



Zimbabwe Economic  
Policy Analysis and  
Research Unit

# AGRO-INDUSTRIES/FOOD AND BEVERAGES

## VALUE CHAIN DIAGNOSTIC STUDY

ZEPARU OCCASIONAL  
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## ACRONYMS AND ABBREVIATIONS

AEZ	Agro Ecological Zone
AGRITEX	Agricultural Extension and Technical Services
AIDS	Acquired Immunodeficiency Syndrome
AMA	Agricultural Marketing Authority
ARC	Agricultural Research Council
ARDA	Agricultural and Rural Development Authority
BAZ	Bankers' Association of Zimbabwe
CBZ	Commercial Bank of Zimbabwe
CFU	Commercial Farmers' Union
CIMMYT	International Maize and Wheat Improvement Centre
COMESA	Common Market for Eastern and Southern Africa
CSC	Cold Storage Company
CSCFAZ	Commercial Sugarcane Farmers Association of Zimbabwe
CSO	Central Statistical Office
DDF	District Development Fund
DDP	Dairy Development Programme
DLVS	Department of Livestock and Veterinary Services
DR&SS	Department of Research and Specialist Services
DVFS	Division of Veterinary Field Services
DVTS	Division of Veterinary Technical Services
EIA	Environmental Impact Assessment
EMA	Environmental Management Agency
EOSH	Environmental and Occupational Safety and Health
FAO	Food and Agriculture Organisation of the United Nations
FDI	Foreign Direct Investment
FPL	Food Poverty Line
FTLRP	Fast Track Land Reform Programme
GAP	Good Agricultural Practice
GDP	Gross Domestic Product
GIEWS	Global Information and Early Warning Systems
GMB	Grain Marketing Board
GMO	Genetically Modified Organism
GoZ	Government of Zimbabwe
HACCP	Hazard Analysis and Critical Control Points
HIV	Human Immunodeficiency Virus
HPC	Horticulture Promotion Council
ICRISAT	International Centre for Research in Semi-Arid Tropics
ICT	Information and Communication Technology
IFPRI	International Food Policy Research Institute
ILRI	International Livestock Research Institute
IMF	International Monetary Fund

ISO	International Standards Organisation
LDC	Livestock Development Committee
LIMS	Livestock Information Management System
LMAC	Livestock and Meat Advisory Council
LPD	Livestock Production and Development
LWG	Livestock Working Group
MAMID	Ministry of Agriculture, Mechanisation and Irrigation Development
MCAZ	Medicines Control Authority of Zimbabwe
MDTF	Multi-Donor Trust Fund
MT	Metric Tonnes
MoHCW	Ministry of Health and Child Welfare
NGO	Non-Government Organisation
NR	Natural Region
NSAS	National Sugar Adaptation Strategy
REA	Rural Electrification Agency
RDC	Rural District Council
R & D	Research and Development
SADC	Southern African Development Community
SAZ	Standards Association of Zimbabwe
SI	Statutory Instrument
SIRDC	Scientific and Industrial Research and Development Centre
SMA	Stock-feed Manufacturers' Association
TCPL	Total Consumption Poverty Line
UNIDO	United Nations Industrial Development Organisation
USAID	United States Agency for International Development
USD	United States Dollar
UZ	University of Zimbabwe
ZAA	Zimbabwe Association of Abattoirs
ZAIP	Zimbabwe Agriculture Investment Plan
ZADF	Zimbabwe Association of Dairy Farmers
ZAPF	Zimbabwe Agricultural Policy Framework
ZCFU	Zimbabwe Commercial Farmers' Union
ZEPARU	Zimbabwe Economic Policy Analysis and Research Unit
ZETDC	Zimbabwe Electricity Transmission and Distribution Company
ZFU	Zimbabwe Farmers' Union
Zim-ACP	Zimbabwe Agriculture Competitive Programme
ZimAsset	Zimbabwe Agenda for Sustainable Socio- Economic Transformation
ZINWA	Zimbabwe National Water Authority
ZNFU	Zimbabwe National Farmers' Union
ZSCFDA	Zimbabwe Sugar Farmers' Development Association

## GLOSSARY

**Competitiveness:** The ability of a firm (or a set of firms that together form a value chain) to offer products and services that meet the quality standards of the local and/or world markets at prices as low as the competing firms while providing adequate returns in relation to the resources used. Competitiveness depends on a wide range of factors that relate to the internal capacities of a firm, the conditions in the value chain and the macro-economic and policy environment, all of which should be part of value chain diagnostics.

**End-market:** The market where the full value of the product is capitalized. This is usually close to where the product becomes available for purchase by the consumers or those who sell to the consumers. End-markets absorb the products of the value chain after no further transformation and value addition is performed. They can be located on domestic markets or abroad.

**GDP - real growth rate:** This entry gives GDP growth on an annual basis adjusted for inflation and expressed as a percent.

**Value Chain:** A mechanism that allows producers, processors, and traders—separated by time and space—to gradually add value to products and services as they pass from one link in the chain to the next until reaching the final consumer (domestic or global). It mainly looks at the existing constraints and opportunities to value chain development, which are multiple by nature. It also looks at the various effects that operations in the chain have on groups of people, e.g., with regard to poverty reduction, employment, income generation, firm development, economic growth, or environmental sustainability.

**Value Chain Governance:** Governance refers to the organization of a value chain and coordination between actors making it possible to bring a product from primary production to end-use. This can include the power and ability with which certain actors in the value chain exert coordination and control along the chain.



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## EXECUTIVE SUMMARY

Agriculture is the backbone of the Zimbabwean economy with the rural majority deriving their livelihood from agriculture and other related agricultural economic activities. The agriculture sector supplies about 60% of the raw materials for industrial processing and contributes about 40% of the total exports. However, regardless of the fact that agriculture has the highest level of employment of 60-70% it only contributes about 16-19% of the annual Gross Domestic Product (GDP) depending on the rainfall patterns and other macroeconomic factors. Zimbabwe's status has declined from being the "bread basket of Africa" to being a net importer of agricultural commodities.

The objectives of this study were to conduct value chain analyses of selected subsectors in the Agro-industries/Food and Beverages sector and map the viability of the selected value chains. The specific aim was to identify policies, measures and strategies to enhance competitiveness of the selected value chains. The study also aimed to identify the constraints and opportunities of the selected value chains in order to develop and increase productivity and also enhance the competitiveness of the agricultural sector and associated industries.

The study commenced with the selection of specific commodities that fall within the sub-classes of namely; cereals and cereal products; meat and meat products; horticulture; beverages; dairy and dairy products and confectionery. A survey of one hundred and fifty (150) representative agro-industries/food and beverages value chain players throughout all the agro-ecological zones of Zimbabwe was conducted. The sample pool consisted of various stakeholders in the value chain including farmers, processors, marketers, regulatory authorities, research institutions and farmer organizations. Data was collected through the following means;

- Reference group meetings: Prior to conducting field work a reference group meeting was carried out to raise an awareness and explain the study objectives; as well as gather pertinent information through discussions with the stakeholders from various subsectors. The first reference group meeting was conducted at the Crowne Plaza on the 7<sup>th</sup> of October 2013 in Harare. A second reference group meeting was held on the 6<sup>th</sup> of February 2014 at the Harare International Conference Centre (HICC) to announce the results obtained from the study.
- Focus group discussions: These were conducted with groups of farmers in the different agro-ecological zones. These were organized through the respective Agriculture research and extension offices (Agritex) prior to visiting the selected areas.
- Questionnaires were distributed either by hand or email to the different stakeholders and were collected upon completion.
- Structured and unstructured interviews of key informants were held for the key stakeholders such as government ministries, regulatory authorities, Zimbabwe Statistics (ZIMSTAT), research institutions, farmer associations, banks and the Bankers Association of Zimbabwe (BAZ) to name a few.

The UNIDO (2010) model for value chain diagnostic studies was adopted for analysing the selected value chains. The following value chain dimensions were assessed: primary production and inputs; processing capacity and technology; end-markets and trade; governance of value chains; sustainable production and energy use; value chain finance; and business environment and socio-political context. Value chains of the selected commodities were mapped using information obtained from stakeholders, and from literature.

The results of the study identified cross cutting issues limiting the efficiency of value chains in the agro-industries/food and beverages sector. These include:

- Funding and liquidity issues: More than 90% of the respondents cited this constraint. The primary producers (farmers) are faced with the challenge of meeting lending requirements such as collateral or security. The resettled farmers highlighted that they do not have the 99 year lease agreements

or security in the form of immovable property to secure loans. Most of the farming is also limited to the summer season due to the lack of capital to invest in irrigation infrastructure. Processors attributed their failure to adopt new technologies and expand operations due to liquidity constraints. The financiers on the other hand also cited high default rates on loans issued. The government may therefore need to extend subsidies to overcome the inability of farmers to obtain credit or loans especially for acquisition of inputs. The poor performance of the primary producer ultimately affects productivity of the processing industry that depends on it.

- High cost and erratic supply of utilities: Water and electricity availability and costs were cited by both producers and processors as a major hindrance to capacity utilization and a driver of production costs leading to uncompetitive market prices.
- Inefficient production technologies: The government has tried to address this issue through the introduction of the Ministry of Agriculture Mechanization. Research institutions such as the Scientific and Industrial Research and Development Centre (SIRDC) who are reverse engineering farm mechanization technologies from Korea through the Korea-Africa Food and Agriculture Cooperation Initiative (KAFACI) are also trying to alleviate this challenge through empowering the smallholder farmers. The challenge of production not only affects the primary producer but also the processors. The technologies used in the manufacturing plants are outdated and need to be replaced with newer technologies in order to improve the economies of scale and thus have competitive pricing of the final product.
- Post harvest losses: These are mainly incurred because of the inefficient production technologies. The harvested output is way below the estimated standing crop output. Losses due to limited ability to process and/or preserve produce has also particularly affected the horticulture farmers whose produce is highly perishable.
- Unfair trade environment: The acceptance of genetically modified (GM) crops by other countries have created serious distortions to pricing of commodities. Prices of products such as vegetable oils, stock feeds, and cereals are way below the non-GM varieties grown locally. Government may need to establish centres that assess and adopt these new biotechnology concepts, and enforce the regulation and control of GM imports.
- Poor linkages between partners within the value chain: The results of the study identified that there were very poor linkages between the actors in the value chain. This needs to be addressed as the efficient functioning of the value chains depends on this. Processors need to identify the primary producers who are key to their productivity and form partnerships or contractual agreements with them so that their raw material supply becomes consistent. This would eliminate the use of middlemen who producers complained of as one of the barriers to fair trade. A very good example is Delta Beverages who have formed contractual agreements with farmers to produce grain such as sorghum, barley and pearl millet for their alcoholic beverages. Delta has remained competitive regardless of the prevailing economic conditions.
- Unfavorable policies and regulations affect all the sectors, with beef farmers for example, disgruntled about the amounts they have to pay for various licenses. Stakeholders also felt that there was a need to clarify policies such as the indigenization and empowerment act which may be a hindrance to foreign investment.
- Several other opportunities were identified and these are discussed in the fifth chapter which also highlights recommendations for the study. These recommendations enable ZEPARU to fulfill its core function of supporting policy decision-making and implementation processes across government; with a view of enhancing the performance of the Agro-industries/Food and Beverages sector in Zimbabwe. If implemented the recommendations of these studies will change the way businesses operate in Zimbabwe for better.

# CHAPTER I: INTRODUCTION

Zimbabwe's economy is currently recovering from a decade of economic crisis that saw economic output cumulatively declining by more than 45%. According to the World Bank (2012), recovery started from about the year 2009 with real GDP growing by 20.1% in 2009-2011. This was supported by the growth recovery of domestic demand and government consumption. GDP growth was stimulated by growth in mining (107%), agriculture (35%) and services (51%); while recovery in manufacturing sector (22%) has been less vigorous. Annual average inflation remained moderated at 5.1% in 2012 despite the rising international prices of grain and oil. Under the multi-currency regime, inflationary developments in the short to medium term will continue to be influenced by the USD/rand exchange rate, inflation developments in South Africa, and local utility charges.

In order to guide the economy, government came up with the Zimbabwe Agenda for Sustainable Socio-Economic Transformation (ZimAsset) in October, 2013. Through its mission "To provide an enabling environment for sustainable economic empowerment and social transformation to the people of Zimbabwe", ZimAsset sets out to fully exploit and benefit from the country's natural resources through value addition in various sectors of the economy, including agriculture. Zimbabwe's exports are currently dominated by primary products such as tobacco, cotton, and mineral ores which fetch lower prices on the global market, and are subject to price fluctuations. Through implementation of the ZimAsset framework, the country's economy is expected to grow by at least 9, 9% by 2018. This is also in line with the Government of Zimbabwe and Food and Agricultural Organisation (FAO) of the United Nations (UN) country's programme framework of 2012-2015 whereby the government aims to improve food security at national and household level through policy frameworks, sustainable agriculture production and competitiveness, as well as disaster risk reduction and management. The government, through the Ministry of Industry and Commerce has also come up with the Industrial Development Policy of 2012-2016 whose vision is to "transform Zimbabwe from a producer of primary goods into a producer of processed value-added goods for both the domestic and export market."

In order to enhance the performance of the Agro-industries/Food and Beverages sector in Zimbabwe, we conducted a value chain diagnostic studies that sought to provide evidence-based recommendations for implementation by policy makers, and the relevant stakeholders. Value chain analysis has become a key approach in policy research with an increasing number of organizations and governments adopting it for more informed interventions. SIRDC therefore employed a multi-dimensional diagnostic tool for value chain analysis, as defined by United Nations Industrial Development Organisation (UNIDO, 2009). The dimensions for analysis are as follows;

1. Sourcing of Inputs and Supplies
2. Production Capacity and Technology
3. End Markets and Trade
4. Value Chain Governance
5. Sustainable Production and Energy Use
6. Value Chain Finance
7. Business Environment and Socio-Political Context

## 1.1 Aim

To undertake a study of value chains in the Agro-industries/Food and Beverages sector in Zimbabwe.

## 1.2 Objectives

- a. To conduct value chain analyses of selected subsectors in the Agro-industries/ Food and Beverages sector.

- b. To map the viability of the selected value chains.
- c. To identify policies, measures and strategies to enhance competitiveness of the selected value chains.

### 1.3 Report Structure

This report has been drafted into four main sections. This first chapter gives a brief introduction to the project, the project justification, and project objectives. Chapter 2 is a review of literature giving a brief background of the agriculture sector and the agro-processing industry and the role they play in the Zimbabwean economy. The concept of the value chain analysis, the regulatory environment and the pricing policies in Zimbabwe are described in this chapter. The methodologies adopted for this study are highlighted in Chapter 3. Chapter 4 gives a multi-dimensional analysis of the value chains for each of the selected categories of commodities in this study. The commodities are as follows;

- Cereals and cereal products (sorghum, barley, maize, wheat)
- Dairy and dairy products (milk and milk products)
- Horticulture (fruits and vegetables)
- Oil seeds (soybean)
- Sugar cane
- Beef and beef products)
- Beverages (alcoholic and non-alcoholic)

Chapter 5 provides the conclusions and recommendations based on the findings of this study. Key references used, and a compilation of appendices are also included at the end of the report.

### 1.4 Limitations of the study

The study was conducted within a limited time frame of just 3 months, which made it impossible to comprehensively assess all the intrinsic complexities of the agro-industries/food and beverages value chains.

For some value chain players such as processors of agricultural produce, the response rate for questionnaires was lower than expected, making it difficult to accurately quantify some of the parameters in the value chain diagnostic study. Regardless of assuring utmost confidentiality, respondents were in some cases not keen to provide production and sales data, as they felt the data would reveal confidential information which could potentially harm their organisations.

The study was also conducted at the peak of the farming season, making it difficult in some cases to obtain data from primary producers and input suppliers as this was their busiest time of the year.

Data on crop yields obtained from government departments is based on total standing crop, and may not necessarily be reflective of the actual harvested crop.

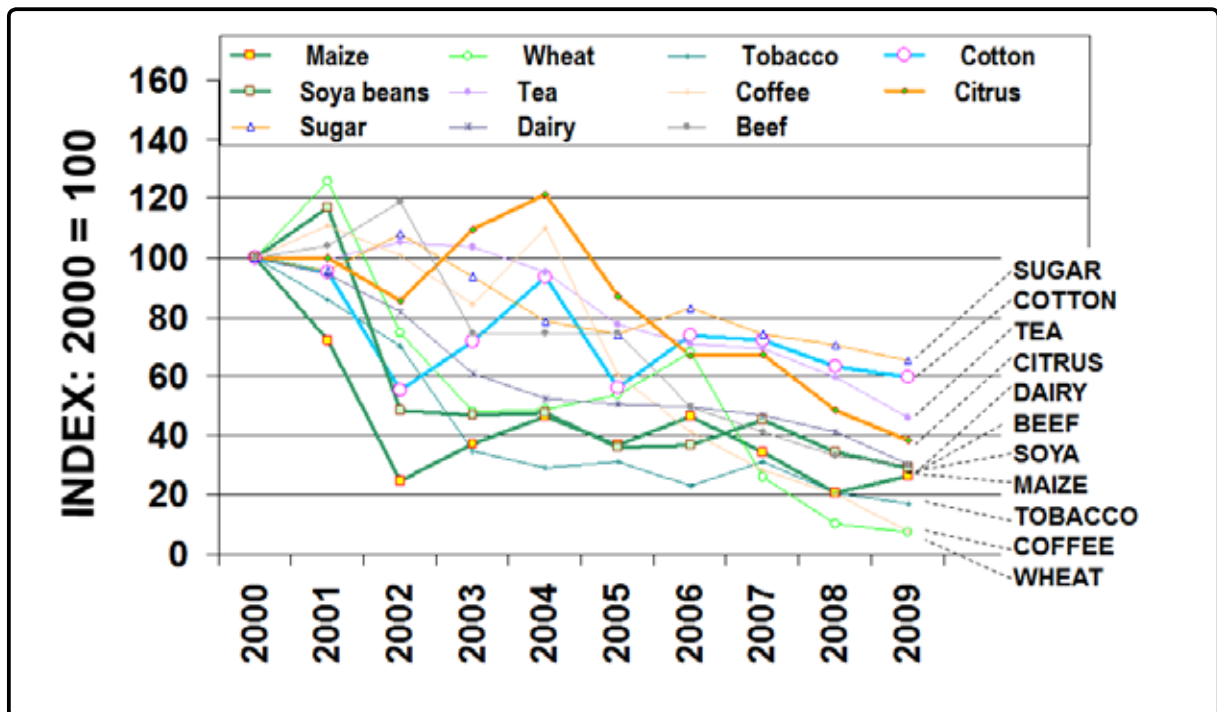
Regardless of the shortcomings cited, this study still managed to identify the major issues hindering the efficiency of selected value chains in the agribusiness/food and beverages sector as well as existing opportunities. The outcomes of this study are therefore taken as indicative, requiring further analysis in some instances for more informed interventions.

## CHAPTER 2: ECONOMIC OVERVIEW AND BUSINESS ENABLING ENVIRONMENT

### 2.1 Overview of the Zimbabwean Economy

From the year 2000 up to the year 2008, Zimbabwe experienced severe economic challenges characterized by hyperinflation. The real GDP slumped from -3.7% in 2007 to -17.7% in 2009, and then increased to 6.3% in 2009, 9.6% in 2010, and 10.6% in 2011 and then decreased by more than 50% to 4.4% in 2012 (World Bank Country Reports). The trend in agricultural production indices (Figure 2.1) also shows a similar trend for the various commodities for the period 2004 to 2009. However agricultural output improved in 2010 on the back of improved maize (12.7%), cotton (2.3%), sugar (14.3%) and non-food crop, tobacco (38.4%) (Africa Development Bank Group, 2011). The increase in output however still falls short of the annual national requirements. For example, at least 1.8 million tonnes of the staple crop, maize, is required to meet the nation's demand.

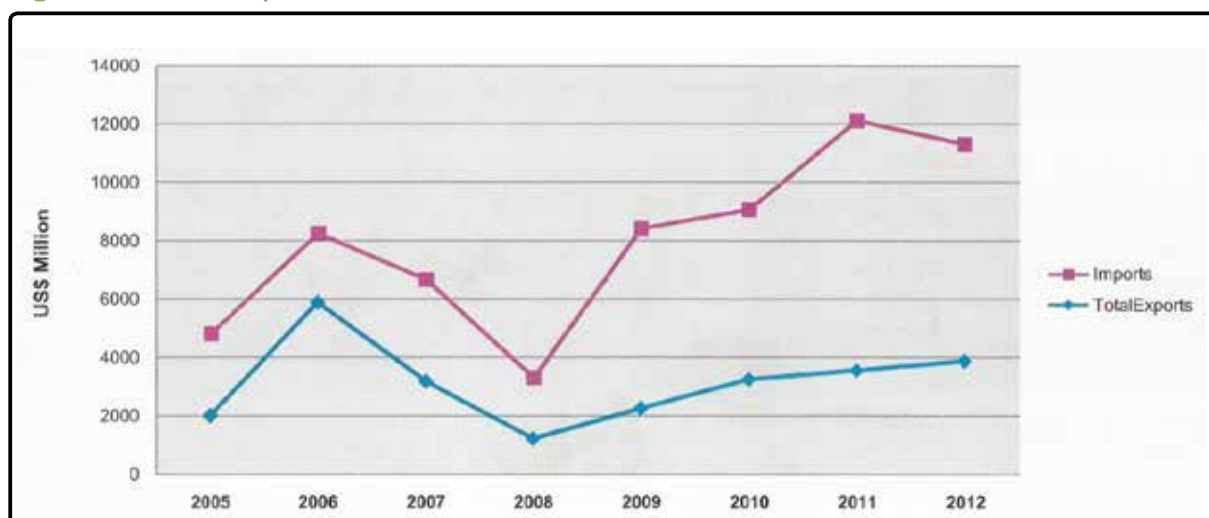
Figure 2.1: Agriculture Production Indices: 2000=100



Source: UNESCO, 2007

Macro-economic instability and unpredictable rainfall patterns have led to a decline in agricultural production. This has worsened poverty, unemployment, access to food, and has also led to a decline in industry capacity utilization. The food processing sector, which is heavily dependent on agriculture for raw materials, also shrunk leading to loss of jobs and incomes as well as food shortages. For over ten years, Zimbabwe has failed to produce enough maize and wheat to meet her annual national needs of at least 1,825 million tonnes of maize. In the past 6 years, the national wheat production average has been 152,870 tonnes. To cover this deficit, Zimbabwe has become a net importer of food mainly from neighboring South Africa. The balance between imports and exports has widened further since 2005. Figure 2.2 shows external trade from 2005 to 2012.

Figure 2.2: Summary of External Trade



Source: ZimStat, 2013

According to Zimstat, 2013; the highest import products of agriculture are dairy (US\$50 136 830 in 2011), cereals (US\$466 237 367 in 2012), products of milling industries such as starches, inulin, gluten (US\$125 617 199 in 2011), oils and fats (US\$223 836 418 in 2012), sugar and confectionery (US\$80 231 900 in 2012), fruits & vegetables (US\$38 191 131 in 2012), fertilizers (US\$2 031 438 819 in 2011), tobacco and manufactured tobacco substitutes (US\$160 648 745 in 2012), beverages (US\$44 936 895 in 2011). The highest export products of agriculture are coffee, tea, mate, spices (US\$21 418 710 in 2012); sugar and confectionery (US\$109 684 950 in 2005); tobacco and manufactured tobacco substitutes (US\$826 579 815 in 2012); wood, articles of wood, wood charcoal (US\$33 271 632 in 2005); cotton (US\$269 080 370 in 2011). The net trade position (**Table 2.1**) of the agricultural sector further illustrates the increasing the gap between the imports and exports. The country is losing scarce foreign currency to other countries in order to meet demand. This is unsustainable with the country's current budget of USD 4.3 billion.

Table 2.1: The Agriculture Net Trade Position

Trade US\$ million	2009	2010	2011	2012
Exports (US\$ m)	472.7	134.4	151.4	206.7
Imports (US\$ m)	824.9	1,072.3	1,297.5	1,413.0
Net (US\$)	(352.2)	(937.8)	(1,146.1)	(1,206.3)

This gap is unlikely to lessen unless there is massive capital injection for the existing industries. At the moment, most processors are unable to take loans because of the high interest rates charged by financial institutions. The average commercial bank lending rates increased from 13.1% in 2009 to 22.5% in 2012 as shown in **Table 2.2**. The lending rates charged by merchant banks are even higher than those of commercial banks. Partners in industry are of the impression that the increase in interest rates on loans has been going up partially because financiers view investment as risky. This has negatively affected industry leading to decline in capacity utilisation and failure to re-equip.



**Table 2.2: Lending Rates in Commercial Banks, Accepting Houses and Merchant Banks (% per annum), 2009-2012**

Year	Lending Rate		
	Commercial Banks	Accepting Houses	Merchant Banks
2009	1.24-25.00	1.00-30.00	—
2010	1.26-36.00	10.00-30.00	—
2011	8.00-30.00	—	10.00-32.00
2012	10.00-35.00	—	15.00-25.00
2013	10.00-35.00 (Jan) 6.00-35.00 (Jul)	—	13.00-25.00 (Jan) 15.00-28.00 (Jul)

Source: Reserve Bank of Zimbabwe

Despite the economy having shown some degree of stabilization (with inflation modestly below 5%) following the cocktail of measures that were adopted by Government in 2009, recovery remains fragile. If current challenges faced by the production and manufacturing sectors are not addressed, the marginal gains recorded so far will be reversed.

## 2.2 Significance of the Agricultural Sector

The agricultural sector is the backbone of the Zimbabwean economy underpinning economic growth, food security and poverty eradication. Agriculture contributes at least 16-20 percent of the gross domestic product (GDP) per annum, and over 40% of national export earnings (GoZ, 2011), hence it remains one of the most significant contributors to the Zimbabwean economy (Robertson, 2009). Over 70% of the nation's population depends directly or indirectly on agriculture for a means of livelihood and employment. Agriculture also provides raw materials (60%) to agro-processing industries (GoZ, 2011). The main agricultural products are maize, cotton, tobacco, wheat, coffee, sugarcane, peanuts, millet, soybean, sheep, pigs and goats (Mudzonga and Chihwada, 2009).

## 2.3 Overview of Agriculture in Zimbabwe

Zimbabwe has a total surface area of 390 760 km<sup>2</sup>, of which about 42% of it is agricultural land, 10.9% is arable land and 0.3% is permanent cropland (FAO, 2013; Worldstat, 2013). Only 37% of the country receives rainfall considered adequate for rain fed crop production.

According to the National Investment Brief for Zimbabwe presented at the “Water for Agriculture and Energy in Africa: the Challenges of climate change” conference in Libya; Zimbabwe's agricultural activities can generally be classified into four main categories (Anon, 2008);

- food crops
- oilseeds and industrial crops
- export crops
- livestock

These activities are carried out in the five agro-ecological Zones (Vincent and Thomas, 1960). The recommended farming activities in these zones are as shown in **Table 2.3**.



Table 2.3: Characteristics of the Agro-ecological Zones of Zimbabwe

Agro-ecological Zone	Area (ha)	Area as % of Country	Characteristic Weather Patterns	Recommended Land Use
I	703 400	1.8	High rainfall (>900mm per annum), with some precipitation throughout the year. Low temperatures	Fruits, tea, coffee macadamia nuts, intensive livestock production
II	5 861 400	15.1	Moderately high (750-1000mm per annum) rainfall confined to summer. Severe dry spells are rare	Intensive crop and/or livestock production
III	7 287 700	19.5	Infrequent heavy rainfall leads to moderate annual recording of about 650-800mm. Fairly severe mid-season dry spells	Marginal for maize, tobacco and cotton production, livestock production
IV	14 782 300	36.7	Fairly low total rainfall (450-650mm per annum). Periodic seasonal droughts, severe dry spells during rainy season	Drought resistant crops such as sorghum and pearl millet, livestock production
V	10 441 100	26.8	Low and erratic rainfall (<450mm per annum, <650mm in the Zambezi valley and <600mm in the Sabi-Limpopo Valleys). Prolonged mid-term dry spells	Too dry for successful crop production without irrigation. Marginal millet, sorghum, extensive beef ranching, game ranching

Source: Central Statistics Office (CSO), 2000, Vincent and Thomas, 1960

### 2.3.1 Land Distribution

Following the launch of the land reform exercise in the year 2001, the area under large scale commercial farming declined to 3.4 million hectares in 2010, versus 11.7 million hectares in 2000. This has resulted in a large number of small to medium- scale farmers in the agriculture sector (141,656 A1 and 8,000 A2 farmers in 2010) (Department of Research & Specialist Services, 2013). The A1 model was designed to decongest communal lands (Makadho, 2006), while the A2 model was intended to promote commercial agriculture among indigenous black farmers (Utete, 2003). **Table 2.4** shows the land distribution patterns before and after the land reform exercise of 2001.

Table 2.4: Changes in the National Distribution of Land 1980-2010

Farmer Cluster	Land Category	1980		2000		2010		Number of Farmers (2010)
		Area (Million ha)	%	Area (Million ha)	%	Area (Million ha)	%	
Smallholder Farmers	Communal	16.4	41.9	16.4	41.9	16.4	41.9	1,100,000
	Old resettlement	0.0	—	3.5	9.0	3.5	9.0	72,000
	New resettlement A1	0.0	—	0.0	—	4.1	10.5	141,656
Small-Medium	New resettlement A2	0.0	—	0.0	—	3.5	9	8,000
Small-scale Commercial	Small-scale commercial farms	1.4	3.6	1.4	3.6	1.4	3.6	14,072
Large-scale Commercial	Large-scale commercial farms	15.5	39.6	11.7	29.6	3.4	8.7	4,317
	State farms	0.5	1.3	0.7	1.8	0.7	1.8	—
	Urban Land	0.2	0.5	0.3	0.8	0.3	0.8	—
	National Parks and forest land	5.1	13.0	5.1	13.0	5.1	13.0	—
	Unallocated land	0.0	—	0.0	—	0.7	1.8	—

Source: Scoones *et al.*, 2010

Regardless of recent government initiatives to promote women in agriculture, the beneficiaries of most of the land have been men (82% in A1 and 88% in A2) (Kanyenze, 2011). This is also reflected in farmer organizations such as the Zimbabwe Commercial Farmers Union (ZCFU) where only 30% of its 18,000 members are women (ZCFU, 2013).

## 2.4 Overview of the Agro-processing Sector in Zimbabwe

Agro-processing industries refer to those activities that transform agricultural commodities into different forms that add value to the product, and may be primary or secondary. Primary processes such as drying, grading, and packaging only lead to minor alterations of the product; whereas secondary processing leads to a significant transformation of the product leading to a subsequent increase in market value and/or nutritional value (Mhazo *et al.*, 2003). The Zimbabwean economy has previously been heavily supported by a very successful agricultural sector that continually provided opportunities for agro-processing and value addition of agricultural produce. Since 2001 however, agricultural production has declined due to an unfavorable economy, poor rainfall patterns, poor quality of inputs, shortages of seed and fertilizers, among many other factors. This has thus impacted negatively on the agro-processing and beverages sector which depend heavily on the agricultural sector for raw materials. Major raw materials such as grain, livestock, fruit and vegetables, sugarcane, oil seeds and milk have traditionally been produced in Zimbabwe with imports being regarded as top-ups. Disruption of agricultural output has grossly affected

the performance of the agro-processing industry. As such, the industry has a few established players, who have considerable power and influence (some of whom have a monopolistic advantage) and, since 2009, are gaining market share and are now improving their production efficiency to enable themselves to fight competition. Most processors, however, have since scaled down operations, while others have shut down due to the unfavorable economic environment. In 2011 there were over 102 registered agro-processors based mainly in Harare (63%), Bulawayo, Mutare and Gweru (Bhonyongwa, 2011). After the adoption of the multicurrency system, the food processing sector has seen the emergence of new players and diversification by already existing players to expand their product range. Most of the upcoming players are small-medium entrepreneurs whose processes are partially mechanized. Locally available Food Science and Engineering courses (up to university level) are key in providing technical skills for this sector. In recent years the major production constraints has been the inadequacy of raw materials due to poor performance by the agricultural sector and antiquated equipment/technology mostly caused by failure to re-equip or modernise machinery and equipment. As determined in this study, some of the key players in the food processing industry and the various products they produce are shown in **Table 2.5**.

Table 2.5: Examples of Agro-Processors in Zimbabwe

Subsector	Companies and List of Products and by-products				
Milling (Cereals and Cereal Products)	<b>National Foods</b> <ul style="list-style-type: none"> <li>▪ flour</li> <li>▪ cooking oil</li> <li>▪ maize meal</li> <li>▪ rice</li> </ul>	<b>Victoria Foods</b> <ul style="list-style-type: none"> <li>▪ wheat flour</li> <li>▪ snacks</li> <li>▪ rice</li> <li>▪ salt</li> </ul>	<b>GMB</b> <ul style="list-style-type: none"> <li>▪ millet</li> <li>▪ sorghum</li> <li>▪ sunflower</li> <li>▪ ground nuts</li> <li>▪ soya beans</li> </ul>	<b>Agrifoods</b> <ul style="list-style-type: none"> <li>▪ stock feed</li> </ul>	<b>Capital Stock-feed Manufacturers</b> <ul style="list-style-type: none"> <li>▪ stock feed</li> </ul>
Confectionery	<b>Lebena</b> <ul style="list-style-type: none"> <li>▪ biscuits</li> <li>▪ chocolates</li> </ul>	<b>Crystal Candy</b> <ul style="list-style-type: none"> <li>▪ sweets</li> <li>▪ chocolates</li> <li>▪ chewing gum</li> <li>▪ syrups</li> <li>▪ caramel</li> </ul>	<b>Arenel</b> <ul style="list-style-type: none"> <li>▪ sweets</li> <li>▪ chocolates</li> <li>▪ chewing gum</li> <li>▪ syrups</li> <li>▪ caramel</li> </ul>	<b>Proton Bakeries</b> <ul style="list-style-type: none"> <li>▪ bread</li> </ul>	<b>Tongaat Hulett</b> <ul style="list-style-type: none"> <li>▪ sugar</li> <li>▪ sugar syrup</li> <li>▪ ethanol</li> </ul>
Dairy and dairy products	<b>Dairibord</b> <ul style="list-style-type: none"> <li>▪ fresh milk</li> <li>▪ long life milk</li> <li>▪ fermented milk</li> <li>▪ cheese</li> <li>▪ butter</li> <li>▪ dairy beverages</li> <li>▪ yoghurt,</li> <li>▪ Ice cream</li> </ul>	<b>Nestle</b> <ul style="list-style-type: none"> <li>▪ soup powders</li> <li>▪ infant milk formula</li> <li>▪ infant milk cereal</li> <li>▪ full cream milk powder</li> <li>▪ breakfast cereals</li> <li>▪ malt extract</li> <li>▪ cocoa based beverages</li> <li>▪ condensed milk</li> </ul>	<b>Kefalos</b> <ul style="list-style-type: none"> <li>▪ yoghurt,</li> <li>▪ ice cream</li> <li>▪ cheese</li> </ul>	<b>Kershelmar</b> <ul style="list-style-type: none"> <li>▪ fresh milk</li> <li>▪ fermented milk</li> <li>▪ yoghurt</li> </ul>	<b>Dendairy</b> <ul style="list-style-type: none"> <li>▪ fresh milk</li> <li>▪ long life milk</li> <li>▪ fermented milk</li> <li>▪ yoghurt</li> <li>▪ ice cream</li> </ul>
Beverages	<b>Delta Beverages</b> <ul style="list-style-type: none"> <li>▪ beer</li> <li>▪ soft drinks</li> <li>▪ maheu</li> </ul>	<b>African Distillers</b> <ul style="list-style-type: none"> <li>▪ spirits</li> <li>▪ wine</li> <li>▪ ciders</li> </ul>	<b>Schweppes</b> <ul style="list-style-type: none"> <li>▪ water</li> <li>▪ cordial</li> <li>▪ fruit juices</li> </ul>	<b>Revive</b> <ul style="list-style-type: none"> <li>▪ dairy based beverages</li> </ul>	<b>Rift Valley</b> <ul style="list-style-type: none"> <li>▪ fruit juice concentrate</li> <li>▪ cordial</li> </ul>
Beef and beef products	<b>Cold Storage Company</b> <ul style="list-style-type: none"> <li>▪ sausages</li> <li>▪ canned meat products</li> <li>▪ biltong</li> <li>▪ cold meats</li> <li>▪ salami</li> </ul>	<b>Grills Group of Companies</b> <ul style="list-style-type: none"> <li>▪ beef</li> </ul>	<b>Montana Meats</b> <ul style="list-style-type: none"> <li>▪ beef</li> <li>▪ canned meats</li> <li>▪ sausages</li> </ul>	<b>Surrey Abattoirs</b> <ul style="list-style-type: none"> <li>▪ beef</li> </ul>	<b>Koala Meats</b> <ul style="list-style-type: none"> <li>▪ beef</li> <li>▪ sausages</li> </ul>
Oil Seeds	<b>Unilever</b> <ul style="list-style-type: none"> <li>▪ margarine</li> </ul>	<b>Surface Investments</b> <ul style="list-style-type: none"> <li>▪ Refined cooking oil</li> </ul>	<b>United Refineries</b> <ul style="list-style-type: none"> <li>▪ cooking oil</li> <li>▪ margarine</li> </ul>	<b>Olivine Industries</b> <ul style="list-style-type: none"> <li>▪ cooking oil</li> <li>▪ margarine</li> </ul>	
Horticulture	<b>FAVCO</b> <ul style="list-style-type: none"> <li>▪ fruit juice</li> </ul>	<b>Honey Wood</b> <ul style="list-style-type: none"> <li>▪ jam</li> <li>▪ puree</li> </ul>	<b>Mazoe Citrus</b> <ul style="list-style-type: none"> <li>▪ fruit juice concentrate</li> <li>▪ cordial</li> </ul>		

The benefits of agro-processing include the following;

- Enhances the product quality
- Yield a higher value product
- Preserves the commodity thereby increasing the shelf life of perishables, and improving the availability of seasonal commodities
- Results in many products and by-products
- Helps address food security issues
- Employment creation and empowerment of minority groups

The resettlement exercise is expected to lead to an increase in agricultural productivity, and hence the need to revamp the agro-processing industry.

## 2.5 Pricing and Marketing of Agricultural Commodities

The production and marketing of agricultural products, which make the bulk of raw materials for agro-processing, is controlled and regulated by statutory bodies to promote production, food security and fair pricing. Examples are the Grain Marketing Board, and the Agricultural Marketing Authority;

The GMB is a statutory body formed by an Act of Parliament, the Grain Marketing Act, to regulate the marketing of certain agricultural products and their derivatives. Examples include maize and wheat, which are strategic grains with respect to national food security. The GMB is in the business of commodity trading, processing of products and also provides logistic services to the agricultural industry. The GMB trade in all the grains produced in the country and has taken a leading role in the agrarian reform by supporting farmers to grow cash crops such as soybeans, sunflower, sugar beans, sorghum and millet through its agricultural inputs scheme. Grain millers then access the grain from the GMB.

The government of Zimbabwe, through the Agricultural Marketing Authority (AMA);

- regulates production, buying and processing of any agricultural product with the aim to promote the proper marketing and fair pricing of any agricultural product.
- promotes the export or sales of any agricultural product by any means, including advertising, market research and the establishment or operation of premises, installations, plant, equipment or machinery at any place, whether inside or outside Zimbabwe.

## 2.6 Customs Documentation and Clearing Procedures

The Zimbabwe Revenue Authority (ZIMRA) stipulates that documentation accompanying export products has to be done by either a registered exporter or a registered clearing agent. Export documentation should be in two sets and includes the Bill of Entry (Form 21), Exchange Control (CDI) forms, suppliers' invoices, consignment note and original Export Permits (GMB permit, Agricultural permit).

ZIMRA also licenses freight forwarding and customs clearance agents who assist with support services including transport, customs clearance, courier services and insurance as required for the exportation and importation of agricultural products. Some of these have head-offices in Harare with branches and representative offices in places like Bulawayo, Beitbridge, Victoria-Falls, Nyamapanda, Chirundu, Gweru, Plumtree and Forbes border posts for the convenience of exporters.

## 2.7 Rules and Regulations Governing Export and Import of Products in Zimbabwe

The importation and exportation of certain goods and substances is restricted and possible only under certain conditions such as production of a relevant permit or license. For some products, the importation or exportation is absolutely prohibited. ZIMRA is in charge of the control of these import and export restrictions and prohibitions.

Usually restricted goods in this context are those which are subject to import or export control - that is, goods which may not be imported or exported except under license or permit. Examples include wildlife and wildlife products, agricultural produce as well as plants and plant products.

The importation or exportation can only be done under a relevant permit or license. For agricultural and horticultural products, as well as plants and plant products, authority is issued by the Ministry of Agriculture. Seed maize falls under the restricted goods category under the ZIMRA regulations hence requires permits before export as indicated in the export documentation section.

## 2.8 Sanitary and Phytosanitary Requirements

Sanitary and Phytosanitary (SPS) measures are designed to protect human, animal and plant health. For this reason, the Government of Zimbabwe, through the Ministry of Agriculture, regulates the importation of plant and animal materials through its borders. Under the plant quarantine regulations, all plants or plant parts are subject to plant quarantine and must be submitted for inspection. The importation of genetically modified seeds, plants and animals for planting or production is prohibited.

## 2.9 Value Chain Analysis

This study sought to analyse value chains in the Agro-industries/Food and Beverages sector from the producer to the end-user of agricultural commodities, in order to assess the viability of the selected value chains; and identify policies, measures and strategies to enhance competitiveness of the selected value chains.

