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Exploring the potential for growth and trade in fruit and oilseed-to-edible oils value chains following political shifts in Zimbabwe

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Abstract: Zimbabwe's persistent economic challenges since the early 1990s have been largely attributed to unpopular political decisions at the expense of building productive capacity in different sectors of the economy. Using a global value chains framework taking into account political economy dynamics, this article explores how developments in the political space shape the opportunities for upgrading in different sectors of the economy. Using a case study approach relying on data from interviews with industry stakeholders in Zimbabwe, this paper identifies existing capabilities and potential areas for upgrading in production, processing, and exports in the fruit and oilseed-to-edible oils value chains in the context of recent political shifts in Zimbabwe. The fruit and oilseeds-to-edible oils value chains were selected particularly because of the underlying productive capabilities in agriculture and food processing, which provide the potential to drive substantial recovery and employment to meet local, regional, and international demand.

Key words: agriculture, edible oils, oilseeds, processing, production, trade, value chain

JEL classification: L52, L66, O13, O14

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1 Introduction

The Zimbabwean economy has been on a continuous downward spiral since the early 1990s, which has led to the erosion of internal production capacity, the collapse of agriculture and manufacturing industries, and dilapidation of infrastructure. The liquidity challenges and emergence of a parallel market have increased the cost of doing business, directly affecting all sectors of the economy importing productive inputs and exporting products.

The collapse of the economy has been squarely blamed on the Mugabe political regime for pursuing political objectives at the expense of economic growth. Since gaining independence in 1980, Zimbabwe has undergone five political shifts classified according to the following periods: 1980–98, 1999–2008, 2009–13, 2014–16 and 2017 to date. From 1980 to 1998, the ruling political party ZANU-PF, which played a large role in liberating the country from colonialism, operated for a long period with little to no political opposition. In 1999, the first major opposition party the Movement for Democratic Change (MDC) led by Morgan Tsvangirai, entered the political space. This began a decade of political tension, polarization, and political violence. In April 2009, following the highly contested 2008 elections, the formation of the Government of National Unity (GNU) brought together the ruling party, (ZANU-PF) and two factions of the MDC. The GNU ended in June 2013, with ZANU-PF regaining its rule of Zimbabwe from the remaining half of 2013. The most recent and critical political shift in Zimbabwe's history occurred in November 2017 when President Robert Mugabe resigned after 37 years in office and the former Vice President Emmerson Mnangagwa was sworn in as the president.

Although Zimbabwe has undergone different political shifts since gaining independence in 1980, the country has largely followed a one-party and one-leader system. As such, the recent political shift was associated with a positive outlook for the recovery of the economy. This was expected to mark a new phase in the Zimbabwean economy, which has passed through four distinct economic phases from the post-independence phase (1980–90), the structural adjustment period (1991–99), the land reform and hyperinflation period (2000–08), and the dollarization period under the multicurrency system (2009 to date).

The anticipated recovery and growth of the Zimbabwean economy is expected to also impact on neighbouring countries in the region. As such, it is important to understand the potential tensions which may arise together with the overall benefits and opportunities from higher regional economic growth and integration.

Using a global value chains framework taking into account political economy dynamics, this article explores how political dynamics shape the opportunities for upgrading in different sectors of the economy. Taking a case study approach, drawing on detailed interviews with firms and other stakeholders conducted in Zimbabwe in 2019, this paper identifies existing capabilities and potential areas for upgrading in production, processing, and exports in the fruit and oilseed-to-edible oils value chains in the context of recent political shifts in Zimbabwe. The fruit and oilseeds-to-edible oils value chains were selected particularly because of the underlying productive capabilities in agriculture and food processing, which provide the potential to drive substantial recovery and employment to meet local, regional, and international demand.

The assessment focuses on the following research questions:

1. Based on existing capabilities, what is the potential for growth in production and processing in the fruit and oilseed-to-edible oils value chains following the recent political shifts?

2. What opportunities exist for increased trade between Zimbabwe and the Southern African region in fresh fruit and processed oilseed products?

1.1 Methodology

To address the above questions, the paper uses a combination of primary information from field interviews and secondary data sources. Production and trade data were sourced from national government departments, the International Trade Centre (TradeMap), and the Food and Agriculture Organisation of the United Nations. A desktop review of publically available information was conducted to map key players and activities in the value chain, which informed the selection of firms for interviews.

In the fruit value chain, researchers conducted semi-structured interviews in the apple-growing district of Nyanga located in the eastern parts of the country. In-depth interviews with key stakeholders in the value chain included local research institutions, extension offices, large-scale farmers and small-scale growers, growers' associations, and processors. Similarly, in the oilseed-to-edible oils value chain, researchers conducted interviews with farmers, ginners, oilseed crushers/edible-oil producers, industry/producer associations, and private research institutions working in agriculture (see Appendix for a list of interviewees).

The fieldwork took place over three months, from January to March 2019. Overall, 16 in-depth format interviews were conducted, centred on the following themes:

i. Identifying key processes/activities in the value chain;

ii. Understanding the structure of the industry (key players, large and lead firms within the value chain, governance, and competitiveness in the value chain);

iii. Challenges associated with upgrading in the fruit and oilseed-to-edible oils value chains in Zimbabwe; and

iv. Opportunities for increased trade between Zimbabwe and the Southern African region.

The paper is structured as follows. Section 2 sets out a conceptual framework to understand upgrading in the context of political economy dynamics. Sections 3 and 4 provide a performance overview of the fruit and oilseed-to-edible oils value chains in Zimbabwe and identify key challenges and areas of high growth potential. Section 5 suggests policy responses to drive more positive outcomes in these value chains in the current political settlement and concludes.

2 Global value chains: a framework to understand industrial upgrading

The global value chain (GVC) framework is useful to identify opportunities and challenges for upgrading and development of capabilities in global industries. It provides a methodology for understanding power and governance across the full range of economic activities within an

industry. It does so by tracing the patterns of value creation and exploring the linkages amongst geographically dispersed economic activities and actors (Gereffi and Fernandez-Stark 2011).

The traditional GVC literature employs two core concepts to assess global industries: (1) governance and (2) industrial upgrading. Governance refers to authority and power relationships that determine the allocation and flow of resources within a value chain (Dallas et al. 2018; Gereffi, 1994; Gereffi and Fernandez-Stark 2011; Gereffi and Lee 2012, 2016). While governance is about understanding the value chain in a 'top-down' manner, upgrading takes a 'bottom-up' approach, exploring how firms or countries can maintain or improve their positions within global value chains.

Opportunities for upgrading and the extension of capabilities take four forms:

i. Process upgrading: transforming inputs into outputs more efficiently by designing efficient production processes using technology or re-organizing production systems;

ii. Product upgrading: producing more sophisticated products;

iii. Functional upgrading: acquiring new functions or roles in the chain; and

iv. Chain upgrading: applying skills acquired in a particular value chain to a different sector (Gereffi and Lee 2016).

Most GVC literature refers to upgrading as a linear sequence of improvements in products, processes, or functions (Gereffi and Lee 2016), lacking an explicit and detailed focus on capabilities and how upgrading actually occurs (Morrison et al. 2008). Morrison et al. (2008) argue that the key issue is not 'functional upgrading' and moving to more advanced functions 'along the value chain'. Rather it is often about deepening the specific capabilities required to explore new opportunities offered at the same stage of the value chain where the firm is currently engaged. In as much as moving up the value chain from exploitation, manufacturing, packaging, and distribution to branding is important, deepening capabilities to explore new original features and varieties at each stage of the value chain is also important and it requires creation and deepening of skills and more complex technological capabilities.

Furthermore, emphasis of the GVC framework on vertical linkages along the value chain is a major weakness of the GVC approach. This approach misses the important role of horizontal linkages among different firms at each node of the value chain, which possibly cut across multiple sectoral value chains (Andreoni 2018). This is true of the oilseed-to-edible oils value chain in Zimbabwe, which has important linkages to other sectors of the economy such as animal feed industries. Successful upgrading requires that firms develop horizontal linkages in the domestic economy while integrating into global production and trade. As such, typologies of GVC need to be expanded to take into account both vertical and horizontal relationships and the complex interactions—tensions, conflicts, displacement, complementarity, and synergy—between public, social, and private forms of governance in order to fully understand the functioning of an industry and its consequences to upgrading (Gereffi and Lee 2016).

Following the recent political shifts in Zimbabwe, political economy factors have become critical to understanding the process of industrial upgrading. The development trajectory of industries is affected by the ability of the industry to lobby and influence outcomes within the industry, as well as the balance of different interests in a society that seek to shape policies (Whitfield and Buur 2014). An analysis of political economy-related issues and the distribution of power is therefore important in understanding how these dynamics have shaped and continue to shape the structure

and development trajectory of value chains. Policies are driven by contextual (institutional and structural) and political economy factors, as well as by the policy space and rationales for government action (Andreoni 2016). Powerful lobby groups and dominant players influence the policy space and this has been important in gaining access to resources and extracting rents in agriculture and agro-processing value chains (see also Kirsten et al. 1994).

The process of upgrading in the selected value chains needs to be understood in the context of Zimbabwe's political and economic challenges. Upgrading may therefore take different forms given the loss of capabilities across the entire value chain over a prolonged period of time. As such, upgrading will involve basic investments to resuscitate production and build lost capacity.

3 The fruit value chain: apples

The fruit value chain assessment focuses on apples, with a particular emphasis on identifying opportunities and potential for growth leveraging existing capabilities in Zimbabwe. Although apples constitute a small proportion of total fruit production in Zimbabwe, analysing the value chain provides useful insights for understanding a range of issues in fruit production. Some of the key lessons regarding the apples value chain can also be applied for other fruit value chains such as oranges.

The apples value chain was selected because of the underlying production capabilities dating back to the late 1990s. However, there has been a hollowing out of capabilities across the entire value chain from research and extension services, and production through to exports. This study highlights the key challenges limiting the growth of the industry and identifies potential for resuscitating production and exports following the recent political shifts.

Zimbabwe does not have a comprehensive fruit map that shows which fruits are grown in which locations.[1] However, apples are grown in Manicaland Province in the eastern parts of the country. The main apple-growing districts are Nyanga, Chipinge, and Chimanimani. For the purposes of this study, we focused on Nyanga District where we conducted in-depth interviews with key stakeholders in the value chain—local research institutions, extension offices, large-scale farmers, and small-scale growers. Nyanga District accounts for roughly 50 per cent of total apple production in Zimbabwe.[2]

3.1 Mapping the fruit value chain

The main activities in the fruit value chain include: (1) production, (2) packing and storage, (3) processing, and (4) distribution and marketing (Figure 1). However, in Zimbabwe the main activities in the apples value chain are concentrated at the upstream growing level as opposed to the downstream level given the constraints in production to support agro-processing demand.

At the upstream research and development level of the value chain, there is the Horticulture Research Institute, which consists of two research centres—the Nyanga Experiment Station and the Horticultural Research Centre. These research centres are housed under the Department of

[1] Interview with Schweppes company, 26 February 2019.

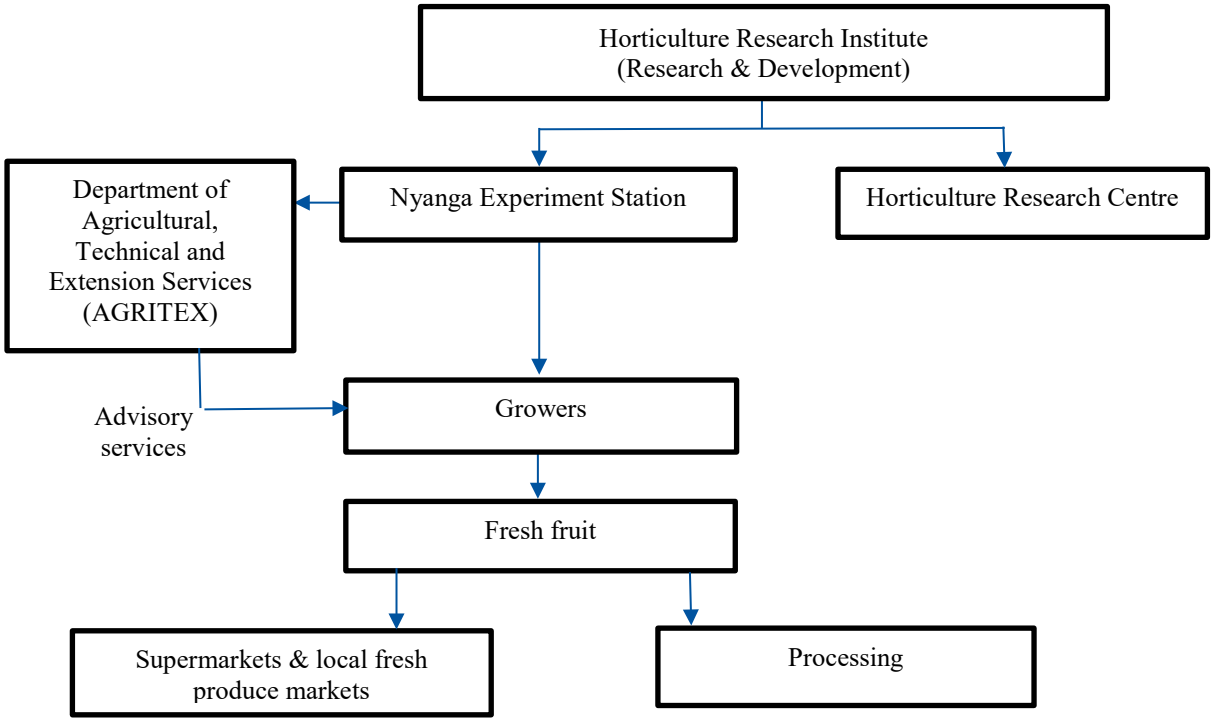
[2] Interview with Nyanga Deciduous Fruit Growers Association, 19 March 2019.

