eThekwini Agribusiness Master Plan

DRAFT

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Foreword by the Mayor of eThekwini Municipality

As the country, we are experiencing population growth and high levels of unemployment, especially amongst the youth and food insecurity. Increasing unemployment should be a concern not only for government but communities, civil society, corporate South Africa and all stakeholders. In fact, addressing food insecurity, reducing unemployment, providing basic services to our communities, growing the economy, SMMEs and co-operatives are some of the top provincial priorities. As eThekwini Municipality we are heeding the call and moving forward with the implementation of strategic programs aimed at improving the livelihoods of our people. Amongst other sectors, we have identified agriculture as an important sector of the economy with the ability to create employment, address food insecurity and improve the livelihoods of our communities especially in rural and peri-urban areas where unemployment and poor living conditions are always severe. There is no denying that agriculture plays an important role in the development of developing countries like South Africa and therefore, the relevance of agriculture needs no elaboration.

I am delighted to present and support eThekwini Agriculture Master Plan for the overall agricultural development within the municipality. The eThekwini Agriculture Master Plan serves as an important document to guide all agricultural development initiatives within the metro and aligning such programs to other national and provincial programs and strategies such as Integrated Food Security Strategy, Black Industrialist Program, RASET, Operational Vula and others. As the municipality we will be implementing the recommendation of this document. Municipal officials will be expected to present progress on implementation of the recommendations. We all need to make concerted efforts to face and address any challenges that can deter successful implementation. We need to move beyond developing strategies that become shelf documents. I strongly believe that the successful implementation of any development plan largely depends on the identification of proper implementation mechanism and integrated efforts to be taken by all stakeholders' concern. I expect that the outcome of all interventions identified under this eThekwini Agriculture Master Plan will lead to enhanced agricultural productivity, development of various value chains, employment creation, food security, better access to markets, creation of enterprises, and general support of agricultural enterprises through appropriate institutional arrangements and sustainable resources mobilization and management.

Lastly, I would like to extend our sincere thanks to Independent Development Trust and a team of agricultural specialists from Agriculture House for assisting the municipality in preparing this agribusiness master plan. I also thank other development partners and eThekwini Municipality officials who have made valuable inputs in this document.

Thank You

Councillor Mxolisi Kaunda: Mayor of eThekwini Municipality

ACRONYMS

National Development Plan	NDP
National Growth Path	NGP
Integrated Development Plan	IDP
Small Medium Micro Enterprises	SMME
Radical Agrarian Socio-Economic Transformation	RASET
Area Based Management	ABM
Agribusiness Development Unit	ADU
Gross Domestic Product	GDP
Structured Query Language	SQL
Provincial Management Unit	PMU
Ingonyama Trust Board	ITB
Industrial Policy Action Plan	IPAP
Department of Trade and Industry	DTI
National Industrial Policy Framework	NIPF
Agricultural Policy Action Plan	APAP
Integrated Growth and Development Plan	IGDP
Department of Agriculture Forestry and Fisheries	DAFF
Department of Rural Development and Land Reform	DRDLR
Research and Development	R&D
National Environment Management Act	NEMA
Environmental Impact Assessment	EIA
Comprehensive Rural Development Strategy	CRDP
Provincial Spatial Economic Development Strategy	PSEDS
Provincial Growth and Development Strategy	PGDS
South African Pork Producers Organisation	SAPPO
South African Poultry Association	SAPA
South African Futures Exchange	SAFEX

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Executive Summary

The eThekwini Agribusiness Master Plan is anchored on sound environmental and economic principles as these are to be the foundation of sustainable growth and development of the sector. When implemented, the plan will facilitate job creation, skills development, increased sector investment in agricultural infrastructure and good practice farming systems among communities. In addition to this strategic document containing a summary of the eThekwini Agribusiness Master Plan, comprehensive agricultural information in the form of maps, an information library, extensive notes on natural resources and the water situation, enterprise budgets and management information is available in the subsequent sections. This report provides further background information for the development of the Master Plan with a brief overview of the socio-economic, resources and institutional environment of the eThekwini District. The challenges facing the eThekwini agricultural sector and the growth and development strategies for agriculture in the eThekwini District are also discussed.

This will provide a set of basic data and integrated information to underpin decision-making on matters relating to agricultural and rural development, food security and infrastructure. Information is spatially linked as far as possible. User-friendly menu systems will allow decision-makers easy access to relevant basic natural resource data, land suitability information and robust economic analytical instruments.

As a result, the document is divided into the following main parts:

- Part 1 of the project provides for a basis for the development of plans and projects for the agricultural sector in the eThekwini District.
- Part 2 provides proposed plans for an enabling environment.
- Part 3 provides a prioritisation of proposed business plans.
- Part 4 provides the different business plans.
- Part 5 provides a framework for the implementation of the Master Plan, which combines all the information in a stepwise action plan.

The eThekwini Agribusiness Master Plan is based on an integrated and holistic approach to address agricultural development priorities. Government departments, local authorities, NGOs and private sector role players responsible for development will be enabled to access information from a single system in order to assess the use options of resources and their profitability in a particular area, to assess potential conflicts that may arise and to design mechanisms for making decisions about trade-offs and/or consolidating initiatives.

The general consensus across political and social spectrums in South Africa is that agricultural development initiatives are in distress owing to an unacceptably high rate of failure. Failure might be ascribed to several factors including human, institutional, infrastructure and natural resource endowments, with most of these factors being interrelated. Agriculture and agribusiness, in general, in eThekwini is no exception and the challenges of the local agricultural sector are also attributable to these factors. One of the most important aspects necessary for proper planning is proper and organised comprehensive information.

The agricultural sector in the eThekwini District, against the backdrop of the dual nature of the district (Metro and rural areas) and its diverse natural resource base, makes it the ideal vehicle through which poverty alleviation initiatives can be instituted through linkages between primary, secondary and tertiary sectors (agribusiness and agro-processing). However, the current environment of economic pressure, deprived infrastructure, time-consuming and unsuccessful land reform and redistribution programmes within the agricultural sector of the province needs to be improved. Such improvement could be brought about by initiatives such as government programmes and revised agricultural policies, forming the basis of the successful alleviation of poverty through agricultural development.

The eThekwini District has enormous potential for agricultural development. However, to achieve a point of increased agricultural productivity and economic prosperity for developing farmers, a number of constraints or problems must be addressed. These can be categorized into four broad groups:

- Production limitations;
- Access to credit;
- Human capacity; and
- Market access.

Agriculture forms a focus area of the Integrated Development Plans of the municipalities. It can make major contributions to economic development through the production of surplus food and fibre, the utilisation of labour, as well as the creation of capital and rural welfare. It is therefore important to understand and analyse the problems according to the broad categories above.

1.0 Introduction

Challenges facing South Africa are food insecurity, unemployment, poverty and inequality. This unwanted legacy of the apartheid state still persists, evident through rural underdevelopment, underutilisation and unsustainable use of productive land, including land redistributed. The plight of Black small-scale and emerging farmers across the country has not changed much since the advent of democracy. eThekwini Metro endeavours to move forward with some remedial methods on these challenges and has commissioned the development of an agriculture master plan to guide the conceptualization, implementation and monitoring of the agricultural programs within eThekwini Metro.

The master plan is built on previous similar studies such as the Rural Agricultural Land Potential Assessment and Agribusiness Policy for eThekwini commissioned by the eThekwini Rural ABM in 2004. Recurring issues noted in these development strategies and policies, generally include:

a) The lack of coordination of agricultural development initiatives within eThekwini Municipality,
b) Lack of a plan to guide agricultural development,
c) Unavailability of accurate primary, secondary and tertiary farming data,
d) Inconsistent farmers' information,
e) Need to identify agricultural niche and mapping of various value chains,
f) Need to identify potential agricultural opportunities,
g) Need to identify potential strategic partners for agriculture and agribusiness development,
h) Need to identify various market opportunities within eThekwini and outside the metro critical for sustainable agribusiness development, and
i) Need to define a single champion for agricultural and agribusiness development.

The above factors were also observed during the assessment of smallholder farms, agro-processors and through interaction with representatives of eThekwini Municipality and other stakeholders. The agriculture master plan is attempting to address and providing guidance on how to remedy such issues. Furthermore, it defines the single champion for agriculture development within the eThekwini Metro by proposing the establishment of the Agribusiness Development Unit (ADU) as the centre to drive all agriculture and agribusiness development initiatives including management of strategic relations with various stakeholders. The

agriculture master plan recognizes national, provincial and local as three spheres of government respectively.

Seventy-five percent of the world's poor live in rural areas and most are involved in agriculture. In the 21st century, agriculture remains fundamental to economic growth, poverty alleviation, and environmental sustainability (Webber and Labatse, 2010). The development community has refocused on agriculture as an effective means of fighting poverty. The World Development Report (WDR, 2008) states that the GDP growth originating from agriculture that involves the poor can effectively raise their income more than GDP growth originating outside the sector (Webber and Labatse, 2010). The renewal of interest in agriculture has been further enhanced by the recent rise of global food prices. As more and better-funded agricultural development projects emerge, policy professionals will require new frameworks for designing and evaluating investments in commercial and emerging agriculture (Webber and Labatse, 2010).

Agriculture is the foundation of developing economies. As one of these economies, South Africa needs to ensure a healthy agricultural industry that contributes to country's GDP, food security, social welfare and job creation, while adding value to the raw materials. The health of agricultural sector depends on the sustainability of farming methods. Farming practices must therefore not only protect the long-term productivity of the land, but must also ensure profitable yields and the well-being not only of the farmers and farm workers but also of the larger population including the youth.

At a local level (eThekwini Municipality), there is limited recognition of the potential role that agriculture can fulfil in improving rural food security, income generation and job creation. This is evident at all levels, i.e. planning activities, ranging from the municipal policy level such as the Integrated Development Plan to local area development plans, that continue to focus on housing, infrastructural development and non-agricultural forms of economic development such as arts and crafts, tourism etc. At a grass root levels it would also appear that the value of land and the potential to generate income from the land available in rural areas through agriculture is not being exploited. This relates to a range of factors, amongst others: households being in the poverty trap (i.e. not having the resources in terms of time, money and labour to devote to agricultural activities), lack of access to support and the lack of access to markets.

Despite the above examples of constraints, successful agricultural enterprises do exist within rural eThekwini. Examples of successful enterprises include market-driven farming in Isipingo and Inanda areas. There is much to emulate from these successful and practical models.

1.1.Short Description and Purpose of the Agribusiness Master Plan

eThekwini Agriculture Master Plan is a guiding document that aligns eThekwini agricultural initiatives with current agricultural development approaches nationally and KwaZulu-Natal Province. It also assists with the identification of priority agricultural commodity value chains for development within the metro based on their feasibility.

Its purpose is to outline the metro's competitive agricultural commodities including potential of such commodities to be processed into value-added products that will contribute further to job creation, food security, and the eradication of poverty. This is a 10-year plan focusing on existing and potential smallholder producers, semi-commercial, commercial and any other forms of agribusiness in primary, secondary and tertiary production.

1.2.The objectives of the eThekwini Agribusiness Master Plan are summarised as follows:

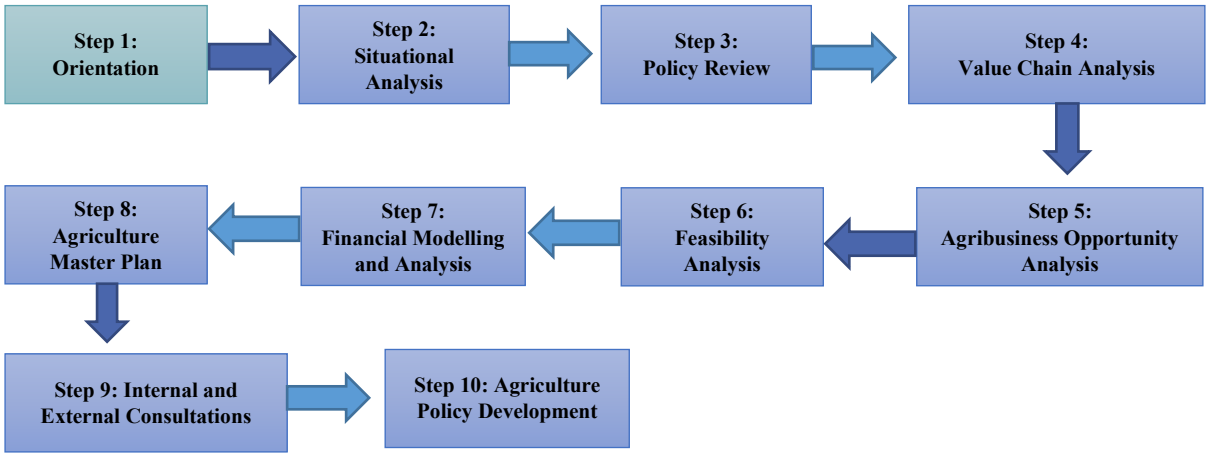
a. To develop a document that serves as a guideline towards the implementation of agriculture and agribusiness development initiatives within eThekwini Municipality.
b. Provide and organize primary, secondary and tertiary farming data in a form of Structured Query Language (SQL) Data Base.
c. Aligning the eThekwini agricultural development strategies with existing national, provincial and local policies and development strategies.
d. Determine the socio-economic benefits and potential impact that a properly implemented agribusiness strategy will have within the metro.
e. Identify the existing agro-processing facilities and establish possible linkages including value addition opportunities.
f. Identify dominant or most feasible commodities within the metro.
i. Identify potential public-private partnerships.

14. Develop a regional specific operational plan for eThekwini agriculture and agribusiness initiatives.
15. Develop eThekwini Agriculture Policy

1.3.Methodology

Figure 1 illustrates the methodology used for developing eThekwini Agriculture Master Plan. It provides the outline of the various steps undertaken.

Figure 1: Methodology



The steps shown in Figure 1 can be summarized as follows:

Step 1: Orientation - The purpose of the first step was to engage with the municipality to achieve a consensus on the goals and objectives of the project. The project team held an inaugural meeting with the relevant stakeholders to finalise project objectives, process deliverables, and present a project management programme.

Step 2: Situational Analysis – A status quo analysis of agricultural and agro-processing (agribusiness) industry was conducted for the eThekwini Municipality. The status quo analysis provides the background to the agricultural environment in the metro used as a baseline for eThekwini agricultural development and support.

Step 3: Review of Policy and Strategy Documents - The policy and strategy review is essentially a desktop exercise which determined the alignment of the eThekwini Agriculture Master Plan with existing national and provincial policies, growth and development strategies such as National Development Plan (NDP) and others including eThekwini Municipality IDP. Other pertinent documents provided by KZN COGTA, KZN Department of Agriculture, eThekwini Municipality, RASET PMU were also reviewed.

Step 4: Value Chain Analysis – Step 4 identified existing agricultural value chains within eThekwini Municipality. This phase assessed support structure for existing agricultural initiatives within the metro and identified gaps. It resulted to the development of farmer data base and proposal to amalgamate the Agribusiness Department and Agro-Ecology Unit into a new Agribusiness Development Unit (ADU).

Step 5: Agribusiness Opportunity Analysis – this phase assessed various value chain opportunities for development. It highlights five value chains for development within eThekwini Municipality, their implementation and support structure.

Step 6: Feasibility Assessment – This assessment assisted in determining the viability of various agricultural value chains and value addition business opportunities. Step 6 also identified key roles for the proposed eThekwini Agribusiness Development Unit as to:

- identify a niche, consolidate and coordinate agricultural support in the metro.
- facilitate investments towards various agribusiness value chains.
- implement strategic and high impact agribusiness development initiatives.
- Create and lead strategic partnerships with government and private sector in the agricultural industry.

Step 7: Production and Financial Modelling: A detailed financial analysis for the proposed agribusiness value chains was conducted. The aim was to cost each value chain including mapping out pathways on how to mobilize financial and non-financial resources.

Step 8: eThekwini Agriculture Master Plan – A master was compiled that focuses on the operational aspects of various value chains, details about the level of investment required, how each value chain will be implemented and the proposed implementation structure.

Step 9: Internal and External Consultations – step 9 solicitated views and buy-in from various internal stakeholders (eThekwini Agribusiness Department, Agro-Ecology Unit, eThekwini IT Department, Water and Sanitation Unit, Development Planning, Environment and Management Unit) and external stakeholders (KZN Department of Agriculture, RASET PMU, KZN COGTA and various funders and fund managers). The aim is also to align the master plan with similar programs driven by these stakeholders.

Step 10: eThekwini Agriculture Policy Development – In this phase, an agriculture policy was developed. The policy addresses policy matters relating to both agribusiness development and food security within the eThekwini Metro.

1.4.eThekwini Agribusiness Strategic Intent

By 2030 eThekwini Municipality will enjoy the reputation of being Africa's most liveable city, where all citizens live in harmony. This vision will be achieved by growing it's economy and meeting people's needs so that all citizens enjoy a high quality of life with equal opportunities, in a city that they are truly proud of.

The eThekwini Agribusiness' vision is two-fold.Firstly, is food sovereignty for all eThekwini residents and secondly is the development of thriving agribusinesses and agricultural sector that significantly contributes to:

- The health and well-being of eThekwini residents,
- Focusses on rural regeneration and development of skills of small-holder farmers,
- Promotes environmental sustainability and sustainable utilization of natural resources,
- Productive and business orientated agriculture,
- Promote agro-processing,
- Promote food security and household food production,
- Combat climate change,
- Empower marginalized communities socio-economically,
- Contribute to job creation, supports and promotes the development of youth, worman, military veterans and people living with disability.
- Encourage creativity & innovation in the agricultural sector,
- Facilitates access to markets.

1.5.Situational Analysis (Baseline Data)

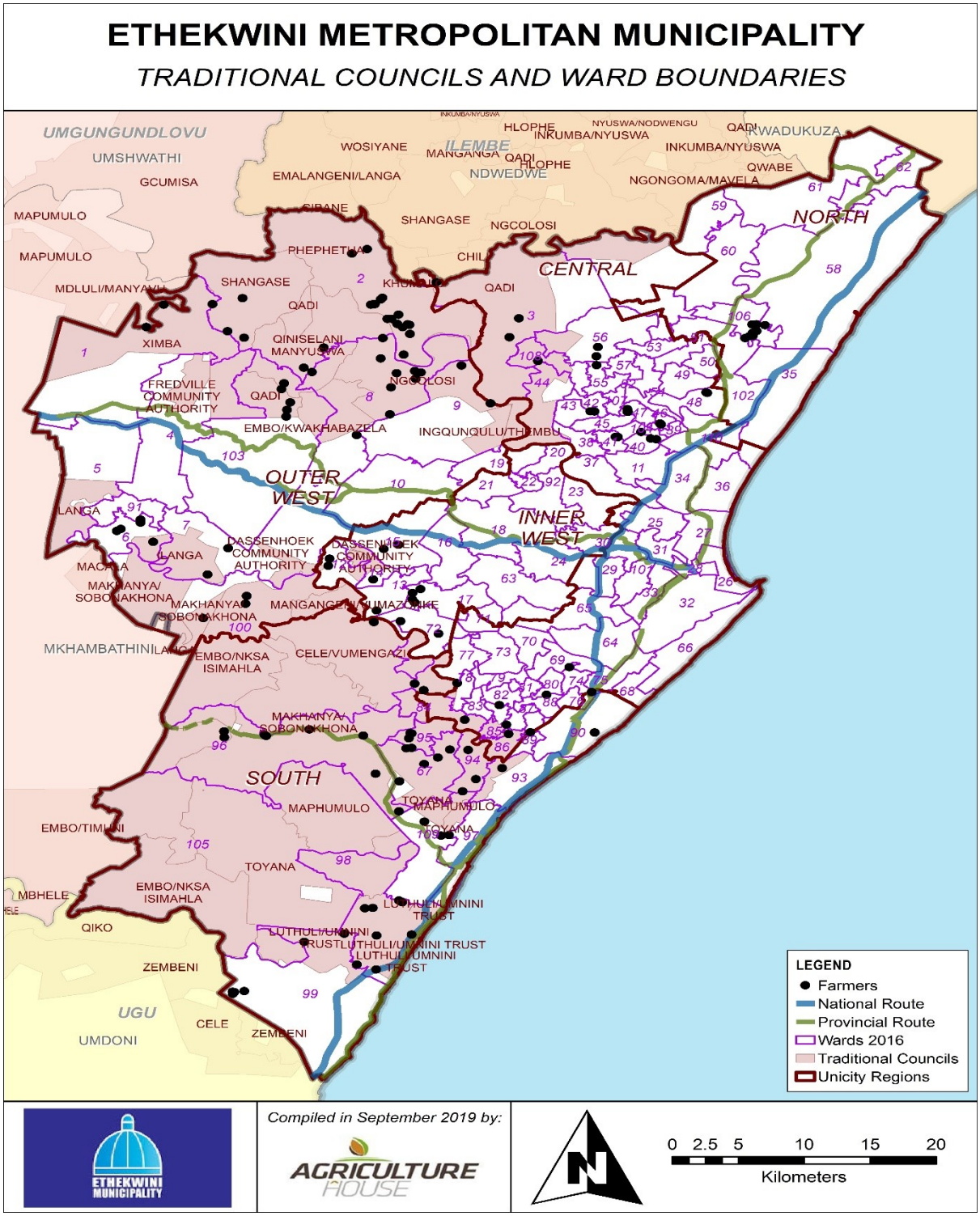
For many years, eThekwini Municipality has been supporting small farmers through its Parks and Recreation, Agro-Ecology and Business Support, Tourism and Markets Unit. Farmers are assisted with inputs and mechanization. However, such support remains uncoordinated and provided on an ad hoc basis. This is one of the reasons that necessitated the development of an agribusiness master plan to promote the coordination of such support services. Within eThekwini Municipality, active fresh produce producers are estimated at 350, farming mainly

vegetables. These producers are organized as co-operatives, companies, NPOs, close corporations and unregistered groups or clubs.

a) Smallholder Production

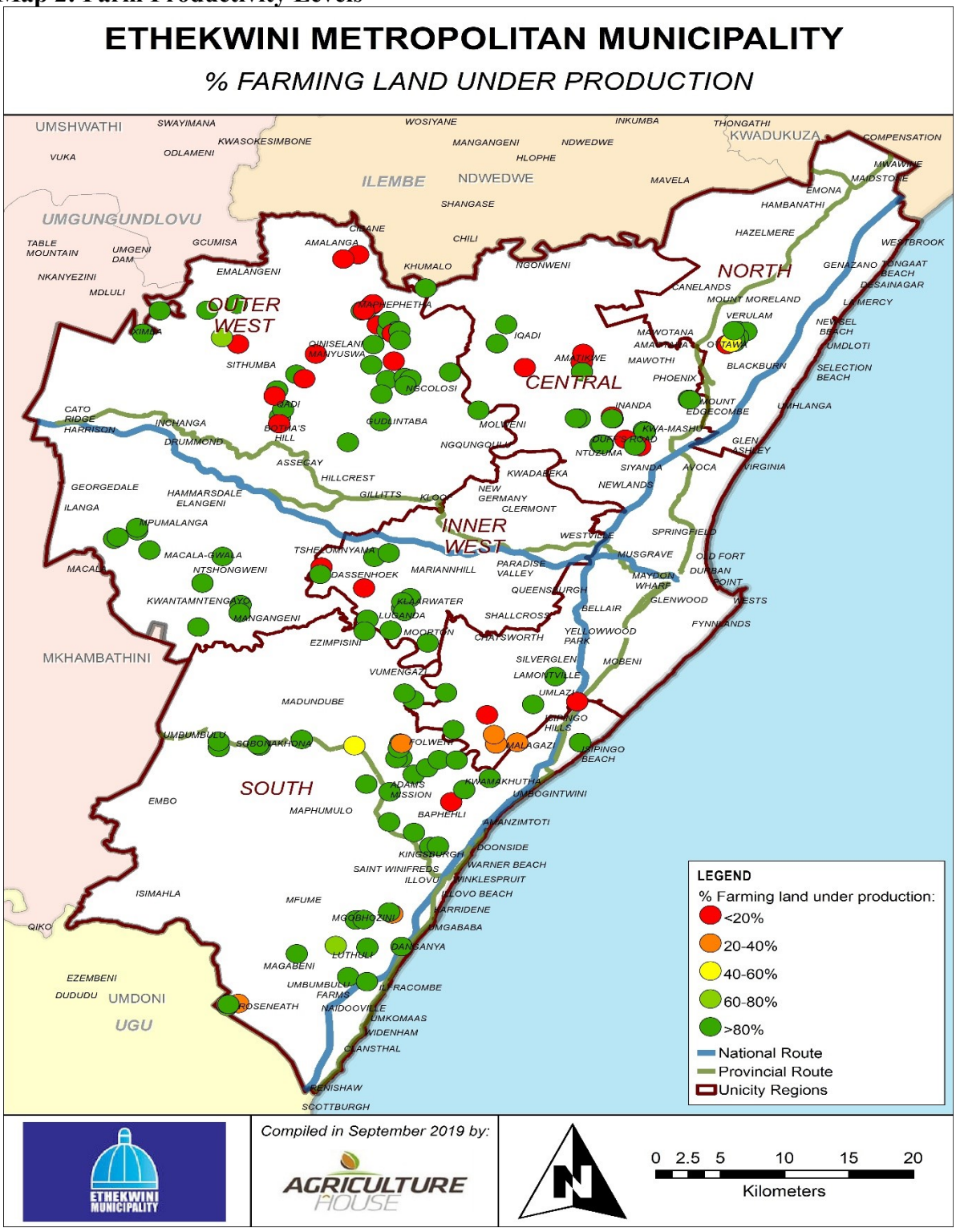
The total confirmed land used for agricultural activities within eThekwini Metro is estimated at 560ha. The bulk of the lands are within Amakhosi areas. The land sizes vary; townships have access to lands ranging from below 0.1ha to 1ha whilst peri-urban and rural areas have lands ranging from 0.5ha to 12ha. Location of lands used for agriculture is shown in Map 1.

Map 1: eThekwini Agricultural Land



There are potential agricultural lands that have not been surveyed /assessed especially under Amakhosi in the South Region. The assumption made is that, when accounting for such lands, eThekwini has at least between 800 to 1200ha of agricultural land. During farm assessment period (June 2019), only 41% of agricultural land was under production. Low productivity results to low income levels. Productivity levels are shown in Map 2.

Map 2: Farm Productivity Levels



An estimated 98.5% of the farmers reported to be getting an income below R5000 per commodity produced per annum. Only 1.5% of the farmers reported higher income ranging from R50 000 to R100 000 with an exception of one co-operative called Mbali Yesizwe Sasenanda that reported to receive an income in excess of R1 million per annum for all commodities combined. Best practices were drawn from successful farmers to formulate

recommendations for increasing production and productivity of undeforming farmers. Production areas within eThekwini are listed Table 1.

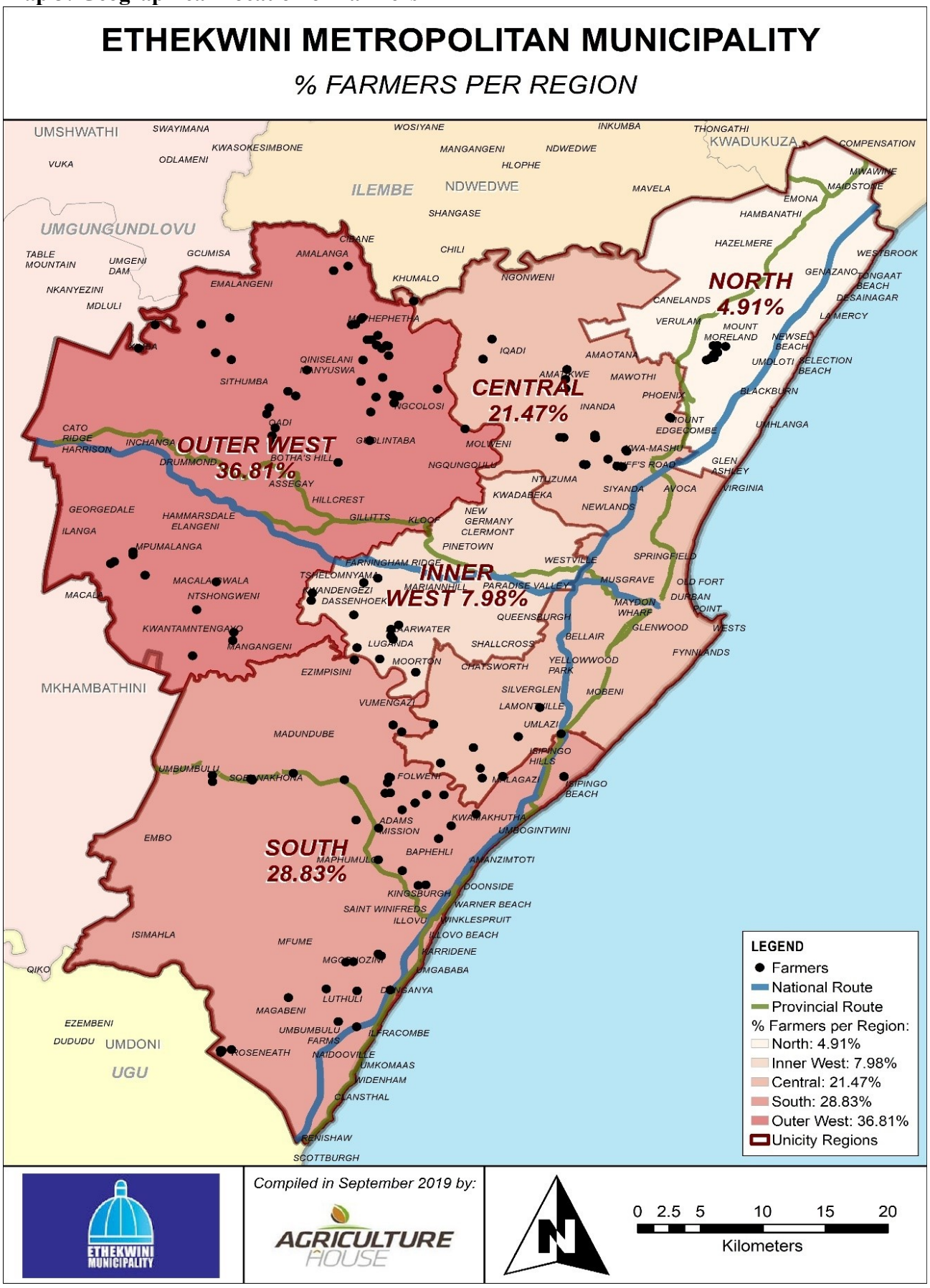
Table 1: eThekwini Production Areas

Ranking	Area	% Contribution to total area under production
1	Isiphingo	18,3%
2	Umgababa	15,48%
3	Umbumbulu	15,04%
4	Folweni	8,69%
5	Inanda	7,80%
6	Marianhill	5,98%
7	Umkomaas	4,72%
8	KwaNgcolosi	3,90%
9	Klaarwater	3,78%
10	Waterloo	2,99%
11	Maphephetheni	2,2%
12	Kwandengezi, Dazenhoek, Cato Ridge, KwaMashu, Hammersdale, Lamontville, Umlazi, Phoenix, Ntuzuma, Nyuswa, Umzinyathi, Illovu, Makhutha, Pinetown	Areas with production below 2%

b) Geographical Location of Farmers

A total of 163 smallholder farmers were profiled. They are located in various regions within eThekwini Municipality as indicated in Map 3.

Map 3: Geographical Location of Farmers

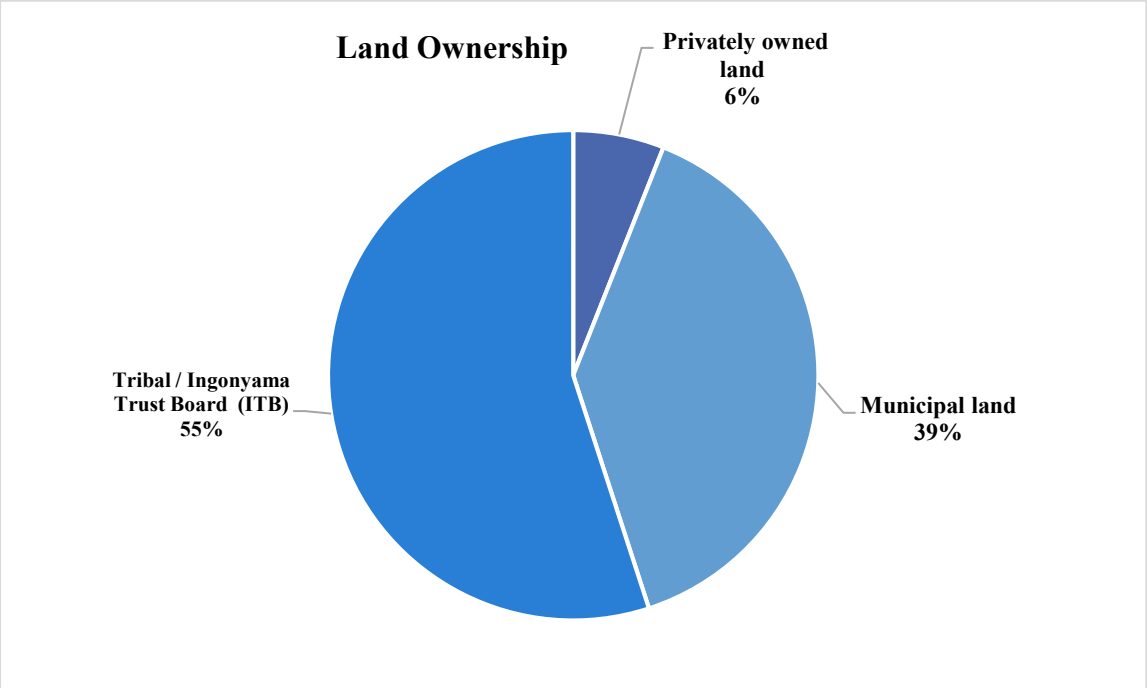


The highest concentration of farmers is in the South at 28, 83%, Central – 21.47% and Outer-West Regions at 36.81%. The Northern and Inner-West Regions have the lowest number of farmers at 4.91% and 7.98% respectively. The above scenario is an indication that small-scale farming under the eThekwini Municipality largely takes place in rural and peri-rural areas.

c) Access to Agricultural Land

Access to productive land is one of the key factors which determines any farmer's success. EThekwini farmers have access to agricultural land through various structures as indicated in Figure 2. The distribution and location are shown in Map 4.

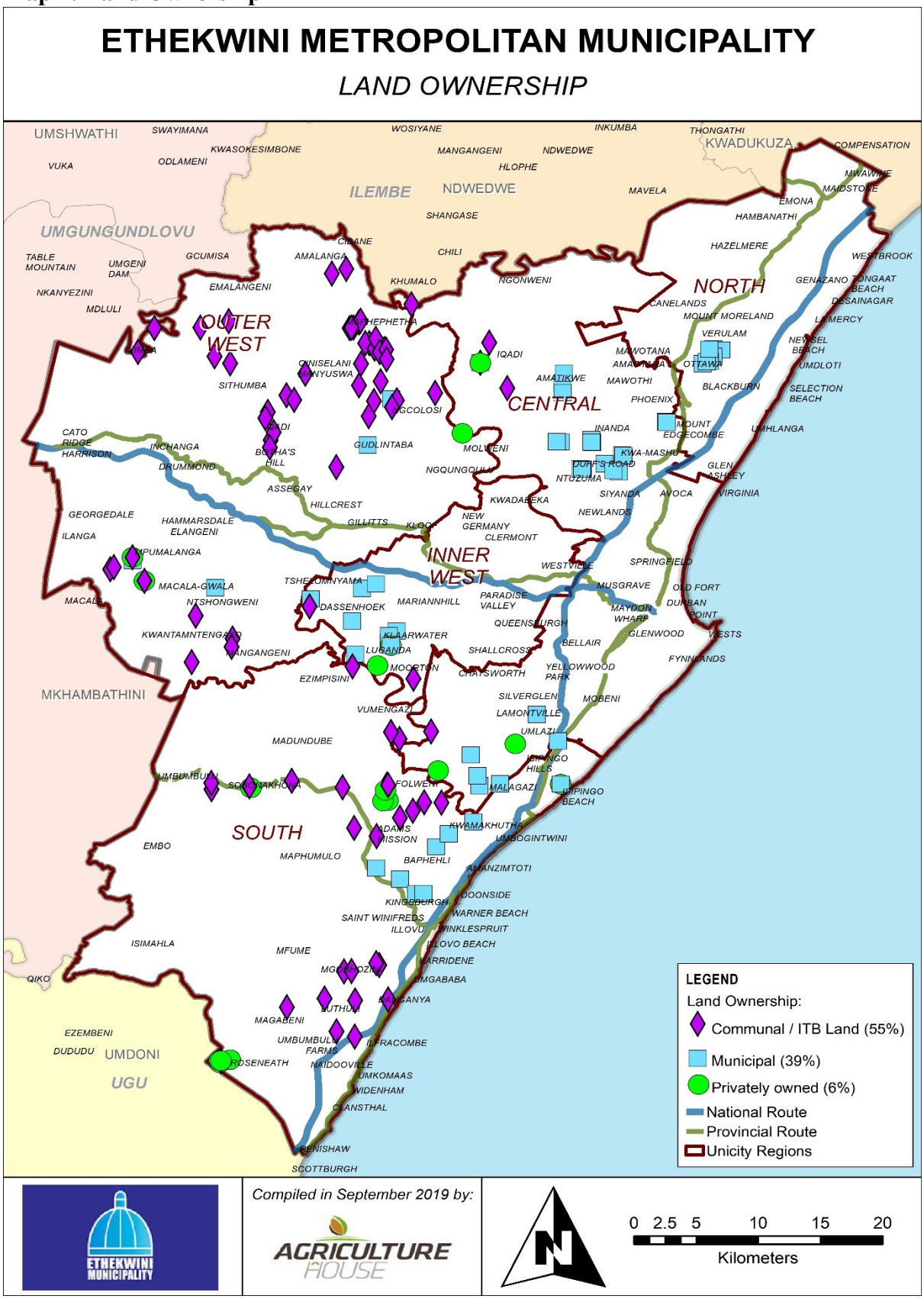
Figure 2: Land Ownership (Based on the Number of Farms)



Only 6% of the farmers are farming on owned/private land. The majority (55%) are farming on ITB / Communal land and 39 % are farming on municipal land. These farmers conduct their farming activities on municipal and tribal lands without official lease agreements[1].