A value chain can be defined as a set of businesses, activities and relationships engaged in creating a final product (or service). It based on the fact that a product is rarely consumed in its original form but becomes transformed, combined with other products, transported, packaged and marketed until it reaches its final consumer. In this context, the value chain describes how producers, processors, buyers, sellers, and consumers — separated by time and space — gradually add value to products as they pass from one link in the chain to the next (UNIDO, 2009). The main building blocks of the diagnostic tool are as follows;

- a) Mapping of actors and product flow
- b) Analysis of competitiveness, costs and margins
- c) Identifying marketing options and responses to market requirements and existing quality standards
- d) Analysing governance and linkages
- e) Analysing resource productivity and environmental performance
- f) Analysing options for development, innovation and upgrading
- g) Analysing actual and potential income distribution, employment and impact on livelihoods

### 2.9.1 Why Conduct a Value Chain Analysis?

The value chain approach was popularised in the 1980s by Michael Porter who sought to assess the contribution of various firm activities to the overall added value of its business. Since then, value chain analysis has been adopted by many government and development agencies as a means of identifying options for industrial development. Results of a value chain analysis give an indication of where intervention is required, and are also a guide to how such interventions can be best implemented (Schmitz 2005). Some of the benefits that can be derived from conducting a value chain analysis include the following (UNIDO, 2009);

- h) Improved quality of products and services
- i) Improved production and processing efficiencies
- j) Creation of new processing and transformation activities
- k) Better linkages among value chain actors

- l) Improved marketing and distribution of products and services
- m) Effective flow of technologies, information, and skills within the value chain
- n) Reduced entry barriers
- o) Regulatory frameworks that create an enabling environment for value chains to function
- p) Improved compliance with existing standards
- q) Promoting fair practices between actors
- r) Improved vertical integration of the value chain through improved contractual arrangements and chain governance
- s) Strengthening capacities in the long-run through training programs and business coaching
- t) Promoting clean technology and production and trade

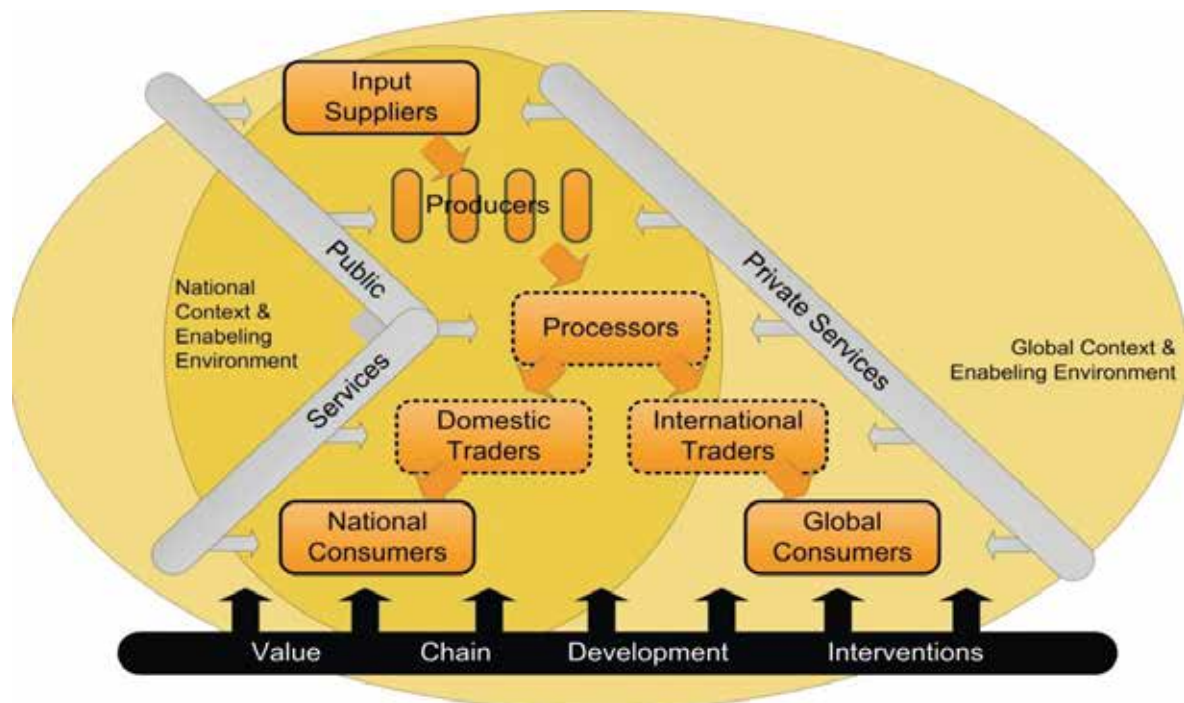
## CHAPTER 3: METHODOLOGY

An Integrated Value Chain Analysis Approach (IVCA) (UNIDO, 2009) was adopted for conducting a multi-dimensional value chain analysis.

### 3.1 Value Chain Modeling

The study methodology took an Integrated Value Chain Analysis Approach (IVCA) as outlined in **Figure 3.1** below. The approach provides a framework to analyse specific activities in a chain through which firms can create value and competitive advantage. The focus is on industrial value chains, meaning those that engage in the processing and transformation of primary products into consumable goods and thereby generate value added. The methodology places particular emphasis on the processing and manufacturing segment with its downstream (market) and upstream (supplies) relationships.

Figure 3.1: Value Chain Model



Source: UNIDO (2009). *Value Chain Diagnostics for Industrial Development*

### 3.2 Commodity Selection

The following categories of commodities in the Agro-Industries/Food and Beverages sector were identified for the study. The selection included commodities that are used in manufacturing, provide food security and those that have potential to grow or regain their previous economic status. The other factors that were considered in selecting the subsectors are:

- Growth potential
- Possibility for scaling up
- Potential for leveraging public with private investment
- Potential for poverty reduction
- Potential for Labour Intensive Technology
- Low barriers to entry(capital, knowledge)
- Low risk



- Social inclusion
- Environmental sustainability
- Within framework of national strategies

**Table 3.1: Commodities Selected for Value Chain Analysis**

Category	Specific Commodity
Cereals and cereal products	sorghum, barley, maize, wheat
Dairy and dairy products	milk and milk products
Horticulture	fruits and vegetables
Beef and beef products	beef, beef products
Oil seeds	soybean
Confectionery	sugarcane, sugar
Beverages	beer (lagers, opaque), fruit juices, sparkling beverages

### 3.3 Survey of Stakeholders

A survey of at least one hundred and fifty stakeholders from various levels of the value chain was contacted via email and telephone for participation in the value chain diagnostic study. A representative sample was taken from each of the agro-ecological zones. **Table 3.2** below shows the number of players from the respective levels that were included in this study group.

**Table 3.2: Numbers of Key Participants in the Value Chain Study**

Value Chain Level	Number of Participants
Producers	18 groups
Input suppliers	5
Processors	100
Other support services (freighters, tertiary institutions, banking services, regulators, farmer organizations, retailers)	27

### 3.4 Data Collection

Data was collected through questionnaires, focus group discussions and interviews of key informants were used to obtain vital value chain information from the stakeholders.

#### 3.4.1 Desk Research

In order to guide the value chain study and the drafting of this report, a review of country documents, publications and reports from government ministries and departments, international organizations as well as reports of value chain studies carried out in Zimbabwe, the region and beyond was done.

#### 3.4.2 Questionnaires

Sector specific questionnaires were developed. These were tested, reviewed to accommodate the changes highlighted, then distributed as electronic and/or hard copies as preferred by the respective participants. The response rate obtained was 57%.

#### 3.4.3 Key Informant Interviews

Forty-one (41) structured and non-structured interviews were held with institutional stakeholders who included tertiary institutions, research organizations and farmer organisations. Voice recorders were used for data capture.

#### 3.4.4 Focus Group Discussions

Focus groups for farmers were pre-arranged through the respective AGRITEX offices. Focus groups were generally well attended by farmers specializing in various commodities in the selected regions. Voice recorders were used for data capture.

## CHAPTER 4: FINDINGS

This chapter presents the findings in line with the seven diagnostic dimensions specified for each sub-sector. It begins by presenting the value chain map, explaining the production and inputs employed in the chain. It proceeds to production capacity and technologies in which we outline how the products are produced, by-products and constraints. We explore the markets for the products in the “End Markets and Trade” section. The subsection on “Sustainable Production and Energy Use” explores issues with sustainability of production technologies and its relation to the environment since the issue of development is multifaceted. Analysis of the governance and financing of value chains are presented last.

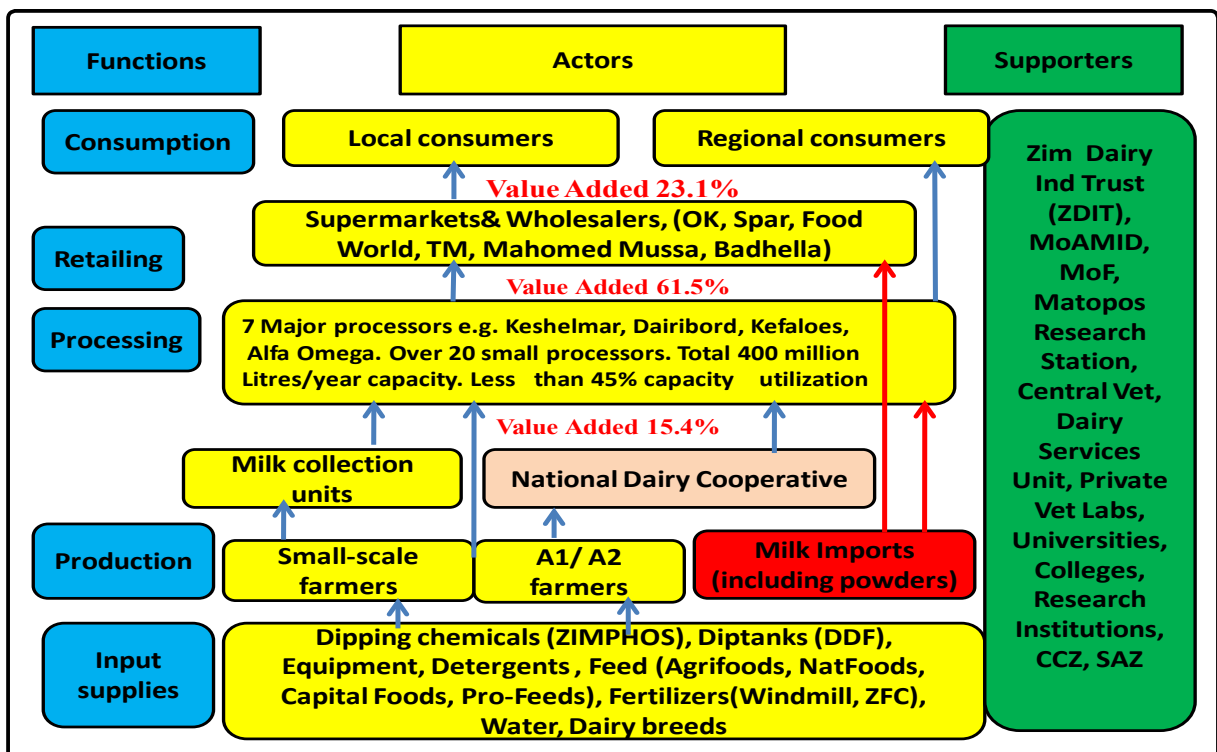
### 4.1 Dairy and Dairy Products

Zimbabwe’s dairy industry is fairly well developed with seven major processors and over twenty smaller processors. The products processed include yoghurt, cheese, milk powder, milk based beverages, ice cream and liquid milk (pasteurised and UHT milk). The processors have a combined capacity to process about 400 million litres of raw milk per year. However the overall capacity utilisation is below 50% mainly due to low supplies of raw milk from the farms. Milk output from the farms has been declining over the years such that production, at about 56 million litres in 2012, failing to meet the annual national demand estimated at 240 million litres (National Dairy Association, 2013). This has led to decline in capacity utilisation and thus impacting negatively on production costs and price to the final consumer and the influx of imports from neighbouring countries, for example Zambia and south Africa.

#### 4.1.1 Mapping of the Value Chain

The dairy value chain consists of several different functions which are farming input supply, milk production, trading, transport and storage, processing, retailing and consumption. These functions are supported by services such as financing, regulations, research and development and training. The value chain map for the dairy industry is shown in **Figure 4.1**.

Figure 4.1: Dairy Value Chain Map



### 4.1.2 Sourcing of Inputs and Supplies

The inputs required by farmers are cows (breeding animals), stock feeds, water, drugs, electricity, milking equipment, cold storage facilities and chemicals. Water is critical for the animals and irrigation of forage. The majority of inputs, about 80%, are sourced locally with the balance being imported mainly from South Africa (90% of imports). Some farmers (40%) expressed dissatisfaction with the performance of some chemicals sourced locally, for example dipping chemicals, hence they opt to import. In addition to this, the farmers face challenges in accessing stock feeds where prices are high (US\$310/tonne) and there is shortage. Only about 33% of the farmers had all the equipment they require, that is milking machines, cold storage facilities, forage cutters and hay bailers. Challenges highlighted by all farmers are lack of inputs, financial constraints, power outages and water shortages. Farmers need of boreholes especially in the southern parts of the country where water is scarce. Need infrastructure such as roads to be developed and to have pure breeding stocks maintained at designated sites.

### 4.1.3 Production Capacity and Technology

Raw milk production in Zimbabwe is failing to meet national requirements, estimated at 15 million litres per month, (National Dairy Cooperative, NDC, 2013). The national dairy herd is small, 26 502 currently (National Dairy Association, 2013). Of this number, 12 498 cows are in milk compared to 38 151 cows that were in milk in 1999 for example. Milk production per cow at one farm was said to be at times as low as 5 litres per day due to insufficient inputs such as feed. The NDC which provides transport services for raw milk indicated that they used to move up to 20 million litres per month but the figure has dropped to the current volumes of about 1.2 million litres a month. Extension workers are helping the farmers but farmers (33%) felt they needed to be more practical in their assistance. Some farmers' organisations, for example Zimbabwe Association of Dairy Farmers provide advisory and technical assistance while others do not. Matopos Research Station helps with breeding stock and forage management. Farmers cited that they also need training to enhance their skills and adoption of a business approach to farming.

**Table 4.1: Milk Production by Volume (2001 to 2012)**

Year	Total milk production (litres)
2001	150 171 000
2002	128 295 000
2003	91 443 000
2004	77 584 000
2009	36 000 000*
2010	-figure not available
2011	50 604 000
2012	55 929 000

Source: ZIMSTAT, 2013, except \* =Zimbabwe dairy association estimate, 2013.

Processors produce beverages and dairy products that include yoghurts, ice cream, cheese, milk powders and liquid milks and the main raw materials are raw milk and packaging. Raw materials are mostly sourced locally; about 66-70% of raw materials are of local origin with the balance being imports that include packaging materials and milk powders. Of the imports, about 68% come from the SADC region. About three quarters (75%) of the processors cited import tariffs and customs and trade regulations as obstacles. Raw materials sourced locally are of acceptable quality but are in short supply, especially raw milk. Raw milk is the most important raw material and is perishable and can be stored for only 2 to 3 days thus requiring a reliable cold chain (constant electricity supply).

Capacity utilisation for the processors ranges from 35 to 45% and the reasons put forward for this include lack of raw materials (80%) and low local demand (66%). The technology in use is comparable to Africa but worse than what is in use in other regions, for example Europe. The equipment used can be described as hybrid, where one processor is using a combination of manual, semi-automatic and automatic equipment.

The suitability of tertiary training was rated as slightly suitable by 40% of the processors while 60% rated it as suitable. The workforce includes unskilled, semi-skilled and skilled personnel. The unskilled and semi-skilled are mostly factory workers who constitute about 80% of the workforce. All processors do their own research and development.

#### 4.1.4 End Markets and Trade

Small-scale producers sale their raw milk through milk collection units or cooperatives and associations while larger producers sell to processors directly or through the National Dairy Cooperative (NDC) who bulk and delivers to processors for a charge. The NDC owns and maintains a fleet of insulated tankers that maintain the cold chain before the milk reaches the processors.

Processors are paying cash to farmers on delivery (60%) at US\$0.50/litre as some farmers have no bank accounts. Where farmers are contracted or are in an agreement with the processor, payments are made monthly at a pre-agreed price. All processors specify the quality they want for the raw materials to their suppliers.

Sales of finished products are mostly national with smaller processors selling their products mainly within their local municipal areas. Processors are adopting international standards, for example ISO 22000:2005 and ISO 9001:2008. For example Dairibord Zimbabwe Private Limited (DZPL) which was certified to ISO 9001 is also now certified to ISO 22000. Due to the small volumes of raw milk produced locally, some processors, for example Dairibord Zimbabwe Private Limited (DZPL), have gone into agreements in which products are packed for them in South Africa and imported into Zimbabwe. In the domestic markets, there is competition from imports coming from the SADC region, for example Zambia and South Africa.

#### 4.1.5 Value Chain Governance

Processors play a major role in the value chain where they provide support to farmers and act as buyers of raw milk. Farmers forming associations to help themselves, for example the Umzingwane Dairy Association to which member farmers deliver their milk for processing into ice cream and yoghurts. Player dominance is significant among processors where one processor becomes powerful with regards to a particular type of product. A notable example is Nestle who produce mostly milk powder products and enjoy a monopoly.

Ownership is mostly local private with some employees owning shares in processing companies, for example in Dairibord Zimbabwe Private Limited (DZPL) where employees hold 30% of the shares.

#### 4.1.6 Sustainable Production and Energy Use

Energy sources in use are coal and electricity and generators for backup. There is no evidence of use or production of alternatives such as bio-fuels. All processors experience power outages up to ten (10) times a month with some lasting as long as six (6) hours at a time. The product losses resulting from the power outages are estimated at a maximum of 2.5% of total production.

Water supplies are from municipal supplies and own boreholes which are used in times of water cuts. Electricity supply is inconsistent and the water from municipal works is of questionable quality.

Consumption of energy and water is monitored and audits carried in 75% of the processing plants. The processors are aware of the effects of their operations on the environment and have taken measures to comply with requirements of statutory bodies such as the Environmental Management Agency (EMA).

#### 4.1.7 Value Chain Finance

Farmers lack suitable financing with 30% citing the terms of the financiers are not good enough with regards to tenure and interest rates on loans. However the farmers show a willingness to work with

established processors by engaging in contract farming. Some processors, for example Kershelmer, have approached banks to finance small holder farmers as a way of boosting the raw milk supply base. All processors are financing their operations from both bank credit (100%) and company funds (50%). However, the funding from banks is short term, at most 5 years tenure, with 50% of the loans attracting interest rates between 16 and 20% per annum.

#### 4.1.8 Business and Socio-political Environment

Land ownership is still an issue among farmers who need title deeds to use as collateral to access loans. Processors are calling for efforts to increase the national milk cow herd in order to boost raw milk supplies. Also pointed the need promote trade within the manufacturing sector and promote links between industry and tertiary institutions and research organisations.

#### 4.1.9 Summary of Constraints

- Small national dairy herd
- Lack of knowledge of best farming practices among farmers
- Lack of access to finances to fund operations by small scale farmers due to lack of collateral to secure bank loans
- High cost of production of milk due to dependence on purchased feed for dairy cattle
- Low productivity per cow due to low feeding
- Low capacity utilization in processing
- Competition from imported dairy products
- High cost of power and inconsistent supply
- Lack of power supply to some farms
- Breaking of the cold chain
- Shortage of water supply for both farmers and processors
- The need for more specialized technical courses for dairy processing
- Low buying power of consumers

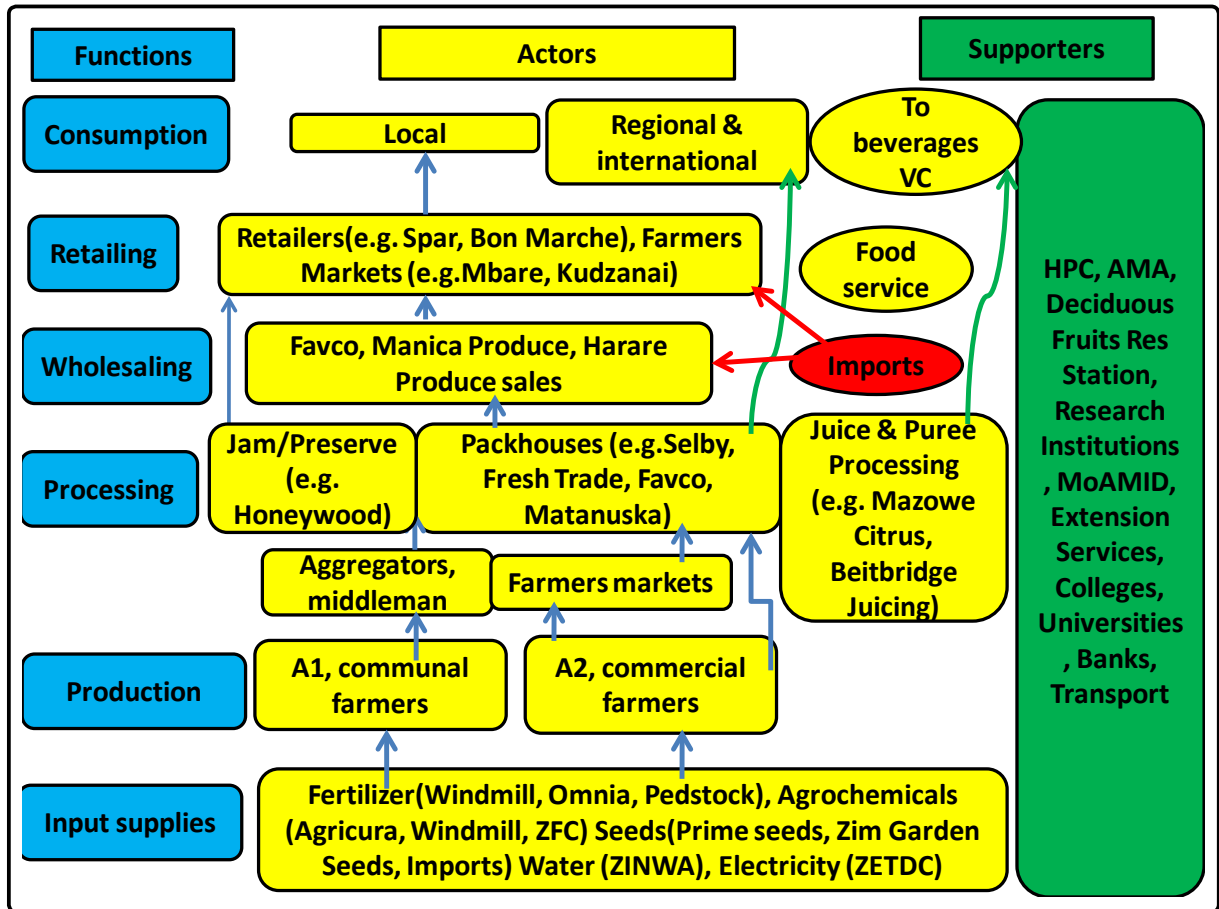
## 4.2 Fruits and Vegetables

Fruit and vegetable production in Zimbabwe is mainly concentrated in the northern parts of the country because of favourable weather conditions. Most fruit and vegetable production is concentrated in areas in and around Harare, Mashonaland East and West and Manicaland. The fruit and vegetable value chain is an important one since it not only provides fruits and vegetables, but feeds directly into the beverages and preserves value chains. Many growers involved in export are located in and around Harare and Manicaland Provinces with the fruits finding their way to European markets among others. The production of fruits and vegetables has been going up and peaked in 2002 before declining.

### 4.2.1 Value Chain Mapping

The actors in the value chain include inputs suppliers, farmers, pack-houses, traders and retailers. The actors get services from research and development, financiers, regulators, standard bodies and training institutions. The fresh and processed fruit and vegetables value chain is presented in **Figure 4.2**. This value chain shows the flow of product from inputs to production, packing and storage, processing as well as distribution and marketing.

Figure 4.2: Value Chain Map of Fresh Fruit and Vegetables



#### 4.2.2 Sourcing of Inputs and Supplies

The main inputs include machinery/equipment, labour, water, fertilisers, seed, tree seedlings and agrochemicals for pest and disease control. Inputs are sourced from both domestic (about 80%) and foreign markets (20%). The imported inputs are seed and seedlings, agrochemicals and equipment/machinery. South Africa is the major source of imported inputs accounting for 67% of the imported inputs. The quality of locally sourced inputs was rated as acceptable by 67% of the farmers although only 57% said they are in sufficient quantities. The most important inputs are water and fertilisers. In addition, labour is also a major input for large estate setups whose operations tend to be labour intensive.

Agreements between farmers and input suppliers exist but mainly for the large estates where 57% had formal agreements with their suppliers. Some of the agreements include up to 270 day accounts. The remaining 43% have to pay cash for the inputs. The large estates also have agreements with some foreign suppliers (14%), particularly of tree seedlings, where they get seedlings and chemicals on terms.

#### 4.2.3 Production Capacity and Technology

The fruits and vegetables produced and consumed in Zimbabwe are exotic. Vegetables are commonly produced in winter, that is from April to August, (Chigumira-Ngwerume, 2000), but their supply usually decreases just before the onset of the rainy season due to the scarcity of irrigation water and the increase in atmospheric temperatures (van der Mheen-Sluijer and Chihande, 1997). Fruits generally require low temperatures and high rainfall hence most of these fruits are grown in the Eastern Highlands. Oranges are mostly grown in Mashonaland Central. The production requires a lot of water and most of the resettled farmers in these areas have limited capacity as they do not have enough water reticulation equipment or where available it requires repair (HPC, 2013).

Production has declined after peaking in 2002 and this has been as result of diversification as farmers opted for other crops. Power and water shortages and high costs of labour (HPC, 2013). The minimum wages are currently US\$65/month for general agricultural workers and US\$78 for the horticulture workers, (Min of Labour and Social Welfare, 2013).

Research Institutes such as Nyanga Deciduous Fruits Research Station and AGRITEX provide farmers with information on new varieties and with the training and technology to grow most horticultural products. These institutions, however, have limited resources to adequately support all the farmers. Agricultural colleges and universities provide training in agriculture and horticulture.

The main value addition processes currently being conducted for fruits and vegetables are the extraction of purees and juices, production of jams and preserves and to a lesser extent pickling and drying by small to medium entrepreneurs. Other activities involve repackaging – i.e. breaking bulk into smaller quantities affordable to many buyers; and packing at pack houses for the export markets.

Processing of fruits in the area of production into juice concentrates, purees and jams appears to be the reason for the survival of processors as they only have to transport the finished product which is less bulky and higher value.

#### 4.2.4 End Markets and Trade

Output has declined over the years especially after 2000 when most large scale mechanized production declined. The quality of produce has also declined over the years; for example apple producers in Zimbabwe are unable to produce class one fruits. Hence most farmers' produce does not meet the quality required for exports. A few producers are however still meeting the required quality for export, selling their produce within the region (42%) and international markets (28%). Examples are estates and orchards in Manicaland who adopted and are certified to international quality standards such as the Global GAP standard which enables them to export fruits such as stone fruit and avocado pears to the United Kingdom and Holland. Smallholder farmers struggle to meet the quality and therefore sell their produce on the domestic market. Pack houses aggregate produce from farmers and pack them for retail distribution under their brands. **Table 4.2** shows the major players in the marketing of fruits and vegetables in Zimbabwe.

**Table 4.2: Players in the Marketing of Horticultural Produce in Zimbabwe**

Major Pack-houses	Major wholesalers	Major retailers
Selby	Interfresh	OK supermarket
Fresh Trade	Harare Produce Sales	TM supermarket
Nat fresh	Manica Produce	Spar
Rollex	Freshpro	Bon Marche
Rusitu Valley	FAVCO	Food World
Fresh Freight	Matanuska	OK supermarket
	Farmers' markets	Farmers' markets

Source: Horticulture Promotion Council, 2010



**Table 4.3: Zimbabwe's Trade Position in Edible Vegetables and Certain Root and Tubers in Millions US\$**

	2005	2006	2007	2008	2009	2010	2011	2012
<b>Exports</b>	8.12	375.75	143.92	37.33	2.92	1.24	1.07	1.17
<b>Imports</b>	7.13	13.38	13.84	17.85	32.17	28.07	20.33	16.07
<b>Trade Gain/Deficit</b>	0.99	362.36	130.09	19.48	(29.25)	(26.83)	(19.25)	(14.90)

Most of the small holder farmers, for example in Domboshawa, Shamva and Mutoko, rely on urban farmers markets such as Mbare in Harare to sell their produce. However, these markets have no suitable storage facilities to maintain the cold chain required for fruits and vegetables. Most of the produce is sold in the open exposed to the sun and the keeping quality is affected leading to losses on the market floor. Security is also a concern among farmers who sell on these markets as they end up losing some of their produce.

#### 4.2.5 Value Chain Governance

Processors and aggregators/middlemen have significant influence over the prices of produce. In the cases of contract farming, prices are also pre-determined for the farmer who has little or no influence. Farmers feel short-changed and tend to shun contract farming. Due to the perishable nature of their products, farmers are unable to hold on to their products until they get the right price and buyers take advantage of this in determining market prices.

Due to the limited number players in the processing industry, the type of governance that dominates in the Zimbabwean fruit and vegetable value chain can be considered to be a market-based type whereby processors and buyers play an influential role.

Linkages between processors and farmers are poor with some farmers failing to find markets for their produce, for example mango orchards in the Middle Sabi lose a lot of fruit and yet Zimbabwe imports mango puree from as far as India for beverage manufacture. The fruit ends up selling for as low as US\$280/tonne which the farmers felt was a loss.

In addition, the processing is taking place at locations far removed from the production site and this means high transport costs for the processors and thus the fruit fetches very low prices. The farmers are exposed to middlemen who then take advantage of the farmers' desperation and pay lower prices.

Linkages between actors at the same level are very important and of particular interest from this study was the processing of jams. One processor, located in the fruit production area, is producing jam for over five (5) other processors who then get the finished product and distribute under their own brands. This has seen the processor operating at 100% capacity utilisation.

#### 4.2.6 Sustainable Production and Energy Use

In horticulture, there is significant investment towards pest and disease control. Communal farmers however, do not use pesticides as intensively as commercial farmers. With the help of AREX officers, environmentally friendly horticultural production is attainable with small holder farmers, but with a compromise on quality. A few of the farmers are practising pure organic farming. More research is required so that higher yields, which are comparable to non-organic farming, are obtained.

The main source of energy is electricity used for pumping water for irrigation. Power outages affect the operations of farmers and results in reduced yields and crop failure especially for the large estates. Small scale farmers also use fuel fired pumps for irrigation directly from streams or rivers.

Fruit and vegetable production is heavily dependent on irrigation and consumes a lot of water. Stream



bank cultivation is rampant amongst communal farmers, for example in Honde Valley and Rusitu, and poses an environmental concern. The collapse of irrigation infrastructure has seen in decline in output from irrigation schemes around the country, for example Chitowa (Mutoko), Nyanyadzi, Mamina and Negomo.

#### 4.2.7 Value Chain Finance

Most farmers do not get any financial aid from financiers as there is a need for them to provide collateral. Banks are not accepting the 99 year lease as collateral for loans. Since most of these farmers are resettled farmers, they have no collateral hence are unable to expand their business ventures.

A few estates (14%) managed to get loans from banks for their operations but they indicated that the interest rates are high, at 15 to 20% per annum and tenures as short as one year. Contract farming, which is another source of financing, is low. About 15% of the farmers indicated they are involved in contract farming under which they are provided with fertiliser, seed and agrochemicals. One estate also indicated they get financing for labour as part of the contract farming agreement. Small holder farmers have become skeptical of contract farming agreements after previous experiences. For example resettled farmers in Shamva, where the contractor collected the produce and never paid the farmers.

Risks in production established in this study are mainly erratic rainfall and power outages which can lead to poor yields and product losses. Due to the perishable nature of horticultural products, there are also high risk post-harvest losses.

#### 4.2.8 Business and Socio-political Environment

Horticulture farming is constantly under threat from cheaper imports coming from neighbouring countries especially South Africa. This is because production costs for local producers are higher, whilst the competitors have lower production costs due to the use of GMO varieties. Consumers also seem to prefer the imports whose quality is perceived to be superior to that of local products.

Most of the farmers, especially the small scale farmers lack formal training and this impacts negatively on their yields. Given the current economic challenges, farmers are also failing to purchase vital inputs. This affects yields and quality of produce, and result in uncompetitive prices on the market.

Limited access to markets and market information by farmers is negatively affecting their decision making on which crops to produce, when and in what quantities. Farmers need to match their activities/production to market demand so that they can produce what the market requires at the right time, and in sufficient quantities.

The issue of land ownership is also impacting on production. Some farmers (23%) indicated they have no leases for the pieces of land they are farming on and they feel insecure about their future. As such, they are not fully investing on the farms and this affects their productivity. Where the leases are available, they have not been accepted by banks as collateral to enable the farmers to access credit to finance their business.

#### 4.2.9 Summary of Constraints

- Dilapidated infrastructure, for example irrigation equipment and green houses.
- Power and water shortages.
- Small number of processors.
- Broken link between processors and producers.
- Competition from imports.
- Inferior product quality.
- Lost foreign markets and no access to high end domestic markets
- Lack of knowledge of markets among farmers and distance from markets/processors.

- Cold chain non-functional.
- Lack of funding.
- No relations between farmers and markets (packers).

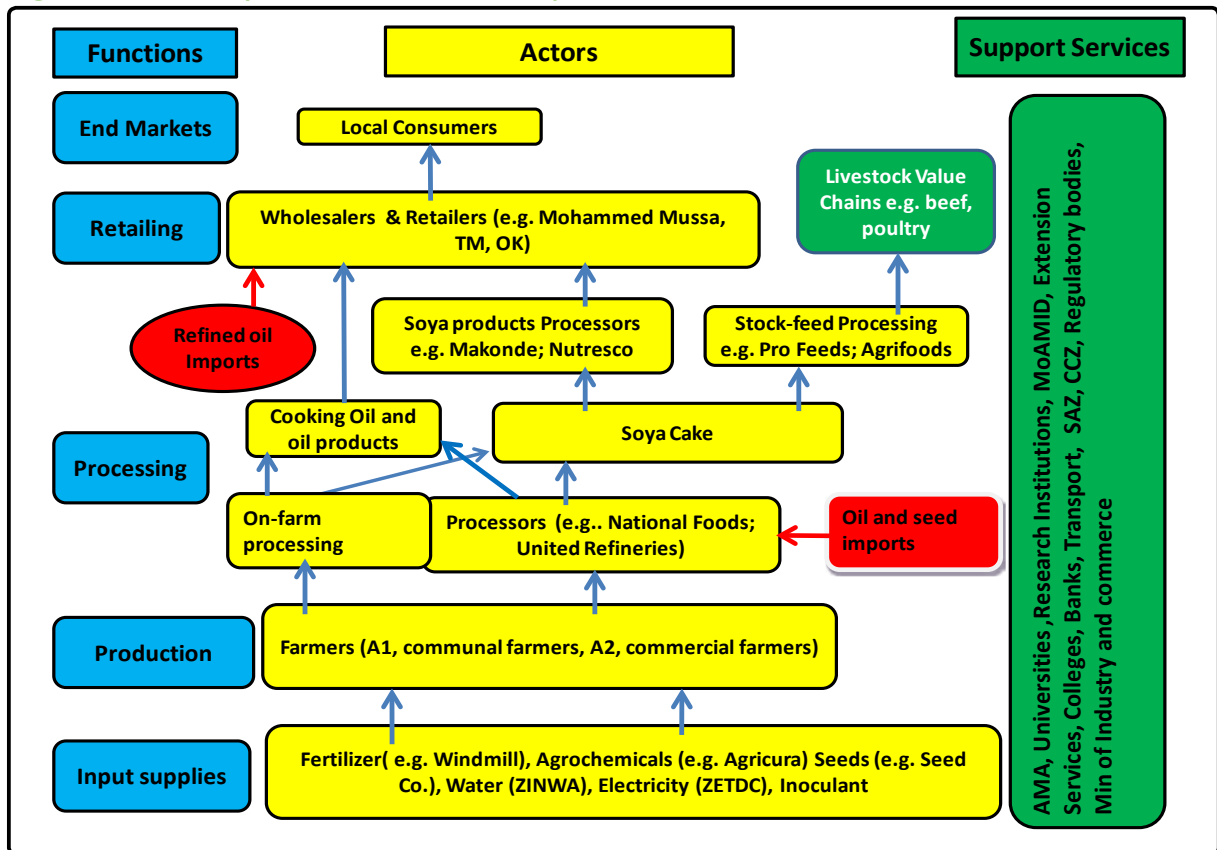
### 4.3 Soya bean

Soya bean is a high value crop because of its benefits both as a cash crop, and as a food crop. It is a significant source of protein for both man and livestock. Soya bean is used to produce a variety of high value marketable soybean oil, soymilk, soy yoghurt, soy flour and soya bean cake (stock feed). Approximately 95% of all soybean seed produced in Zimbabwe is destined for the processing industry for the production of soya bean oil. Soybean contributes 30% of all the cooking oil production while cottonseed contributes 50% (GoZ, 2008).

#### 4.3.1 Value Chain Mapping

The soya bean value chain consists of inputs suppliers, farmers, processors and marketers all supported by services such as banking and finance, training, research and development and regulatory bodies as shown in the value chain map in **Fig 4.3**.

Figure 4.3: The Soya bean Value Chain Map



#### 4.3.2 Sourcing of Inputs and Supplies

The major inputs are seed, fertilisers, agrochemicals and inoculants which are available from local suppliers. Agrochemicals are also available locally and this is complemented by imports from South Africa. The suppliers include the seed houses, fertiliser companies, agrochemicals manufactures and their distributors and retail outlets.

Seed and fertilisers are at times in short supply and more so in the rural areas. Most small holder farmers in rural areas rarely use certified seed. The quality of seed has been questioned by some farmers who

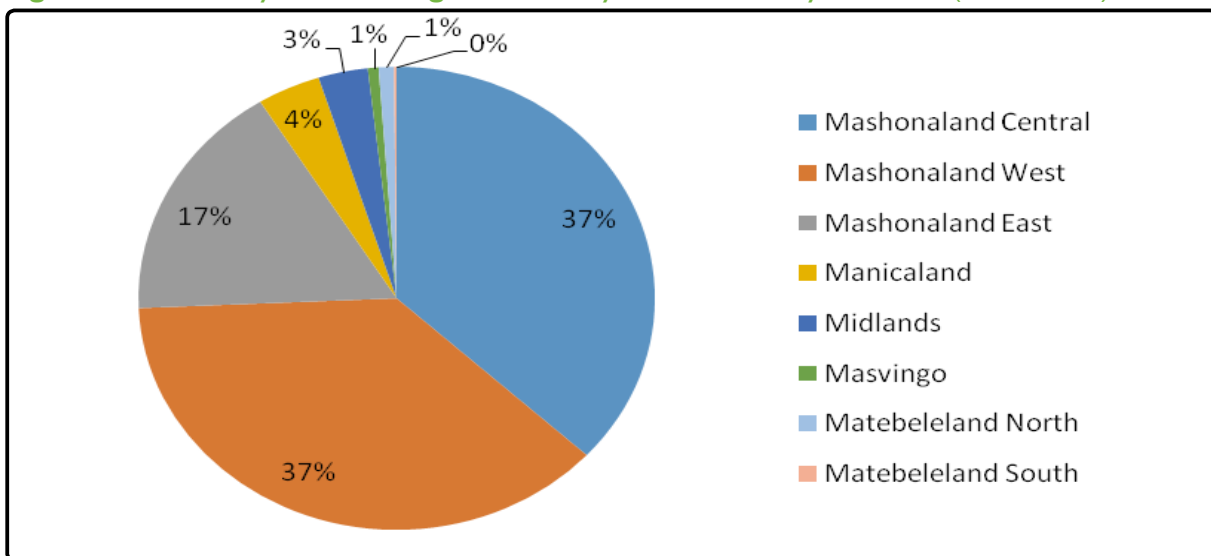
claimed germination rates that are lower than the expected 80-90%. Microbial inoculants for also not readily available and some farmers have no knowledge of their existence. Where available to small holder farmers, the inoculant costs as much as US\$10 to US\$20 per packet compared to US\$5 in urban areas. Fertilisers also become much more expensive with distance from urban centres with prices as much as US\$50-US\$55 per 50kg bag in some rural areas.

CIAT, an organisation working with communal small holder farmers, is running a project under a theme “Putting nitrogen fixation to work for small holder farmers in Zimbabwe” wherein they have partnered DR&SS for the production of soya bean inoculum for the farmers.

### 4.3.3 Production Capacity and technology

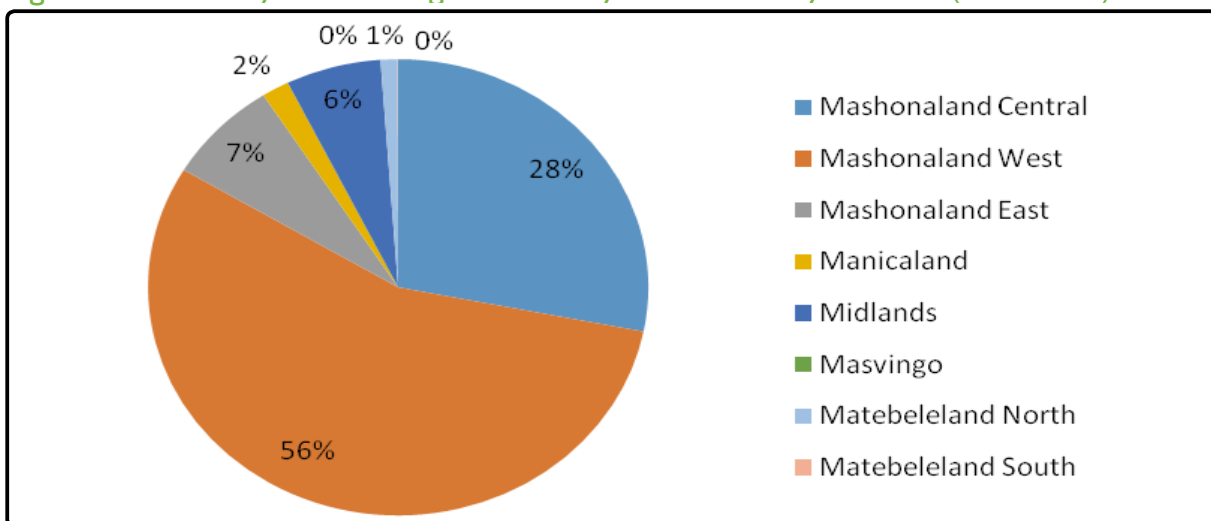
Soya bean production has been fluctuating since the 1980s peaking at 150 000 tonnes in 2009 before declining again, (DR&SS, 2013). Data for the years 2011 to 2013 from the DR&SS revealed that farmers in the Mashonaland Central and Mashonaland West provinces had the largest share of land planted with soya bean in the past two years as shown in the **Figures 4.4** and **4.5**.