Research and Specialist Services in the Ministry of Agriculture and they consist of breeders, agronomists, and horticulturalists.

Of relevance to our study is the Nyanga Experiment Station whose main activity is conducting research. The station mainly conducts adaptive research to establish which fruit trees and material are suitable for different geographical areas, including research on agronomy, chemicals, and soils. Critical to the functioning of the fruit value chain is the role of Nyanga Experiment Station in breeding and propagation of planting material.[3]

Working closely with the research institution is the Department of Agricultural, Technical and Extension Services (AGRITEX). AGRITEX is an extension agency which provides advisory services to farmers. The organization disseminates research information on standards and agronomic practices generated by Nyanga Experiment Station to local farmers.[4] In the Nyanga District, AGRITEX is largely involved in supporting and mobilizing small-scale farmers to form out-grower schemes. It identifies small-scale farmers with potential for increased production and requests the large farmers to assist the small farmers with inputs and markets. The small-scale farmers then access funding to produce fruits for the large-scale farmers through the out-grower schemes.

Figure 1: Apples value chain



Source: Authors' own construction based on interviews.

At the growing level of the value chain, the main apple producers include a few large-scale farmers—the estates and the A2 small and medium-scale commercial farmers who benefited from the land re-distribution programme (Table 1). From 2000, the Fast Track Land Reform

[3] Interview with Nyanga Experiment Station, 19 March 2019.

[4] Interview with AGRITEX in Nyanga District, 20 March 2019.

Programme saw the re-distribution of land from white large-scale commercial farmers to local black people. Land was distributed under two main 'models'; the A1 schemes focused on smallholder production and the A2 farms focused on commercial production at a slightly larger scale. The average size of the A1 family farms is about 37 hectares while new A2 farms is about 318 hectares, including crop and grazing land (Scoones et al. 2011). Although current apple production in Nyanga is limited to approximately 159 hectares, the region is characterized by arable land and favourable climatic conditions required for apple production—low temperature and high rainfall.

Table 1: Main apple growers in Nyanga District, Zimbabwe (15 February 2019)

Farm name	Type of farmer	Hectares under apples
Claremont	Estate	76
Nyamagaya	Estate	23
Tundu Farm	A2	20
Nyanga Downs	A2	15
Charteland Farm	A2	0.5
Mbiriri Itai	A2	1
Matowanyika	A2	5
Kyline	A2	6
Saruchera	A2	9
Mbona	A2	3
TOTAL		158.5

Source: Authors' compilation from unpublished information provided by AGRITEX (2019).

Ownership of the relatively large apple farms is in partnership with foreign investors. For example, Nyamagaya Orchards is originally owned by a local company called Matanuska but it is now owned in partnership with Malaysian and Chinese investors, each investor accounting for a third of the company shares.[5] Similarly, Claremont Estates is co-owned by Ariston Holdings—a Zimbabwean agro-industrial company and a South African investor. Lastly, Nyanga Downs is currently in negotiations to partner with a local and a South African investor.[6]

Most activities and processes at the upstream level of the apple value chain are still carried out manually—picking, sorting, and grading of fruits, although sizing of the fruits is done using a machine. After sorting and sizing, the fruits are stored in the cold room to preserve quality and extend fruit shelf life.[7]

In Zimbabwe, 85 per cent of apples are mostly consumed as fresh produce and are sold on the local markets. Of the 85 per cent, the first-grade apples are marketed locally through companies such as Brands Fresh, which distributes to supermarkets, while the second and lower grades, which constitute the larger proportion, are sold through the main city markets of Mbare Musika in Harare, Sakubva Market in Mutare and in Marondera.

The remaining 15 per cent are sold to the processing companies such as Cairnes Zimbabwe Limited and Associated Foods Zimbabwe. These companies process apples into fruit canning and juices. However, the apple juice-processing industry is not well developed in Zimbabwe and most fruit juices are imported from South Africa.[8] Due to limited production, processing companies

[5] Interview with Nyamagaya Orchards, 19 March 2019.

[6] Interview with Nyanga Downs, 19 March 2019.

[7] Interview with Claremont Estates, 18 March 2019 and Nyamagaya Orchards, 19 March 2019.

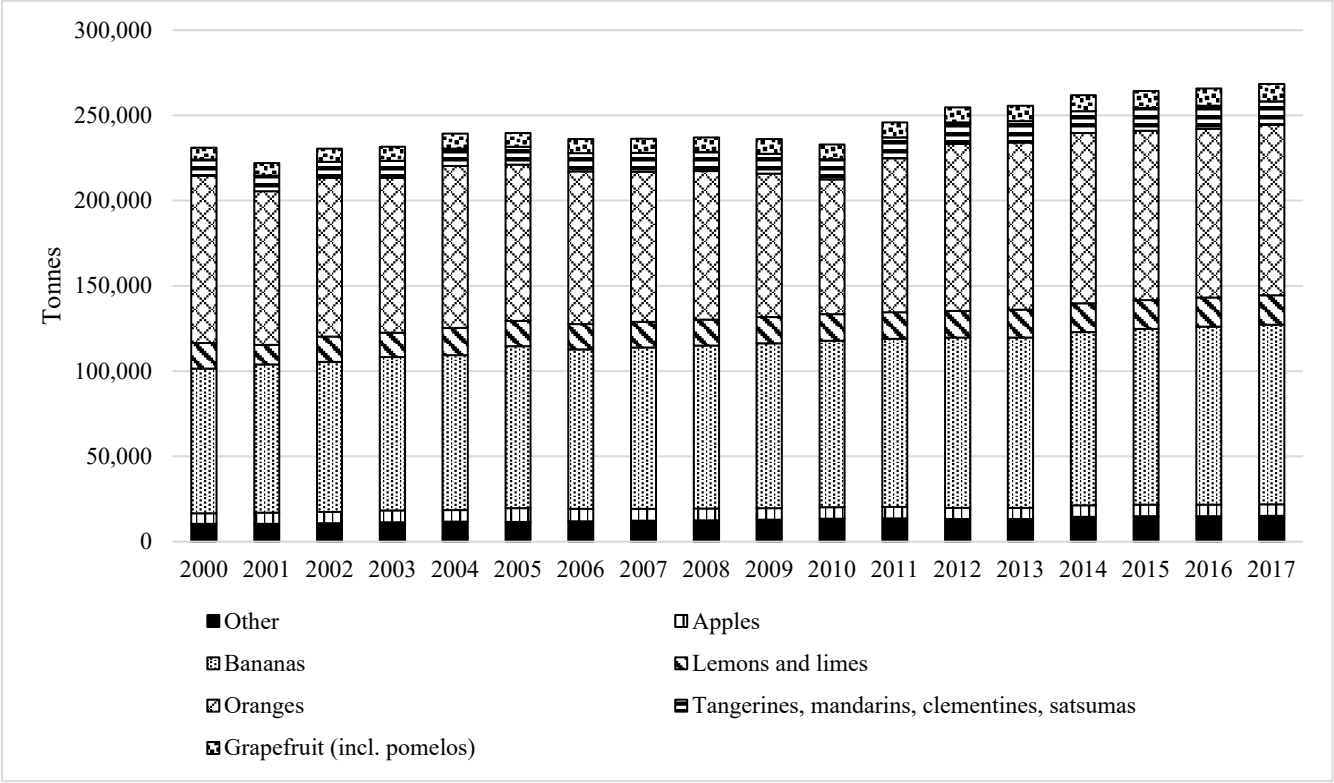
[8] Interview with Claremont Estates, 18 March 2019.

which depend on cheaper downgraded fruit for processing are paying higher prices almost equivalent to the price of fresh fruit targeted for the supermarkets and local fresh fruit markets.[9]

3.2 Production of fruit

Total fruit production grew slowly at a compounded rate of 0.08 per cent between 2000 and 2010 before increasing to 1.47 per cent between 2011 and 2017 (Figure 2). The low levels of growth in production speak to the various challenges in the fruit industry. To understand the challenges in fruit production, the study uses the apples value chain in the Nyanga District as a lens highlighting key issues in production.

Figure 2: Total fruit production in Zimbabwe, 2000–17



Source: Authors' compilation from FAOSTAT Database (2019a).

Concentration of apple production in specific districts makes it relatively easy to gather information across a number of growers. Nyanga District accounts for roughly 50 per cent of national apple production (Table 2).

Table 2: Distribution of production in Nyanga District

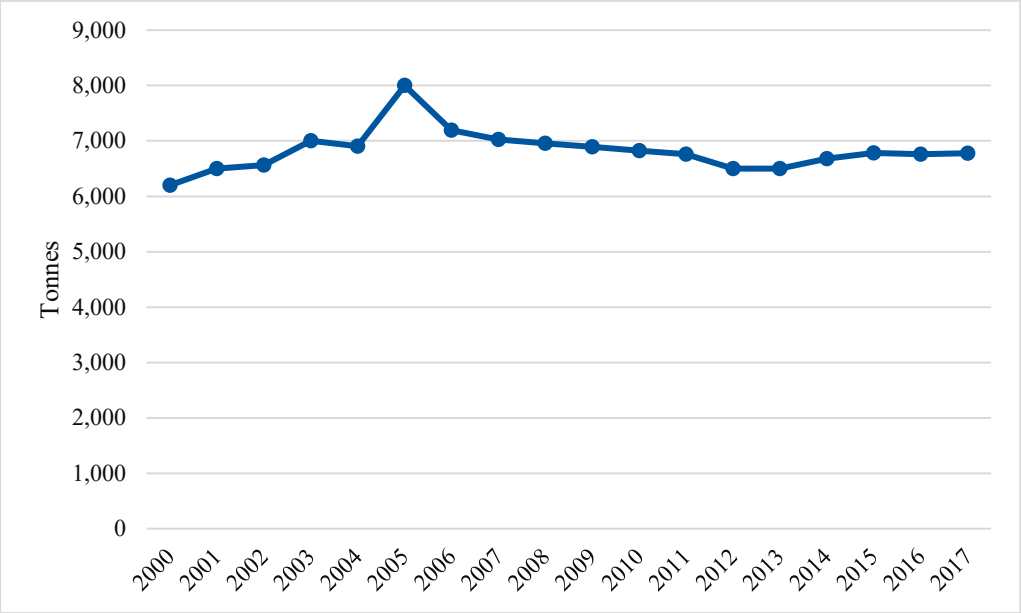
Producer category	2015 (tonnes)	2016 (tonnes)	2017 (tonnes)
Large scale	2,925	2,700	2,750
Small scale	500	500	500
Total	3,425	3,200	3,250

Source: Authors' compilation from unpublished information provided by Nyanga Deciduous Fruit Growers Association (2019).

[9] Interview with Nyanga Downs, 19 March 2019.

From 2000 to 2005, production in Nyanga grew at a compound average growth rate of 4 per cent before declining over the rest of the period (Figure 3). During the period 2013 to date, there has been a significant decline in the number of hectares under apple production. Out of a total of 159 hectares currently under apple production, 85 hectares of apple orchards were lost to fire damage, change in land use, and uprooting of old orchards for replanting. For example, Nyanga South Downs scaled down from 81 hectares in 2008 to 10 hectares in 2019 largely due to veld fires which burnt down the orchards in 2010.[10]

Figure 3: Trends in apple production



Source: Authors' compilation from FAOSTAT Database (2019a).

