

SCOPING REPORT



Agricultural Finance Scoping

An Agriculture Finance Scoping Exercise in Botswana

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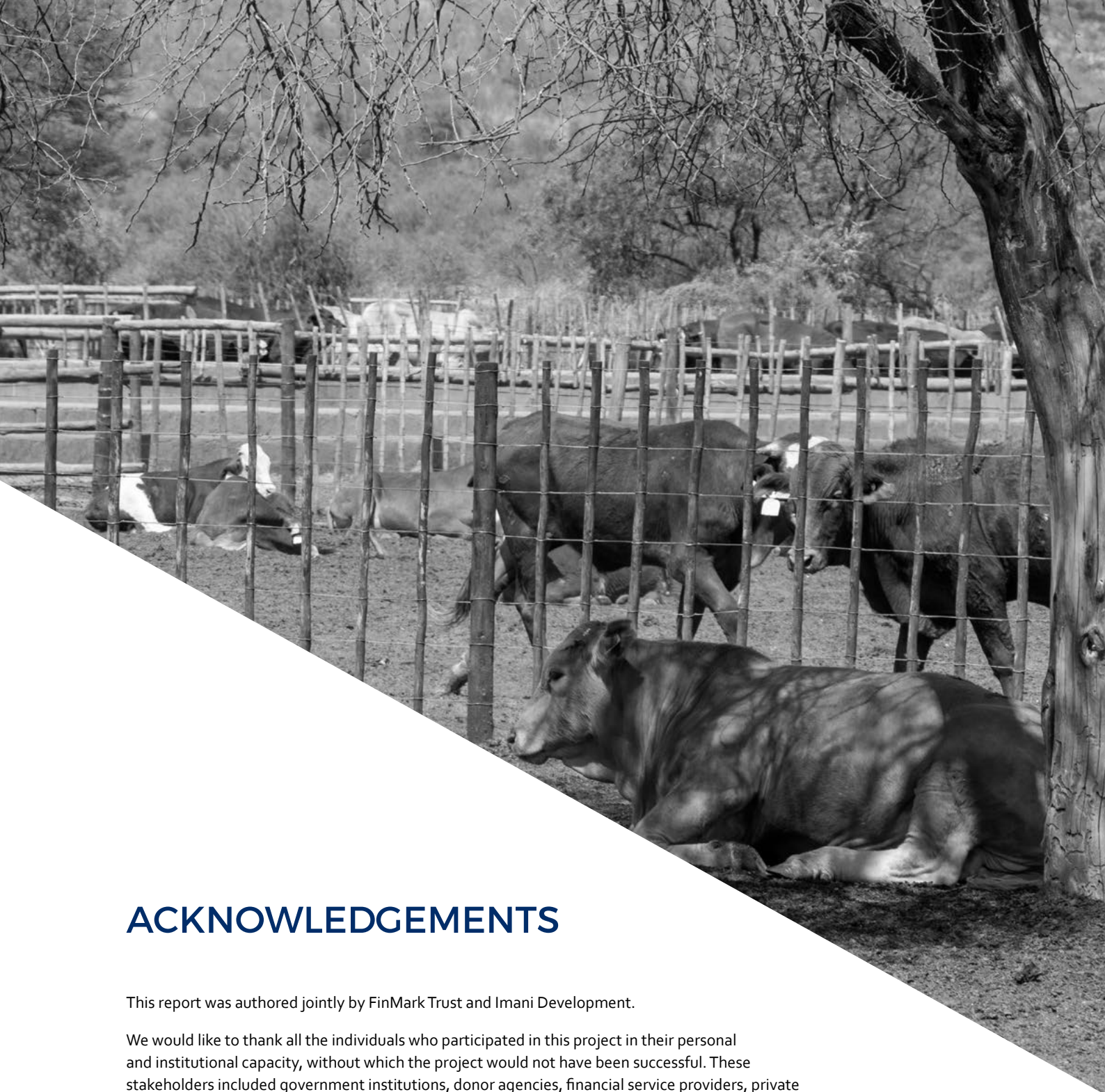
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For more information:

Visit our website at www.finmark.org.za

Email info@finmark.org.za

Call us on +27 11 315 9197



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ACRONYMS AND ABBREVIATIONS

Acronym	In full
AI	Artificial insemination
BAMB	Botswana Agricultural Marketing Board
BDC	Botswana Development Corporation
BEDP	Botswana Exporter Development Programme
BITC	Botswana Investment and Trade Centre
BoHoCo	Botswana Horticulture Council
BMC	Botswana Meat Commission
BNVL	Botswana National Veterinary Laboratory
BUAN	Botswana University of Agriculture and Natural Resources
BVI	Botswana Vaccine Institute
CEDA	Citizen Entrepreneurship Development Agency
DABP	Department of Agribusiness Promotion
DCP	Department of Crop Production
DAP	Department of Animal Production
DAR	Department of Agricultural Research
DVS	Department of Veterinary Services
FDI	Foreign-Direct Investment
FMD	Foot and Mouth Disease
FMT	FinMark Trust
HORTCOMS	Horticulture Cooperative Market Society Limited
ITC	International Trade Centre
LAC	Livestock Advisory Centre
LEA	Local Enterprise Authority
LIMID	Livestock Management and Infrastructure Development
MYSC	Ministry of Youth Empowerment, Sport and Culture Development
MOA	Ministry of Agricultural Development and Food Security
NFTRC	National Food and Technology Research Centre
NDB	National Development Bank
SDP	Supplier Development Programme
VPP	Veterinary Para-Professional

1. BOTSWANA COUNTRY OVERVIEW

1.1 Introduction

Botswana is a relatively small and landlocked country located in the centre of Southern Africa. It is the longest continuously stable democracy in Africa and has one of the lowest levels of corruption on the continent. Botswana has a population of 2.2 million, of which 18.4% live below the poverty line.² Poverty rates have been falling, but inequality remains high at 53.3%. Though this is an improvement (down from 60.5% in 2010), Botswana still has one of the highest rates of inequality in the world.³

In recent years, Botswana has maintained relatively robust economic growth. In 2016, GDP growth was at 4.3%, dropping to 2.9% in 2017, and rising again to 4.5% in 2018. In 2019 GDP growth slowed to 3.5%. The economy is expected to contract in 2020 due to the effects of the Covid-19 pandemic, with the diamond industry and tourism particularly hard hit. However, GDP growth is projected to recover and stabilize at around 4% by 2022.⁴

Largely unprocessed minerals have dominated exports to a few key markets in Europe and Asia whilst imports, mostly food, come in large part from South Africa.⁵ The diamond industry remains an important driver of growth and is still the largest contributor to government revenues. The diamond industry accounts for 80% of export earnings.^{6,7} However, in recent years, mineral sector led growth has experienced challenges resulting in a decline in mining proceeds. As a result, macroeconomic imbalances have occurred as well as fiscal deficits and declining reserve buffers. This has been compounded by the effects of Covid-19. Given the exhaustibility and volatility of the diamond industry, the Government which assumed office in 2019, has recognised the need for economic diversification. The government has identified the agriculture sector as key to diversification efforts.

The Government's objective, as outlined in the Botswana: Vision 2036, is to transition to a high-income country. The overarching objective of the vision is to achieve prosperity for all through sustainable economic development, human and social development, sustainable environment and governance, and peace and security. It is underpinned by a strong drive towards economic diversification, which is perceived as one of the main routes to achieving its ambitions. Vision 2036 acknowledges that the majority of the population resides in rural areas, where much of the country's agricultural activities take place. Improved productivity and competitiveness of the sector will therefore have positive implications for rural livelihoods. The ambitious goals outlined in the document include establishing a sustainable, technology-driven and commercially viable agricultural sector which is disease-free and able to optimise land and other resources. This is to be achieved through private sector led development of agricultural value chains.⁸

Expenditure under National Development Plan (NDP) 11 (2017 - 2023) is valued at over BWP 101 billion/ \$ 8.8 billion and has been earmarked for infrastructure projects in areas such as water, energy, tourism, health, education and agriculture. This amount excludes investment in infrastructure through the private sector. It is expected that these investments will have a significant impact on key sectors including agriculture. Nonetheless, agricultural sector is recognised as slow-growing and projected growth rates are less than 3% per annum under the plan.

The prevalence of severe food insecurity in the total population of Botswana rose from 35% in the period 2014-2016) to 41% in the period 2016-2018. The prevalence of undernourishment stood at over 26% in 2018.⁹ Almost 1 in 3 children under 5 in Botswana are stunted, in part due to low birth weights and poor feeding practices. Botswana is a net importer of cereals,

With the understating that the agricultural sector is very dynamic with constant opportunities and threats rising from different angles from time to time, FinMark Trust conducted an agriculture scoping study to identify areas for intervention related to agriculture finance in supporting agricultural value chain activities. The aforementioned scoping study was undertaken in the following SADC countries, namely Botswana, Eswatini, Lesotho and Malawi.