[1] ADU should work towards formalizing the utilization of municipal lands for agricultural purposes

Map 4: Land Ownership



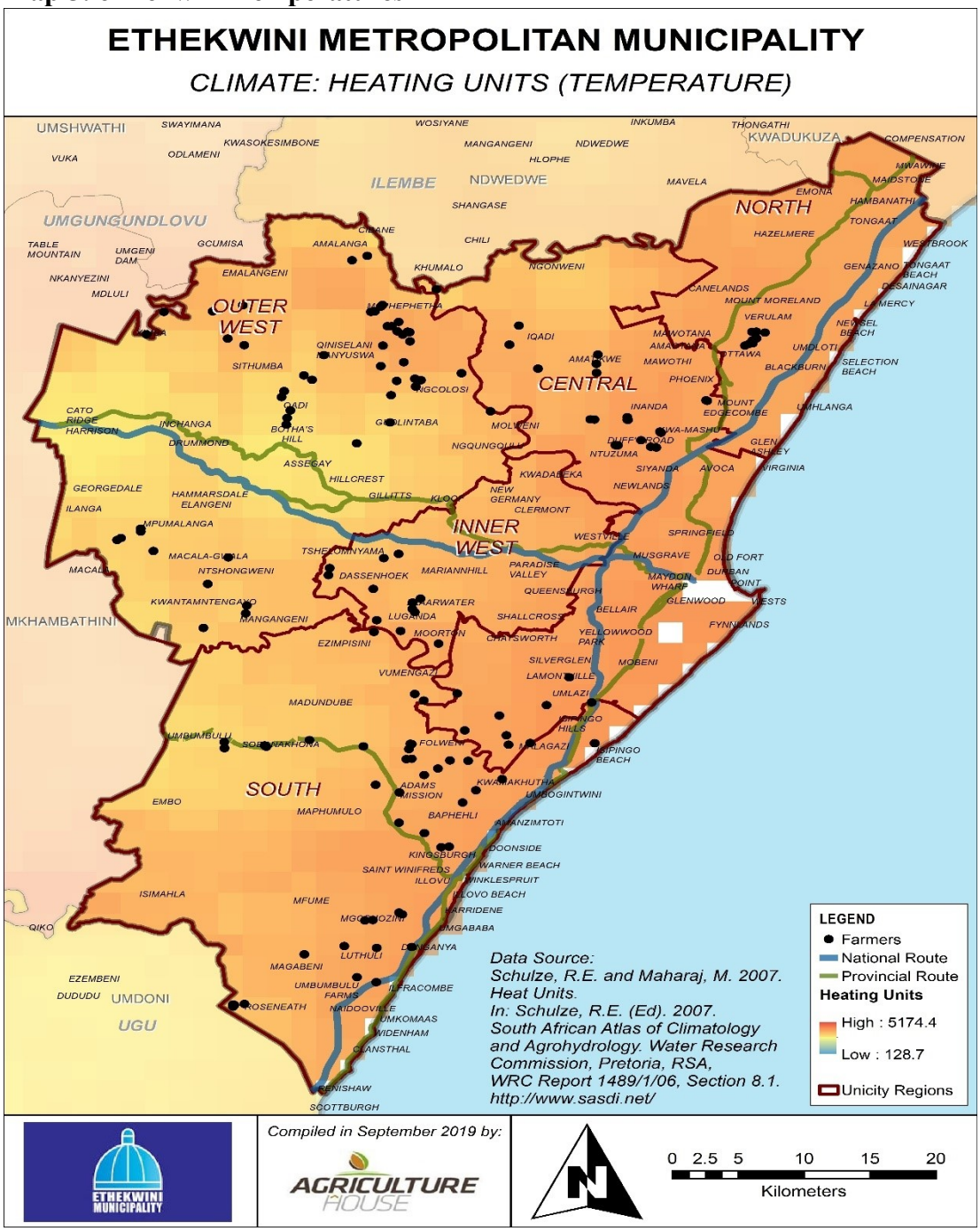
d) Natural Resources and Land Potential

Temperature and rainfall are the most important factors determining the potential for agricultural production.

i. Temperature

Mean annual temperatures for eThekwini Municipality are ranging from 16^0C to 23^0C, with temperatures being highest along the coast and dropping towards west shown in Map 5. Most areas of eThekwini Municipality are frost free. This provides suitable climatic conditions for agribusiness. However, climate smart agriculture should be promoted in the municipality.

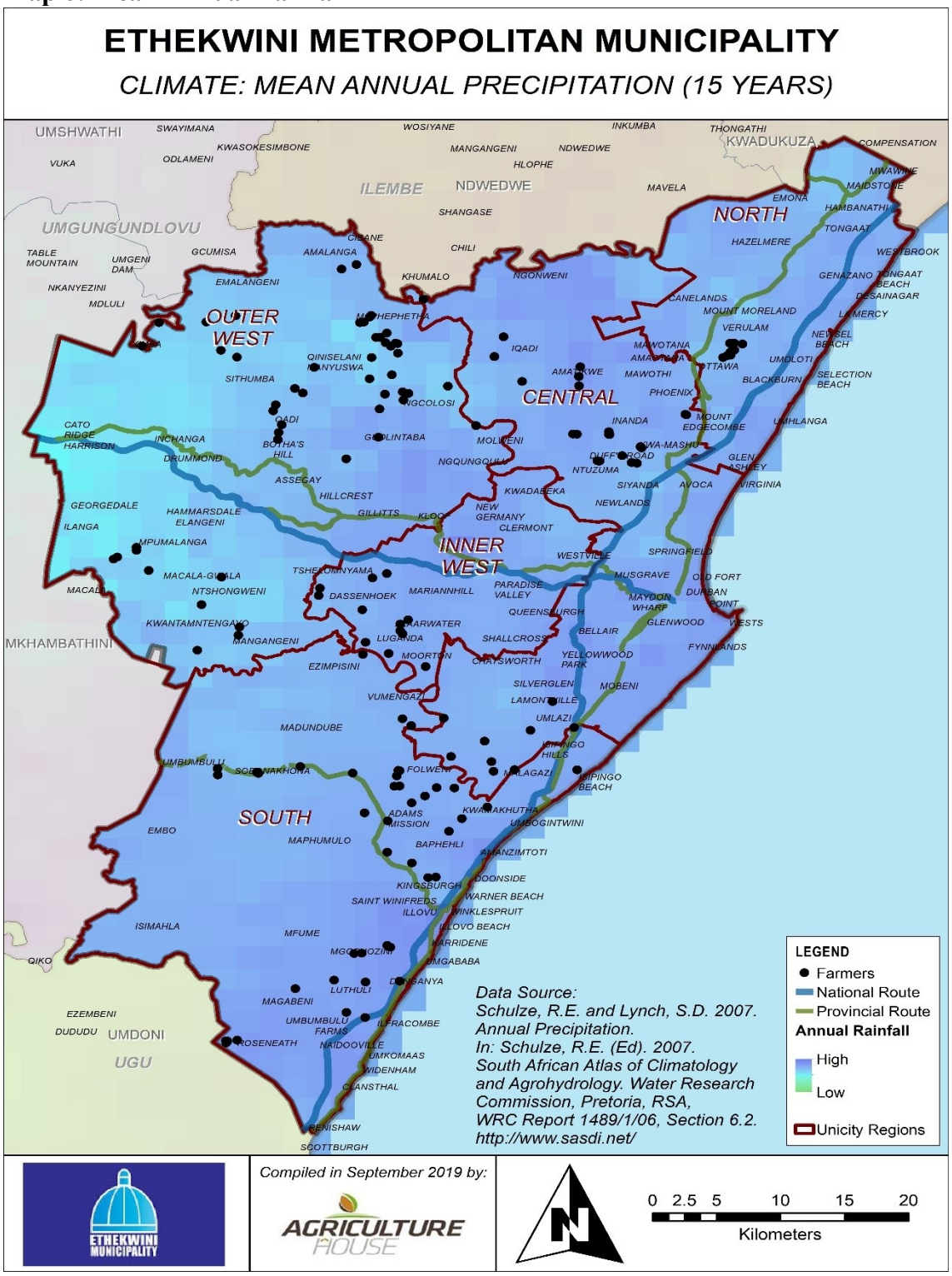
Map 5: eThekwini Temperatures



ii. Rainfall

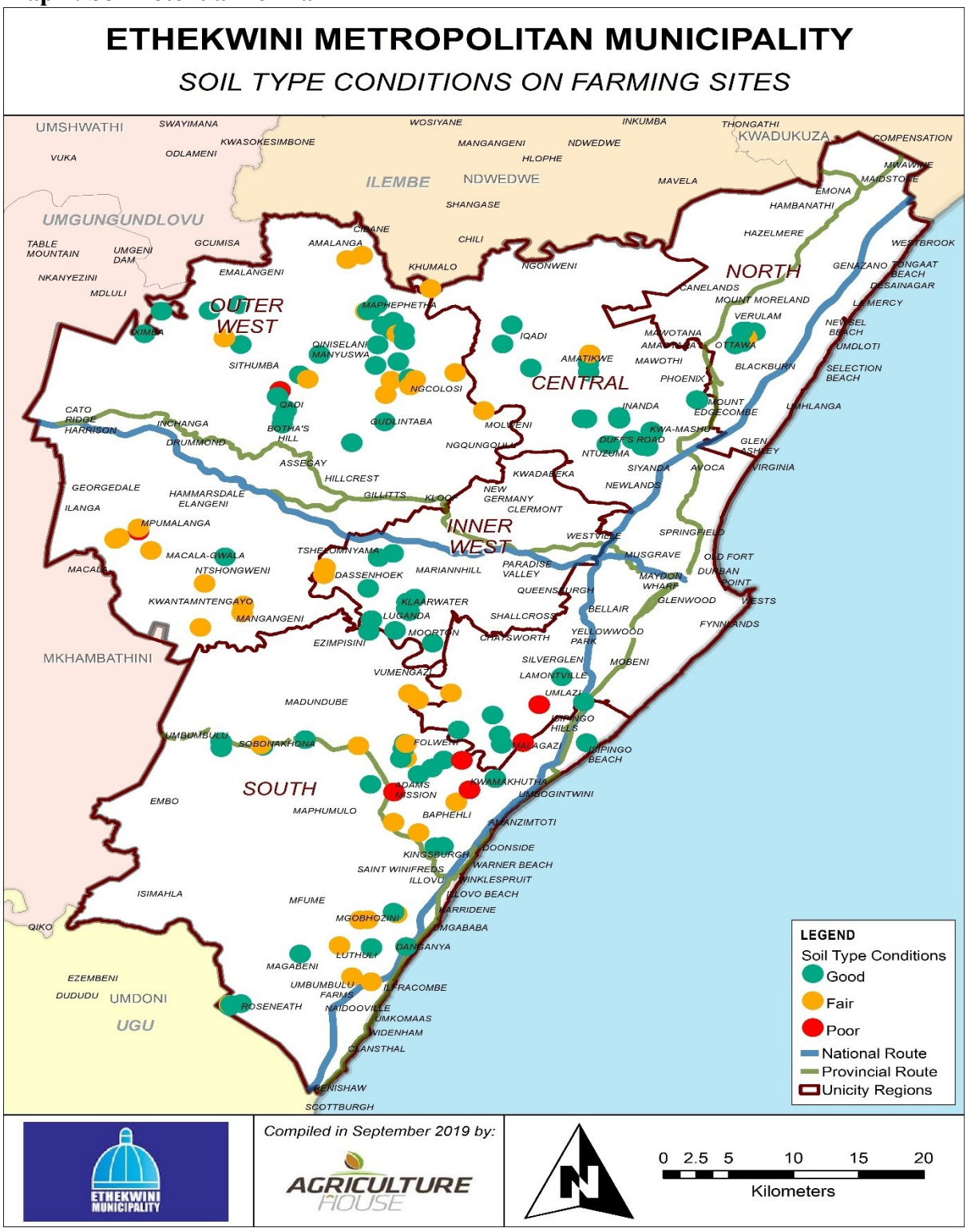
Mean annual rainfall ranges from 800mm to 1100mm per annum. Coastal areas receive higher rainfall compared to west areas shown in Map 6.

Map 6: Mean Annual Rainfall



Areas shown as dark green are classified as high rainfall areas. In these areas, climatic limitations are slight or do not exist and less limiting terrain is encountered. Soils differ in each farm as shown in Map 7. Overall, eThekwini Municipality has limited available high potential agricultural land for food production. Sugarcane is regarded as an industrial crop and excluded.

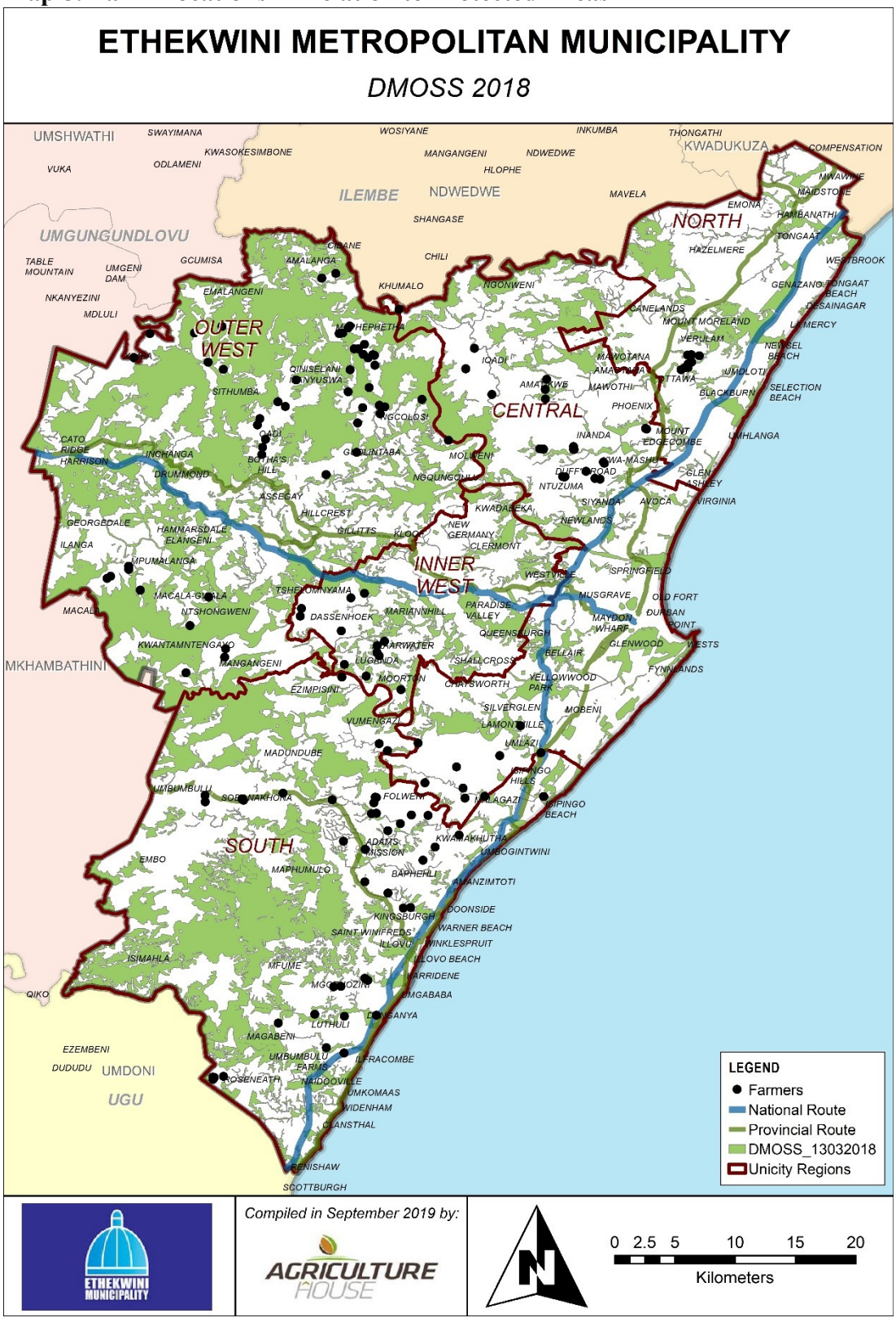
Map 7: Soil Potential Per Farm



e) Location of the Farmers in Relation to Protected Areas

The location of small farms in relation to protected areas within the municipality is shown in Map 8. Farming is taking place outside the protected areas.

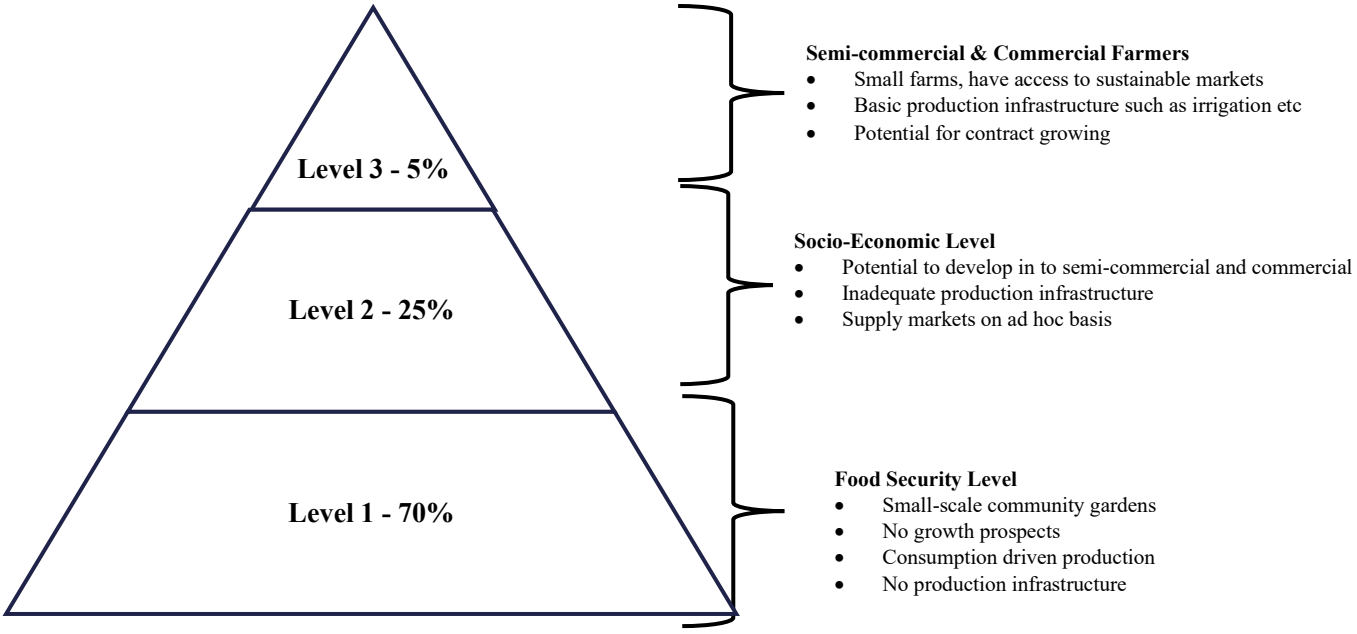
Map 8: Farm Locations in Relation to Protected Areas



f) Classification of Farmers

eThekwini Black Farmers are generally small scale in nature and conduct their farming activities at various levels of the primary farming value chain. These farmers fall into three categories presented in Figure 3 below (adapted from the Maslow's Hierarchy):

Figure 3: Smallholder Farmers – Levels of Development



- More than 70% fall in category 1. These farmers produce vegetables for household consumption. These are food security groups / category farmers. Most have not growth prospects of graduating to levels 2 and 3.
- About 25% of the farmers fall within category 2, these farmers produce for household consumption and informal markets, supplied on ad hoc basis. The bulk of the farmers have potential to graduate to level 1.
- And, only 5% of the farmers are in category 3, mainly comprising of farmers in Isipingo that are purely business oriented and are part of the tight value chains. These farmers supply formal markets consistently. Some have potential to expand but limited by production resources.

The support of smallholder producers should be aligned to stages of their development, growth and their capacity.[2]

[2] Farmer support packages should be developed. This should conform to farmers' level of development i.e. food security packages should be different to agribusiness support packages.

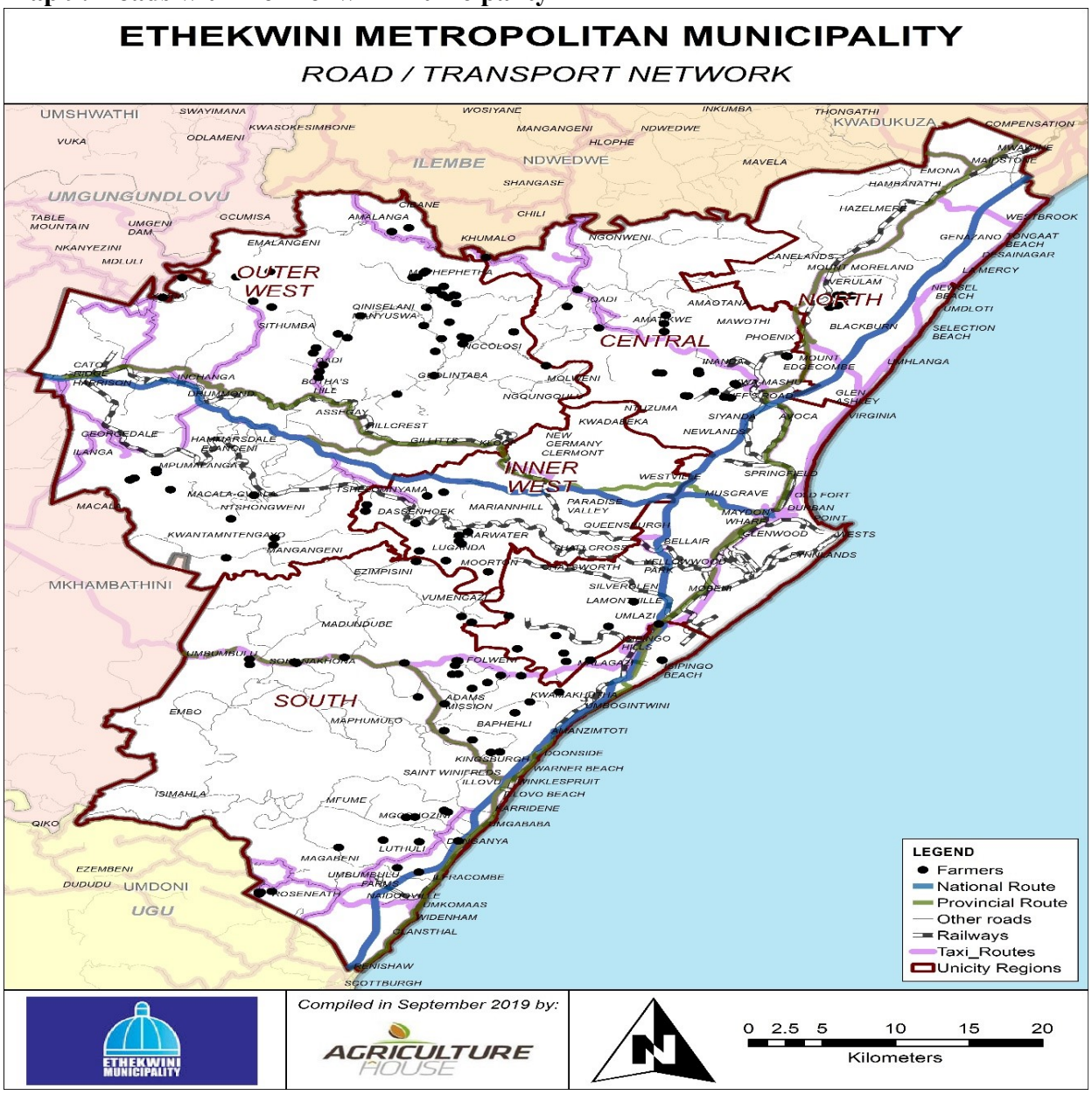
g) Accessibility of Farming Sites

Farm access varies according to their location i.e. rural or peri-urban. Accessibility is through a combination of rural, municipal and national roads.

i. Main Roads and Municipal Roads

Within eThekwini Metro, the national and municipal roads are in good condition and tarred. Small-holder farms are accessible through road network linking N2 South Coast, N2 North Coast, uMbumbulu Road, N3 West and M13. In rural areas, the main gravel roads are also well-maintained especially in areas such as Umkomaas, uMbumbulu, eMaphethweni, KwaNgcolosi and uMgababa. Roads within eThekwini Municipality are Shown in Map 9.

Map 9: Roads within eThekwini Municipality



ii. Access Roads to Farms

Roads condition at farm level, varies in accordance with location and area classification. In townships and urban areas such as uMlazi, Ntuzuma, Phoenix, Isipingo, Inanda, Lamontville and Pinetown, access to farms is fairly easy through tarred roads. Gravel roads are minimal in these areas. Access roads to farms in rural and some peri-urban areas are in the form of gravel roads. Some of these roads are quite difficult to drive on due to bad terrains caused by flooding during heavy rains as well as poor road maintenance.

h) Access to Bulk Services

Access to bulk services assessment was also conducted on three key factors which are water sources, power supply and sewerage services. Water, is a key factor in any farming environment. Power supply and sewerage services are also supporting services that contribute largely to the farm's well-being.

i. Sources of Water

Various sources of water were identified during farm assessments. These are municipal water, rivers, dams, fountains, streams, self-made water harvesting sources such as catchments, rain water harvesting and boreholes. These are also shown in Map 10. About, 86% of farmers confirmed to have access to various sources of water for irrigation purposes. However, farmers in peri-urban and township areas rely mainly on municipal water for their farming activities. This was assessed to add undue strain on the municipality water supply system. This means there is competition between water for human consumption and other household requirements and farming activities. This arrangement / practice is not sustainable, it is an exception from the general agricultural industry norm.

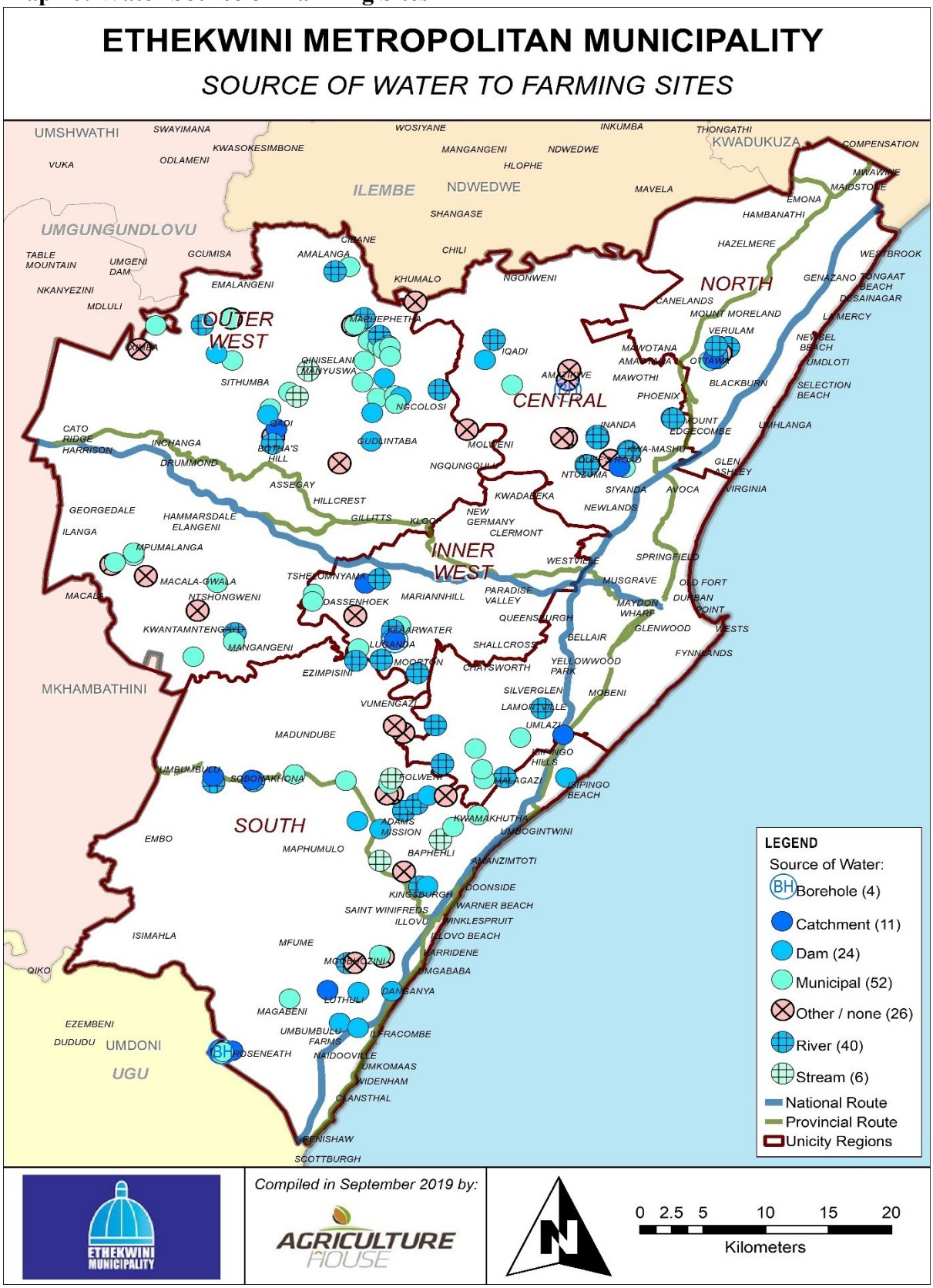
Most parts of South Africa, including eThekwini Municipality have endured drought for the past few years, the use of municipal water for irrigation should be addressed. Viable water harvesting technics should be explored to promote climate smart agriculture. In rural and some parts of peri-urban areas, farmers rely on rivers, dams, streams and some self-made water catchments. It was also observed that the quality of water from the rivers is very poor. Access to water can be summarized as follows:

- Use of municipal water – 30%
- Dams, rivers, streams and catchments – 56%

- No water – 14%

The eThekwini Water and Sanitation Department is one of the key stakeholders identified to play an important role in exploring water harvesting technics that could be adopted and used by the farmers.

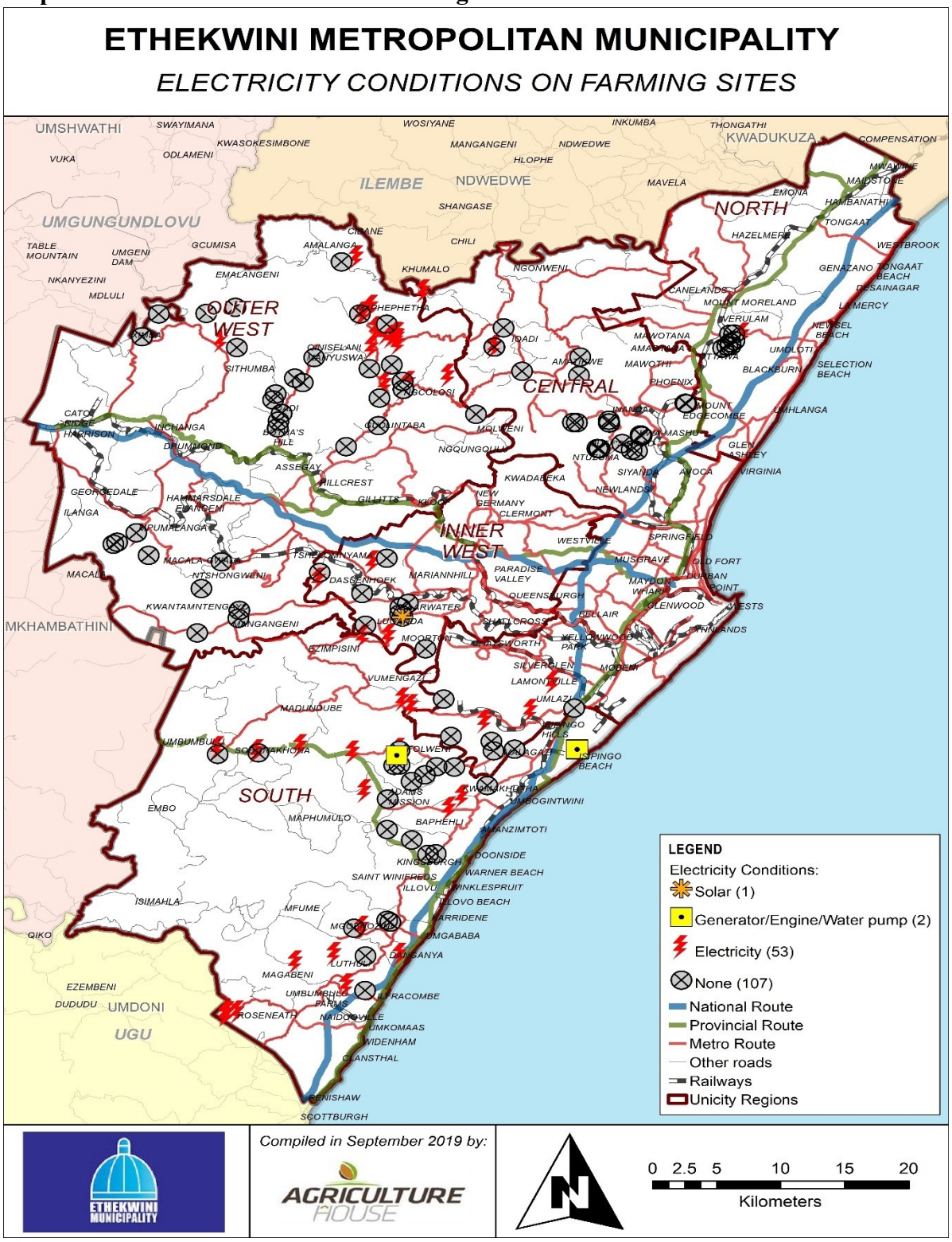
Map 10: Water Source on Farming Sites



ii. Power Supply

In this document, power supply refers to means of generating power through electricity, solar power, generator and gas. The only two forms of power source used by farmers is electricity and generators (diesel and petrol), the latter being less than 1% shown in Map 11.

Map 11: Power Source from each Farming Site

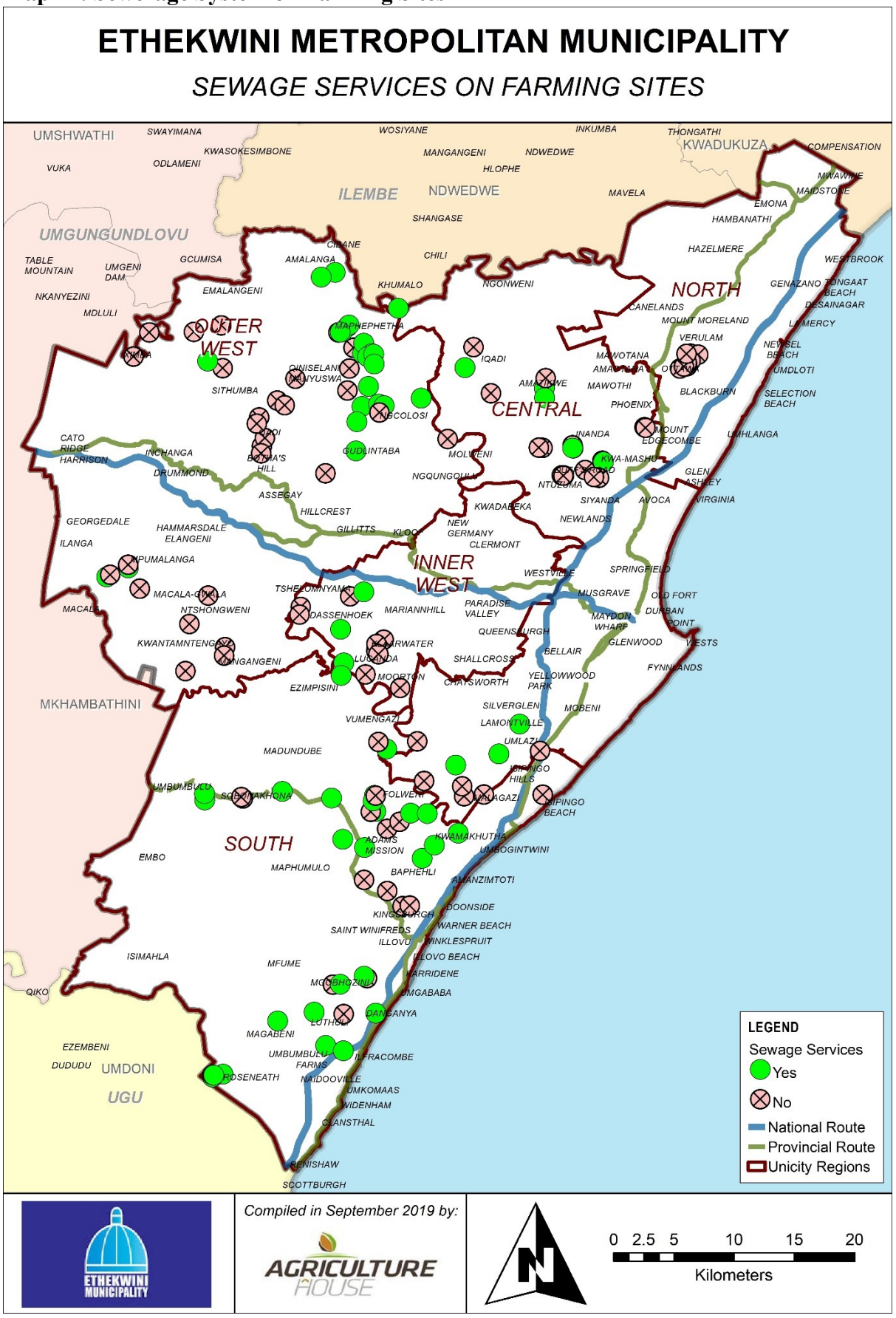


All households-based gardens (izivande), recorded a 100% access to electricity. However, this is only for household use, not for farming activities. Farmers operating in sites such as schools and crèche premises may easily access electricity due to the presence of power grid nearby but even these farmers do not have access to electricity for farming activities. Access to power in this instance refers to presence of electricity power lines within 200 metres of the farms. Therefore, these farms are not directly connected to the grid but located close enough to electricity supply power lines. Overall, none of the farmers use electric power for irrigation and only 1% use generators. eThekwini Electricity Department and other power generators should assist ADU to explore possible power supply options for eThekwini farmers.

iii. Sewerage Services

Only 24% of farmers have access to sewerage facilities that are in good condition; the majority or over 95%, is located in urban, peri-urban and township areas. Over 70% of farmers, especially in rural areas have no access to proper sewerage facilities on their farming sites and therefore make use of houses close to the farming site and use nearby bush shown in Map 12. This was identified as a health risk. The risk was assessed to be higher in areas along rivers and waterways as faecal material is transported by rain water.