However, production is expected to increase following investments in sizeable hectarage of new plantings by the large farms from 2012 to date, which are expected to reach their optimal production in 2020/21 (Table 3). The large farms have either expanded their orchards or are planning to expand orchards in response to a larger market, which is mainly unsatisfied local demand. In 2016, the local market demanded about 19,823 tonnes of fresh apples, yet annual production was 6,760 tonnes.[11]

Table 3: Orchards' expansion capacity in Nyanga District

Farm name	Type of farmer	Hectares under apples	Yield per hectare	Capacity to expand (hectares)
Claremont	Estate	76	55	100
Nyamagaya	Estate	23	14	5
Tundu Farm	A2	20	17	10
Nyanga Downs	A2	15		15
Charteland Farm	A2	0.5	17	12.5
Mbiriri Itai	A2	1	17	
Matowanyika	A2	5	13	
Kyline	A2	6	14	
Saruchera	A2	9	14	5
Mbona	A2	3	13	10
Total expansion capacity				157.5

Source: Authors' compilations from unpublished data provided by AGRITEX (2019).

[10] Interview with Nyanga Downs, 19 March 2019.

[11] Interview with Claremont Estates, 18 March 2019.

Claremont Estates has been growing since 2012 through investing in new orchards and is currently planning to further expand its apple orchards by 8 hectares. Out of a total of 74 hectares under Claremont apple orchards, 40 hectares consist of young trees. These new orchards will take approximately three to four years to start producing fruits and about eight years to reach their optimal production capacity.[12] At maturity, the trees are expected to yield 55–60 tonnes per hectare based on 2019 yields.

At maturity, Nyamagaya Orchards currently produces 45 tonnes of apples per hectare based on 2019 yields.[13] Nyamagaya Orchards has 5 hectares of new apple trees, which were planted in 2016 and 2018, and these are expected to bear fruit in the fourth year. There are plans to further increase the area under apple production by up to 40 hectares by June 2019 through moving current production of flowers to another farm so that the land is solely dedicated to apple production.

Nyanga Downs also plans to plant 15 hectares of new apple trees. These new orchards are expected to produce an average yield of 40 tonnes per hectare based on their current yields.[14]

However, a number of challenges pose constraints to increased production and expansion of orchards. Key challenges at the production level include lack of access to planting material and new varieties, high costs of chemicals and irrigation, dilapidated equipment and infrastructure, and limited access to credit, as discussed below.

Key challenges at the production level

3.3 Limited access to planting material and new varieties

Limited access to planting material (fruit trees) is a key challenge for apple growers. Lack of capacity at fruit breeding facilities to develop and supply new varieties limits production and establishment of new apple orchards. Apple farmers used to source fruit trees from the Nyanga Experiment Station, which used to propagate apple plants for local farmers. However, the station is currently facing a number of challenges.[15] These include lack of germplasm (seeds for plant breeding) and propagation structures. The station used to access germplasm from East Malling Research Station in England and also South Africa, but it has since lost ties with the institutions partly due to sanctions.[16] In terms of propagation structures, the station lacks root stocks and budding capacitation. The station used to have clonal root stocks but these are now very old and have been overtaken by new technologies.[17] The majority of planting material and rootstocks currently in use in Zimbabwe's deciduous fruit industry were developed in the early 1960s.

To fill this gap, the large farmers started propagating apple plants but they also stopped due to lack of root stocks. To access apple trees, farmers rely on imports from South Africa. The cost of imported material is high (US$5–US$7 per plant excluding transport cost). To plant one hectare of apples requires approximately 1,428–1,600 trees. As such, the cost of trees constitutes about a

[12] Interview with Claremont Estates, 18 March 2019.

[13] Interview with Nyamagaya, 19 March 2019.

[14] Interview with Nyanga Downs, 19 March 2019.

[15] Interview with Nyanga Downs, 19 March 2019.

[16] Interview with Nyanga Experiment Station, 19 March 2019.

[17] Interview with Nyanga Experiment Station, 19 March 2019.

third of total production costs.[18] Currently, only one local producer—Claremont Estates—has managed to import and establish new plantings. Limited access to planting material has resulted in farmers using the available propagation material, which is not virus tested, thereby increasing the susceptibility to diseases and pests.

The other challenge at the production level is that growers still use old varieties from the 1980s such as the MM106. The old varieties are prone to pests and diseases and produce dwarf trees and limited yields. The existing orchards are old and less productive; most of them were planted in the 1966–69 period. Although these plantations are still bearing fruit, they are expensive to maintain while their yields continue to decline to levels which are no longer economically viable. No new plantings were done beyond the year 1992, implying that the youngest bearing orchards are more than 20 years old.[19] Normally, apple trees should ideally last for about 20 years and therefore most of the trees being cultivated are now very old. There is a clear need to uproot trees from the 1960s,[20] but access to new varieties is a big challenge in Zimbabwe since there are no commercial nurseries with the requisite breeders' rights to propagate and multiply the new cultivars.[21]

3.4 Chemicals, irrigation, and production equipment and machinery

Maintenance of orchards requires investments in irrigation and chemicals. The cost of irrigation and chemicals constitutes the bulk of total production costs. Although the large farms have dams for irrigation purposes, the irrigation infrastructure is worn out and needs to be improved. Irrigation costs have also increased due to climate change. In previous years, growers would not irrigate land in the November to March period of each season, whereas in recent years they have been increasingly under pressure to irrigate due to erratic rains associated with climate change.[22] Nyanga used to receive 1,800 ml per year of rainfall but this has dropped to 1,200 ml, while temperatures have gone up.[23] Furthermore, the lack of new and improved varieties makes it difficult for farmers to respond to climate change, which is encouraging a range of pests and diseases.

Chemicals constitute the most expensive input in maintaining orchards.[24] About one-third of chemicals are imported from South Africa while two-thirds are procured locally. Due to the high costs of chemicals, there is very minimal maintenance of orchards.[25] Access to chemicals is critical given the rise in pests and diseases due to climate change. Furthermore, pests and diseases have grown resistant to the pesticides and chemicals currently used by farmers. This is largely due to limited research being conducted to keep up with changes in pests and diseases and identifying the right chemicals and pesticides to eradicate them.

Challenges of access to chemicals and fertilizers are particularly acute for small-scale farmers who cannot afford the chemicals and fertilizers required for maintaining the orchards. They therefore

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[18] Interview with Claremont Estates, 18 March 2019.

[19] Nyanga Deciduous Fruit Growers Association (2019).

[20] Interview with Nyanga Downs, 19 March 2019.

[21] Nyanga Deciduous Fruit Growers Association (2019).

[22] Interview with Claremont Estates, 18 March 2019.

[23] Interview with Nyanga Downs, 19 March 2019.

[24] Interview with Claremont Estates, 18 March 2019.

[25] Interview with Nyanga Downs, 19 March 2019.

rely on the large-scale farmers. However, large-scale farmers are also facing input challenges, which constrains their ability to effectively support the small-scale framers.[26] Because of poor maintenance of fruit trees, fruit growers produce a poor quality of apples.[27] Furthermore, poor maintenance of trees also reduces the size of the harvest.

Although the government has a duty free policy on imports of agricultural productive implements such as chemicals and farm equipment, growers have limited funds to benefit from such incentives, which is potentially an area for intervention by external partners and investors, particularly with respect to smaller farmers.[28]

The majority of large and medium growers own cold rooms and grading shades although the infrastructure is old and dilapidated due to lack of maintenance (Table 4). The major challenges are old cold rooms and grading shades. These require investments in refurbishments, upgrading, or entirely new equipment. Such equipment is vital for maintaining a longer shelf life and quality of the fruit.

Nyamagaya Orchards has a 500-tonne capacity cold room, which was built in 1988. The cold rooms are not only worn out but the farms have outgrown the installed capacity. Furthermore, the sorting and grading equipment can only grade 12 tonnes per day yet the farm needs to meet a daily demand of 20 tonnes of apples per day. As such, the farm plans to invest in increased capacity of the equipment to 50 tonnes per day. The company also plans to invest in refurbishment of the cold room and replacement of old equipment such as sorting and grading equipment.

Table 4: Infrastructure of the apple producers, 2018/19

Farm name	Type of farmer	Hectares under apples	Infrastructure present	Status
Claremont	Estate	76	1 grading shade, 1 cold room	Functional
Nyamagaya	Estate	23	1 grading shade, 1 cold room	Functional
Tundu Farm	A2	20	1 grading shade, 1 cold room	Non-functional
Nyanga Downs	A2	15	1 grading shade, 1 cold room	Non-functional
Charteland Farm	A2	0.5	1 grading shade, 1 cold room	Functional
Simba Makoni	SSC	250	1 cold room, 1 grading shade	Functional
Mbiriri Itai	A2	1	1 grading shade	Functional
Matowanyika	A2	5	1 grading shade	Functional
Kyline	A2	6	1 grading shade	Functional
Saruchera T	A2	9	1 grading shade	Functional
Mbona	A2	3	1 grading shade	Functional

Source: Authors' compilation from unpublished data provided by AGRITEX (2019).

3.5 Limited access to adequate and affordable credit

A key challenge in fruit production and investments in new orchards relates to limited access to credit. These challenges are particularly acute among small-scale farmers. Large farmers raise capital through partnership with foreign and local investors in exchange for a stake in ownership. In some cases, to be sustainable apple growers venture into production of other cash crops which are relatively less expensive to grow.

Challenges of funding in the fruit industry are further compounded by the fact that there is limited government support for the industry. Fruit production is relatively expensive compared to other

[26] Interview with AGRITEX Nyanga District, 20 March 2019.

[27] Interview with Claremont Estates, 18 March 2019.

[28] Interview with Nyamagaya Orchards, 19 March 2019.

traditional crops such as maize and tobacco. Furthermore, the government considers fruit farming as less of a priority in issues of food security and, as such, there is generally more support for traditional crops over high-value crops. Given the nature of fruit production and its role in the economy, the government has been of the view that the financing of fruit production should be carried out by private players in the industry. However, with the coming in of the new government, there is interest to support fruit farming through the Command Agriculture Programme.[29]

Currently, the fruit industry relies on banks for access to funding. Although there are efforts by the local banks to finance the sector, long-term funding is not available. Most banks offer loans that are short term, yet fruit production is a long-term project, with fruit trees taking three to four years to start bearing fruits and generating revenue. Banks such as AgriBank provide facilities of up to US$10 million, but the ability of farmers and producers to fully benefit from the use of this facility is constrained by the fact that it is effectively a short-term credit product. Similarly, most of the financial products available in the market are short term with very high interest rates (20–30 per cent).[30] Some banks have been providing long-term capital expenditure finance, but the quantum of the finance is limited.[31]

The establishment and maintenance of an apple tree orchard is capital intensive, requiring high investment cost per unit area. To establish one hectare of apples, a grower requires approximately US$22,355/ha.[32] Once orchards are established there is a need to develop proper technologies, research and extension support, finance mechanisms, and accessible markets. The current macroeconomic instability, uncertainty on land tenure, and high capital costs are viewed as the most limiting parameters discouraging long-term investments in the deciduous fruit industry.[33]

To commence production in a given season, the farmers also require approximately US$9,381/ha and an additional US$4,255/ha to maintain the fruit trees and the orchard (Table 5). Production and maintenance costs are recurrent throughout the productive life of an orchard compared to the once-off establishment costs. Therefore, over the whole life of an orchard, production and maintenance costs would be relatively large compared to establishment costs. Overall, investments related to establishment costs are the most difficult to raise because they constitute a sizeable initial capital outlay that would take several years to raise or pay back given Zimbabwe's economic constraints. This has been a major constraint in the expansion of orchards and is expected to limit growth in production for the foreseeable future.[34] On the other hand, although production and maintenance costs are recurrent, they can easily be met from sales' proceeds once harvesting commences.

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[29] Interview with AGRITEX Nyanga District, 20 March 2019.

[30] Nyanga Deciduous Fruit Growers Association (2019).

[31] Interview with Nyanga Downs, 19 March 2019.

[32] Nyanga Deciduous Fruit Growers Association (2019).

[33] Nyanga Deciduous Fruit Growers Association (2019).

[34] Interviews with Claremont Estates, 18 March 2019; Nyamangaya Orchards, 19 March 2019, and Nyanga Downs, 19 March 2019.

Table 5: Costs of apple orchard establishment, production, and maintenance for 1,650 trees (US$ per hectare)

	Establishment	Maintenance (Non-bearing trees)	Production
Yield (tonnes/ha)			60
Fertilizers	909	322	645
Herbicides	129	43	43
Pesticides	16	47	73
Fungicides	52	40	73
Rest breaking agents	-	48	193
Fuel	130	233	311
Electricity	107	216	270
Repair & maintenance	-	21	56
Pollination	-	-	28
Transport	-	-	1,500
Packaging	-	-	1,485
Seasonal labour	-	-	519
Fuel	-	-	90
Repair & maintenance	-	21	28
Consultants	-	50	
Fixed labour	1,385	1,385	1,385
Water costs	218	177	196
Other overheads	1,769	730	1,327
Interest on loan	3,610	649	865
Depreciation on orchard	584	292	292
Plant material	7,419	-	-
Soil analysis	240	-	-
Micro jet irrigation system	2,690	-	-
Drainage	214	-	-
Land preparation	974	-	-
Wind breaks	101	-	-
Hail net + trellising system	1,809	-	-
Total cost	22,355	4,255	9,381

Source: Authors' compilation from unpublished data provided by Nyanga Deciduous Fruit Growers Association (2019).