This study identified areas for targeted intervention in agricultural finance, with focus on:

- *Identifying and mapping key value chains, understanding blockages especially access to finance,*
- *Improving agricultural productivity and employment;*
- *Improving incomes and welfare for vulnerable groups (including women and youth), and*
- *Leveraging on technological innovation in relation to clean energy.*

and in 2019/20 cereal imports increased by 20% due to a poor harvest in 2019. However, 2020 was a relatively good year for cereal crop production, particularly sorghum and maize, due to favourable rainfall conditions.³⁰

1.1.1 Covid-19

Botswana recorded its first case of Covid-19 on 31st March 2020. The government declared a state of emergency on the 2nd of April, adopting a list of containment measures, including travel bans and social distancing. Some of the restrictions were lifted after 7 weeks of lockdown, but a resurgence in cases led to another partial lockdown in July. The state of emergency was extended to March 2021 but restrictions on travel have eased. Botswana has also made an initial payment to COVAX (WHO vaccine arrangement) to acquire 940,800 vaccines which is enough to vaccinate around 20% of the population.³¹

Many of Botswana's important economic activities have been severely affected, including declines in diamond sales and tourism. The decline in travel and tourism has had a knock-on effect on the beef sector, with reduced demand for more expensive meat cuts to supply hotels and restaurants.³² Border closures have also had an impact on trade flows. Early on in the pandemic the SADC community worked hard to keep trade flows open as far as possible, despite some temporary physical border closures. The significant second wave of infections and concerns about the spread of the new variant led South Africa to close borders with Botswana, Mozambique, Namibia, Lesotho and eSwatini on 11th of January 2021. These borders reopened again a little over a month later.

A mid-term review of NDP 11 has been approved by Parliament, and a BWP 15 billion stimulus package is planned to support national recovery and facilitate structural transformation. The government has committed to paying purchase orders swiftly, streamlining the procurement process, and issuing VAT refunds. It has also set up a Covid-19 relief fund worth BWP 2 billion and is asking private sector players to contribute. Interventions to support the private sector include:³³

- Wage subsidies (BWP 1 billion)
- A 24-month loan guarantee of up to BWP 25 million for loans with commercial banks
- Tax concessions (deferral of 75% of any two quarterly payments between March and September 2020 to be repaid from March 2021, reduced VAT refund period)
- Waiver of training levy for six months
- Repayment holidays for commercial bank loans to be negotiated by Bank of Botswana

Public and private sector actors have had to adapt quickly to the pandemic and to restrictions. Concessional lender the Citizen Entrepreneurship Development Agency (CEDA) has put in place a special relief protocol to cushion the effect of the pandemic on SMMEs.³⁴ This focuses on working capital facilitation and providing repayment breaks for CEDA clients. The organisation also established an essential supplies loan to be extended to companies involved in the production of essential products that would help ensure the country's self-sufficiency during the pandemic.³⁵ The National Development Bank (NDB) is seeking to promote domestic food production through its *Feed the Nation Campaign* under the bank's Agribusiness Stimulus Fund, designed in part to address the food supply issues that have been exacerbated by the pandemic. The fund will finance activities under 5 agricultural sub-sectors including horticulture, small stock, cereals, beef and poultry.

In addition to the disruption experienced by Botswana's formal economy, there have also been serious impacts on the informal economy. The seven-week period of national lockdown resulted in the decreased domestic demand for many goods and services, leading to a pause in revenue-generation activity within the informal sector. Informal sector workers such as hawkers and street vendors were particularly affected since staying at home and social distancing prevented them from engaging in the primary economic activity supporting their livelihoods.³⁶

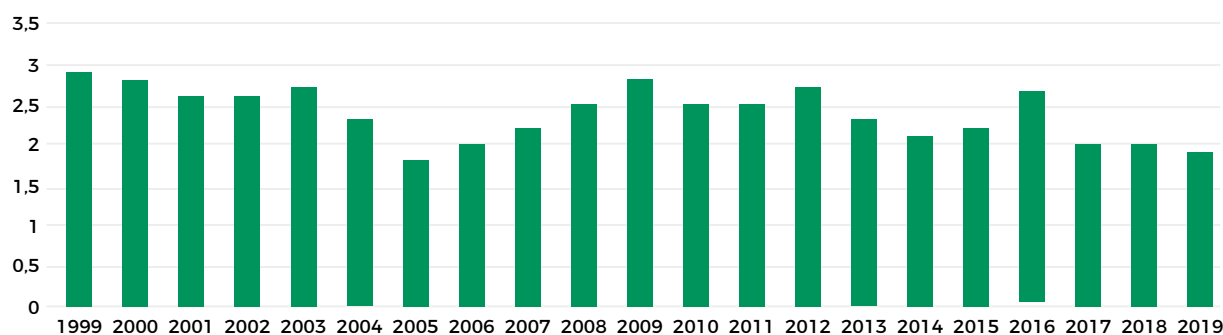
With support from UNDP, the Government of Botswana has put together an informal sector recovery plan. Recognising that much of the support to date has been directed to businesses in the formal economy, the plan targets informal economy players unable to access that support, in particular women entrepreneurs and vulnerable groups. It pivots around two strategic goals, aligned with Vision 2036, namely i) establishment of informal sector facilitation structures within the first year of the pandemic, and ii) economic revitalisation of the informal sector. It aims to support businesses to re-establish themselves in the short term to avert economic failure. It also seeks to facilitate a transition to a modified definition of the informal sector that is broad, inclusive, and will accommodate the dynamic changes taking place within, as well as supporting the transition to a more stable and sustainable informal sector. Progress on implementation of the recommendations, published in August 2020, is not yet available.