Map 12: Sewerage System on Farming Sites



i) Farms Infrastructure

i. Irrigation

eThekwini farmers are producing vegetables on both dryland and under irrigation. Those producing under dryland rely solely on rainfall. Only 22% of the farmers have some form of proper irrigation system (drip and overheads). These are larger farms (between 5h and 15ha in size) located in Isipingo, Umkomaas, Hammersdale, Inanda and KwaNgcolosi.

About, 78% of the farmers use manual watering methods, mainly watering cans, horse pipes and buckets for vegetable production. This group of farmers produce on small portions of land below 1ha, farming on a variety of crops in plots allocated to individual farmers. The majority of these farmers (over 80%) is located in rural and township areas. This group of farmers produce the lowest volumes of crops with over 90% of their total production used for household consumption and surplus sold to informal markets including local communities. Some farmers reported to have received assistance from government with irrigation but such irrigation was never installed.

ii. Fencing

The availability and condition of fencing differ from site to site. Only 53% of farmers were identified as having moderate to good quality fencing. And, 90% of these farmers are those assisted by various departments within eThekwini Municipality. Mainly these are gardens within homesteads, within school premises and lands owned by the municipality. The rest of the farmers either have no form of fencing or it is severely damaged. Some farmers reported lack of production due to unavailability of fencing.

iii. Storage and Packaging Facilities

Only 28% of the farmers reported to have access to some form of storage and packaging facilities. And of these, over 90% are those farmers which were assisted by eThekwini Municipality and other government departments through food security programmes. Only 1% of farmers have access to processing facilities. The resultant effects of lack of storage facilities and pack houses are:

- Inability to buy inputs in bulk and in advance
- Inability to harvest in bulk

- Linked to above, ready crops are not harvested and left to spoil on the fields due to lack of suitable storage facilities.
- Inability to keep fresh quality produce refrigerated until taken to the markets
- Farmers have no choice, but to operate at a primary level, receiving low profit margins.

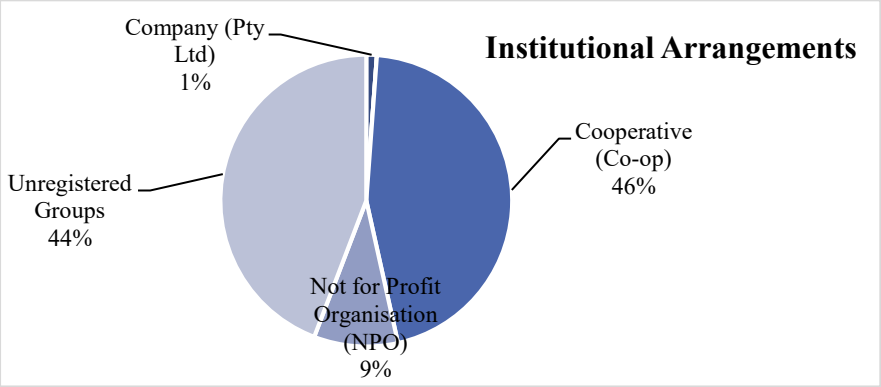
j) Access to Mechanisation and Farm Implements

The size of land under production is largely what informs the need to mechanize in small-scale farming. Because of the small scale (1.3ha on average) nature of farming operations within eThekwini, farmers are using manual cultivation methods such as hoes and some garden tools. Only 8% of the farmers have access to mechanisation through ownership and some through hiring. However, such mechanization is not in good working condition. From a total of 350 farmers, only one Mr Gumede of uMbumbulu has a complete set of farming implements in good condition. At least, 43% of the farmers were found to be having garden tools that are in a functional condition. Where farmers operate as a group, each member bring their own self-funded/acquired working tools to use in the field. The most common tool used by the farmers is a hand hoe. ADU should explore various mechanizations solutions that could be adopted for small-scale farming in eThekwini.

k) Institutional Arrangements

Various business formations were recorded. Figure 4 provides a breakdown of how eThekwini farmers are organised and their businesses registered. Farmers that farm on larger scale and sell bulk of their produce to various markets, understand the need to be formally registered and to operate as a legal entity, whilst small producers are reluctant to formalize their business operations.

Figure 4: Institutional Arrangements

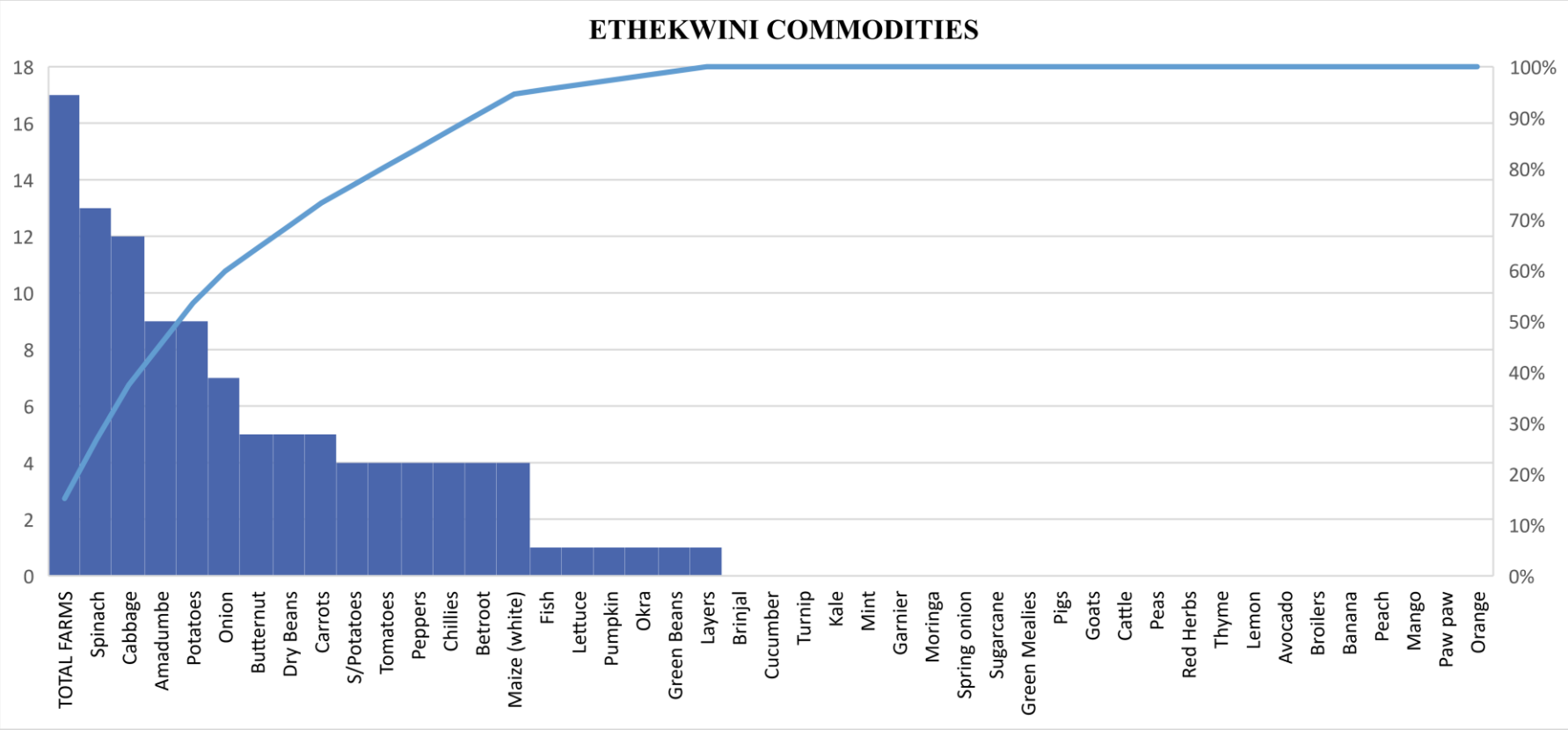


l) eThekwini Agricultural Commodities

1) Primary Production

All small-scale farmers in eThekwini Municipality are primary producers, farming on vegetables, herbs, field crops, poultry, livestock, aquaculture and fruits presented in Graph 1.

Graph 1: eThekwini Agricultural Commodities



Vegetables accounts for 90% of the commodities produced by eThekwini farmers.

- Cabbage and spinach were found to be the highest produced crops, this is largely due to demand and ease of selling these crops to informal markets such as local communities, hawkers and at pension/grant pay points. Potatoes, onions, pepper, chillies, tomatoes and butternut were also found to be the second highest vegetables.

Livestock production accounts for less than 1% of total agricultural commodities. This is largely due to:

- In adequate grazing lands. Most areas of eThekwini Municipality are densely populated with very limited grazing land. Potential small-scale livestock farmers do not have adequate capital for intensive livestock farming infrastructure. This untapped segment is identified as one of the potential opportunities for development within eThekwini Municipality especially in piggery and sheep farming. There are piggery farmers with capacity ranging from 10 sows to 60 sows and fewer sheep and goats' farmers.

- Poultry – eThekwini has a number of broiler and egg producers but operating at a very small-scale. This document is providing recommendations on how to commercialize these farmers.

Fruits accounts for only 2% of the total agricultural commodities.

- Farmers cited complexity in fruit production, high input costs, and lengthy periods to maturity and lack of markets as some of the reasons for low production scale. Furthermore, fruit production was found to be only conducted amongst individual farmers who farm in their own yards and these fruits were for own consumption with surplus sold to informal markets or shared with other members of the community. No farmer is producing fruits for commercial markets.

At 7%, grain (green mealies in particular) is the second most produced agricultural commodities amongst the eThekwini small farmers.

- Maize is produced only under dryland as a summer crop.
- After harvest, dried maize is stored and used to feed chickens and goats.

- These commodities are primarily destined for pension/grant pay points as farmers tend to get better returns from this market.

Only few farmers such as Mr Gumede are farming on sugarcane at a commercial scale under dryland on lands varying from 5ha to 18ha.

m) Agro-Ecology Hubs

eThekwini Municipality has setup agro-ecology hubs in Northdene, Newlands, Inchanga, Marriannridge, Clifdale, Umbumbulu and Hambanathi. These hubs are used as training and resource centres for small farmers. They train small farmers on permaculture principles and farming skills. Some hubs also have aquaculture ponds. In their nature, these hubs are mainly food security co-ordination centres, not geared for commercialization. The hubs have infrastructure that could be used for receiving and distributing fresh produce. However, various configurations are required to develop infrastructure in to fully-fledged fresh produce and collection depots for eggs[3]. These centres can also fulfil other functions such as distribution of inputs and planting programs.

n) Agro-processing (Small-Scale Operations)

Based on the sampled areas, only less than 1% of the farmers are involved in the processing of their primary produce. Only one farmer operating under Agritainment (Pty) Ltd in uMgababa was involved in agro-processing through production of wine from beetroot. This farmer further produces herbal tea using marigold and other crops. However, the business is at a start-up phase, trying to gain market access. There are few small agro-processing businesses within eThekwini Municipality, these businesses rarely buy from local farmers instead prefer Durban Fresh Produce Market in Clairwood due to unavailability of some commodities from local farmers especially fruits. Other reasons cited by the processors precluding them from buying agricultural commodities from small farmer include, inconsistence and poor quality of produce from farmers as well as disagreements with pricing between farmers and processors. Farmers always want higher prices than what agro-processors can pay. Some of the processors include Frutee Belliez – a youth-owned business, the company has expanded into the provision of fruit salads from a range of seasonal fruit, the supply of vegetable salads and the preparation of a variety of peeled and chopped vegetable packs. It processes and package fresh fruit and

[3] Agro-Ecology Hubs should be reconfigured into fully-fledged collection depots for fresh produce and eggs. These should be in accordance with Farmer Production Support Units (FPSU) spearheaded by DRDLR.

vegetables for use in private homes and for catering companies, bed & breakfast and industrial kitchens. The Fair Food Company – started as an edamame program, and this company is processing a variety of agricultural products for various customers such as Toyota, hospitals and others etc.

o) Access to Markets

Access to markets was identified as a key component to enable sustainable agricultural production. Six categories of markets exist, namely government departments, retailers, municipal and farmers markets, hospitality industry (restaurants and hotels), informal markets and agro-processors.

- With regards to access to markets, none of small-scale farmers supplied government department or related organisation with their produce. Although some farmers are aware of potential markets within government, through programs such as the Radical Agrarian Socio-Economic Transformation (RASET), the farmers did not know how to go about accessing these markets.
- Only 18% of the farmers were supplying retailers mainly Spar and Boxer Supermarkets and Durban Fresh Produce Market in Clairwood. The arrangement with these markets was largely on a produce availability basis, due to limited production capacity and inconsistency supply of fresh produce by the farmers. Growing and co-ordination of fresh produce supply requires major improvement.
- The majority of the eThekwini small-scale farmers (82%) were only supplying informal market which is made up of local communities, pension pay points and hawkers. This group also comprised of farmers who plant for both own consumption as well as income generation.
- None of the small-scale farmers within eThekwini supply the hospitality industry and agro-processors directly. This is a major market segment not exploited by the farmers.

The information gathered indicates that eThekwini farmers are faced with high barriers to markets entry due but not exhaustive to:

- Low production volumes
- Low quality of produce
- Inconsistent production
- Lack of production infrastructure

- Lack of access to agro-logistics
- Limited productive agricultural land[4]

p) eThekwini Municipality as the Potential Market

Food consumption is affected by availability, accessibility and choice. Consumer food intake choices are influenced by factors such as consumer perception, season, disposable income, religion, marketing and other support service (Ronquest-Ross, *et al.,* 2015). eThekwini with its residents estimated to 3,4 million people and tourists estimated to 500 000 per annum is a significant market that could sustain local agricultural businesses. eThekwini market is categorized into:

a) Public sector Markets
   - KZN Department of Education
   - KZN Department of Health
   - Department of Correctional Services

b) Private sectors
   - Restaurants
   - Hotels
   - Retailers

Table 2: Estimated National Food Consumption and eThekwini Food Demand

Description	National Consumption Per Capita (Kg)	Estimated Demand for eThekwini (Using Employed People Only = 1.7million) per annum
Meat		
Poultry	38.08	64 736 tons or 36 million chickens
Beef and Veal	36.2	61 540 tons
Pork	4.5	7 650 tons
Lamb and Mutton	3.6	6 120 tons
Eggs	7.65 or 128 eggs	21.7 million eggs
Vegetables		
Fresh Vegetables	8.4	14 280 tons
Frozen Processed Vegetables	16.5	28 050 tons
Canned / Preserved Vegetables	5.8	9 860 tons
Fresh Tomatoes	12	20 400 tons

Compiled by Agriculture House from various sources. National averages were used as the base to establish eThekwini estimated demand.

[4] A detailed assessment of all eThekwini high potential agriculture lands within Ingonyama Trust Board must be conducted. Such lands should be included in the overall eThekwini agricultural development.

According to Fresh Produce Market Association (2013), retailers account for 85% of food distribution in South Africa, followed by foodservices at 10% and other institutions at 5%. eThekwini has over 1000 licenced retailers; some are willing to source from local producers. eThekwini food production is far below the demand resulting to eThekwini being a net importer of food from other districts, provinces and outside the country. This is an opportunity for the development of local food production supply.

q) Government Sector Markets

i. KZN Department of Education

Within eThekwini Municipality, there are 590 schools split between Umlazi and Pine Town Metros with a total enrolment of 377 506 learners. The prescribed dietary requirement is 0.39kg per week for primary school and special learners and 0.49kg per week for secondary school learners. This translate to a total of 157 tons of fresh produce per week for school calendar year. This is a market opportunity for fresh produce from local farmers. The demand is presented in Table 3.

Table 3: Estimated Consumption: eThekwini Schools

Monthly volume for Grain	Total	Monthly Volume for Vegetable	Total
Rice (10kg) x 8	446 tons	Butternut (7kg) x 6	234 tons
Meal-meal (25 kg) x 4	557 tons	Onion (10kg) x 1	55 tons
Samp (5kg) x 4	111 tons	Tomato (5kg) x 4	111 tons
Dry beans (5kg) x 12	334 tons	Carrot (10kg) x 3	167 ns

ii. KZN Department of Health

Within hospitals, the total food consumption estimate is as follows:

- Total chicken consumption of 30kg/day/hospital,
- Beef consumption of 8kg/day/hospital,
- 165 egg consumption/day/hospital,
- Total fish consumption of 90kg/day/hospital and
- Total vegetable consumption of 20kg/day/hospital.

There are about 18 public hospital under eThekwini Municipality namely:

- Addington Hospital
- Charles James Hospital

- Clairwood Hospital
- Don Mc Kenzie Hospital
- Ekuhlengeni Psychiatric Hospital
- General Justice Gizenga Mpanza Regional Hospital
- Hillcrest Hospital
- Inkosi Albert Luthuli Central Hospital
- King Dinuzulu Hospital Complex
- King Edward VIII Hospital
- KZN Children's Hospital
- Mahatma Gandhi Hospital
- Osindisweni Hospital
- R.K. Khan Hospital
- St Aidan's Hospital
- St Mary's Hospital
- FOSA TB Hospital
- Wentworth Hospital

Consumption in hospitals is presented in Table 4.

Table 4: Average Hospital Consumption

Item	Daily Consumption	No. of Hospitals	Total Consumption
Chicken	30kg	18	540kg/day
Beef	8kg	18	144kg/day
Eggs	165 eggs	18	2970 eggs/day
Fish	90kg	18	1620kg/day
Vegetables	20kg	18	360kg/day

Source: Telephone interviews conducted by Agriculture House (August, 2019)

iii. Prison Consumption

There is only one prison under eThekwini Municipality, namely Westville Prison. The prison is divided in to two sections female and male. Female section has two subsections A and B, male has four subsections A, B, C and D.

In October (2019), there were +/-3400 prisoners (female= +/-400 and male= +/-3000). Westville Prison food consumption is presented in Table 5.

Table 5: Food Consumption in Westville Prison

Food product	Consumption estimation/month
Oats	4080kg
Maltabella porridge	4080kg
Bread	32700 loaves
Eggs	13600eggs
Maize meal	5100kg
Samp	5250kg
Gem squash	3360kg
Carrot	3360kg
Cabbage	3360kg
Spinach	3360kg
Tomatoes	3360kg
Beetroot	3360kg
Butternut	3360kg
Pumpkin	3360kg
Potatoes	3360kg
Sweet-potato	3360kg
Banana	13600 units
Pea	13600 units
Orange	13600 units
Apple	13600 units
Soya beans	10200kg
Sugar beans	10200kg
Beef	4410kg
Fish	3927kg
Chicken	4760kg
Pork	4410kg

Source: Westville Prison (October, 2019)

The prison and hospitals are well placed as potential market to buy from the proposed value chains / local producers. The Agribusiness Development Unit should formalize supply relationships with these institutions. This proposed arrangement is also aligned to the RASET strategy of using government demand departments as the market for the small producers.

r) Private sectors

i. Restaurants

The food service sector incorporates a diverse mix of outlets, including cafes, bars, full service restaurants, fast food, street stalls and home deliveries. In total, there are 4840 licenced restaurants within eThekwini Municipality (eThewini Municipality Business Licencing Department, 2019). A sample of seven brands representing 276 outlets was selected to ilustrate the demand for agricultural products. These outlets are serving vegetables, eggs, chicken meat, beef, pork and fish as show in Table 6.

Table 6: List of Restaurants and their Demand

Outlets	Total number of shops	Volume/Week/Outlet	Estimated Demand/Week
KFC	72	No of Chicken's used ✓ Normal days-630 ✓ Busy days-1440	Total chickens/week = 1035 x 72 = 74 520 chickens/week
Wimpy	50	No of eggs used ✓ 100-150 Beef/ gram ✓ 100 gram-4kg ✓ 200 gram-3kg	Total eggs/week 125 x 7 x 50 x = 43 750 eggs Beef 4kg x 50 = 200kg 3kg x 50 = 150kg
Fishaways	18	Fish ✓ 10 kg(small)=75 boxes ✓ 10 kg(large)=10-15 boxes	Total fish/week 1350 boxes (small)10kg each 225 boxes (large)10kg each
Spur	28	Beef/week ✓ 120-140/kg ✓ 350-400/kg	130kg x 28 = 3.64 tons 375 x 28 = 10.5 tons
MC Donald's	18	No of eggs used ✓ Weekends-200 and above ✓ Normal days-60-70	130 x 7 x 18 = 16380 eggs
Nando's	40	No of Chicken used ✓ Weekends-50 ✓ Normal day-20-30	34 x 7 x 40 = 9520 chickens per week
Steers	50	10 Chickens/day 15 kg Pork	Chicken, 10 x 7 x 50 = 3.5tons 15 x 7 x 50 = 5.2 tons per week

Source: Fast food Outlets (van Vlaanderen, 2018)

The fast food and restaurant sector consist of a blend of home grown and international brands. The biggest international player in the market by store count is KFC, owned by YUM Brands. KFC has about 72 outlets, followed by Steers with about 50 (van Vlaanderen, 2018). These are possible markets for agricultural produce. The above are potential markets for the proposed agricultural value chains. ADU should establish a formal relationship that will result to the supply of agricultural products to these restaurants.

ii. Hotels

The Durban hotel market is the third most important in South Africa after Cape Town and Johannesburg. The Durban municipality has 65 hotels (Dray, et al., 2007). Table 7 show some of the main hotels and their food consumptions per day.

Table 7: Durban Hotels: Daily Food Consumption

Hotel names	Volumes/day		
Blue water's hotel	Vegetable 2-3 kg	Chicken2-3kg	Beef 5-7kg
	Fish 1kg	Eggs 60-70	
The capital pearl's hotel	Vegetable 1-2kg	Chicken 5-10kg	Beef 3-5kg
	Fish 3kg	Eggs 60-120	
The royal hotel	Vegetable 3-5kg	Chicken 5-10kg	Beef 5-7kg
	Fish 2	Eggs 60-80	
Hilton Durban Hotel	Vegetable 5-10 kg	Chicken 3-10 kg	Beef 5-7kg
	Fish 1kg	Eggs 30-60	
Protea Hotel by Marriott	Vegetables 2-5 kg	Chicken 5-10kg	Beef 4-5 kg
Durban	Fish 2 kg	Eggs 40-60	
Coastlands Musgrave Hotel	Vegetables 5-12	Chicken 5-10 kg	Beef 3-7 kg
	Fish 3-4 kg	Eggs 30-60	
Onomo Hotel Durban	Vegetable 2-3 kg	Chicken 4-10 kg	Beef 3-5 kg
	Fish 3 kg	Eggs 40-60	
Water front hotel	Vegetable 3-5kg	Chicken 5-10kg	Beef 3-5kg
	Fish 2kg	Eggs 30-60	
Sun coast casino	Vegetable 10-15kg	Chicken 20-25kg	Beef 10-15kg
	Fish 10kg	Eggs 120-130	
Southern sun	Vegetable 5-10kg	Chicken 5-10kg	Beef 7-10kg
	Fish 3kg	Eggs 60-120	
Elangeni & Maharani	Vegetable 10kg	Chicken 15-20kg	Beef 7-10kg
	Fish 5kg	Eggs 120-130	
Road lodge	Vegetable 5-10kg	Chicken 7-10kg	Beef 5-10kg
	Fish 3kg	Eggs 60-120	
Holiday inn	Vegetable 5kg	Chicken 7-10kg	Beef 5kg
	Fish 3-4kg	Eggs 60-120	
Riverside hotel	Vegetable 5kg	Chicken 5-10kg	Beef 7kg
	Fish 4kg	Eggs 80-120	
Garden court	Vegetable 10-15kg	Chicken 5-10kg	Beef 7-8kg
	Fish 3kg	Eggs 80-120	
Durban city lodge	Vegetable 8kg	Chicken 8-10kg	Beef 7kg
	Fish 4kg	Eggs 80-100	
Pavilion hotel	Vegetable 5kg	Chicken 10kg	Beef 5kg
	Fish 3kg	Eggs 60-120	
Albany hotel	Vegetable 7kg	Chicken 10kg	Beef 4kg
	Fish 3kg	Eggs 80-100	
aha Gateway hotel	Vegetable 10kg	Chicken 5-10kg	Beef 5-7kg

	Fish 13kg	Eggs 120-140	
The oyster box hotel	Vegetable 5-10kg Fish 10kg	Chicken 7-10kg Eggs 120-150	Beef 4-8kg
Beverly hills	Vegetable 10kg Fish 5-10kg	Chicken 10-15kg Eggs 120-130	Beef 3-7kg

The majority of the hotels are willing to support local businesses, they are willing to procure food from the local producers provided, the quality and prices are competitive.

s) eThekwini Farmers Markets

Retail Markets are another form of trading provided by the Durban Market to informal traders, there is a total number of 20 retail markets under eThekwini Municipality. These markets are located across the eThekwini Region and are available to traders of fruits, vegetables and other convenient products at a rental fee. Table 8 show some of the retail markets and the total volume sold (depending on the number of stalls that the market has) per year.

Table 8: List of Farmers' Markets in eThekwini

Name & Location of Market	Year established	Trading hours	Trading facilities	Composition of stall holders	Products sold	Total Volume/tons/ annum(estimation)
Farmers Retail Market 32 Flower Rd, Clairwood	1975	Tuesday and Friday am – 1.3 pm	160 stalls	82% Indian 16% African 2% White	Fruits and Vegetables	40 tons
Tongaat Daily Market 323 Main Street, Tongaat	1947	Mon to Sat 7am-5pm. Wednesday 7am-3pm	18 fruit & veggie shops; 1 butchery; 1 general dealer	17 Indian; 1 African (Lease Agreement)	Fruits and vegetables purchased from Durban Bulk Sales Market	4.5 tons
Tongaat Morning Market 59 Plane Street, Tongaat	1975	Saturday only 6am-1pm.	176 stalls;8 shops; 10 Poultry stands	90% Indian;10% African (Daily basis)	Locally grown vegetables and dry goods, including clothing	44 tons
Verulam Day Market 151 Wick Street, Verulam	1884 in Market Square; Permanent structure in 1912; relocated in 1988 to	Mon to Sat 7am-16:00pm.	3 cafes, 3 spice shops, 7 fruit shops,8 fruit &veggie stalls	99% Indian 1% African (Lease agreement)	Fruit and vegetables purchased from Durban Bulk Sales Market.	5 tons

	current location					
Verulam Morning Market 151 Wick Street, Verulam	Same as above	Tues, Thurs & Sat 5.30am-1pm.	498 stalls/tables, 6 flower stalls, 16 poultry stands	80% Indian 10African (Daily basis). 5 Farmers and rest are market gardeners and 80% are speculators.	5 Framers and rest are market gardeners and 80% are speculators. Variety of items sold	125 tons
Brookdale Market 17 Brookdale Drive, Brookdale, Pheonix	1997	Mon to Sun-7am-5pm	46 plots/ stands 98% Indian 2% African (Lease agreement)	98% Indian 2% African (lease agreement)	Flea Market type of operation, variety of items sold, including groceries, fruit and vegetables	11.5 tons
Pheonix Plaza Market 51 Pandora Street, Pheonix	1996	Mon to Sun-7am – 5pm.	130 stands-Fruit and vegetable, clothing, fish shops, café, shoes repairs.	97% Indian 3% African (Lease agreement)	Flea Market type of operation, variety of items sold, including clothing, brassware, live poultry, and fresh fish.	32.5 tons
Early Morning Market 100 Warwick Avenue, Durban	1933	Mon to Thurs-6am-3pm. Fri-6am -6pm. Sat-6am-2pm.	676 Tables for fruits and vegetables 14 kiosks 54 pans inside and outside 15 stalls permit	300 traders Indian: 90% African: 10%	Fruits and vegetables purchased from Durban Market.	169 tons

Source: (eThekwini municipality, n.d.)

There is an urgent need to improve and transform demographics at eThekwini farmers' markets.

t) Produce Distribution Networks

With some of the farmers having to send their produce to various markets, access to transport becomes a key factor. Based on the sampled areas, only 7% of farmers reported to have their own transport to deliver produce to markets. These farmers produce in larger volumes in comparison to the rest of the farmers. During assessment, it became clear that access to transport does improve access to market and productivity. Farmers that produce at small scale rent delivery bakkies as and when required and in some instances walk or use public transport to take their produce to destined markets such as pension/grant pay points. Some retailers collect produce directly from the farmers provided certain volumes are met. Hawkers, who

formed part of informal markets, also collected directly from the farmers as and when they required stock.

u) Farming Skills & Capacity

All farmers demonstrated significant knowledge of farming which has been acquired over a number of years. Some farmers have received some form of training through various government programmes. However, there is a general discontent about invisibility and lack of technical support and extension services.

v) Business Management Skills

Farmers that supply formal markets demonstrated high level of business management skills. These farmers were able to synchronise their production schedules with markets requirements and prioritised crops in accordance with profitability. More than 80% of farmers who supplied informal markets did not plan or use any production schedule, they planted according to seasons without studying what the markets needed. As a result, some produce either ended up not being sold or rotten on the fields or attracted prices below production costs. More than 98% of farmers were found not to be keeping any records related to their operations, as individuals or as a group. When asked, farmers were unable to conclusively confirm key farming and business information such as historical yields, type of cultivars used, dates of planting and expected harvest dates, costs of inputs, operational costs, income generated etc. Such information is key for measuring business performance, effectiveness and efficiency (operationally and financially).

1.6.SWOT Analysis

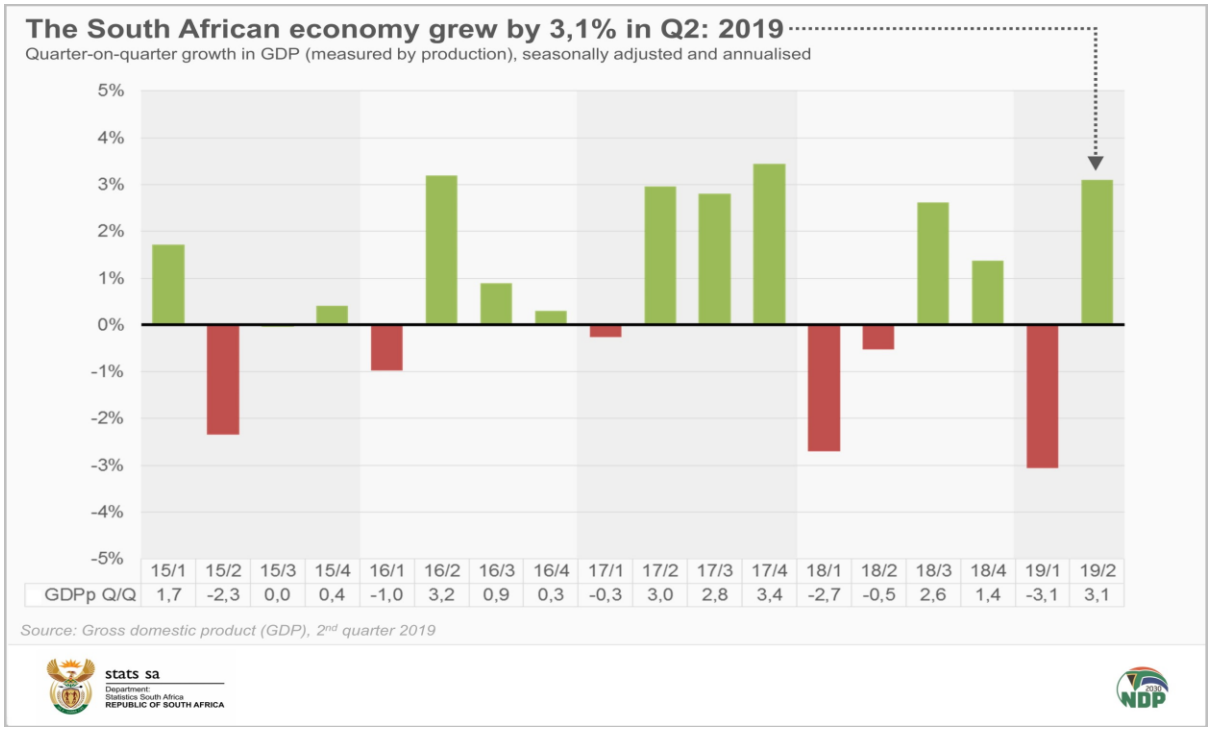
Strengths	**Weaknesses**
• eThekwini farmers have some basic knowledge of farming • The climate of eThekwini is ideal for production of a wide range of crops (especially vegetables), • There are moderate to good soils, 31% and 64% respectively,	• Most of the farmers lack infrastructure and those that have the machinery it is obsolete • Farmers make use of manual methods to cultivate e.g. hand hoes, use of watering cans. This has constraints in the overall production capacity, • Limited access to market due to poor quality and low volumes of produce,

• Relatively low labour cost, most farmers make use family members as source of labour, • Strong Institutional arrangements within the farming community, this is an important factor for sustainability of various agricultural initiatives, • Social cohesion through working together as a community, • Stable market that exceed the current supply in the entire eThekwini, • Keen interest of the municipality and KZN government to support small-scale production through various programs. • Availability of some infrastructure e.g. in agro-ecology hubs	including lack of access to market information, • Poor access roads to some farming sites • Non-existent extension support service, • Poor network coverage in some farms, • High costs to obtain production inputs. There is no bulk buying of inputs and accrual of benefits from economies of scale, • Lack of progression beyond commercial farming / household gardens, • Limited access to bulk services i.e. irrigation water, electricity, • Informal farm operating entities.
Opportunities • eThekwini climatic condition is favourable for production of a wide range of crops. • There is potential to utilize dormant tribal land to boost eThekwini Production capacity, • Implementing of new technologies to improve productivity, • There are high-value potential value chains to explore e.g. cannabis • Farming in eThekwini has high impact on social and economic well-being of poor communities. • The demand for agricultural products is increasing and there are value addition opportunities, • Farmers' (small and emerging) willingness to engage in farming	**Threats** • Limited technical support for rural communities and funding accessibility • Unpredictable nature (climate) and/or economic disasters (slow growth in the economy, • Lack or uncertainty of the market and prices • Competition between established and emerging farmers • Social ills such as crime. There is a potential threat in terms of crops and livestock theft • The sector is highly populated by old people and no clear succession planning • Price hikes in fuel, resulting to increase production costs, • Out-break of diseases

2. Recent Performance of the Economy and Agricultural Industry in South Africa

After shrinking sharply in the first quarter of 2019, the economy rebounded from a low base to record positive growth of 3,1% in the second quarter (April−June) shown in Graph 2.

Graph 2: Performance of the South African Economy (Q2 of 2019)

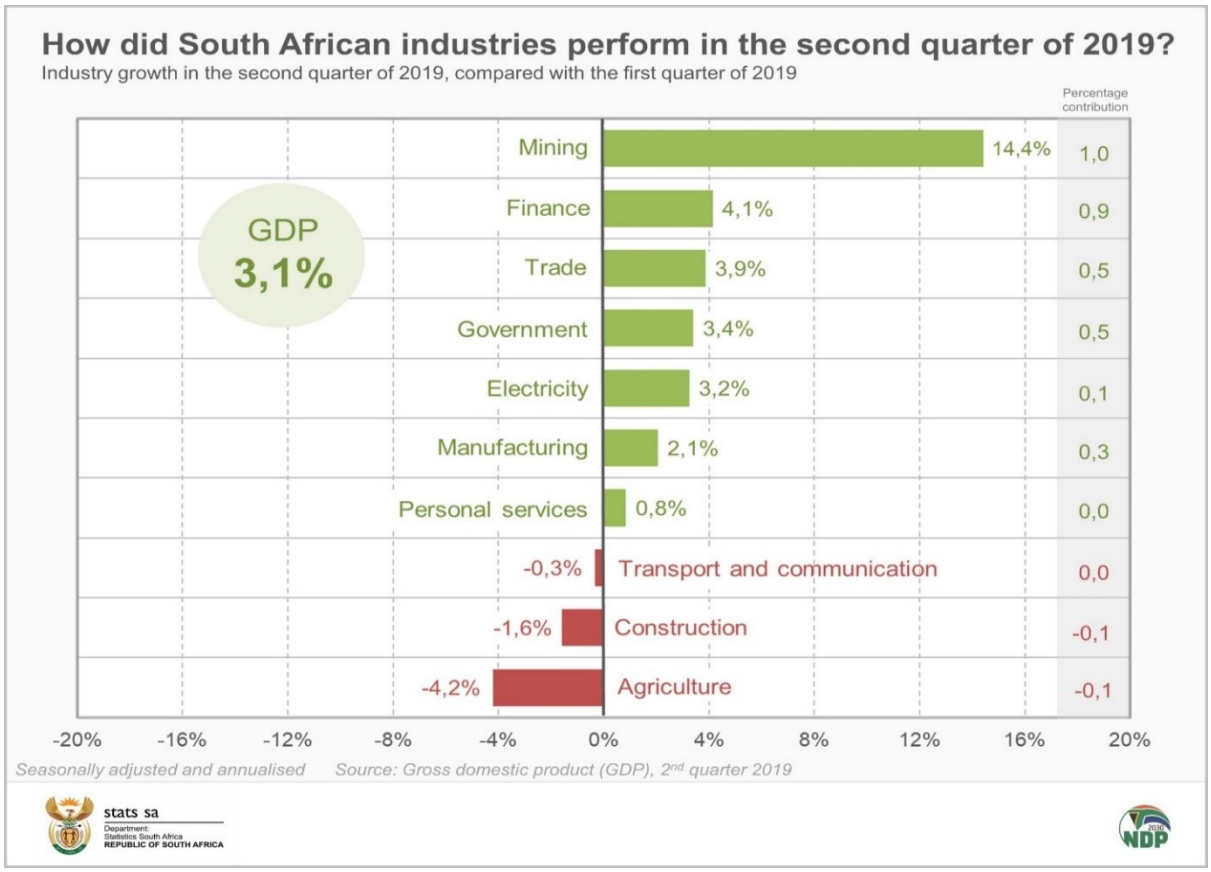


Mining, finance, trade and government services were the main drivers of growth. Three industries (construction, agriculture and transport) registered a slump in production. Mining was the strongest performer in the second quarter, expanding by 14,4%. This was the industry's strongest showing in three years since the second quarter of 2016 when production jumped by 16,3%.

Iron ore, manganese and coal were the main contributors to mining growth. Iron ore production climbed by 11,8% (not annualised) in the second quarter of 2019. Manganese was up by 21,2% (not annualised) and coal by 3,6% (not annualised), according to the Mining: Production and sales release. Gold failed to impress, however, shrinking by 4,1% (not annualised).

Finance, real estate and business services – the largest industry in the South African economy – grew by 4,1%. This was on the back of stronger performances by the banking and insurance sectors. Sector performance is shown in Graph 3.