3.6 Other challenges in the value chain: limited research capacity

Limited research capacity of major institutions such as the Nyanga Experiment Station is a major constraint to the growth of the apple industry. The Nyanga Experiment Station is poorly funded and under-capacitated to provide research services. This has led to the hollowing out of research capabilities since the early 1990s. Before the 1990s, the station used to rely on donor funds, and since the withdrawal of funding from 1999/2000 to date, partly due to sanctions, the station has not been receiving any financial support, including from government.

The station in Nyanga only started receiving funding from the government in 2018 and 2019 following the recent political shift. The new government appears to be prioritizing the fruit industry, and there have been some improvements in investments in irrigation and machinery.[35] Coupled with limited funding, other challenges relate to there being few researchers (only three researchers working on three to four fruits) and low remunerations for researchers at the institution. As such, farmers rely on consultants hired from South Africa who lack the experience and background to deal with problems specific to apple farming in Zimbabwe.[36]

[35] Interviews with Nyanga Experiment Station, 19 March 2019 and AGRITEX Nyanga District, 20 March 2019.

[36] Interview with Claremont Estates, 18 March 2019.

3.7 Potential for increased regional trade

The potential for increased regional trade in apples is currently limited with about 98 per cent of apples sold locally and only 2 per cent exported. Between 2000 and 2016, exports were insignificant and concentrated around a few regional partners (Figure 4).[37] Given the difficulties in accessing markets, the region is a relatively easy market to access due to less stringent quality requirements compared to developed markets. In 2018, ZimTrade tried to facilitate market access for the large farmers but this has yet to materialize.[38] Furthermore, most of the local apples are of lower quality, usually grade B or less, and therefore cannot access high-value markets in developed countries.[39]

Previously, Zimbabwe used to export to developed markets but largely lost this capability due to the predominant use of the US dollar under the multicurrency system.[40] Between 2009 and 2016, the US dollar was the predominant currency for local transactions and as such the local prices for apples were good for producers.[41] After the multicurrency system, government introduced a local currency called a bond note/RTGS which was equivalent to the dollar. The local price of apples was US$1.20 to US$1.50/kg versus an export price of US$1.00 per kg.[42] As such, local producers could earn more than export earnings in the local market and there was no incentive to export. In turn, most producers sold on the local market and incurred fewer costs in terms of logistics and transportation. However, with the depreciation in local currency versus the US dollar, it is necessary for producers to export in order to access foreign currency to import inputs and also take advantage of the government's export incentive.[43]

In addition to the above macroeconomic challenges, most apple growers do not export because they cannot meet Global Good Agricultural Practices standards and phytosanitary requirements for the developed countries' export markets.[44] Some of the large growers such as Claremont Estates used to market their produce directly to Europe but, over the past few years, they have been having challenges in meeting some of the requirements leading to the use of agents.[45]

However, to be sustainable in the fruit business, a grower needs to export. There is potential for Zimbabwe to export fruits, especially to the region. Zimbabwe has a two-week marketing window ahead of South Africa because Zimbabwe's fruit ripens earlier than that of South Africa.[46]

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[37] The export destinations are mainly Zambia (56.8 per cent), Mauritius (10.8 per cent), Malawi (10.4 per cent), Mozambique (8.3 per cent) and Democratic Republic of Congo (4.5 per cent).

[38] Interview with Claremont Estates, 18 March 2019.

[39] Interview with ZimTrade, 08 March 2019.

[40] Interview with Nyanga Downs, 19 March 2019.

[41] Interview with Nyanga Downs, 19 March 2019.

[42] Interview with Claremont Estates, 18 March 2019.

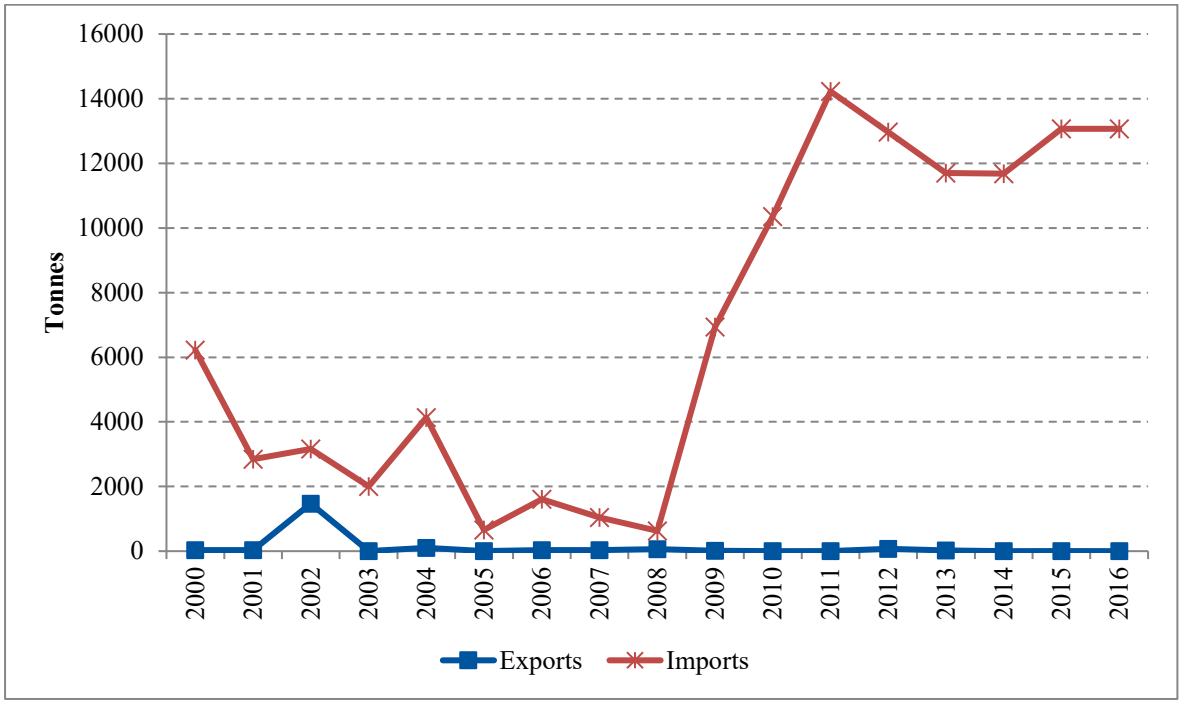
[43] Interview with Claremont Estates, 18 March 2019.

[44] Interview with Myanga Downs, 19 March 2019.

[45] Interview with Claremont Estates, 18 March 2019.

[46] Interview with Claremont Estates, 18 March 2019.

Figure 4: Zimbabwe's exports and imports of apples, 2000–16



Source: Authors' compilation from FAOSTAT Database (2019b).

The decline in imports between 2000 and 2008 coincided with an increase in production domestically, although exports did not improve. Locally produced apples cannot compete in terms of quality and price with imports from South Africa, which account for 95 per cent of Zimbabwe's total imports. Zimbabwe's industry has lost competitiveness in both the local and export markets. As such, the industry has lobbied government to ban imports from South Africa, except for first-grade apples, between the months of February and June every year. The government provides policy support in the form of import bans during the local marketing season, which runs from January to July every year. It follows that between January and June there are no imports of apples into the country.[47]

However, the growth in local demand and the failure of local farmers to increase production post 2005 is fuelling growth in imports to meet the gap in demand. In 2016, Zimbabwe demanded about 19,823 tonnes of fresh apples, yet annual production was 6,760 tonnes and imports stood at 13,064 tonnes. Local per capita consumption and total consumption of deciduous fruits since 2008 has increased from 0.6kg to about 2kg. South Africa has become more aggressive in its export drive and managed to establish dominance as the main supplier of deciduous fruits in the country and within the region.[48] To replace imports, Zimbabwe needs to increase the hectares under fruit production to 800 hectares.

The effect of competition from imports is especially problematic because of Zimbabwe's lack of new and improved varieties to respond to new market demands. Apple farmers predominantly produce old varieties, mainly green apples, but due to changes in preferences and the introduction

[47] Interview with Nyamagaya Orchards, 19 March 2019.

[48] Interview with Nyanga Deciduous Fruit Growers Association, 19 March 2019.

of new varieties, the market now prefers the red apples.[49] The ability to meet the demand for red apples has been constrained by lack of rootstocks for grafting red apples and the lead time required between planting and harvesting of the apples.

3.8 Industrial policy relevant to the fruit sector in Zimbabwe

Putting such an integrated and targeted policy framework in place is critical for fostering greater production and a recovery in exports in the value chain analysed above.

The fruit sector is covered in the national policies such as the agricultural policy, industrial and trade policies. However, Zimbabwe's agricultural, industrial, and trade policies are in draft form and are still to be adopted. A Draft National Agriculture Policy Framework (2018–30) was expected to be in place in 2018, but this could not be achieved, which also implies that the agriculture sector is operating without a clear policy framework. The last industrial policy in place was the Industrial Development Policy (2012–16), implying that industry has been operating without a sector-specific policy guidance framework for more than two years now.

The current national budget statement for 2019 imposed an import duty on processed fruit products payable in foreign currency as a strategy to discourage the use of foreign currency on products that are regarded as luxuries. Import duties also cushion the local fruit processors from import competition, although the supply gap may exert upward pressure on prices of processed fruit products given that the local processing industry is less developed.

To ease the challenges faced by fruit producers in accessing foreign currency to import inputs, the monetary policy statement for 2019 pegged the foreign currency retention threshold for horticultural products at 80 per cent. Fruit exporters can therefore access 80 per cent of their foreign currency requirements while 20 per cent can be accessed as local currency.

The government's general policy direction, as indicated in the current economic blueprint the Transitional Stabilisation Programme (2018–20) has earmarked Manicaland Province as a fruit-canning special economic zone. In the special economic zone, the government will provide tax and business incentives that attract investments into fruit canning. The regulations that cover incentives to special economic zones were already put in place through the Finance Act of 2017 and Statutory Instrument 59 of 2017 for Customs and Excise Regulations. The designation of Manicaland as a special economic zone for fruit processing is to encourage fruit processors to establish processing plants closer to farming areas for easy access to raw materials.

Fruit processing companies such as Schweppes Holdings are considering establishing mobile semi-processors or establishing new processing plants especially in areas where there is substantial fruit production such as Chipinge. However, the success of special economic zones will be predicated on the broader business environment, including access to foreign currency, policy consistency, and confidence in the financial services sector.

Despite the above policy efforts, there is a need for government to deal with policy issues regarding ownership of land to encourage long-term investment in the fruit sector and access to long-term funding by fruit farmers.[50] The current land lease agreements limit access to long-term credit due to insecurity of tenure issues, which also discourages investment. Financial institutions are not willing to extend loans to farmers with offer letters and lease agreements. These are considered to

[49] Interview with Nyamagaya Orchards, 19 March 2019.

[50] Interview with Schweppes Company, 26 February 2019.

be not bankable as the land cannot be sold or sub-leased when the borrower fails to repay the loan. Furthermore, because it is illegal for farmers with lease agreements to sublease government land, it is impossible for investors with access to capital to commit to long-term investment on government-leased land. Investors need security of land tenure in order to invest in fruit production. Although government allows for joint ventures between land owners and capital owners, the process of getting approval from government is cumbersome, takes an extended period of time and is subject to corruption.[51] Furthermore, the process of applying for land from government is also very lengthy.