Figure 4.4: Summary of Percentage Area of Soybean Planted by Province (2011-2012)



Source: Department of Research and Specialist Services (DR&SS), 2013

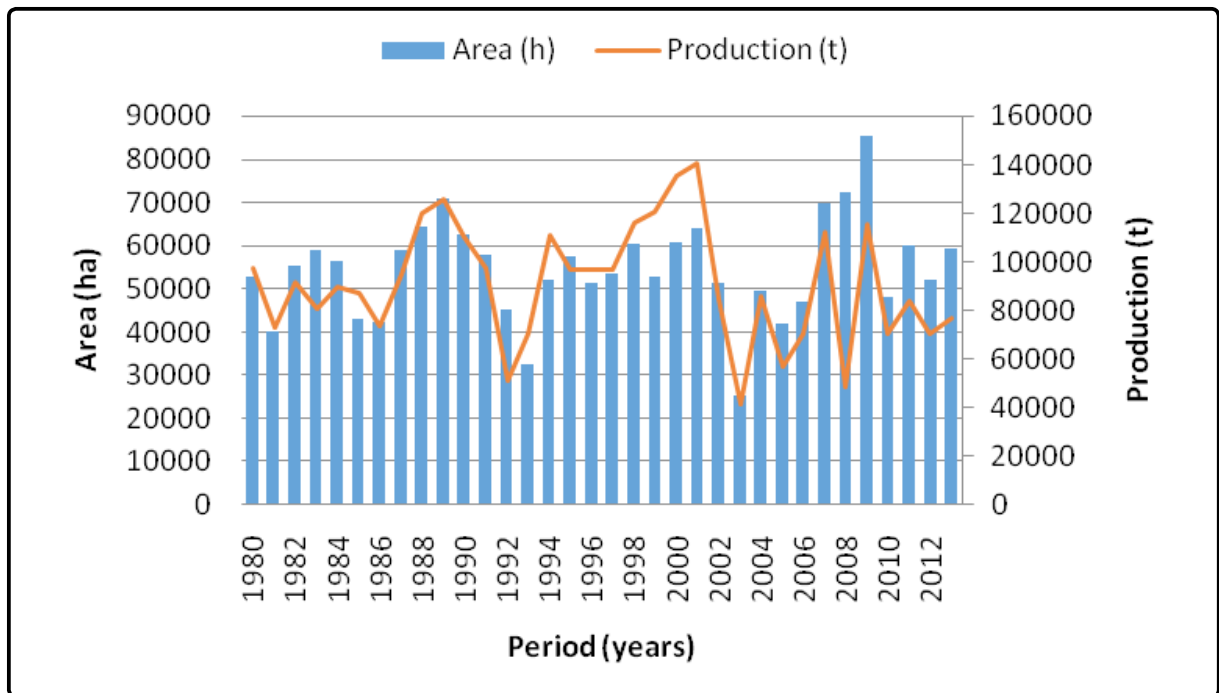
Figure 4.5: Summary of Percentage Area of Soybean Planted by Province (2012-2013)



Source: Department of Research and Specialist Services (DR&SS), 2013

The area under soy beans, (see **Figure 4.6**), has shown some fluctuations since 1980 to date with sharp decreases noted particularly in the 2002/03 season immediately after the land reform exercise. Production volumes have also been fluctuating in response to changes in the area planted with soybeans. An increase in planting area in the 2007/08 and 2008/09 seasons however first saw a sharp decline in production before production increased in the latter season possibly due to a harsh economic environment. The highest production volumes were experienced during 2000/01 season mainly as a result of unchanged amounts of land dedicated to planting in major producing provinces as well as improved yields.

**Figure 4.6: Trends in Soybean Area Planted and Total Production (1980-2013)**



Source: Department of Research and Specialist Services (DR&SS), 2013

Soya bean is primarily processed into cooking oil and the protein-rich soya bean cake. The cake (also referred to as soy meal), a by-product of the oil extraction process, is sold to feed manufacturers domestically and in the region, e.g. South Africa. Soybean cake is an important protein source for livestock, particularly in the poultry and piggery sub-sectors. Soybean cake extracts are also be used in the manufacture of consumables such as soy-chunks. Another important by-product of the soybean extraction process is the gums which contain lecithin used in the manufacture of bread.

Although some establishments are using almost 100% of installed capacity, the industry has generally faced a decline in capacity utilisation due to low local demand, lack of raw materials, working capital constraints, antiquated machinery and breakdowns, high cost of doing business, competition from imports and drawbacks from the current economic environment.

Soya bean harvesting requires machinery such as combine harvesters; machinery which is expensive and is not easily available such that most farmers depend on hired equipment. Small scale farmers harvest their crop manually and this is labour intensive. There is need for appropriate technology for small scale producers such as has been developed in India.

Processing uses mainly manual processing and transformation technology. Lack of affordable finance poses a major challenge in the maintenance and upgrading of the plant and equipment hence some of the equipment in use is old and inefficient.

#### 4.3.4 End Markets and Trade

Cooking oil, which is the main product accounting for up to 70% of sales, is sold on the local markets through wholesalers and retailers where there is competition from cheaper imported oil. Soybean cake is sold locally to stock feed manufacturers such as Feedmix, National Foods and Probrands as a protein source or to processors who convert it into chunks and corn-soya blend. The market for the cake is favourable given the high demand for stock feeds especially for poultry. Growth in the livestock production industry creates a huge market for soya bean and cake. The cake also competes against cotton seed cake in the market. There has been a shortage of soya bean cake and feed stock manufacturers have had to import soya bean or the cake to meet their requirements. Soap is another by-product of oil production and finds its way to the local market where, again, there is competition from imported products.

#### 4.3.5 Value Chain Governance

The sector has well developed processors who process soybean into cooking oil and soy cake and they are very powerful. This is a market based chain because the product is fairly standard and non-differentiated and the prices are determined by supply and demand. The major processors are Olivine, Surface Investments, National Foods and United Refineries. The processors respond to market forces especially now that the market has several imported products coming from South Africa.

#### 4.3.6 Sustainable Production and Energy Use

Electricity is the major source of energy for both farmers and processors with generators providing energy during power cuts. Power outages are experienced on average 15 times per month lasting up to 6 hours each time. Refineries use fuels such as paraffin and diesel to fire burners.

The local municipality is the major source of water supply for processors and effect of water cuts is minimal. The sector is faced with the challenge of waste disposal, especially acid oil when it cannot be converted to soap.

#### 4.3.7 Value Chain Finance

Whilst operations are financed from within some of the companies, financing is also sourced from banks and shareholders. For finances sourced from banks, challenges faced include stringent collateral requirements, funding is not always readily available and high interest rates. For farmers, accessing funds is a challenge particularly the small holder farmers without the required collateral, the money is expensive for the farmers.

There some organisations that promote small holder farmers producing legume crops including soya beans. One such example is CIAT who have worked with farmers in areas such as Chegutu, Makoni, Hwedza and Guruve under contract. Because the farmers lack funding to buy inputs, CIAT provided the inputs and training and then buys the crop from the farmers.

#### 4.3.8 Business and Socio-political Environment

Courts and tax administration pose no obstacle to the current operations at processing companies. Minor to moderate obstacles are experienced with corruption, crime, theft and disorder, inadequately educated workforce, practices of competitors in the informal sector, and transport limitations. Customs and trade regulations, labour regulations and health issues, licensing and permits, tax rates and import tariffs pose as major obstacles to current operations at these establishments. 10-12% of company management time was spent on dealing with requirements imposed by government regulations. Import licenses were obtained 1 to 2 weeks from the day of application to the day they were granted. It took more than a month from the time of application for 50% of the companies to obtain operating licenses.

#### 4.3.9 Summary of Constraints

- Low national production volumes-insufficient raw materials for processors.

- High costs of production.
- Low local demand.
- Competition from cheaper imports.
- Technology gaps in processing.
- Skills and knowledge lacking among farmers.
- Poor coordination within the value chain.
- Unfavourable import policies.

#### 4.4 Sugarcane

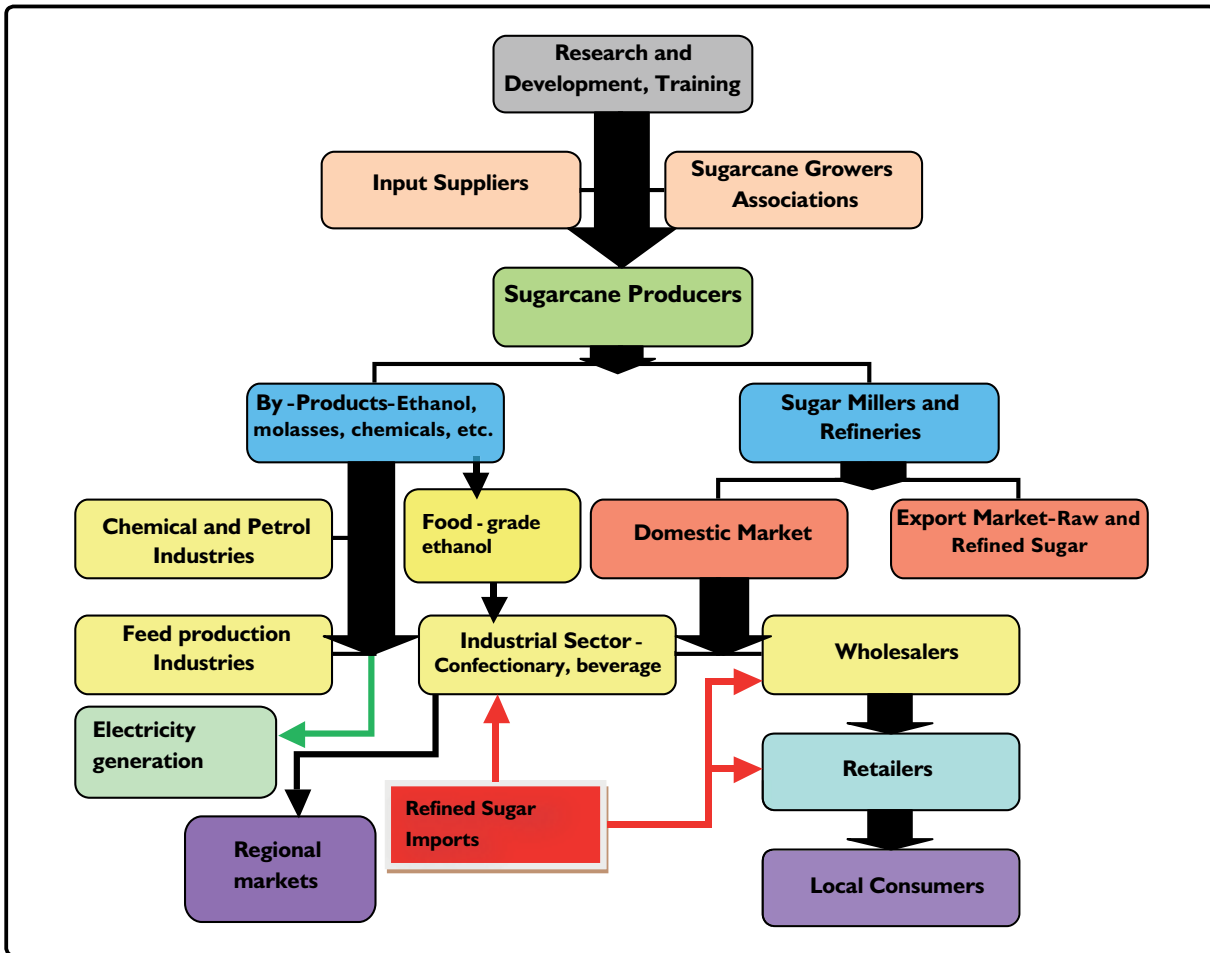
Sugarcane production in Zimbabwe takes place under irrigation in the southeast, low altitude areas of Zimbabwe, also known as the Lowveld. Production is by large, privately-owned sugar estates and private farmers in the Triangle, Hippo Valley, Mkwesine and Mwenezi areas. Sugar is an important raw material for the beverages and confectionery sectors; while by-products such as bioethanol also contribute towards the fuel sector. Sugar is largely consumed directly, with a very small percentage consumed through value-added products. The per capita sugar consumption is estimated at 24.6 kg per annum.

Sugarcane is produced by large, privately-owned sugar estates and private farmers in the Triangle, Hippo Valley, Mkwesine and Mwenezi areas. Triangle and Hippo Valley Estates are the two large privately-owned estates comprising of 28 494 hectares under sugarcane production and produce about 80% of Zimbabwe's sugar crop. Tongaat Hullet, a large South African agricultural and agro-processing group which also has operations in South Africa and Mozambique, wholly owns Triangle and has a 50.35% stake in Hippo Valley Estates. Private growers and newly resettled farmers occupy about 15,880 hectares and produce about 20% of the sugarcane crop.

##### 4.4.1. Value Chain Mapping

Sugarcane value chain in Zimbabwe includes input suppliers, estates, out-growers, sugarcane millers, refiners and marketers of sugar.

Figure 4.7: The Zimbabwe Sugarcane Value Chain Map



#### 4.4.2 Sourcing of Inputs and Supplies

These provide cane, fertilizers, chemicals, machinery and equipment. Farmers also get into contract farming with the two major producers to get assistance on financing and inputs.

There is limited supply of irrigation water and water charges are prohibitive as they constitute major expenditure on production. At the moment, it takes an average of five days to clear imported raw materials from customs, with a thirty day inventory for all inputs. However, import tariffs and customs regulations are the major obstacles to production with regards to imported raw materials. Formal contractual agreements exist between suppliers and producers. Transportation is a moderate impediment due to bad road network which hampers timely transportation of bulk quantities of inputs.

#### 4.4.3 Production Capacity and Technology

Zimbabwe has an installed capacity of 600,000 metric tonnes sugar per year but is currently producing just over 370,000 metric tonnes per year (62%). The country produces 3 100,000 tonnes of raw sugar cane annually with a world share of 0.2%. The large estates have a potential to produce over three million tons of sugarcane while private farmers and newly resettled, who were allocated twenty hectares per farmer after the Land Reform Programme, have the potential to produce 1.4 million tons of sugarcane.

The top two producers, Triangle and Hippo Valley, are involved in sugarcane farming, sugar milling and alcohol production. They also have contractual agreements with some farmers who produce sugarcane to feed the mills. Inputs are sourced locally and are financed through personal funds or under contract

farming. The millers get sugarcane directly from their plantations and smaller volumes from private farmers. Sugar cane is processed into cane sugar and its by-products, such as ethanol, used in various sectors such as confectionery and beverages.

There are two stand-alone sugar refineries in Zimbabwe located in Bulawayo and Harare. The primary inputs are raw sugar from mills and coal obtained from Hwange Colliery through formal contractual agreements. In 2012 more than 95% of raw materials were obtained locally while imports are not direct. Some raw materials such as phosphoric acid are sourced locally but now the chemical industry is operating below capacity and cannot meet the demand. The Harare Refinery is undergoing upgrades at an estimated cost of US\$15 million to meet both regional and international standards. The technology is being sourced from India. There is competition from by imported brands which have flooded the market.

Research and Development for process improvement is mainly in-house. Zimbabwe Sugar Association Experiment Station (ZSAES), a private sugarcane research station, provides the Zimbabwe sugarcane industry with research, evaluation, technology transfer and specialized services. Technologies provided by the institution are new and improved sugarcane varieties, sugarcane production systems, fertilizer and machinery recommendations and water and irrigation management among others. Currently, there are fourteen sugarcane varieties and breeding is underway to produce varieties that satisfy the industry's requirements. Universities and colleges provide training in the fields of agriculture, food processing and engineering which provide adequate human resources. Although the technical expertise provided by the tertiary education curricula is suitable for the sector, there are no collaborations with national R&D institutions. However, ZSDA crafted a Sugar Industry Expansion Programme Vision 2015 meant to increase production of the crop by indigenous farmers to ensure that new farmers are equipped with the right knowledge on sugar-cane production. The association is currently working towards coming up with a training curriculum for growing sugar and farmers will be awarded certificates and diplomas and even degrees.

Zimbabwe is currently ranked 23<sup>rd</sup> in the world sugarcane production rankings. **Table 4.4** and **Table 4.5** show sugarcane production world rankings as well as production trends respectively.

**Table 4.4: Sugar Cane Values and World Rankings for Zimbabwe (2013)**

Data set	Value	Rank
Sugar cane, production quantity (tonnes)	3 100 000	36
Sugar cane, area harvested (hectare)	39 000	44
Sugar cane, yield (hectogram per hectare)	794 872	23

Source FAOstat, 2013

**Table 4.5: Production of Sugarcane and Sugar in Zimbabwe from 2008/09 Marketing Season**

Season	Area harvested (ha)	Cane crushed (MT)	Yield MT/ha	Sugar production (MT)	Cane/sugar ratio
<b>2008/09</b>	35,320	2,582,200	73.1	297,864	8.67
<b>2009/10</b>	36,174	2,338,300	64.6	258,962	9.03
<b>2010/11</b>	35,290	2,695,828	76.4	332,000	8.12
<b>2011/12 (estimate)</b>	35,290	3,000,000	85.0	372,000	8.06
<b>2012/13 (forecast)</b>	37,500	3,500,000	93.3	430,000	8.10

Source: Global Agricultural Information Network, 2012



Triangle is the biggest sugar operation in Zimbabwe with crushing capacity of around 2 500,000 tonnes of cane per year and producing up to 300,000 tonnes of raw sugar per year. Hippo Valley, the country's second largest operation produces approximately 50% of the local sugar industry output and has a mill with an annual capacity almost equaling Triangle. Mkwesine Estates has about 4 650 hectares under cultivation by small scale farmers. The decrease in capacity utilisation in the industry is mainly due to low local demand, power and water shortages and competition from imports.

The total annual capacity of the two sugar refineries is 260,000 tonnes and they produce white sugar. Sugar pricing varies in accordance with market demand and supply with several competitor brands having entered the market from the region.

The manufacturing sector's capacity utilisation declined from an average of 57% in 2011, 44% in 2012 and 39% in the 3rd quarter of 2013. This is due to structural and infrastructural bottlenecks such as erratic power supply, obsolete machinery and dilapidated infrastructure as well as lack of and high cost of capital, thereby negatively affecting value addition, beneficiation and employment creation.

Sugarcane processing plants are well established as they have been operating for over thirty years with most installed equipment still capable of producing high quality sugar. Processing technology is automatic and better compared to the rest of Africa although it is below international standard. Funding and availability of equipment suppliers in Zimbabwe are the major challenges faced in maintenance and upgrading of plant and equipment.

Processors are aware of the food quality standards that should be adhered to with a number of companies in the sector having been certified under Standards Association of Zimbabwe (SAZ), ISO 9001:2000, Hazard Analysis Critical Control Points (HACCP) and ISO 22000 Food Safety Management Standard. Some other companies are working towards EOSH (Environmental) certification.

The main by-products of sugarcane are ethanol and molasses. The biggest ethanol plant in Zimbabwe is Green Fuels, a multi-billion dollar project situated in Chisumbanje. The venture employs latest automated technology with more than 75% efficiency. There are plans to increase the number of ethanol plants in Middle Sabi, Mkwesine and Nuanetsi areas, which are set to use even more advanced technologies.

The Chisumbanje Ethanol Project is a national project of great strategic importance where ethanol is produced from sugarcane. It is one of Africa's largest ethanol projects. The project consists of sugarcane plantations in Chisumbanje and Middle Sabi, with the ethanol plant being located in Chisumbanje. It is also a consortium of local investors in partnership with the government's Agriculture and Rural Development Authority (ARDA). At its peak, the Chisumbanje ethanol project and ARDA's cane growing adjacent farms has been projected to create employment for more than 8 000 people.

Triangle also has an alcohol plant attached to the sugar factory which produces up to 25 million litres of industrial grade rectified spirit from molasses annually, for sale mostly into the regional market while Hippo Valley produces molasses. Molasses is a useful ingredient in production of stock feed and alcohol. The bagasse produced during the milling season is used for the generation of electricity, producing at most 30 megawatts at optimum capacity. There was an increase in capacity utilisation in ethanol production from 15% in 2012 to 89% in 2013.

#### 4.4.4 End Markets and Trade

Zimbabwe exports sugar to the European Union market- United Kingdom, Portugal, Spain, Italy, Romania and Germany. The country is currently not exporting any sugar to the SADC region and in Africa 350 tones were exported to Kenya in 2013. About 301 000 tonnes of sugar are sold locally whilst 202 000 tones are exported. About 65% of the sugar produced in Zimbabwe is for the domestic market while

the remaining 35% is exported. Some of the export destinations for sugar and confectionary are shown in **Table 4.6**.

**Table 4.6: Export of Sugar and Confectionery Products**

Product	Export Destination
Sugar	Botswana, South Africa, Zambia
Sugar syrup	Botswana, South Africa, Zambia, Malawi, Mozambique
Sweets, Chocolates, Chewing Gum, Syrups, Caramel	Mozambique, Malawi, Botswana, Tanzania, Zambia, Angola, DRC, Sweden, Denmark, Netherlands
Biscuits, Bread	Malawi, Mozambique, Botswana, Namibia, Zambia, South Africa

Most of the sugar consumed by the local market is mainly used as an input/raw material in other value chains in the agro-processing sector. The major product of the Chisumbanje ethanol plant is ethanol fuel (90%) which they supply to major fuel companies in the country. There has been a marked increase in sales of ethanol with about 95% being consumed locally whilst the remaining 5% is exported mainly into the SADC region.

Annual direct imports in the year 2013 were as follows; SADC 19%, Asia 33% and other regions 48%. Zimbabwe currently has an agreement with the European Union (EU) to export sugar into the region free of duty and quota restrictions and its market is secure for the period from September 2010 to 2015, subject to the safeguard clause of the Economic Partnership Agreement with the European Union (EU).

For confectionary producers, exports have decreased from previous years due to the fact that there are no incentives for exporting their products, high transport costs as well as lack of mechanisms to sell abroad. This has caused most companies to sell about 90% of their products to the domestic market whilst only 10 % reaches the international market, which is mostly the SADC region. Products are facing competition mainly from imports that are cheap.

**Table 4.7: Zimbabwe's Sugar and Sugar Confectionary Trade Position in Millions US\$**

	2005	2006	2007	2008	2009	2010	2011	2012
<b>Exports</b>	109.68	56.16	45.51	27.80	78.52	52.54	53.14	106.70
<b>Imports</b>	8.20	1.16	1.70	3.89	32.32	70.39	59.67	80.23
<b>Trade Gain/Deficit</b>	101.48	55.00	43.81	23.91	46.21	(17.86)	(6.53)	26.47

Source: ZIMSTAT, 2013.

The refineries are certified to the ISO 9001:2008 standard (quality management system). Since February 2009, sales to the domestic market have been conducted in US dollars and other regional currencies and the prices are now in line with regional sugar prices. The average wholesale price of sugar is US\$ 1.70 per 2 kg, while the retail price is US\$2 per 2 kg.

The price of raw sugar is largely determined on the international market. The price of raw sugar in Zimbabwe for the 2012/13 marketing season dropped to US\$627, 67 per tonne from US\$700 the previous year owing to a decline in the price of the commodity on the international market. The low sugar price is not favourable to producers especially considering high production costs incurred due to water charges, labour costs, high interest rates and exorbitant input prices.

#### 4.4.5 Value Chain Governance

The Zimbabwe Sugar Farmers Development Association (ZSCFDA) together with the Commercial Sugarcane Farmers Association of Zimbabwe (CSCFAZ) represent close to 1 000 new cane farmers in the Lowveld who benefited under the land reform programme. Farmers in the Lowveld have a good working relationship with Hippo Valley and Triangle that own vast sugar estates. Previously, sugarcane was produced by white commercial farmers in Hippo Valley and Triangle but now more indigenous farmers are producing sugar cane following the land reform. However, the land reform did not affect their estates and expansion is targeting virgin land as the entire Lowveld is suitable for cane production.

According to the ZSDA, sugarcane growing expansion is not only targeting the Lowveld but the whole country. Zimbabwe has a very good climate for growing sugar not only in Chiredzi and Mwenezi but in Manicaland, Matabeleland South, Matabeleland North, Mashonaland West and Mashonaland Central provided that there is water.

The Zimbabwe Sugar Association is a private association of millers and growers which provides breeding programmes, sugarcane trials, and plant protection with research reports being published to benefit farmers.

#### 4.4.6 Sustainable Production and Energy Use

Triangle is an estate which is self-contained in terms of water and energy supply for the operation season which runs typically from April to November annually. Raw water supply is through supply contracts with the Zimbabwe National Water Authority (ZINWA) while power supply is secured through agreements with the Zimbabwe Electricity Transmission and Distribution Company (ZETDC). Large commercial sugarcane producers such as Triangle are using biomass as a fuel in running their own power station to sustain production in their plant, thereby reducing pressure on the national power grid. They also have their own waterworks. The industry lost between 5 and 10% of total annual sales to power outages.

Producers are compliant to environmental laws and regulations with a number having been certified under international bodies such as ISO. The sugar refineries are working towards ISO 14000, (Environmental Management System), certification. Employees are trained on environmental matters including air emission, hazardous substance, waste management and water use in line with existing environmental policies. Regular tests for hazardous air emissions are also conducted.

#### 4.4.7 Value Chain Finance

Loan categories vary between farmers as well as their associations with both long and short-term loans being available. For major producers, the annual operations require more than US\$10 million with the financing coming from within the companies. They do not face challenges from banks since there are already established linkages and good reputation over years of doing business. The companies are operating below capacity due to limited cane supply.

There are some farmers' associations with arrangements with service providers whereby the associations act as the guarantors, especially for small holder farmers. Strength of the small scale farmers has been born through the formation of the Zimbabwe Sugarcane Development Association (ZSDA). Interest rates on borrowed funds vary from 10% to 25% per annum, with repayment periods below 3 years.

#### 4.4.8 Business and Socio-political Environment

Sugarcane growing had been under monopoly by Hippo Valley Estates but since the agrarian reform programme, new small scale farmers now control about 16 000 ha of sugar cane in Chiredzi. An industry recovery programme is underway to try and revamp sugar production in Zimbabwe. This process is expected to improve cane yields and to re-establishment private farmer cane lands, a development that is expected to lead to the industry getting back to its capacity production of 600,000 metric tonnes a year. The industry has about 18 000 employees.

Green Fuels and Triangle also have a working relationship shown by purchases worth over US\$ 130 million per annum. There are 800 small scale farmers who accessed loans from Banc ABC, a local company supporting sugarcane farmers.

#### 4.4.9 Summary of Constraints

- Capacity utilisation is low due to shortage of local inputs, use of out-dated technology in food processing, packaging and labelling.
- Insufficient working capital for production, banks are not giving long term loans.
- Competition from imports.
- Fluctuations in global market prices of sugar.
- High production costs.
- High operational costs- maintenance for machinery (high tools and spares costs).
- Electricity and water cuts
- High raw materials costs.
- Unavailability of locally produced spares for machinery and plant.
- Prolonged drought in areas such as Chiredzi, where most of the sugar estates are.
- High water charges and erratic supplies
- Obsolete technologies due to inability to re-equip and modernize machinery

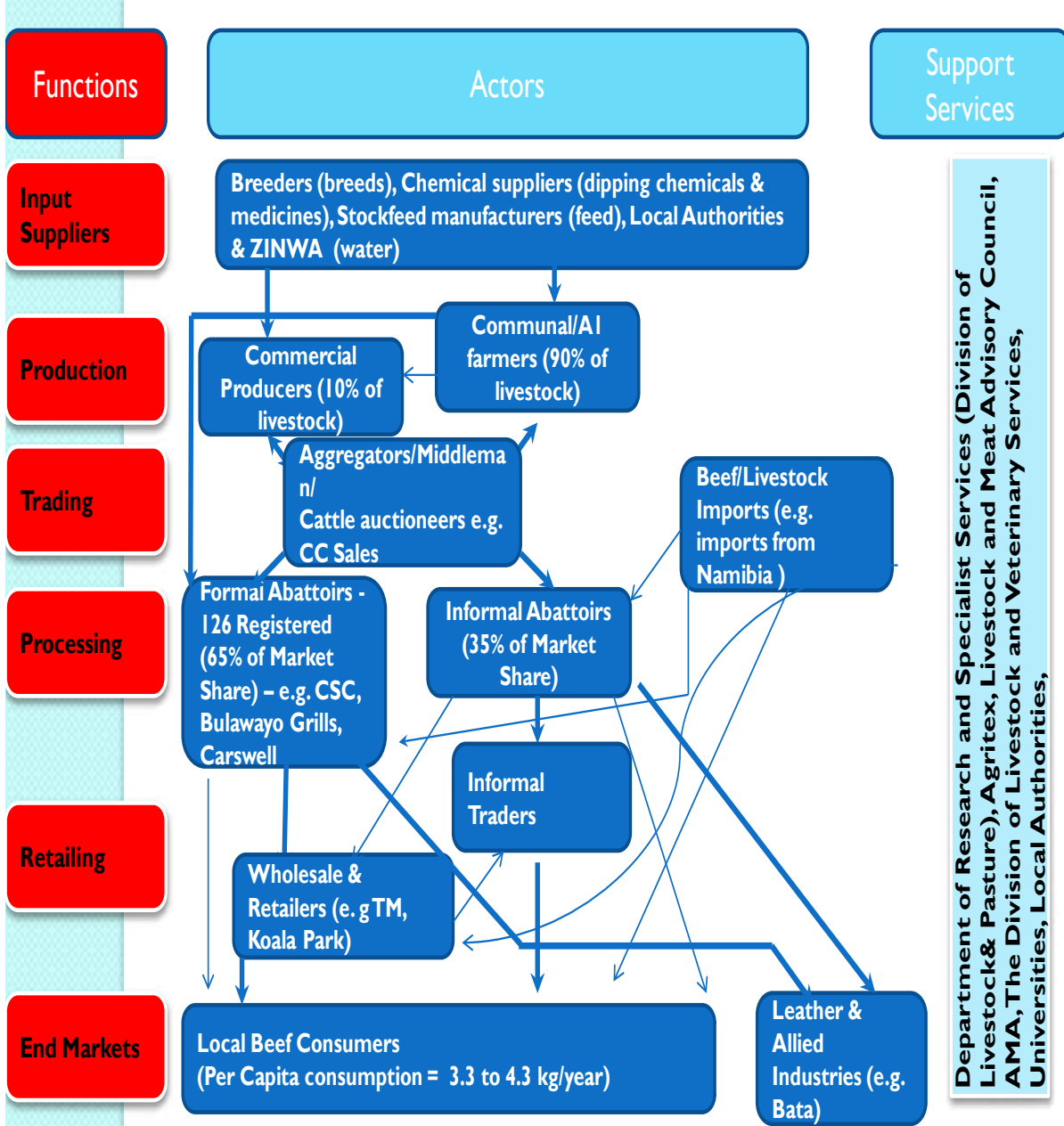
#### 4.5 Beef and Beef Products

Zimbabwe has a total cattle population of 5.2 million (2<sup>nd</sup> Crop and Livestock Assessment Report, 2012) of which 90% of this cattle population is found in the smallholder/AI farming sector (LMAC, 2013) in the Matebeleland and Masvingo provinces. Productivity in the Zimbabwean livestock sector has undergone major changes due to the Fast Track Land Reform Program (FTLRP). This has resulted in significant shifts in ownership, use and management of livestock, animal disease management, marketing and production. The net effect of these changes has been a decline in the commercial livestock farming sector and an increased dependency on output from the smallholder livestock farming sector. Therefore there is a need to align the existing policy and regulatory framework governing the livestock sector to reflect this shift and enhance productivity by the new smallholder farmers who are now the backbone of the livestock sector.

##### 4.5.1 Value Chain Mapping

The beef value chain consists of input suppliers, producers, processors, wholesalers, retailers and consumers. Organisations and service providers such as the Livestock & Meat Advisory Council (LMAC), Department of Livestock and Veterinary Services (DLVS), Livestock Research Division of the Department of Research and Specialist Services (DR&SS), Zimbabwe Republic Police, health inspectors and others facilitate activities along the value chain to ensure product safety and delivery. Middle-men who act as a link between the producers and abattoirs/processors are also a common feature of the beef value chain. The value chain map is shown in **Figure 4.8**.

Figure 4.8: Beef Industry Value Chain



#### 4.5.2 Sourcing of Inputs and Supplies

The main inputs cited by farmers are water, veterinary drugs, livestock feed, supplements, genetic resources (breeding animals, semen, embryos) and forage/grazing land. The inputs are acquired on a cash basis with the exception of water that is on a monthly credit term.

Expenditure on inputs varies according to the number of animals that the farmer possesses. The quality of the grazing is mainly affected by the amount of rain received and water availability. Most farmers however, depend on the rainfall for watering the grazing areas with a few supplementing the diets of their livestock with commercial feed. Farmers said the livestock feed sold in Zimbabwe is more expensive, average US\$310/tonne, (and hence non-competitive) compared to the feed in other regional countries such as Zambia and South Africa. The high prices of locally produced stock feed is caused by a variety of factors which include the legislation that restricts the use of cheaper genetically modified raw materials (which are permissible in other countries) in the production of feed; insufficient quantities

of raw materials such as wheat bran, cotton seed, cake and hulls for use in feed formulation and low capacity utilisation in stock feed manufacture. Veterinary supplies are readily available within the country and farmers have a choice to either purchase locally produced or imported supplies.

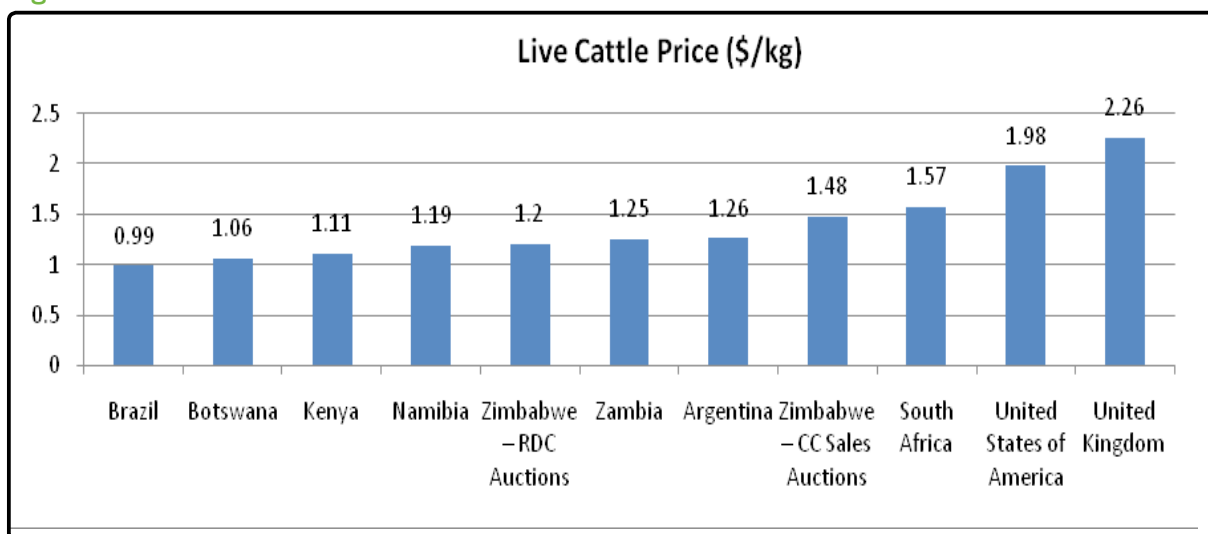
#### 4.5.3 Production Capacity and Technology

The sector comprises of smallholder farmers producing cattle under low input systems and large scale producers who are more specialised in beef production. Matabeleland North and South, Midlands and Masvingo provinces are designated as having comparative advantages for beef production. However; it has remained a challenge to attain commercial production and productivity levels among smallholders/ AI farmers due to several factors which include lack of high quality breeding stock, the multiplicity of functions of cattle in this farming sector, poor pasture management, limited capital to purchase supplementary stock feed and limited availability of water. The overall off-take rates in Zimbabwe are thus lower than other regional countries.

Zimbabwe, however, is quite competitive compared to other regional countries with regard to cattle density in terms of cattle grazing per hectare of land (UK Aid, 2011) and carcass weight per animal slaughtered (LMAC, 2013).

A key competitiveness variable in beef production is the cost of live animals. The national average live weight in Zimbabwe is about US\$1.23 (this value is derived by taking into account the average live weight prices from Rural District Council auctions and other auctions such as those conducted at CC Sales). This value is comparable to regional prices and is marginally competitive in the live cattle markets (Figure 4.9).

Figure 4.9: Live Cattle Prices for Zimbabwe and other Countries



Source: Botswana Meat Commission; FAO stats for others, 2013

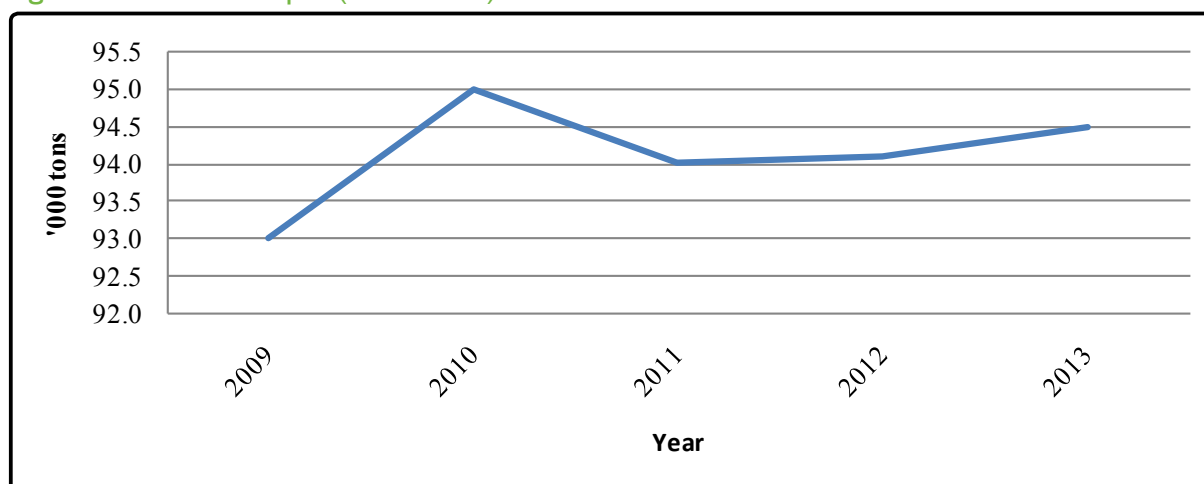
Zimbabwe has one of the highest cattle population densities in the region as compared to countries such as Zambia, South Africa and Botswana as shown in Table 4.8. To increase beef production improved management is required. This will include an improvement in the calving rate, age at first calving, bulling ratio, and average weight of carcass and mortality rate.

**Table 4.8: Key Cattle Productivity Indicators in Selected African Countries**

Country	Cattle density	Cattle herd productivity	
	Cattle grazing/ ha	Off take rate (%)	Beef yield (carcass weight/ animal (kg))
Kenya	0.63	18.1	150
Zimbabwe	0.44	8.0	225
South Africa	0.17	21.2	265
Zambia	0.4	12.6	160
Botswana	0.10	7.3	190
Namibia	—	—	247

Source: FAO/STAT (2013), LMAC (2013); 2<sup>nd</sup> Crop and Livestock Assessment Report (2012); UK Aid, from the Department for International Development and the World Bank (2011)

Beef production in Zimbabwe is estimated to increase from 94 100 tonnes in 2012 to 94 500 tonnes in 2013. This is mainly driven by increased off take from 3.5% to 6% as farmers off-load stocks owing to the drought conditions (Ministry of Finance, 2013).

**Figure 4.10: Beef Output (2009-2013)**

Source: Ministry of Finance, Government of Zimbabwe, 2013

### Slaughter Capacity

The slaughter industry has over 126 registered abattoirs with the capacity to slaughter 1.5 million cattle per year but the average slaughters per annum are estimated at approximately 400 000 giving a capacity utilisation of 27 percent (LMAC, 2009). One the biggest beef processors is the Cold Storage Company (CSC), a government parastatal, which has the most sophisticated slaughter facilities with a capacity to process 600 000 cattle per year. The company has factories in Bulawayo, Chinhoyi, Masvingo, Kadoma and Marondera. The CSC procures, processes and markets beef, lamb, goat and related products. However, since 2009 the company has faced intensified internal (such as low working capital) and external (such as disease outbreaks) challenges which have led to the closure of three of its abattoirs. Overall the cattle slaughter industry has rebounded from the lows of 2008 with 95% of the slaughters being conducted in private abattoirs and the remaining 5% being conducted in CSC abattoirs (Table 4.9).



**Table 4.9: Formal Market Cattle Slaughter Trends**

Year	2007	2008	2009	2010	2011
Private abattoirs slaughters	78,926	74,928	121,526	219,801	224,886
CSC abattoirs slaughters	8,063	3,869	6,888	9,876	36,538
Total slaughters	86,989	78,797	128,414	229,677	261,424
% through private abattoirs	91%	95%	95%	96%	86%
Average/Month	7,249	6,566	10,701	19,140	21,785

Source: LPD, 2012

#### 4.5.4 End Markets and Trade

Beef consumption in Zimbabwe is currently estimated at 11 000 metric tonnes per month and beef now only constitutes 35% of all the meat consumed (Mutenga, 2013; Kachembere, 2013). Urban beef demand at 9.14 kg per capita is 4 times the demand for beef in rural areas (2.04 kg per capita) where most of the beef is supplied through the informal market. Overallly the national demand is estimated at 3.3 to 4.3 kg per capita (from formal and informal markets) (Sukume and Beffa, 2013). Currently Zimbabwe has the lowest estimated per capita annual beef consumption within the region (Kachembere, 2013).

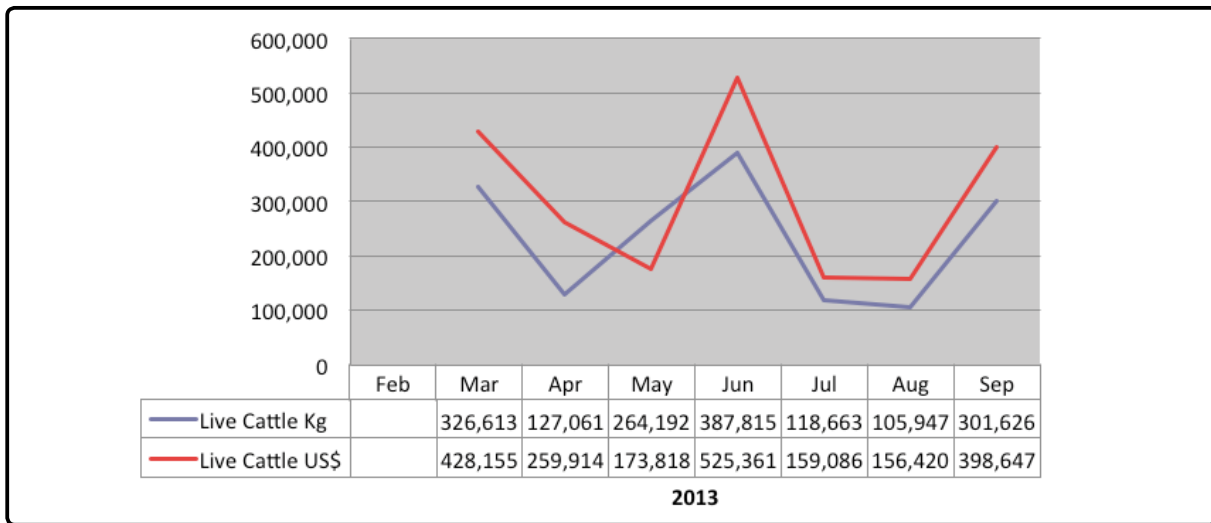
Cattle are sold through auctions and direct sales which may sometimes be assisted by intermediary agents. These intermediary agents either work independently or are contracted by meat processors. The slaughter industry is comprised of vertically integrated feedlot operators, informal meat processors, formal meat processors and small butcheries through live cattle sales intermediary institutions. The major cattle auctions are Cattle Company Sales in Mt Hampden, Agric Auctioneers in Matebeleland and CK Holland in Manicaland. Large scale farmers market cattle through private auction sale. LMAC stated that most Rural District Councils (RDCs) provide centres for auctions and offer auction infrastructure. Sellers at RDC auctions are mainly small scale farmers. The buyers at RDC auctions include butcheries and abattoirs that purchase the cattle for direct slaughter or for pen fattening prior to slaughter. In some cases buyers negotiate directly with the farmers and slaughter the cattle for either formal or informal sales and in some cases for use in traditional rituals. Some intermediary agents (middle men) who take advantage of the desperation of farmers (especially in drought prone areas) purchase (usually at low prices) cattle from the farmers for re-sale at a profit.