Graph 3: Performance of South African Economic Sectors



Output by the agriculture sector contracted 4,2% an improvement from 13,2% in the first three months of 2019. Along with other labour-intensive sectors, including manufacturing, mining, and quarrying, agriculture was one of the largest contributors to the poor performance of South Africa's GDP during this period.

According to a report by Statistics South Africa (Stats SA) on the first quarter GDP figures, the economy contracted by 0,2% year-on-year. The contraction in economic growth was mainly as a result of declining exports, weaker fixed capital investment, and falling household consumption expenditure (Stats SA). Load-shedding, which was implemented by Eskom in February due to limited generation capacity, had also had a direct impact on the economy. Sectors with the biggest declines all rely heavily on electricity [for production].

According to Stats SA, the agriculture sector's performance was weakened by a slowdown in the production of field crops, including wheat, sunflower seed, and tobacco, and horticultural products, such as vegetables, citrus and deciduous fruits. The contraction in the sector was in line with the figures being released by key horticultural subsectors that had harvested their

produce during the first quarter of the year. These included the wine grapes, which saw a 2% decline year-on-year.

The citrus industry, which has been a source of positive news in the horticultural sector, with exports set to reach a record level of 137 million boxes of citrus fruit in 2019 due to [high] output, only started with its harvesting activities in the second quarter, when such data is available, the overall performance of the agricultural industry will be better compared to the current highlights.

Agricultural conditions were challenging in large parts of the country, due to drier weather conditions. This was specifically evident in the central and western parts of the country, which predominantly produced summer grains and oilseeds. The yields of major summer crops such as maize, soya bean and sunflower seeds were negatively affected, and thus production is set to be down 13%, 16% and 29% year-on-year to 10,9 million tons, 1,3 million tons, and 611 140t, respectively for period under review. Despite the recent drop in GDP, agriculture remained one of the sectors capable of addressing rising unemployment in South Africa, given the great export potential of the sector's labour-intensive commodities. While the recent GDP outcome is shocking, there is still hope in the remaining quarters of 2019, with expected good output for winter crops and some industries in the horticulture sector.

Buoyant wholesale, retail and motor trade sales in the South African economy lifted the trade industry by 3,9%. Government saw its biggest increase since the second quarter of 2014. A rise in contract employment in the public sector, particularly during May's general elections, underpinned the growth in government activity.

Electricity, gas and water (spurred on by a rise in electricity distributed), manufacturing (driven by higher output in food, transport, and metals & machinery) and personal services were the other three industries that saw positive growth in the second quarter.
Not all industries did well, however. Transport and communication edged lower. Agriculture fell by 4,2% on the back of lower production of field crops and horticultural products.
The construction industry remained firmly in recession, contracting for the fourth quarter in a row. A drop off in activity related to non-residential buildings and construction works constrained growth in the second quarter.

Stats SA also measures the expenditure side of GDP, providing an indication of total spending in the economy. It includes government spending, household spending, investment spending (gross fixed capital formation and changes in inventories), and net exports. Expenditure on GDP in the second quarter increased by 3,0% quarter-on-quarter (seasonally adjusted and annualised), spurred on by a build-up of inventories and increased household expenditure, government spending and investment.

Household consumption expenditure increased by 2,8% in the second quarter, mainly driven by a rise in spending on food and non-alcoholic beverages, as well as recreation and culture. Households held back on eating out and accommodation, however. Spending on restaurants and hotels slipped by 3,8%.

Gross fixed capital formation (fixed investment) increased by 6,1% in the second quarter, driven mostly by increased spending on machinery and transport equipment. This is the first positive rise in gross fixed capital formation since the fourth quarter of 2017. However, activities related to construction works and non-residential buildings were down in the second quarter of 2019. South African exports of goods and services edged lower (-0,7%), largely influenced by a fall in the trade of pearls, precious and semi-precious stones. In contrast, imports jumped by 18,8% in the second quarter, driven mostly by a rise in trade of machinery and electrical equipment, mineral products and chemical products.

Key facts from the GDP release for the second quarter of 2019:

- Real GDP in the second quarter was up 3,1% quarter-on-quarter (seasonally adjusted and annualised).
- Unadjusted real GDP in the second quarter was up 0,9% year-on-year.
- Unadjusted nominal GDP in the second quarter of 2019 was estimated at R1,26 trillion, higher than the R1,20 trillion recorded in the first quarter of 2019.

The performance of the agricultural sector in general has implications on the various sub-sectors envisaged for the eThekwini Municipality. It is for this reason that various sub-sectors were assessed in terms of their resiliance. The proposed project implentation approach takes into account the performance of various agricultural sub-sectors and the South African economy. The master plan is recommending intensive farming of most agricultural commodities and commercialization of less risky sub-sectors.

3. Policy Review

This section of the master plan provides an overview of the national, provincial and local policies that will have a direct influence on the development and implementation of the recommendations of the eThekwini Agriculture Master plan. The national policy framework was considered as the first sphere of government, followed by provincial and lastly the local government.

3.1 National Policies

3.1.1. National Growth Path

The South African government adopted the New Growth Path (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 with five million jobs by 2020 in order 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 was also formulated to reduce inequality and eliminate rural poverty by identifying areas where long term structural and feasible changes can be made. Worrying fact is that such desire is not being realized. Unemployment has increased to 29% in the Q2 of 2019. The strategic focus of the NGP is to support employment creation in priority sectors namely, infrastructure, the agricultural value chains, the mining value chain, green economy, manufacturing, tourism, and certain high-level services. The NGP also advocate for the development of policy packages to facilitate employment creation, and strengthen the domestic and regional agricultural markets by supporting smallholder farmers.

3.1.2. National Development Plan

South Africa's first National Planning Commission (NPC) was setup and inaugurated in May 2010. The mandate given to the NPC was to take an independent view of South Africa, and from that vintage point, craft 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 could likely to come about, was through eliminating poverty and reducing inequality, the two single biggest problems in South Africa. These aspects affect every other facet of development and every aspect of life for South African citizens. As both a cause and result of these primary problems, the NDP identified nine specific and predominant

challenges. Relevant to the eThekwini Agriculture Master Plan is that, too few people work, production infrastructure is poorly located, inadequate and under-maintained, spatial divides hobble inclusive development and economy is unsustainably resource-intensive. The three broad frameworks identified to ensure the proposed vision set out by the NDP is achieved, were the following:

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

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

The Industrial Policy Action Plan (IPAP) 2013/14-2015/16 is in the fifth iteration of IPAP and 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. 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

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

The Agricultural Policy Action Plan (APAP) 2015-2019) is aligned to and complementary to other existing national plans such as the NGP, NDP, and the IPAP. These plans were designed to facilitate the provision of decent employment through inclusive growth, rural development, food security, 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 and concrete steps. 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). Furthermore, it presents institutional arrangements and processes for integrating planning, monitoring and evaluation between Department of Rural Development and Land Reform (DRDLR) and Department of Agriculture Forestry and Fisheries (DAFF) across three spheres of government. The APAP has four policy levers which are:

i. *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

ii. *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 Research and Development (R&D) outcomes.

iii. *Ecological Sustainability*:

- Promoting climate smart agriculture

iv. Governance:

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

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

DAFF's Agro-Processing Strategy was developed to create a strategic direction on agro-processing for both national and provincial governments. 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 APAP. 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 technologies
- 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.

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 Agriculture Forestry and Fisheries (AFF) Sectors. DAFF's strategic plan aims to address the social and economic challenges that the AFF sectors are faced with. It further sets new opportunities for service delivery in 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

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

The National Policy Framework on the Development of Small and Medium Agro-Processing Enterprises in the Republic of South Africa was initiated by the DAFF. Its strategic priorities were:

- Rural industrialisation through the establishment of agro-processing industries that are closer to production areas.
- Local economic growth through increased trade in rural areas.
- Job creation through the establishment of SME agro-processors to improve livelihoods of both smallholder agro-processors and producers.
- 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.

3.1.8 Strategy for the Development of Small and Medium Agro-Processing Enterprises in the Republic of 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 (MTSF, 2009). The Strategy for the Development of Small and Medium Agro-processing Enterprises in the Republic of South Africa informs this Agribusiness Masterplan through identifying the following four intervention pillars needed for the development of Small and Medium Agro-processing Enterprises:

- Enterprise development and support (access to finance, market access and incubation)
- Industry research and technology transfer
- Infrastructure investment

3.1.9 Agriculture, Forestry and Fisheries: 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 strategic priorities of the IGDP for the agricultural, forestry, and fisheries sector are the following:

- Attaining equity and transformation
- Equitable growth and competitiveness
- Environmental sustainability
- Good governance

3.1.10. National Environmental Management Act (NEMA)

The key principles of NEMA includes the following:

- Environmental, social and economic sustainable development;
- The protection of natural resources and the maintenance of natural systems;
- The provision of access to resources and environmental management that puts people and their need first.

These principles are critical for undertaking the Environmental Impact Assessment (EIA) and the Environmental Management Framework (EMA) which are critical documents for the environmental conservation and protection of land within the municipality, thus ensuring development is adhered to in the developed land and not in environmentally sensitive,

developable land. This piece of legislation is paramount in the preservation of critical environmental areas of eThekwini Municipality.

3.1.11. Comprehensive Rural Development Strategy 2009

The goal of the Comprehensive Rural Development Program (CRDP) was to achieve social cohesion and development by ensuring improved access to basic service, enterprise development and village industrialization. The CRDP implemented broad based-agrarian transformation, focusing on community organization and mobilization as well as strategic investment in economic and social infrastructure. The CRDP proposes an approach that addresses the needs of the person, household and the community. It is built on the premise that rural areas in the country have the potential to be developed in a way that generates jobs and economic opportunities, thus providing an alternative to the urban centers, and contributing to the reduction in rural urban migration. Furthermore, although agriculture plays a significant role in rural development, the CRDP proposes diversification of the rural economy, according to condition prevailing in different areas

The CRDP consists of three phases:

- Meeting basic needs
- Enterprise development
- Establishment of village industries and creation of access to credit facilities.

3.2. Provincial Policies

At provincial level, the development and growth strategy is guided by amongst others, the following key pieces of legislation and polices:

- Provincial Spatial Planning Guidelines 1-8;
- Provincial Growth and Development Strategy; and
- Provincial Spatial Economic Development Strategy;
- KZN LUMS/ Schemes Guidelines.

3.2.1. Provincial Spatial Economic Development Strategy (PSEDS) 2004

The Provincial Spatial Economic Development Strategy (PSEDS) sets out to:

- Focus where government directs its investment and development initiative;
- Focused decision making;
- Bring about strategic coordination, interaction and alignment.

The PSEDS recognizes that:

- Social and economic development is never uniformly distributed;
- Apartheid created an unnatural distortion of development and this distortion must be addressed

PSEDS identified the following as key sectors for development:

- The agriculture sector/ agro-processing and land reform:
- The industrial sector;
- The tourism sector; and
- The service sector (including government's services)

3.2.2. Provincial Growth and Development Strategy (PGDS of 2011)

The KZN PGDS (2011), developed a strategic framework for accelerated and shared economic growth through catalytic and developmental interventions. It reinforces the province's commitment to achieving the vision of Kwazulu-Natal as a "prosperous province with a healthy, secure and skilled population, acting as a gateway to Africa and the world.'' The PGDS aims to build this by growing the economy for the development and improvement of the quality of life for all the people living in the province.

The principles of the PGGDS relevant to this agriculture master plan are:

- Eradication of extreme poverty and hunger;
- Promotion of gender equality and empowerment of women;
- Ensuring environmental sustainability;
- Developing a global partnership for development
- Sustainable economic development and job creation;
- Integrating investment in community infrastructure;
- Developing human capability;
- Fighting poverty and protecting vulnerable groups in society.

3.2.3. KwaZulu-Natal Agriculture Development Master Plan (2018)

The KwaZulu-Natal Agriculture Development Master Plan forms part of the Provincial Growth and Development Strategy, focusing on the agricultural sector. Its principles are preservation of KZN agriculture land, inclusion of all three government levels in the planning and implementation of agricultural development. The master plan advocates for commodity-based development.

3.2.4. Schemes/ Land Use Management System (LUMS) Guidelines

The purpose of preparing LUMS is to promote coordinated, harmonious and environmentally sustainable development. A land use management system, in its broader sense, refers to all the actions required by municipality to manage land. The rural component of Planning Scheme is primary applied to manage land outside defined urban areas, so as to promote the general principles of sustainability, efficiency and integration; to ensure that prime agricultural land is protected and to ensure that important areas of environmental significance and bio-diversity are protected.

3.2.5. Rural Development in the eThekwini Economic Strategy

The 2012 eThekwini Economic Development and Job Creation Strategy (eThekwini 2012) highlights several issues in the national economic context impacting on the local (eThekwini) economy. The issues, of which a number will impact directly on rural economic development, include:

- The negative impact of the global financial crises on the local manufacturing sector;
- The NSP's prioritization of unemployment, poverty and inequality;
- High youth unemployment;
- Under-investment in infrastructure;
- Increasing competition as a result of globalization;
- Spatial disintegration in South Africa cities;
- High logistic costs;
- Numerous skills and education system challenges;
- High level of bureaucracy related to small business;
- High cost of labour and production;
- Low levels of foreign fixed investment;

3.3. Implications of the National and Provincial Policies and Strategies to the eThekwini Agribusiness

The reviewed policies and strategies have similarities in that, they were design to address common challenges facing South Africa. The expected outcomes from implementation of these policies and strategies are:

a) Job creation,
b) Improved food security,
c) Addressing inequality and social injustices,
d) Improved planning, co-ordination and implementation of government programs, through collaborations at all three levels of government,
e) Growing economy, where all sectors of the economy, including agriculture are contributing positively to growth,
f) Transformation of the agricultural sector,
g) Sustainable rural livelihoods,
h) Developing technical and managerial skills for agricultural entrepreneurs,
i) Commodity-based approach and development of integrated value chains,
j) Value addition / agro-processing promotion,
k) Facilitation of markets access (domestic and foreign),
l) Investment promotion in the agricultural sector especially in rural areas,
m) Support innovation and use technology to improve productivity and development,
n) Improve stakeholder relations and partnerships (communities, public and private sector),
o) Protect the South African agriculture against imports and cheap substitutes,
p) Protection of the environment, natural resources and agricultural land.

eThekwini Agriculture Master Plan is aligned to these strategies and policies. It will form an important part of the eThekwini Integrated Development Plan (IDP) through its adoption by the eThekwini Council. This will ensure that it is reviewed within the IDP's monitoring and evaluation process of the municipality and that it becomes an integrated part of the annual work of the committees within the municipality. It is a practical document that provides details on how to approach the development of the agricultural sector in eThekwini Metro within the ambit of national and provincial development strategies.

4. eThekwini Agricultural Sub-Sectors and Commodities

Six sub-sector value chains have been identified for development in eThekwini Metro as follows:

a) Piggery
b) Poultry
    i. Eggs
    ii. Broilers (fresh chicken only)
c) Vegetables (open field and tunnel farming)

Other potential value chains for development are:

a) Intensive sheep farming
b) Cannabis

4.1. Rationale for the above selection

- Based on the feasibility analysis of each commodity,
- Available production infrastructure within eThekwini Metro such as abattoirs,
- Level of development of each commodity value chain,
- Demand analysis and availability of markets,
- Baseline information on current farming activities,
- Alignment with other provincial initiatives and available support,
- Interest from industry bodies to support the establishment of such value chains including skills transfer and mentorship,
- Risk levels and mitigations in each value chain, and
- Profitability analysis of each value chain.

4.2.Piggery (Pork Value Chain Analysis)

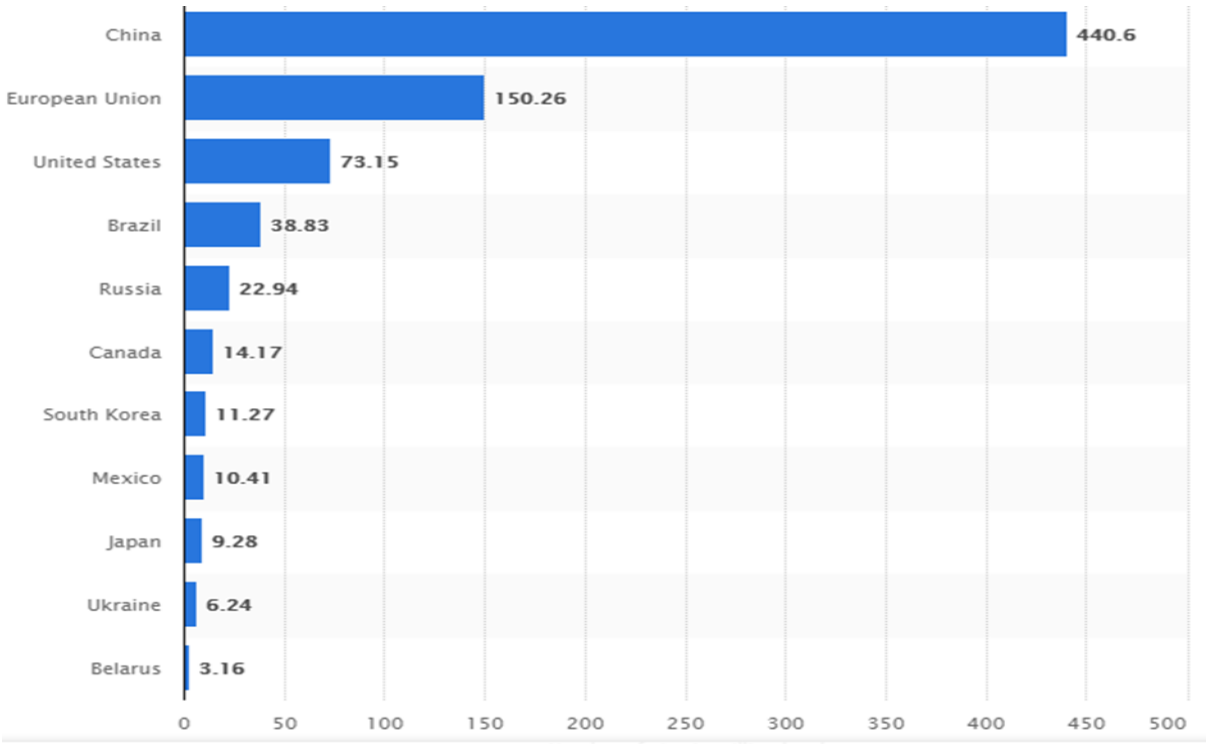
4.2.1. Industry Analysis

a) Global Industry Overview

In terms of pork production, China continues to lead as a top producer globally, with a market share of 48 %, followed by the European Union and Brazil at 23 million and 3.8 million metric tons respectively in 2017. Pork exports exceed imports globally, resulting in a positive trade balance. The world's trade in pork has been showing an increasing trend, largely due to the increase in global demand and production of pork. Exports reached a peak in 2017, amounting to 8.6 million metric tons.

As at the end of 2018, according to the US Department of Agriculture (USDA, 2019), China had a total population of over 440 million pigs with EU and US at 150 and 73 million heads respectively as shown in Graph 4. The OECD-FAO expects global meat production to increase to almost 40 million tons by 2026, an increase of approximately 12% relative to the 2014-2016 base period. The bulk of growth will occur in developing countries that face fewer constraints related to environmental regulations, and have greater availability of natural resources for production.

Graph 4: Number of Pigs in Millions Worldwide as at 2018 (USDA, 2019)

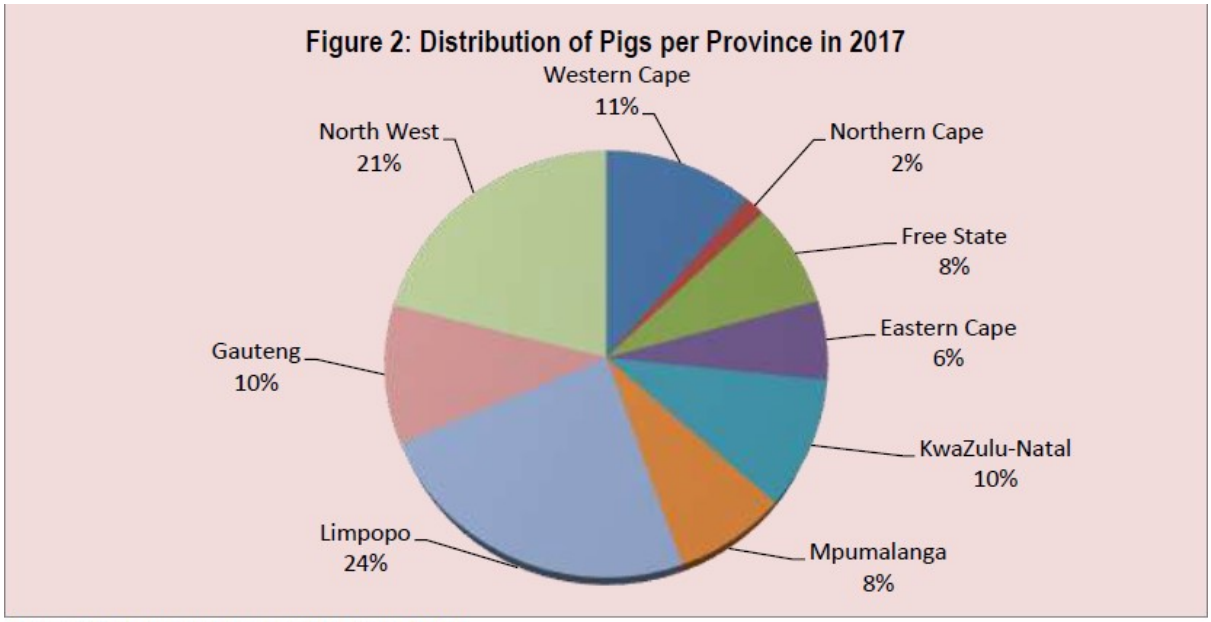


b) Areas of Production (Locally)

Pork is considered as one of the smallest industries in terms of overall South African agricultural sector (DAFF, 2017). It contributes around 2.1% to the primary agricultural sector. The average gross value of pigs slaughtered between 2007 and 2017 amounted to R 3.5 billion per annum which is a steady increase to the gross value of agricultural production. This was mainly due to an increase in prices caused by increased consumption of pork.

According to DAFF Statistics and Economic Analysis (2018), pork is produced throughout South Africa with some areas producing a high number of pigs but do not necessarily produce a lot of pork meat. Pigs are transported to other areas for slaughtering and further processing. Limpopo and North West Provinces are the largest producers accounting for 24% and 21% respectively. Western Cape follows with a share of 11% and Gauteng and KwaZulu-Natal accounts for 10% each. The province with lowest animal numbers is Northern Cape with 2% share. Figure 5 below highlights areas of production in RSA.

Figure 5: Distribution of Pigs per Province (DAFF, 2017)



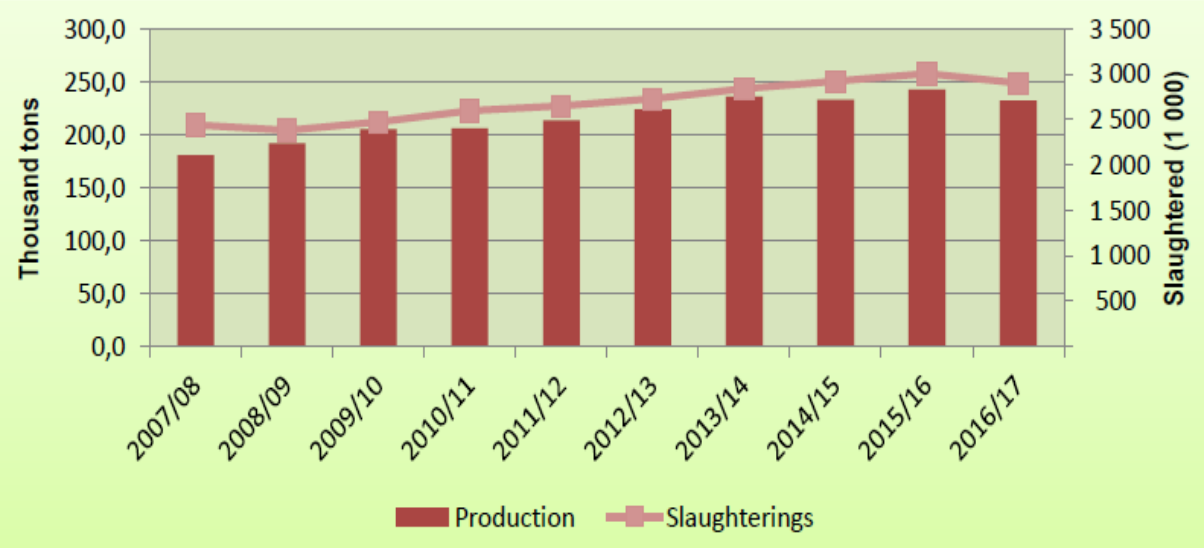
Source: Statistics and Economic Analysis, DAFF

c) Production Trends and Scales/Volumes

Latest DAFF statistics confirms that during the past decade, approximately 27 million pigs were slaughtered in the country and resulted in more than 2 million tons of pork meat produced. On average, 2.2 million pigs were slaughtered and produced an average of 216 600 tons per

year for the period under analysis. Graph 5 below shows the production trend in relation to number of pigs slaughtered for the past 10 years ending 2017.

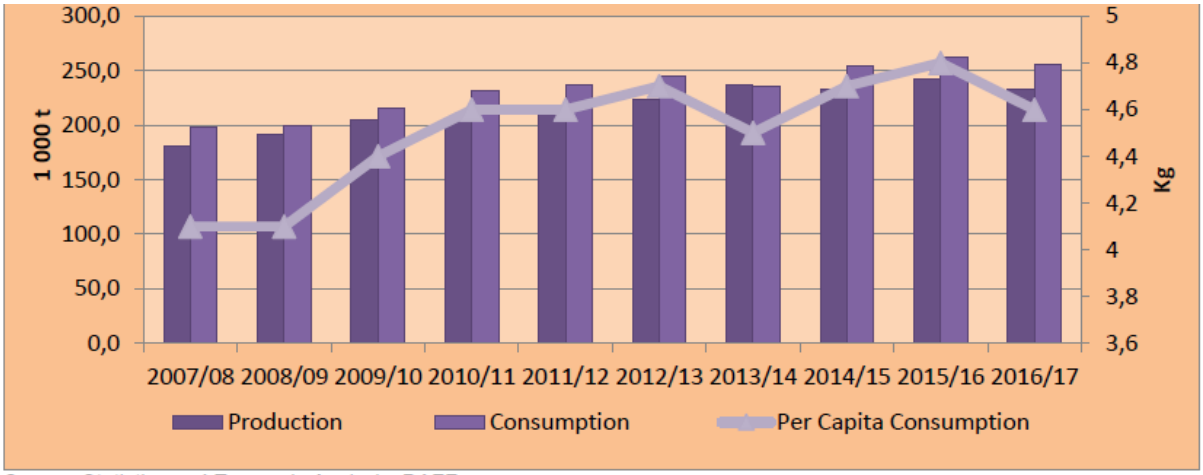
Graph 5: Pork Production & Pork Slaughtered (DAFF, 2017)



d) Consumption Trends

Pork is the most consumed product globally whilst South African consumption is lowest compared to poultry and beef consumption. Pork consumption is largely influenced by the religious and cultural beliefs in the country. The dominance of some religious groups in KwaZulu-Natal (Nazareth & Islam) and Limpopo (ZCC) largely influences areas of production within the province and subsequent consumption thereof. Pork production and consumption is presented in Graph 6.

Graph 6: Pork Production, Consumption and Per Capita Consumption



Source: Statistics and Economic Analysis, DAFF

Graph 6 indicates that South Africa consumes more pork than what is produce which makes the country net importer of pork meat. This has been the case for the past decade excluding 2013/14 (DAFF, 2018). During 2013/14, South Africa became self-sufficient by producing 236 300 tons which became more than the consumption of 236 000 tons and consumption had slightly decreased during the period of 2013/14. This may have been due to high price of pork meat, which made it relatively expensive to its substitutes such as poultry and beef. From 2014/15 to 2016/17, the situation returned to its nature where the consumption outstripped the production. This caused South Africa to import pork to meet local demand. The per capita consumption has shown an increasing trend from 2007/08 to 2016/17 except in 2013/14 and 2016/17 which is in line with the decrease in consumption.

e) Factors Influencing Production Trends

The South African pork industry is affected by several key factors which affect both commercial and emerging producers, with the latter being more affected due to lack of economies of scale. These factors include but not exhaustive to the following:

- The maize price which is usually influenced by exchange rates, CBOT, local crop size, and SAFEX speculation,
- Urbanisation and consumer preferences,
- Land policies,
- Raw material prices,
- Applicable product standards and regulations,
- Disease outbreak i.e. swine flu,
- Food safety certification,
- Trade relations in Southern Africa and beyond.

4.2.2. Input Suppliers (Key Role Players)

a) Feed and Medication

Nationally and provincially, feed supply is dominated by few major producers that control and influence the feed value chain for all forms of livestock and breeding games. Prominent pig feed suppliers in KZN are:

- Epol
- Meadow Feeds

- De Heus
- Quantum Feeds and
- AFGRI Animal Feeds

These suppliers also supply livestock medication to producers. Commercial producers buy both ready-made feed and high-performance concentrates (HPC) which are mixed with maize and soya. Often, the latter method of buying is only done by producers that have feed mill facilities and plant own maize and soya. Smaller piggeries, mainly Black-owned, located in rural and peri-rural areas buy from localised suppliers which are in the form of feed cooperatives. This category of farmers buys in smaller quantities because of limited production scale.

Strategic partnership agreement should be signed between the proposed eThekwini Pork (Pty) Ltd (a special purpose vehicle to implement the pork value chain in eThekwni Municipality) and one or more feed suppliers with favourable terms. eThekwini Agribusiness Unit should facilitate the discussion.

4.2.3. Commercial Breeders and Breeds

a) Breeders and Producers

There were approximately 132 commercial producers and 19 stud breeders in South Africa with an estimated figure of over 1.5m pigs for the year 2016/17, a decrease of 1.6% compared to 2015. Primary pig production consists of nucleus, multiplier and production farms.

The availability and quality of breeding stock is of primary importance within the pork industry value chain. There are currently no recognised nucleus farms and breeders of gilts in the KZN Province. Semen and breeding gilts are imported to KZN from other provinces, mainly Mpumalanga and Gauteng. eThekwini Pork (Pty) Ltd should establish relationships with the suppliers of semen and gilts.

b) Pig Breeds

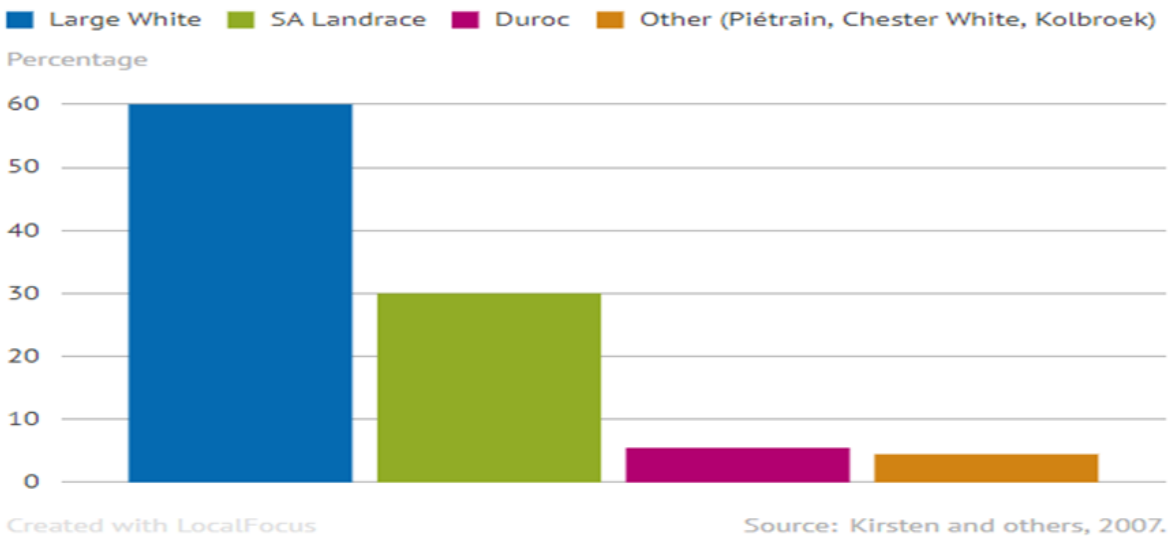
There are over 100 pig breeds across the world with most of them bred to suit unique environmental conditions. Registered South African commercial breeds are:

- PIC
- Large White
- Kolbroek
- South African Landrace

- Pietrain
- Large Black
- Hampshire
- Chester White
- Duroc

The Large White, SA Landrace and Duroc are the mostly commonly crossbred breeds amongst commercial breeders and farmers. In recent times, there has been an increase in Danish origin genetics within South Africa under the Danbred brand. This breed is fast gaining momentum amongst South African pig farmers due to its higher fertility and farrowing rate. Small-scale farmers do not have access to influencing breeding programmes, they only take semen that is available at the market and are largely dictated by price. Small-scale farmers that farm for both own consumption and informal markets tend to use the indigenous Kolbroek breed due to its hardiness and lower maintenance. Industry authorities such as SAPPO should advise which breed is best suited for eThekwini Pork Development initiative. On advise, eThekwini Pork (Pty) Ltd should then formalize the supply agreement with the breeders.

Graph 7: Popular Pig Breeds in South Africa



4.2.4. Logistical Arrangements

a) Pigs Transportation

With the scattered production of pigs and destined abattoirs and processing facilities throughout the country, transportation of pigs becomes a key logistical component within the pork industry value chain. Transportation of pigs occurs via road networks at three different levels, namely:

- From stud breeders to commercial breeders – stud bred pigs are transported from breeding farms to farmers who breed for commercial purposes, i.e. to sell gilts or finishers to abattoirs. Limited transportation occurs at this level.
- From commercial gilt breeders to other farmers (commercial & small-scale) – transportation at this level occurs at larger scale than above and in the form of start-up and replacement gilts. Furthermore, transportation of weaners to small-scale pig farmers also occur at this level.
- From all pig producers to abattoirs – the greatest part of pig transportation occurs at this level whereby all market ready pigs and those to be culled are sent to various abattoirs.

eThekwini Pork Value chain should have its own logistics component. There should be a dedicated transport to collect pigs from breeders, farmers and deliver to relevant destinations. In order to create job opportunities, independent transport enterprises should be created and contracted to eThekwini Pork (Pty) Ltd.

b) Cold Chain including Logistics

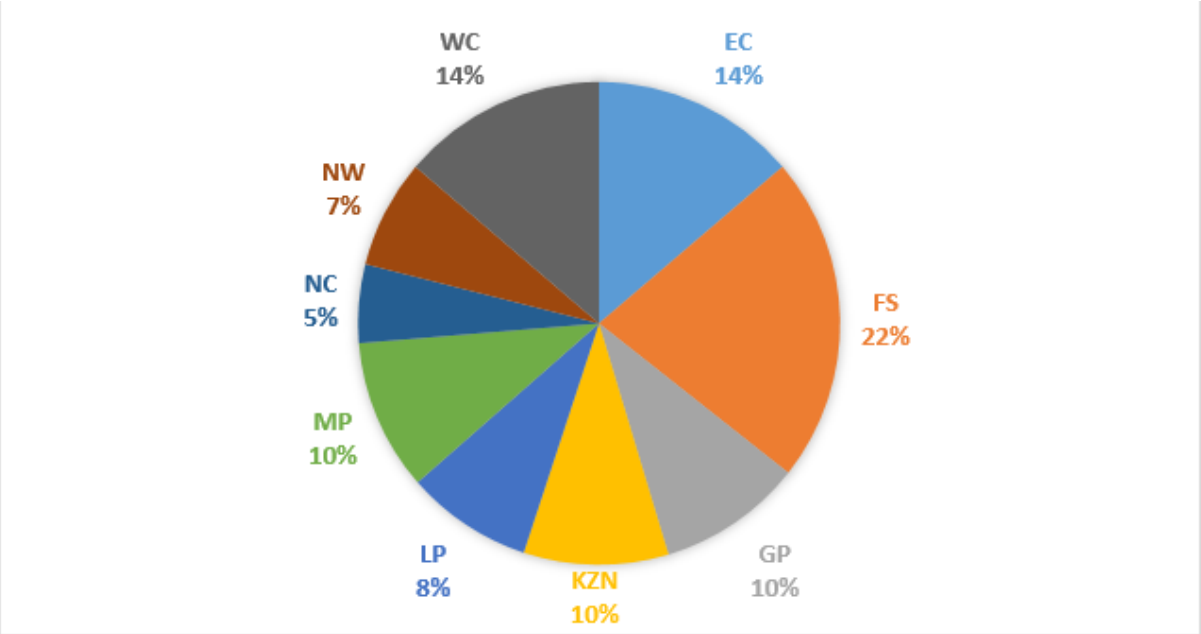
Cold storage is owned by abattoirs and processors. According to latest data from both DAFF (2017) and SAPPO (2018), there are no Black owned pork meat cold storage facilities in the KZN province. Small-scale producers send all their pigs ready to slaughter to abattoirs owned by big corporates such as Chester Meats, Cato Ridge Abattoirs and others. eThekwini Pork (Pty) Ltd will supply pigs to these abattoirs. The frequency of supply will be determined by the quantities produced within the piggery scheme.

4.2.5. Abattoirs and Processors

a) Industry role players

There is a sizeable number of abattoirs (about 247) spread across the country and 150 are dedicated for pigs (DAFF,2017). These are categorised as low and high throughput. The geographical spread of these abattoirs is as indicated in Figure 6 below:

Figure 6: Abattoirs per Province (DAFF, 2017)



Source: Profile of Pork Industry in South Africa (DAFF, 2017)

Abattoirs are largely responsible for slaughtering which results in pork carcasses that are further processed or sold as they are. The ownership of these abattoirs is shared amongst big commercial farmers, large agribusiness corporates, meat processors and retailers that sell pork meats and associated products. Furthermore, abattoirs operate mainly at wholesale level and supply retailers such as butcheries, processors and or other meat outlets. Black small-scale farmers in the KZN Province are excluded from this part of the value chain as they do not own or operate abattoirs but only supply pigs for slaughter. Abattoirs sell meat to the butchers/wholesalers/retailers/processors. In some instances, small-scale farmers buy back pork fifth quarters (offal, heads and trotters) and sell them directly to the public, raw or cooked. The medium-term (5 to 10 years) plan, is for eThekwini Pork (Pty) Ltd to establish its own abattoir that will be owned by all member farmers.

b) Types of Pork Meat Products

There are several pork meat products that are available in the market. These products are at different stages of value adding as indicated below:

- At Abattoir Stage – resultant meat products are pork carcasses, trotters, heads, offal as well as casings
- At Deboning Stage – pork primal cuts such as rump, loin, belly, shank, steak, fillets, chops, spare ribs, leg roast, pork trimmings and mince
- At Processing Stage – processed pork meat products include sausages, bacon strips, smoked meat products, polonies, viennas, hot dogs and meatballs

There are currently no Black owned abattoirs, deboning facilities and processing facilities within eThekwini Municipality. This part of the pork industry value chain is dominated by big commercial farmers, large agribusiness corporates, large retailers and wholesalers. The long-term plan (10 – 15 years) is to establish a meat processing facility that will be owned by eThekwni Pork (Pty) Ltd.