Despite the World Bank’s warning over the potential disruption of African food supply chains due to Covid-19, initial reports suggest that serious disruption to Botswana’s food system has so far been avoided. Agriculture was designated an essential service sector and the Government set up a relief fund to support farmers.¹⁷ Business Botswana projects that agriculture will prove to be one of the more resilient sectors. Some farmers lost their ability to harvest during lockdown, or were unable to get movement permits, resulting in income losses. However, agricultural growth is only projected to drop by one tenth of a percentage point (from 1.7% to 1.6%) and the sector is expected to bounce back quickly.¹⁸ The pandemic has resulted in funding being diverted from planned activities, including investment in infrastructure for the agricultural sector and a plan to scale up horticultural production. Efforts are now also more targeted towards food storage to ensure that there are sufficient reserves in the wake of Covid-19, and the recent outbreak of African migratory locusts.¹⁹ Whilst some of the direct negative impacts of Covid-19 that were expected to hit the food system have not materialized, it is likely that reduced economic activity is exacerbating food and nutrition insecurity at the household level.

1.2 Agricultural Economy

Botswana’s agricultural sector has experienced a steady decline in contribution to GDP over the last 40 years. The sector accounted for 42.7% of GDP at independence in 1966²⁰. It now contributes less than 2% to GDP, as illustrated in Figure 1 below.

Figure 1: Trend in % contribution of agriculture to GDP (1999 - 2019)



Livestock production accounts for more than 80% of income from agriculture, whilst crops account for the remaining 20%. Meat and meat products are the only agricultural sector outputs that contribute significantly to exports. In 2019 these were down 32.3% on the previous year due to reduced livestock production, in part attributed to harsh climatic conditions in 2018.²¹

Table 1: Selected agri-exports 2019

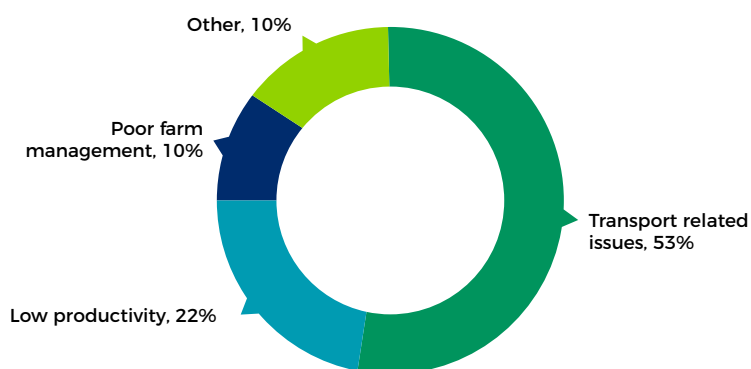
Product	Value exported in 2019 (thousand USD)	Trade balance in 2019 (thousand USD)	Growth in exported value between 2015-2019 (% p.a.)	Growth in exported value between 2018-2019 (% p.a.)
Live animals	6,870	1,748	54	4,671
- of which live bovine animals	6,813	6,738	77	6,267
Edible vegetables and certain roots & tubers	5,163	-26,325	50	15
Fish and crustaceans, molluscs...	1,559	-2,063	16	-3
Cereals	1,087	-108,456	19	-19
Dairy produce, birds' eggs, natural honey...	660	-49,998	13	-23
Edible fruits and nuts...	43	-29,461	0	-65
Preparations of meat, fish & crustaceans	128	-17,561	-28	-58
Preparations of cereals, flour, starch & milk	709	-60,024	-29	-54
Preparations of vegetables, fruits, nuts or other parts of plants	2,503	-62,612	103	73

In spite of its small contribution to GDP, the agriculture sector is the mainstay for the rural economy. 30.6% of Botswana's population live in rural areas and approximately 70% of rural households depend on subsistence farming for their livelihoods.²² The majority of these rural farmers who depend on subsistence farming are still net food buyers.²³

Development of agro-processing activities is identified as a high priority for economic diversification, and a key route to increasing agriculture's contribution to export earnings. Value addition activities do take place but are limited and tend to be on a small scale. The Ministry of Investment, Trade and Industry (MITI) has drawn particular attention to the dairy, meat and horticulture value chains regarding potential for broadening and scaling up value addition.