Zimbabwe is currently importing live cattle, beef and beef products from regional countries (Botswana, South Africa and Namibia) (LMAC, 2013). The net impact of the imports has been to increase beef supply on the local market and put added pressure on a depressed market. Participants in the beef industry claim that they have no access to information on the type and quantity of meat products that are being imported into the country. The Zimbabwe Revenue Authority (ZIMRA) is not at liberty to release this information and cites that the information is confidential. Industry stakeholders believe that access to such information is key to market intelligence and useful for strategic planning (LMAC, 2011).

**Figure 4.11** and **Figure 4.12** highlight the 2013 trends for live cattle and beef meat imports.



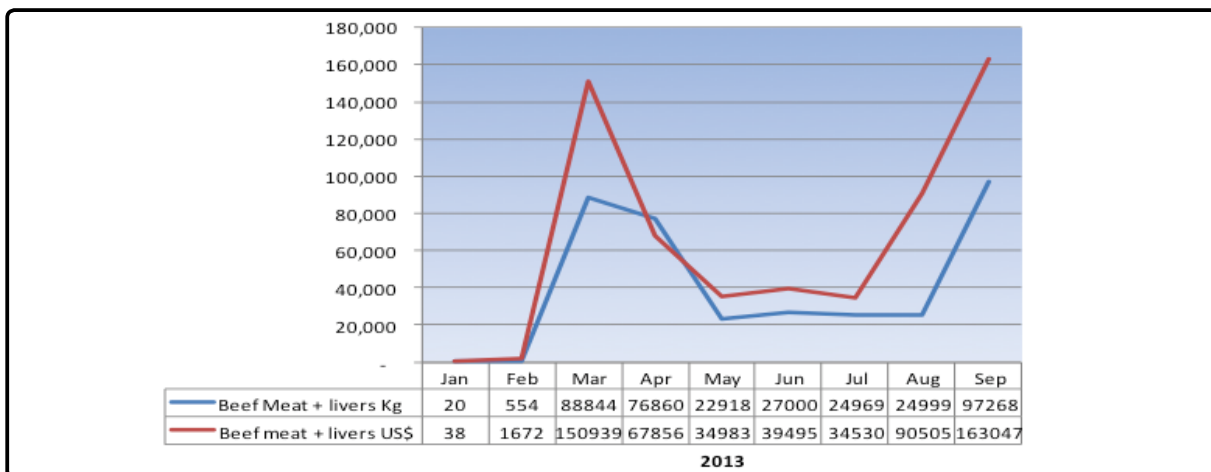
Figure 4.11: Live Cattle Imports Value and Weight



Source: LMAC Monthly Livestock Market Update: October 2013

The statistics for 2013 (up to September 2013) indicate that beef meat and livers with the highest value (both in weight and USD terms) were imported into the country in September 2013.

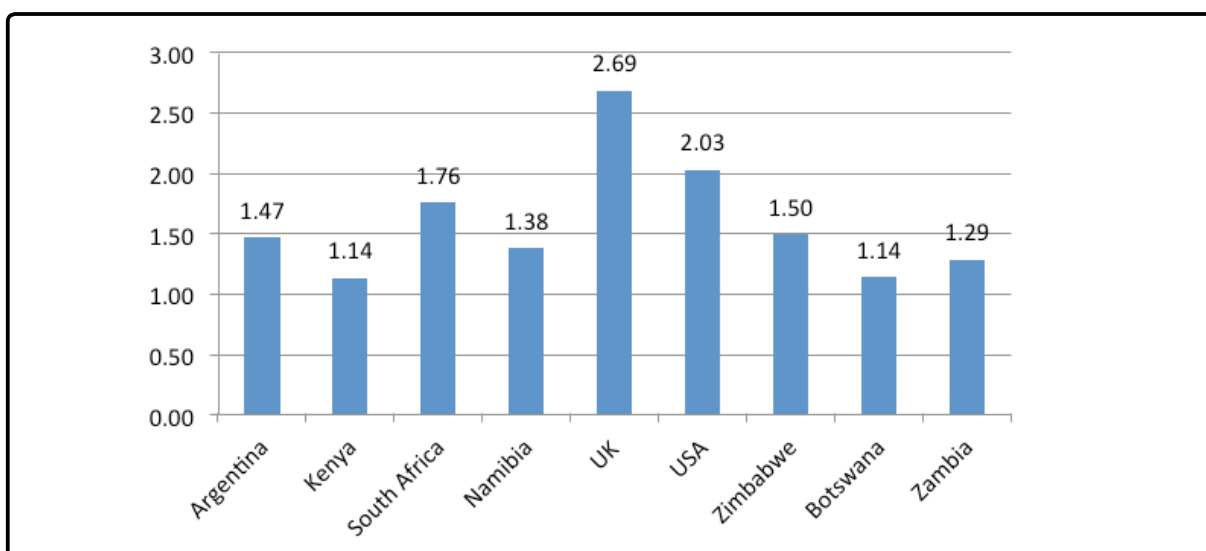
Figure 4.12: Beef Meat and Liver Imports



Source: ZIMSTAT, 2013

Zimbabwean wholesale beef prices are higher compared to most countries (**Figure 4.13**) and this indicates that there is an increase in costs along the value chain, which are passed on to the next level of the value chain.

Figure 4.13: Cattle Live Weight Producer Prices (US\$/kg)



Source: FAOSTATS (other countries) and CC Sales for Zimbabwe (2013)

The wholesale prices for the different grades of beef are indicated in **Table 4.10**. The weighted average price for the period 2009-2011 was about US\$ 3.20 per kg cold dressed mass over the super, choice, commercial and economy grades.

Table 4.10: Trends in Wholesale Beef Price by Grade

Year	Month	Grade and Price per Kilogram			
		Supers	Choice	Commercial	Economy
2009	February	4.00	3.70	3.10	2.55
	May	3.20	3.00	2.50	2.20
	November	4.20	4.00	3.80	3.50
2010	January	4.00		3.35	2.50
	March	3.90	3.65	3.35	2.75
	April	3.90	3.40	3.00	2.75
	July	3.50	3.20	2.90	2.70
	August	3.50	3.20	2.90	2.70
	September	3.65	3.50	3.25	2.90
	December	4.40	4.00	3.90	3.40
2011	February	4.20		3.60	3.00
	April	4.15	3.55	3.30	2.60
<b>Average</b>		<b>3.88</b>	<b>3.52</b>	<b>3.25</b>	<b>2.80</b>

Source: LMAC, 2013

On the international market, the Zimbabwe wholesale beef prices are higher than those of other countries in the region as shown in **Table 4.11**. The Zimbabwe average price of the beef carcass is even higher than South America. A comparison of the live and carcass prices shows that Zimbabwe incurs most of its costs in the processing sector as compared to other countries. Stakeholders in the slaughter sector pointed out that the un-competitiveness of the slaughter sector is due to costs incurred through annual abattoir inspections and registration, labour, power, water, slaughter fees, meat inspection and meat grading (cost of compliance).

**Table 4.11: Comparison of Wholesale Beef Prices with Competitor Countries**

Country	Grade	Carcass Wholesale Price (\$/kg)	Average Spread between Live and Wholesale Prices
Zambia	Average	2.68	1.43
Kenya	Average	2.16	1.05
Namibia	Average	2.13	0.94
South Africa	Average	2.80	1.23
Argentina	Average	2.70	1.44
Brazil	Average	2.04	1.05
UK	Average	4.19	1.93
USA	Average	3.81	1.83
Botswana	Prime	2.93	1.48
	Super	2.53	
	Grade 1	2.40	
	Grade 2	2.30	
Zimbabwe	Super	3.88	1.89- 2.17
	Choice	3.52	
	Commercial	3.25	
	Economy	2.80	
	Average	3.20	1.97

Source: Botswana Meat Commission (for Botswana), 2013; FAO Stats (for others), 2013

#### 4.5.5 Value Chain Governance

Prices are generally market driven, with the prices of beef in urban retailers being higher than in communal areas because of increased demand in the former. Producers have complained that the high cost of compliance often affects the asking price for live animals and beef. Local supply of beef is sometimes affected by the fact that the communal farmers, who own about 90% of the cattle, may be reluctant to sell their cattle beyond a certain herd size due to the multiple benefits they derive from the cattle (such as draught power and as a sign of wealth).

#### 4.5.6 Sustainable Production and Energy Use

Beef ranching is carried out mainly in the lowveld, and this region has serious water shortages. It would be beneficial to encourage farmers to employ water harvesting, and recycling technologies so as to save this precious commodity.

Waste disposal is a major issue in abattoirs. Some abattoirs send waste parts and rejects for rendering, or sell it off for consumption by wildlife such as crocodiles. It is important to pre-treat liquid waste before release into water bodies as the high organic content is a major source of contamination and eutrophication of water resources.

Erratic power supplies often affect abattoirs and other meat processors who need to maintain a cold chain. It is crucial for these to take the initiative to invest in alternative energy sources such as solar energy, both as backup and to cut on their energy costs.

#### 4.5.7 Value Chain Finance

The lack of adequate financing was cited as the major constraint in the value chain. Most farmers cannot access bank loans because they do not have farmland tenure security. The banks require security in order to offer loans to the farmers. The smallholder farmers who are the majority do not have the security such as immovable assets as is required by the banks. According to the LMAC, the government, through the Cold Storage Company (CSC) in 2011 offered a US\$2 million package whereby farmers could purchase cattle at an interest rate of 5 % but the scheme has not yet commenced.

#### 4.5.8 Business and Socio-political Environment

The national herd has dwindled over the last few years, and there is need to come up with strategies to promote breeding and increase beef production. There is also need for training of indigenous farmers who make up 90% of the beef producers.

Beef farmers in Matebeleland South raised concerns that they were not benefiting from the government input distribution scheme which focuses primarily on maize production which is not viable in their region. The main inputs they require for beef production are feed and breeding stock. It is therefore crucial that the distribution of input by government and other non-governmental organizations should be stratified according to the agro-ecological zones so that maximum benefit is derived from these.

There is also concern among consumers that some of the beef imported at a cheap price from neighbouring countries such as Botswana is actually coming from European Union quarantined Foot and Mouth zones. However, whether this is true or not could not be established.

#### 4.5.9 Summary of Constraints

- Limited availability, poor quality, and high cost of stock feed.
- High prevalence of disease such as Foot and Mouth disease in areas such as Masvingo, Matebeleland South, Beitbridge and Mangwe in the last few years. Foot and Mouth disease has a significant impact on the competitiveness of the beef industry and in severe cases can result in the region being quarantined (LMAC, 2013).
- High pressure on the depressed beef market due to import of live cattle, beef and beef products from regional countries (Botswana, South Africa and Namibia) (LMAC, 2013).
- Small national herd and dwindling pedigree herd.
- Decline in the number of breeders of indigenous breeds (and breeders in general) that are suited to the Zimbabwean conditions.
- Poor farming practices of small holder farmers.
- Farmers complained about the costs that are incurred in moving cattle from the farm to point of sale. The costs include:
  - Animal Health Movement Permit at US\$5.00
  - Movement permit at US\$5.00
  - Police clearance forms at US\$ 20.00
  - Rural District Council levies
  - Cattle grading fees by the Department of Livestock Production and Development charged as a percent of auction value. Farmers proposed that a flat fee should be charged so that good quality cattle are not prejudiced.
  - Transport costs for ferrying the cattle from point of production to the market. In Matebeleland for example farmers have to pay US\$35.00 per beast. These costs sometimes result in farmers having to use inappropriate transportation which results in the cattle suffering from stress and may be injured. Some farmers incur high transport costs in order to acquire cattle movement permits from DVS and the police station.

- The movement of DVS inspectors is sometimes restricted by resource constraints resulting in delays of service delivery.

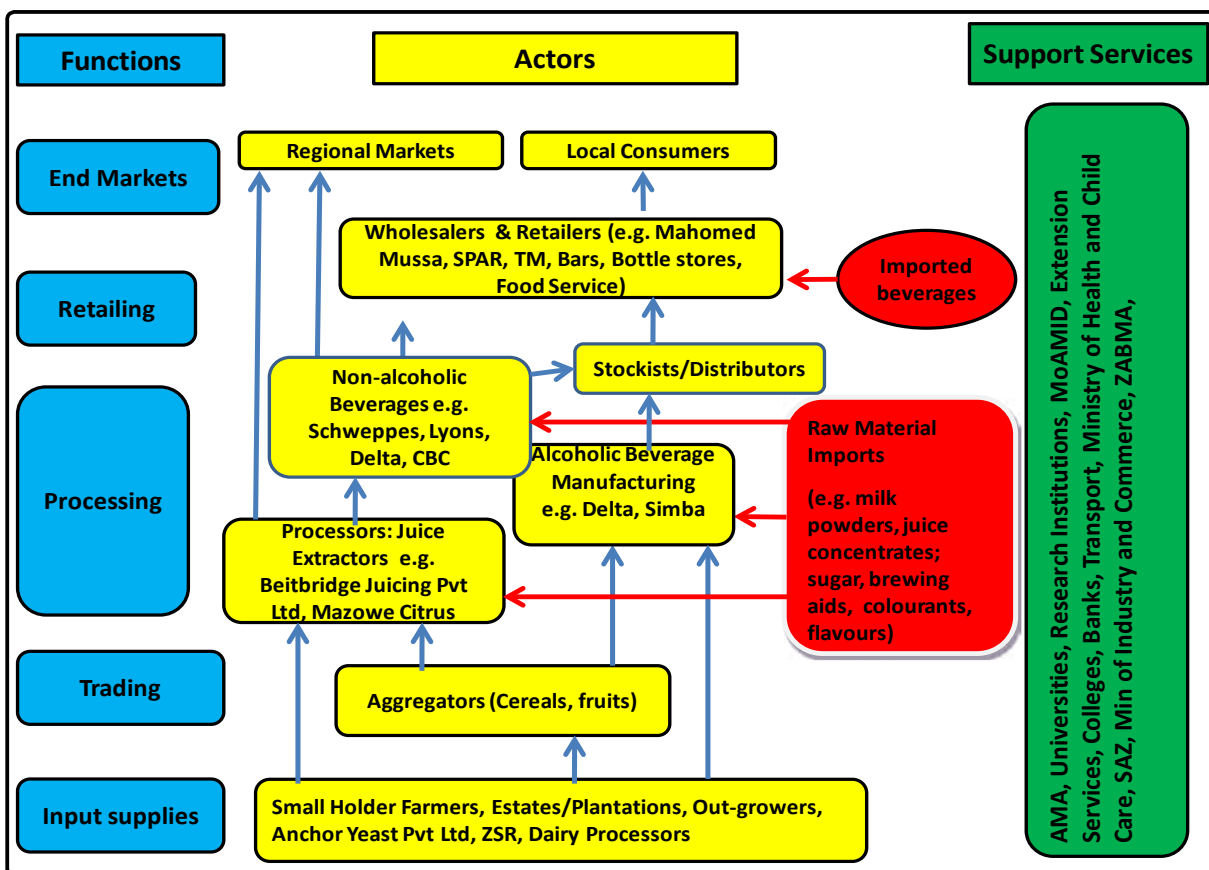
### 4.6 Beverages

The Zimbabwean economy has been supported by an agricultural sector that has been very successful and has provided opportunities for agro-processing and value addition of agricultural produce. Because of this success, the beverages sector in the country is well established and diverse. Thus the beverages sector has a strong linkage to agriculture and strong linkages with sectors such as packaging, technology, transport and distribution. The production is mainly in the cities and towns with the concentration of beverage manufacturing factories highest in Harare.

#### 4.6.1 Value Chain Mapping

The production of beverages in Zimbabwe is classified into two main categories; that is alcoholic and non-alcoholic. The actors include the input suppliers, producer/farmers, processors, marketers and the end consumers. The major processors include Delta Corporation, Mazowe Citrus, Schweppes, Beitbridge Juicing Pvt Ltd, Dairibord Holdings and African Distillers. The value chain mapping of Beverages is provided in **Fig 4.14**.

Figure 4.14: The Beverages Value Chain Map



#### 4.6.2 Sourcing of Inputs and Supplies

The beverages value chain is fed directly from the dairy, fruit and vegetable, sorghum, maize, sugarcane and barley value chains and, therefore, the inputs are discussed under these value chains in this study.

#### 4.6.3 Production Capacity and Technology

Beverages manufacture feeds from the sorghum, dairy, fruit and vegetable, sorghum, maize, sugarcane and barley value chains. Additives and additional raw materials are imported to complement local

production. Imports include hops for lager beers, stabilizers for fruit juice and dairy beverages, milk powders and fruit juice concentrates and purees. The source countries include South Africa and India.

Mazowe Citrus and Beitbridge Juicing Pvt Ltd, extractors of juice from fruits, provide the juice concentrates required for fruit juice beverages. Their main extracted fruit is orange and operations of the extraction factories are affected by seasonal availability and low volumes of fruit. The production of citrus peaked at about 50 000 tonnes in 2002 and has since dropped with the output at 22 000 tonnes in 2009, (Horticulture Promotion Council).

Delta Corporation is the producer of lager beers and also imports lagers from South Africa's South African Breweries. Other processors of opaque sorghum beer include Ingwebu Breweries and Simba Breweries. African Distillers (Afdis) dominate the distilled alcoholic beverages market which also has smaller actors for example Straitia Beverages.

Delta's lager beer capacity is about 2 million hectolitres per year. Delta Corporation also produces opaque sorghum beer and the capacity is about 5.5 million hectolitres per year, ([www.delta.co.zw](http://www.delta.co.zw)).

Afdis' annual volumes are about 5.5 million litres of which 42% are imports from South Africa and 58% is local production. The processor is acquiring plant to push volumes to about 6.4 million litres by producing locally, (Africa Manufacturing, Nov 2013).

In the non-alcoholic beverages sub-sector Delta Corporation has Strategic Business Units producing sparkling (carbonated) beverages and maheu (from sorghum). Dairibord Holdings produce dairy-based beverages as Dairibord Zimbabwe Pvt Ltd and Lyons Foods. Other dairy beverage producers include Revive, Alfa Omega, Dendairy and Kershelmer. Schweppes Zimbabwe Pvt Ltd produces fruit juices and cordials and other producers are Lyons, Punch Bowl Products and Marlon Foods.

There is an increased demand for pure fruit juice beverages (without added sugar, colours and preservatives) and this has seen an influx of imports mainly from neighbouring South Africa. FAVCO and some retailers, for example Spar, are getting these products toll-manufactured in South Africa and branded in their name.

Research and development was in-house, the processors do their own research and development on site. However, 67% do collaborate with local universities and research institutions. The training offered by training institutions was rated suitable to their needs, 66%, while the rest said it was slightly suitable. The collaborations, between industry and universities, include research and industrial attachments for students.

Processors are operating below full capacity. Processors cited insufficient raw materials, low demand, power and water shortages and antiquated machinery and breakdowns as the reasons for their current capacity utilisation status. Two processors indicated that the power and water shortages were affecting their suppliers also thus worsening the raw material supply and capacity utilisation. Raw material supply is thus a bottleneck in this value chain.

Processing equipment is being imported from Europe and Asia (China and India) either as new plants or upgrades to improve the existing plant. Processors, for example Schweppes Zimbabwe and Straitia Beverages have adopted new technologies for example reverse osmosis. The age of the plants varies significantly with some processors having acquired some equipment post 2008. Some plants are over 40 years old while others are about three years old.

Delta Corporation bought new equipment between within the last 5 years to increase their bottling capacity in the lagers factory in Harare. Dairibord Zimbabwe Pvt Ltd also set up a plant for dairy

beverages in Chitungwiza in the same period. Recent innovations include Delta extension into maheu production and the extension by Schweppes Zimbabwe Pvt Ltd into ready-to-drink fruit juice beverages branded Minute Maid®.

#### 4.6.4 End Markets and Trade

Beverages are distributed through the processors' depots, wholesalers, stockists and retailers throughout the country. The processors indicated that they have close interactions with end buyers to keep abreast with what the consumers want and respond accordingly. The quality of the product is very critical as consumers also tend to be loyal to certain brands and stick to them. The large companies, for example Schweppes, Delta, have well established brands which dominate the local markets and command a high degree of loyalty from consumers. The products also find their way into regional markets where some of the brands have become household names, for example Mazoe orange crush.

A number of companies in the sector are certified (or working towards), under Standards Association of Zimbabwe (SAZ). These include Delta Beverages, Schweppes Zimbabwe Pvt Ltd and Dairibord Zimbabwe Pvt Ltd. The standards include

- ISO 9001:2008 Quality Management Systems;
- Hazard Analysis Critical Control Points (HACCP);
- ISO 22000:2005 Food Safety Management Systems; and
- ISO 14001:2008

**Table 4.12: Trade in Beverages and Spirits in Millions of US\$**

	2005	2006	2007	2008	2009	2010	2011	2012
<b>Exports</b>	3.58	4.06	4.37	1.11	4.45	7.45	6.74	8.29
<b>Imports</b>	3.23	3.44	5.77	15.24	35.84	37.35	44.94	44.16
<b>Trade Gain/ Deficit</b>	0.35	0.62	(1.39)	(14.13)	(31.39)	(29.90)	(38.20)	(35.86)

Source: ZIMSTAT, 2013.

#### 4.6.5 Value Chain Governance

Delta Corporation manages its supply chain to ensure supply of sorghum and barley (for opaque beer and lagers respectively) by way of contract farming. Zimbabwe's Delta Corporation, which dominates the Zimbabwean beer and soft drinks landscape, has invested considerable sums in the country since 2009 with SABMiller, which owns about 36% of its equity, among its main backers. Delta has been able to access credit internationally at affordable rates.

Processors, as buyers, have significant power and control the farm-gate prices of raw materials produced locally. Delta Corporation enjoys a monopolistic position and controls the prices of both the raw materials and the finished products. Due to the small number of processors, producers have fewer market options and usually take what the processors are willing to pay. The processors also dictate the quality that the farmers should produce if they are to supply them.

The beverages sector has few processors who play a bigger role in what is produced, how much, the quality and the prices to the end user. There is also the issue of monopolistic advantage with the result that the players control the price and this can be a barrier to entry by other players.

#### 4.6.6 Sustainable Production and Energy Use

Sources of energy currently in use are electricity and coal. Diesel is also used in generators for backup when power cuts are experienced. Coal is used to fire boilers and electricity to run the plant. One

processor indicated that they use a diesel-fired boiler. All respondents had acquired generators as a backup power source because of power-cuts and on average all used generators for over 18 hours in a month. Of the respondents, 60% experience power-cuts 6 to 10 times a month with each power cut lasting up-to 6 hours. The remaining 40% experience less than 5 power-cuts a month and each lasting less than 5 hours. Of the respondents, 66% have experienced losses due to power-cuts and these were estimated at less than 2% of their total production.

None of the processors are using alternative sources of energy such as solar or gas. Processors are certified to ISO 14001, the environmental management system, or are working towards certification. The actors also comply with requirements for emissions and waste disposal. However, there is a challenge with waste disposal and some actors have had to pay fines to their local councils and/or the Environmental Management Authority (EMA). Programmes are in place to control waste generation with some players adopting the cleaner production approach.

All processors within the confines of local authorities are dependent on the local authority for water. In a few cases (17%) the processors have boreholes on site to complement the council water supply. All processors outside the local authorities' confines have their own water works and boreholes. Water-cuts were cited by some respondents (33%) and in one case the frequency was as high as 2 times per month. The rest said the frequency was insignificant. Another one third of respondents said they do not have water only when they experience a power cut since they also use boreholes and therefore their operations are not affected by water-cuts.

The production of beverages uses water as part of the ingredients and therefore the processes stop once there is no water. Respondents said local authorities need to provide appropriately treated water and ensure consistence of supplies.

#### 4.6.7 Value Chain Finance

The financial requirements of the actors vary significantly because of the differences in size and level in the chain. Players in the beverages sector indicated that their operations are financed mainly by bank loans and the company's own funds. From the results of the survey, 75% were funding operations from these sources. For all respondents, there was more than one source of funds which include funding from shareholders in addition to the two sources above. None of the respondents were operating at full capacity with the reasons cited being financial constraints (25%), equipment and raw materials supply (50%) and decreased demand due to competition from imports (25%).

There is inadequate financing for processors. This is in terms of the amount of financing, interest rates and the tenure of the loans extended to the processors. The processors require long term financing to enable them to upgrade their plants because as it is now, the loan funds are used for working capital using equipment which may be antiquated and less efficient. Where available, financing is short term and the interest rates are said to be high by the actors, above 10% per annum and the tenure is at most five (5) years. Liquidity crisis on the other hand is affecting processors the most and the operations are crippled by lack of adequate working capital. The major requirement for financing is for capital projects (equipment/plant upgrades) and operations to boost capacity for processors.

#### 4.6.8 Business and Socio-political Environment

There is risk on the part of the processor in terms of liquidity risk. The risk is associated with the conversion of the finished product to cash. There is competition from imported beverages coming from neighbouring countries, for example South Africa. In addition the risk also comes from the challenge of decreasing disposable incomes and the accompanying reduction in buying power of consumers. Investor confidence is low and it is difficult for players to access affordable funding.



### 4.6.9 Summary of Constraints

Beverage manufacturers face a number of challenges that we found and these are:

- Decline in the fruits output particularly the citrus and the limited fruit juice extraction.
- Poor rainfall patterns affecting production of fruit and cereals
- Erratic electricity and water supplies.
- Low volumes and yields for barley and sorghum.
- Weak linkages between processors and producers.
- Low capacity utilisation in fruit extraction.
- Competition from ‘pure juice’ imports.

### 4.7 Cereals and Cereal Products

Cereals are important crops for food security in Zimbabwe. The grain intake for all cereals at the Grain Marketing Board (GMB) has been on the decline from about the year 2008, the time the country experienced an economic downturn. The volumes of grain sold to the GMB declined sharply from a peak of 430,000 tonnes to below 50,000 tonnes as from 2009. According to the National Investment Brief for Zimbabwe presented at the “Water for Agriculture and Energy in Africa: the Challenges of climate change” conference in Libya; the industry was hugely affected since farming inputs were scarce (Anon, 2008). Since then, the country is still trying to come to parity in the agricultural sector. **Figure 4.15** shows the trends of grain intake at the GMB since 2008.

Figure 4.15: Grain intake (imports and local production) at GMB

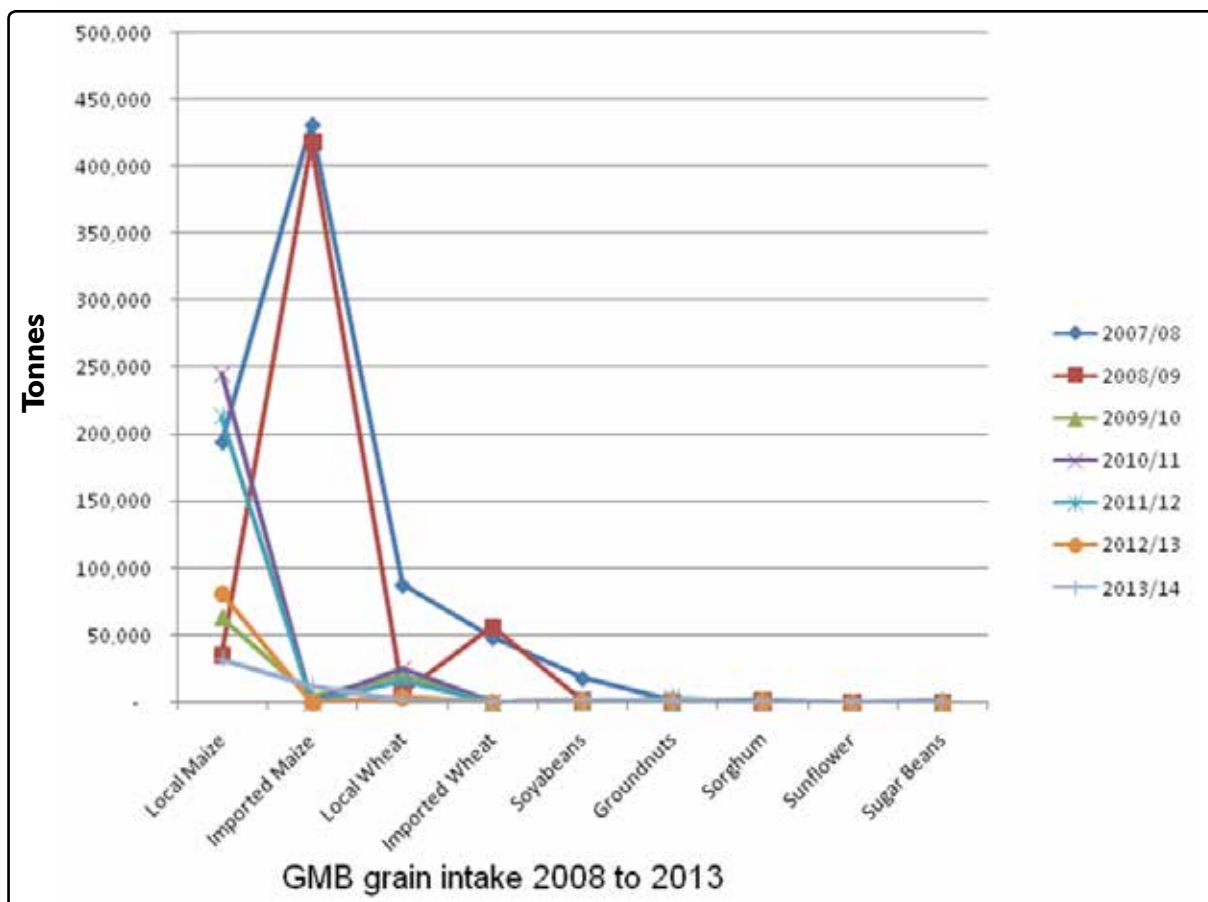
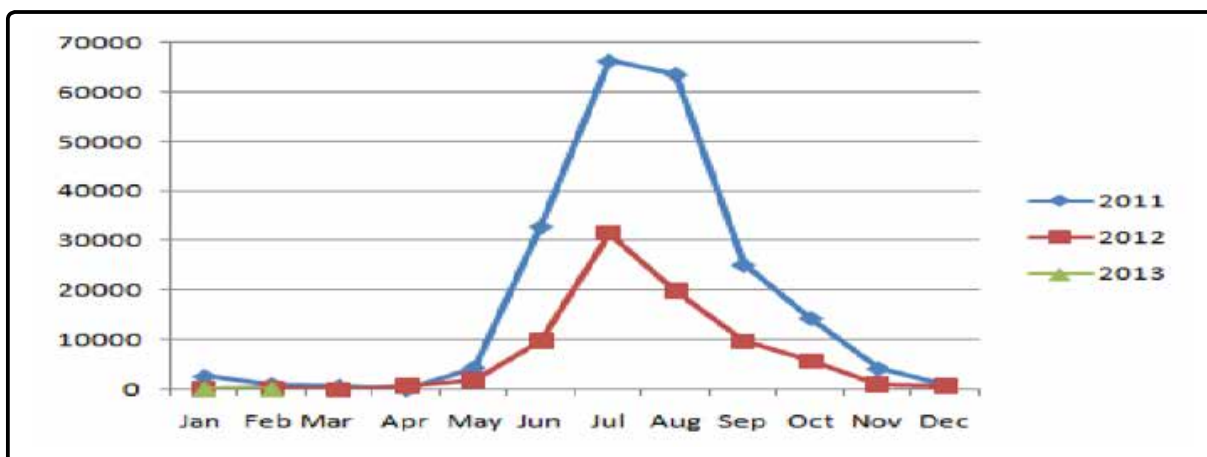


Figure 4.16 shows the amount of grain sold through the marketing authorities.

Figure 4.16: The Volume of Grain Crop Sold through Authorities in tonnes (2011-2013)



The percentage of grain being sold through the GMB has been declining because independent players offering higher value for the grain are increasing. Also, the GMB's failure to pay cash up-front and long waiting periods after grain delivery has caused reluctance by farmers to sell to GMB. The data for 2013 was still being compiled at the time of publication of this report.

Table 4.13: Zimbabwe Cereals Trade Position in Millions of US\$

	2005	2006	2007	2008	2009	2010	2011	2012
Exports	0.37	0.43	0.25	0.02	0.47	0.44	1.43	2.28
Imports	175.73	117.47	187.27	156.59	220.82	292.81	352.03	466.24
Trade Gain/Deficit	(175.35)	(117.04)	(187.02)	(156.57)	(220.35)	(292.38)	(350.60)	(463.96)

Source: ZIMSTAT, 2013.

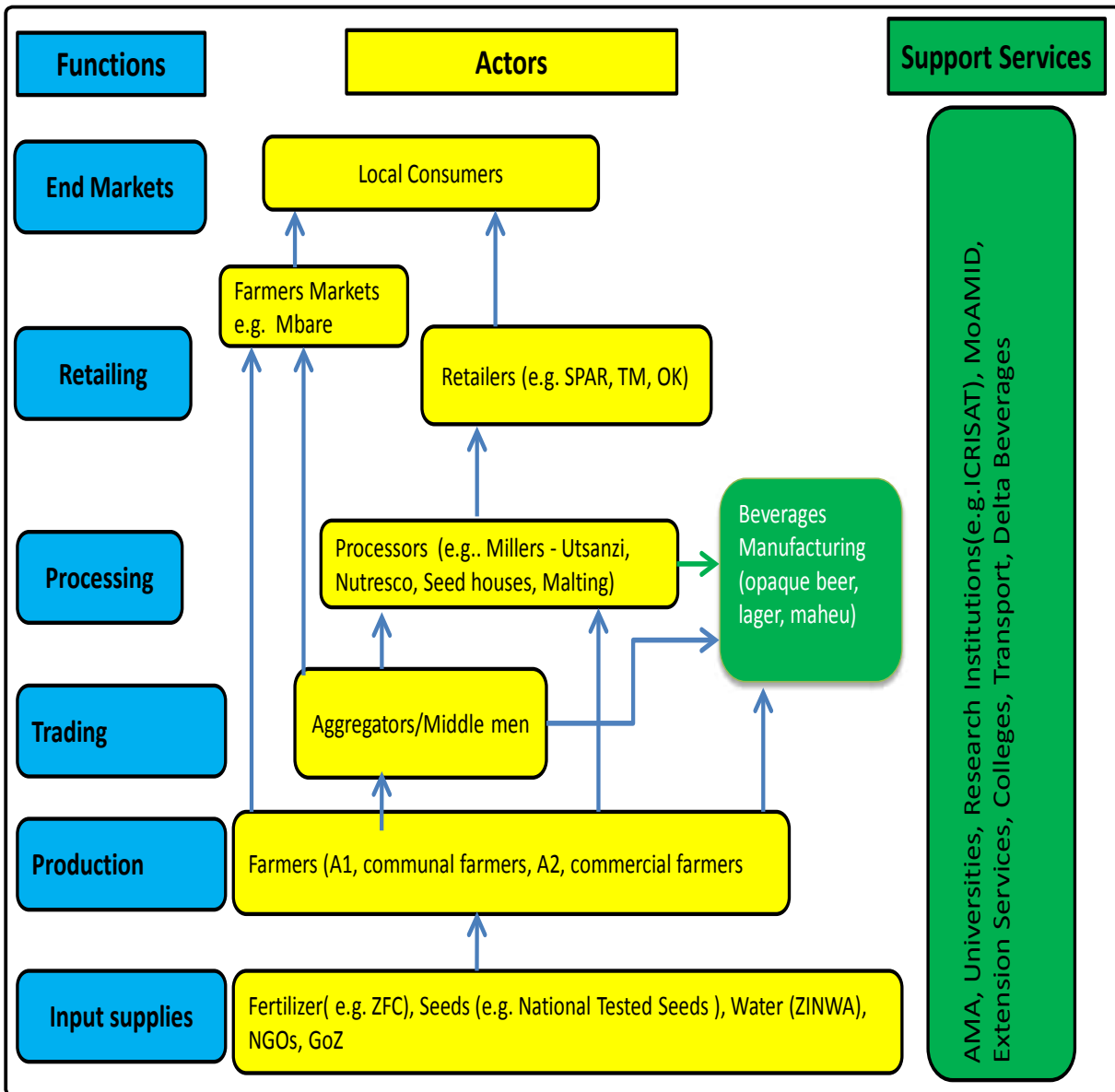
#### 4.7.1 Sorghum

In view of climate change, drought, food shortages and imports of grain, sorghum is an important food crop in Zimbabwe as it is better adapted to the more marginal conditions which are characteristic of low and erratic rainfall areas in Zimbabwe categorized as natural regions IV and V. In these regions, it has potential to outperform maize the staple crop and thus improve livelihoods of producing small holder farmers (Mukarumbwa, 2013). Sorghum could therefore play a major role in food security in Zimbabwe and ease the pressure on maize production and consumption. However, due to preference of maize as the main staple crop, sorghum has not yet attained the level of demand and importance that it should occupy. Sorghum is also viewed as a poor man's crop and hence it has generated little interest in the farming communities. There is no current evidence of sorghum exports and about 3% of total sorghum is traded through formal channels (FAO, 1995).

##### 4.7.1.1 Value Chain Mapping

The sorghum value chain map is shown in **Figure 4.17**.

Figure 4.17: The Sorghum Value Chain Map



The primary producers of sorghum are subsistence farmers mainly from the natural regions IV and V of Zimbabwe. They get inputs in terms of fertilizer, machinery and pesticides from agricultural chemical and equipment retailers. They normally employ family labour whilst village labour is used at times. Besides home consumption, the farmers can sell their output directly to the GMB, stock feed companies, millers and breweries, or to middlemen who then deliver to national markets. Brewers use sorghum for beer production which reaches consumers through wholesalers and then retailers. Middlemen deliver the product to farmers’ markets like Mbare, Lusaka or to the brewers. Vendors purchase the product from the farmers’ markets and they sale to consumers. We could not establish evidence of sorghum sales outside Zimbabwe.

**4.7.1.2 Sourcing of Inputs and Supplies**

For the communal farmer, there is limited application of fertilizer and chemicals. Unskilled labour force from the surrounding communities is usually employed in the farming season. However, the use of hybrid seed, fertilizer and irrigation has been seen to result in superior yields (FAO, 1995). Seed is available from seed companies like Seed Co, Pannar, Agriseeds, ARDA Seeds, National Tested Seeds

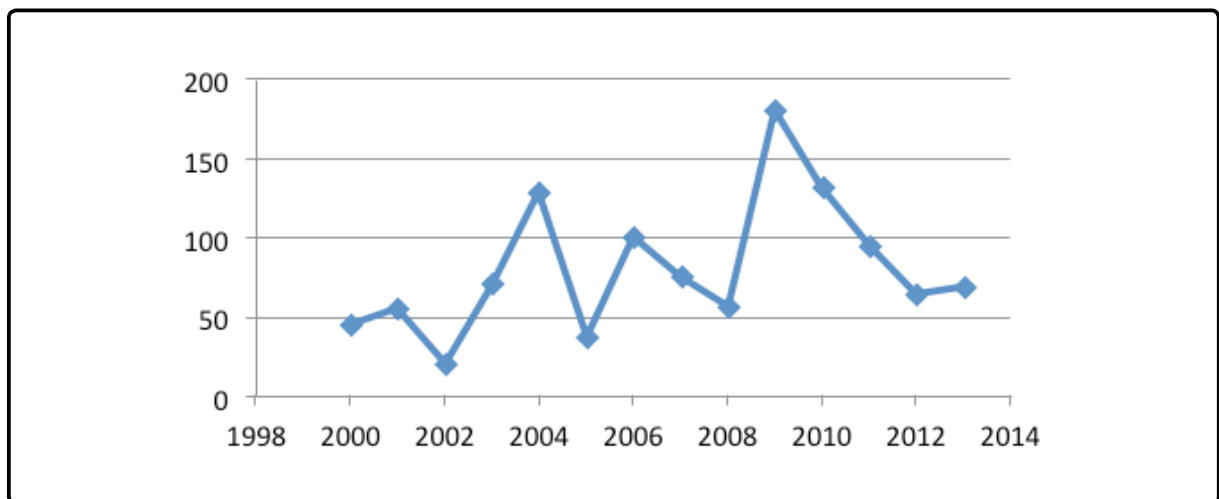
and Progen Seeds. Fertilizer is available from fertilizer companies like Windmill. AREX officers help with education on proper application of fertilizer and pesticides. Machinery for cultivation is available from agro- retailers like Farm & City.

#### 4.7.1.3 Production Capacity and Technology

Sorghum is basically a subsistence crop in Zimbabwe whose production is widely scattered in drought prone communal areas where maize, the staple crop is vulnerable. Only a small proportion of the crop is farmed for the formal market and through contract farming by Delta Beverages. Whilst sorghum production constitutes 23% of cereal production in SADC (FAO, 1995), it constitutes only 8% of coarse grain in Zimbabwe compared to 12% millet and 62% maize (FAO, 1995). Recent evidence point out to the following factors as contributing to the decline in sorghum production: its local and international price, price of substitutes- maize in particular, exchange rate, climate change, availability of credit, and government policy (Mukarumbwa, 2013).

The production trend of sorghum is as shown in **Figure 4.18**.

Figure 4.18: Trends in Production of Sorghum in Zimbabwe



Source: Department of Research and Specialist Services (DR&SS), 2013

Under ideal conditions, communal farmers can yield one tonne per hectare whilst commercial farmers can achieve 5 tonnes per hectare. Actual production however stands at 400 to 600 kg per hectare for communal farmers and 2 to 3 tonnes per hectare for commercial farmers (FAO, 1995). According to our study, the costs of production per hectare are US\$690 and a farmer can benefit more if they increase their yield per hectare. Profits for the farmer increase from US\$55 per tonne for a yield of 3 tonnes per hectare to US\$147 per tonne for a yield of 5 tonnes per hectare. Delta pegged the selling price of sorghum at US\$285 per tonne for the 2013/14 season. Brewers like Delta convert sorghum into seed, and malt which goes into beer production.