4.2.6. Markets Structure and Trends

a) Domestic Markets

The pork market consists of various players which are both formal and informal. Formal markets consist of:

a) Butcheries
b) Wholesalers and Retailers
c) Restaurants
d) Catering Companies
e) Processing Entities

Informal market sector is made up of:

- Hawkers
- Individuals
- Stokvels
- Pension Pay Points
- Informal Food Outlets such as “shisanyama”

eThekwini Pork (Pty) Ltd is targeting both formal and informal markets. eThekwini Pork (Pty) Ltd should develop a market strategy for its pork. This should provide details on target market, distribution methods, prices etc.

4.2.7. Export Markets

Over-time, the plan is to also to supply export market. However, the immediate focus is domestic market.

4.2.8. Pork Price Trends

Since the deregulation of the agricultural marketing dispensation in 1997, the prices in the red meat industry is determined by demand and supply forces.

4.3.Pork Industry Value Chain

Figure 7: Pork Industry Value Chain (DRDLR, 2015)

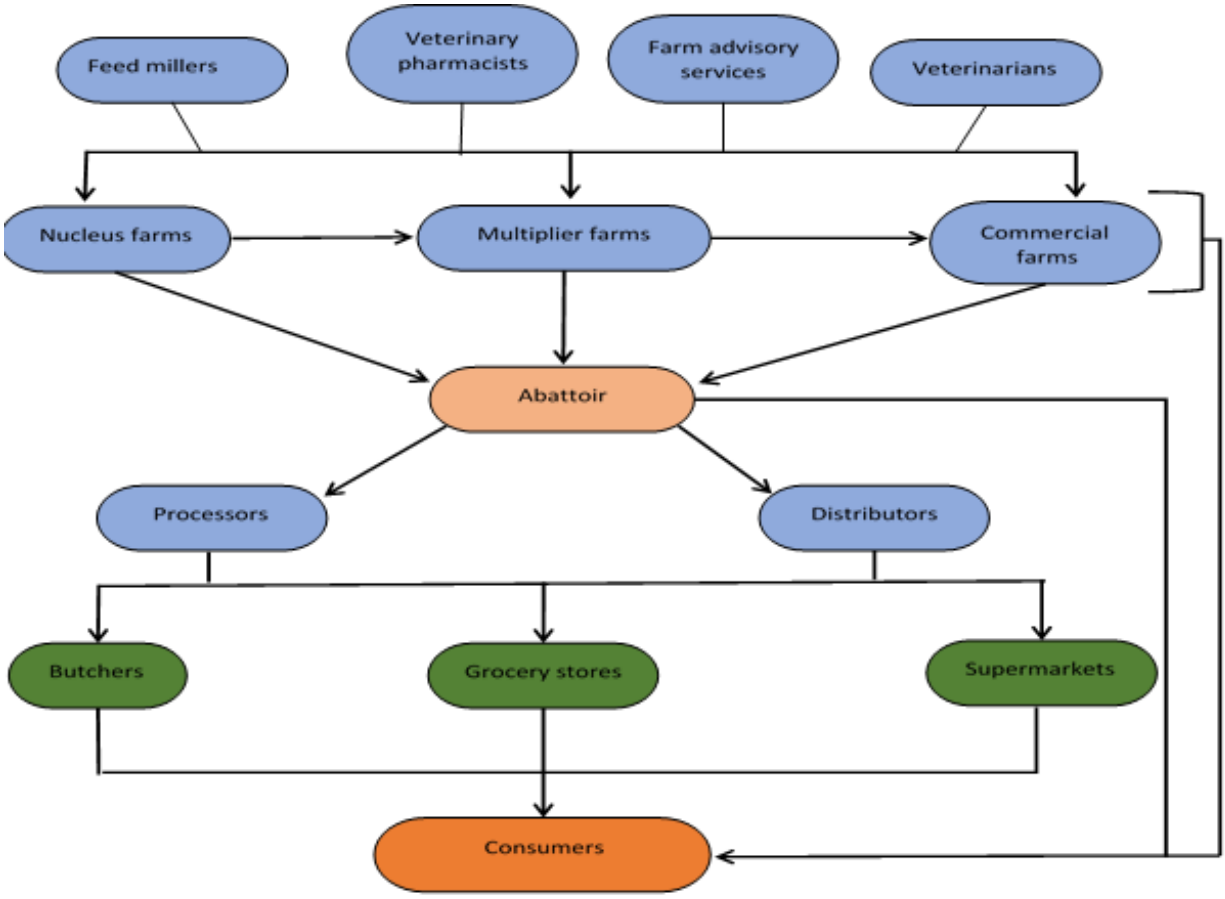


Figure 7 above indicates the pork industry value chain and flow of activities between all role players from primary production until final products reach consumers/end-users. Throughout the value chain, Black participants are only confined at primary level of production. Notwithstanding their only concentration at this level, their production scale and capacity is still negligible considering the number of sows (16 000) which they own in comparison to large scale commercial producers that own over 100 000 sows.

4.4.Industry Barriers to Entry

The low rate of commercial scale entry into this industry can be attributed but not exhaustive to the following barriers:

- Capital intensive: – commercial piggery and processing facilities set up costs are very high and unaffordable for the majority of potential Black participants.
- High feed costs: – feed is the highest input cost incurred by pig farmers. Sustainability is achieved through own production of key feed components which are maize and soya
- Industry standards and permissions: – there are several industry standards and permits required for participants. Compliancy in the industry is often costly.
- Skills requirements: – lack of skills and expertise in the industry also prevents participation, particularly at the middle to the lower end of the value chain.
- Lack of access to suitable sites – pork primary production and processing requires access to suitably zoned sites. Failure to access such sites prevents entry into the industrial value chain.
- Access to Funding: – to achieve all of the above, significant funding is required and Black farmers almost always struggle with accessing funding, for both starting up and or expansion.
- Access to Markets: – this is more often a case with small-scale Black farmers who struggle with markets due to their small production capacity.

4.5.Industry SWOT Analysis

The SWOT analysis is presented in Table 9.

Table 9: SA Pork Industry SWOT Analysis

Strengths	**Weaknesses**
• Piggeries can be established in relatively small areas. • The demand for pork meat has increased significantly over the years. • The industry has been recording positive growth over the years.	• The industry is susceptible to diseases. • Health, safety and phytosanitary issues can be inhibitive in terms of growth. • Water shortage is a major inhibitor. • Labour intensive • Not consumed by people in certain religions.
Opportunities	**Threats**
• High growth potential industry • Export opportunity • Can create massive job opportunities for low skilled workers	• Diseases out-break • High feed costs • Stringent regulatory requirements • Phytosanitary issues • Changes in consumer preferences due to religious and health reasons • Competition from other sources of protein

4.6.Compliance Requirements

At Farms Level, the following regulations are applicable:

- Zoning Licence – production site should be within a zoned agricultural area.
- Environmental Compliance – pig production site should comply with the environment; therefore, an EIA is required for breeding units above 40 sows,
- Waste Management Compliance – a properly designed waste management plan is required,
- Water Use Authorisation - due to the intensive water use in the piggery, authorisation for water use also needs to be obtained from the Department of Water Affairs,
- Pork 360 Quality Assurance is also a requirement – this focuses on meat safety, quality, traceability and animal welfare, particularly sows

At Abattoir, Deboning and Processing Facilities – the following regulations are applicable:

- Abattoir Registration Certificate – it is issued by the department of agriculture and specifies throughput of an abattoir and grants zoning of the premises for slaughtering usage
- SANS 10049 requirements for prerequisite programmes (PRPs)
- ISO/TS 22002 prerequisite programmes on food safety
- Codex Hazard Analysis Critical Control Point (HACCP) principles
- Food Safety Management System requirements as guided by the Global Safety Initiative (GFSI)
- Applicable laws, regulations and compulsory specifications
- Compliance with relevant municipal by-laws
- Waste Management Compliance – a properly designed waste management plan is required.
- Water Use Authorisation - due to the intensive water use at these facilities, authorisation for water use also needs to be obtained from the Department of Water Affairs.

Key Industry Regulatory Bodies and Role Players in the Pork Industry Include:

- SA Pork Producers Organisation (SAPPO)
- SA Meat Processors Association (SAMPA)
- SA Meat Industry Company (SAMIC)
- Pig Veterinary Services (PVS)
- Pig Breeders Society (PBS)
- Red Meat Abattoir Association (RMAA)
- Departments of Agriculture (National and Provincial)
- Department of Health: Food Control and Food Legislation
- Department of Environmental Affairs
- Department of Water Affairs
- Local Municipality

4.7.Industry Research & Development (R&D)

The South African Pig Producers Organisation (SAPPO) is largely responsible for pork industry research and development. In KZN, SAPPO offers various pork industry training and development through Baynesfield Academy in Pietermaritzburg. The South African

government, through the Department of Agriculture, Forestry & Fisheries also provides industry research and development for the pork industry.

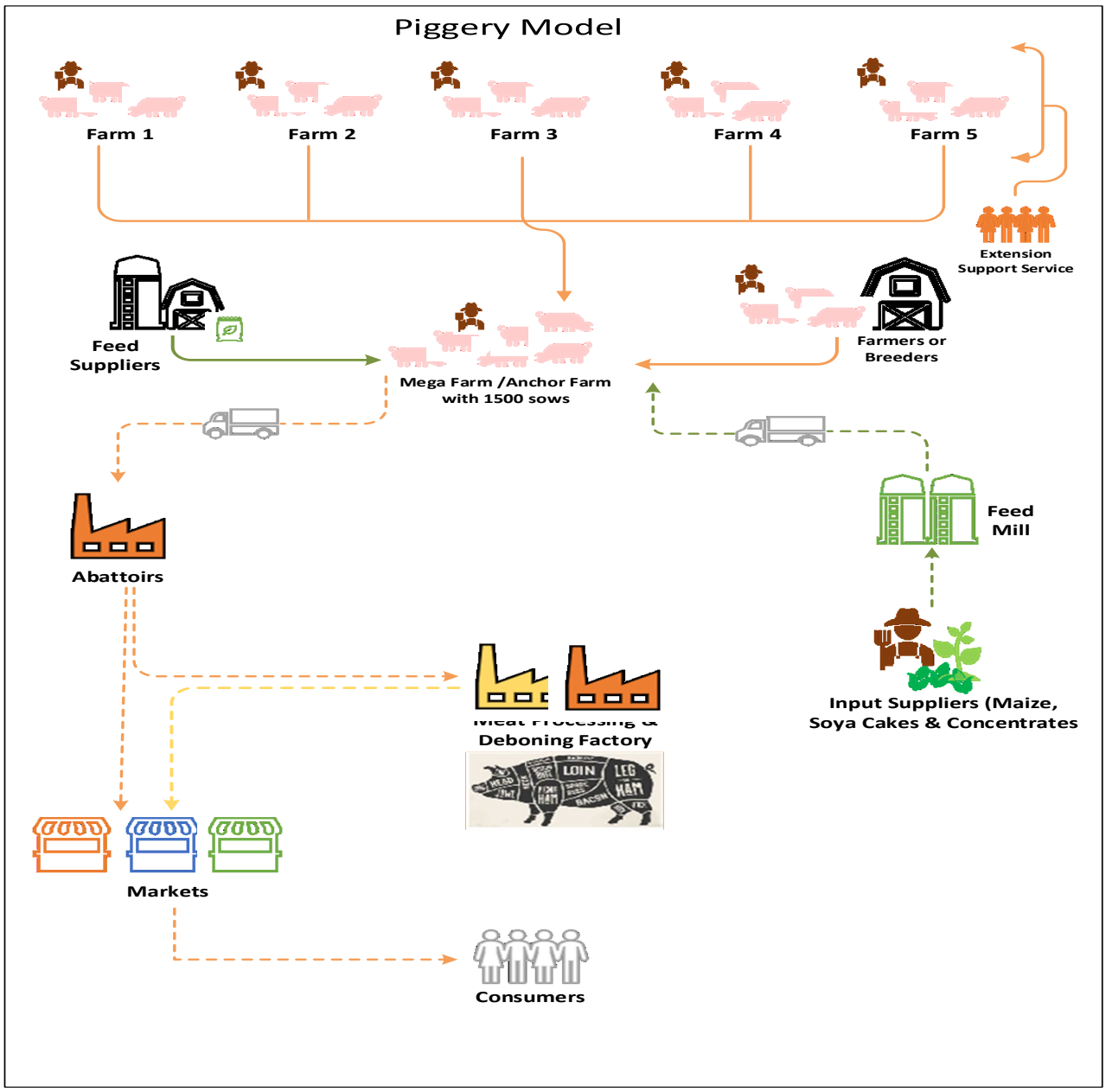
4.8.Industry Growth Opportunities

The South African pork industry produces less than 0,5% of the world's total pork output, and slaughters approximately 2,8 million pigs per annum. With the drought in 2015/16 which severely increased feed prices and the recent ASF outbreak, the number of pig farmers, particularly Black, has further reduced significantly. Globally, pork is considered the number one protein source. It's affordable and competes well with other preferred meat types. All these developments offer an opportunity for South Africa to increase market share in the commodity, nationally and globally.

The increase in domestic consumption vs low production levels presents an opportunity for increased production for both existing farmers and new entrants. Access to funding and regulatory requirements are key constraints in this industry, particularly for emerging pig producers.

4.9.eThekwini Piggery Development Strategy

Figure 7: Proposed Implementation Model for eThekwini Pork Value Chain



a. Role Players in the Value Chain

- Multiplier / Anchor Farm – this is the centre of excellence and provides support to smallholder farmers. The anchor farm is capacitated to provide the following services:
    - Establishment of smallholder piggery farms
    - Training and mentorship of smallholder farmers
    - Conduit to market
    - Sourcing/ or mixing and supply of feed to smallholder farmers

- Sourcing/or breeding of pigs and supplying to smallholder farmers
- Deliver carcases to markets and deboning factories

At least one anchor farm should be established in the initial stages. The anchor farm should have capacity of 1500 sows. Expansion and the number of additional anchor farms will be determined by the following:

a. market and demand
b. slaughter capacity of the local abattoirs
c. capacity to provide technical support

At this production, an EIA authorization is needed.

- Smallholder Farms: – these are small breeders that will have a 40-sow unit each. The small breeders will produce an average of 920 piglets per year and supply these to anchor farm and to markets. The plan is to commence on 40 sow units and expand. The 40-sow unit does not trigger an EIA.

- Agro-logistics: – distribution should be carried-out as a separate service from the rest of anchor farm services. The aim is to develop enterprises that will be responsible for cold chain distribution. Distribution should be carried out from abattoirs, deboning factory, and meat processing factory to markets / customers.

- Feed mill: – in the initial stages, feed manufacturing companies will supply feed to piggery farms. Relevant cooperation agreements should be signed between the feed manufacturer(s) and the project. Overtime, the intention is to capacitate Black local feed manufacturing companies to manufacture and supply feed to the project. Within eThekwini there is an established animal feed manufacturing company willing to partner with eThekwini Agribusiness for the supply of animal feed.

- Feed suppliers: – various feed suppliers have been identified to supply feed to the project. These are De Heus in Umlaas Road, Epol and Meadow Feeds.
- Breeders: – breeding and supply of sows is a specialized function. The sows will be supplied by registered breeders. SAPPO should be contacted for the list of reputable stud breeders.

- Abattoirs: – eThekwini has one dedicated piggery abattoir in Cato Ridge. The other piggery abattoir is outside eThekwini in Baynsfield. These abattoirs will provide slaughtering services to all piggery farmers. A formal agreement should be signed to govern the relationship between the eThekwini Agribusiness and the abattoirs.

b. Other Role Players

- South African Pork Producers Organization (SAPPO) – this is the mouthpiece of pork producers in South Africa. The organisation serves the South African pork producer by co-operating within the organised agricultural fraternity and by liaising with various sectoral organisations, role-players within the supply chain of the meat industry, the government and international interest groups. SAPPO is a broad-based and dynamic service provider and facilitator, representing and supporting all South Africa's pig farmers in their quest for profitability and sustainability. The organisation is recognised by the government and other agricultural role-players as the mouthpiece and representative organisation for pork producers. SAPPO will also be responsible for capacity building and mentorship.

- eThekwini Municipality Agribusiness – the municipality through its agribusiness development department will undertake the following responsibilities:
    - Facilitate agreements between the markets and anchor farm(s).
    - Facilitate formal relationships between anchor farm and feed mills and breeders
    - Facilitate investment in the piggery value chain.
    - Commission the development of business plans for various piggery value chain components
    - Drive the investment strategy in eThekwini agribusiness sectors
    - Facilitate land access

c. Approach

- Initially, one anchor farm should be established. The capacity of the anchor farm is 1500 sows. The anchor farm can be established either in the South or Out-West Regions of the municipality. These are suitable areas for piggery. The outer-west areas are ideal because of their close proximity to the abattoirs. Expansion and establishment of additional anchor farms is dependent on the demand and supply capacity.
- In addition to an anchor farm, a minimum of 10 smallholder farms (small breeders of 40 sow units) should be established. Each smallholder farm should be capacitated to have 40

sows that will produce at least 920 piglets that will be fattened and sold as porkers or baconers. The plan should be to set-up over 100 small breeders over five years.

d. Markets

After slaughter, the carcases are destined for the main stream retailers. Pick ‘n Pay has demonstrated keen interest to partner with eThekwini Pork Initiative. However, all piggeries including the abattoir should comply with the minimum standards set-up by these retailers. In addition to the main stream retailers, meat wholesalers such as Bluff Meat, Chester are also willing to provide off-take. Offal will be sold to informal markets. Informal market strategy should be developed.

e. Training, Skills and Capacity Building

SAPPO will assign trainers and mentors to the project. The training process will be in a phased approach.

5. Poultry

5.1.Industry Overview

Poultry industry (including eggs) is the largest sub-sectors of the South African agricultural sector. The poultry industry represented 16.6% or R47.9bn of the total gross value of 2018 agricultural production of R288.6bn and remains the largest animal production segment. Production of broilers (chicken) for slaughter was 6% up in 2018, a significant achievement following the avian influenza (AI) outbreaks, however this was offset by reduced consumption. Major industry players have reported mixed results. The industry suffered numerous casualties during the avian flu outbreaks, which were exacerbated by increased competition from imports. A number of small-scale egg producers and small-scale broiler producers ceased operating during 2017, and the industry continues to consolidate. There is increasing pressure from rising input costs, particularly those for feed, transportation, energy and labour as well as declining consumer spending, although the industry was heading to a seasonal upturn in mid-2019.

The greatest challenge to local poultry producers remains surging imports of individually quick frozen, brined, brown chicken meat from various countries, which local producers and interested parties contend, is sold locally below the foreign cost of production through foreign government subsidies. While this benefits meat importers, foreign exporters, consumers but local producers are severely affected. The implications of the avian flu on imports are evident in the performance of various industry players, from large players such as RCL Foods to small contract growers and is reflected in declining industry player and employee numbers. Foreign commentators note that, the local primary poultry industry has structural problems which affect its performance and are incorrectly ascribed to imports.

5.2.Industry Description

Poultry farming involves the informal or commercial production of chicken as well as ducks, geese, turkeys and ostriches for meat, eggs and feathers which are then processed further.

5.3.Poultry Production

<u>Day-old chick supply industry for broiler and egg laying farms</u>

In-house breeding operations supply eggs to an in-house hatchery where eggs are hatched. Day-old broiler chicks are supplied either to in-house or third-party farms. Day-old layer chicks are sent to rearing farms, called layer replacement hen production farms, and raised until they are ready to begin laying eggs, referred to as the “point of lay”.

The broiler industry

Chicks are grown for 33-35 days before they are captured and sent to abattoirs for processing.

The egg industry

Day-old chicks/pullets are reared on rearing farms for 21 weeks, and then transferred to laying farms where they lay eggs until they no longer lay eggs or lay too few to remain profitable. They are then culled and sold to recover the purchase cost. Chickens that are kept for egg production are most commonly housed in layer cages in aviaries. There are also floor or barn systems and combination, or combi, systems. Cage free 'free-range' and organic 'free-range' eggs are growth industries and are expected to dominate the industry by 2025. Eggs are graded for quality: Grade A are sold at retail stores for home use and are sized according to weight; Grade B are used mostly in bakeries; and Grade C are sent to egg breakers. Eggs may be broken and sold as pulp or dried eggs to industrial bakers. Egg yolks are used as an emulsifier in mayonnaise production. Eggs are also differentiated as organic free-range, omega 3-enriched, free-range, barn, grain fed and commercial.

5.4.Chicken Meat Processing

The chicken meat processing includes the following activities.

- Abattoirs where birds are slaughtered.
- Food processing plants where birds are dressed and packed.
- The processing of fresh, chilled or frozen chicken in processing plants and retail operations.
- The manufacture of natural sausage casings and production of sausages.
- The preservation and preparation of meat and meat products by processes such as smoking, salting, quick-freezing and injecting with brine.
- The rendering and refining of feathers and or other edible animal fats.

5.5.The Poultry and Egg Industry Value Chain

The poultry industry is highly concentrated and dominated by fully integrated broiler and egg producers. The major broiler producers include RCL Foods (Rainbow Chicken), Country Bird Holdings (Supreme and Crown Chickens), Astral Foods (Goldi, Festive, Mountain Valley, and County Fair), Quantum (Tydstroom), Sovereign Foods and Kuipers Group (Eagles Pride). They all own fully integrated poultry operations and thus breed their own flocks, own their

own hatcheries, rear their own broilers and provide feed from their own feed mills. They also own, or are involved in, the secondary industry with their own or contracted abattoirs, handling meat processing, value-added product manufacturing, distribution and marketing. Some companies also have import and export divisions. Some own retail stores and fast food chains or have contracts to supply frozen and cooked (heat and eat) chicken products directly to restaurants, fast food chains and supermarkets.

The egg industry is also highly concentrated. Three main producers, Quantum Foods (Nulaid), Kuipers Group (Eggbert) and the 50-odd independent producer members of TopLay Egg Co-Operative which market under the TopLay Brand as well as their own, such as Killarney Poultry Products in the Eastern Cape, account for more than 51% of the egg market and operate fully integrated egg production systems. Eggs are graded and sold under their own or house brand labels as shell eggs or in liquid form as egg pulp or liquid eggs or in dried form as powdered eggs which have a longer shelf life. Liquid eggs are sold to industrial customers for use in baking and the manufacture of mayonnaise. Most eggs are sold to large supermarket retailers. The poultry and egg value chain is presented in Figures 8A and 8B.

Figure 8A: Poultry and Egg Industry Value Chain

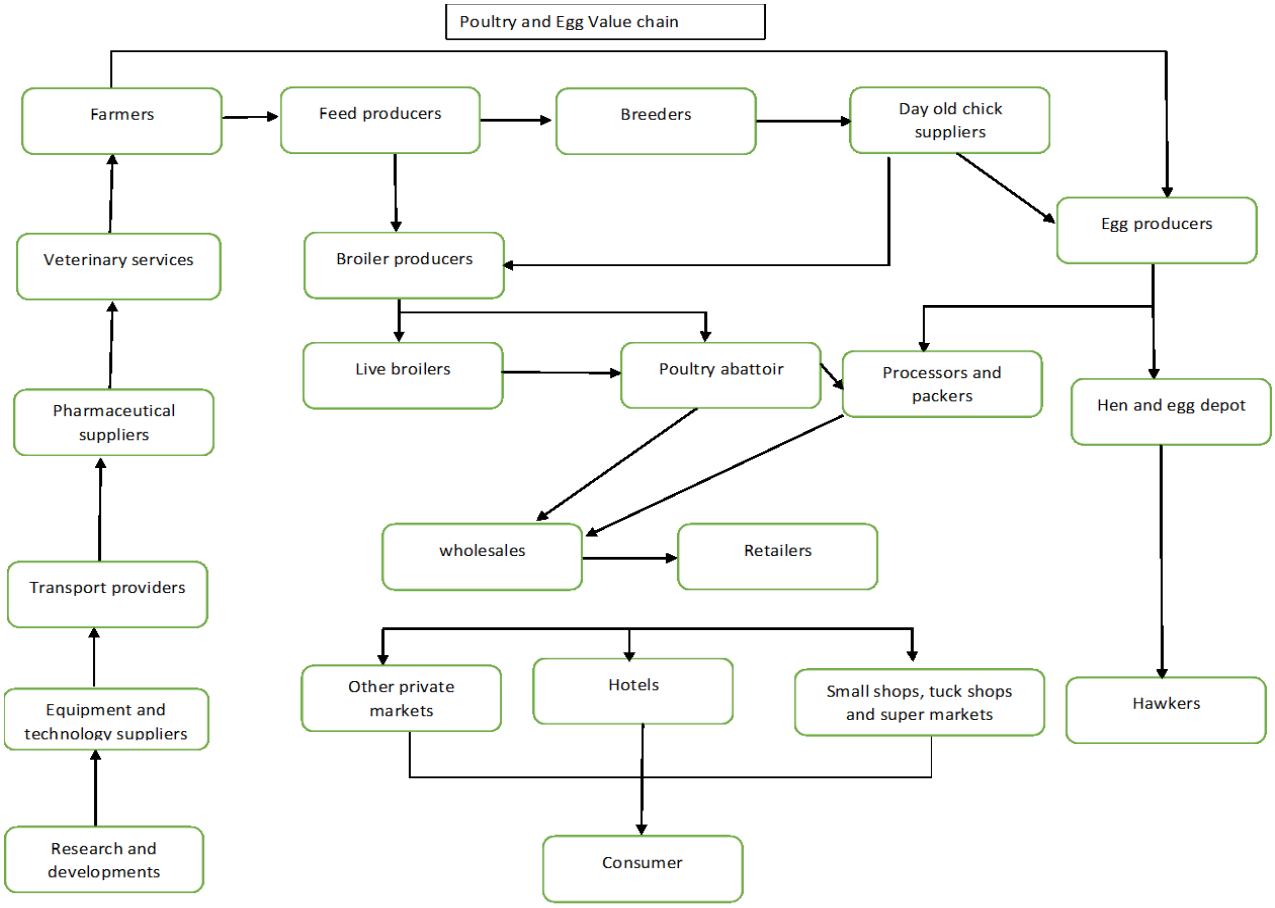
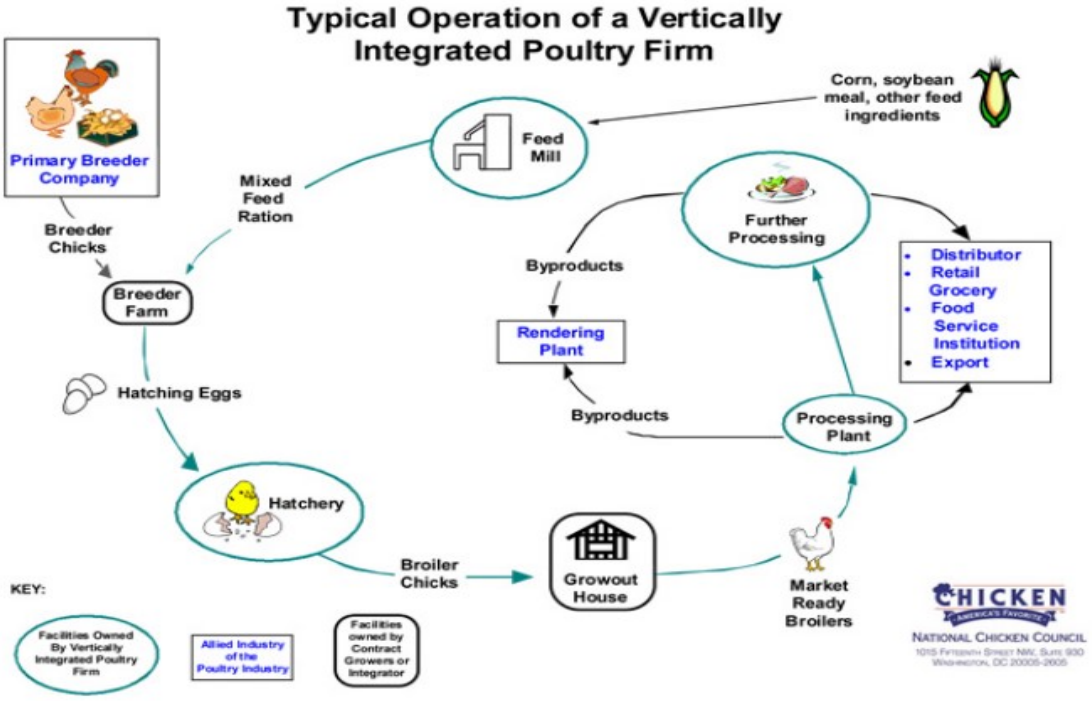


Figure 8B: Poultry and Egg Industry Value Chain



Source: (Marc Boosman, June 2019)

5.6.Industry Performance

The Size of the National Laying Flock since 2014

SAPA adjusted the egg industry production model from July 2017 to account for culling of 4.69 million hens due to the avian flu outbreak between July and October 2017 and the removal of a further 30,000 laying hens in June 2018. Approximately 24% of poultry industry birds are used in the egg industry. According to DAFF (2017) eggs remain the fourth-largest animal product sector in agriculture in South Africa, after poultry meat, beef and milk. Average per capita egg consumption for 2016/2017 was 7.28kg/capita, continuing a declining trend from the 2015/2016 consumption of 7.89kg per capita, and 7.96kg per capita in 2014/2015.

5.7.Egg Industry Risks

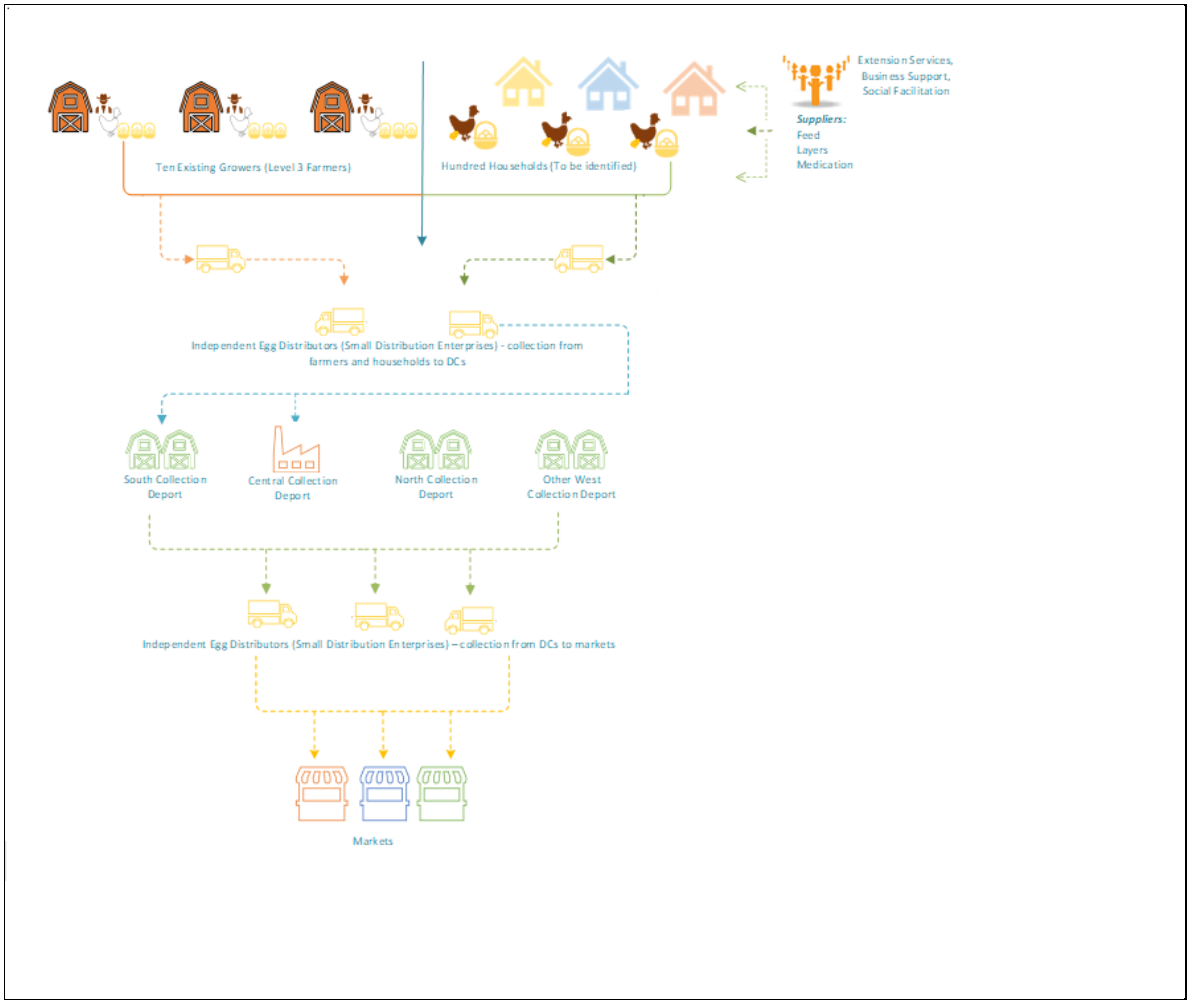
The major industry risks are:

- Avain flu
- High feed costs
- Competition from cheap substitutes
- Product dumping
- Presence of dominant players limits the scope and easy access to market for small suppliers

These factors warrant careful consideration when designing eThekwini Poultry Industry Value Chain.

5.9. Proposed Implementation Model for Poultry and Egg Industry Value Chain in eThekwini Municipality

Figure 9: Proposed eThekwini Egg Value Chain Model



a) Role Player in the Value Chain

- Producers – there are two types of producers. The growers (these are level 3 type farmers). There is a total of seven of these farmers operating at a capacity between 10 000 to 30 000 layers within eThekwini Municipality. The aim is to increase the capacity of these farmers to 50 000 layers each. The other category is households. A turnkey egg production solution for households is recommended. For a pilot phase, a total of 100 households should be identified. These households will be assisted to setup egg laying units consisting of 1000 layers each household.

- Independent Egg Distributors – there will be opportunities to create independent egg distributors. From the growers, a total of 243 000 eggs will be produced. Households will produce a total of 81000 eggs per day. The eggs will be collected from growers and households and delivered to collection depots for packaging. Once packaged, eggs will be distributed to various markets. Independent distributors will also be responsible for distributing eggs from collection depots to markets. At the proposed full production capacity of 50 000 layers each grower, the total production will be 405 000 eggs per day or 1125 boxes of 360 eggs and 81 000 eggs or 225 boxes in total for households.

- Collection depots – four collection depots in four eThekwini regions (south, north, central and outer-west) are proposed. The depots will be responsible for receiving eggs from growers and households, packaging the eggs for distribution to markets. The depots will receive payments from markets and pay the growers and households. The depots will also facilitate the purchase of feed, vaccines and layers and deliver these to growers and households.

- Markets – various markets are targeted. These are government and private sector markets, mainly restaurants, retail stores, bakeries etc.

b) Other role players

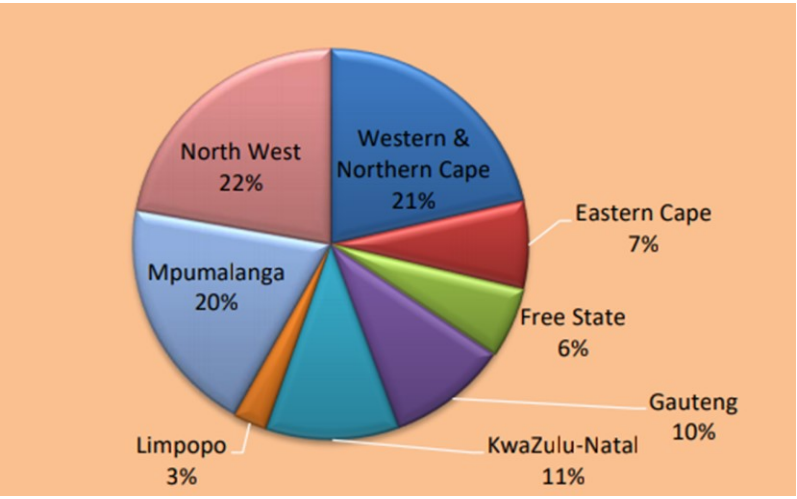
- SAPA will play a crucial role by training growers and provision of advisory services to the project.
- eThekwini Municipality Agribusiness – the municipality through its agribusiness development department will undertake the following responsibilities:
    - Facilitate agreements between the markets and the depots
    - Facilitate formal relationships between depots and markets, feed suppliers, suppliers of layers and vaccines.
    - Facilitate investment in the egg value chain.
    - Drive the investment strategy in eThekwini agribusiness sectors

- Training and capacity building – SAPA will also provide technical training and mentorship to famers.

5.10. Broiler Industry

South Africa dominates regional production of chicken meat, accounting for 73.1 % of total production in the SADC bloc, (FAO, 2017). Malawi and Tanzania are the next biggest producers, but each account for less than 6 % of the total regional production of broiler meat. Broiler meat is produced throughout South Africa with North West, Western and Northern Cape, Mpumalanga and KwaZulu–Natal Provinces being the largest producers accounting for approximately 72% of total production. During 2016 North West Province produced 22% of the entire broiler meat in South Africa followed by Western and Northern Cape Province at 21%, Mpumalanga Province at 20% and KwaZulu–Natal Province at 11%. Limpopo Province was the least producer, producing only 3% of South African broiler meat (Department: Agriculture, 2017) shown in Fugure 10.