A recent report from the International Trade Centre (ITC), Botswana's Local Enterprise Authority (LEA) and MITI on promoting SME competitiveness in Botswana advocates for a bottom-up approach to economic diversification.²⁴ Key findings from the report relate to issues of transport and certification. Regarding transport, the report finds that more than half of interviewed SMEs in the agricultural sector identify transport-related problems as the biggest challenge they face in meeting the cost and quantity requirements of buyers, and that those in rural districts with fewer roads tend to be less competitive. Issues cited included poor roads, trucks getting stuck on improper roads, long distances between cattle posts and farms, unreliable transport services, and high transport costs.

Figure 2: Main difficulties meeting quantity & cost requirements of markets cited by agri-SMEs



Source: ITC, 2019

The report found that quality performance is relatively weak within Botswana’s SMEs, highlighting this as a significant challenge for agricultural exporters. This sits alongside the finding that in Botswana, standards were more popular in the services sector and less common in the agricultural sector. This differs from many other countries where certification is more popular among agricultural companies.

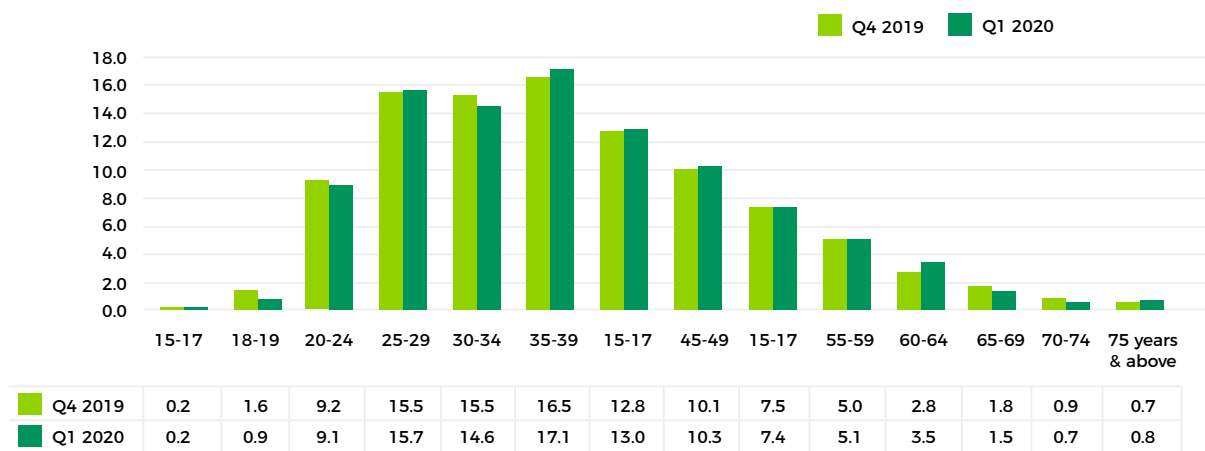
A key challenge facing the sector as a whole is lack of access to financial products and services. This particularly affects less advantaged groups, including communities (i.e. traditional & smallholder producers), women and youth, as well as agricultural MSMEs and remote firms. There is also a lack of adequate infrastructure such as roads, electricity, water, telecommunications and market infrastructure. Farms are mostly very geographically dispersed and therefore provision of services can be challenging, often resulting in low activity along value chains. The capacity of industry organisations and producer associations has historically been low, though reports suggest that this is beginning to change. Some of the more prominent associations include:

- Botswana National Beef Producers Union
- Botswana Pork Producers Association Feedlotters Association
- Botswana Meat Processors Association
- Botswana Horticulture Council
- Young Farmers Association
- Botswana Horticulture
- Farmers Association

1.3 Employment in Agriculture

One of the objectives of the previous National Development Plan (NDP 10) was to create new job opportunities, but unemployment remains high and has been rising with the effects of Covid-19. 23.2% of the economically active population (over the age of 15) are seeking work, up from 20.7% in 2019. 49.5% of those unemployed are female and 50.5% are male. Youth unemployment also poses a critical challenge. Botswana has a fairly young population, with 32.6% of the population under the age of 15.

Figure 3: Employment by age group – Q4 2019 & Q4 2020



Source: Statistics Botswana, 2020

A report from Statistic Botswana provides some insights into employment in agriculture. However, the report focuses on formal employment which refers to people working for payment and/or profit or gain. This means that those engaged in subsistence farming are not considered to be employed²⁵. Approximately 7.4% of people in formal employment in Botswana work in agriculture, forestry or fishing. This equates to 55,932 people in total, 77% of which are male and 23% female. 66% of those employed in the agriculture, forestry and fishing industry work in 'elementary occupations', whilst 20% are skilled agricultural workers. Skilled agricultural workers also operate in other industries including public administration, wholesale and retail trade, and accommodation and food service activities.²⁶ Female participation is stronger in this category, with women accounting for 44.5% of all employed skilled agricultural workers. 41% of skilled agricultural workers are youth (aged 15-35).