There is an urgent need to improve the production technology of sorghum grains in Zimbabwe and adopt newer technology from countries such Botswana and disseminate it to farmers. Post-harvest sorghum processing is labour intensive and there is a need to adapt small scale equipment that can be used by communal farmers and boost their production, thereby decreasing post-harvest losses.

The Crop Breeding Institute based in Matopos focuses on sorghum research for early maturing, drought resistant and high grain yielding varieties of sorghum. ICRISAT also housed in Matopos focuses on conservation agriculture on sorghum and holds a regional gene bank for sorghum varieties. The Agronomy Research Institute also partners with ICRISAT on sorghum research. The national sorghum gene bank is available at the National Gene Bank and Biotechnology Institute.

#### 4.7.1.4 End Markets and Trade

Sorghum varieties can be used for food, feed, fodder and fuel. Although production of sorghum in marginal areas has been actively promoted, farmers in these areas continue to attempt maize production often resulting in low yields and crop failure. Consumer education and attitude change is required that will market sorghum as a good nutritional cereal especially for diabetics.

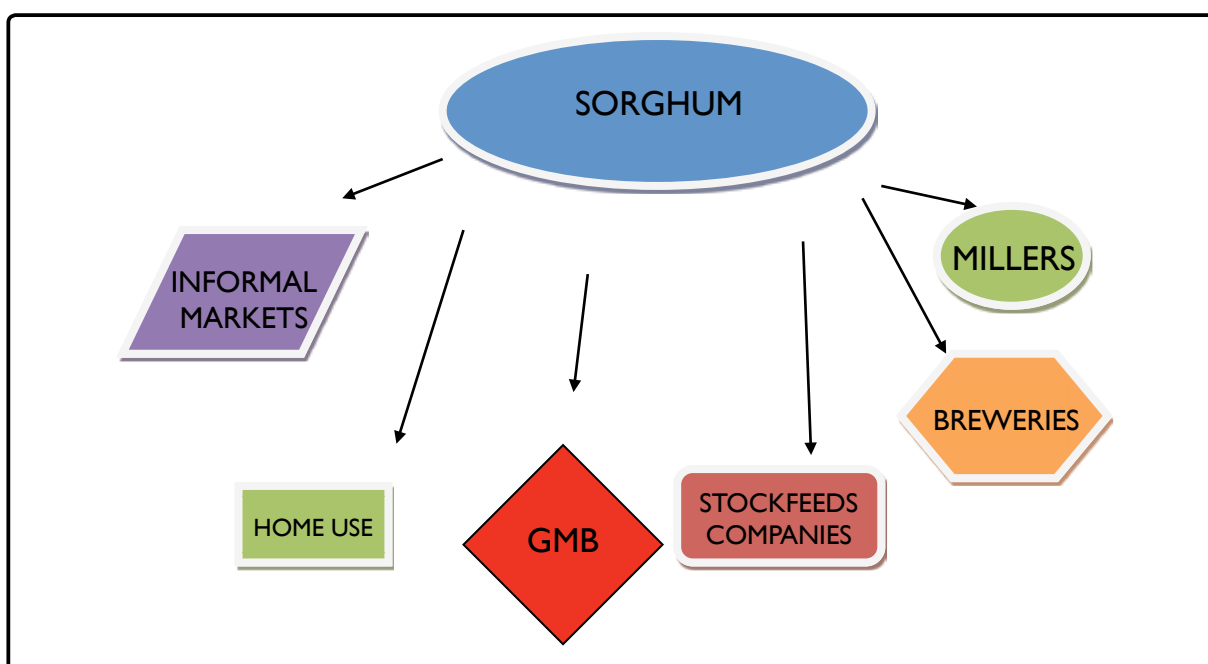
All sorghum produced in Zimbabwe is consumed locally as shown in **Figure 4.19**. Most of the sorghum produced is for household consumption and the informal market, where a 20kg bucket of sorghum is sold for US ten dollars. However a small proportion is sold through formal channels such as the Grain Marketing Board (GMB), stock-feed companies, millers and breweries. There is a niche market for red sorghum with breweries that brew the local type of beer popularly known as 'Chibuku' or opaque beer. The largest brewery is owned by Delta beverages. Other breweries include Simba Beer Brewery run by the city council in Kwekwe, and Ingwebu Beer Breweries in Bulawayo.

Beer sales are affected by the cost of living and the amount of disposable income available. These factors have seen a rise in the consumption of sorghum based alcoholic beverages because they are cheaper and are also filling. Delta Beverages sales have increased by 9 % to 2 510 776 hectolitres of sorghum beer sold in 2013 before the festive season.

The end product is not available in a convenient form; that is meal or porridge. When one buys sorghum from informal markets they must go through the pain of sieving out all the unwanted material in the grain such as stones and chaff and then take it to the millers. This is unlike maize meal which is readily available in the retail outlets in a convenient form.

There is no ready market for sorghum grain in the country. To ensure food security, policies that are in favour of sorghum production must be put in place. This may include a mandatory blending of maize and sorghum in stock feeds and mealie-meal to ease the pressure on maize. A ready market for sorghum must be set up by opening up millers who can quickly take up the commodity and process it and send it to retailers. More silos should be built around the country that will cater for sorghum storage. More farmer incentives should be available and a competitive price or subsidies for sorghum farming to ensure uptake by farmers.

Figure 4.19: Possible Markets for Sorghum



#### **4.7.1.5 Value Chain Governance**

Due to limited players in the processing industry, the type of governance that dominates in the Zimbabwean sorghum value chain can be considered as a “market-based” type with the processors playing a bigger role in what is produced, the quantity and also the quality of produce. Farmers cited that sorghum processors manipulate the price of the product due to a lack of demand of its raw form anywhere else. Consequently, small holder farmers opt for other cash crops even those less viable in their natural regions. There is thus buyer power on the sorghum raw product. Sometimes farmers do not have direct linkages with final household users of sorghum or the processors. This exposes them to exploitation by middlemen who take advantage of the information asymmetry, buy the grain at low prices (about US\$8.00 per bucket) whilst getting high prices in the market (upwards of US\$10.00 per 20kg bucket). The processors on the other hand respond to market demands in processed products and exercise control of the quality and price of the end-product. Sorghum meal costs at least US\$5.00-US\$7.00 per kg in the retail shops. Local beer, for example, is still produced by a limited number of players who can thus benefit from such low levels of competition. The farmers currently benefiting the most from sorghum farming are only those in contract farming who are certain of demand and usually even output price.

#### **4.7.1.6 Sustainable Production and Energy Use**

Communal farmers do not use pesticides as intensively as commercial farmers. The main concern is the commercial farmers for whom there is need to develop appropriate organic pesticides and pest resistant varieties. Whilst commercial farmers use irrigation to supplement rainfall, communal farmers rely solely on natural rainfall. There is need for water saving and recycling technologies for commercial farmers who are into irrigation. Mulching can also be used to retain moisture on the farms. Commercial farmers and processors consume significant amounts of electricity in irrigation and processing respectively.

#### **4.7.1.7 Value Chain Finance**

There is still low interest in financing agricultural production in Zimbabwe due to issues of collateral. Financial institutions thus are not contributing significantly to production of sorghum. There is inadequate financing for farming at the moment and processors are using contract farming arrangements to hedge against the risk of farmers not being able to finance farm production. Financial markets however, are attracted to the processing companies as shown by the share price of Delta on the Zimbabwe Stock Exchange, probably due to the company’s low business risk. Processors are the major source of sorghum production financing; with Delta for example pledging US\$3 million of finance through contract farming to the 2013/14 agricultural season.

#### **4.7.1.8 Business and Socio-political Environment**

Sorghum is also viewed by many as a poor man’s crop and hence it has generated little interest in the farming communities, except those in the arid regions such as Masvingo. Recent government initiatives to promote production and consumption of indigenous grains because of their high nutritive value are expected to lead to a subsequent increase in sorghum production in the coming years. Prior to this, there had not been much support to sorghum farmers except for those who are under contractual agreements with Delta Beverages. As such the general tendency has been to produce alternative cereals such as maize where input schemes are readily available and farmers could make reap commercial benefit. Non-governmental organizations such as Plan International and Action Aid have also been promoting consumption of indigenous grains and encouraging farmers through various incentives such as supplying inputs for the production of these.

#### **4.7.1.7 Summary of Constraints**

The following constraints were identified by stakeholders as the challenges facing farmers in production:

- Changing food preferences as consumers resort to substitutes.
- Low yield of sorghum has led to farmers not taking up the crop on large scale when compared to maize.

- Quelea birds which affect sorghum and millet
- Rising labour costs
- Ease of production of substitute crops like maize
- Fewer residues when compared with maize. Residue can be used for manure or stock feed.
- The crop is considered only for subsistence and not for commercial purposes by small holder farmers.
- Weeds like the Striga which is parasitic.
- Grain moulds which reduce yield and quality of harvested crop.
- Inadequate government policy.

The following were concerns highlighted in the survey for processors:

- Financing working capital
- High labour costs
- The liquidity crunch now affecting other supplies and demand by end user.
- Lack of processing technologies which has affected growth of the formal market of sorghum.

These constraints are also alluded to in prior studies by Mukarumbwa (2013) and FAO (1995).

#### 4.7.2 Barley

Barley is used for white beer production in Zimbabwe. Currently, only two-rowed malting barley is produced commercially under contract farming by the sole end user, Delta Beverages. The crop is less vulnerable to bad weather when compared to wheat. Besides its use as malt in beer processing, it can also be used as a livestock feed, preparing food and coffee when roasted. Zimbabwe is ranked number 68 in highest producers of barley in the world. Barley production for commercial purposes began in 1961. Production however increased significantly as farmers shifted away from wheat production during the beginning of the economic meltdown around 2003 when the government imposed unviable price ceilings on wheat. Wheat and Barley have been success stories of Zimbabwe's import substitution policies for the baking and brewing industries (Sukume *et al.*, 2000). The two share common features, in particular, they are produced exclusively in the winter.

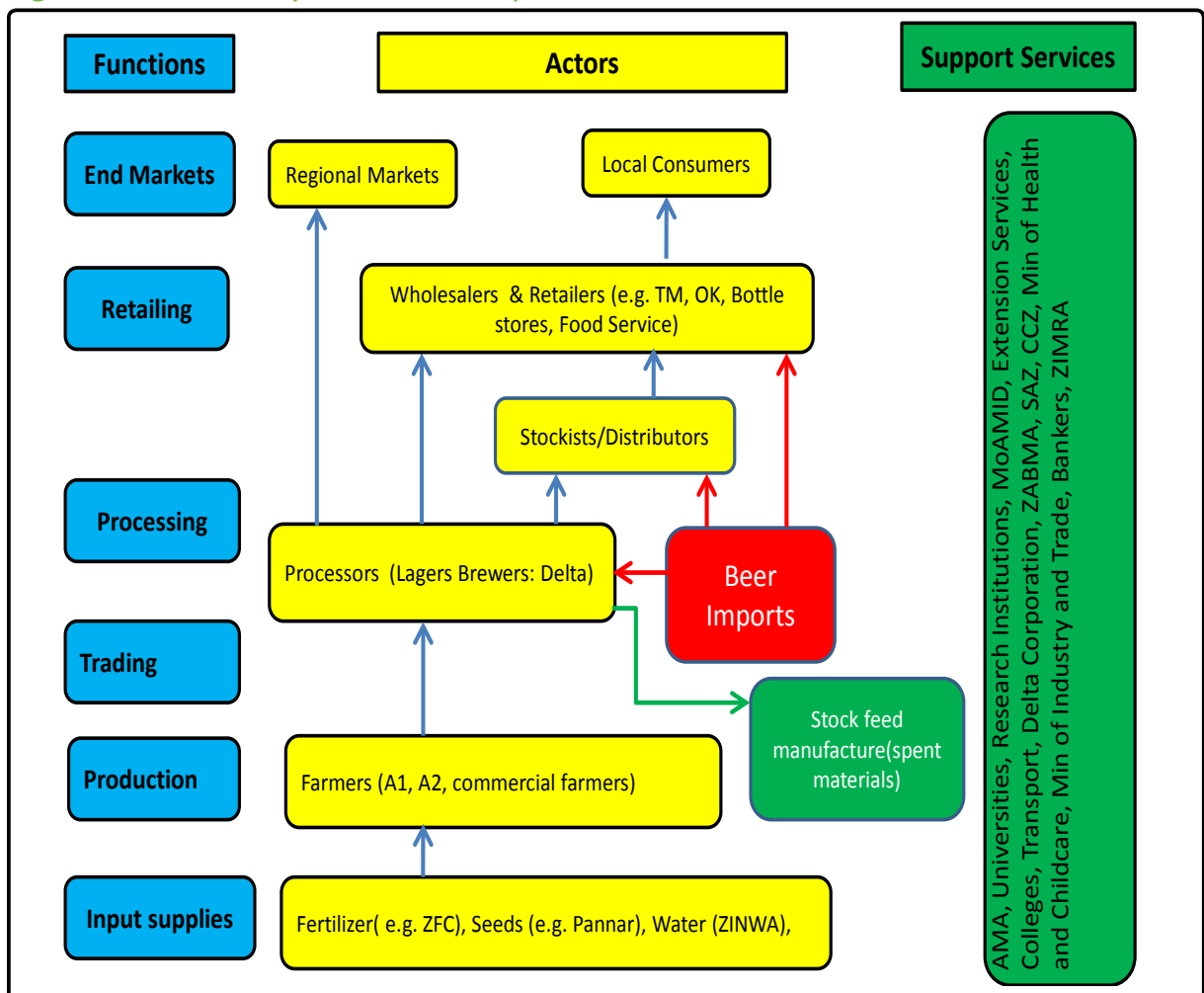
##### 4.7.2.1 Value Chain Mapping

The value chain map of barley is provided in **Figure 4.20**.

After price controls on staple grains, barley production increased at the expense of wheat production in the early 2000's. At the moment, barley is mainly purchased by Delta Beverages for beer production. The farmers are thus the primary producers, using inputs from retailers financed by personal funds or under contract farming. Processors convert barley into seed, and malt lager beer in the case of brewers. The brewer gets the product either directly from the farmer or through middlemen. We could not establish evidence of exports. The Agronomy Research Institute and ICRISAT are useful research centres for scientific evidence. AREX officers provide extension services and education.



Figure 4.20: The Barley Value Chain Map



#### 4.7.2.2 Sourcing of Inputs and Supplies

Seed is available from seed companies like SeedCo, Pannar, Agriseeds, ARDA Seeds, National Tested Seeds and Progen Seeds. Fertilizer is available from fertilizer companies like Windmill. AREX officers help with education on proper fertilizer and pesticide application. Machinery for cultivation is available from agro-retailers like Farm & City. Delta Beverages assists farmers for contract farming arrangements with inputs. Delta Beverages also have a department that is dedicated to the production of barley from research, inputs, to agronomy advice given to farmers. This department monitors the crop under contract farming from planting to harvesting. The monitoring ensures that they have good quality crop and meet the desirable quantities for their raw materials. In 2013/2014 season 40 000 tonnes of barley are expected from contract farming of barley.

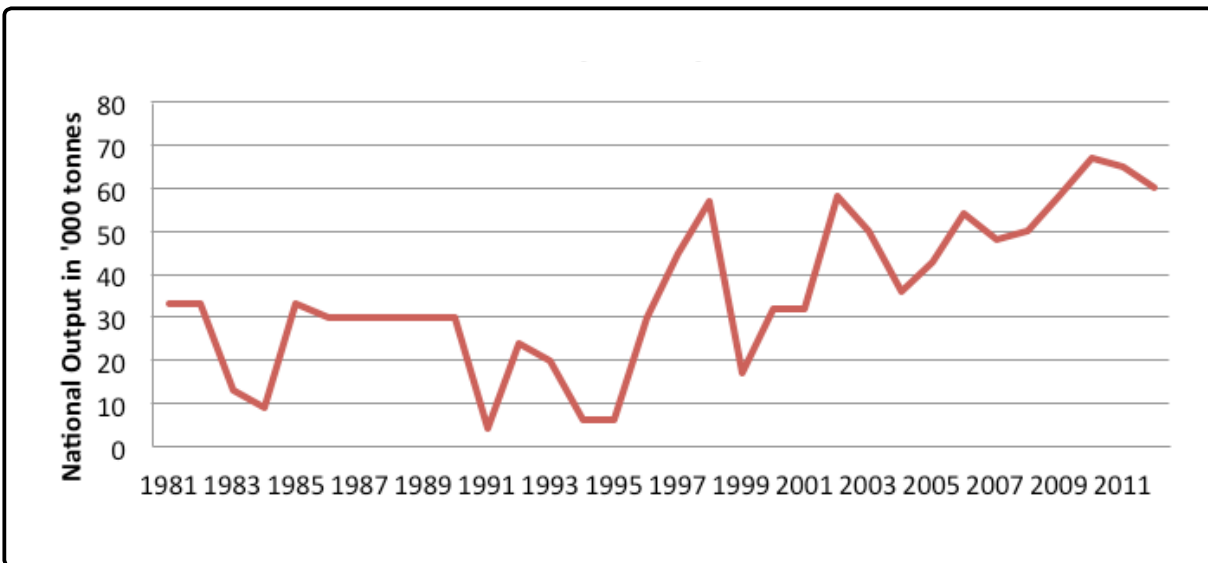
#### 4.7.2.3 Production Capacity and Technology

Barley is a commercial crop used for beer production and stock feed formulation. Production of barley is mainly on contract farming basis with Delta Beverages being the major player. Barley is classified amongst cereal grains in Zimbabwe and recent increases in production are associated with shifts from the production of wheat which is sold at government controlled prices.

The production trends of barley over the years are as shown in **Figure 4.21**.



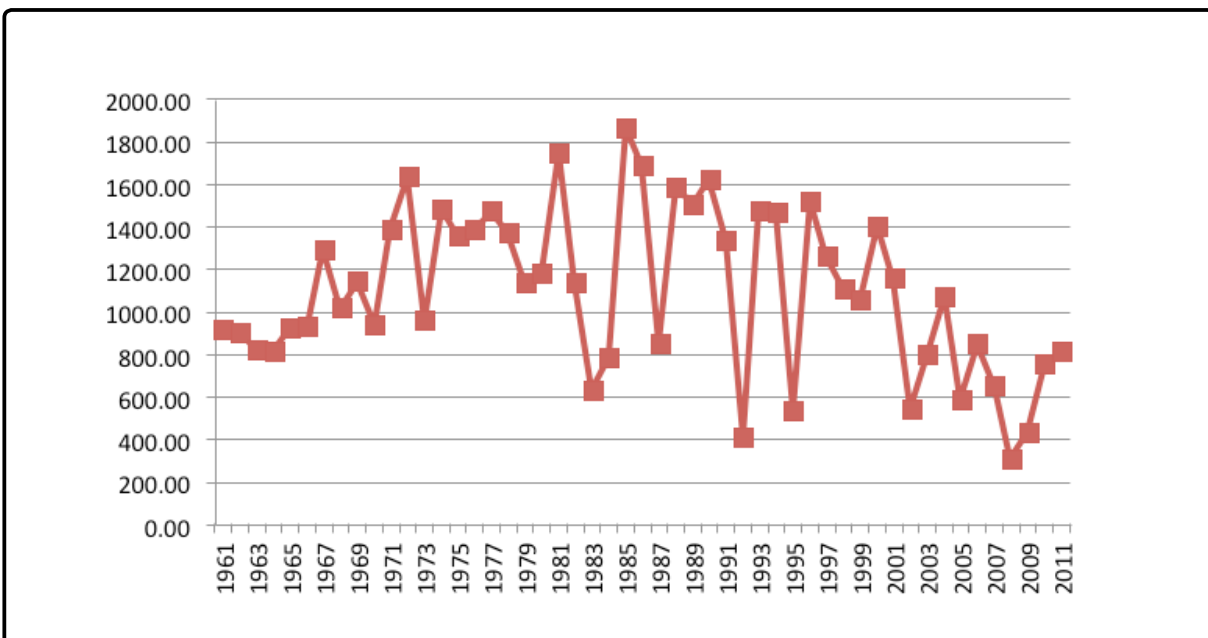
Figure 4.21: Barley Production (1981- 2012)



Source: Index Mundi (IM, 2013)

Barley is a winter crop but farmers use irrigation due to dry conditions in Zimbabwe. It has a short growing season taking on average 140 days to maturity. Average yield per hectare has been fluctuating in the range 310 kg per hectare and 1 829 kg per hectare as shown in **Figure 4.22**. Current evidence suggests that these figures can however rise up to 5.5 tonnes per hectare with improved farming methods and input supply/application. Droughts, the land reform program and the economic crisis are the main contributory factors to low yields. This crop is mainly produced by commercial farmers under contract farming whilst communal farmers produce insignificant quantities.

Figure 4.22: Trends in Yields of Barley in Zimbabwe 1961-2011



Source: Index Mundi (IM, 2013)

**Post-harvest handling and storage**

To retain its quality, barley grain must be correctly managed during handling, storage and transporting. Cleaning, grading and drying the grain can reduce quality defects thereby adding value to the grain. To

reduce the risk of storage germination, the grain must be stored at cool temperatures using aeration. There is also need to protect stored grain from insects which infest within three months under ideal conditions and 8 weeks under poor storage conditions. Temperatures below 20°C and moisture content below 12.5% should be adequate to ensure safe storage for at least 12 months.

#### **End Markets and Trade**

All the barley that is produced is bought by Kwekwe Malting, which is a 100% subsidiary of Delta Beverages. Kwekwe Malting pays a premium price of US\$450/tonne to their farmers so that barley farming remains competitive (in comparison to about US\$285-300/tonne for maize). Kwekwe Malting processes the barley into malt and sells 70% of the malt nationally to Delta Beverages and other smaller breweries in Zimbabwe. The price of malt is controlled by Delta Beverages so as to control the price of beer. Delta Beverages has large production plants of beer in Harare and Bulawayo. There are smaller breweries which buy malt in Zimbabwe, one of which is Beer Engine in Harare. Kwekwe Malting also exports 30% regionally to breweries in Zambia, Malawi and Botswana.

Beer sales are mainly affected by disposable income. The cost of living is increasing and disposable income is decreasing thereby negatively affecting beer sales. Annual beer sales are currently estimated at 1 259 900 hectolitres. The value chain of barley is a good model of how processing companies can assure the quality and quantity of their primary inputs.

#### **4.7.2.5 Value Chain Governance**

Delta beverages has been a monopolist for a period spanning over 2 decades exerting its power resulting in inefficiencies in prices which has been challenged occasionally by farmers (Sukume, 2000). Processors thus have significant buyer power and control the prices of barley. Delta has to a large extent promoted the marginalized communal farmers through contract farming arrangements and has also promoted the uptake of indigenous grains. However, the presence of more players would enable farmers to have more bargaining power over their produce.

#### **4.7.2.6 Sustainable Production and Energy Use**

Water is used for irrigation since the crop is produced during the dry winter season. There is need for proper irrigation depending on water holding capacity and using knowledge from AREX officers. The supply of water is linked to electricity which is required for pumping the water. The water is from dams and boreholes. There is need for water saving and recycling technologies in barley production and processing. The farmers get their electricity for irrigation off the national grid and are also affected by power-cuts. Communal farmers do not use pesticides as intensively as commercial farmers. There is also need for proper nutrient management since inadequate application reduces yield and quality. Excessive nutrient levels also cause significant losses from low yield and poor quality. With the help of AREX officers, environmentally friendly barley production is attainable.

#### **4.7.2.7 Value Chain Finance**

There is still low interest in financing agricultural production in Zimbabwe due to issues of collateral. The processors are thus the major financiers of farming through contract farming. This secures the raw material supply base for processors, and facilitates timely acquisition of inputs and guaranteed income for farmers.

#### **4.7.2.8 Business and Socio-political Environment**

Prior to the land reform exercise, barley was produced mainly by the white commercial farmers leading to a decline in production from the year 2001. The Delta contract farming arrangements have in a way assisted with capacitating new farmers with training and input supply for barley production.

#### **4.7.2.9 Summary of Constraints**

- Inadequate training of the new farmer
- Farmers who are not contracted by Delta are generally poorly financed due to lack of collateral to secure loans

- High input costs
- High costs of irrigation, including costs of electricity for pumping water
- Poor storage facilities leading to post-harvest losses.

### 4.7.3 Maize

Maize is the staple, and the most easily grown crop in Zimbabwe and hence many small scale farmers grow maize. Maize grows well in Natural Regions I to III. The Matabeleland regions are low rainfall regions hence very little maize production takes place there. Focus is on other small grains that are drought resistant.

#### 4.7.3.1 Value Chain Mapping

Figure 4.23 and Figure 4.24 show the value chain maps of maize, and maize to maize-meal.

Figure 4.23: The Maize Value Chain

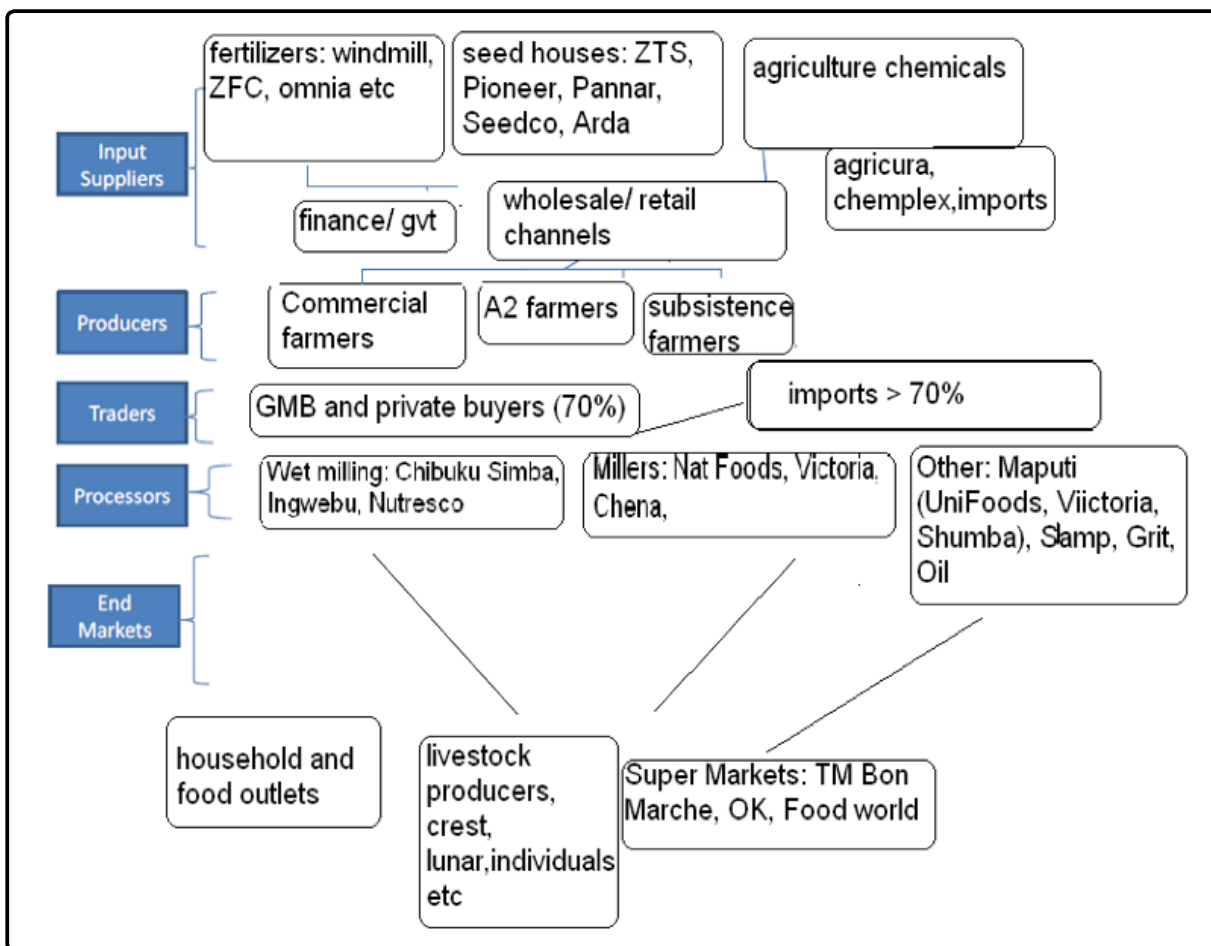
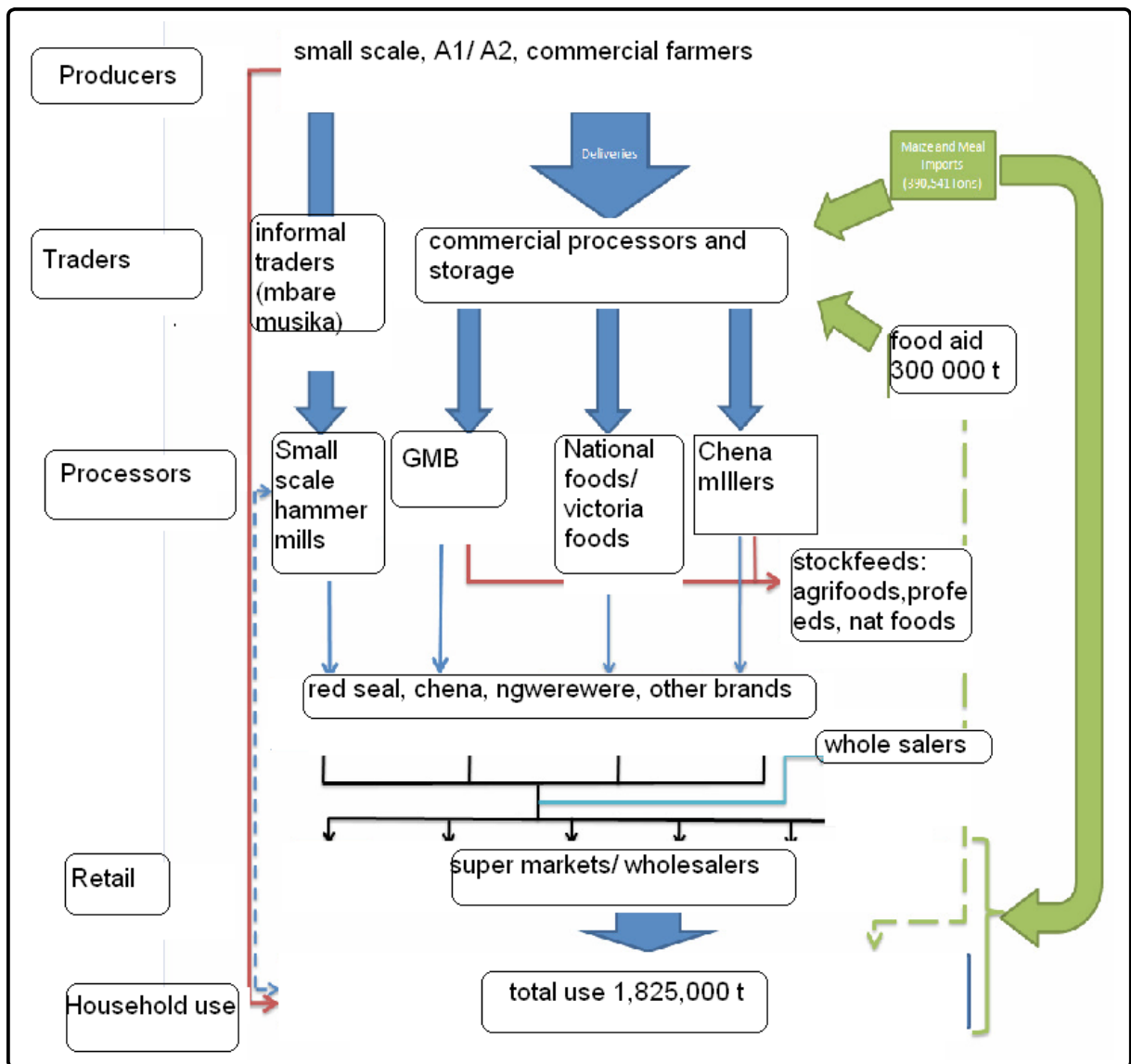


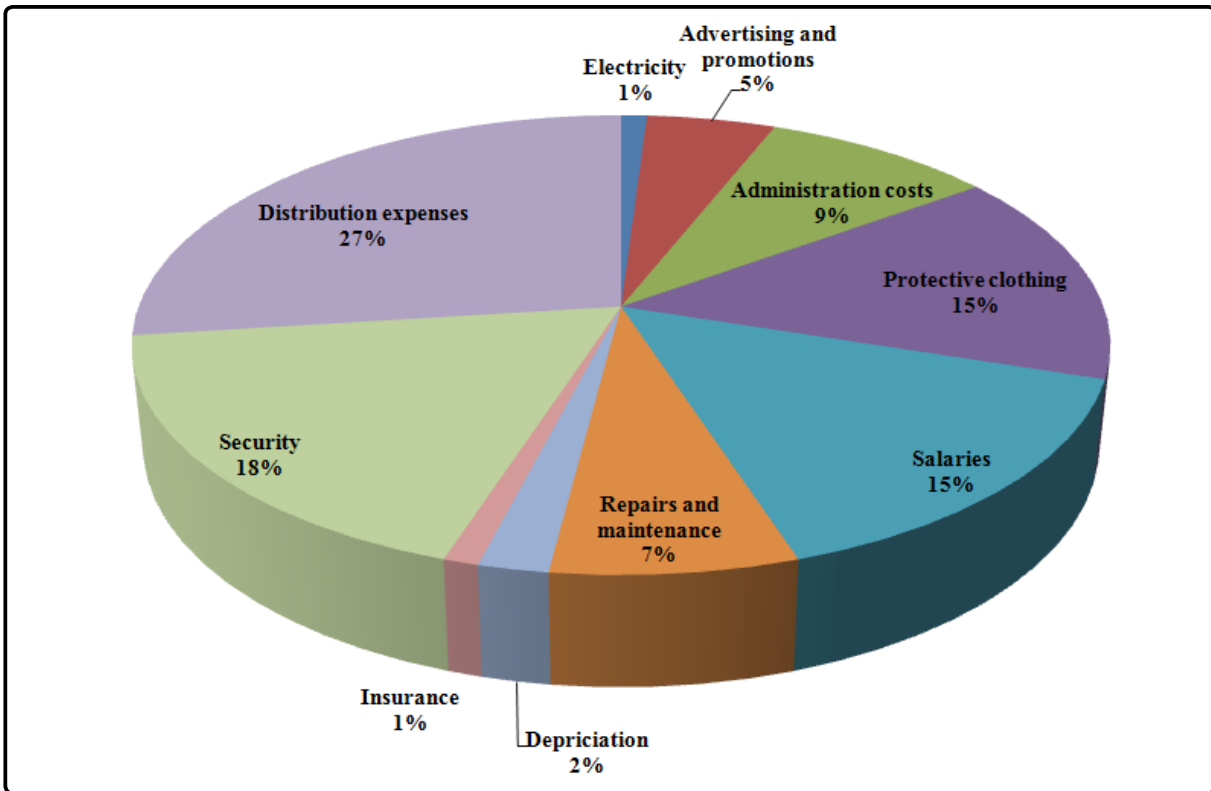
Figure 4.24: The Maize to Maize-meal Value Chain



#### 4.7.3.2 Sourcing of Inputs and Supplies

The country requires 38 000 tonnes of seed maize per season. Seed available to farmers is acquired mainly through personal purchases, Government, SADC, NGOs and other input support programmes. The inputs distributors have been the government (through GMB), Mashco, Farm and City, general dealers and other smaller players including NGOs. The cost of seed is approximately US\$2.50/kg and one hectare requires about 20 kg of seed. About 315 000 tonnes basal fertiliser and 260 000 tonnes of top dressing fertiliser is required per farming season for maize. The cost of fertilizer in the retail outlets is about US\$37-40/50kg ammonium nitrate, and US\$34-37/50kg compound D basal dressing. Most small holder farmers also use herbicides on at least 50% of their lands. The bulk of chemicals used are imported, with local companies such as Agricura supplying a few such as Atrazine and Paraquat at US\$9/L each. The draught power is mostly cattle among the A1/A2 though some A2 farmers have benefited from the government's mechanization programme, owning at least a tractor and a disc harrow. These farmers hire out the equipment at US\$40/ha excluding the cost of diesel, which is approximately 15L/ha. Combine harvesters are only confined to a few commercial farmers, and are usually also hired out. As shown in **Figure 4.25**, transport costs, salaries, security and protective clothing, apart from procuring the maize itself, are major cost drivers in maize-meal production.

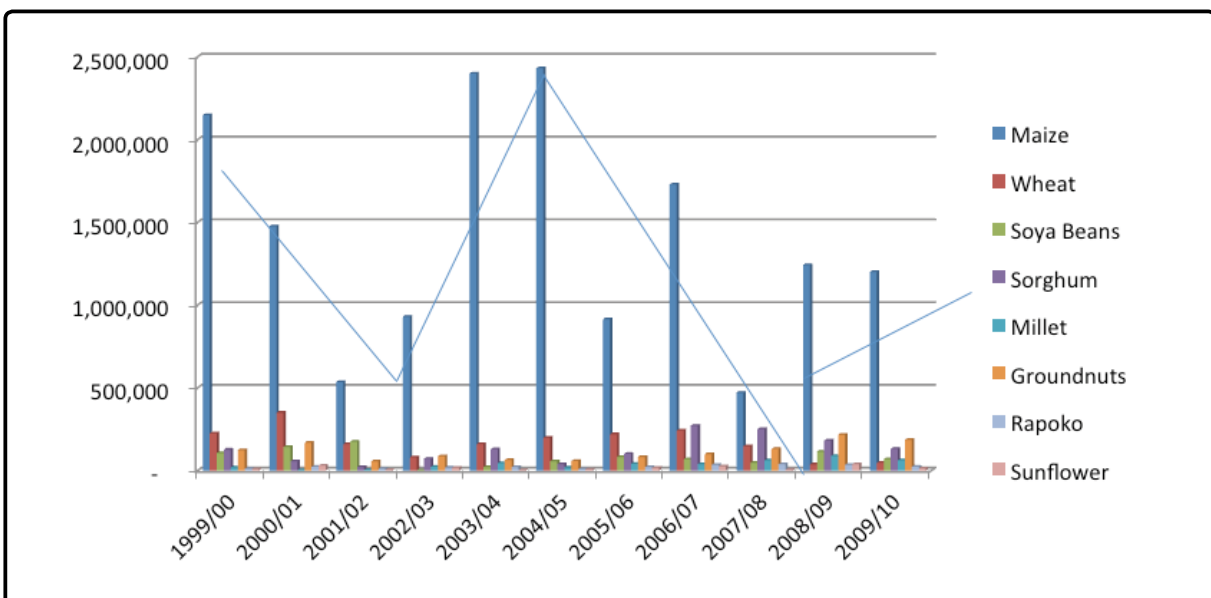
Figure 4.25: The Distribution by Percentage of Maize-Maize meal Value Chain Inputs



4.7.3.3 Production Capacity and Technology

The land reform exercise has resulted in an increased number of smallholder farmers. The area planted for maize has been varying and inconsistent yields have been harvested. The average yield has not been commensurate with the production efforts with the lowest yield of 0.33 tonnes/ha being experienced in the 2007/8 season when 1,800,000 ha were planted (Kapuya *et al.*, 2012). Under normal rainfall, a hectorage of at least 1,2 million hectares of maize should be planted to meet the domestic human requirements of 1,825 million tonnes. On average 350,000 tonnes are used for other commercial uses. The production trends of maize as compared to other grains is as shown in **Figure 4.26**.

Figure 4.26: Estimated Production Figures for Cereals



As can be seen, the grain production is starting to pick up slowly, from a slump in 2008. In the season of 2001/2002, a drought was experienced in the country which led to the decline in production. Wheat production seems to be slowly dying off.

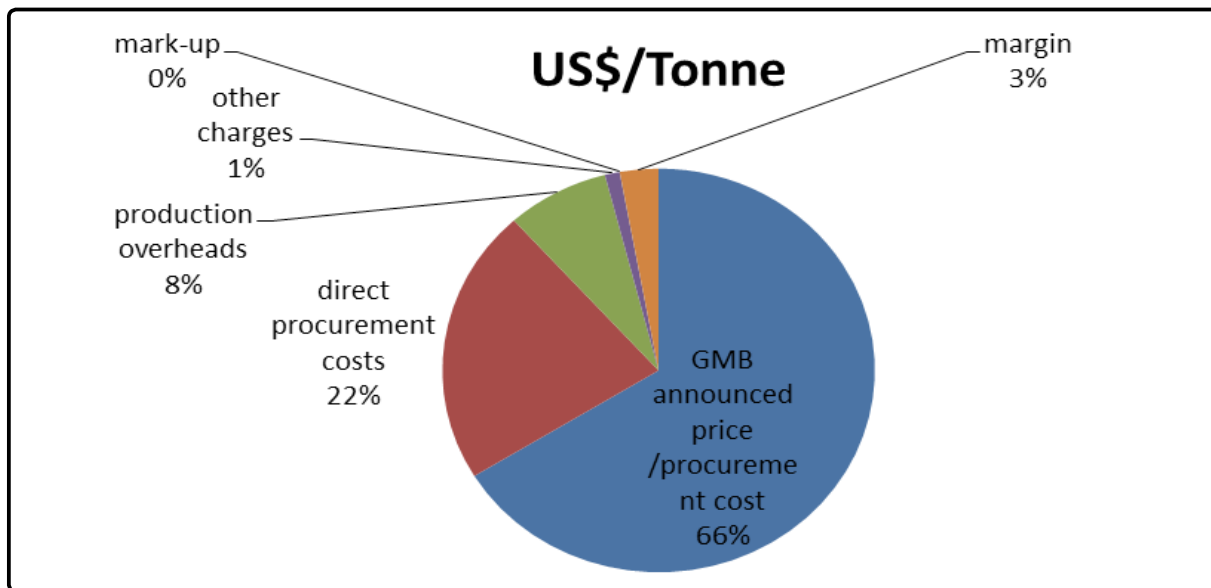
Zimbabwe grain storage has been predominantly by the GMB through the controlled crops regulation. The nation's total storage capacity is estimated at 5 million tonnes. The silo grain storage consists of 10 main depots, with bulk grain being stored in grain complexes with a total storage capacity of 733 500 tonnes; while bagged grain can be stored at all depots on hard stands and in sheds with a capacity of up to 4 266 500 tonnes. After the deregulation of grain trade in 2009, private players in the storage, milling and trade sectors have come on board. Since the formal private grain storage and trade sector seems not yet fully developed, there are however key players that have been moving, storing and trading large volumes of grain over the past few years. Subsequently GMB has been operating in a competitive environment. This has seen GMB letting out its silos at US\$0.50/tonne/day.

According to the Zimbabwe Grain Millers Association, the industry employs 5 300 personnel through 486 millers around the country, with a capacity to mill 2.7 million tonnes per year representing a 59.5% capacity. About 5 000 tonnes of maize are used for human consumption or commercial use per day.