Figure 10: Broiler Meat Production by Provinces

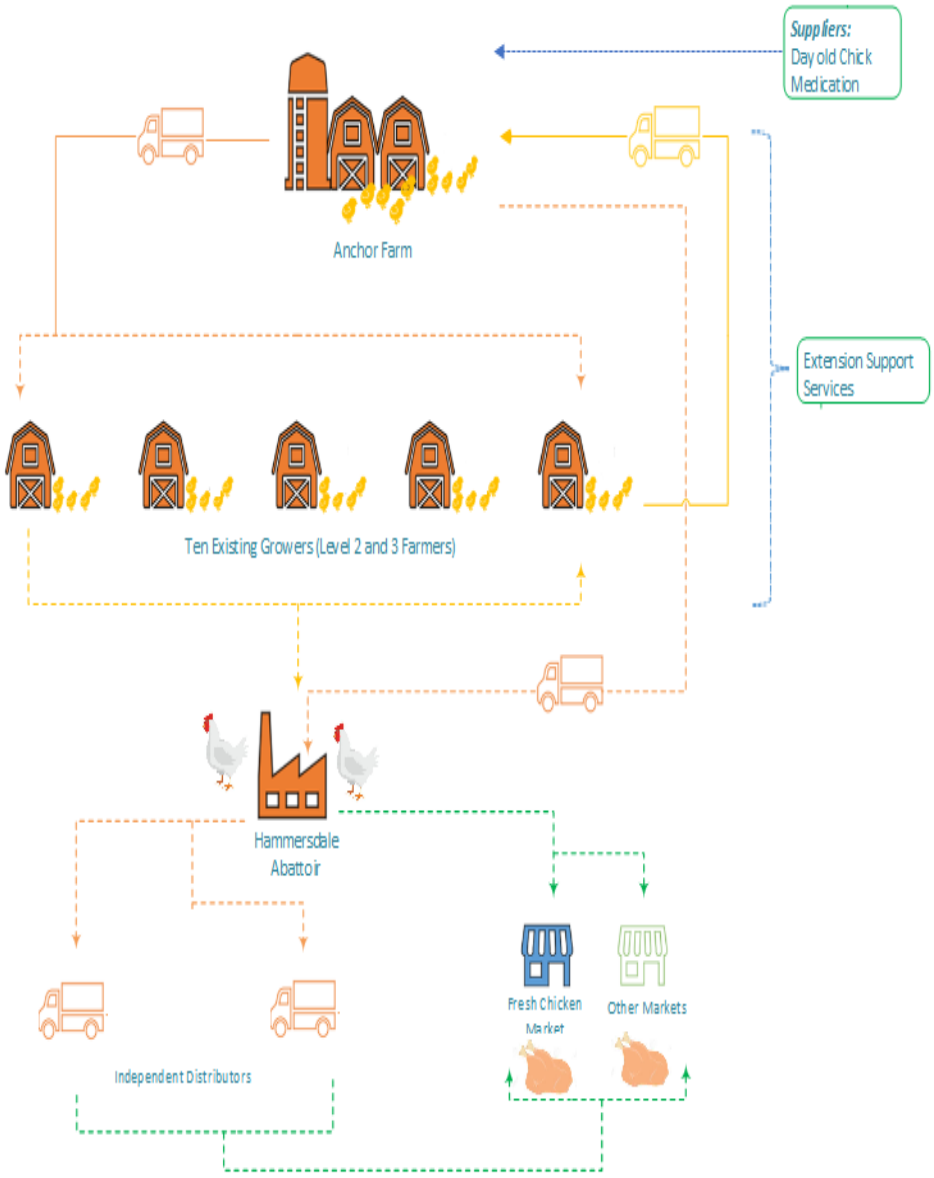


Source: SAPA, 2017

One of the large agricultural sub-sectors within the eThekwini Municipality is broiler production. The largest operation is that of Rainbow Chickens albeit at a reduced scale over the past few years. Its operations are located around Cato Ridge, and include broiler breeders, hatcheries and rearing farms. In Cato Ridge and surrounding, there are other small broiler producers operating at different scales between 1000 to 50 000 broilers. These growers should be capacitated to increase their production scale according to market demand. The proposed eThekwini Broiler Value Chain is presented in Figure 11.

5.11. Proposed eThekwini Broiler Value Chain

Figure 11. eThekwini Broiler Value Chain Model



a) Role Players in the Proposed Broiler Value Chain

- Hammersdale Abattoir (Haalal) – eThekwini broiler value chain is anchored on the Hammersdale / Goergedale Abattoir. This abattoir is currently supplying fresh chicken to various customers, mainly restaurants. The abattoir has a slaughter capacity of 10 000 chickens per day with a potential to expand. The abattoir will receive chickens from farmers for slaughter. It will either buy chickens from the farmers or provide slaughtering services only.

- Growers: – initially, at least 10 growers will be established over five years with a proposed capacity of 200 000 broilers each out-grower. The focus is to supply fresh chicken to various markets. Growers will deliver their chickens to the abattoir for slaughter when the chicken weight is between 1.8 to 1.9kg per bird.
- Independent distributors: – cold chain distributors will collect chickens from the abattoir and deliver to various markets. The markets will pay the farmer or a co-ordinating entity (SPV) and such entity will then pay farmers and all other creditors on behalf of the farmers.
- Market: – the target market is restaurants and hotels. The intention is to supply fresh chicken meat.

b) Other role players

- SAPA will play a crucial role of training growers and provision of advisory services to the project / entire poultry value chain.
- eThekwini Municipality Agribusiness – the municipality through its agribusiness development will undertake the following responsibilities:
    - Facilitate agreements between the markets and the depots
    - Facilitate formal relationships between depots and markets, feed suppliers, suppliers of layers and vaccines.
    - Facilitate investment in the poultry value chain.
    - Drive the investment strategy of eThekwini Agribusiness.

6. Vegetable Value Chain

6.1.Industry Overview

Vegetables form a vital part of the human diet because they are the source of many vitamins, minerals and proteins. In almost all developing countries, the consumption of vegetables is far from sufficient. Vitamin A is one of the nutrients which is normally lacking in human diets and therefore dark-green leafy vegetables should be consumed on a regular basis. The United Nations Food and Agricultural Organization (FAO) recommends an intake of 200g vegetables per person per day, or 73kg per year, to ensure adequate nutrient supply. South African horticulture plays key role in the wider agricultural sector and is particularly an important category for the country's agricultural exports. Horticulture's contribution to the value of total agriculture has steadily increased over the past two decades and fresh fruit and vegetables accounted for 28.8% of annual gross value of agricultural production in the 2017/2018 season. The vegetable market remains primarily driven by local demand.

6.2.Local Areas of Production

According to DAFF (2017), South Africa is divided into a number of farming regions according to climate, natural vegetation, soil type, and farming practices. Due to these factors, South Africa produces a wide range of vegetables, of the total vegetable crops produced; about 46% is delivered to fresh produce markets, 42% is direct sales and own consumption, 18% as processed (RVO, 2019) and (DTI, 2018). There are very few commercial vegetable producers within eThekwini Municipality. The bulk of producers are concentrated in green leafy vegetables and this is largely due to the state of natural resources (soil and prevalent climatic conditions). The majority of producers are located in the North, South and Outer-West Regions of eThekwini Municipality. However, the entire metro is a small contributor of vegetables consumed in in eThekwini and KwaZulu-Natal Province. The bulk of vegetables consumed within eThekwini are imported from other areas in KZN and other provinces. This present an opportunity for eThekwini producers to scale-up their operations.

6.3.Production Trends and Production Scales

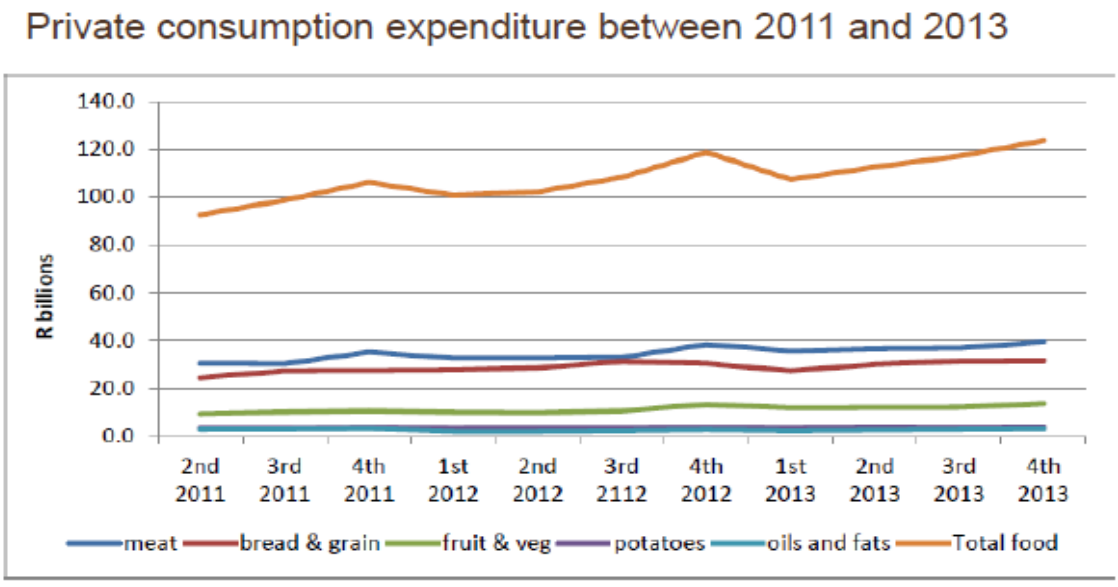
Table 10: Crops & Markets First Quarter 2018 (DAFF, 2018)

Code	Market	Rands	Tons	Rands/ton
TSW	Tshwane (Pretoria)	493 319 280	1 144 44	4 311
JHB	Johannesburg	1 186 838 531	260 772	4 551
BFN	Bloemfontein	66 468 209	16 563	4 012
KIM	Kimberley	9 192 687	2 469	3 723
CT	Cape Town	262 030 015	5 1505	5 088
PE	Port Elizabeth	6 414 4902	16 198	3 960
EL	East London	58 926 271	14 050	4 194
DBN	Durban	241 453 016	54 970	4 392
PMB	Pietermaritzburg	48 998 766	12 773	3 836
WLK	Welkom	36 264 777	8 870	4 088
KDP	Klerksdorp	58 183 513	16 078	3 630
VER	Vereeniging	22 117 714	6 157	3 592
SPR	Springs	65 490 135	18 076	3 623
UIT	Uitenhage	–	–	–
WBK	Witbank	10 181 098	2 521	4 038
NLS	Nelspruit	3 636 791	809	4 493
MPL	Mpumalanga	23 930 298	5 332	4 488
KEI	Kei (Mthatha)	1 137 317	333	3 415
GEO	George	4 220 378	1 006	4 194

Table 10 reflects the volumes of vegetables sold through 19 major fresh produce markets between January and March 2018. Tshwane and Johannesburg markets sold the most vegetables during the period under review. DAFF (2018), estimates that around 30% of leafy vegetables like cabbage, spinach, lettuce and 30% of fruit vegetables, like tomatoes and green beans and approximately 25% of root vegetables, like carrots and potatoes, are lost annually due to lack of proper storage and management. This is one of the reasons the agro-ecology hubs will be upgraded and equipped to handle fresh produce from farmers, including the establishment of a central processing facility.

6.4.Consumption Trends

Graph 8: Private Consumption Trends (FPIA, 2014)



As indicated in Graph 8, vegetable consumption has remained stable over the years as it forms part of almost every household's dietary requirements.

6.5.Factors Influencing Production Trends

As with all other agricultural commodities, there are several factors that influence production of vegetables. These include but not exhaustive to:

- Rising cost of inputs (seeds, agrochemicals, fertilizers, pesticides)
- Increasing energy-related costs
- Frequent pest and disease attacks
- Climatic conditions
- Natural resources
- Production infrastructure
- High-level post-harvest losses of the perishable commodities are restraining the growth of the fruits and vegetable market in South Africa
- Urbanisation and consumer preferences/influences

6.6.Input Suppliers (Key Role Players)

- **Seeds, Fertilizer & Agrochemicals (herbicides, fungicides & pesticides)**

National and provincial inputs supply is dominated by few major producers that control and influence the development and breeding of vegetable seeds. These corporates include Starke Ayres, Sakata, Hazera Seeds SA, Capstone Seeds SA, United Seeds, Macdonald Seeds and Alliance Seeds. These large corporates invest considerable resources in developing the vegetable inputs value chain and largely control it as well. They market these directly to farmers and or distribute them through various independent outlets and retailers across the country.

Within eThekwini there are few vegetable seed companies due to the low commercial vegetables production activities taking place. Retailing agents such as Coastal Farmers in the Northern Region is largely popular within the farming community and supply a variety of farming inputs to farmers.

- **Nurseries**

Large scale commercial producers establish their own nurseries in order to control the quality of their produce as well as to ensure timeous planting and harvesting for their respective markets. Smaller producers rely on these large-scale commercial nurseries for seedlings,

although they also establish their own over time. Sunshine Seedlings in Pietermaritzburg, Sutherlands in Ixopo are widely used by most commercial farmers within eThekwini Municipality. The proposed vegetable value chain also necessitates the establishment of a commercial seedling nursery within eThekwini.

6.7.Intensive Production

Intensive is production done under protected environments such as tunnels and shade nets. The set-up and maintenance costs are high in this type of operation, hence used for production of high value crops. Small scale Black producers are almost entirely excluded from commercial intensive production due to high set-up costs and skills required to operate such infrastructure. Crops grown under such conditions usually produce higher yields and high great quality. With a lot of crops being seasonal, this model of production ensures availability and supply of crops throughout all seasons. High value crops should be considered under tunnel farming especially where infrastructure exist such as the Agrizone at Dube Trade Port.

6.8.Urban Roof Top Gardens

The latest addition to intensive production model is urban roof top gardens. This practice or method of growing crops is steadily becoming popular in people living in cities where there are high rise buildings and no planting spaces. They then use rooftops of these buildings to set up small gardens and produce fresh produce largely for own consumption. Production in these environments occur minimally and at negligible scale currently. This method of production is not recommended for eThekwini Municipality because of inherent problems such as increase of mosquitos, flies, bees and other insects.

6.9.Extensive Production

- **Under Irrigation**

Access to water is one of the key requirements for any vegetable producer. This method of production is conducted under irrigation which can be in a form of sprinkler, drip or sub-surface irrigation. The requirement is that farmers should register as water users. The recommendation is that, all farmers growing vegetables for market should be capacitated/ assisted to produce under full irrigation. This is the recommended production method for eThekwini farmers.

- **Dryland Production**

Production under dryland occurs purely on open lands and solely dependent on rainfall. Crops normally produced under these conditions include amadumbe, sweet potatoes, pumpkins and okra. Majority of small-scale vegetable producers, who are mainly Black, falls under this category. The bulk of eThekwini farmers are producing under dryland. Support should be given to such farmers to produce under full irrigation, especially those producing for markets.

6.10. Organic Production

Organic food production is a farming system which avoids the use of chemicals, synthetic fertilisers, pesticides, growth regulators and additives. Irradiation and the use of genetically modified organisms (GMOs) or products produced from or by GMOs are generally prohibited in organic farming. With the increase in number of health-conscious population and awareness, there is a growing demand for organically produced vegetables. However, as the population continues to grow, organic farming also lacks the ability to feed many people. Such produce is therefore mainly confined to a niche market which is a fraction in comparison to the rest of the world's population. Within eThekwini Municipality farmers should be encouraged to grow organic vegetables provided there is a sustainable organic market able to absorb the produce. In addition, the cost benefit analysis should guide the establishment of organic farming enterprises.

6.11. Agro-Processing

6.11.1. Industry Role Players

Food production is South Africa's largest manufacturing sector and is dominated by a few very large, diversified, national and multinational food manufacturers. Although there are over 1800 food production companies, the top ten are responsible for 70% of the industry's turnover (Flanders, 2015). South Africa's key players include national and multinational companies such as Tiger Brands, AVI, Premier Foods, Pioneer Foods, FoodCorp, Oceana Group, First SA Foods, Nestle, Clover SA, Parmalat SA, Rainbow, Astral Foods, RCL Foods, Tongaat Hulett, Rhodes Food Group Holdings, Kellogg's SA, and South African Breweries. These food processors tend to be involved in several food groups, have established market shares, and control both production capacity and sales in most food categories.

Despite their limited market share, new entrants and SMMEs play an important role to ensure a dynamic food processing environment in South Africa. Small companies depend on formal retail chains to sell their manufactured products. Big multinational companies, such as Nestle (Switzerland), Unilever-Unifoods (UK/NL), and Borden (US), operate their own manufacturing plants in South Africa. Some multinationals companies do not have processing facilities but have arrangements with local manufacturers. For example, branded packaged foods of Knorr (a Unilever brand) are manufactured under license by Robertson's, a major South African spice packer and food processor (Flanders, 2015).

There is still a need for investment in the downstream food processing level of the value chain. Currently, investments in the South African food processing sector are largely driven by the large food companies listed at the Johannesburg Stock Exchange (JSE), mentioned above. These large food producers account for 74% of total fixed investments in the sector in 2015 (IDTT, 2018). From 2010 to 2015, investments in food processing appear to have barely grown. Even for listed companies, growth in the total asset base has largely been through acquisitions of existing businesses rather than investments in expansion or productive capacity. Food processing firms have been more inclined to grow and diversify their businesses by acquisition in South Africa rather than organic expansion of existing operations and capacity in order to grow market share (IDTT, 2018). On the other hand, South African food processing firms are expanding operations into other sub-Saharan African countries through green field projects (IDTT, 2018).

6.12. Agro-logistics

Transportation of vegetables occurs through different distribution networks. In the main, vegetables are perishables and therefore their transportation is delicate. Depending on where they come from and the distance travelled, temperature-controlled mode of transport is used for transporting vegetables. There are however other forms of vegetables that have a longer life span and do not require refrigerated transportation but protection from direct sunlight and other forms of harsh weather conditions. These include potatoes, onions, cabbages, pumpkins, butternuts, amadumbe etc. The availability of transport facilitates access to market for the farmers. eThekwini vegetable value chain should have transport / agro-logistics component that provide transport services to vegetable producers, especially those without means to take their produce to market.

6.12.Export Markets

Although South African fruit and processed fruit products have a strong export market, there exists a historically poor export market in terms of fresh and processed vegetables (IDTT, 2018). South African vegetable prices often become depressed due to oversupply, and therefore in order for the local industry to grow, the export market needs to expand (Farmer's Weekly, 2018). Obvious expansion would be into African countries. Currently Southern African Development Community (SADC) countries are the largest importers of South African vegetable products. Currently, eThekwini does not have black vegetable producers supplying foreign markets. However, eThekwini remains a strategic exit point for fresh produce exports due to its existing road, air, water and storage infrastructure. The Dube Trade Port remains one of the strategic infrastructures within the municipality but remains underutilised. South Africa as a whole, is an important emerging market and export gateway to sub-Sahara region.

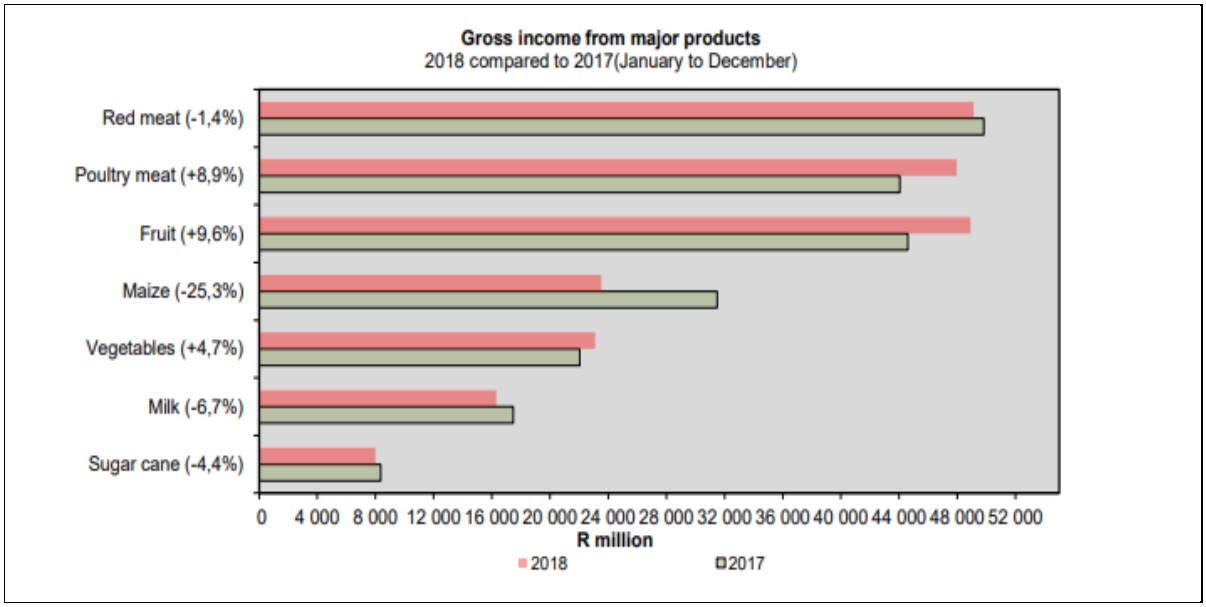
6.13.Opportunity in the Fresh Produce Industry

According to Fresh Produce Importers Association (FPIA) vegetable demand and consumption reflect a positive uptick for the industry which also necessitates importing of additional fresh produce. This uptick is largely attributed to:

- Consumer segments with high standards of living are part of a growing middle class with growing demand for variety and ''out of season'' products
- Increasingly urban consumers with more income and less time create demand for quality and convenience products
- Steady growth in tourism fuels a demand for more variety and growth of food service industry
- Increasing health awareness create opportunities for nutritional/ health and diet products
- Staple foods in traditional SA diet include meat, seafood, maize, vegetables and fruit
- Fresh food consumption is very high and expected to grow with fresh vegetables and fruit experiencing expenditure growth because of increasing health awareness, quality and variety
- Small but growing trend toward organic products
- Food market developing in sophistication with well-developed formal retail market increasingly expanding into rural areas
- Growing retail industry with large supermarket chains expanding into other regions in Africa

Graph 9 is showing performance of various agricultural sub-sectors. Fresh produce is continuing to grow.

Graph 9: Economic Review of the South African Agriculture 2018, DAFF



Source: DAFF, 2018

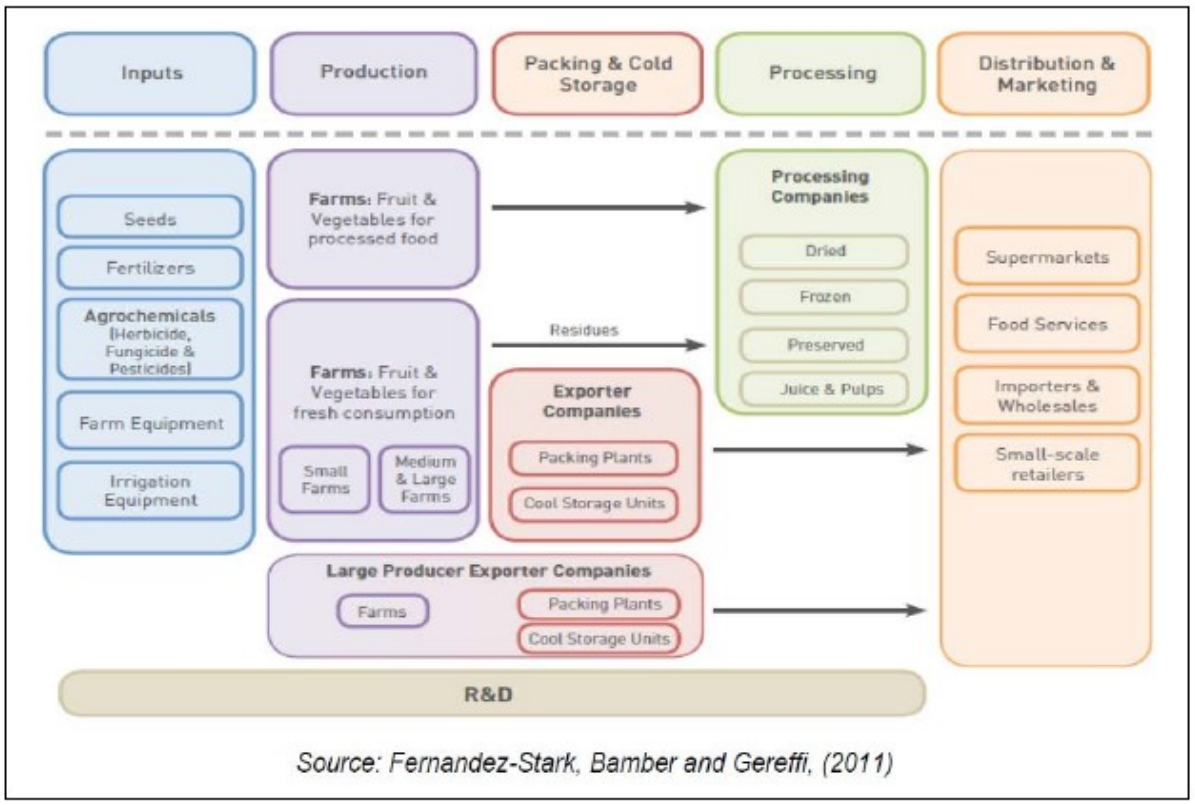
6.14.Packaging and Cold Storage Distribution

Packaging, storage and distribution is critical within the vegetable value chain. Within eThekwini Municipality, the bulk of packaging and storage facilities are largely owned, controlled and operated by large commercial producers such as Bidfood, Fruitspot and others. Black farmers lose their produce at post-harvest stage of the value chain, because they do not have access to such facilities. This also results in them having to end up selling their produce at a loss as they are unable to add value / process or hold on to their produce until the market prices improve. Furthermore, due to lack of proper packaging and storage, their produce fetch low prices at the point of sale as the quality would have deteriorated by the time the produce reaches the market.

eThekwini Municipality has infrastructure that could play a pivotal role in supporting the vegetable value chain. This infrastructure is located at the Durban Fresh Produce Market in Clairwood. The recommendation is to use this infrastructure as the main vegetable packaging, processing and distribution hub for eThekwini. In addition, the Agro-ecology hubs should be

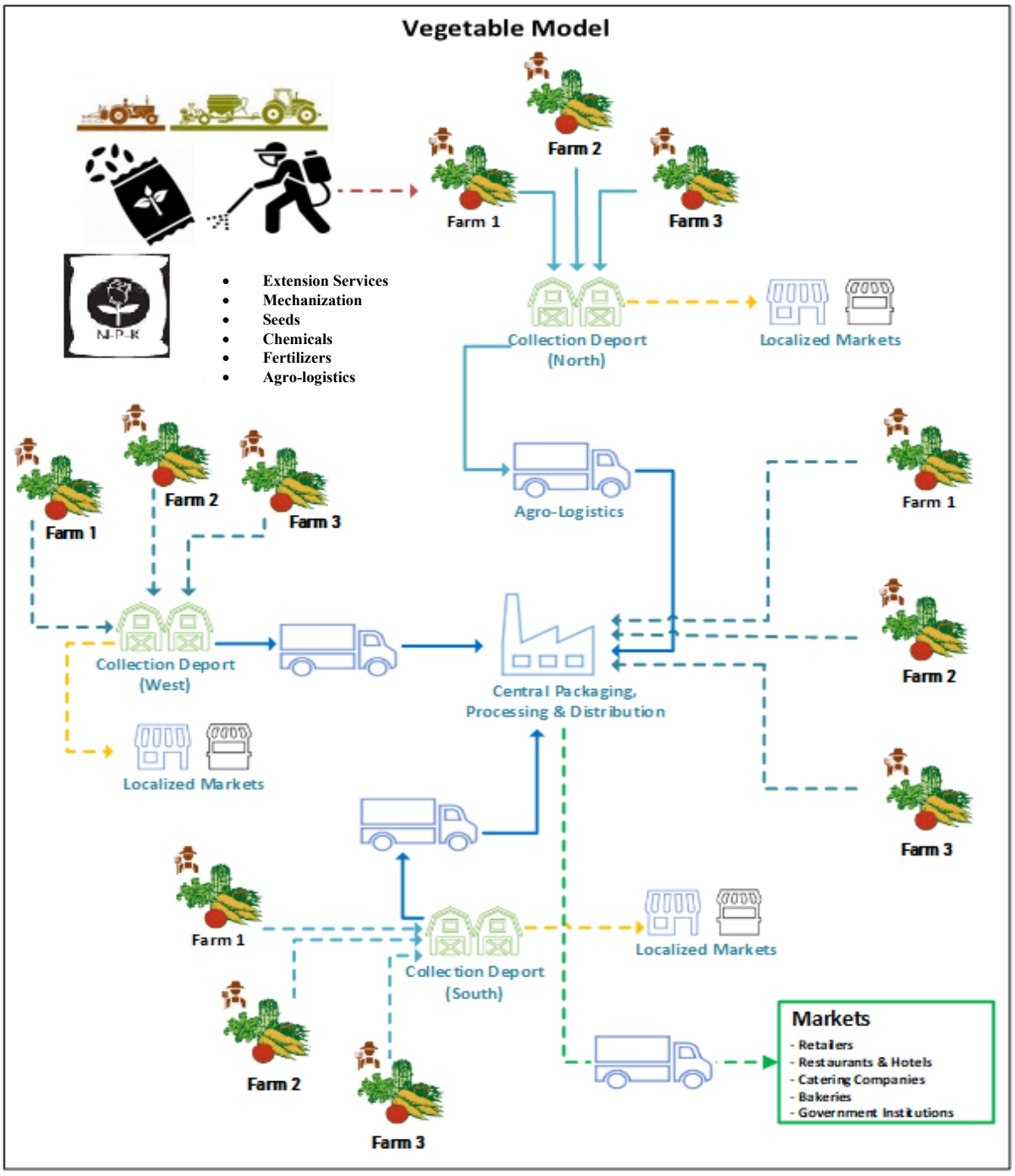
used as collection depots. The vegetable industry value chain is shown in Figure 12. The proposed eThekwini vegetable value chain model is shown in Figure 13.

Figure 12: Vegetables Industry Value Chain



6.15.Proposed eThekwini Fresh Produce Value Chain

Figure 13: Proposed eThekwini Vegetable Value Chain



6.16.Industry Barriers to Entry

Although common across the entire value chain, barriers to entry in this industry are largely dependent on the intended size of operation, markets as well as stage of participation in the value chain. A household vegetable producer will have different entry barriers compared to a commercial producer. Primarily, the following barriers to entry exist in the vegetable industry:

- **Climatic conditions** – vegetable production requires suitable climatic conditions. eThekwini weather is suitable for production of a variety of vegetables.
- **Access to suitable production land** – most farmers find it difficult to access high potential areas for farming. The bulk of agricultural land in eThekwini is characterized as poor to medium potential lands.
- **Access to irrigation water and irrigation infrastructure** – vegetable production requires adequate, clean and consistent water supply. eThekwini Farmers do not have irrigation infrastructure. Any commercial vegetable production should factor the establishment of small irrigation scheme.
- **Lack of technological access** – As technological innovations evolve; farmers need to adopt modern technology for production in order to increase their production and productivity.
- **High start-up capital for commercial operations** – subsistence farmers are not succeeding in the industry due to lack of funds to establish or expand their farming operations.
- **Lack and or inefficient extension support services** – with the changes in the industry, extension support services become critical to disseminate information to farmers.
- **Lack of storage facilities** – most Black farmers are confined to small-scale production due to lack of suitable production infrastructure.
- **Lack of entrepreneurial skills** – some farmers lack business planning and management skills. These skills are needed in any business operation including farming.
- **Limited or lack of access to markets** – small-scale farmers are usually located in remote areas hence they cannot access markets. This is also caused by lack of access to agro-logistics / transport to move produce from farms to markets.
- **Industry and compliance standards** – stringent industry standards and permits requirements such as HACCP, Global GAP etc. Compliance with such requirements is costly and not affordable to the majority of small Black producers. The majority of formal markets are insisting on compliance and certification. None-compliant producers are not able to access such markets. Support will therefore be needed to uplift the farmers in the value chain.

6.17.Industry Compliance Requirements

Industry related SPS requirements, compliance challenges and bio-security risks include:

- Agricultural Pest Act (Act 36 of 1983) - DAFF

- Pest Risk Analysis (PRA)
- Climate change and effect on pest distribution/ outbreaks
- Phytosanitary Certifications
- Food safety requirements (NT)
- Agricultural Product Standards Act (Act 119 of 1990) – DAFF
- Grading, packing and marking – vegetables, potatoes, tomatoes, garlic, onions and shallots
- Foodstuffs, Cosmetics and Disinfectants (Act 52 of 1972) – Department of Health
- Labelling requirements

7. Other Potential Value Chains

Two potential sub-sectors have also been identified for development as follows:

a) Intensive Sheep Farming
b) Cannabis

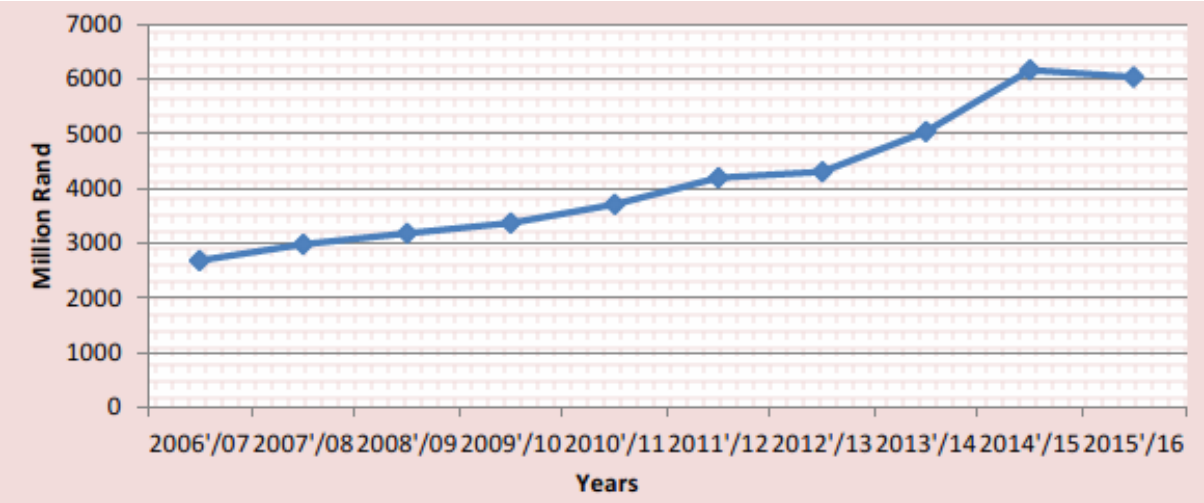
7.1. Intensive Sheep Farming
7.2.Industry Overview

Sheep farming is practiced throughout the country but concentrated in the more arid parts of such as Northern Cape, Eastern Cape, Free State and Mpumalanga Provinces. There are approximately 8 000 commercial sheep farms throughout the country and +/- 5 800 communal farmers. The estimated number of sheep (woolled sheep and non-woolled sheep) in South Africa is estimated to be around 23 million. Sheep farmers are represented by organizations such as Dorper Sheep Breeders' Society of South Africa and Merino SA. Dorper is a highly successful South African-bred mutton breed developed specially for the more arid areas of South Africa. Today they are widely spread throughout the country. The Dorper's excellent carcass qualities in terms of conformation and fat distribution, generally qualify it for top classification. Other mutton breeds that can also produce wool are Damara, Meatmaster, Ille de France, Dormer, Suffolk, Van Rooy and Vandor.

The gross value of mutton production is dependent on the price and quantity of meat produced. Over the past ten years, the average gross production value amounted to R4.1 billion per annum. The gross value of mutton production increased continuously from 2006/07 until 2014/15 and decreased slightly in 2015/16. Declining sheep numbers and rapid population

growth in South Africa have led to an increase in demand and subsequent shortages in the supply of lamb and mutton. The declining of sheep numbers is mainly through the predation and stock theft. Figure 14 shows the gross value of mutton production from 2006/07 to 2015/16.

Figure 14: Gross Value of Mutton Production

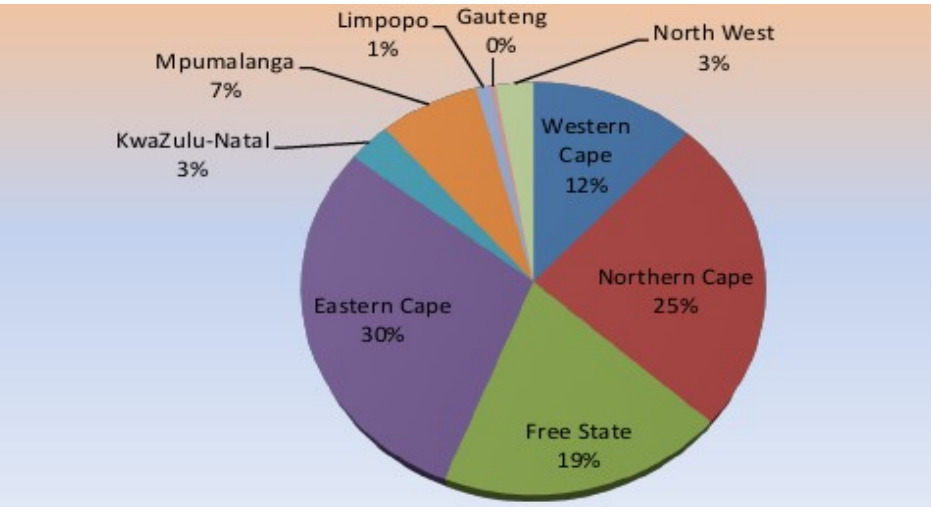


Source: Statistics and Economic Analysis (DAFF, 2017)

7.3.Production Areas

Sheep numbers in South Africa is estimated at 23 million distributed in all nine provinces. Approximately 30% of the sheep are in Eastern Cape followed by Northern Cape with 25% and Free State at 19%, shown in Figure 15. KZN contributes only 3% of the national production.

Figure 15: Distribution of Sheep Per Province



Source: Statistics and Economic Analysis (DAFF, 2017)

7.4.Production trends

Sheep and lamb are slaughtered in abattoirs that are distributed all over South Africa. Slaughtering outside the abattoirs is not recorded. Most of the mutton produced in South Africa is consumed locally. Figure 16 shows the comparison between mutton produced and its consumption in South Africa. The below analysis shows that, consumption is exceeding the supply during the period under review. This presents an opportunity to small producers that want to be role players in the sheep farming industry.