4 The oilseed-to-edible oils value chain

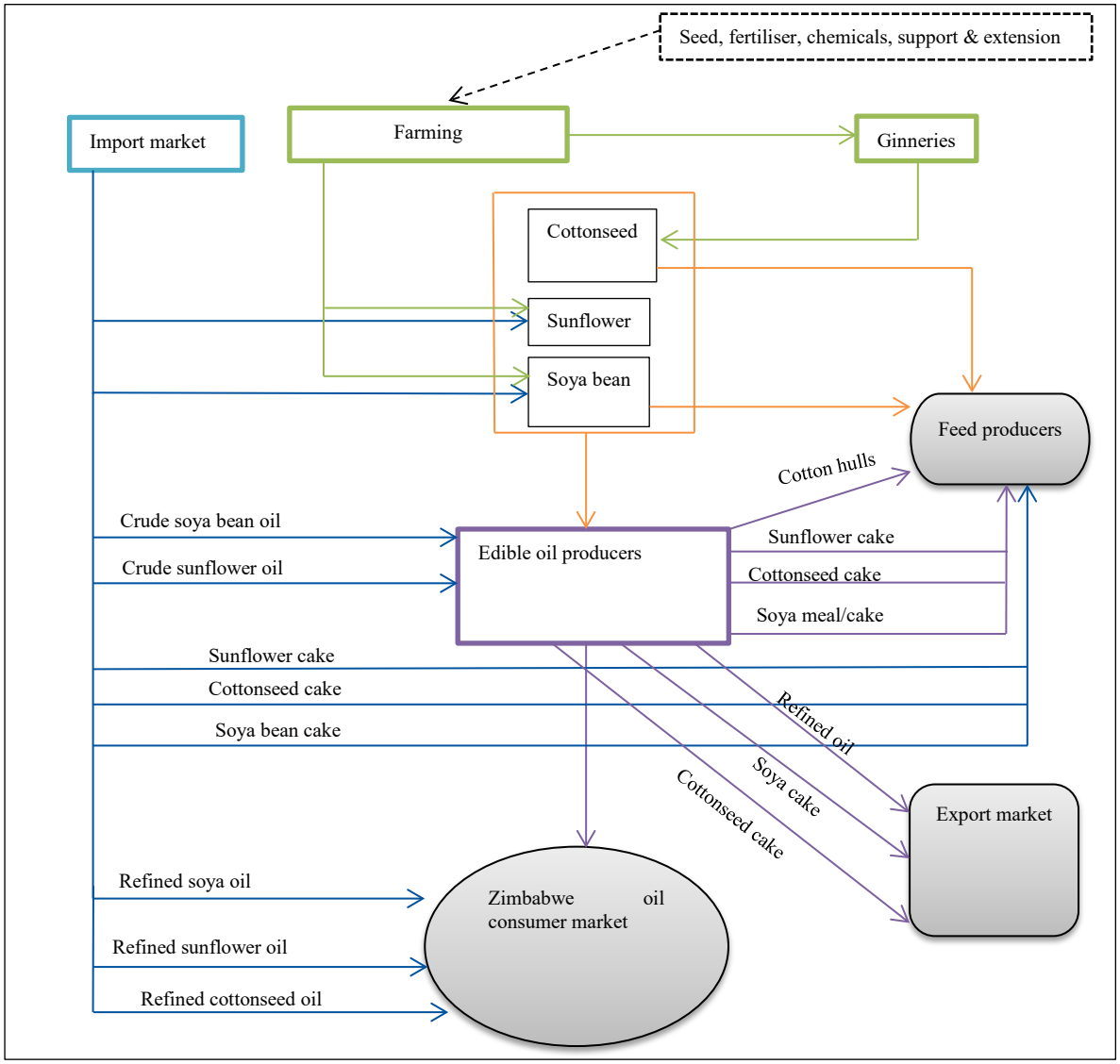
The oilseed-to-edible oils value chain assessment focuses on soya bean, cotton, and sunflower, with a particular emphasis on resuscitating agricultural production to meet agro-processing demand in the value chain. Zimbabwe has production and processing capabilities in crushing to produce edible oils to meet local demand but continues to rely on imports of oilseeds and edible oils. The main constraint to developing the value chain lies at the upstream farming level, which is failing to produce enough oilseeds for the crushing industry. As such, there is unused crushing capacity at the processing level and companies resort to imports of crude and refined oil. Furthermore, growth of the oilseed-crushing industry is linked to development of related sectors such as the animal feed industry that sources oilcake from oilseed-crushing firms for production of animal feed. Currently, growth of the oilseed-to-edible oils value chain is constrained by the animal feed industry, which is too small to absorb the oilcake from the oilseed-crushing industry. This points to the need for increased complementary investments at the production level and in the animal feed and poultry industries.

4.1 Mapping the oilseed value chain

Zimbabwe's oilseed-to-edible-oils value chain is concentrated around three seeds—soya bean, cotton, and sunflower— which are mainly used for the production of cooking oil for household and industrial use. The value chain has three distinct stages: seed production by farmers and ginners, seed crushing to produce crude oil by edible-oil producers, and refining of the crude oil to produce cooking oil (Figure 5). Import markets also play a significant role across the entire value chain as a source of oilseeds, crude oil, and refined oil.

[51] Interview with Schweppes Company, 26 February 2019.

Figure 5: Oilseed-to-edible oils value chain



Source: Authors' compilation from interview data.

Production of soya bean, cotton, and sunflower is concentrated around small-scale, communal, and resettled farmers. Although the three oilseeds generally follow the same processes along the value chain, the cottonseed passes through an additional process called ginning before it is sent to the edible-oil producers for processing.

After production, cotton farmers, who are mainly communal and resettled farmers, first sell their cotton to the ginners, who separate cotton lint from the cottonseed and sell the cottonseed to edible-oil producers and animal feed industry. Cotton is composed of the seed and the lint, with the cottonseed constituting approximately 57 per cent and the lint constituting about 41 per cent,[52] while the remainder is waste.

Following the opening up of the market in 2000, a number of new players entered the industry, which ended a duopoly of the Cotton Company of Zimbabwe (Private) Limited (COTTCO), a

[52] Interview with COTTCO, 28 February 2019.

wholly owned government private company, and Cargill, a private player. Ginners compete in providing inputs and developing their own pool of farmers through contract farming arrangements. By 2008, the industry had an estimated 30 players, each supporting cotton production (Chigumira 2017). However, the high number of players began to create side marketing opportunities, as some of the players would try to get access to output whose production they had not financed.

A number of ginners used to be vertically integrated, thereby ensuring that they utilized the seeds from the ginning process in their oil-expressing businesses. These players included Alliance, COTTCO, Grafax, and Olam. However, Grafax and Olam are now only active in the oil business, relying on seed from the remaining ginners. COTTCO has ceased its downstream activities and is now only concentrating on the ginning business.

Zimbabwe's ginners have a capacity to produce just over 129,000 tonnes of cottonseed (Buka 2016), which would produce just over 23,000 tonnes of oil. China Africa holds about 30.9 per cent of the ginning capacity followed by COTTCO at about 24 per cent. Other players with significant ginning capacity include Grafax (21 per cent), Alliance (19 per cent), and ETG Parrogate (19 per cent) (Buka 2016).

However, following the government intervention in 2017, when COTTCO became the only beneficiary of the free input scheme, most of the active ginneries have since exited the market. This includes Parrogate and Grafax, which had invested in ginning. Players generally enter into toll ginning arrangements, where even COTTCO can use other ginners' facilities at a fee.

The ginners of cotton and farmers of soya bean and sunflower sell the oilseeds to the edible-oil producers for processing into crude oil and cake. The crude oil then goes through a refining process to remove impurities through neutralization, and eliminating odour and lightening the crude oil to produce cooking oil.

There are more than ten edible-oil producers in Zimbabwe. These include Cangrow Trading, Chiseller, Pure Oil Industries, Olivine Industries, Surface Wilmar, United Refineries, and Willowton.[53] Surface Wilmar, Pure Oil, and United Refineries have a combined oilseed-crushing capacity of about 400,000 tonnes per year.[54]

Processing of the oilseeds produces different amounts of oil. The sunflower seed has the highest oil content, producing 35–37 per cent oil, 40 per cent sunflower oilcake, and 23 per cent sunflower hulls (Chisoro-Dube et al. 2018). The soya bean produces about 18 per cent oil and 77 per cent soya cake/meal, with the remainder being waste material.[55] The cottonseed produces about 18 per cent oil and 44 per cent cotton meal/cake, and the remaining materials are hulls, linters, and waste products (Chigumira 2017).

Most of the cooking oil expressers in Zimbabwe have invested in both soya bean and cottonseed crushing to enhance flexibility. Being able to be flexible on the use of both soya bean and cotton has increased the scope for capacity utilization. A few firms, particularly those involved in the cottonseed value chain such as Grafax, have an oil-expressing plant that is based wholly on cottonseed. This was meant to achieve vertical integration with Grafax's ginning operations in

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[53] Oil Expressors Association of Zimbabwe (2018).

[54] Interview with Pure Oil, 28 February 2019.

[55] Oil Expressors Association of Zimbabwe (2018). '

cottonseed. Another edible-oil producer, Alliance Ginneries, has also invested in a cotton oil-expressing plant as it derives about 80 per cent of its oil from cottonseed.

Edible-oil producers sell the oil cakes to the feed industry. There is some level of vertical integration between edible-oil producers and animal feed producers. Pure Oil Industries, an edible-oil producer, is owned by National Foods, a feed manufacturer. Pure Oil crushes the oilseeds and supplies National Foods with cake for feed manufacturing. However, all feed manufacturers in Zimbabwe access their cake/meal as by-products from the edible-oil industry.

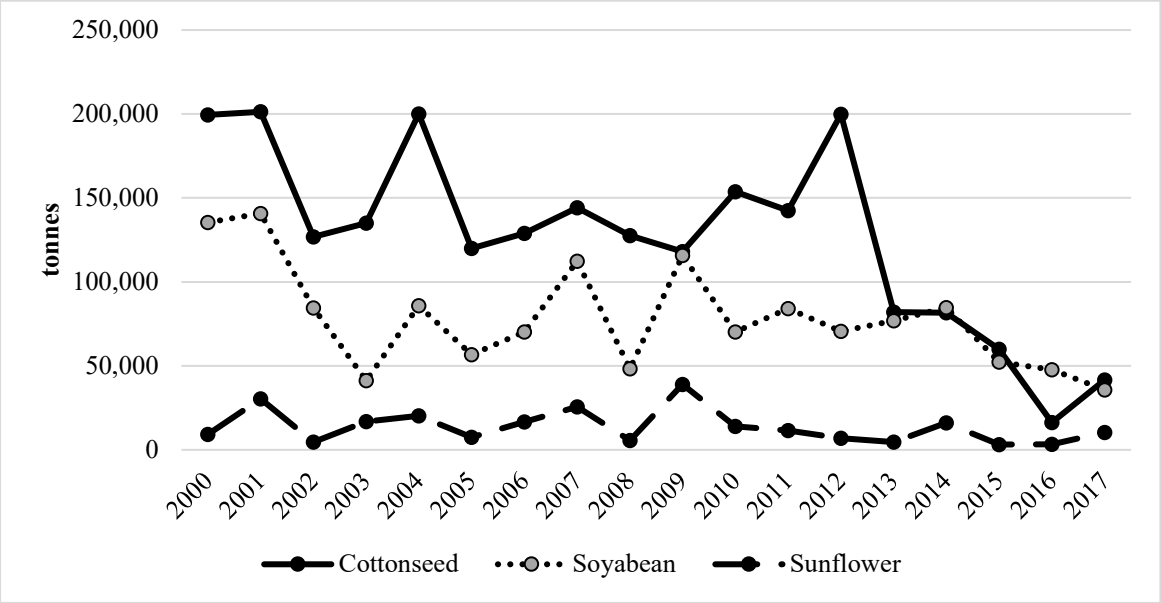
4.2 Production of oilseeds

The production of oilseeds in Zimbabwe has been generally declining over the period between 2000 and 2017 with frequent and pronounced fluctuations (Figure 6). Production of cotton and sunflower is generally reliant on rain-fed agriculture due to the dominance of smallholder and communal farmers.[56] This is now also true for soya beans in which production has undergone some structural shifts from large-scale commercial farmers to local farmers relying on rain-fed agriculture. With climate change, there has been an increase in the frequency and severity of extreme rainfall events such as droughts and floods, causing sharp declines in production particularly in the 2002 and 2015/16 seasons.

In addition to climate constraints, production has been volatile due to limited availability of planting inputs (seeds), limited area under production of oilseeds due to lack of financing, low yields attributed to poor agronomic practices including sub-optimal plant population, limited fertilizer application, mono-cropping, and non-adoption of efficient technologies (Chigumira 2017).

[56] In particular, sunflower has traditionally been grown in three natural regions which have low rainfall patterns (Hikwa et al. 2001). Cotton production is mainly centred in the Gokwe North and South, Muzarabani, Checheche, Chiredzi, and Mount Darwin areas of Zimbabwe, which receive a fair amount of rainfall but are affected by erratic rainfall patterns.

Figure 6: Trends in oilseed production (2000–17)



Sources: Authors' compilation from FAOSTAT Database (2019a)[57] and Agriculture Marketing Authority (2017).[58]

Government policies in agriculture have also played an important role in shaping production trends over the period analysed. In particular, the Fast Track Land Reform Programme of 2000 to 2008 also contributed to the overall decline in oilseed production.