Table 2: Roles of those currently employed in Agriculture, Forestry & Fishing

Industry	Occupation											
	Managers	Professionals	Technicians and Associate Professionals	Clerical Support Services	Service / Sale Workers	Skilled Agric. Workers	Craft and Trades Workers	Plant & Machine Operators	Elementary Occupations	Other	Not Stated	Total
Agriculture, Forestry and Fishing	2,384	237	86	221	107	11,289	2,515	2,146	36,946	-	-	55,935

Source: Statistics Botswana, 2020

1.4 Women in Agriculture and Agribusiness

There have been gradual but significant shifts in the demographics of agriculture in recent years. Men still dominate farming activities (63.1%) compared to their female counterparts (36.9%). However, the number of women who own land has increased due to positive changes in the legal system, including the Deeds Registry Act, and the Married Persons Property Act. More recently, an amendment to the 2015 Land Policy means that a woman can now own land alongside her husband, giving women independence within marriages. The most recent available figures suggest that 49.3% of women in Botswana now own land,²⁷ and this is only likely to increase on the strength of the amendment.

Botswana men are still the main players in livestock production. 76% of cattle holdings and 85% of the cattle population are owned by men.²⁸ Men also hold 60% of land holdings, amounting to 64% of land area within the traditional agricultural sector. Meanwhile, female-headed households are disproportionately represented among those living below the national poverty line: 46.6% of households in Botswana are headed by women and 55% of these are poor.

Whilst there is some gendered division of labour in crop production cycles, this is not experienced uniformly across districts. In some districts where tasks are shared, men are responsible for clearing land, ploughing with cattle, hoeing, and guarding fields. In other districts, women take responsibility for the whole production cycle undertaking tasks such as planting/broadcasting seeds, weeding, harvesting, processing and post-harvest handling in addition to those mentioned above. Women are generally responsible for small stock, and for tasks including collecting water and gathering firewood and veldt products, Men are usually responsible for large livestock, and control a greater deal of agricultural and related resources. Their ownership over the majority of productive assets continues to inhibit equal participation of women in agriculture.

Women play an important role in post-harvest handling including the processing of maize, small grains and pulses. Activities include threshing, shelling, and winnowing, as well as transporting from farm to homesteads and treating with pesticides for storage. Excess produce is transported to markets for sale. Women are also responsible for vegetable processing such as sun drying. Women usually use manual, time-consuming technologies such as wooden mortar and pestle for dehusking and grinding grain and head-loading for transporting grain. Labour-saving technologies can help reduce the workload of women and enable them to balance their activities in agriculture with other household responsibilities.

The government has implemented programmes to support gender equality such as the Women's Economic Empowerment Programme and the Women's Grant, both of which provided seed money to help launch women-led small business projects. The former was first implemented in 1998 and has reportedly benefitted over 3,725 women engaged in the production of furniture, textile products, and agro-business activities, with an annual budget of \$5.2 million in 2018. However, the programme is not currently active and is under review. Research indicates that whilst the programme has provided women with new livelihood opportunities over the years, a lack of issue-specific support in areas such as access to markets, credit and business skills development has limited its impact.²⁹

Whilst women entrepreneurs face a number of such challenges, recent research indicates that the legal and regulatory environment in Botswana is actually highly conducive and supportive of women entrepreneurship.³⁰ Indeed, Botswana ranks 21st for economic participation and opportunity in the World Economic Forum's Global Gender Gap Index and has reportedly achieved full gender parity in education. However, the country's very low ranking for political empowerment (135th) perhaps points to remaining cultural obstacles that continue to inhibit women's participation in some activities, including some kinds of agricultural production. Vision 2036 speaks directly to this issue, asserting that "*Botswana will be a place where all men and women have equal opportunity to actively participate in the economic, social, cultural and political development of their country*".

1.5 Livestock

Data to support decision making in Botswana's agriculture sector covers the traditional/ subsistence sector and/or the commercial sector. In beef production, traditional livestock farming takes two forms; i) the traditional system based on small herds / cattle posts, and ii) the traditional farming system based on larger herds managed under communal grazing systems, but operating on a commercial basis. These traditional systems are quite different from fenced commercial ranch production systems which utilize modern husbandry practices, feedlots, specialized breeding and strategic feeding, producing high-value beef.³¹ Some national level data, such as the annual agricultural surveys produced by Statistics Botswana, focus solely on the traditional sector. In the case of beef production, that includes just the first of the two traditional systems at the cattle post/village level.³²

The most recent annual agricultural survey report from Statistics Botswana was published in 2020, covering the year 2019.³³ The report focuses on the traditional sector and does not cover commercial agriculture. Headlines include a decline in cattle production due in part to losses from straying and stock theft. The volumes and diversity of livestock have shown increases, specifically poultry and piggery. However, the increase in poultry production is characterized by fluctuations resulting from diseases and drought.