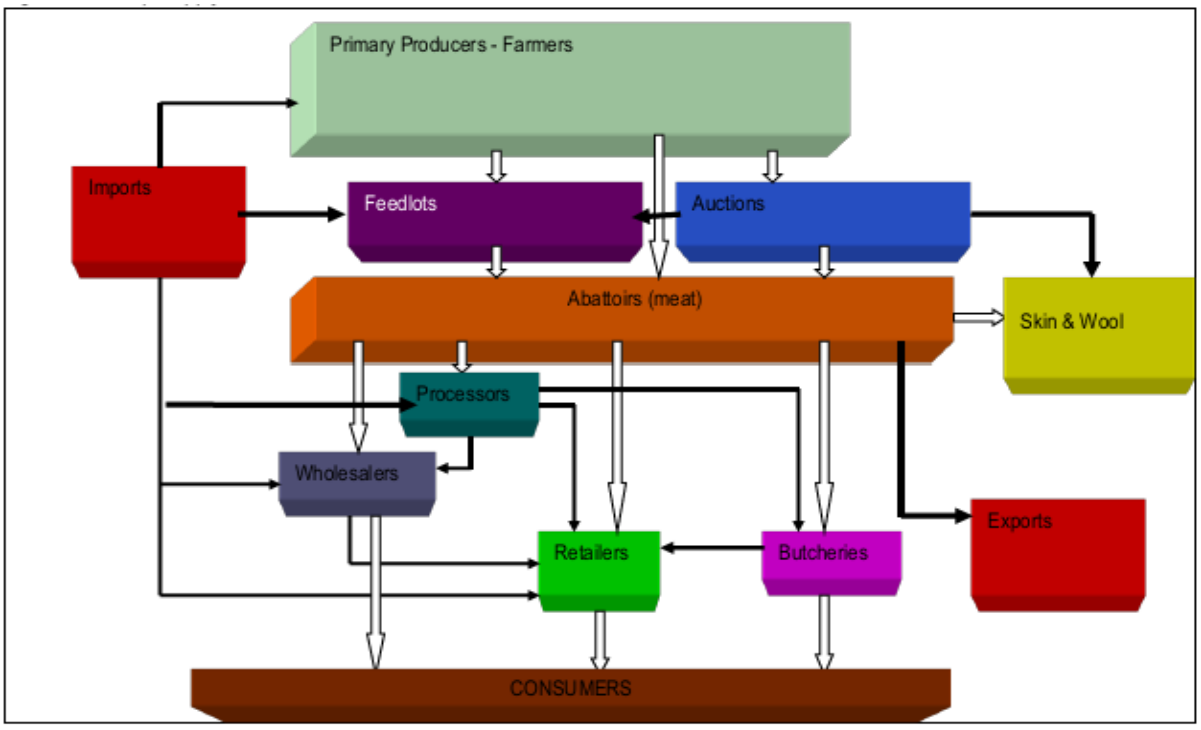
Figure 16: Production Vs Consumption

Source: Statistics and Economic Analysis and Quantec Easydata

7.5.Marketing Channels

The lamb and mutton marketing channel (Figure 21) begin with the farmer who produces sheep and lamb. Meat from abattoir is distributed through wholesalers, retailers and butcheries. Some is exported or processed. Imports of meat are done by retailers and wholesalers and processors while exports are mainly by abattoirs. The final stage of the sheep supply chain and marketing channel end with the consumer. The sheep value chain is presented in Figure 17. The target market is retail and meat wholesalers.

Figure 17: Sheep Industry Value Chain



Source: DAFF, 2017

7.6.Proposed Sheep Value Chain for eThekwini

eThekwini Metro is a major lamb and mutton market in KwaZulu-Natal. However, production in the entire KZN remains below 5% of the total national production. Feasibility study on sheep value chain was commissioned by eThekwini Municipality and findings are summarized below:

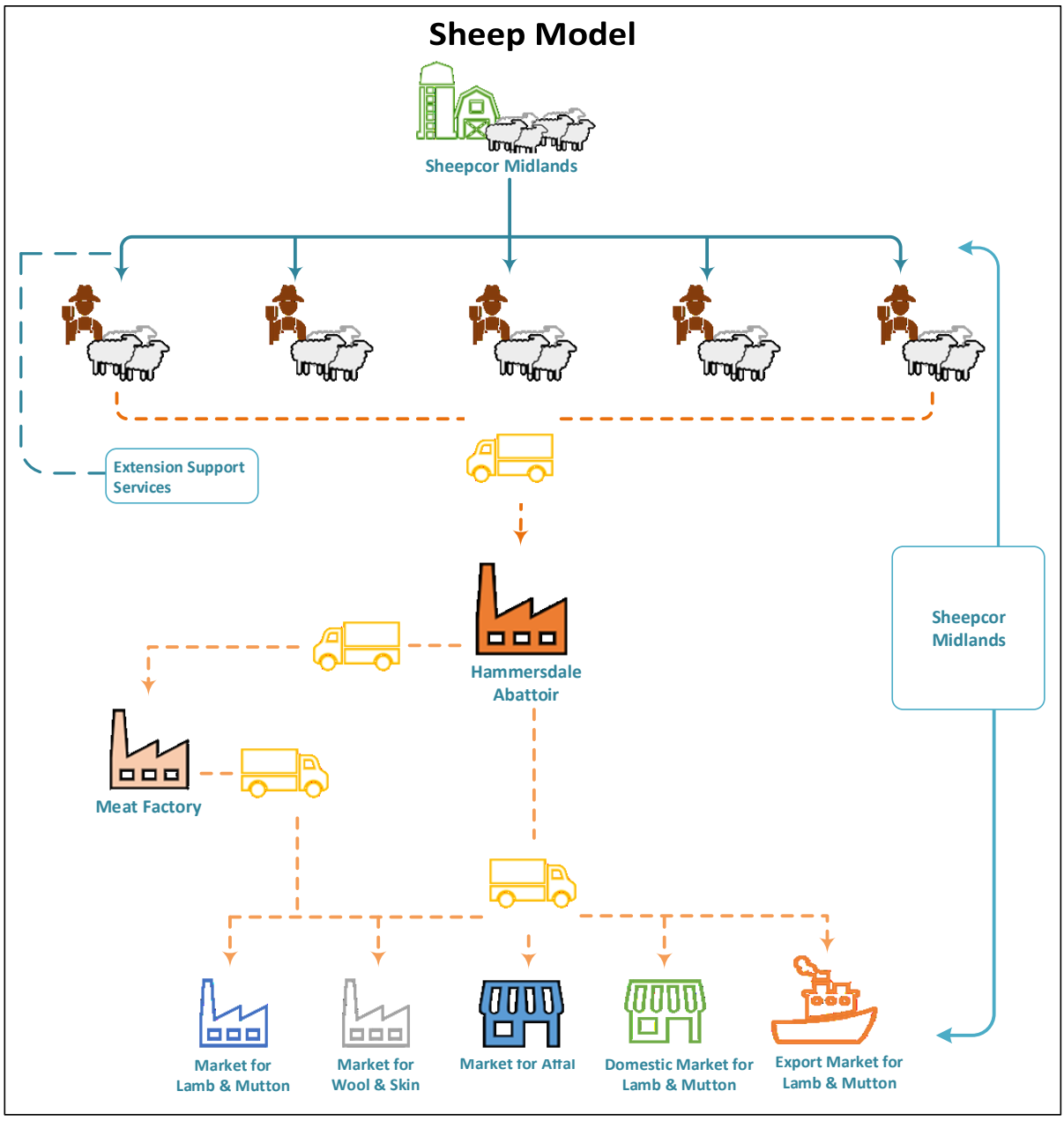
- eThekwini Municipality does not have big enough land for extensive sheep farming,
- eThekwini consume more lamb and mutton than any other municipality in KZN,
- Bulk of the lamb and mutton consumed in eThekwini is imported from other municipalities, provinces and outside the country,
- eThekwini does not have dedicated sheep abattoirs,
- eThekwini can be one of the major players in the industry also in terms of export because of its enabling infrastructure (sea – Durban Habour, air – Dube Trade Port and road – N2 North, N2 South and N3 corridors),

Based on the above finding, the recommendations are:

- To establish intensive sheep farming operations,
- eThekwini Municipality has some basic infrastructure that could be used for intensive sheep farming.

- One of the farmers has certificate / authorization to establish a sheep abattoir with a capacity of 150 animals per day. This will be a first sheep abattoir in eThekwini municipality.
- The recommendation is to set-up at least 10 sheep out-growers based on the envisaged capacity of the local abattoir and to link the project to similar initiatives being implemented in the province such as the Sheepcor Midlands Program. The proposed sheep value chain is presented in Figure 18.

Figure 18: eThekwini Sheep Value Chain



a) Role Players in the Value Chain

- Out-growers – initially, ten out-growers will be established. These are smallholder farmers that will be feedlotting 800 lambs per cycle of 60 days in order to slaughter 400 lambs per month each out-grower.
- Hammerdale Abattoir: – in Hammersdale, one farmer has authority to establish a dedicated sheep abattoir with a slaughter capacity of 150 sheep per day. This abattoir is part of the broader plan to establish a sheep value chain within eThekwini Municipality.
- Sheep Industry Experts – various sheep industry experts and association should assist with setting up of the proposed eThekwini Sheep Value Chain including training of the farmers.
- Extension Services: – extension services will be provided by KZN Department of Agriculture and Rural Development and sheep industry experts through breeders' societies such as Dorper Sheep Breeders' Society of South Africa and others.
- Markets: – various markets have been engaged and are willing to purchase lamb and mutton from this initiative such as the Spar Group. Wool will be supplied to BKB, and skin to other various markets that have been identified. Offal market has also been identified.
- The proposed eThekwini Agribusiness Development Unit - the municipality through the proposed agribusiness development unit will assume the following responsibilities:
    - Approve policies that will allow the establishment of the sheep value chain,
    - Create strategic relationships with role players in the industry,
    - Facilitate investment in the sheep value chain.
    - Commission the development of business plans for various sheep value chain components
    - Drive the investment strategy in eThekwini agribusiness sectors
    - Facilitate land access,
    - Collaborate with the initiative to approve EIAs where necessary.

b) Approach

A total of ten out-growers will be established over three years. Each out-grower will be capacitated to sell 400 lambs per month (or have capacity of 800 lambs per cycle of 60 days). Lambs ready for slaughter will be sent to the abattoir monthly. The abattoir will also buy directly from the out-growers to supply its markets (domestic and foreign). Industry experts working in the project will ensure that all products, meat, wool, skin and offal are sold to various markets and farmers are paid correctly.

8. Cannabis Value Chain Development

8.1.Industry Overview

Cannabis is a flowering plant that belongs to the family *Cannabaceae* and is native to the Asian subcontinent. It refers to a group of three plants with psychoactive properties, known as *Cannabis sativa, Cannabis indica, and Cannabis ruderalis*. Different strains of the cannabis plant produce different types and levels of the 113 cannabinoid chemicals found in cannabis. Most growers that supply the medical industry plant either the *indica* or s*ativa* subspecies.

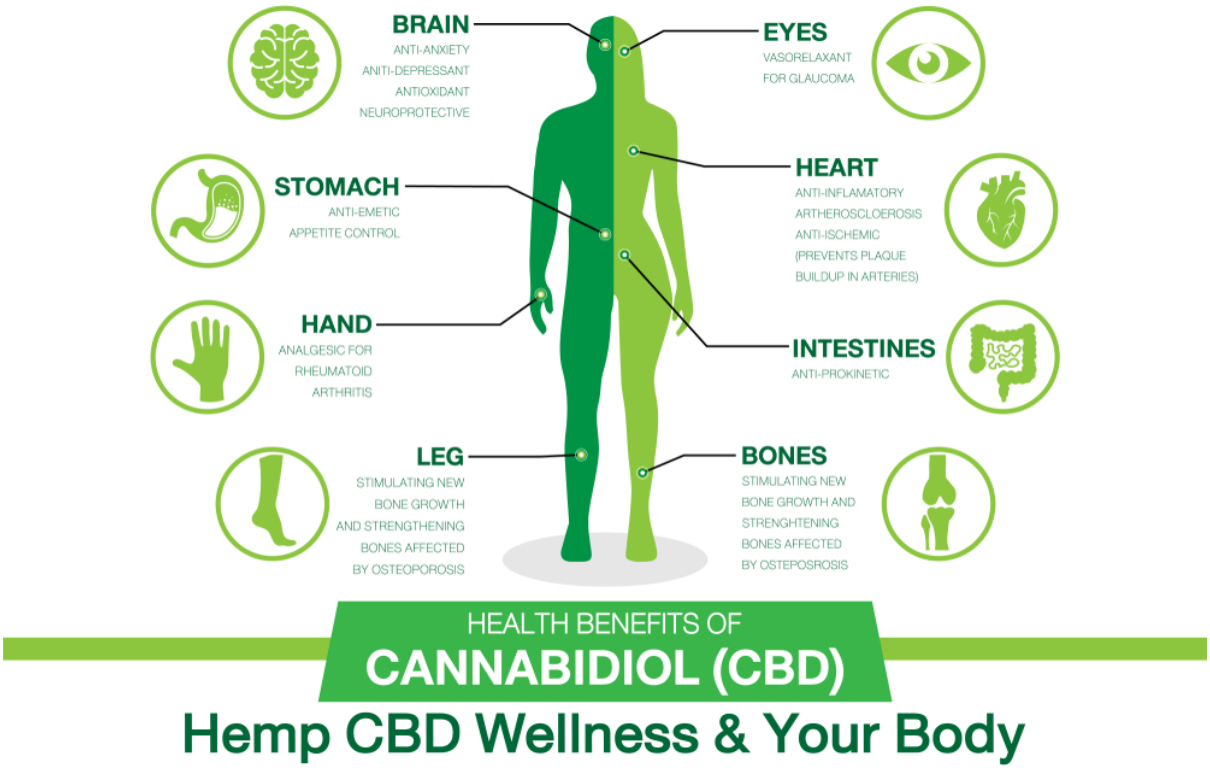
The cannabidiol (CBD) and tetrahydrocannabinol (THC) uses are:

CBD - this is a non-psychoactive cannabinoid, meaning it won't get you "high." It's often used to help reduce inflammation and ease pain. It also helps with nausea, migraines, seizures, and anxiety. Researchers are still trying to fully understand the effectiveness of its medical use.

THC - this is the main psychoactive compound in cannabis. THC is responsible for the "high" that most people associate with cannabis.

There are cannabis products that contain just CBD, THC, or a combination of both. But the dried flower that most people associate with cannabis contains both cannabinoids, though certain strains may have much more of one than the other. Hemp has large quantities of CBD, but no THC.

Figure 19: Health Benefits of Cannabidiol (CBD)



Hemp, (Cannabis sativa), also called industrial hemp, plant of the family Cannabaceae cultivated for its fibre (bast fibre) or its edible seeds. Hemp is sometimes confused with the cannabis plants that serve as sources of the drug marijuana and the drug preparation hashish. Although all three products—hemp, marijuana, and hashish—contain tetrahydrocannabinol (THC), a compound that produces psychoactive effects in humans, the variety of cannabis cultivated for hemp has only small amounts of THC relative to that grown for the production of marijuana or hashish. According to research done by the Prohibition Partners, cannabis has been cultivated and used on the African continent for centuries (The African Cannabis Report, March 2019). In some regions, the plant is widely used for its medical capabilities, financial benefits or as traditional way of healing. Despite it being illegal in most African Nations, it is widely cultivated and consumed. Of the 54 African Countries, 48 of them have given cannabis an illegal status for both medical and recreational use. Only 6 countries in Africa have mixed statuses with regard to cannabis and its uses as shown in Table 11.

Table 11: Legal Status of Cannabis Across Africa in 2018

Country	Medical Use	Recreational Use
Egypt	Illegal	Illegal but tolerated
Lesotho	Legal	Illegal
Morocco	Illegal but unenforced	Illegal but unenforced
South Africa	Legal	Decriminalised for private cultivation and consumption
Zambia	Legal but not enacted	Illegal
Zimbabwe	Legal	Illegal

Source: The African Cannabis Report (2019)

The UN estimates that more than 38 000 tonnes of cannabis are produced across Africa each year, with a market value worth billions of dollars. However, cannabis remains illegal across vast swathes of the continent as African governments have yet to follow the trend of legalisation that is sweeping across Europe, North America and Latin America. According to the UNODC's 2018 Drug Report, Ghana, Nigeria, eSwatini and Mozambique are currently the primary trafficking and origin points of cannabis in Africa. The rise of indoor cultivation has meant that cannabis is mostly trafficked within the region where it is produced. Whilst most of the cannabis produced in Africa is consumed locally, several countries including Ghana,

Nigeria, South Africa and Zambia have identified European markets (primarily in the UK, Netherlands and Italy) as the possible final destinations for cannabis.

The African Cannabis Report (March 2019) by Prohibition Partners has estimated that in 2023 the total market value of South African cannabis industry will be around $1.8 billion (assuming there is wholesale legislation and regulation of the cannabis industry). The global legal cannabis market is estimated to reach $146 billion by the end of 2025 and South Africa's progressive stance towards the green plant is likely to make the country one of the major players in the international market (J van der Linde, 2019).

8.2.Local Industry Developments

The local development of the cannabis industry has been widely recognised and, in some instances, pursued by some countries. This has resulted in several Cannabis Expos aimed at creating more awareness and thus educating communities about this industry. South Africa and some of its neighbouring countries recognise the socio-economic potential that the industry has and this has resulted to the following developments:

- Neighbouring African countries such as Lesotho and Zimbabwe have made significant changes to their laws and policies on legalising cannabis for medical and research purposes. In 2017, Lesotho became the first African nation to grant a license for the cultivation of medical cannabis (The African Cannabis Report, 2019).
- In September 2018, the Constitutional Court ruled that it is not a criminal offence for an adult citizen to use, possess or grow cannabis in private for personal consumption. The court gave parliament 24 months from the date of the judgment to bring the ruling in line with South African laws, with a new bill expected to be released soon.
- In his budget speech, the Minister of Finance, Mr Tito Mboweni, opined on policy changes in the cannabis industry, which can result in a potential source of revenue for South Africa.
- In her budget policy speech, KZN Economic Development, Tourism and Environmental Affairs (EDTEA), MEC Nomusa Dube-Ncube also highlighted the importance of Cannabis and the commitment from government to ensure regulation and licencing growers and extraction factories.
- The City of Cape Town, along with Wesgro, announced the release of vacant land for the production of medical cannabis, which will set the foundation to unlock Cape Town's potential in this untapped sector.

- The Eastern Cape premier Oscar Mabuyane, also recently stated that he wants to make Eastern Cape home to South Africa's first cannabis industry.

8.3.Cannabis Uses

Cannabis is used as follows:

a. Medical Cannabis: – refers to cannabis based or plant derived cannabis products as prescribed by a medical practitioner for the treatment of specific medical conditions or diseases
b. Recreational Cannabis: – refers to any cannabis used for non-medical purposes and includes products available on the black market. It ordinarily has a higher concentration of THC, the psychoactive properties of the cannabis plant. It is illegal in many countries and states. People tend to smoke (or consume via edibles) recreational cannabis or use oils and vaporised products
c. Pharmaceutical Cannabis: - refers to products formulated using pure cannabinoids (either plant extracted or synthetic) that have been through full clinical trials and licensed as a medicine. Examples of such products include Sativex, Epidiolex, Cesamet, Marinol and Syndros.
d. CBD Infused Goods: – such as CBD-infused consumer goods, capsules and oils products that may be used for wellness purposes such as those used for sleep, or pain or anxiety management.
e. Industrial Cannabis – these include all products such as clothes which are made from the hemp fibre.

Previously in South Africa, licensed domestic cultivation of medical cannabis aimed at ensuring sufficient local supply for medical, scientific and clinical research purposes. Conditions considered for medical cannabis are:

- HIV/AIDS;
- severe chronic pain;
- severe muscle spasms, vomiting or wasting because of cancer;
- severe seizures in patients with epilepsy where other treatment options have failed or have intolerable side effects

8.4.The South African Legislative Framework on Cannabis

South Africa is a signatory to the United Nations Single Convention on Narcotic Drugs (1961), an international treaty that prohibits the production and supply of specific narcotic (including cannabis) except under license for specific purposes, such as medical treatment and research. Therefore, the following Drugs Acts are applicable within the country:

- The Drugs and Drug Trafficking Act No 140 of 1992 ("Drugs Act")
  The Drugs Act was enacted to outlaw the production, possession and supply of drugs (including cannabis). The Drugs Act prescribes and imposes criminal penalties for the production, possession and supply of cannabis (listed as an *undesirable dependence-producing substance*).

- Medicinal and Related Substances Act No 101 of 1995 ("Medicines Act")
  The Medicines Act regulates the use of cannabis, among other substances. The Medicines Act prohibits the acquisition, use, possession, manufacture, supply, sale or administration of cannabis unless it is done for medicinal or research purposes (section 22A(9)(a)(i) and Section 22A(10) read with schedule 7 of the Medicines Act).

8.5.African Cannabis Market Size

The African Cannabis Report estimates that, by 2023, the value of Africa's legal cannabis market could be worth over $US7.1b. These figures are based on the country markets that were profiled during their research which assumed a fully legal and regulated cannabis industry by 2023. Figure 24 shows key statistics for the African Cannabis industry. Figure 25 indicates that Nigeria is the top country in Africa in terms of cannabis consumption.

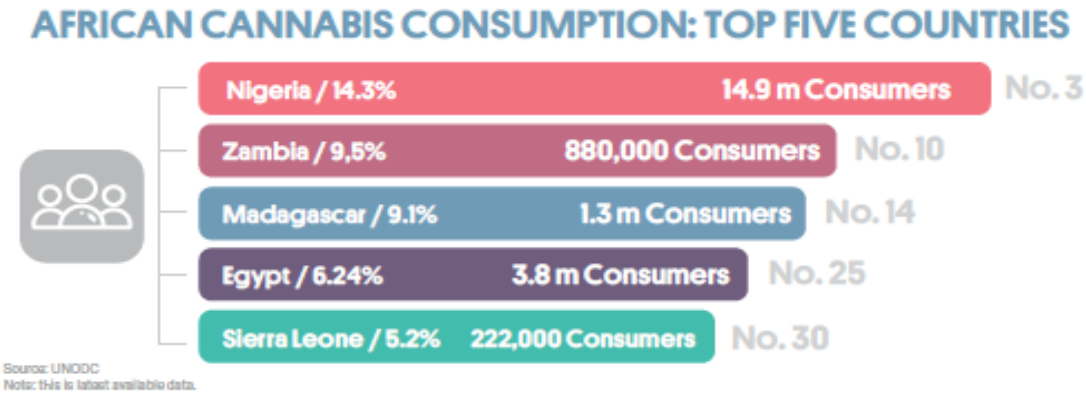
Figure 20: Key Statistics for the African Cannabis Industry (UNODC, 2016)

Population, 2018 (m)	1,200
Estimated No Patients, 2023 (m)	0.42
GDP, 2017 (US$ t)	1.6
Total Healthcare Expenditure, 2018 (US$ b)	140
Total Pharmaceutical Expenditure, 2015 (US$ b)	21
Estimated cannabis users, 2016 (aged 15-64)	76
Total Estimated Cannabis Market Value, 2023 (US$ b)*	>7.1
Estimated medicinal cannabis market value, 2023 (US$ b)*	>0.8
Estimated recreational cannabis market value, 2023 (US$ b)*	>6.3

*Estimates assume that by 2023, all countries profiled (South Africa, Zimbabwe, Lesotho, Nigeria, Morocco, Malawi, Ghana, eSwatini and Zambia) will have legalised medical cannabis and regulated recreational use.
Values are calculated only on country markets profiled in this report
Source: World Bank/ UNODC/ Prohibition partners

Source: UNODC, 2019

Figure 21: Top 5 African Countries on Cannabis Consumption



Source: UNODC, 2016

8.6.Local Cannabis Industry

In 1999, the Department of Health issued legal permits to the House of Hemp to conduct research on the health benefits of pharmaceutical grade CBD and other cannabinoids. Based in Dube Trade Port, the company was established in 1999 as part of the National Hemp Foundation project which was formed to conduct legal research into hemp fibre and seeds, fibre production, and hemp CBD. A recent site visit (August 2019) indicated that there is currently no production, however plans are underway to bring the facility into production. According to information received from The House of Hemp, there are approximately 900 cannabis growers nationally, with 200 of them based within eThekwini Municipality.

In May 2018, South Africa's first medical cannabis dispensary opened in Durban. One of the centre's founder creators is Krithi Thaver, the founder of Canna Culture and chair of the KwaZulu-Natal branch of the Cannabis Development Council of South Africa.

8.7.South African Cannabis Industry Organisations

There are several key cannabis industry role players in South Africa which have largely contributed to the industry's growth and changes in laws and policies. Table 12 lists these organisations:

Table 12: South African Cannabis Industry Organisations

Cannabis Development Council of South Africa	The Cannabis Developing Council of South Africa (CDCSA) was formed in 2015, ahead of the imminent legalisation of cannabis in South Africa. The council has been set up to position the Eastern Cape as South Africa's pioneering Cannabis agro-processing hub. It is a self-regulating Cannabis Industry Association which will work in association with the National Hemp Foundation to help regulate and control South Africa's cannabis industry.
National Hemp Foundation	The National Hemp Foundation (NHF) was

	launched in 2001. NHF is composed of public and private-sector players who work to coordinate the emerging hemp industry. Dr Thandeka Kunene has been the national coordinator of the NHF since 2007 and has overseen all commercial incubation research trials since 2010.
The Dagga Couple	A campaign group founded by Julian Stobbs and Myrtle Clarke following their arrests for possession and dealing cannabis in 2010. In 2017, the couple sued the seven sectors of the South African government that maintained and enforced cannabis prohibition resulting in the much publicised "Trial of the Plant".
Fields of Green for All	A pro-legalisation not-for-profit organisation that seeks to drive a constructive conversation around the legalisation of cannabis use. Founded by Julian Stobbs
Doctors for Life International	Doctors for Life is a non-governmental and registered not-for-profit organisation made up of doctors, specialists, dentists, veterinary surgeons, and professors of medicine spanning a range of medical faculties across South Africa and abroad. The group has lobbied against the legalisation of cannabis in South Africa on the grounds that there is not yet enough evidence to support the health benefits of the plant.
The Clear Option	A drug-testing company which launched in 2007the Anti-Drug Alliance.

8.8.Cannabis Cultivation Licencing in South Africa

The legislation of the cultivation of medical cannabis in South Africa is developed by the Department of Health and the South African Health Products Regulatory Authority (SAHPRA). SAHPRA formally known as the Medicines Control Council (MCC) was formed by the South African government to oversee the regulation of health products. SAHPRA regulates the licence application under section 22C(1)(b) of the Medicines Act and provides guidelines and licence requirements for any commercial enterprise that wishes to cultivate, extract and/or test cannabis and cannabis resin, including the manufacture, import, export and/or distribution of cannabinoid-containing products. The two main objectives of the cannabis cultivation license application can be summarised as follows:

- Firstly, the legitimacy of the cannabis must not be compromised; and
- Secondly, all necessary steps must be taken to prevent the deviation of cannabis for illegal purposes

Encapsulating from these objectives – the license application must address the following:

- the personal information regarding the license holder, their businesses associates and their employees
- training programs for employees
- security protocol
- building and infrastructure
- storage and distribution
- equipment
- record keeping and reporting; and
- proper procedures for the harvesting and production of the cannabis.

8.9.Industry Growth Opportunities

The *African Cannabis Report* (March 2019) has estimated that in 2023 the total market value of South African cannabis industry will be around $1.8 billion (assuming there is wholesale legislation and regulation of the cannabis industry). There is increasing demand for cannabis-based medicines. With the SA government having decriminalised cannabis use, particularly for medical use, there are opportunities of growing the industry in a more responsible way. This trend will create huge opportunities for the South African cannabis industry in the following value chains:

- At Production Level: – farmers in mostly rural areas will now be able to legally take part in the more lucrative medical cannabis through legally recognised markets, both locally and internationally,
- Traditional Healers: – will also be able to participate meaningfully in the industry, thereby creating an income generation avenue for themselves,
- At Processing Level: – it is anticipated that a considerable number of high-end jobs can be created in the processing stage of the cannabis due to the vigorous and intensive methods used during this process
- At Distribution Level: – transporting of cannabis ready seeds from growers to processors and markets will also create additional jobs

Overall, the cannabis industry, if well supported, will create a number of sub-industries which will contribute to the economy. Figure 22 outlines opportunities in the cannabis value chain.

Figure 22: Cannabis Commercial Opportunities

Core Segment	Production	Processing	Distribution & Retail	Digital	Ancillary
Sub-segment	Commercial seed growers and suppliers	Industrial Processing	Distribution	Information	Real Estate
	Production equipment manufacturers & suppliers	Industrial Manufacturing	Transport (standard and secure)	Communities	Legal
	Cultivation of Medical grade Cannabis	Medicinal Processing	Online (ecommerce)	Data	Finance
	Cultivation of Recreational grade Cannabis	Medicinal Manufacturing	Off line (Bricks & Mortar)	Marketing	Consulting
	Cultivation of Industrial grade Hemp	Recreational Processing		Software	Technology
	Testing & Quality Control	Recreational Manufacturing			

Source: Prohibition Partners (2019)

8.10. Industry Barriers to Entry

Commercial cannabis in South Africa is permitted for medical use. There are several barriers of entry to this industry due to it being highly regulated. These barriers include but not exhaustive to the following:

- Lengthy and costly licencing process,
- High setup cost for planting infrastructure – cannabis for medicinal use is grown under green houses in order to control quality and reduce pathogens and nematodes. According

to a report by Landbouweekblad (a farming magazine), the estimated cost of setting up a production facility and preparing an application range between R3 million and R5 million.

- High energy bill due to plant temperature control demands,
- Highly specialised processing skills are required,
- Access to clean water – water needs to be first tested before use,
- Security risk: – risks of it being stolen and illegally distributed requires a high level of security measures which can be costly,
- Access to suitable seeds supply – high quality seeds are currently being imported at high costs from some European and US countries as these countries have invested and over time improved their cannabis seeds,
- High industry regulations – which often disadvantage the emerging producers,

8.11. Recommendations on the cannabis value chain

According to various research reports on cannabis, medicinal cannabis is the more lucrative component of cannabis production in terms of value and socio-economic benefits. At present, the use of cannabis as a medicine has not been rigorously tested in South Africa due to production restrictions and other regulations (The African Cannabis Report, 2019). Cannabis in eThekwini is mainly produced for recreational and industrial purposes. Limited research has been conducted on the medical use of cannabis. Dr Thandeka Kunene, Founder of House of Hemp, also stated in one of her radio interviews (Radio 702, December 2018) that; the company's research has focused on hemp, which is a strain of cannabis grown for industrial uses of its derived products. Going forward, they are planning to produce active pharmaceutical cannabinoids, which will be grown partly from hemp and partly from CBD purchased from farms within the country.

Wandile Sihlobo, Chief Economist at Agricultural Chamber of Business also agrees that more research needs to be undertaken with regards to the commercial trading of cannabis in the country. He was quoted in the recent Cannabis Expo in Cape Town as saying:

"Overall, I am not arguing for any particular policy position regarding cannabis, but rather for increased research which would assist policymakers in evaluating the benefits, and possible unintended consequences of growing and trading cannabis. This should take stock of the changing perceptions surrounding this crop globally, and its growing demand and commercial value."

Cannabis for medical purposes is highly regulated and its production requirements are very strict. Although there are several research literatures on cannabis which reflect this industry as having a high growth potential, eThekwini should consider a phased approach towards making cannabis one of its key agricultural commodities within the municipality. Therefore, it is recommended that eThekwini prioritises medical cannabis in a phased approach as follows:

- Commission an in-depth research and due diligence studies on all activities involved in the cannabis value chain as well as its potential in contributing to eThekwini's economic growth
- As a cannabis producer licence holder within eThekwini, conduct trials with The House of Hemp at the existing Dube Trade Port facilities in order to:
    - Ascertain suitability of the existing infrastructure at the Dube Trade Port
    - Provide adequate resources to The House of Hemp to support conducting of trials,
    - Establish suitable seed supply for intended purposes,
    - Perfect production methods from seed production to final medicinal products,
    - Provide capacity building to House of Hemp that is informed by real time trials,
    - Provide training to potential cannabis farmers.
- Establish a verified database of all farmers that are involved in cannabis production under eThekwini,
- Conduct due diligence on those farmers to ascertain their needs and capacity as producers,
- Conduct a thorough due diligence on potential markets (local and international) with regards to their needs and product standards,
- Establish a value chain whereby the Dube Trade Port greenhouses, if trials have confirmed their suitability, become the anchor driver of the model that supports other smaller growers throughout eThekwini Municipality with regards to, e.g.:
    - Training
    - Access to markets
    - Processing facilities
    - Access to inputs (seeds)
    - Research and development

The above, once concluded, will provide eThekwini Municipality with detailed financial requirements to firmly establish this Cannabis Value Chain.

9. Required Investment

The following agricultural value chains have been identified for development:

a) Piggery

b) Broilers

c) Layers

d) Vegetables

e) Intensive Sheep Farming

The required investment in each value chain is summarized below:

9.1. Financial Summary

9.1.1. Capital Structure

Summary - Total Investment	Anchor Farms		Out Growers				Community	Vegetables	Total
	Broiler	Piggery	Broiler	Piggery	Egg Production	Sheep	Egg Production	300 Ha Land	
Capital Expenditure	238 172 321	139 853 989	238 172 321	40 210 986	110 102 766	27 862 456	28 582 733	25 254 000	848 211 572
Working Capital	7 500 000	23 876 321	15 000 000	7 500 000	10 000 000	6 555 000	6 500 000	3 800 000	80 731 321
Total Investment	**245 672 321**	**163 730 310**	**253 172 321**	**47 710 986**	**120 102 766**	**34 417 456**	**35 082 733**	**29 054 000**	**928 942 893**
Capital Structure									
Equity / Grant	98 268 929	65 492 124	101 268 929	19 084 394	48 041 106	13 766 982	14 033 093	11 621 600	371 577 157
Debt	147 403 393	98 238 186	151 903 393	28 626 591	72 061 660	20 650 473	21 049 640	17 432 400	557 365 736
Total Investment	**245 672 321**	**163 730 310**	**253 172 321**	**47 710 986**	**120 102 766**	**34 417 456**	**35 082 733**	**29 054 000**	**928 942 893**

A. Financial Performance

1) Piggery Anchor Farm

- *Capital Structure*

Project Costs	Anchor Farm
- Capital Expenditure	R 139 853 989
- Working Capital	R 23 876 321
Total Project Investment	**163 730 309,60**

- *Financial Performance*

Financial Perfomance	Ave Per Month	Per Annum	Cummulative 10 Year
Revenue	R 6 578 963	R 78 947 553	R 789 475 535
Gross Profit	R 2 917 353	R 35 008 239	R 350 082 392
Gross Profit margins	44%	44%	44%
EBITDA	R 2 257 268	R 27 087 217	R 270 872 169
EBITDA margins	34%	34%	34%
NPAT	R 397 702	R 4 772 427	R 47 724 270
Cummulative Cash	R 752 416	R 9 028 989	R 90 289 889

2) Piggery – Out Growers

- *Capital Structure*

Project Costs	Per Out Grower	10 Out Growers
- Capital Expenditure	R 4 021 099	R 40 210 986
- Working Capital	R 750 000	R 7 500 000
Total Project Investment	**4 771 098,56**	**47 710 985,56**

- *Financial Performance*

Financial Perfomance	Ave Per Month	Per Annum	Cummulative 10 Year	Cummulative 10 O/G's 7 Years
Revenue	R 175 439	R 2 105 268	R 21 052 681	R 210 526 809
Gross Profit	R 90 312	R 1 083 743	R 10 837 434	R 108 374 343
Gross Profit margins	51%	51%	51%	51%
EBITDA	R 70 847	R 850 159	R 8 501 591	R 85 015 912
EBITDA margins	40%	40%	40%	40%
NPAT	R 21 123	R 253 470	R 2 534 703	R 25 347 027
Cumulative Cash	R 29 385	R 352 617	R 3 526 166	R 35 261 657

3) Broilers – Anchor farm

- *Capital Structure*

Project Costs	Anchor Farm
- Capital Expenditure	R 238 172 321
- Working Capital	R 7 500 000
Total Project Investment	**245 672 321,25**

- *Financial Performance*

Financial Perfomance	Ave Per Month	Per Annum	Cummulative 10 Year
Revenue	R 26 713 357	R 320 560 281	R 3 205 602 811
Gross Profit	R 5 067 404	R 60 808 842	R 608 088 420
Gross Profit margins	19%	19%	19%
EBITDA	R 5 197 198	R 62 366 378	R 623 663 776
EBITDA margins	19%	19%	19%
NPAT	R 2 185 882	R 26 230 584	R 262 305 842
Cummulative Cash	R 1 215 512	R 14 586 148	R 145 861 477

4) Broilers - Out Growers

- *Capital Structure*

Project Costs	Per Out Grower	10 Out Growers
- Capital Expenditure	R 23 817 232	R 238 172 321
- Working Capital	R 1 500 000	R 15 000 000
Total Project Investment	**25 317 232,13**	**253 172 321,25**

- *Financial Performance*

Financial Perfomance	Ave Per Month	Per Annum	Cummulative 7 Year	Cummulative 10 O/G's 7 Years
Revenue	R 2 827 041	R 33 924 494	R 339 244 938	R 3 392 449 385
Gross Profit	R 662 446	R 7 949 350	R 79 493 499	R 794 934 994
Gross Profit margins	23%	23%	23%	23%
EBITDA	R 655 330	R 7 863 954	R 78 639 543	R 786 395 431
EBITDA margins	23%	23%	23%	23%
NPAT	R 295 982	R 3 551 787	R 35 517 875	R 355 178 749
Cummulative Cash	R 197 229	R 2 366 750	R 23 667 501	R 236 675 014

5) Egg Production – Out Growers

- *Capital Structure*

Project Costs	Per Out Grower	10 Out Growers
- Capital Expenditure	R 11 010 277	R 110 102 766
- Working Capital	R 1 000 000	R 10 000 000
Total Project Investment	**12 010 276,62**	**120 102 766,20**

- *Financial Performance*

Financial Perfomance	Ave Per Month	Per Annum	Cummulative 10 Year	Cummulative 10 O/G's 7 Years
Revenue	R 1 673 112	R 20 077 347	R 200 773 473	R 2 007 734 732
Gross Profit	R 402 176	R 4 826 113	R 48 261 129	R 482 611 292
Gross Profit margins	24%	24%	24%	24%
EBITDA	R 185 532	R 2 226 380	R 26 716 561	R 267 165 607
EBITDA margins	11%	11%	13%	13%
NPAT	R 61 550	R 738 605	R 7 386 049	R 73 860 494
Cummulative Cash	R 90 572	R 1 086 867	R 10 868 670	R 108 686 700