Before the land reform programme, cotton production was distributed between the communal farmers contributing 55–60 per cent to total production, large-scale commercial farmers with about 30 per cent, and the rest was resettlement farmers. Following the land reform programme in 2000, production of cottonseed by large-scale commercial farmers declined rapidly and virtually stopped by 2004. The large-scale commercial farmers were replaced by resettlement farmers and A1 farmers, although communal farmers continued to dominate production over the whole period. However, with the new regime in 2017, there was a sudden resurgence in large-scale commercial farming, which contributes just over 40 per cent of production. This is largely a response to the government's free input scheme. This was sustained into 2018 as the free input scheme made cotton production profitable.

Other policies which have impacted on cotton production include the Short Term Emergency Recovery Programme (STERP) of 2009, introduced under the GNU. Growth in cotton production between 2009 and 2012 is associated with the introduction of STERP, which emphasized that resources for the 2009/10 summer season for cotton[59] would be sourced from the market through contract farming arrangements. A1 and A2 farmers who were not previously involved in cotton production started producing the commodity during this period. Data from the Zimbabwe Statistics Agency (ZIMSTAT)[60] shows that over the period from 2010 to 2014, production by A1 and A2 rose from zero to about 17 per cent of total production.

[57] For the period from 1961 to 2006.

[58] For the period from 2007 to 2017.

[59] Together with tobacco, horticulture, and other strategic crops

[60] Data provided in Excel format to the authors on request from ZIMSTAT, the official statistics agency for Zimbabwe (ZIMSTAT 2019).

The most recent recovery in production of cotton and sunflower observed in 2017 is largely associated with the government's Command Agriculture Programme introduced in 2017, later popularized under the new dispensation headed by President Mnangagwa. Cotton production has benefited immensely from the current scheme, with farmers being given free inputs and the associated costs are not deductible at marketing. This saw output increasing from a historic low of 16,300 tonnes in 2016 to 41,690 tonnes in 2017. The 2017 recovery was also sustained into 2018, where it is estimated that about 142,000 tonnes of seed cotton were produced.[61]

The decline in production between 2013 and 2016 in addition to the 2015/16 drought was exacerbated by the side marketing challenges in production of cotton. Side marketing mainly affected ginners, who suffered losses of up to 50 per cent of their investments in the 2013/14 season (Chigumira 2017), resulting in a decline of just less than 50 per cent in output over the whole period.

Unlike cotton, soya bean production was concentrated around large-scale commercial farmers, contributing more than 95 per cent of total production from the 1990s until 2004. Following the land reform programme, ZIMSTAT data[62] shows that the contribution of the large-scale commercial farmers to total production declined from 90 per cent in 2001 to 10 per cent in 2007. Post 2004, local farmers under different land re-distribution schemes (A1 and A2), grew to contribute roughly 75 per cent of total production, although much lower output compared to when the large farmers were producing. However, between 2005 and 2017, production was generally lower compared to the previous periods given that the new farmers lacked the necessary knowledge on best farming practices including machinery and equipment.

Sunflower production in Zimbabwe has generally been low compared to cottonseed and soya bean. Due to sunflower's drought-resistant characteristics, the production of sunflower is dominated by smallholder communal and resettlement farmers in various parts of the semi-arid areas of Zimbabwe. As such, the land reform programme did not have an impact on sunflower production, which is mainly affected by rainfall patterns. The entry of A1 and A2 farmers in the sunflower production began in 2007, but this was not enough to restore production to historic levels.

The low levels of production also speak to the limited support for the sector. Sunflower is not a policy priority area, given that the general policy thrust since dollarization has been that markets should lead in terms of supporting agriculture. Interviews with large edible-oil producers such as Surface Wilmar indicated that it is difficult for edible-oil producers to support sunflower production given that the farmers grow the crop in very small quantities, therefore making logistics difficult to coordinate.[63]

However, there is a noticeable recovery in sunflower production in 2017. This is part of the new government's efforts to increase production of all oilseeds as an import substitution strategy. Furthermore, in December 2018 the Oil Seed Association of Zimbabwe is reported to have partnered with a German investor to engage in an initiative aimed at reviving sunflower seed production in the 2018/2019 agriculture season. The initiative focuses on approximately 115,000

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61 Interview with COTTCO, 28 February 2019.

62 Data provided in Excel format to the authors on request from ZIMSTAT, the official statistics agency for Zimbabwe (ZIMSTAT 2019).

63 Interview with Surface Wilmar, 20 February 2019.

hectares of sunflower, which are expected to produce about 230,000 tonnes of sunflower seed for the cooking oil industry.[64]

The trends in oilseeds production show that production levels are well below their potential. There is scope to increase production, given that production responds directly to the level of support provided for farmers. The recovery in sunflower and cotton in 2017 demonstrates that this potential can only be realized with more support towards the farmers. Given that the land reform programme shifted land ownership to undercapitalized and less-resourced farmers, production of all crops in Zimbabwe can only significantly take place if farmers are supported. The success stories in maize and tobacco, as well as cotton, demonstrate this trend. This is particularly critical for sunflower production, which is concentrated around poor communal farmers with limited resources for upscaling production and, as such, are largely dependent on government support for increased production.

Other challenges that limit increased production of oilseeds relates to idle land. This is largely because most of the beneficiaries of the land reform programme are not adequately utilizing the land.

In addition, the unresolved issue of land title deeds has been identified as a major drawback. Edible-oil producers are interested in leasing underutilized farms to grow soya beans. However, the holders of the farms do not have leases and it is difficult to invest in huge irrigation infrastructure when the title deeds to the land have not yet been established. The holders of the farms also owe significant levies or rentals to government, which also makes it difficult for government to authorize lease arrangements with edible-oil producers before arrears are settled.

Commercial farmers, especially the white farmers currently owning land, are also reluctant to make any further investments on the land as there are still isolated cases of land repossession despite an assurance that the land reform is over. This is also affecting productivity. Resettled farmers are also failing to attract international investors. There is limited interest for investors to extend funding to local farmers given that most of the agricultural land is contested as the former owners have not been compensated. The current thrust under the new government to compensate the former white owners for developments made on the land is expected to resolve the land issues and resuscitate production.

4.3 Key issues in the oilseed-processing industry

Zimbabwe requires about 10,000 tonnes of refined oil per month for consumption, with soya bean being the main edible oil on the market. In 2017, local farmers produced about 87,823 tonnes of oilseeds (cottonseed, soya bean, and sunflower),[65] which were locally available for crushing into crude oil. Assuming an oil content of 18 per cent for cottonseed and soya bean and a 35 per cent oil content for sunflower, then the total available seed was only able to produce about 17,574 tonnes of crude oil per annum,[66] which would only constitute about 15 per cent of national demand for refined oil.

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[64] Good Morning Zimbabwe News (2018).

[65] Calculated from official statistics from AMA. Cottonseed estimated as 57 per cent of 73,141 plus 35,743 tonnes of soya beans and 10,389 tonnes of sunflower.

[66] Calculated by multiplying each oil seed by its estimated oil content.

Zimbabwe has an estimated oilseed-crushing capacity of 600,000 tonnes. With local production less than 200,000 tonnes per year, edible-oil producers have unused processing capacity of more than 400,000 tonnes. Given the limited quantities in local production of oilseeds, edible-oil producers make use of the import market to source oilseeds. For instance, in 2017, Zimbabwe imported a total of 73,412 tonnes (73,395 tonnes of soya beans and 17 tonnes of sunflower seed).[67] Close to 2,000 tonnes of the soya beans were used by the animal feed industry as whole soya beans. With 159,235 tonnes of oilseed available for processing (imports plus local production), the industry produced just over 30,000 tonnes of crude oil for the year, meeting 25 per cent of total demand in 2017.

To meet the remaining demand, edible-oil producers rely on imports of crude oil[68] for further refining due to limited availability of locally produced crude oil (Figure 7). Imports data shows that since 2013 the importation of crude oil has been increasing significantly, after imports had almost been entirely eliminated between 2006 and 2012. Industry players estimate that about 80 per cent of the local oil consumption market is met through the importation of crude oil.[69] Imports data also confirms this, given that crude oil imports over the five years from 2014 to 2018 averaged just over 92,000 tonnes per annum, which would constitute about 77 per cent of the estimated national demand. Soya bean crude oil is imported mainly from South Africa, accounting for 76 per cent of total crude oil imports in 2017,[70] followed by Argentina, which contributes 10 per cent of total crude oil imports, and other South American countries, as it is cheaper to do so via Beira in Mozambique. The importation of crude oil points to a gap which can only be filled if production of oilseeds can be increased. Imports also demonstrate potential for import substitution. As expected, exports of crude oil from Zimbabwe are almost non-existent.

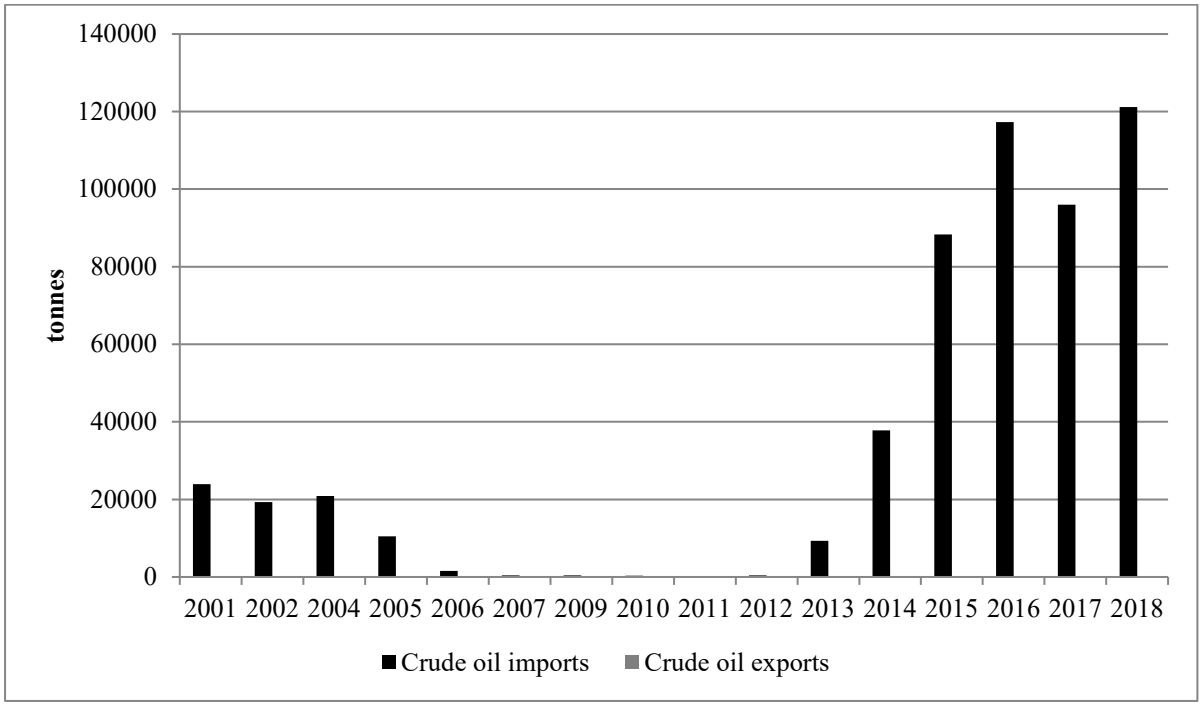
[67] Data extracted from TradeMap Database (Trademap 2019).

[68] HS Code 150710.

[69] Interview results with Pure Oil, 28 February 2019.

[70] Data extracted from TradeMap Database (Trademap 2019).