Table 3: Livestock holdings, population and indicators between 2017 and 2019

Indicators	2017 Traditional	2019 Traditional
Cattle: Total Cattle Holdings	33,819	29,355
Total Cattle	1,100,375	934,732
Offtake Rate (%)	5.5	7.0
Birth Rate (%)	47.3	56.5
Death Rate (%)	5.9	10.9
Goats: Total Goats Holdings	58,332	42,179
Total Goats	1,199,661	1,228,744
Offtake Rate (%)	7.3	6.6
Birth Rate (%)	39.1	39.2
Death Rate (%)	23.3	18.9
Sheep: Total Sheep Holdings	12,992	11,905
Total Sheep	234,621	242,911
Offtake Rate (%)	3.9	7.7
Birth Rate (%)	33.6	32.8
Death Rate (%)	16.1	14.1

Source: Annual Agricultural Survey Report, 2019

1.5.1 Beef

Beef cattle production is of huge importance in Botswana, both to rural livelihoods and as the agricultural sector's most significant contribution to GDP. Despite having significant production potential and well-established markets, the sector has struggled in recent years and there has been a dramatic decline in production. There are a variety of reasons for this, not least the longer and harsher droughts that have caused some pastoralists to give up their livestock.

Botswana has an estimated 1.4 – 1.5 million head of cattle, around 80% of which are smallholder-owned.³⁴ Over 95% of beef production is exported. In 2019, Botswana was the ninth largest exporter of beef to the European Union. However, between 2010 and 2018, earnings from beef exports dropped from \$130 million to \$80 million. Botswana's exports of fresh and chilled beef products dropped from \$62 million in 2015 to \$29 million in 2019. Exports of frozen beef products dropped from \$53 million to \$32 million over the same period. Livestock production is particularly affected by weak market linkages. The lack of clustering of production centres also has implications for access to services such as extension services, water, energy, and product interchange.³⁵

Challenges to beef cattle production in Botswana include:

- Lack of quality animal health care
- Lack of quality feed
- Lack of capacity to invest in operations and infrastructure
- Disease (including Foot & Mouth Disease which particularly affects the northern region due to proximity with wildlife)
- Monopoly on the export market and low producer prices (due to be addressed through the new regulatory authority but progress and impacts as yet unknown)
- Inadequate marketing
- Lack of private sector investment
- Poor roads and other infrastructure
- Widespread use of traditional cattle management practices – predominantly driven by cultural reasons rather than business-oriented
- Gender gap in cattle rearing

Opportunities are said to exist in organic production and certification. Markets for organic products are lucrative but require strict supply-chain management requirements. Because of the low levels of commercialisation in many of Botswana's agricultural sub-sectors, there is ample opportunity for organic produce. For example, much cattle farming is free-range. However, much organic produce fails to reach markets because of a lack of systems to match produce to markets.

1.5.2 Leather

A report published by UNCTAD describes the leather and leather products industry as a source of tremendous opportunity for Africa to form regional value chains and add greater value to exports.³⁶ This is due to the continent having the largest source of the industry's raw material, and an increase in imports of leather products to the region in recent years. The leather sub-sector is a key focus of efforts to diversify Botswana's economy. A leather strategy is reportedly in development / to be developed as part of the economic diversification drive strategy.

Hides and skins are almost exclusively exported in their raw form, estimated at 300,000 skins per annum. Botswana has identified potential for growth of the leather sector through the development of tanneries for the export of processed goods. The development of a leather park is scheduled to be underway in Lobatse, with construction expected to be completed in the first quarter of 2022.³⁷ It is hoped that this will attract investors and open up new value addition opportunities. However, tanneries are very capital intensive and it is unclear if there is adequate financial support in place to establish the park and maintain operations. A good steady supply of hides will be needed for the park to operate efficiently, emphasising the need for strong breeding stock, good herd management practices, slaughter facilities and transport. There are doubts as to whether Botswana's livestock sector will be able to meet this supply need to support the operations of the park and the growth of the leather sector.

Opportunities stemming from the development of the leather industry seem to be limited for smallholder farmers. Hide quality is a concern given the conditions in which most livestock are raised. Unfenced farming systems leave cattle free to wander, often getting snagged in undergrowth, and many farmers reportedly refuse to leave behind traditional branding systems which further compromised hide quality. These are issues that could be addressed over time. However, because the BMC already buys the whole animal, there is no additional value available to the smallholder producer from the sale of the hide. This setup may also disincentivise leaving behind the traditional branding practices.