#### 4.7.3.4 End Markets and Trade

From the procurement of the maize through the milling process to the retail, the realized profit margin for break even is about 3% of all the costs. The figure below illustrates the distribution of the costs and profit as a fraction of the process costs.

Figure 4.27: Capital Costs and Profit Margins for the Maize- Maize meal Value Chain



The average price of maize is about US\$265-\$300/tonne. The average price of processed roller meal is US\$0.50 per kilogram. The transport costs from the farm gate to the nearest GMB silo were calculated as the average transport differential to all the major maize silos. It is important to note that these differentials were based on transport costs derived from average freight rates of logistics companies available in Zimbabwe. The current working average for freight rates is calculated at US\$0.02/tonne/km, which is derived from the US\$2.00/Load/ km rates applied to farmers. For Maputi there are three types of Maputi namely: Dry Maputi, Oil maize snacks, Spiced Maputi. The average price is as follows per 50 grams: (i) Dry Maputi US\$0.10 (ii) Oil maize snacks US\$0.25 (iii) Spiced Maputi US\$0.35 (Chiukira and Juru, 2012). Samp can be used as a substitute for rice in many communal households and even in urban areas. The average cost price prevailing in the market for 1 kg of samp is US\$0.60. A 50 kg of samp

and it will sell at US\$0.60 per kg. The price per tonne of maize will thus be US\$3,000.00. Oil, about 10% oil volume/weight, can be extracted from maize. A tonne of maize will therefore give 100 litres of cooking oil to be sold at US\$1.70 thus a tonne will give an estimate of US\$255. Besides the, Corn is also wet milled which feeds into beer manufacture, or processed into snacks, maputi, samp and stock feeds.

Maize grown is mainly for local consumption, and current production trends have failed to meet requirements leading to importation of grains from neighboring countries, for example South Africa and Zambia. The GMB is the buyer of last resort for grain produced. The informal sector and Mbare Musika have also been moving large stocks of maize.

#### **4.7.3.5 Value Chain Governance**

The maize value chain is dominated by processing firms who play a leading role and these include National Foods, Victoria Foods and GMB among others. Their power comes from the superiority of their manufacturing capabilities. The processors have prominent brands and have advanced distribution, manufacturing and research and development functions.

Processors are mainly concentrated in and around urban centres which provide the largest markets for the main product maize meal. The products are fairly standard and non-differentiated and so the governance is mainly market based with prices being determined by supply and demand.

#### **4.7.3.6 Sustainable Production and Energy Use**

The most important materials used in the value chain are fertilisers and maize. The milling processes release dust which is harmful to humans especially the factory workers. Fertilisers and other agrochemicals such as herbicides, also pose an environmental hazard as these affect aquatic life.

The main sources of energy are electricity and fuels. Processing uses mostly electrical energy and fuel is used for farming and transportation activities. No energy is generated from the by-products of the industrial processes. Opportunities for adoption of renewable energy include solar and wind although these are limited by availability and access to the technology and infrastructure.

Water is mainly used for farming and this is dependent on rain water as maize is produced during the rainy season and rarely under irrigation. Water pollution from this value chain is associated with the use of fertilisers and agrochemicals in farming.

Emissions from the maize value chain are minimal with the emissions coming from the farming and transportation activities. There is limited application of standards for cleaner production or environmental sustainability.

#### **4.7.3.7 Value Chain Finance**

Financial backing of the maize value chain in Zimbabwe is limited as the business returns are rated as less attractive mainly due to the price of maize. Prices for maize (US\$300/tonne) are lower than other cereals, for example barley (US\$450/tonne). Maize production requires financing for inputs and there is no specific financing for maize. Maize production is financed mainly from the farmers' own funds and the government inputs support programme, which is subject to abuse in many cases. The costs of available financing are also high and tenures are short making it unsuitable for the farmers' needs.

The risks associated with the maize production financing include the unreliability of rainfall and price fluctuations on the market. Firms (processors) support to farmers is limited as there is the risk of failing to recover advances provided to farmers. Poor or bad management (corporate governance) may lead to inefficient use of materials and financial losses. Other risks include political and legal environment with regards to land ownership



#### **4.7.3.8 Business and Socio-political Environment**

Zimbabwe faces challenges in road and rail infrastructure which has negatively impacted transportation services and the costs of transport. Rail transport, which is bar far the cheapest mode of transport for bulk commodities, is not functional. Transportation of maize, and the required fertilisers, could be more cost effective if done by rail. The availability of electricity is another challenge facing processors whose operations rely heavily on power drawn from the national grid. Power cuts are frequent leading to several plant start-stops which affect output. The use of generators is more expensive and pushes the costs of production up.

This includes the extent to which national policies and regulations such as tariffs, bans, quality requirements, administrative procedures and product and food safety standards affect what is produced and how it can be traded within the country and across borders. An analysis is also needed of the functioning of national marketing boards and market institutions such as commodity exchanges.

However, Zimbabwe's education and training provides the industry with the required skills in farming and processing.

#### **4.7.3.9 Summary of Constraints**

Productivity is low and uncompetitive as a result of factors which include:

- High local transportation costs
- Poor agronomic practices and liquidity challenges leading to grain of inferior quality
- Unavailability of irrigation facilities
- Limited access to latest technologies and mechanization equipment by both farmers and processors
- Unattractive prices of maize due to government regulations
- Limited access to market information
- High costs of input
- Poor input distribution scheme, with inputs sometimes distributed late into the farming season, or mismanaged by beneficiaries
- Poor linkages between farmers and processors with research and training institutions.

#### **4.7.4 Wheat**

Wheat is the second most important strategic food security crop. The majority of the population eats bread for breakfast, thereby making wheat a staple crop given its high demand (Kapuya *et al.*, 2010). Thus, the value of wheat as a commodity has steadily risen. Wheat contributes about 4% to the GDP of Zimbabwe (RBZ, 2009). The products of wheat are flour (after milling) and bran (after de-hulling). Flour is the main ingredient for making bread and other confectionaries consumed daily by mostly urban Zimbabweans while wheat bran is mainly used in the stock-feeds manufacturing sector. Since locally produced wheat has poor quality for bread making because it is too soft, hard wheat imports are required to improve the glistening of the local wheat.

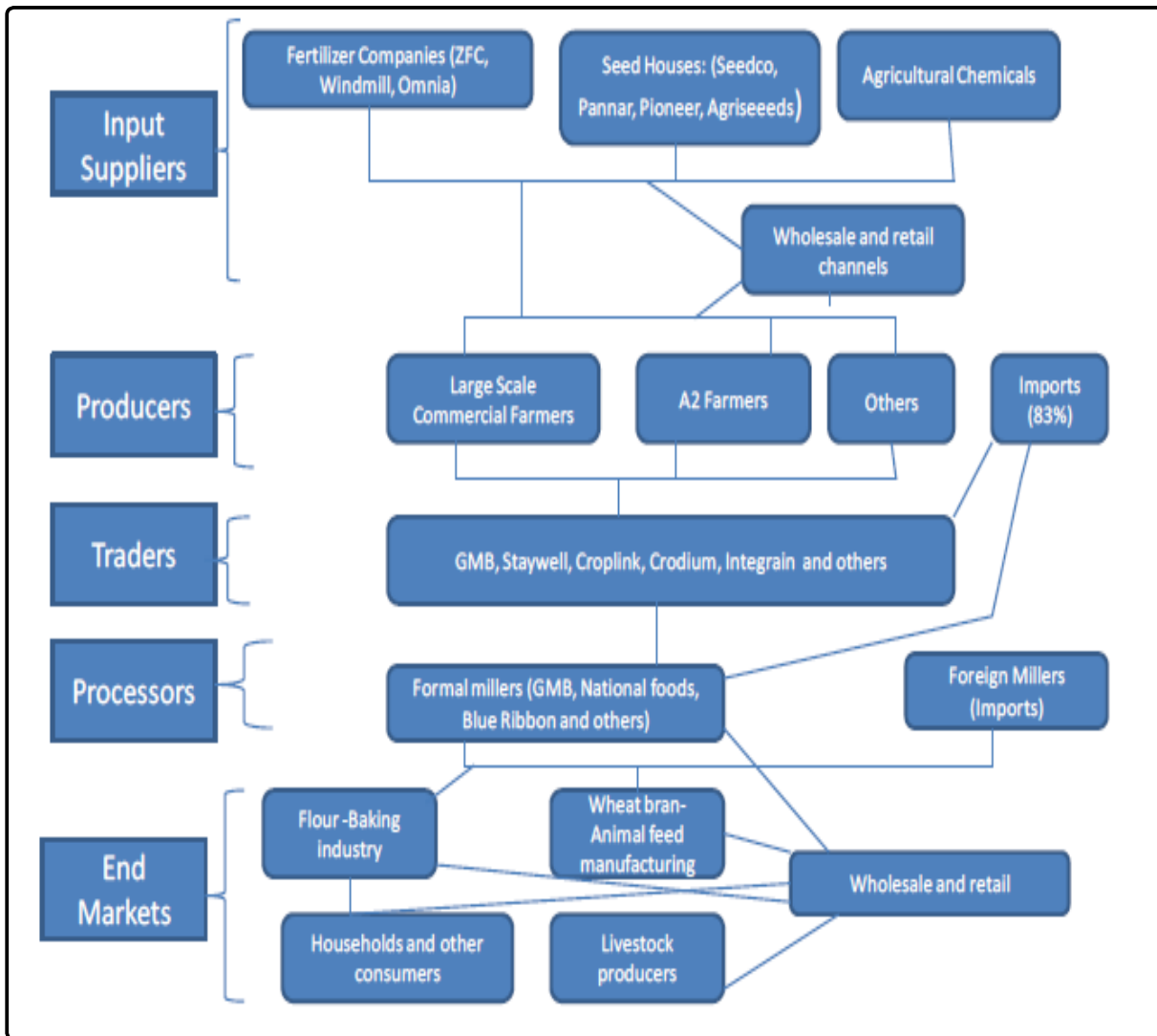
Irrigation water supply and power are important in wheat production since the crop is cultivated in winter when there is no rain. This means a significant initial capital cost for construction of dams, water reservoirs, boreholes, water mainlines, sprinklers, and power. Mostly commercial farmers have been involved in wheat production, not neglecting a few smallholder farmers on wet lands and smallholder irrigation schemes which produce wheat, albeit mainly at subsistence levels.

#### **4.7.4.1 Value Chain Mapping**

The wheat to bread value chain map is as depicted in Figure 4.28.



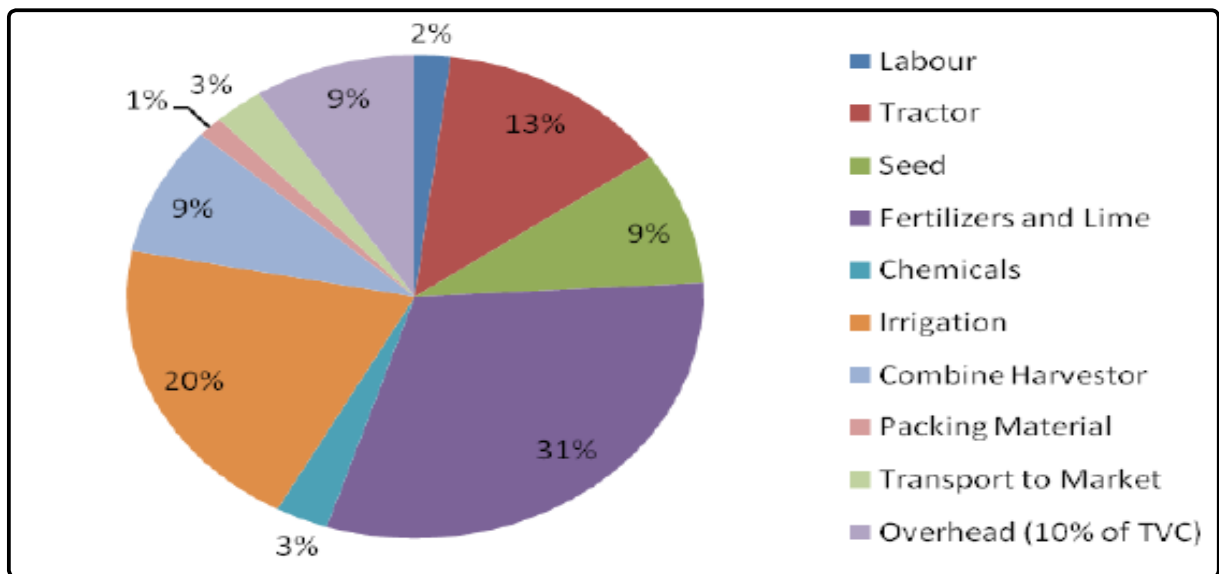
Figure 4.28: The Wheat to Bread Value Chain



#### 4.7.4.2 Sourcing of Inputs and Supplies

The major inputs of this sector are land, labor and capital. Capital caters for other inputs such as seed, fertilizers, chemicals, farm machinery, utilities, irrigation and other services. Although time and budgetary constraints would not allow this study to do a detailed survey to collect quantitative performance indicators of the whole value chain and individual components of the value chain, however the following qualitative measures emerged for farm production, milling industry and bakers. The average total cost of producing one hectare of wheat is US\$1,788.00 of which fertilizers and lime, irrigation, and farming equipment (such as tractors and combine harvesters) are the major inputs required in wheat farming. **Figure 4.29** is an estimate of the related cost of inputs as a percentage.

Figure 4.29: The Ratio of Cost of Inputs in Wheat Production



Irrigation capacity has been estimated at 45,000 ha of 120, 000 ha potentially irrigable. The GMB storage facilities are leased at US\$0.10 per tonne for overnight bulk storage, and US\$0.10 per tonne for overnight bagged storage.

#### 4.7.4.3 Production Capacity and Technology

Total annual wheat output has been declining from 325,000 tonnes in 1990 to 18,500 tonnes in 2008 (Gasana *et al.*, 2011). In the past 6 years, the national wheat production average has been 152,870 tonnes. **Figure 4.30** shows the production trends of wheat versus imports.

Figure 4.30: Trends in Wheat Production and Importation since 1960



Source, Mutambara *et al.*, 2013

Since 2001, a sharp decline in wheat production was experienced; a huge deficit was therefore experienced in terms of imports and exports. Given the strategic importance of the commodity, the continued decline in self sufficiency of the economy in this sector is a cause of serious concern, especially for government whose role is to protect strategic commodities for food security in the country.

### **Wheat Millers**

The milling industry is highly dominated by four major processors sharing more than 80% of the wheat market. Wheat marketing deregulation has introduced new small scale players with proliferation of hammer mills in settlement areas. There are about 35 formalized small scale hammer mill based firms and together with the four major processors they have a total capacity of 189 MT/hour, converting to 400 000 MT of flour (equivalent to 500 000 MT of wheat) per year. Milling capacity ranges from 0.4 – 34 tonne per hour. The millers mill the wheat into flour and wheat bran. The flour goes into the baking industry while wheat bran is used mainly in animal feed manufacturing. The milling industry is however under threat and one of the major millers stopped production.

The major constraints millers are facing is availability of wheat grain for processing, lack of working capital, expensive borrowing costs due to the general illiquidity conditions in the market. Further, millers are facing stiff competition from wheat and flour imports depressing domestic prices.

### **The Baking Industry**

The baking industry is highly decentralized with several wholesale and retail producers throughout major settlement areas. The National Bakers Association of Zimbabwe (NBAZ), a part of the Confederation of Zimbabwe Industries (CZI) represents bakers. Major bakeries in Zimbabwe are Bakers' Inn, Proton Bakers, Perfect Bakers, Super-bake and Lobels Bakers. In addition there are in-house bakeries in supermarkets, restaurants and hotels. Small scale indigenous household baking is also being practiced, producing buns and doughnuts for market. About 90% of the flour used in the baking industry is used for bread making while the other proportion goes into other baking products such as cakes, scones, buns and others. There is no significant competition with imports in the baking industry since bread is a perishable. Some bakeries actually import wheat or flour. Households also buy flour for home baking.

#### **4.7.4.4 End Markets and Trade**

Products from wheat such as flour, bread and other confectionery products are consumed by mainly urban households and other consumers such as hotels and restaurants, through the numerous wholesale and retail outlets in mostly urban and growth points areas. Wheat bran, a wheat milling by product, is used for manufacturing livestock feed. Wheat and bread consumption per capita has through time increased in Zimbabwe. Although bread used to be a luxury product especially among the urban and rural poor, it has through time become a necessary good, a staple food. Bread is gradually becoming an important source of carbohydrates for most house-holds especially urban families. Bread is substituting maize meal (sadza) and other sources of carbohydrates such as rice and potatoes.

#### **4.7.4.6 Value Chain Governance**

The price of wheat and wheat products including bread is regulated by the government, as wheat is considered a staple grain in Zimbabwe. Regulation of wheat prices resulted in a slump in production from about the year 2003 where it was not commercially viable for farmers to produce wheat, as the profit margins, if realized, were minimal. Producers of confectionery then resorted to imports as these are cheaper than locally produced wheat. Concerns have been raised by organizations such as the Baker's Association who feel that the imports may be of sub-standard quality as these often contain banned substances such as bromide and soya mix. Wheat flour is coming in at prices much lower than the normal price at source; this is synonymous with dumping and is in violation of Article 4 of the World Trade Organization (WTO) Anti-dumping Agreement and Article 18 of the SADC Trade Protocol. For instance, wheat flour from Turkey is costing USD 493/tonne in Zimbabwe, compared to USD 580/tonne at source (Istanbul). The actual quantities that are being imported are not known and so are the brands. The industry is emphasizing the need to arrest the evil of cheap imports by invoking the World Trade Organization provisions on dumping, subsidies and sanitary and phyto-sanitary (SPS) measures.

#### 4.7.4.7 Sustainable Production and Energy Use

The success of wheat farming relies heavily on irrigation infrastructure, as well as the consistent supply of water and electricity. Investment into alternative sources of energy would lessen the pressure on the national power grid. Implementation of more effective irrigation practices such as drip irrigation would also be crucial in ensuring better management of available water resources.

#### 4.7.4.8 Value Chain Finance

Just like most other resettled farmers, the issue of loans and collateral was cited as a major hindrance in securing capital for production or improving existing irrigation infrastructure. The milling industry is also affected by the lack of working capital and expensive borrowing costs due to the general illiquidity conditions in the market.

#### 4.7.4.9 Business and Socio-political environment

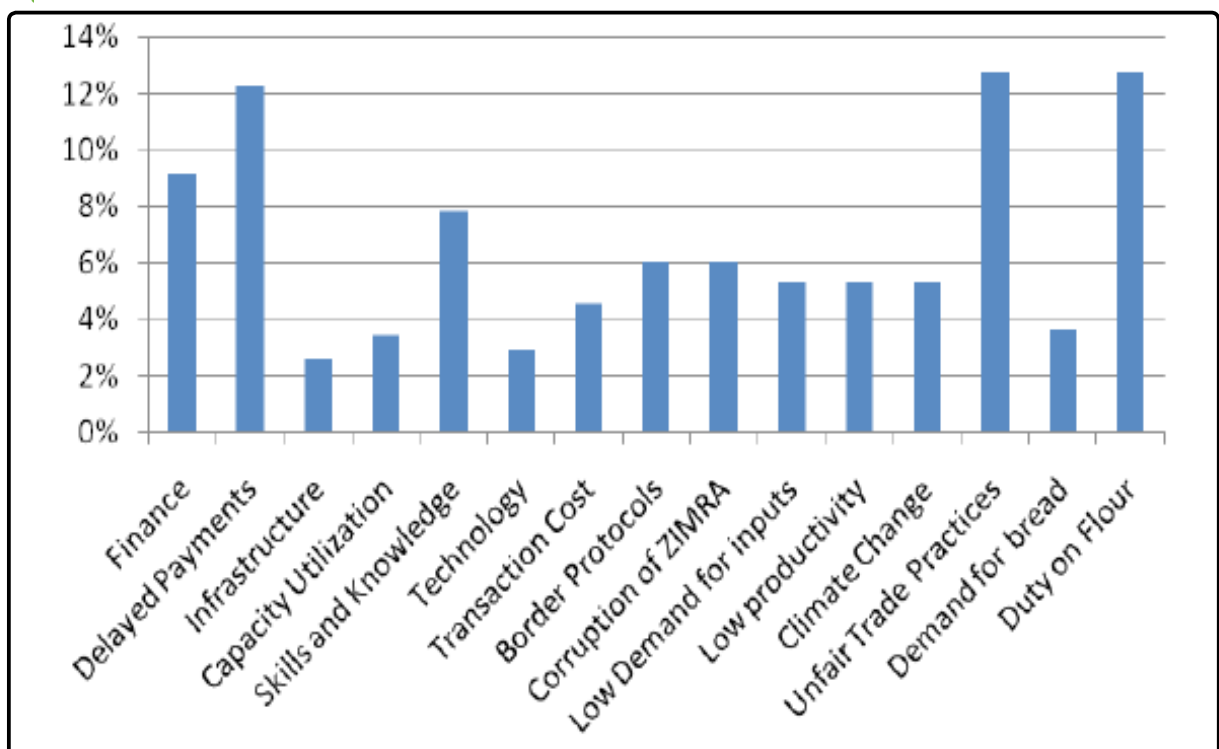
There is need for government to revise the current producer prices for wheat (of US\$460-465/tonne) and wheat products so as to encourage more farmers to take up wheat farming for improved food security. Government could also introduce additional incentives (such as supply of inputs, and training) for farmers to specialize in wheat farming. Such a program should focus primarily on farmers in natural farming regions I and II, especially those in areas in the central watershed (Harare, Mazowe, Marondera, Macheke, Headlands) where water is easily available where high yields of wheat can be attained.

The average milling price of wheat is about US\$575/tonne. Millers feel disadvantaged as they are buying wheat at the government stipulated prices, but fail to realize any profits following value addition. The milling industry is also struggling to survive in the face of cheap imports. At the time this exercise was conducted, some of the major millers had shut down citing viability problems.

#### 4.7.4.9 Summary of Constraints

Key players cited a number of issues that were affecting the performance of the wheat value chain, and these are as summarized in **Figure 4.31**.

Figure 4.31: Constraints in the Wheat Value Chain



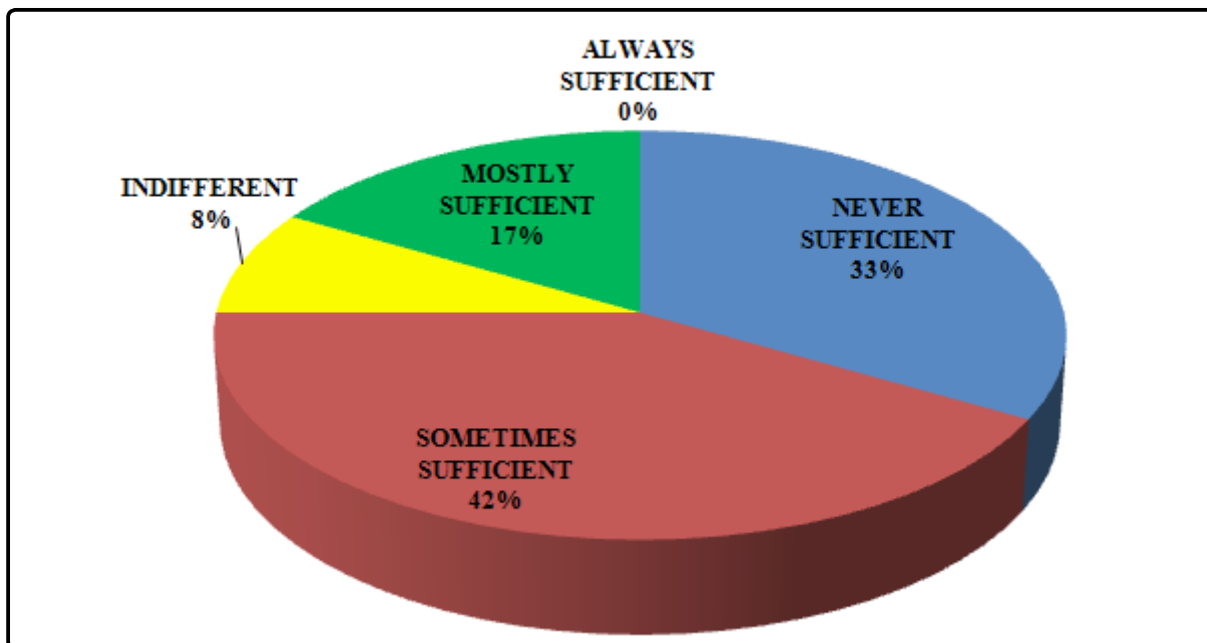
The obstacle cited the most by farmers is the unevenness of the industry (13%) which they said is costing them in terms of returns. Unfair trade practices and duty on flour were the major constraints. The delay in payments came out as a major constraint also (12.5%). The industry also stated that the lack of appropriate skills and knowledge was a constraint, at 8%. The rest of the constraints were distributed around 5% save for Border protocols and ZIMRA corruption contributing 6% a piece. A few players complained of lack of demand, infrastructure, capacity utilization and technology which in total contributed about 11% of the constraints.

#### 4.8 Summary of Statistical Data from Questionnaires

The specific issues affecting value chains are highlighted in the earlier sections. This section uses graphical illustration to present an overall summary of statistical findings derived from all the value chains selected for study in the Agro-processing/Food and Beverages study, as obtained through questionnaires.

##### 4.8.1 Sourcing of Inputs and Supplies

Figure 4.32: Processors' Responses on Sufficiency of Raw Materials Sourced Locally



Raw materials that are sourced locally were said to be in short supply leading suppliers to import primary raw materials in order to make up for the deficit. It is therefore critical to increase agricultural output so that it meets the local industry requirements for raw materials in terms of both quantity and quality. This will in turn boost industrial capacity utilisation and possibly lower production costs.

Figure 4.33: Farmers' Comments on Quality of Locally Sourced Inputs

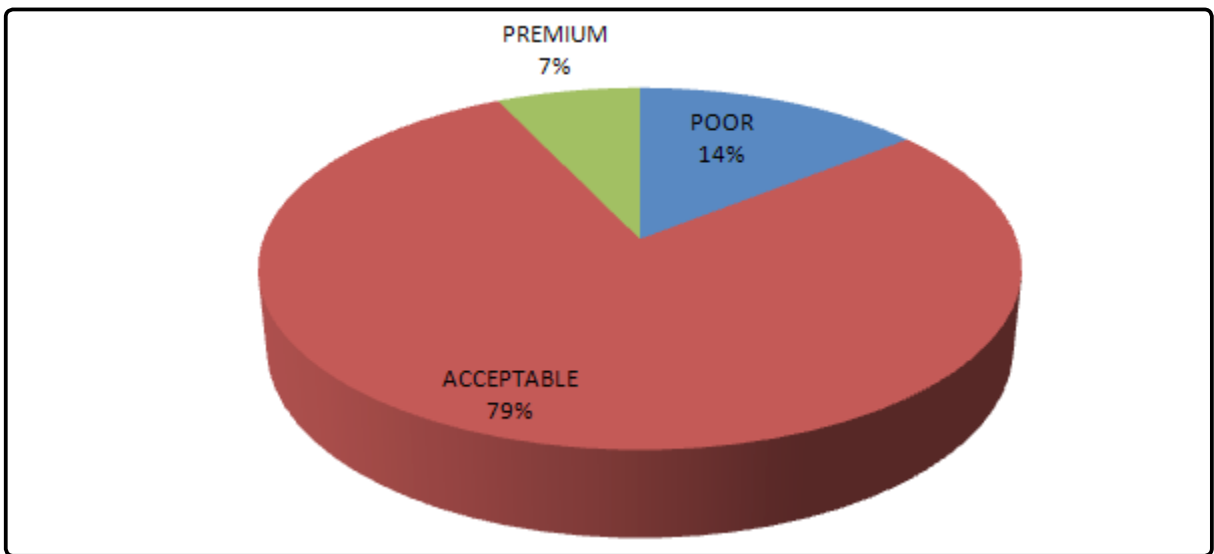
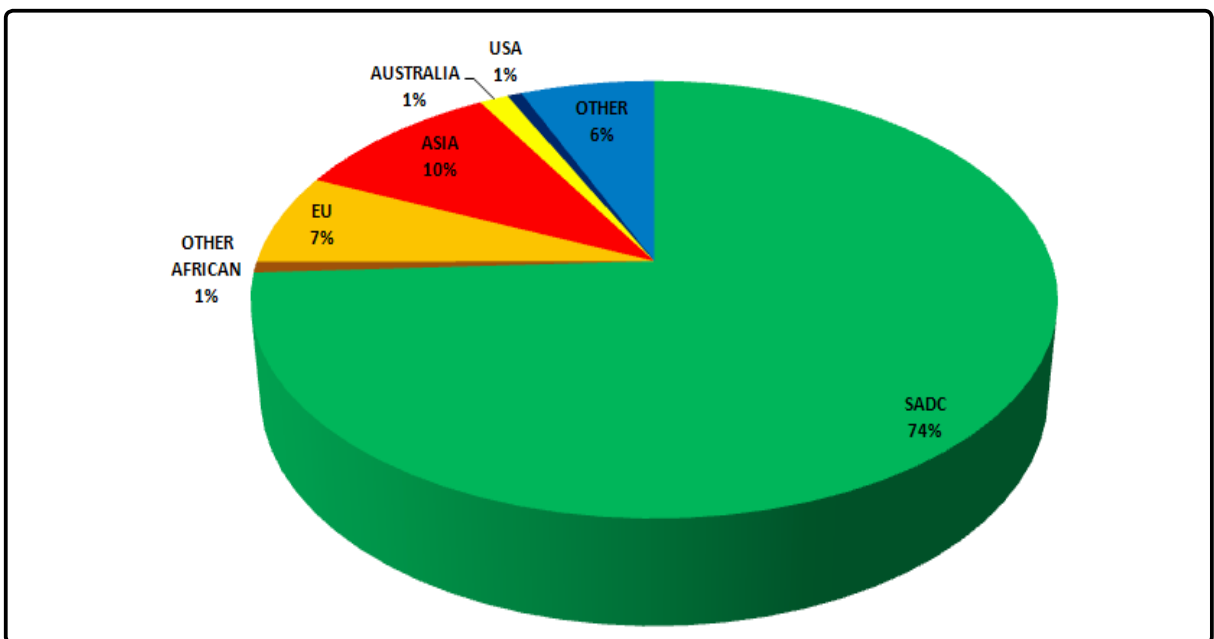


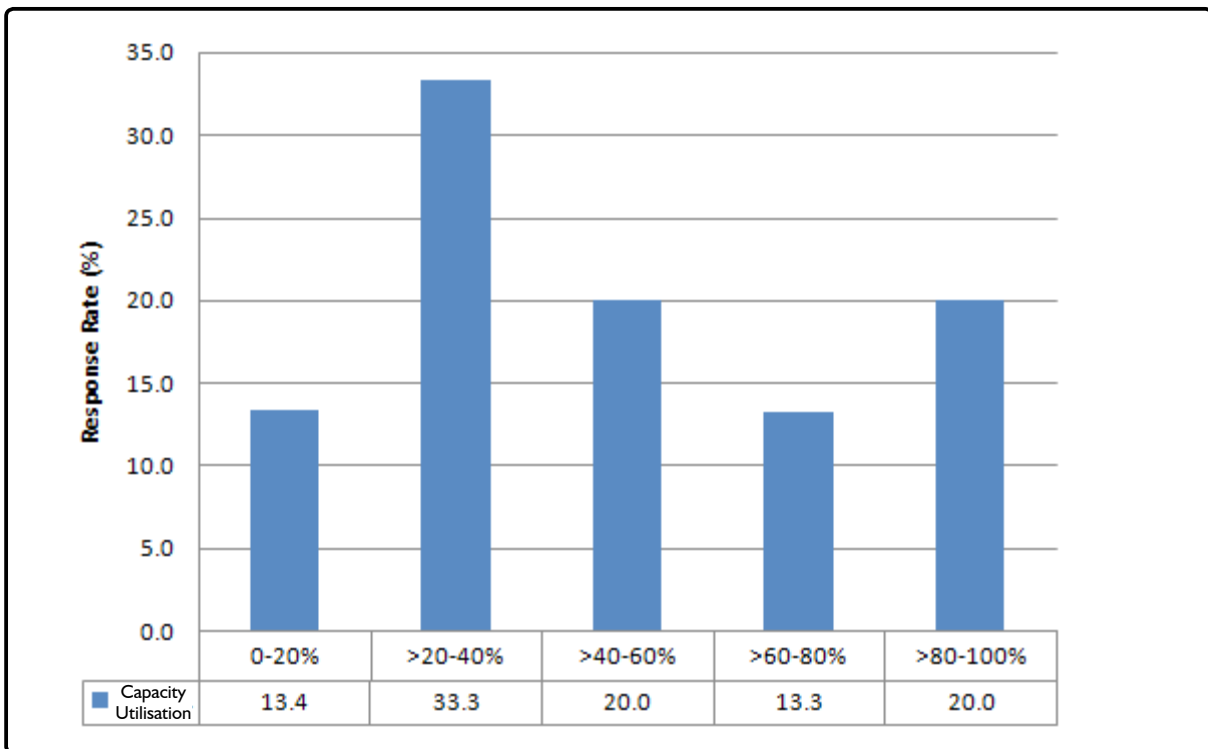
Figure 4.34: Sources of Raw Materials Imported by Processors



The information obtained from the survey show that the majority of imported raw materials are from the SADC block. However, the SADC countries only act as distributors representing the country of origin which may not necessarily be from the SADC region.

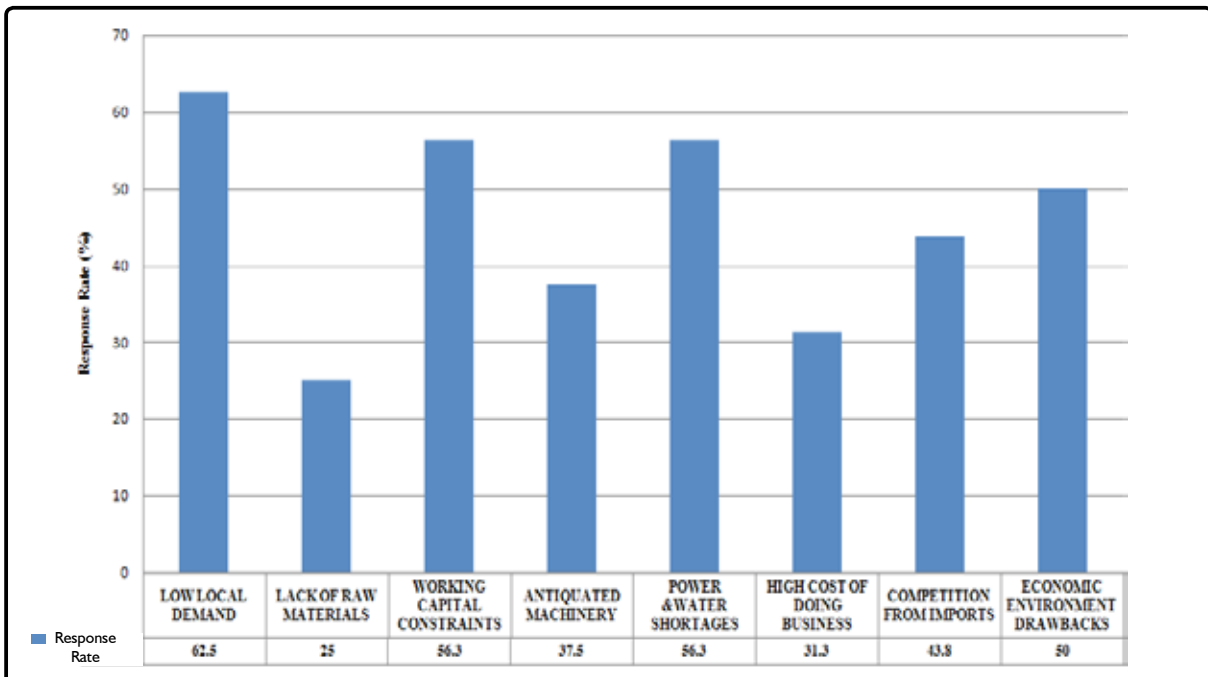
### 4.8.2 Production Capacity and Technology

Figure 4.35: Level of Capacity Utilisation in Agribusiness/Foods and Beverages Processing



Capacity utilisation is low, about 50% are operating below 50% of installed capacity and this increases the unit costs of production and leads to high uncompetitive end product prices.

Figure 4.36: Reasons Cited by Processors for Declining and Low Capacity Utilisation

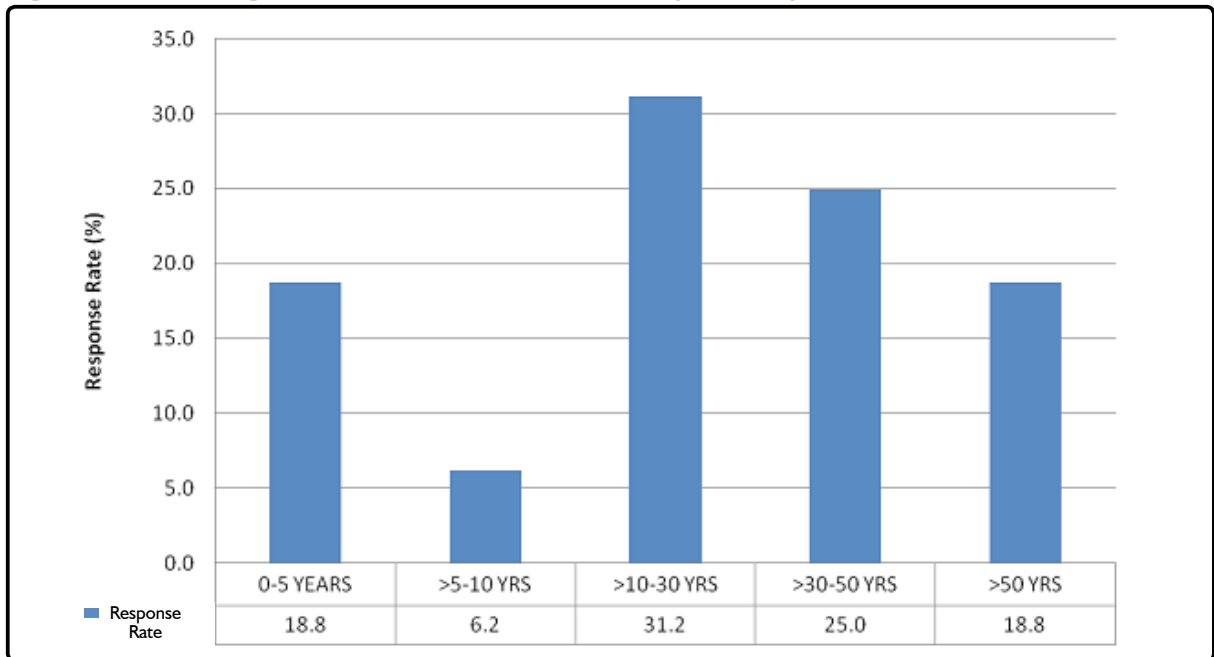


From the reasons given for low or decline in capacity utilisation, low local demand, working capital constraints, power and water shortages and economic environment drawbacks were the most cited.



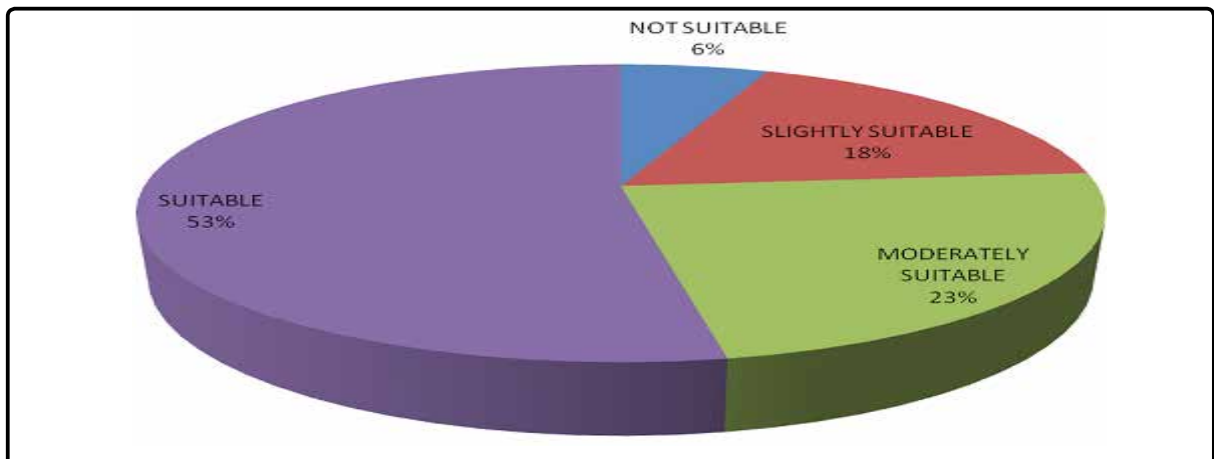
Low local demand is linked to pricing issues and the low disposable income within the populace leading to consumers preferring cheaper imported products.

Figure 4.37: The Age Distribution of Plants Currently Used by Processors



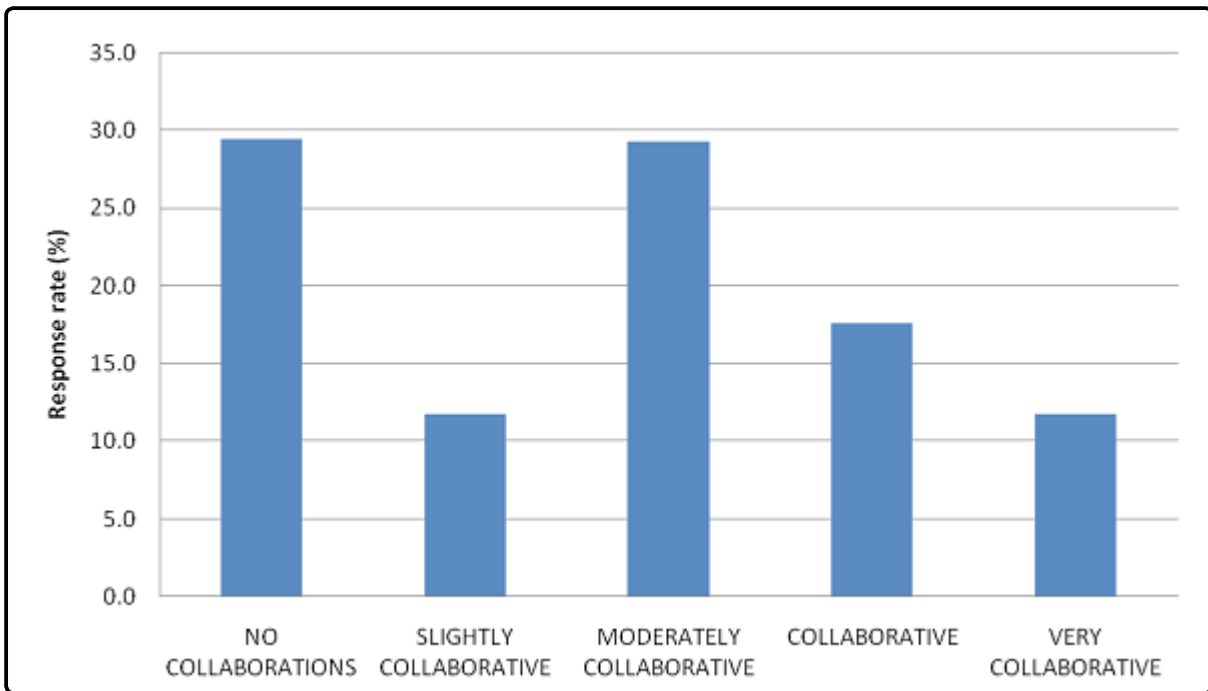
Over 50% of the processing firms were established more than 20 years ago and have knowledge acquired from their experiences which may be lacking among new entrants. However, this also means if they have not been able to re-equip, the plants in use are older, less efficient and more expensive to run.