6) Egg Production – Household Turnkey Solution

- *Capital Structure*

Project Costs	Comm Grower	0 Comm Growers
- Capital Expenditure	R 285 827	R 28 582 733
- Working Capital	R 65 000	R 6 500 000
Total Project Investment	**350 827,33**	**35 082 733,24**

- *Financial Performance*

Financial Perfomance	Ave Per Month	Per Annum	Cummulative 10 Year	Cummulative 100 C/G's 10 Years
Revenue	R 34 083	R 408 992	R 4 089 917	R 408 991 699
Gross Profit	R 9 549	R 114 587	R 1 145 873	R 114 587 337
Gross Profit margins	28%	28%	28%	28%
EBITDA	R 11 428	R 137 137	R 1 371 371	R 137 137 119
EBITDA margins	34%	34%	34%	34%
NPAT	R 6 903	R 82 837	R 828 374	R 82 837 431
Cummulative Cash	R 7 684	R 92 210	R 922 105	R 92 210 464

7) Sheep Farming

- *Capital Structure*

Project Costs	Per Out Grower	10 Out Growers
- Capital Expenditure	R 2 786 246	R 27 862 456
- Working Capital	R 655 500	R 6 555 000
Total Project Investment	**3 441 745,56**	**34 417 455,65**

- *Financial Performance*

Financial Perfomance	Ave Per Month	Per Annum	Cummulative 7 Year	Cummulative 10 O/G's 7 Years
Revenue	R 407 400	R 4 888 800	R 39 804 651	R 398 046 509
Gross Profit	R 164 392	R 1 972 704	R 16 198 923	R 161 989 233
Gross Profit margins	40%	40%	41%	41%
EBITDA	R 211 067	R 2 532 802	R 10 721 214	R 107 212 137
EBITDA margins	52%	52%	27%	27%
NPAT	R 168 662	R 2 023 945	R 6 299 604	R 62 996 037
Cummulative cash	R 23 964	R 287 569	R 2 875 688	R 28 756 882

8) Vegetables

- *Capital Structure*

Uses of Funds	R	% Contr
Capex	25 254 000,00	87%
Working Capital	3 800 000,00	13%
Total Funding Required	**29 054 000,00**	**100%**

- *Financial Performance*

Financial Performance	Ave Per Month	Per Annum	Cummulative 10 Yrs
Revenue	2 580 483	30 965 791	309 657 914
Gross Profit	1 268 458	15 221 494	152 214 944
Gross Profit margin	49%	49%	49%
EBITDA	1 132 046	13 584 558	135 845 576
EBITDA margins	44%	44%	44%
NPAT	608 403	7 300 831	73 008 308
Cummulative Cash	643 978	7 727 736	77 277 357

10. Developmental Impact

The proposed agricultural value chain should achieve the following impact:

A. Job Creation

10.1. Vegetable Value Chain

- eThekwini Fresh Produce (Pty) Ltd – 10 jobs
- Primary Production – currently, there are 1691 employment opportunities (permanent and seasonal combined), created on 270ha. The proposed plan is to produce on 350ha. This will create 210 permanent employment opportunities i.e. 3 people for every 5ha and 1400 short-term employment i.e. 4 people for every 5ha.
- Agro-logistics – Five transporters each employing 3 people = 15 jobs
- Collection Depots
    - North Collection Depot = 6 jobs
    - South Collection Depot = 6 jobs
    - Outer-West Collection Depot = 6 jobs
    - Central Collection Depot = 15 jobs
- Centralized administration = 2 jobs

10.2.Piggery Value Chain

- eThekwini Pork (Pty) Ltd – 5 jobs
- Anchor Farm – 35 jobs
- Out-growers – 5 people per out-grower x 10 out-growers = 50 jobs
- Transporter – 1 transporter employing 2 people = 2 jobs
- Market reps – 5 jobs
- Feed mill – 10 jobs

10.3.Poultry (Egg) Value Chain

- EggCo (Pty) Ltd – 10 jobs
- Out-growers – 5 people per out-grower x 10 = 50 jobs
- Households – 2 people per household = 100 x 2 = 200 jobs
- Distributors – 5 distributors each employing 3 people = 15 jobs
- Market reps – 10 jobs

10.4.Poultry (Broiler) Value Chain

- eThekwini Chicken (Pty) Ltd – 5 jobs
- Anchor farm (automated) 2 people per house of 40 000 birds = 50 houses x 2 = 100 jobs
- Out-growers (manual) – 5 people per out-grower x 10 = 50 jobs
- Distributors – 3 distributors, each employing 2 people = 6 jobs
- Abattoir – 40 jobs
- Market reps – 5 people

10.5.Sheep Value Chain

- eThekwini Sheepco – 4 jobs
- Out-growers – 8 people x 10 out-growers = 80 jobs
- Abattoir = 18 jobs
- Distributor (sourcing of store lambs) = 1 transporter each employing 2 people = 2 jobs
- Distributor (meat distribution from abattoir to markets) 3 transporters each employing 3 people = 9 jobs.
- Market reps = 5 jobs

10.6.Total Employment Summary

Table 13: Job Creation Summary

Value Chain	**Total Number of Jobs**
Vegetable Value Chain	1655 jobs
Piggery Value Chain	107 jobs
Poultry (eggs) Value Chain	285 jobs
Poultry (broilers) Value Chain	206 jobs
Sheep Value Chain	118 jobs
Total Direct Jobs	**2371 jobs**
Indirect Jobs	**+ 7500 jobs**

B. Contribution to eThekwini's and KZN Provincial Economy

Total Investment Required

Total Investment		
Description	**Quantity**	**Total Amount**
Piggery Anchor Farm	1	R163 730 309,60
Piggery Out-growers	10	R47 710 985,56
Broiler - Anchor Farm	1	R245 672 321,25
Broiler - Out-growers	10	R253 172 321,25
Egg - Out-growers	10	R120 102 766,20
Egg - Households	100	R35 082 733,24
Sheep - Out-growers	10	R34 417 455,65
Vegetable Growers	300 ha	R29 054 000,00
TOTAL		**R928 942 892,75**

Consolidated Financial Performance

	Revenue				Profit			
Description	**Per Month**	**Per Annum**	**Cummulative - 10 Years**		**Gross Profit Margin**	**NPAT Monthly**	**NPAT/Annum**	**Cummulative Cash - 10 Years**
Piggery Anchor Farm	R6 578 963,00	R78 947 553,00	R789 475 535,00		44%	R397 702,00	R4 772 427,00	R90 289 889,00
Piggery Out-growers	R175 439,00	R2 105 268,00	R210 526 809,00		19%	R21 123,00	R253 470,00	R35 261 657,00
Broiler -Anchor Farm	R26 713 357,00	R320 560 281,00	R3 205 602 811,00		19%	R2 185 882,00	R26 230 584,00	R145 861 477,00
Broiler - Out-growers	R2 827 041,00	R33 924 494,00	R3 392 449 385,00		23%	R295 982,00	R3 551 787,00	R236 675 014,00
Egg-Out-growers	R1 673 112,00	R20 077 347,00	R2 007 734 732,00		24%	R61 550,00	R738 605,00	R108 686 700,00
Egg-Households	R34 083,00	R408 992,00	R408 991 699,00		28%	R6 903,00	R82 837,00	R92 210 464,00
Sheep - Out-growers	R407 400,00	R4 888 800,00	R398 046 509,00		40%	R168 662,00	R2 023 945,00	R28 756 882,00
Vegetable Growers	R2 580 483,00	R30 965 791,00	R309 657 914,00		49%	R608 403,00	R7 300 831,00	R77 277 357,00
TOTAL	**R40 989 878,00**	**R491 878 526,00**	**R10 722 485 394,00**			**R3 746 207,00**	**R44 954 486,00**	**R815 019 440,00**

C. Access to Market

Access to market was identified as one of the challenges facing small black farmers in eThekwini. Markets are not buying from small farmers because of poor quality produce and low volumes. The implementation of these value chains will facilitate access to market for small farmers. Production and productivity will be increased. Offtake agreements have to be developed between smallholder farmers and the markets

D. eThekwini Agricultural Sector Development

These value chains will assist in developing the agricultural sector within eThekwini. This will have positive spin-offs to other sectors such as informal trading sector. This will further create employment.

E. Inclusive Development

Some value chains (eggs and vegetables) are also focusing on household production. This model can be replicated to other households especially the egg turnkey solution.

F. Food Security

Local food production will contribute positively to local food prices i.e. lower transport cost resulting to lower food prices.

G. Use of Existing Government Infrastructure

This master plan is promoting the efficient use of the exist municipal infrastructure such as the Agro-ecology hubs as collection depot, the Durban Fresh Produce Market as a central processing facility.

H. Youth Participation in Agriculture

Some of the identified value chains will improve the participation of the youth in agriculture.

I. Strategic Partnerships

The agribusiness master plan and implementation of the proposed value chains will improve working relations amongst various stakeholders in the private sector, government and farmers.

11. Investment Structure

The proposed investment structure is presented in Figures 23– 28. Potential funders have been identified and categorized into four groups. All funders will channel their funding through KZN Growth Fund. The KZN Growth Fund will act as fund managers for the overall eThekwini agribusiness initiatives. Each value chain will be implemented by a special purpose vehicle / company (SPV). Shareholding in each SPV to be decided and agreed by prospective funders, participants and the proposed eThekwini Agribusiness Unit. However, the standard shareholding is 51% farmers trust (to be formed for each value chain) and 49% for the funders to be held by the fund managers.

Figure 23: Funding Model for eThekwini Value Chains

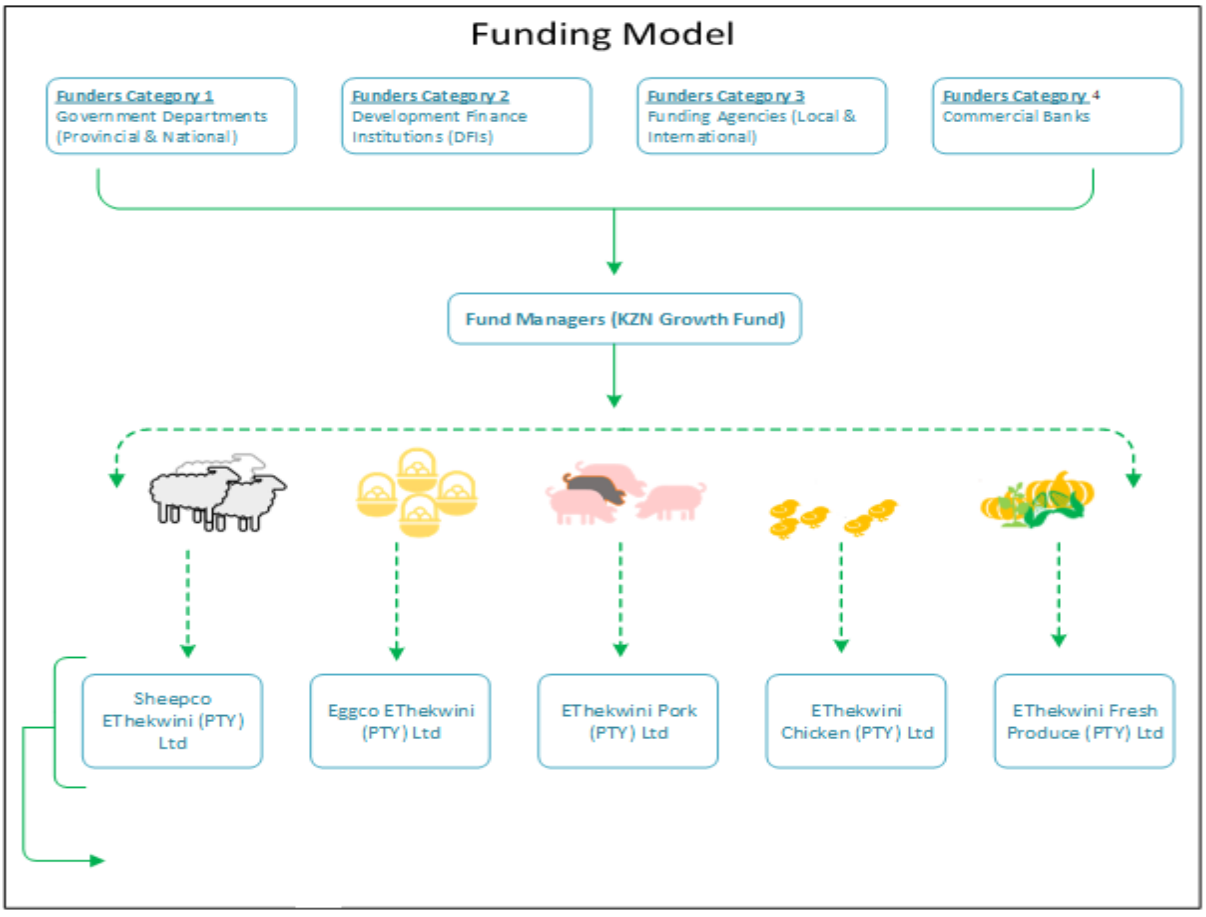


Figure 24: Sheep Value Chain Funding Structure

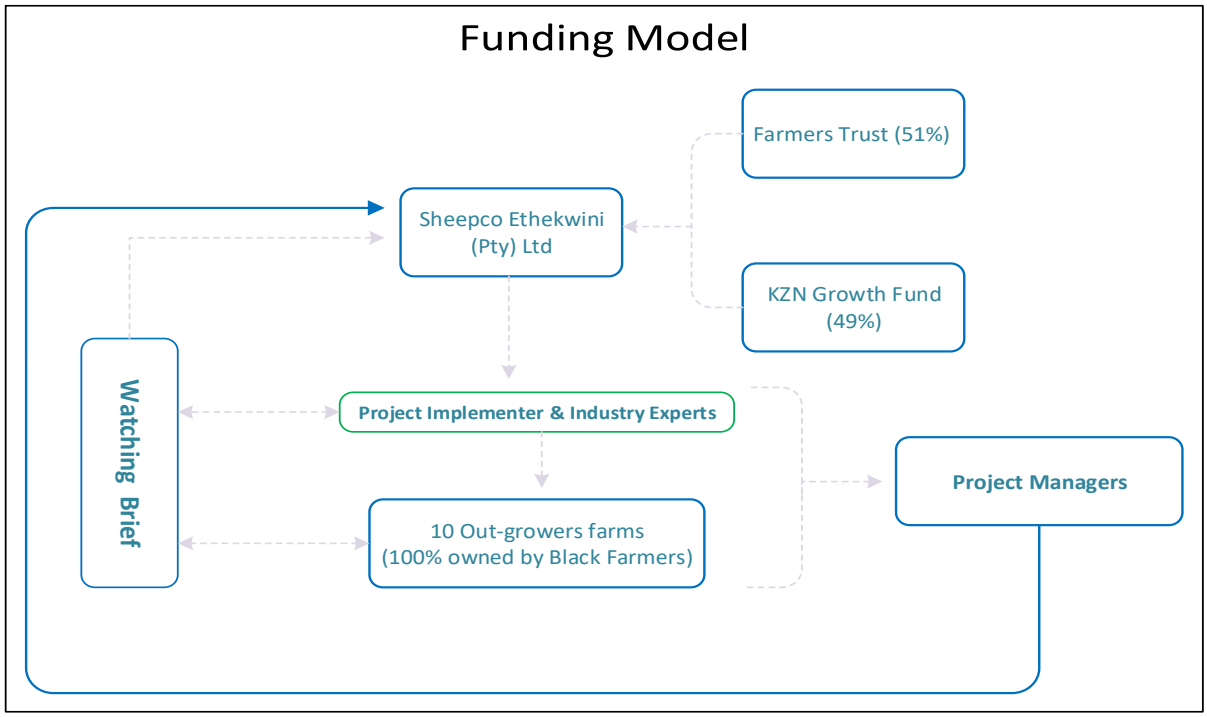


Figure 25: Poultry (Eggs) Value Chain Funding Structure

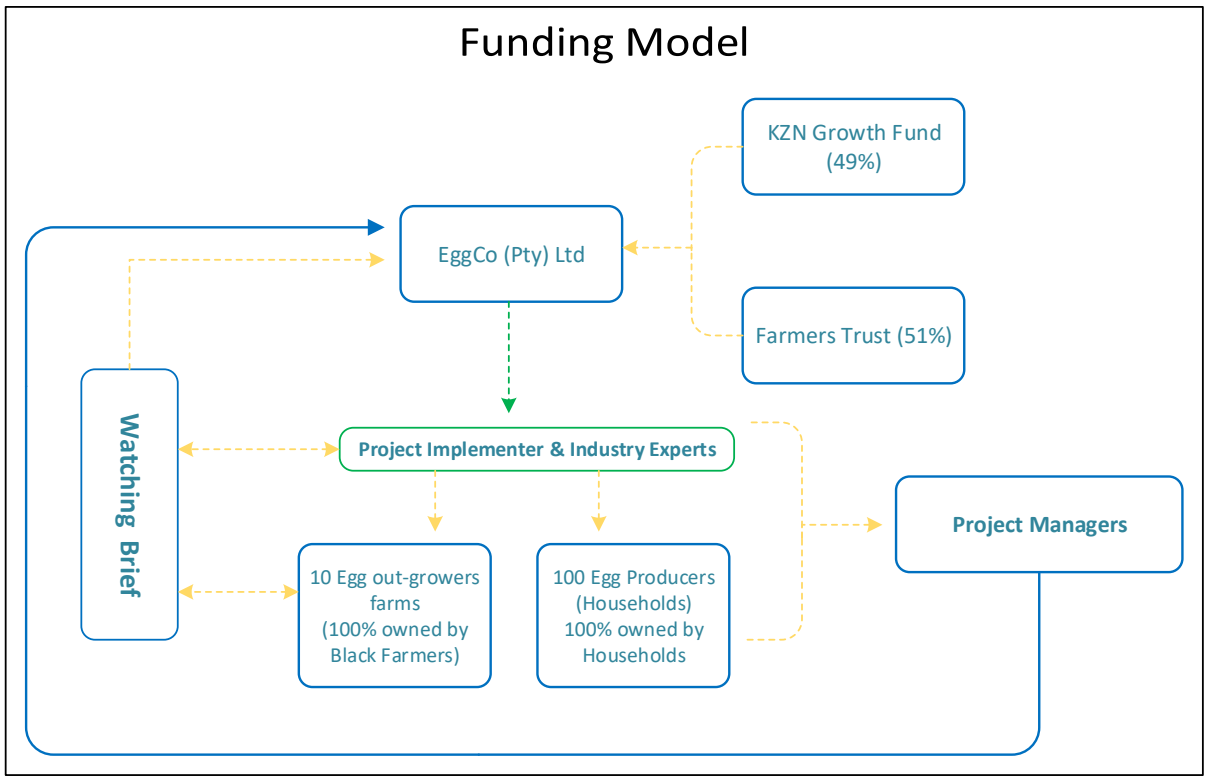


Figure 26: Piggery Value Chain Funding Structure

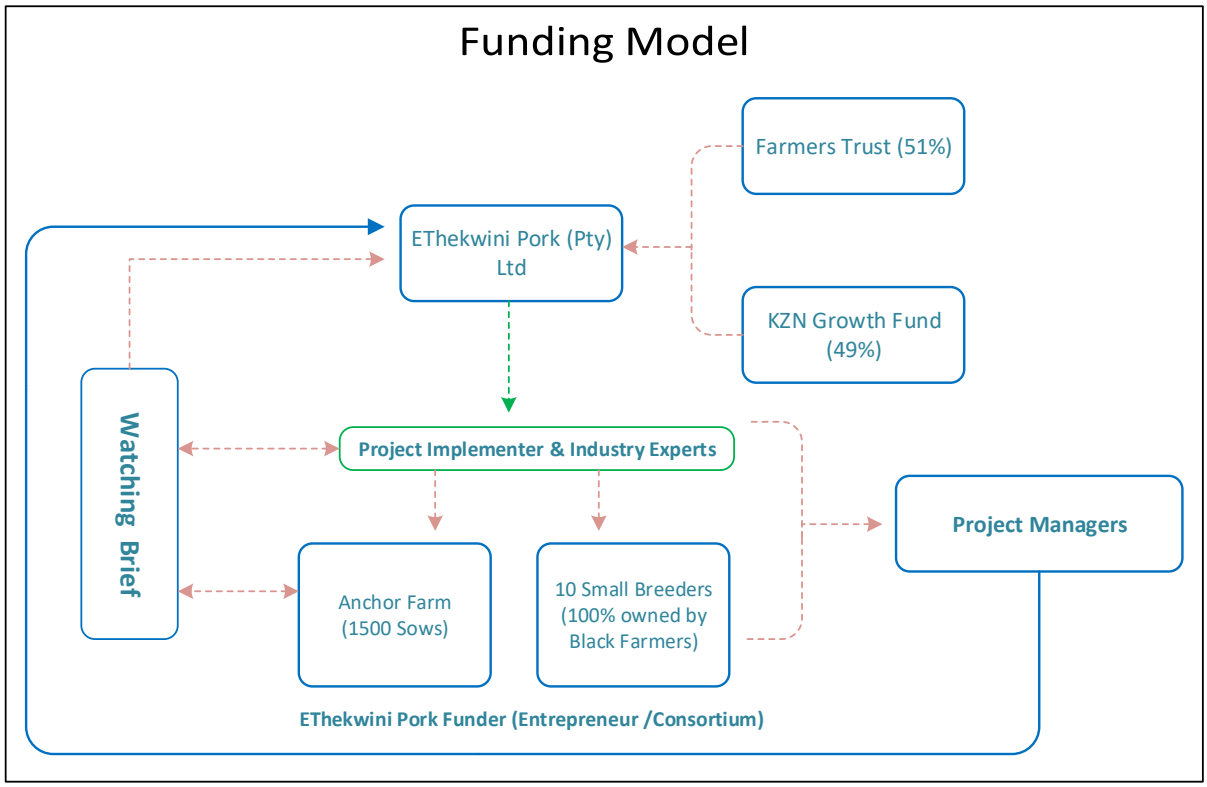


Figure 27: Poultry (Broilers) Value Chain Funding Structure

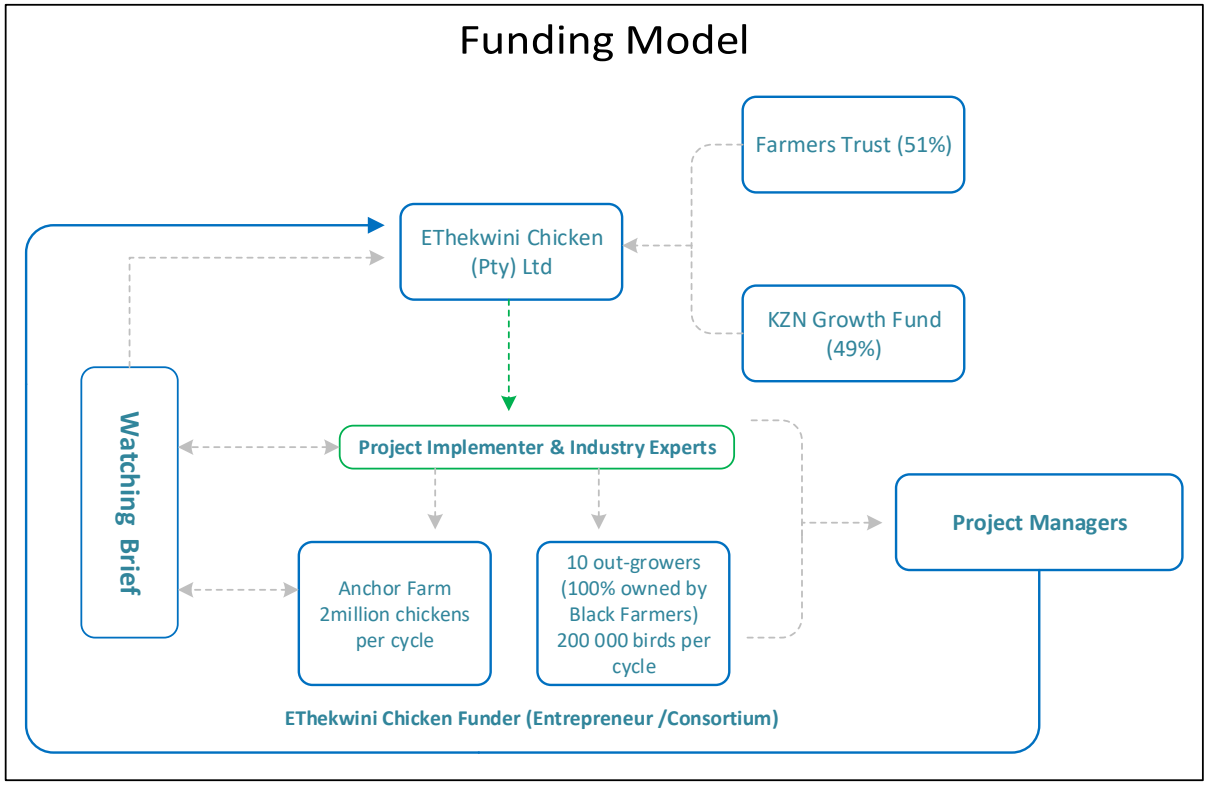
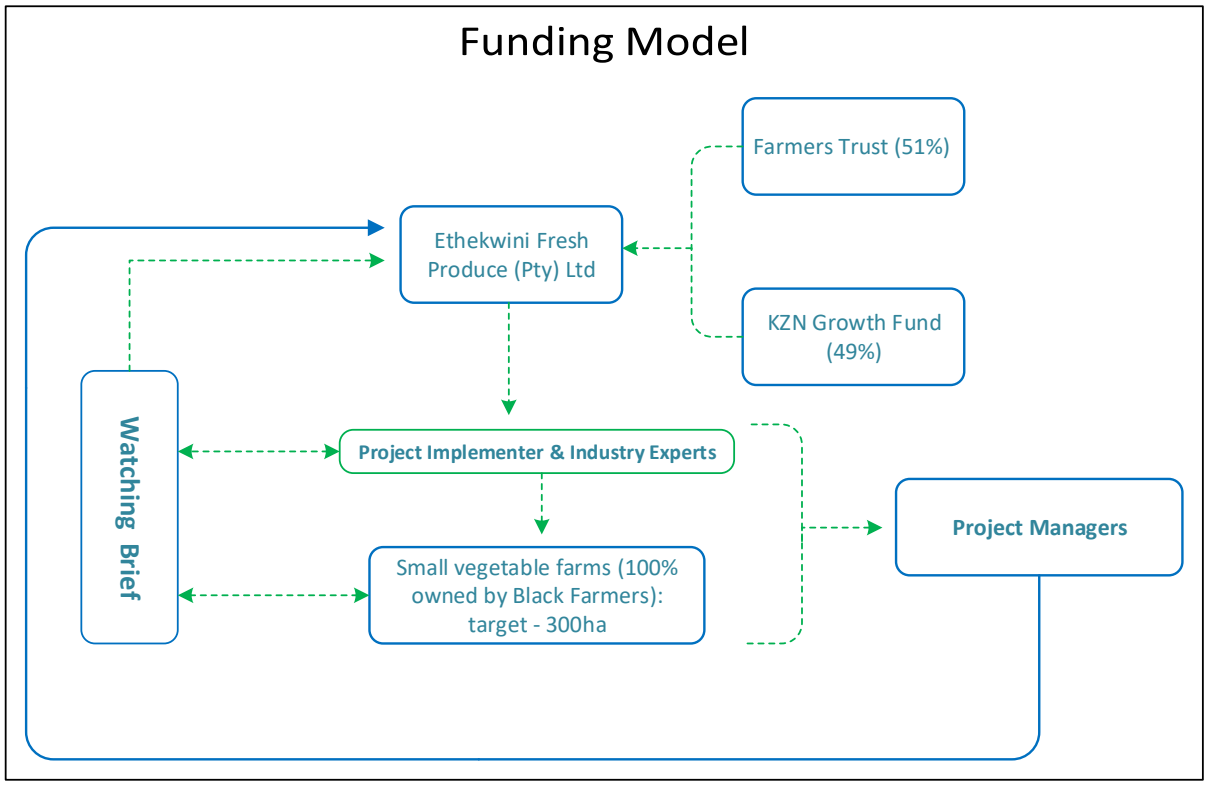


Figure 28: Funding Structure for eThekwini Fresh Produce Value Chain



12. Implementation and Management

The implementation of eThekwini Agribusiness Masterplan requires a dedicated business unit within the municipality that will be responsible for overseeing and ensuring that recommendations of the masterplan are carried out as recommended and there is accountability. The municipality has established an Agribusiness Department under Business Support, Tourism and Markets Unit shown in Figure 29 and 30.

Figure 29: Business Support, Markets and Tourism Unit Structure

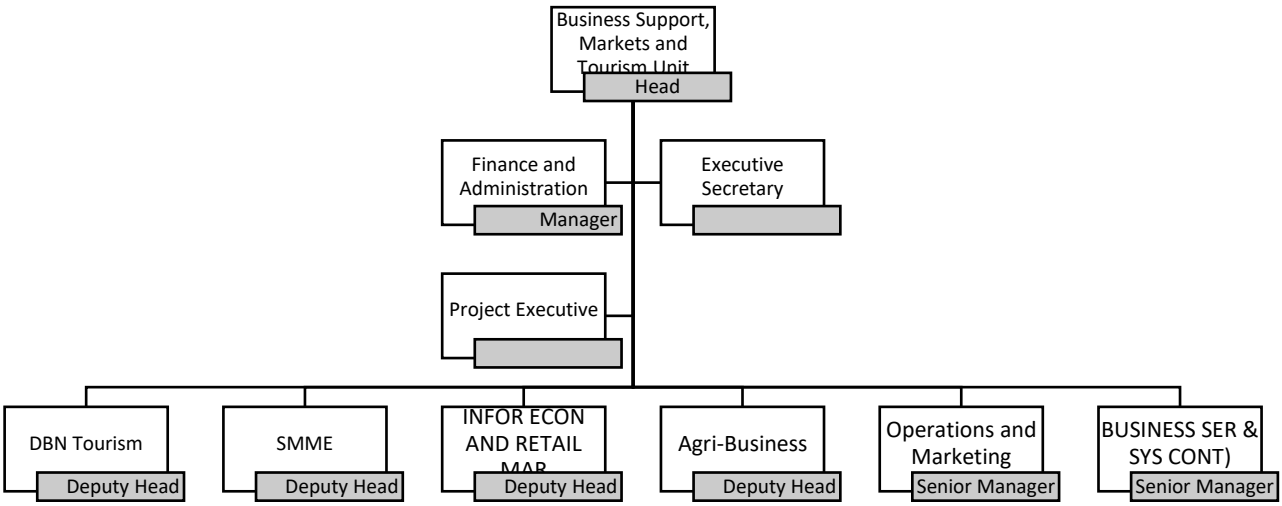
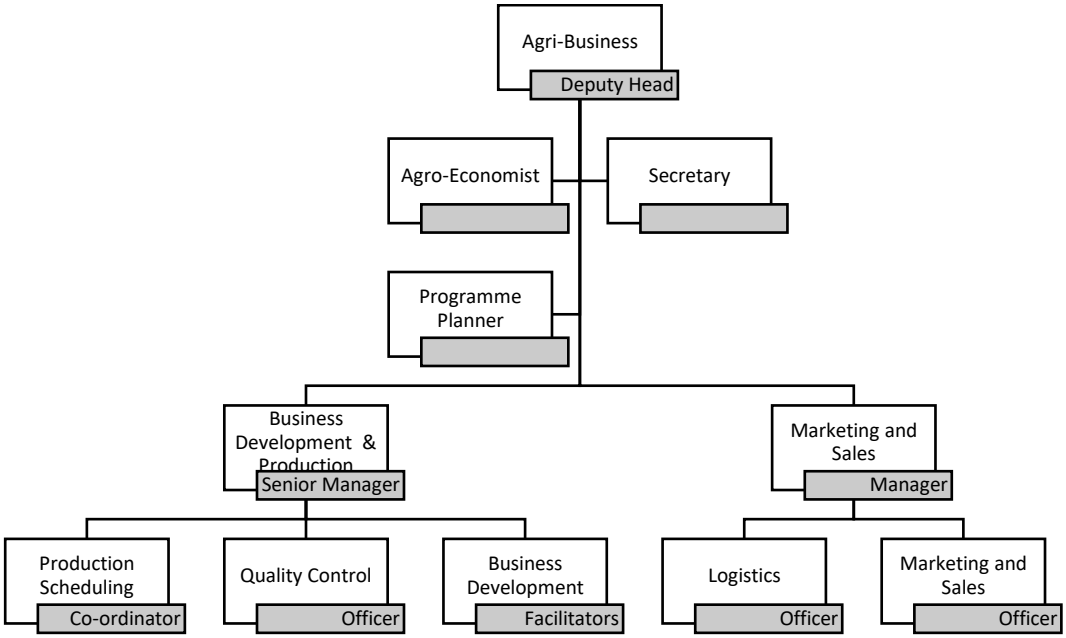


Figure 30: Agri-business Department Structure



Various improvements needs were identified in the current structures as follows:

a) Some functions within the current structures are not aligned to the agribusiness, the structure is geared towards implementation of small-scale agricultural development initiatives.
b) There is omission of some key specialized functions aligned to the proposed value chains in agribusiness master plan.
c) It was further observed that, work is duplicated between Agro-Ecology Unit and Parks and Recreation.

A merger of Agro-Ecology Unit and Agribusiness Department is recommended. The two should merge to form a new Agriculture Business Development Unit. This recommendation require that eThekwini HR determines the following:

a) Implications of the proposed merger
b) Determination of the skills set required in the new / proposed Agribusiness Development Unit,
c) Organizational structure of the proposed unit.
d) Any other processes that will facilitates the merger.

12.1. Proposed Reconfiguration of the Agribusiness

- The proposed unit shall be referred to as Agribusiness Development Unit (ADU)
- The ADU shall have four distinct operations namely Commercial Enterprises Department (focusing on commercial agriculture) and Food Security Department (focusing on smallholder and household agriculture), Markets (this will focus on municipal markets) Department and Collection Depots Department (previously called Agro-Ecology Hubs).

12.2.Core Mandate of the Proposed ADU

ADU will champion the establishment and development of a strong, transformed and sustainable agricultural sector through meaningful economic inclusion of all previously disenfranchised primary and secondary food producers in the food value chain in collaboration with private and public sector partners thereby stimulating social and economic growth in the eThekwini Municipality and the Province of KwaZulu-Natal. ADU will establish eThekwini Agribusiness Working Group, formed by funders, fund managers, project managers and watching brief to oversee all agriculture development initiatives in eThekwini Metro.

12.3.Objectives of the Proposed ADU

Through the establishment of ADU, eThekwini Municipality aims to:

- Promote, support and facilitate agricultural development in eThekwini through mobilisation of financial and non-financial resources.
- Increase agricultural productivity,
- Reduce eThekwini's dependence on local and internationally imported food and food products,
- Ensure that agricultural production is sustainable and dependable through efficient utilisation of available productive land and supporting infrastructure,
- Enhance coordination and management of land and other natural resources in eThekwini,
- Promote competitiveness and profitability of the agricultural sector,
- Improve policies and by-laws governing agriculture within eThekwini Municipality,
- Promote and encourage private sector investments in eThekwini Municipality and participation of the private sector in agribusiness growth,
- Enhance the role of youth in agriculture
- Drive and coordinate integrated programmes of rural development, land reform and agrarian transformation in the municipality,
- Promote applied research and innovative technologies for agribusiness development,
- Plan, monitor and evaluate all supported agribusinesses initiatives,
- Create strategic partnerships with organized agriculture, investors and markets.
- Align local agribusiness initiatives to provincial and national programs.
- Conceptualize, develop, implement turnkey agricultural initiatives within eThekwini Municipality.
- Promote the inclusion of households, micro, small medium agricultural enterprises to food value chain.
- Develop food security strategies
- Support food security initiatives within eThekwini Metro
- Provide various support packages to small farmers and food security initiatives.

12.4. Overall Skills Set within ADU

The process of capacitating ADU should take into consideration certain skills set which will be critical in building an effective and efficient agribusiness development unit. Below is the recommendation of / list of some critical skills needed in the day-to-day operation of the proposed ADU:

- Agribusiness and SME Development
- Agribusiness Finance
- Market / Sector Intelligence
- Agricultural Land Management and Sustainable Resource Management
- Business Development
- Agriculture (agronomy, animal production, poultry production, agro-processing)
- Social Facilitation
- Publications, Promotion, Advertising and Campaigns
- PFMA and other relevant legislations,
- Business Planning
- Strategy Development
- Finance and Administration
- Financial Accounting
- Stakeholder Relations and Management

13. Monitoring and Evaluation Framework

The Master plan outlines the importance of effective and efficient programming to ensure all planned / proposed value chains are promoted within scope and time with the intended goals and objectives. There should be a monitoring and evaluation framework linked to the overall eThekwini M&E Policy.

14. Recommendations and Conclusion

The eThekwini Agriculture Master Plan takes in to account baseline information on agricultural production and productivity within eThekwini Metro. Its objectives are aligned to those of various national and provincial strategic policy documents such as NGP, NDP, APAP and others. The master plan provides a focus intervention approach towards developing the agricultural sector by proposing five value chains for development in the eThekwini Metro. Whilst, the provincial agriculture master plan provides general guidance towards agricultural sector development in the KZN Province, eThekwini Agriculture Master Plan provides specifics, details on the how the proposed commodity value chains should be developed. Seven key recommendations in the eThekwini Agriculture Master Plan are:

a) Selection of five agricultural value chains for development based on their feasibility. These are piggery, broilers, eggs. vegetables and intensive sheep farming. Effectively, this means only recommended agricultural commodities should be supported and promoted in eThekwini.
b) A 60:40 (loan:grant) financing structure is proposed. This is based on the financial analysis of each value chain and size of investment required.
c) Implementation structure of each value chains. The proposed structure takes in to account the risk appetite of private, commercial funders including DFIs and government. The recommendation is to establish a special purpose vehicle (SPV) for each value chain. Funds from different funders should be placed under fund managers (KZN Growth Fund is proposed), and then value chains funded through their respective SPVs.
d) Merger of the Agribusiness Department and Agro-Ecology Unit to form a new Agribusiness Development Unit. This is aimed at strengthening the capacity to implement the recommendations of agriculture master plan. eThekwini HR to determine implications of the merger and propose the organizational structure of the new agribusiness units.
e) Monitoring and evaluation framework should be developed. This should be aligned to the eThekwini monitoring and evaluation policy to ensure accountability.
f) Strategic partnership should be established with funders, markets and industry bodies to ensure support of the proposed various value chains.
g) The proposed eThekwini Agribusiness Development Unit should establish and formalize partnerships with identified markets in the metro.