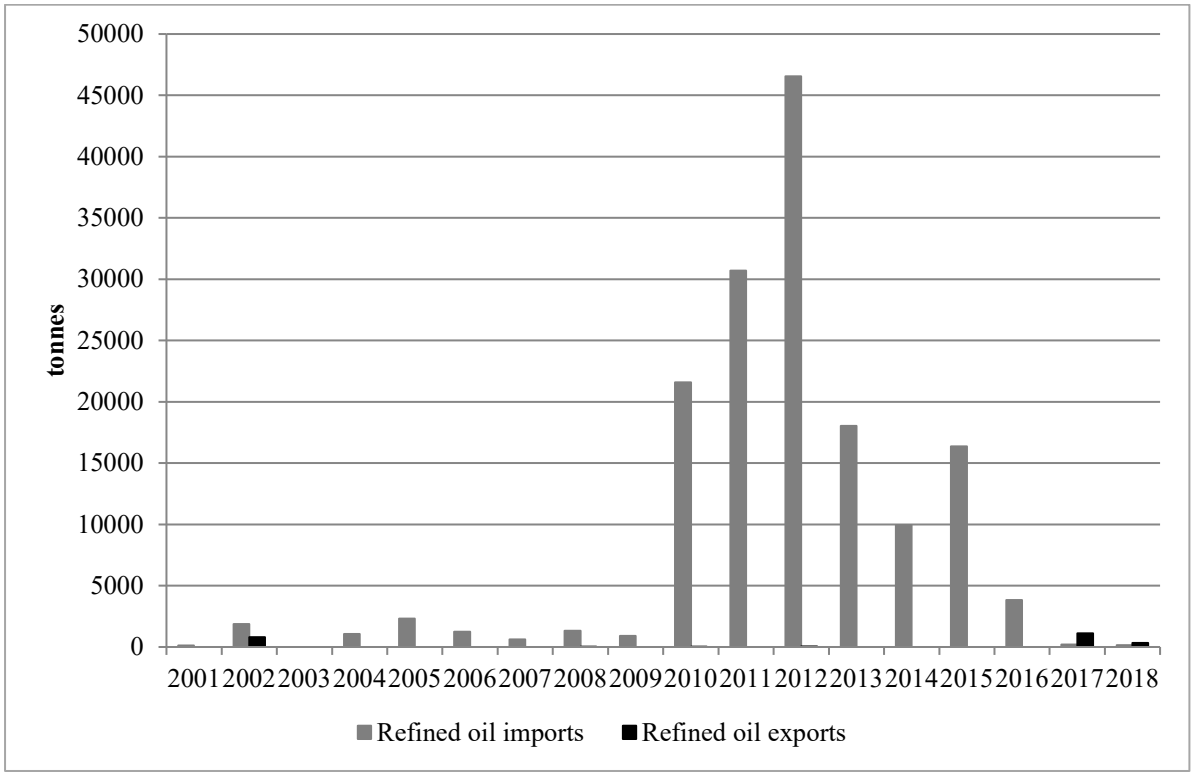
Figure 7: Zimbabwe imports and exports of crude oil



Source: Authors' compilation from TradeMap Database (2019).

Some industry players also import refined oil from deep sea markets, competing with local processing companies (Figure 8). One of the main policy thrusts of the GNU, as outlined in STERP, was to address the challenge of empty shelves in retail outlets, which had characterized the period of hyperinflation. Thus, restrictions on importation of some finished products, including cooking oil, were lifted. This saw a spike in the importation of refined cooking oil in 2010 from about 900 tonnes in 2009 to close to 22,000 tonnes (Figure 8). However, as the importation of crude cooking oil started picking up after 2013, a reduction in refined oil imports became noticeable. The government then imposed a restriction on imports of refined cooking oil as a strategy for protecting the local industry, especially in 2016. This saw imports of refined cooking oil reducing accordingly.

Figure 8: Imports and exports of refined oil



Source: Authors' compilation from TradeMap Database (2019).

This implies that the decision to import along the value chain is not solely driven by cost advantages but is mainly in response to policy strategies and the challenges at the production level. Local oilseed supply is only enough to facilitate production in the value chain for a few months in a year.

The implication from the production of the oilseeds is that there is scope to increase production provided that farmers are supported. The main users of the oilseeds are better placed to provide the support, as they need throughput into processing. There are three main users of oilseeds in Zimbabwe: the edible-oil producers, the ginneries, and the animal feed producers.[71] Unlike in other countries, animal feed producers in Zimbabwe do not process oilseeds directly into cake/meal; rather they buy from the edible-oil producers as a by-product. Except for the oilseeds that are used as whole seed, there are no direct value chain linkages between feed manufacturers and oilseed producers. This means that the production of oilseeds can only be directly driven by edible-oil production given that demand for feed is residual.

The dilemma of who should support oilseed farmers is particularly a challenge in the soya bean value chain where 77 per cent of the seed is cake demanded by animal feed manufacturers. Government is trying to encourage edible-oil producers to support farmers to grow soya beans. However, edible-oil producers are reluctant to support soya bean production, as they are not the primary users of the product.[72] It is estimated that about 600,000 metric tonnes of soya beans are required to meet local demand for edible oil based on their installed capacity (ZEPARU 2017).

[71] There are, however, other by-products that are also produced from these three processes which create further value in the chain.

[72] Oil content is lower in an oilseed than the cake, hence feed millers are regarded as the primary user.

However, animal feed producers only need about 200,000 metric tonnes of soya beans to meet their demand for cake. This implies that if edible-oil producers finance the production of the national soya bean requirements, they would have an excess cake of equivalent to 400,000 tonnes of soya beans, which they do not have a ready market to sell into. This is also taking into account that they will be competing with cheaper genetically modified soya cake in the international market. Therefore, the relatively small size of the animal feed industry limits the growth of the edible-oil industry, which points to the scope for increased investment.

To address these industry issues, the Stockfeed Manufacturers Association (SMA) has entered into an agreement with the Oil Expressors Association of Zimbabwe (OEA) stipulating that OEA will buy all locally produced soya beans and import beans from Zambia to cover production shortfalls while SMA has undertaken to take up all soya bean meal produced by the OEA at predetermined prices, precisely at prices that are 1.1 times the landed cost of the meal (SMA 2018). This is intended to ensure that the two associations provide incentives to each other for local value addition.

The agreement between the SMA and OEA specifically provides for the utilization of locally produced soya beans and locally produced soya cake before resorting to imports. This therefore implies that increased self-sufficiency along the value chain over time has to be anchored in sufficient soya bean production. Investment at the processing stages of the value chain should be complemented by investment in production of oilseeds to curb the reliance on imports as well as issues of unutilized capacity.

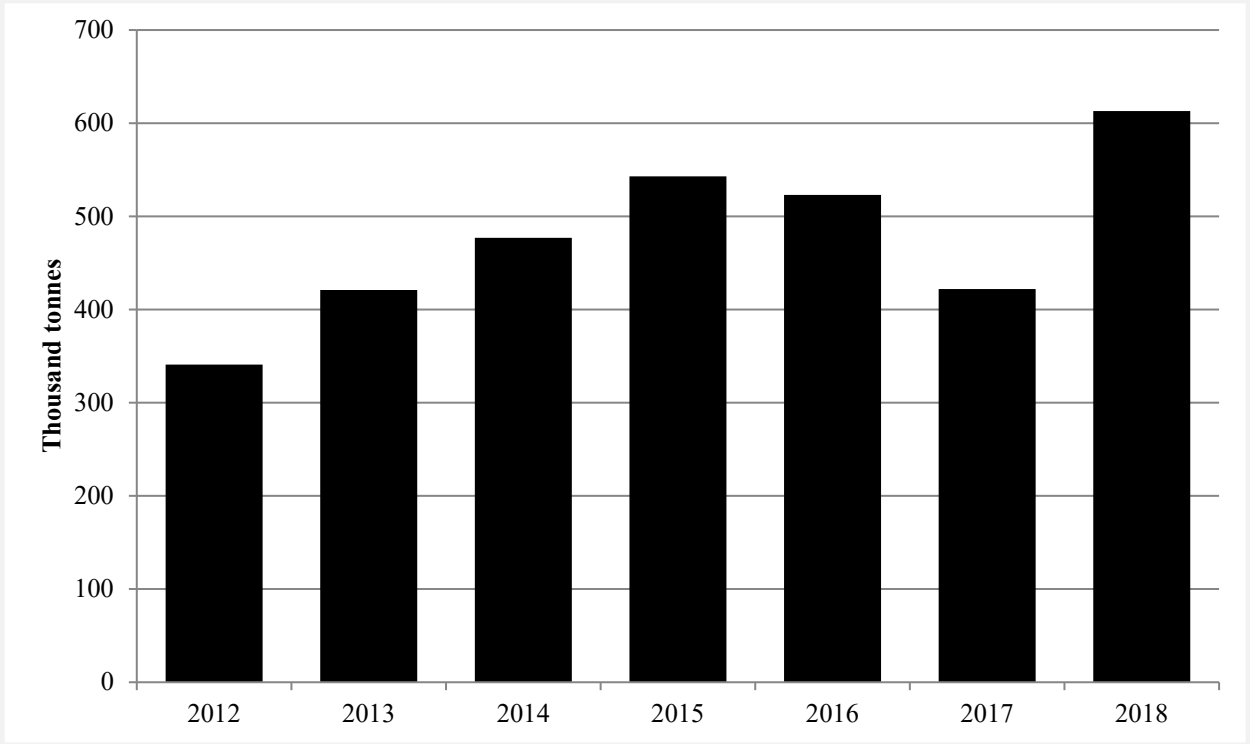
Over and above the agreement between the SMA and OEA, edible-oil producers are already exploring the possibility of growing their own soya bean requirements by leasing idle farms, particularly those farms with access to water. They have approached government to provide some incentives, especially with respect to access to foreign currency to import centre pivots and other infrastructure needed for commercial farming. Government is exploring measures of facilitating this development.

4.4 Linkages between the edible oils and animal feed industries

Growth of the edible oils industry is directly linked to the growth of the animal feed industry. Unlike the value chain structure in Zambia and South Africa, the feed producers in Zimbabwe have not invested in crushing capacity. Animal feed producers only buy their cake/meal from edible-oil producers or import to augment local supplies.

The animal feed industry has been expanding output between 2012 and 2018, having increased production from 341,000 tonnes in 2012 to 613,000 tonnes in 2018 (Figure 9). Of this, poultry feed production has grown by close to 72 per cent from about 233,000 tonnes in 2012 to about 400,000 tonnes in 2018. Production of feed was increasing at a time when the main oilseeds were registering a downward trend in production. The expansion of the feed industry is currently hinged on regional imports of the cake/meal rather than on local value addition of raw materials. This shows the extent to which the animal feed industry in Zimbabwe is already dependent on regional value chains. Data extracted from the TradeMap Database (2019) shows that Zimbabwe imported soya bean cake worth about 50,703 tonnes in 2018, out of which about 72 per cent came from Zambia while the remainder was imported from Malawi. In 2016, however, South Africa was the main supplier of imported soya bean cake, supplying about 84 per cent of total imports.

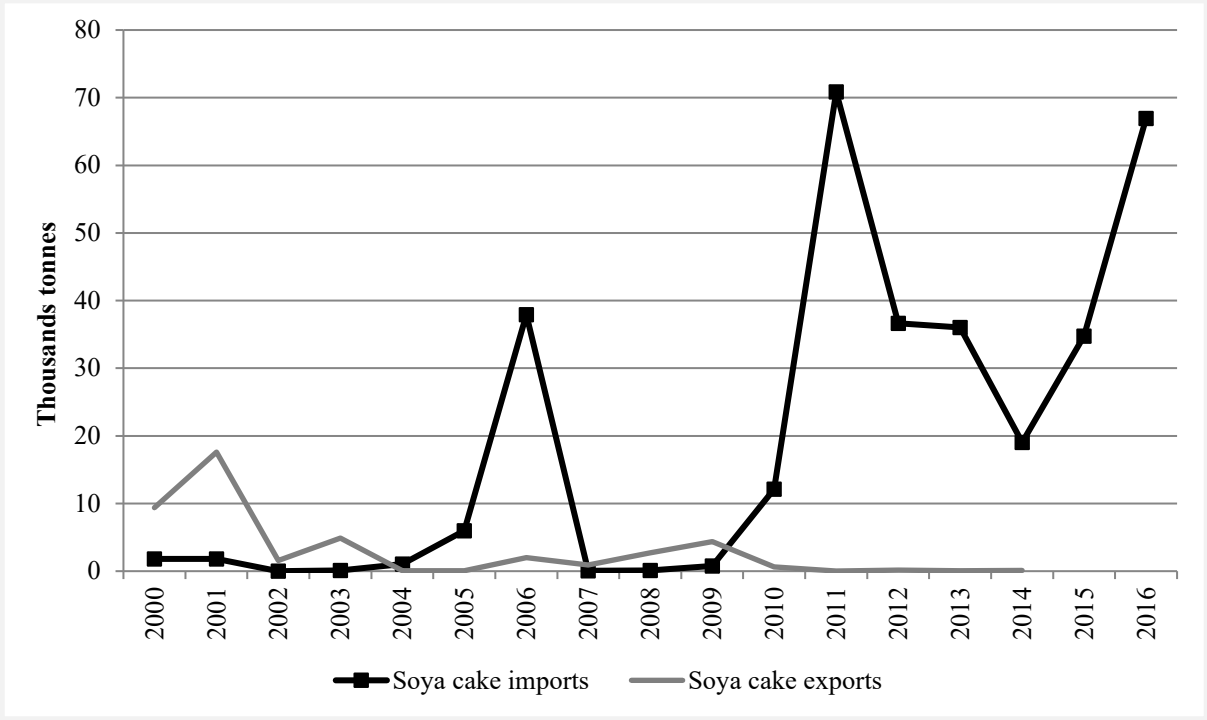
Figure 9: Annual production of stock feed in Zimbabwe, 2012–18



Source: Authors' compilation from data in SMA (2018).