Figure 4.38: Processors' Rating of Local Education/Training Suitability to the Industry's Needs



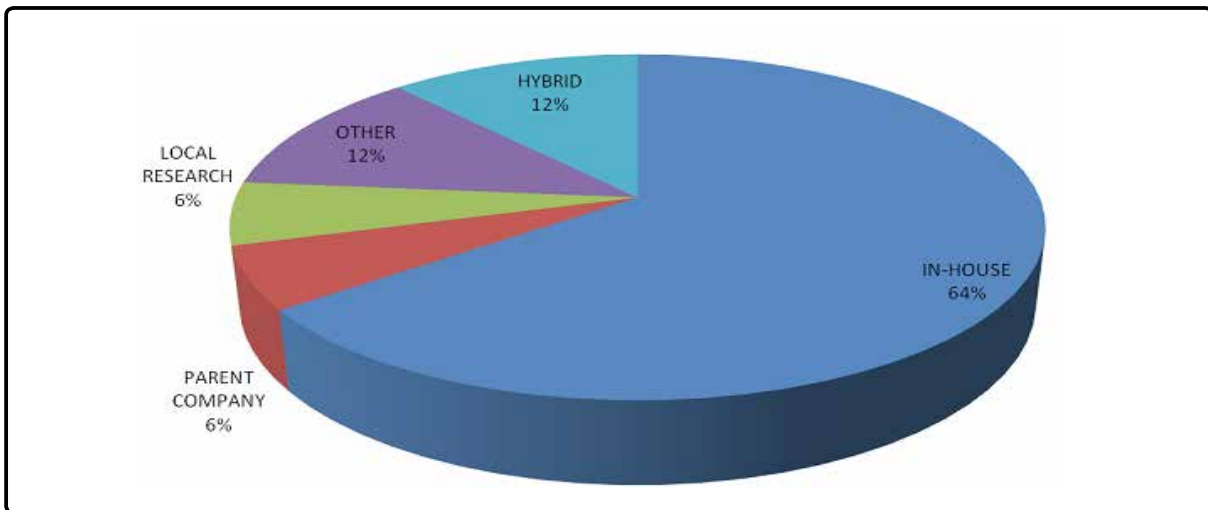
The responses show that the skills imparted by formal training/education suit the requirements of the industry but there is need to improve on the curricular and skills to adequately suit the all the different processors' needs.

Figure 4.39: Processors' Rating of their Collaborations with other Actors



The responses from the actors indicate that there are poor linkages among value chain players, and little collaboration exists among them in terms of research and development. Older, more established firms have knowledge acquired from experience and this is not necessarily available to smaller and new players.

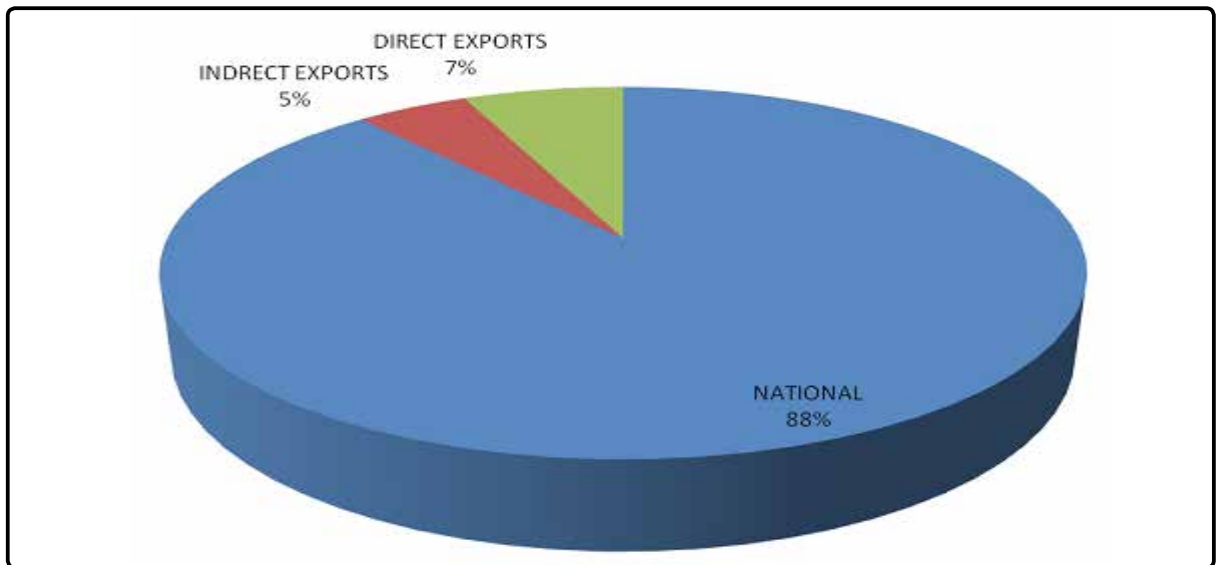
Figure 4.40: Sources of Research and Development Used by Processors



There is limited transfer of technology from training and research and development institutions to industry (6%). The majority of processors do their research and development in-house and at times this is in combination with other sources of research and development services providers (hybrid).

### 4.8.3 End Markets and Trade

Figure 4.41: Markets for Products of the Agribusiness/Foods and Beverages Value Chains



The figure shows that the majority of the products are sold on the domestic market. Some processors did indicate that they fail to meet foreign export demand because they do not have enough raw materials. Other processors cited lack of financing and high freight costs as the main reasons for failing to export and/or increase exports volumes (See **Figure 4.42**).

Figure 4.42: Factors Cited by Processors as Hindering Growth of their Exports

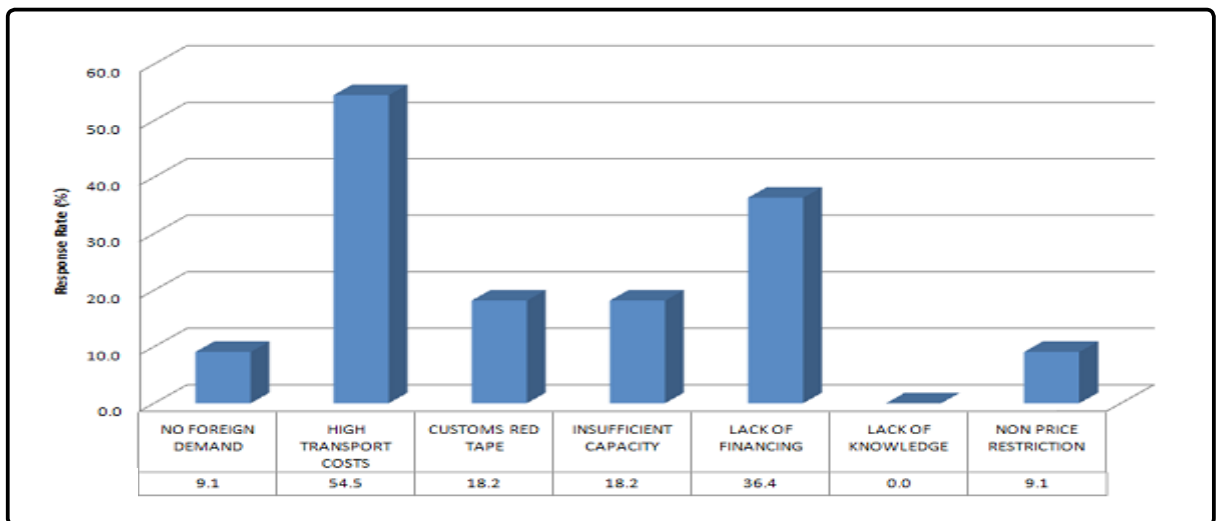
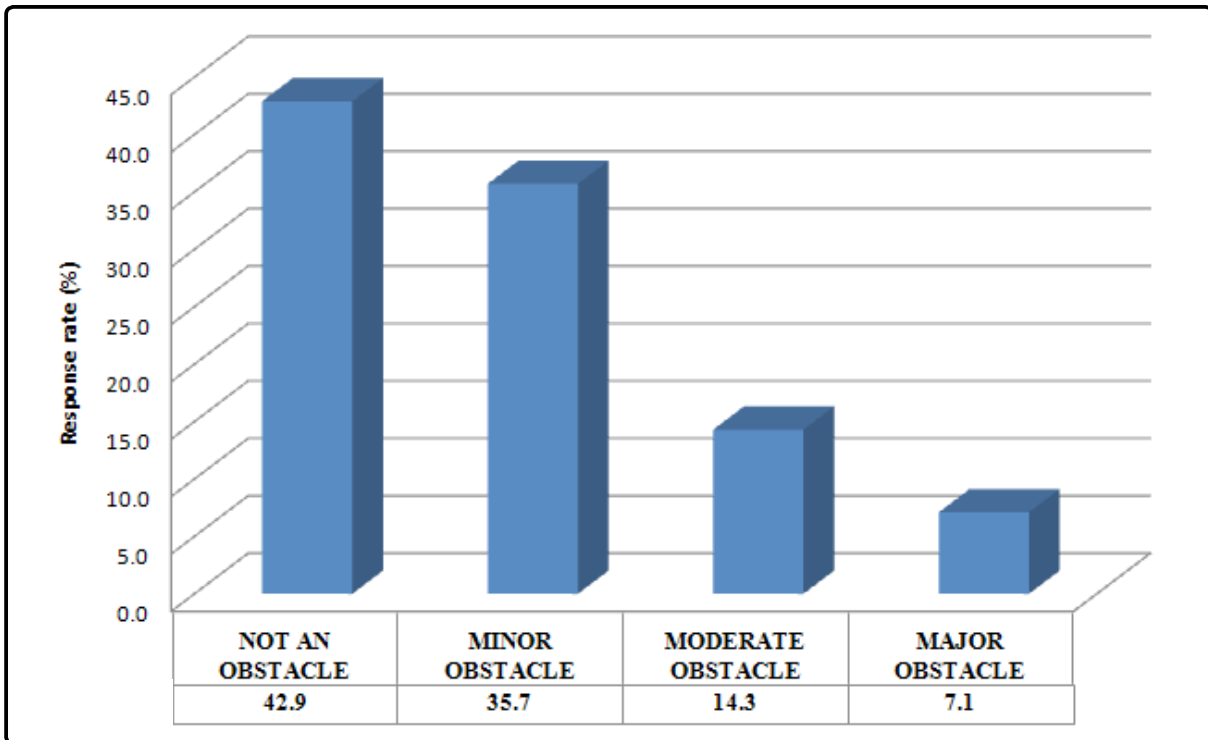
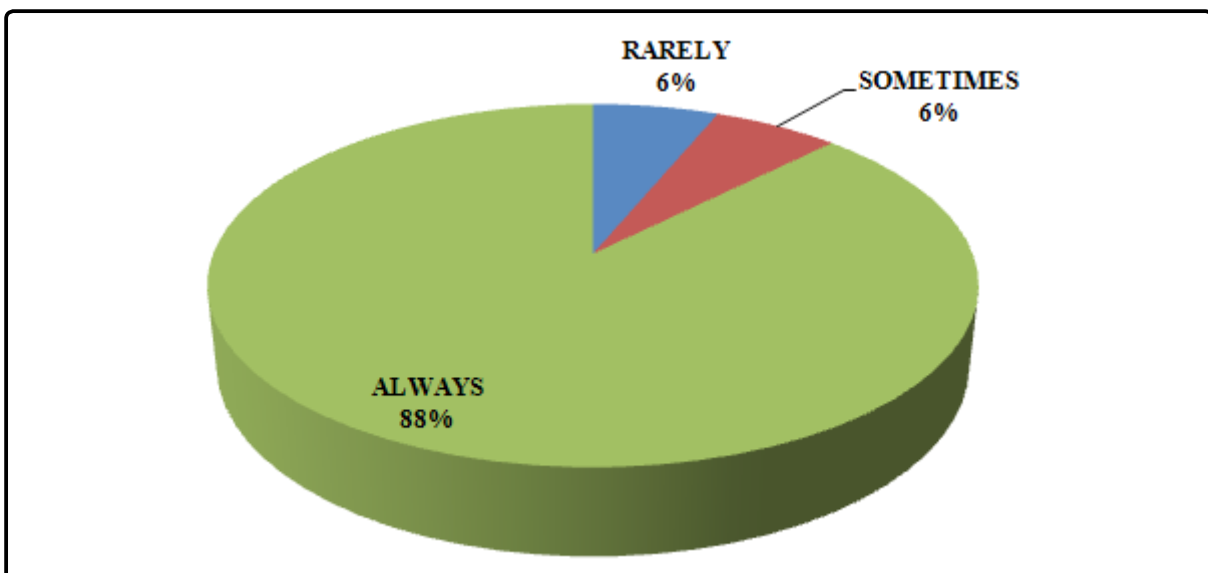


Figure 4.43: Processors' Rating of Informal Sector Practices' Effects on their Businesses



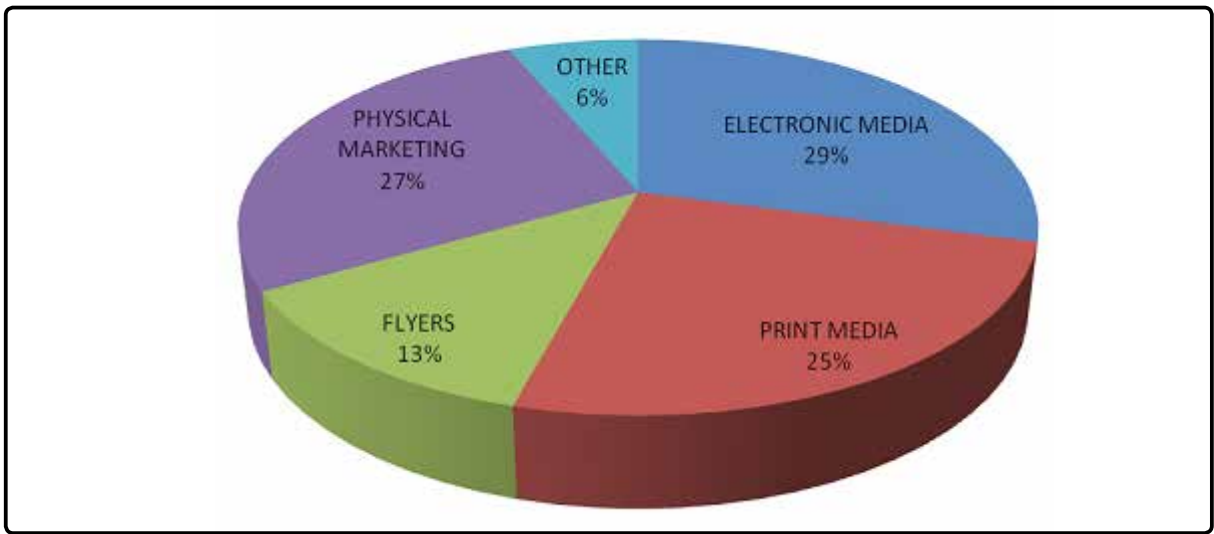
Overall, bigger players cited that they hardly view smaller players in the informal sector as significant competition. The practices of the informal sector have minimal effects on the businesses of processors in the value chains. However, smaller processors using less sophisticated technologies indicated that they are heavily affected, often negatively by the performance of the informal players.

Figure 4.44: Processors' Assessment of their Interactions with End-Buyers



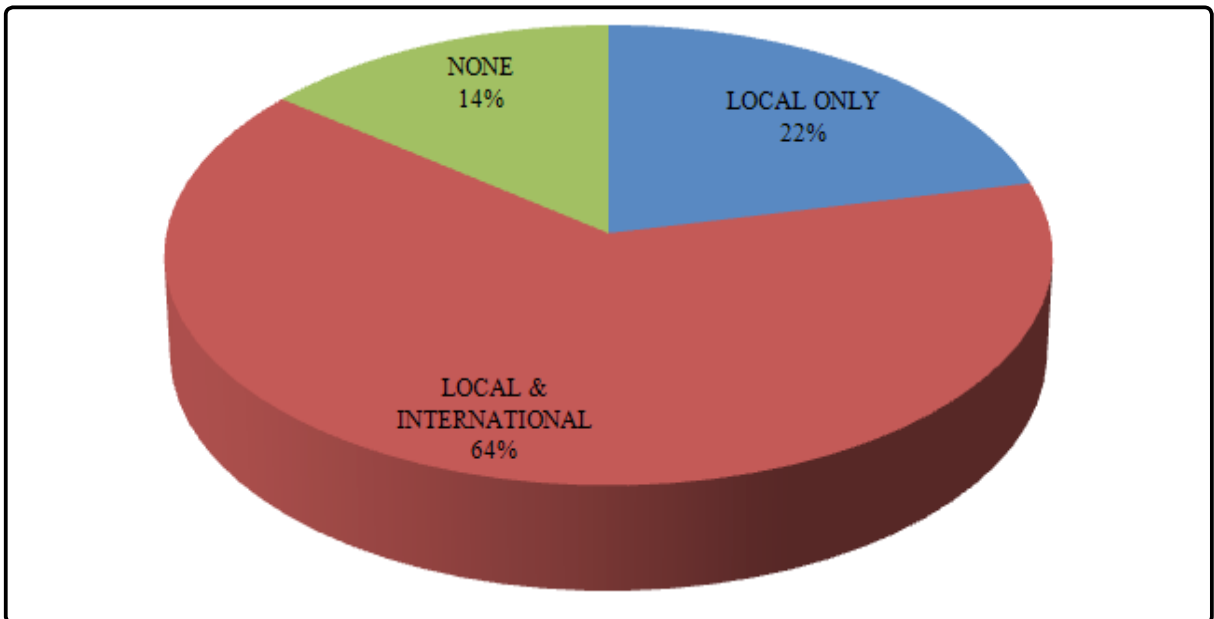
Most processors have a significant interaction with the end buyers (retailers and wholesalers). The advantage of this is that the end buyers have direct interaction with consumers and know what the consumers need. They then act as an interface, giving this feedback to the processors who then respond to the needs of the consumer.

Figure 4.45: Marketing Channels Used by Processors



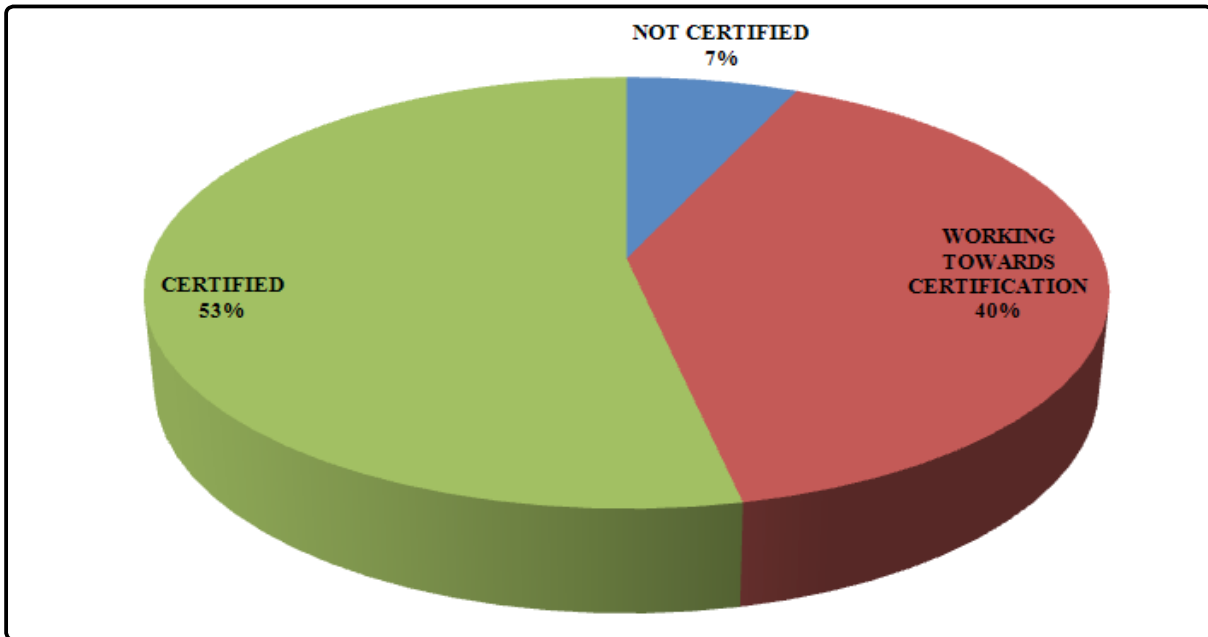
Marketing of products is done through a combination of channels as processors try to reach all consumers. It is worth noting that smaller processors advertise less and in some instances do not even have a marketing budget, mainly due to the costs.

Figure 4.46: Awareness and Use of Quality Standards by Processors



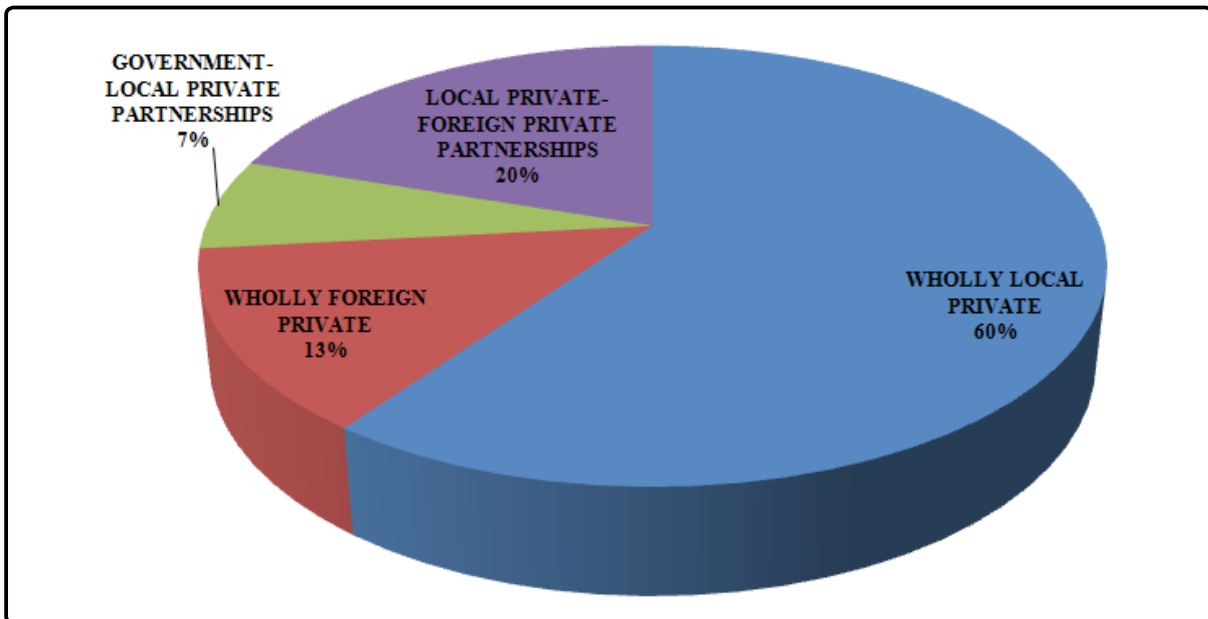
The adoption and use of standards by processors enables them to sell their products on global markets. Standards provide assurance that the products meet international product specifications and quality standards. Adherence to international standards are important for firms to gain access to export markets and to penetrate other target markets.

Figure 4.47: Processors' Adoption of and Certification to Quality Standards



#### 4.8.4 Value Chain Governance

Figure 4.48: Processing Firms' Ownership Structures



The majority of firms are wholly locally owned and this has seen the inclusion of locals in the economic activities of the nation. Partnerships with foreign private organisations or individuals also bring in financial wellness and technology.

Figure 4.49: Firms' Competences

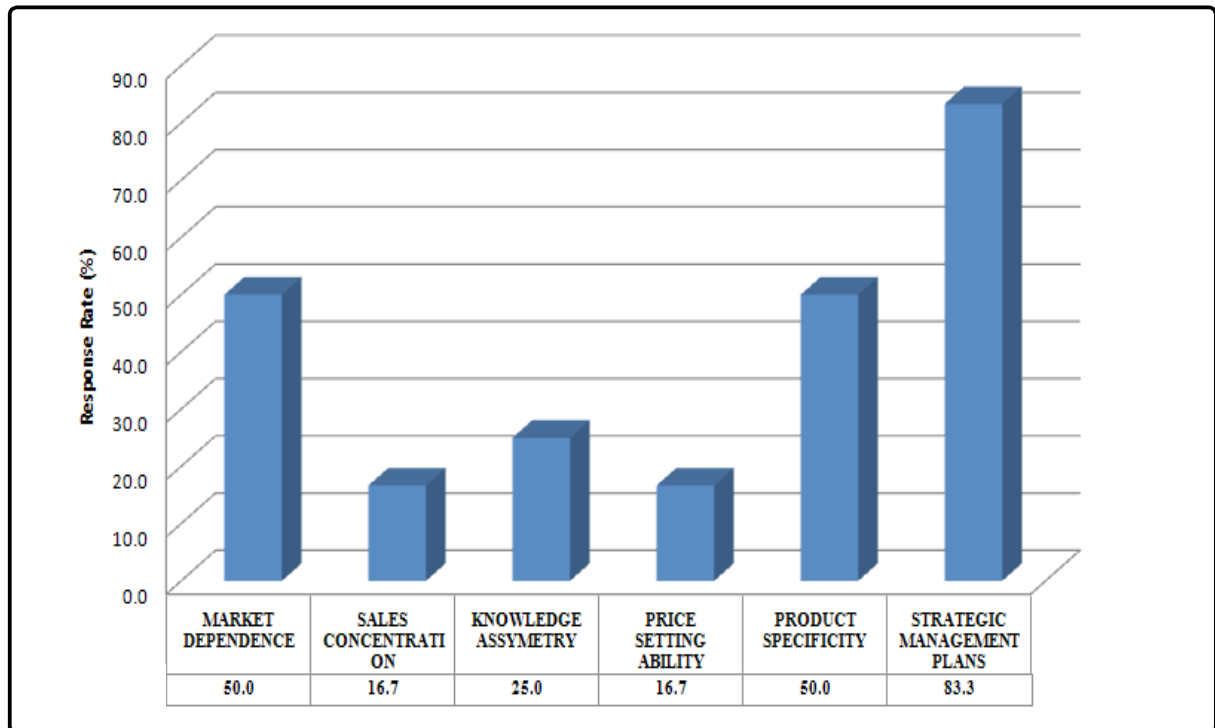


Figure 4.50: Processing Firms' Years in Operation

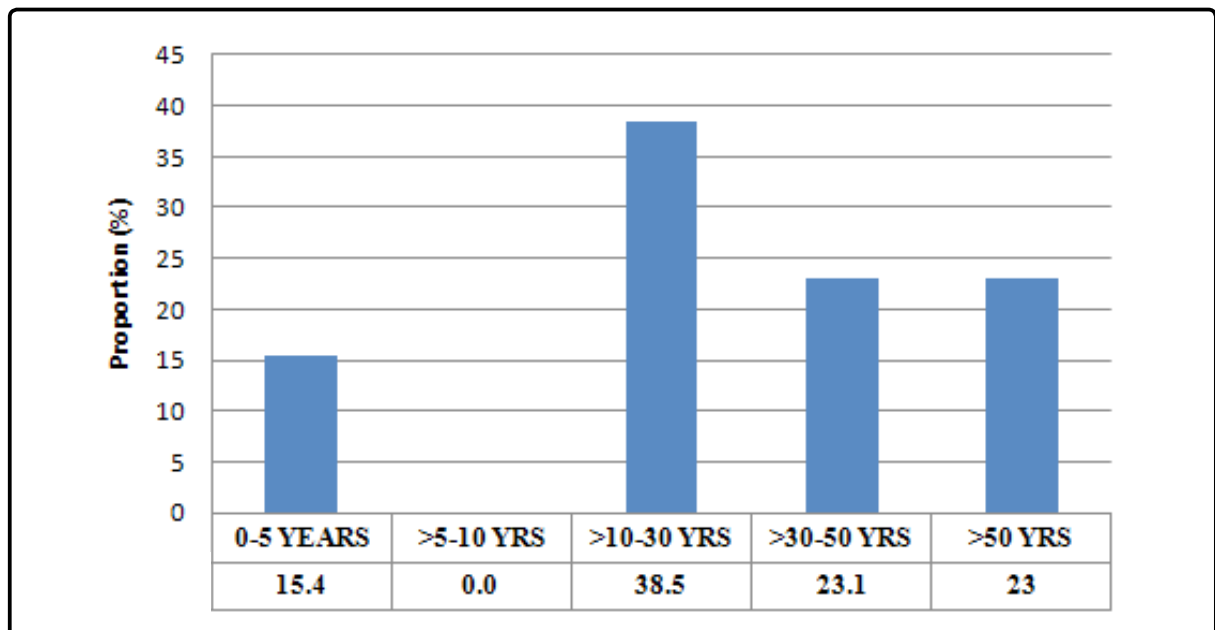




Figure 4.5 I: Gender Distribution of Employees in the Agribusiness/Foods and Beverages Value Chains

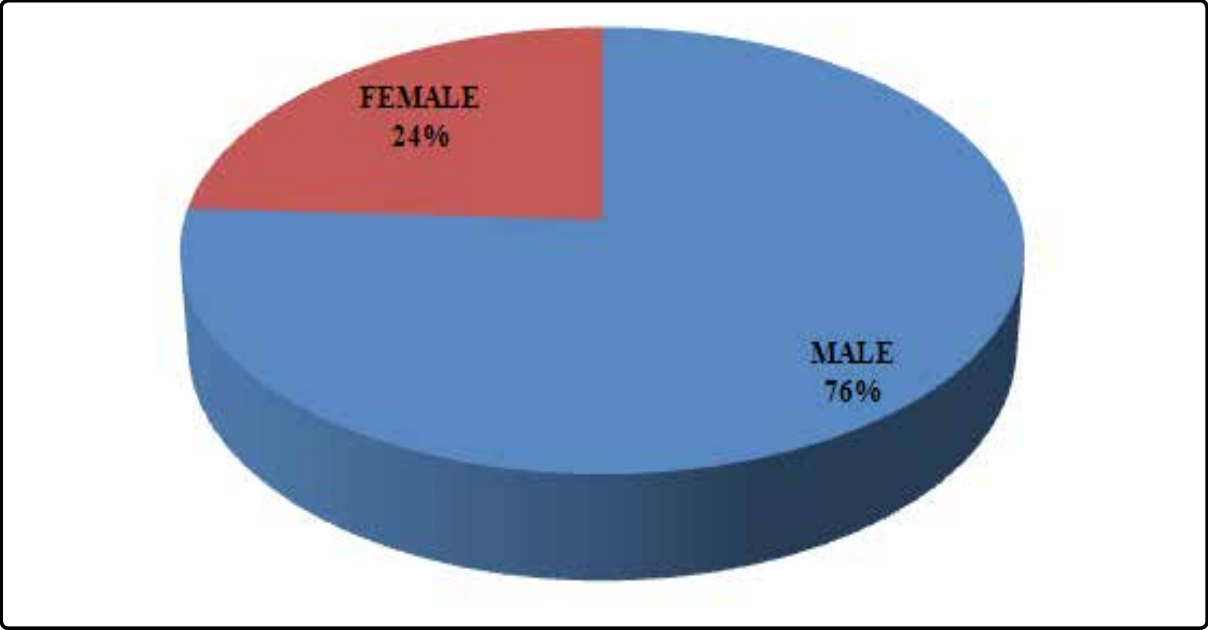
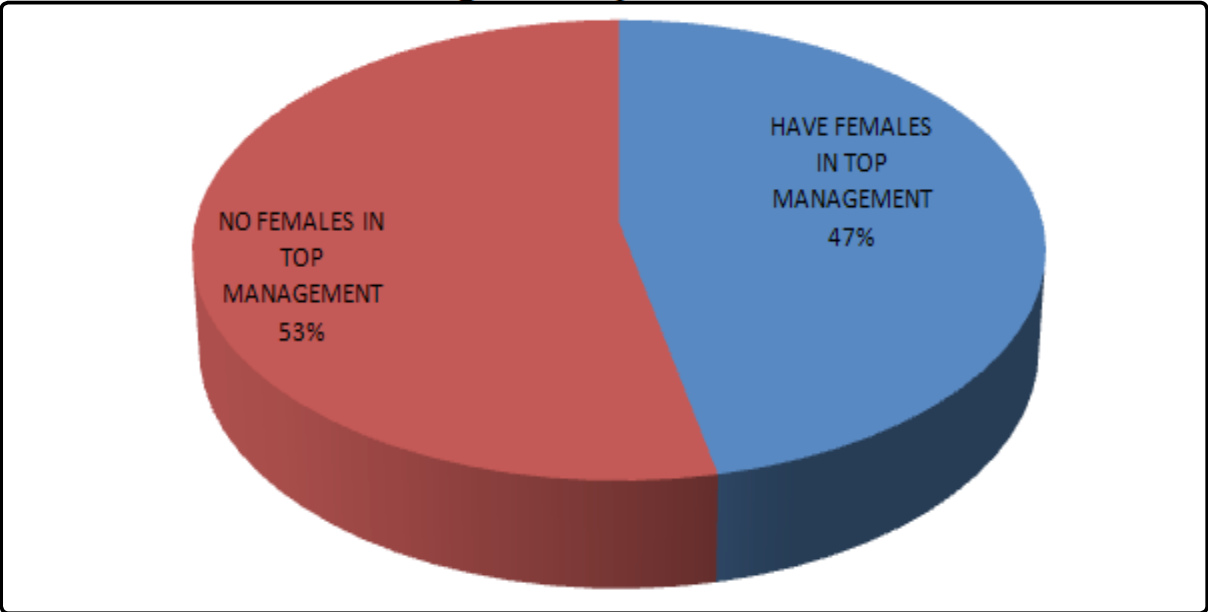


Figure 4.52: Proportion of Firms with at Least One Female in Top Management



#### 4.8.5 Sustainable Production and Energy Use

Figure 4.53: Sources of Energy Used in Processing

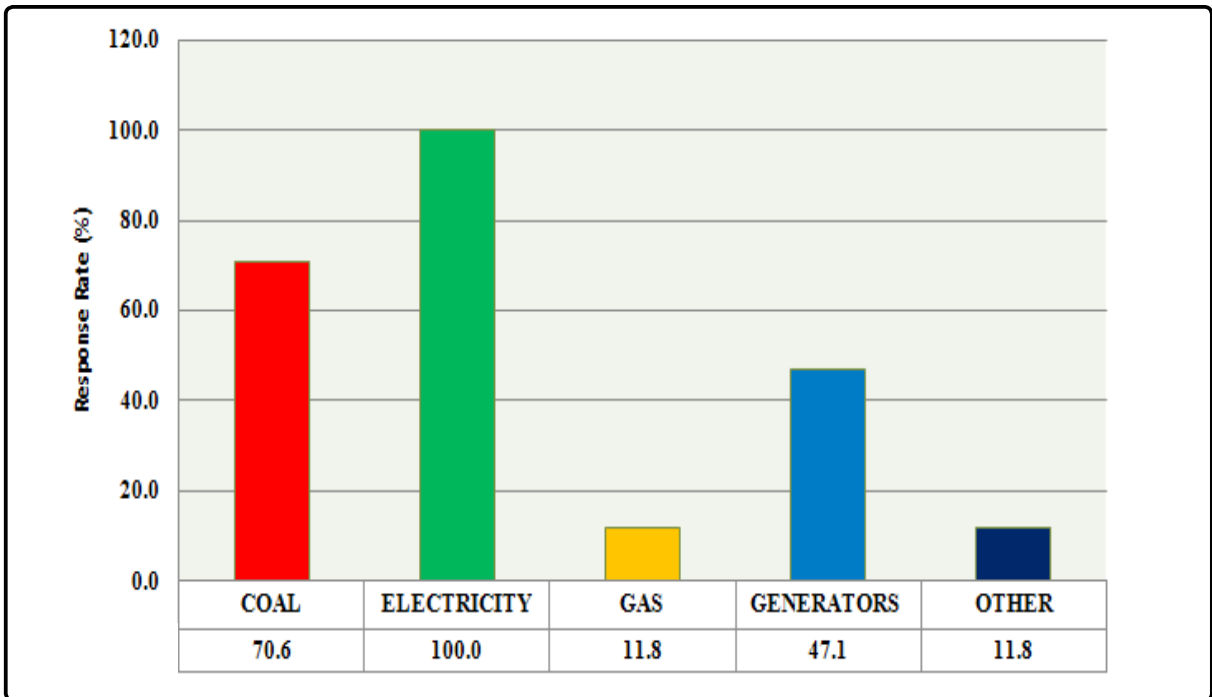
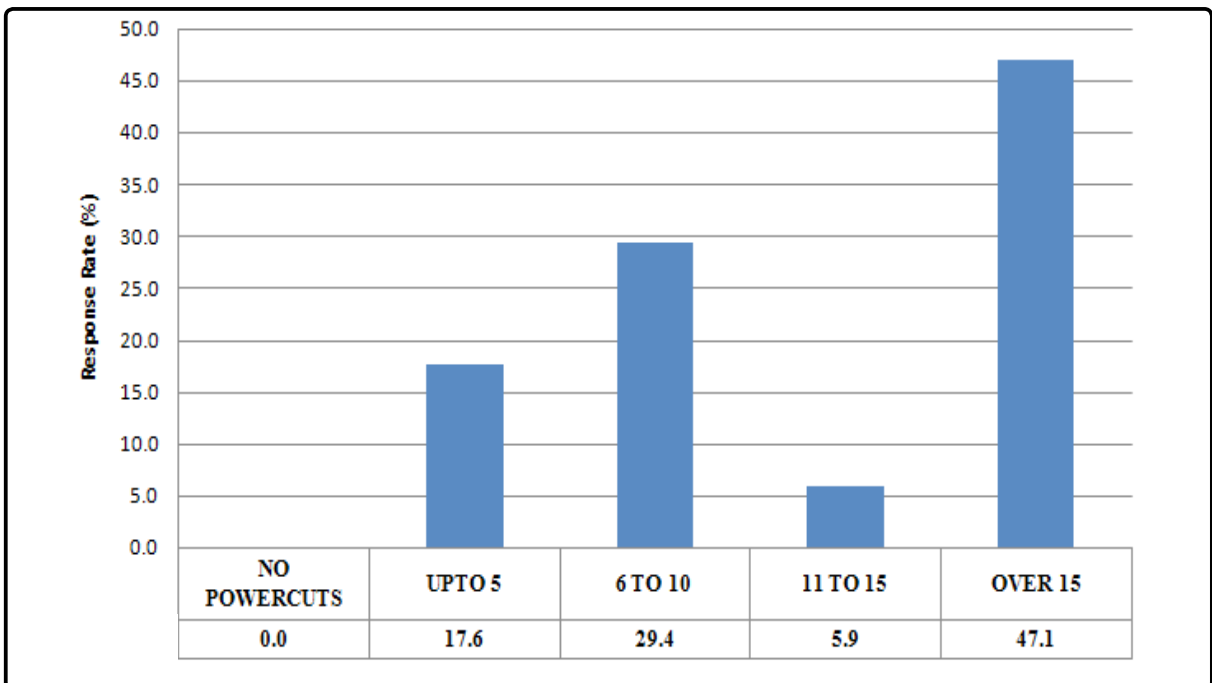


Figure 4.54: Frequency of Power-Cuts Experienced by Processing Firms



Electricity is a major source of energy for running the plants and equipment used and yet is in short supply. This has seen firms experiencing power-cuts leading to different levels of losses as shown in **Figure 4.55**.