Given the limited availability of oil cake locally, the animal feed industry relies on imports. Growth in imports of soya bean cake began on a large scale mainly after 2009. This is largely in response to expanded animal feed production, which intensified after hyperinflation as players started expanding capacity but without sufficient throughput from the farmers for cake production. From 2004 to date, Zimbabwe became a net importer of soya bean cake driven by the increase in demand for feed in the local industry coupled with limited production of cake by edible-oil producers (Figure 10). By the end of 2016, Zimbabwe had become a net importer of both soya beans and soya bean cake. This is not expected to end any time soon, given that soya bean production is not responding to growing local demand for the commodity in both the animal feed and edible-oil value chains due to a range of challenges at the farming level.

Figure 10: Imports and exports of soya cake, 2000–16



Source: Authors' compilation from the FAOSTAT Database (2019b).

Should Zimbabwe invest in production of oilseeds to meet processing capacity, there is an opportunity to position Zimbabwe as a net exporter of soya bean cake into the region given the relatively small capacity of the local animal feed industry. With the country and the region as both net importers of cake and animal feed, there is an opportunity for Zimbabwe to leverage the local as well as regional value chains to grow the animal feed industry.

Hence, growth of the edible oils industry relies on its ability to tap into the regional value chains. With poultry being an important source of protein in the region, there are opportunities for Zimbabwe's edible oils and animal feed industries to integrate with existing regional value chains in poultry. However, local production would need to compete with imports into the region (such as from South America), as well as growing production in countries such as Zambia.

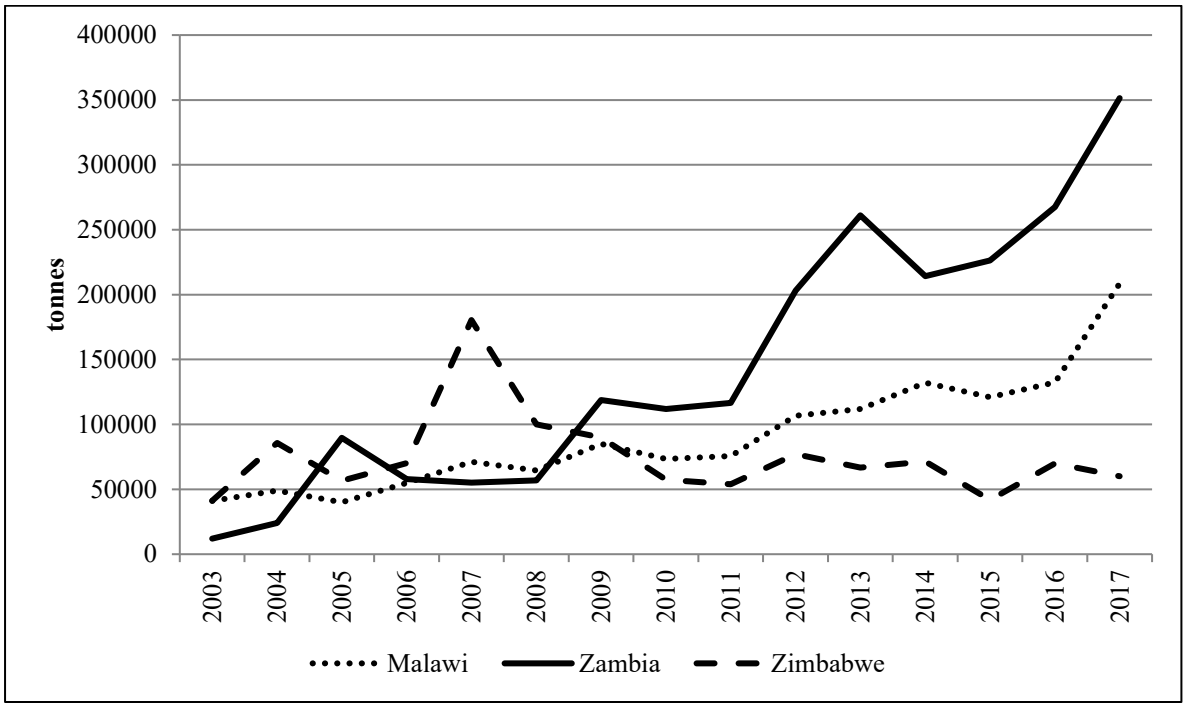
The growth limitations imposed on the edible-oil industry by the animal feed industry also reflect that the animal feed industry is small in Zimbabwe, pointing to the scope for increased investment in this area as well. This is important given that demand for meat is generally expanding. For example, chickens slaughtered in Zimbabwe increased by more than 163 per cent from 22 million heads in 2000 to about 58 million heads in 2016, while chicken meat processed increased from 25,300 tonnes to 66,700 tonnes over the same period.[73]

The absence of a direct relationship between the animal feed manufacturers and soya bean farmers could also explain why Zimbabwe's production trends are lower than comparator countries that have feed producers that are integrated with oilseed production. For example, although Zimbabwe's soya bean production was comparable to that of Malawi and Zambia in 2003, it has now fallen far behind (Figure 11). Zimbabwe's soya bean output in 2017 has fallen to about 17 per

[73] Data from FAOSTAT Database (2019a).

cent and 29 per cent of the levels recorded in Zambia and Malawi, respectively, despite having been at par in the early 2000s.

Figure 11: Production of soya beans in Malawi, Zambia and Zimbabwe, 2003–17



Source: Authors' compilation from the FAOSTAT database (2019a).

4.5 Policy issues relevant to the oilseed and edible oils sector in Zimbabwe

Similar to the fruit value chain, the oilseed-to-edible oils value chain is also covered in the national policies—the agricultural policy, industrial, and trade policies.

The oilseed-to-edible oils value chain constitutes one of the focus areas for the Transitional Stabilisation Programme (TSP) (2018–20). Central to the TSP is increasing oilseed output with the aim to promote value chain linkages and reduce the importation of crude oil. The TSP aims to allocate about 60,000 hectares for soya beans to increase throughput to the edible-oil industry. Soya beans would be produced under a special programme, the Special Agriculture Production Initiative, to be financed from the private sector and augmented through contract farming arrangements. To provide incentives for farmers, government announced a producer price of US$720 per tonne in the 2018/19 marketing season for soya beans, which is well above the international soya bean average price. The sustainability of such a high pricing policy needs to be considered extensively, given the potential for farmers to make investments in producing soya beans, which would not be sustainable should this pricing measure be removed in future.

The current incentive structure is more targeted at the output level rather than the input level. Information from interviews established that most of the farmers do not benefit much from high producer prices, as they only produce low volumes of output due to poor yields. However, those who have access to finance would become the beneficiaries. There is thus an opportunity to provide input support and technical assistance for farmers to enable greater productivity and output over time.

The TSP also targets expanding the production of cotton, with the goal to increase lint exports. The TSP prioritizes the continuation of the Cotton Input Subsidy Scheme, under which

government gives farmers free inputs to grow cotton, with the aim to increase production to 352,000 tonnes by 2025. The policy, however, has already caused some distortions in the industry. The condition that all the farmers receiving free inputs should market their output only through COTTCO, the only government-owned ginner, has seen other ginners struggling to find independent farmers with free cotton to market with them. A number of these ginners exited the market in the 2018/19 season, leaving only six players[74] from a historic level of about 30 players.

However, central to increased oilseed production is the ability to curb side marketing. The government introduced Statutory Instrument 142 of 2009 mandating ginners to only buy from their contracted farmers. The government also introduced regulations to compel farmers to avoid selling the free inputs or selling contracted produce to any other party besides the government as represented by its agencies. Statutory Instrument 79 of 2017[75] criminalized the selling of inputs as well as the selling of contracted produce to other parties. This was later reinforced by Statutory Instrument 247 of 2018,[76] which also criminalized the purchase of contracted produce. However, side marketing challenges saw investment in cotton production falling significantly, which also affected output. The main companies claim that the regulations governing side marketing are weak while the regulatory authority, the Agriculture Marketing Authority claims that the only weakness could be low penalties which contract farming defaulters are subjected to. The regulator attributes the breakdown of the contract farming arrangements to poor relationships between the farmers and the contractors, which results in lack of trust and creates incentives for side marketing.

5 Conclusion and policy recommendations

With the new government regime encouraging foreign investment into the country, the fruit and oilseed-to-edible oils value chains represent potential areas for investment. Fruit as a high-value industry with export potential makes it a central focus for high-value agriculture-led growth. The opportunities for fruit processing also contribute to development of manufacturing capabilities as not all fruit can be sold on the fresh markets. There is also downgraded fruit which requires processing to avoid waste in the value chain. However, various challenges at the farming level limit development of the value chain. Farmers are not able to increase fruit production to meet local demand, exports, and fruit processing. Challenges at the production level include limited access to planting material and new improved varieties, high costs of irrigation, dilapidated grading sheds and cold rooms, and limited research capacity to support the industry. As such, efforts to develop the fruit value chain should invest in developing farmers' capacity to increase production of fresh fruit.

In Zimbabwe, there is an especially important role for government to play in supporting development of research institutions along with broad-based investments in infrastructure for the overall growth of the industry. Taking the industry several leaps forward, especially in the context of lost capacity, requires partnerships and alignment of priorities between government and the

[74] That is COTTCO, Alliance Ginneries, China Africa, Southern Cotton, Shawasha Agri and Zimbabwe Cotton Consortium.

[75] Agriculture Marketing Authority (Command Agriculture Scheme for Domestic Crop, Livestock and Fisheries Production) Regulations, 2017.

[76] Agriculture Marketing Authority (Command Agriculture Scheme for Domestic Crop, Livestock and Fisheries Production) Regulations, 2018.

private sector. The following issues are important in shaping policy responses to increase production:

- Investment in research centres such as the Nyanga Experiment Station to promote local breeding of new varieties and propagating of fruit trees will address the major challenges regarding limited access to planting material by local growers.

- Given the industry's current plans to expand orchards, government needs to complement private sector investments in chemicals, irrigation and farm equipment to quickly upscale production and enable the industry to operate sustainably.

- Access to long-term funding can be made on a co-funding model between government and third-party funders (private sector or commercial banks) to deal with the risk associated with extending long-term credit to fruit farmers. The research has highlighted the importance of availability of long-term funding facilities to enable the nature of large-scale investments required to revive the fruit value chain in the Zimbabwean context.

Similarly, the oilseed-to-edible oils value chain assessment has focused on resuscitating agricultural production to meet agro-processing demand in the value chain. Given, Zimbabwe's local production and processing capabilities in crushing to produce edible oils, there is potential for value addition to meet the gap in local demand for edible oils and replace imports. However, development of the value chain is constrained by limited production of oilseeds due to a number of challenges. Firstly, the sector does not have access to irrigation facilities and as such relies on rain-fed agriculture with precarious output. Secondly, the sector is dominated by medium and small-scale communal farmers with limited financial resources for investing in upscaling production. Lastly, the edible-oil producers have a limited local market through the animal feed industry to sell their oilcake, which limits the incentive to crush oilseeds and promotes imports of edible oils. The animal feed and poultry industry are small in terms of their capacity to absorb oilcake produced by edible-oil producers.

Realizing the full potential of the oilseed-to-edible oils value chain requires the following:

- As has been the case with the initiative involving German investors in the sunflower value chain, private sector support is required for oilseed farmers to increase production of oilseeds for sufficient throughput of raw materials to the processing level.

- Investments at the farming level should be in coordination with edible-oil producers and animal feed manufacturers through contract farming arrangements with local farmers, particularly to ensure that investments in the farming level align with the requirements of various downstream processors. Government should assist in enforcing contract farming regulations to protect investments by processors especially against the potential for side marketing. In the short term, the latter is important to ensure appropriability of returns from investments made by processors and investors at the downstream level.

- Investments in expanded capacity of the animal feed and poultry industries are required to provide a ready market for excess oilcake from the oilseed crushers and promote local value addition.

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Appendix

Table A1: List of interviews

Company/organization	Date of interview
Soya Bean Promotion Taskforce	19 February 2019
Surface Wilmar	20 February 2019
Zimbabwe Farmers Union	22 February 2019
Zimbabwe National Farmers' Union (ZNFU)	25 February 2019
Schweppes Zimbabwe Limited	26 February 2019
Pure Oil	28 February 2019
COTTCO	28 February 2019
ZimTrade	08 March 2019
Agricultural Marketing authority	13 March 2019
Staywell Private Limited	13 March 2019
Claremont Estates	18 March 2019
Nyanga Downs farm and Deciduous Fruit Growers Association	19 March 2019
Nyamagaya Orchards	19 March 2019
Nyanga Experiment Station	19 March 2019
AGRITEX	20 March 2019
Willowton Group	21 March 2019

Source: Authors' compilation.