Figure 4.55: Processing Firms' Estimated Losses Resulting from Power-Cuts

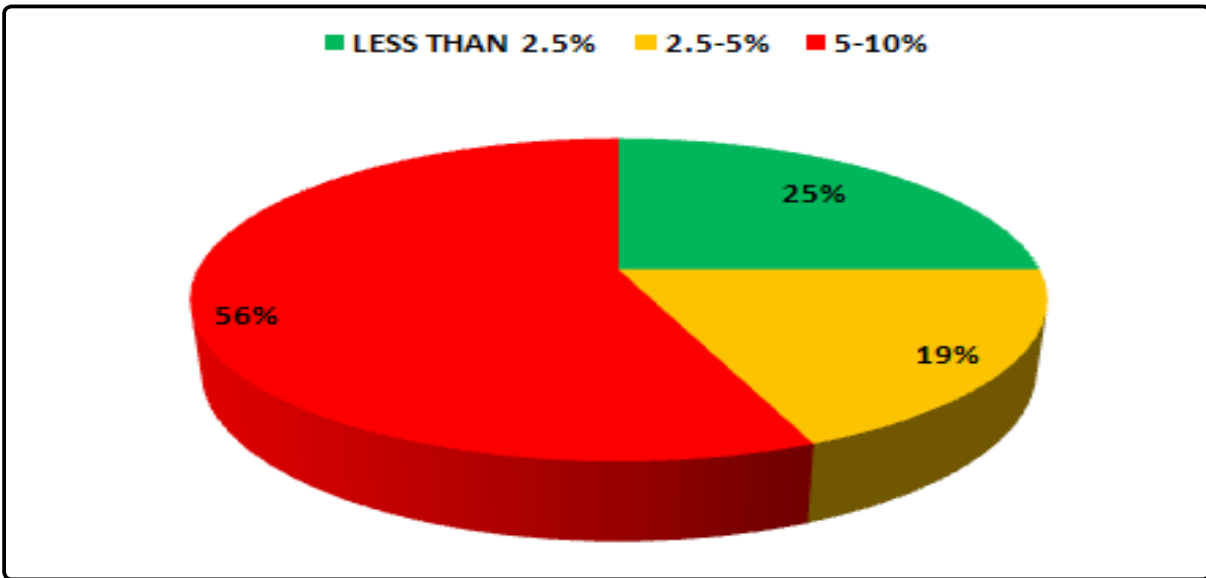


Figure 4.56: Sources of Water Used in Processing

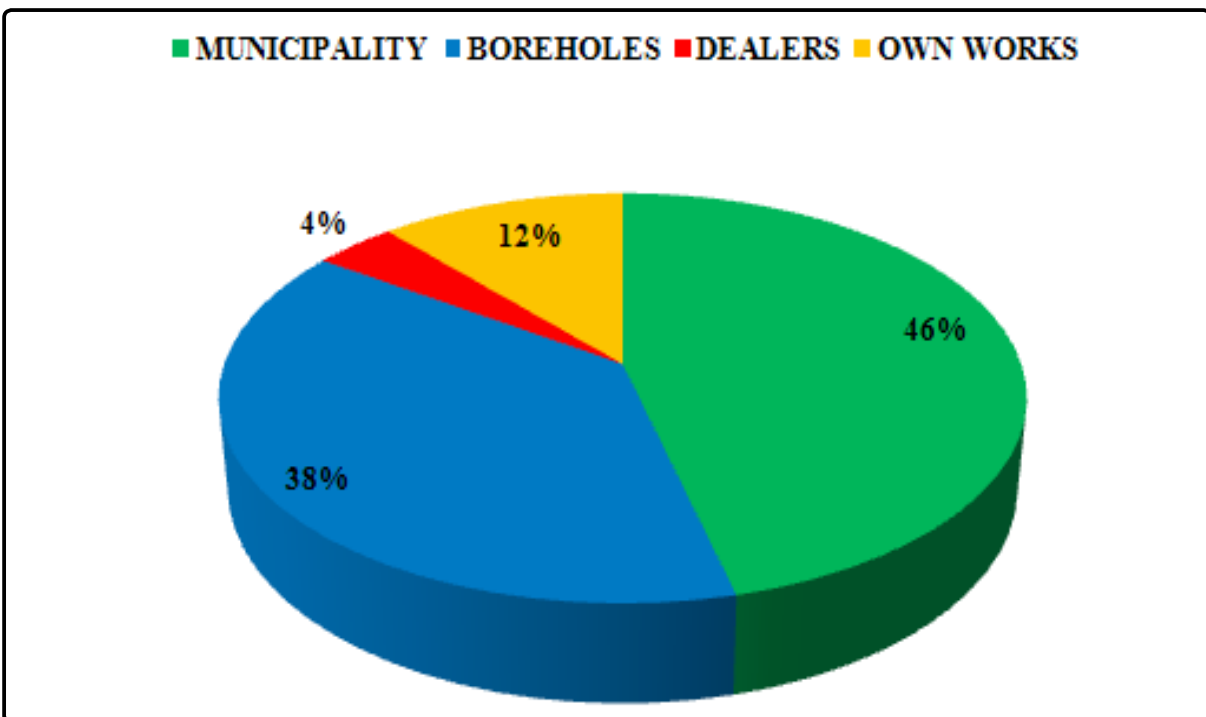
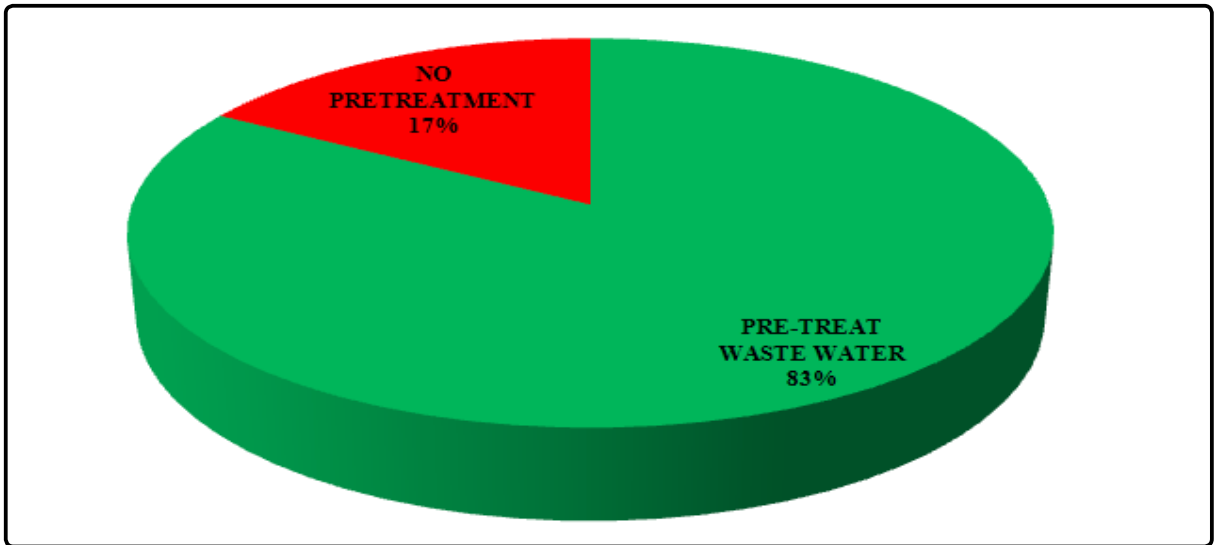


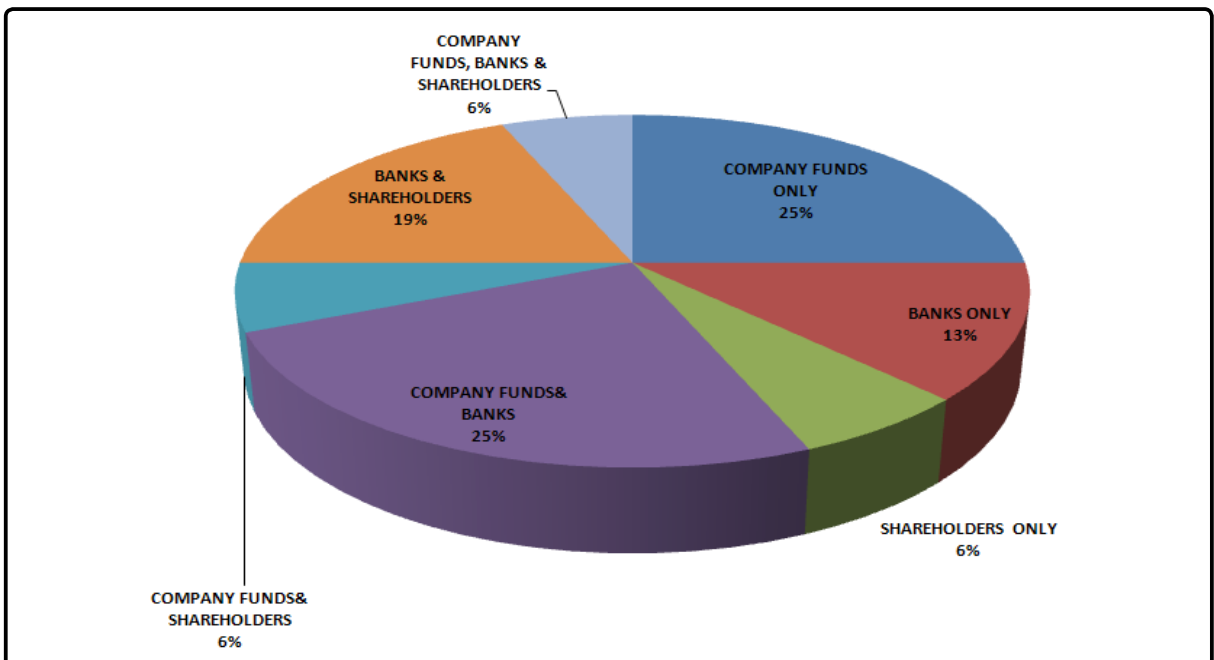
Figure 4.57: Proportion of firms Pre-Treating Waste Water to Reduce Environmental Impact



Industrial processes produce waste along with the intended products. The waste released has environmental implications and firms have the responsibility to minimize their impact on the environment and one such way is to pre-treat waste water before discharge into water bodies.

#### 4.8.6 Value Chain Finance

Figure 4.58: Sources of Finance Used by Actors



Firms are financing their operations through company funds, loans and shareholders' funds. The majority use a combination of these sources of funds to meet their requirements. The loans that are being extended are short term, 5 years or less, and attract high interest rates in most cases, above 16% per annum. See also **Figure 4.59** and **Figure 4.60**.

Figure 4.59: Proportion of Actors with Running Loans with Financial Institutions

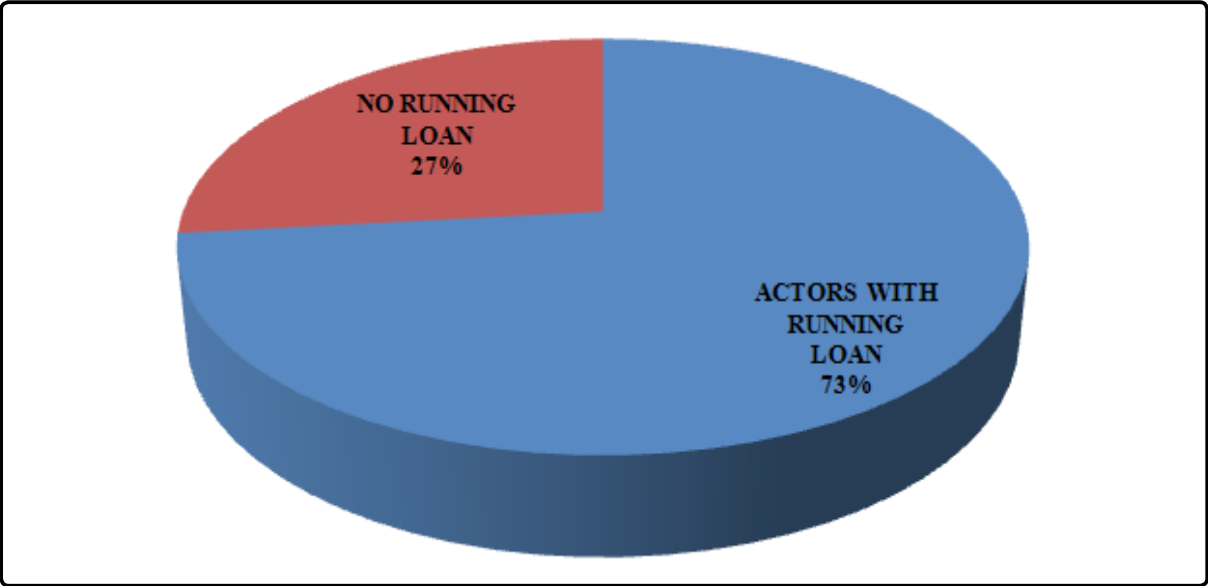


Figure 4.60: Distribution of Rates of Interest Charged on Loans

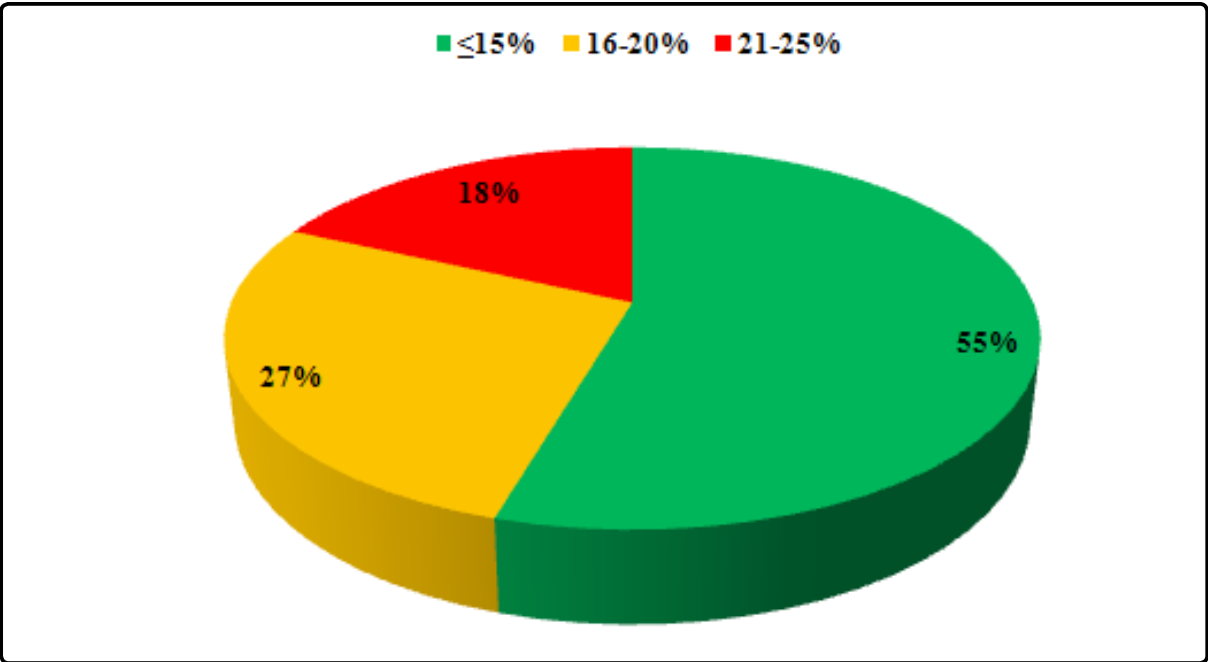
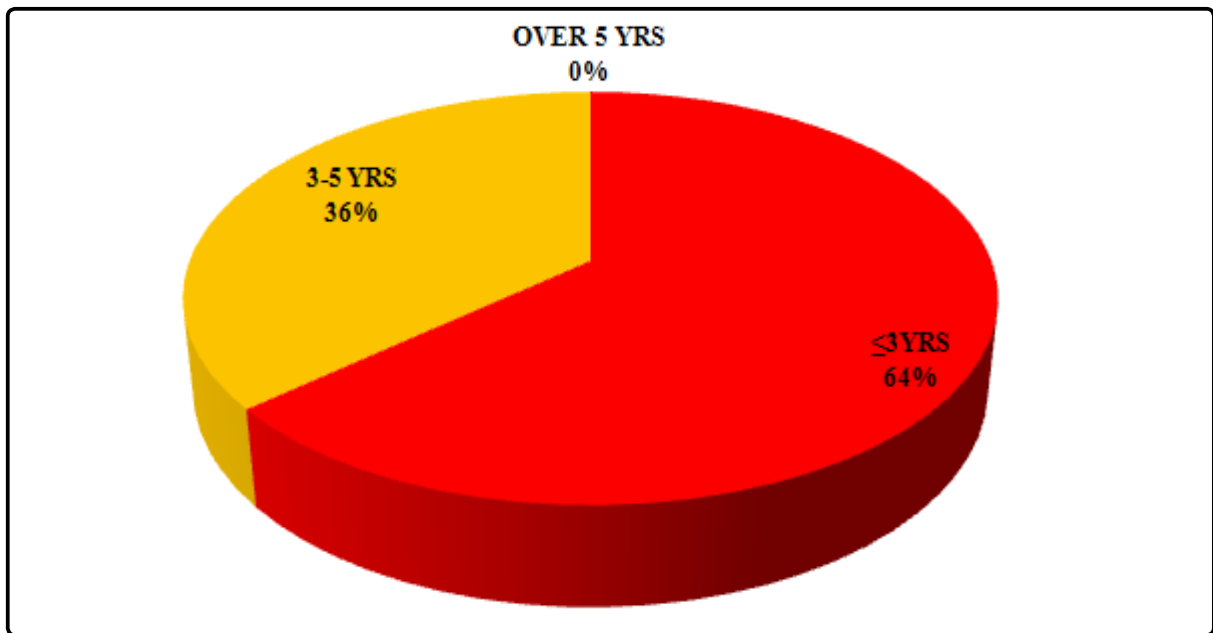
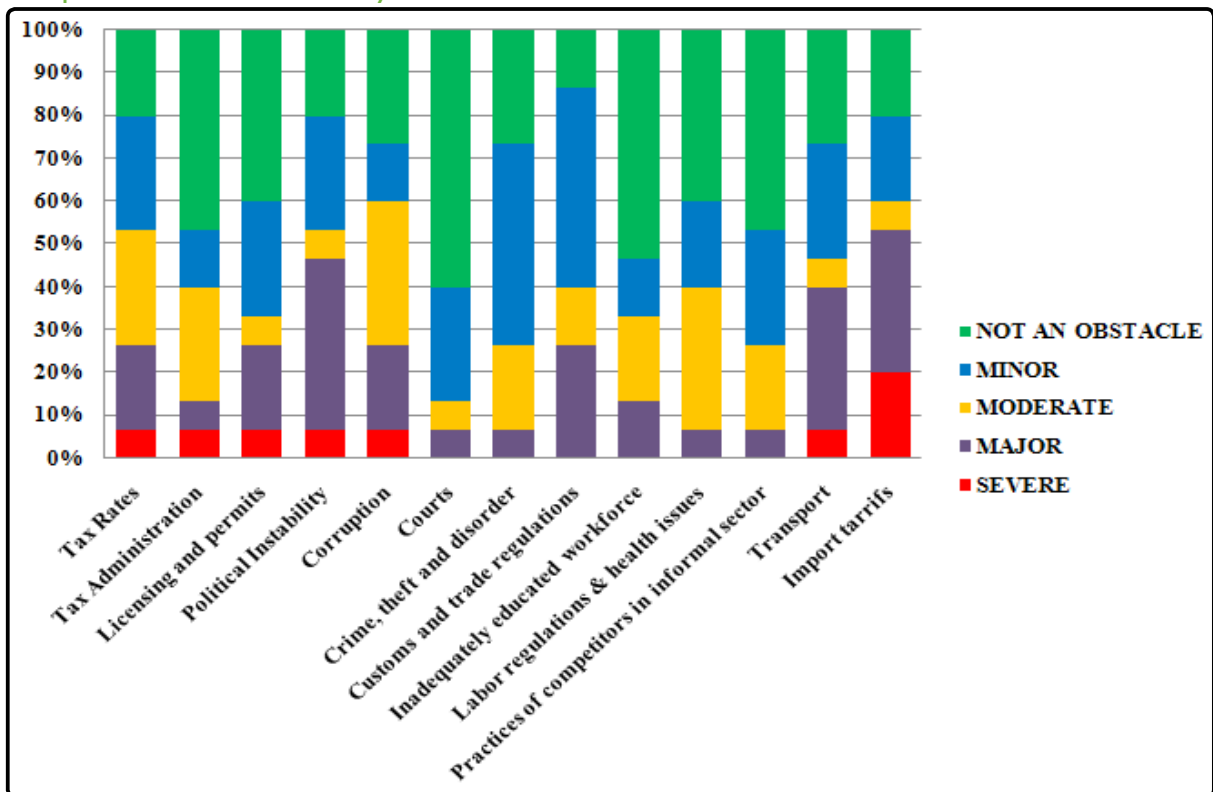


Figure 4.61: Tenure of Loans Extended To Actors



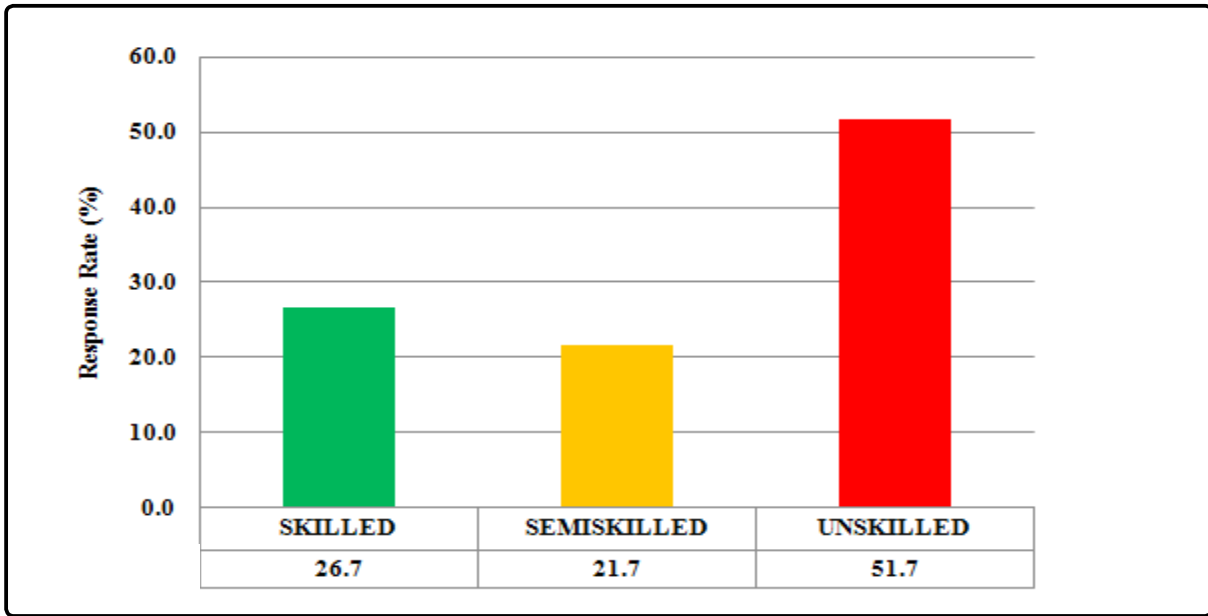
#### 4.8.7 Business and Socio-political Environment

Figure 4.62: Obstacles Faced by Players from the Business and Socio-Political Environment Perspective and their Severity



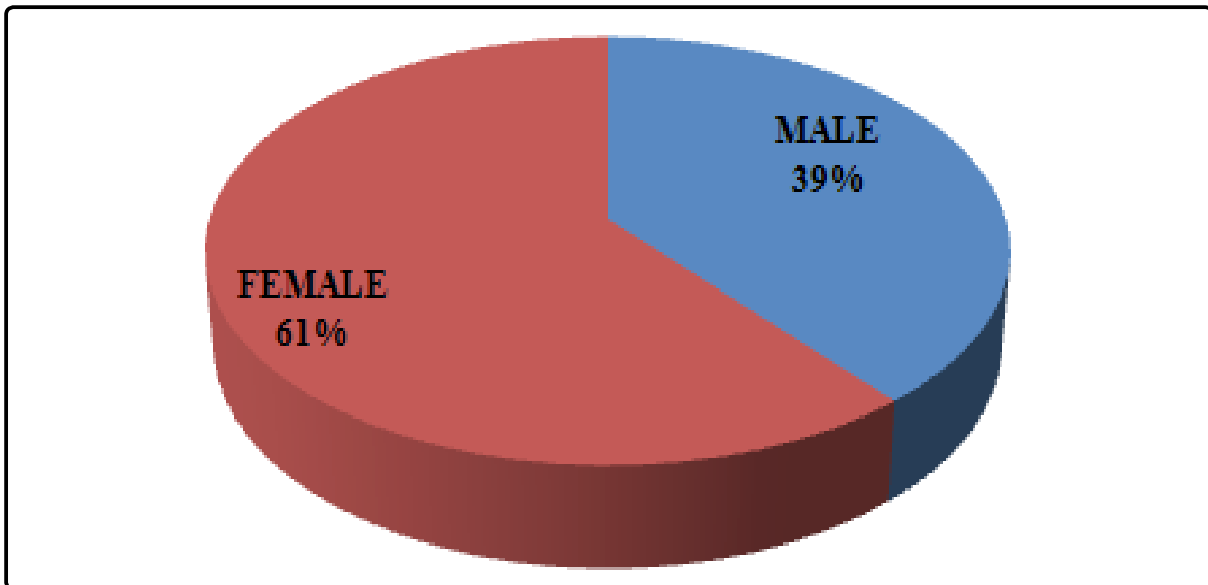
The obstacles which impact the most on raw materials and inputs of foreign origin are the customs and trade regulations and the import tariffs. The actors pointed out the need to review tariffs on the inputs and raw materials. Duty charged on importation of finished consumer goods which do not lead to value addition should be more than that which is charged on raw materials so as to encourage value addition by the local industry.

Figure 4.63: Distribution of Skills among Employees in the Value Chains



Unskilled labour constitutes the bulk of the sector’s labour. The study results also show that the primary production activities employ the bulk of unskilled labour force.

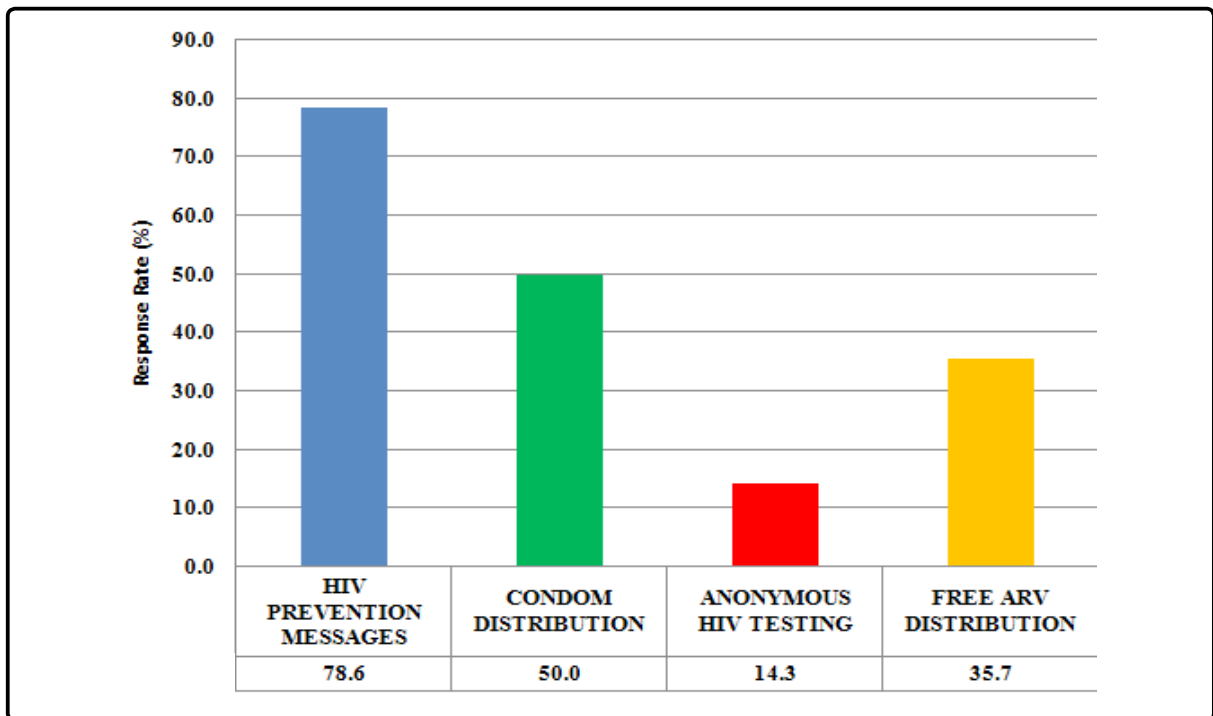
Figure 4.64: Proportion of Males to Females among Contract Employees



More females are employed as contract workers in primary production as compared to the processing function. As a result, the majority of skilled labour are males.



Figure 4.65: HIV/AIDS Awareness Programs Undertaken by Firms



Firms are putting in some work into HIV/AIDS programmes and initiatives for the employees to the extent of providing antiretroviral drugs (ARVs) and encouraging protected sex through distribution of condoms. Prevention efforts in particular, need to be promoted to ensure a reliable healthy work force.

## CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

The Zimbabwe agriculture sector is faced with a number of challenges that need to be addressed as discussed in preceding chapters. Supply-side constraints have led to a decline in the sector. These constraints include inconsistent power supply, access to credit facilities. Persistent droughts due to climate change, deteriorating soil quality, crumbling irrigation systems and inconsistencies in the distribution of subsidised inputs and supplies to name a few. This chapter gives a summary of constraints and opportunities (**Table 5.1**) and concludes with recommendations (**Section 5.2**).

### 5.1 Sector Specific Issues Affecting Value Chains

**Table 5.14: Constraints and Opportunities for Specific Value Chains**

COMMODITY	CONSTRAINTS	OPPORTUNITIES
Soya bean	<ul style="list-style-type: none"> <li>▪ Low yields affect prices</li> <li>▪ Productivity has been poor and uncompetitive</li> <li>▪ Droughts and power shortages are adversely affecting the yield</li> <li>▪ Poor financing, soybean is a capital intensive crop</li> <li>▪ The smallholder farmer has limited access to inputs, e.g. <i>Rhizobium</i> inoculum.</li> <li>▪ Inputs are not reliable and the costs are high.</li> <li>▪ Low mechanisation suitable for smallholder farmers.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Increased demand for stock feed due to growth in livestock production</li> <li>▪ Nitrogen fixing properties, improve soil fertility and yields for other crops</li> <li>▪ Cooking oil imports substitution</li> <li>▪ Majority of Zimbabwe's land is suitable for soybean</li> <li>▪ Relatively easy value addition potential</li> <li>▪ Manufacture and fabrication of motorized small scale farm equipment and implements</li> </ul>
Milk	<ul style="list-style-type: none"> <li>▪ Small national herd</li> <li>▪ Poor milk cattle breed</li> <li>▪ Expensive and insufficient stock feeds</li> <li>▪ Flooding of local market by imports</li> <li>▪ Antiquated machinery and breakdowns</li> <li>▪ Power and water shortages</li> <li>▪ Lack of refrigeration facilities to maintain cold chain</li> </ul>	<ul style="list-style-type: none"> <li>▪ Milk and dairy products imports substitution</li> <li>▪ Establishment of cattle breeding and reproductive technology centres</li> <li>▪ Increasing import tariffs on finished products.</li> <li>▪ Increasing the national herd</li> <li>▪ Demand for quality products</li> <li>▪ Regain lost domestic and export markets</li> </ul>
Beef	<ul style="list-style-type: none"> <li>▪ Small national herd</li> <li>▪ Poor animal husbandry techniques</li> <li>▪ Poor beef breeds</li> <li>▪ Prone to disease outbreaks</li> <li>▪ Prohibitive cost of compliance</li> </ul>	<ul style="list-style-type: none"> <li>▪ Potential for exports</li> <li>▪ Regain lost markets</li> <li>▪ Strengthening of the veterinary services in the country</li> <li>▪ Establishment of livestock breeding programmes</li> </ul>
Sorghum	<ul style="list-style-type: none"> <li>▪ Viewed by most farmers as inferior</li> <li>▪ Main market for red variety only</li> <li>▪ Limited technology for harvesting and processing</li> <li>▪ Labour intensive</li> </ul>	<ul style="list-style-type: none"> <li>▪ Drought tolerant</li> <li>▪ Growing demand for products of sorghum flour (small grains)</li> <li>▪ Replace maize in stock feed and ease pressure on maize</li> <li>▪ Relatively simple to produce</li> <li>▪ Mechanisation to reduce manual labour</li> </ul>
Wheat	<ul style="list-style-type: none"> <li>▪ Energy and irrigation infrastructure unreliable</li> </ul>	<ul style="list-style-type: none"> <li>▪ High national demand</li> <li>▪ Production failing to meet demand</li> </ul>
Fruits and Vegetables	<ul style="list-style-type: none"> <li>▪ Dilapidated irrigation infrastructure</li> <li>▪ Exports are prone to price fluctuations because of global supply and demand factors.</li> <li>▪ Training and specialised skills required</li> <li>▪ Labor intensive</li> <li>▪ Limited access to markets due to middle men</li> <li>▪ Unfair competition from imports</li> </ul>	<ul style="list-style-type: none"> <li>▪ Abundance of fruits</li> <li>▪ Potential for post-harvest processing and value addition into specialised high value products</li> <li>▪ Poverty alleviation, suited to small holder farmers</li> <li>▪ Policies to favour production</li> <li>▪ Opportunities for employment and poverty reduction</li> <li>▪ SMEs growth</li> </ul>
Beverages	<ul style="list-style-type: none"> <li>▪ Extractive processing limited to a few fruits</li> <li>▪ Stiff competition from imports</li> <li>▪ Player domination</li> </ul>	<ul style="list-style-type: none"> <li>▪ Abundance of fruits</li> <li>▪ Promote small scale processors (SMEs)</li> <li>▪ Opportunities for poverty alleviation and employment creation</li> <li>▪ Import substitution</li> <li>▪ Potential for exports</li> </ul>
Barley	<ul style="list-style-type: none"> <li>▪ Limited markets</li> <li>▪ Irrigation not well developed</li> </ul>	<ul style="list-style-type: none"> <li>▪ Crop rotation with tobacco</li> <li>▪ Specialized crop with a ready market (under contract)</li> <li>▪ Potential for exports</li> </ul>

## 5.2 Recommendations

### 5.2.1 Sourcing of Inputs and Supplies

Since the resettlement exercise, the government has embarked on empowerment programs to promote the small-holder farmer through programs such as Productive Sector Facility (PSF) and Agricultural Sector Productivity Enhancement Facility (ASPEF). Regardless of the governments' efforts, the inputs distribution system is inefficient leading to delays in inputs reaching the farmers particularly the smallholder and communal farmers. Seed and fertiliser imports should be done well ahead of the planting season. Farmers specialising in production of commodities other than crops (for example cattle ranching) have also echoed that they have been neglected in these schemes which focus primarily on inputs for cereal grains. Proper regulation of the government inputs scheme will ensure that the required input reaches the intended beneficiaries and prevents the supplies going to those farmers who are capable of buying their own inputs.

Input requirements and local suppliers' capacity need to be ascertained beforehand to allow for timely importation to make up for deficit. There is need to move away from the government input supply scheme to subsidizing the inputs at the point of production to enable farmers to produce competitively. Agriculture needs support in form of input price reduction to provide inputs at prices comparable to the region. This will improve participation of small holder and resettled farmers and ensure a consistent raw materials base to sustain the agro-processing sector. The availability of fertiliser may also be augmented by the development and use of organic fertilisers that are cheaper and more readily available.

There is also need to support the expansion of viable agro-dealer networks through the use of "smart subsidies" which raise effective demand for inputs and crowd in private actors. These should be coupled with innovative financing strategies to enable agro-dealers to effectively stock, store, and manage inputs.

### 5.2.2 Production Capacity and Technology

The Zimbabwean government, through the mechanization policy, has aimed to expand agricultural productivity through agricultural mechanization. The mechanization policy needs to take into consideration the needs of the small holder farmers so that they can contribute meaningfully and competitively to agricultural production. Use of small-scale processing systems which have both relatively low barriers to entry, particularly in terms of capital requirements, and are well suited for aggregating small and highly dispersed produce volumes that characterize smallholder production systems is recommended. Government needs to promote the acquisition and development of technology to improve the performance of indigenous resettled farmers so that they spearhead the sustainable development of competitive and commercially oriented agricultural businesses. This can be achieved in part through the establishment of processing services enterprises that hire out equipment to the farmers on a cost recovery basis.

There is very little to no value addition by the farmer, and the produce therefore attracts a lower price on the market. Policy needs to encourage value addition through scrapping of duty on processing equipment and the establishment of community-based processing industries.

The new resettled farmers need backing from extension services to ensure the use of modern productive agronomic practices to boost yields. Resettled farmers need to be enabled to create personal wealth and so improve productivity.

Chemical companies such as Sable Chemicals need to be resuscitated to meet the fertilizer requirements of the nation in order to boost agricultural production. This can be done by way of re-equipping with modern energy and cost efficient technologies to replace the current electrolysis process which is straining the nation's electricity supply. Alternatively the adoption of technologies that do not require ammonia for production of nitrogenous fertilisers can be pursued. Resuscitation of the Cold Storage

Company (CSC) should be prioritized. The CSC has the most sophisticated slaughter facilities with a capacity to process 600 000 cattle per year which is about 40% of national slaughter capacity. Currently CSC accounts for less than 20% of the slaughters. The company needs to be resuscitated so that it contributes meaningfully to beef production reflecting its installed capacity. The company also needs to focus on other markets for beef besides the traditional European Union markets which are no longer as accessible.

Infrastructure such as railways and roads networks need to be developed to effectively serve the manufacturing sector by providing cost effective transport services. There is need for government to partner financiers to resuscitate the National Railways of Zimbabwe (NRZ) which provides a more cost effective means of transport for bulky inputs and raw materials. Road networks need improvement to make all parts of the country accessible and enable access to markets especially by communal farmers.

There is poor linkage between industry and research and development (R&D) institutions and training institutions in the country resulting in industry at times acquiring their research and development services from outside Zimbabwe. There is need for greater cooperation between R&D and industry for process improvement and adaptation of latest technologies to improve efficiencies and competitiveness. Actors need to come up with collaborations and partnerships between them and these need to be strengthened. The education system and curricular needs to be tailor made to the needs of industry to ensure the right skills are produced.

### 5.2.3 End Markets and Trade

Our study identified the marketing of commodities as one of the weakest linkages within the value chains. Zimbabwe needs an agricultural commodity marketing system that gives incentives to encourage growth and participation of resettled farmers. Resettled farmers need to adopt a business approach to ensure consistency in their contribution to agricultural production. Local production needs to be promoted by providing guaranteed prices well before the farming season begins.

Farmers are affected by lack of information on markets and this leads to oversupply and undersupply of produce on the domestic market. There is need to link farmers to buyers through contract farming and commodity marketing authorities to ensure production is linked to demand. Channels need to be available to ensure the flow of information from the markets to farmers to ensure the best possible allocation of resources. The emergence of middlemen has greatly compromised the bargaining power of the small holder farmers who end up being shortchanged. Barter trading has often resulted in farmers not realizing meaningful returns and hence they fail to sustain their business. There is need to regulate the activities of the middlemen for farmers to realize better value for their produce. Collective marketing strategies need to be put in place to give smallholder farmers better bargaining power.

Contract farming needs regulation to prevent defaulting from both sides; there is lack of trust between farmers and contractors. Government policy needs to break monopolies and create a free and fair market for commodities. Effective market information systems that capture prices in major trading areas and disseminate this information to farmers should also be established. Prior knowledge of prices and can help farmers make informed decisions as to what to produce, when and in what quantities. Institutions such as the Agricultural Marketing Authority (AMA) need be more visible and promote fair trade. Farmers' organizations need to lay the role of aggregators for small-scale farmers to lower the transaction costs for smallholders leading to higher farm gate prices.

Importation of finished products and produce needs to be regulated. It is preferable that only raw materials are imported, if local production is failing to meet demand, to ensure that the value chains remain operational. The importation of finished products suppresses local manufacturing by breaking the link between manufacturing and retail. Government policy needs to allow for duty free importation of raw materials.

There is need for producers and processors to adopt quality management, food safety and hygiene standards to enable them to produce products that can compete on the regional and global markets. Industry needs to be proactive and look beyond the local markets. As such, adherence to international quality standards is critical.

#### 5.2.4 Value Chain Governance

The analysis revealed that the value chains are mostly buyer-driven; the buyer is the most powerful actor and therefore has the ability to influence pricing. Seller/producer driven value chains need to be promoted so that producers have control of the price of their products and realize the true value.

Firms involved in contract farming need to provide high standard services by timely providing inputs to farmers and paying fair prices for the commodities produced for them. This will ensure development of the small holder farmers and improve productivity and competitiveness.

#### 5.2.5 Sustainable Production and Energy Use

Environmental management and cleaner production in the country have been limited. There is need to re-equip industry and to adopt cleaner production strategies in order to reduce consumption of utilities and losses. Businesses need to be more conscious of the effects of their activities on the environment by managing their waste and emissions, through cleaner production. This would ensure they meet environmental regulations set by bodies such as the Environmental management Authority and would also reduce the impact of human activity on climate change and bio-diversity. Organisations can liaise with Zimbabwe's National Cleaner Production Center (housed at the Scientific and Industrial Research and Development Centre, SIRDC) for consultancy services in the adoption of sustainable production and consumption.

The use of alternative sources of energy such as solar needs to be pursued and promoted to bring relief to the national power grid and alleviate recurrent power cuts. Alternative energy sources would also increase the country's energy supply base. Actors need to invest in electricity generation projects to supplement the supplies from the national grid. In addition, firms need to monitor and manage their energy use with the aim to achieve better energy use efficiencies through the adoption of cleaner production.

Electricity generation needs to be increased to meet the industry demand and prevent losses emanating from power outages and the accompanying product losses by processors. Again, to ensure that agriculture functions correctly, the tariffs charged to farmers need be reviewed downwards and/or subsidized to compete against cheaper imported produce/commodities.

More eco-friendly approaches to farming such as the increased use of organic farming, focusing on use of bio-control agents such as *Trichoderma* in horticulture production, and use of organic fertilizers should be promoted. Good Agricultural Practices (GAP) should also be adopted.

#### 5.2.6 Value Chain Finance

The financial services sector requires collateral when giving loans and usually there is lack of quality collateral that is required by financial institutions. There is need for government to finalise the issue of 99 year leases or the restoration of freehold title to agricultural land for collateral purposes. There is also need to restore an orderly investment base to attract foreign direct investment and bilateral borrowing. Credit markets should be strengthened through continued improvements in macro-economic policies in order to provide more incentives to banks and farm production contractors to lower their rates and improve their lending conditions. There is also need to restore confidence in the banking system as the majority of the population is not banked and the money is in the informal sector.

Financing of agriculture can also be achieved through out grower schemes and contract farming agreements. For this to be effective there is need for legislation to govern repayment of loans to deal with defaulters.

### 5.2.7 Business Environment and Socio-Political Context

Where the business environment and policy context is transparent and predictable, businesses can plan and adjust their operations to become more productive, innovative and profitable. One of the main issues raised by primary producers is the need for clarification of land rights and ownership through the issuing of credible land tenure documents (permits and long leases). This must be coupled with appropriate tracking of land ownership and transactions in order to stimulate the collateralization of land and a functional but regulated land lease and rental market.

Establishment of small and medium-scale (SMEs) fruit and vegetable processing enterprises within the areas of production to help reduce losses experienced by producers and ensure product availability on the market. Small scale agro-processors lack the necessary business skills. Training in universities and colleges needs to include business management courses to ensure competence in this area.

Small scale farmers need to be supported through building their farming skills and this needs support of extension services among the new farmers to improve their agronomic practices and adopt new technologies and a business approach to farming. In the long term, this should improve on the volumes and quality of their produce. Government extension services need to be expanded to give the farmers skills to identify opportunities and empower them with negotiating skills required when trading in liberalized agricultural markets.

The Indigenisation Act needs to be clarified so that it is well understood by all actors and does not become a barrier to foreign direct investment (FDI). Investors view the act as a threat to their investments.

Zimbabwe has many regulations some of which are hindering competitiveness. An example is the policy on Genetically Modified Organisms (GMO) which needs to be reviewed to accommodate the use of high yielding GM maize varieties. The government needs to review regulations with the view to relax those regulations that are affecting competitiveness and industry's capacity utilisation. Industry also needs to be proactive and innovative when it comes to challenges it is facing and spearhead transformation. Industry needs to actively participate in policy implementation for the benefit of industry and the economy.



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