1.5.3 Dairy

Dairy production in Botswana does not meet domestic demand, and the sub-sector remains underdeveloped. The government has identified the dairy industry as a priority for economic diversification. For the sector to thrive, it would need to be able to compete with cheap milk imports from South Africa under the SADC free trade agreement. This is unlikely; although the value of milk imported from South Africa has decreased by 15% since 2015, it still stands at \$20 million (2019).³⁸ The production rate of dairy cattle and small stock has not reached targeted levels and this has inhibited milk production volumes. Constraints to the growth of the industry are reported to include high feed costs, feed shortage, lack of appropriate skills, lack of technical support, disease and pests, and lack of appropriate dairy-related technology.³⁹ Opportunities are said to exist in grain feed and roughage production, establishment of a milk processing plant, and development of cold chain. Information on the current state of the dairy sector seems to be limited. However, like leather, a sector strategy for dairy is in the making as part of the economic diversification drive strategy.

1.5.4 Pork

Domestic demand for pork is estimated at 1,500 tonnes per year.⁴⁰ The national pork industry is reported to be producing just half of that volume, producing 477 tonnes and importing 519 tonnes in 2019. Pork is not traditionally a preferred meat for the people of Botswana when compared to beef or chicken, partly for cultural and religious reasons. However, demand is reported to be rising, particularly in urban areas. The Department of Animal Production offers some extension services to pig farmers and is said to be supporting the establishment of producer associations. Farmers face challenges such as inadequate slaughter facilities, high cost of feed, shortage of extension services, disease, disorganized marketing, and limited livestock and business management skills. There is also the issue of inferior quality of breeding stock, though Sebele pig multiplication unit is reported to be producing quality animals to be sold to new and existing farmers at subsidized prices. This approach is perhaps preferable to ongoing feed subsidies in that it is a one-off / infrequent approach as opposed to ongoing annual subsidies.

1.5.5 Goat

Indigenous goat production is an important activity for rural livelihoods in Botswana, and as with other small livestock is accessible to women. They are mostly raised by resource poor farmers, and their ability to adapt to harsh climactic conditions makes them a significant contributor to household resilience and food security. Many of Botswana's indigenous goats are raised under communal production systems.⁴¹ These are characterized by low production, low input levels, lack of properly defined breeding strategies, and a lack of supporting infrastructure. Whilst many rural smallholder practise mixed farming, keeping livestock is often the primary activity, and is an important source of cash income for school fees, restocking, and other household needs. However, productivity is often affected by theft, disease, and predators. A government grant scheme to help people buy goats and support food security and livelihoods has apparently had a favourable impact on the price of goats. There is a good domestic market for goat, but this is not to the level of beef and poultry. Though there is demand for live goats in the Middle East, Botswana is not currently well placed to serve this market, in part due to the high cost of transport and long distances overland.

1.5.6 Poultry

Significant growth has taken place in Botswana's poultry industry since the introduction of commercial poultry farming in the 1980s.⁴² Domestic demand for chicken is strong, second only to beef. In urban areas commercial production is common, but in rural areas indigenous varieties still predominate. The poultry industry is dominated by three large operators, two domestic and one from South Africa. Together these big players account for 96% of production, operating through a formalised and vertically integrated value chain structure.⁴³ Demand for poultry meat is said to be increasing, in part driven by the fast food industry, and broiler units are scaling up in order to meet that demand.⁴⁴ Though import restrictions are in place to limit competition from imports, it is difficult for smaller producers to compete with the large domestic producers, particularly without the advantages of geography or refrigeration, and they often struggle to meet quality standards. Challenges for rural producers include local shortages of feed, layers, and chicks. The government introduced a subsidy on feeds which was subsequently lifted. The lifting of the subsidy and a shortage of day old chicks pose particular challenges for small farmers who struggle to compete with bigger producers.

1.6 Field Crops

Arable agriculture is mainly rain-fed subsistence farming with little mechanisation and limited use of inputs such as fertilizer and certified seed. Increasing production is seen as a challenge due to low soil fertility, the semi-arid climate, and recurring drought. There is a focus on increasing domestic production of basic foodstuffs and recent trends in arable crop production show encouraging signs. Nonetheless, competition from cheap South African imports is still a huge challenge.

Maize, sorghum, millet, and beans and pulses are the major crops in terms of total area planted. Whilst all of these have seen yield increases over recent years, they each saw significant declines in yield between 2017 and 2019, as illustrated in table 4 below. This is largely attributed to the low rainfall experienced in the 2018/2019 agricultural year. However, demand is increasing; Botswana is a net importer of cereals and will be for the foreseeable future. Imports meet 90% of domestic cereal requirements, and imports for 2019/20 were up by 20% on the previous year in part due to the bad harvest in 2019.⁴⁵

Table 4: Area planted and harvested and production yields between 2017 and 2019

	Indicator	Traditional Sector	
		2017	2019
Sorghum	Total Sorghum Holdings	19,859	15,058
	Total Area Planted (ha)	23,766	17,126
	Area Harvested (ha)	16,215	5,136
	Production (Metric Tons)	5,975	826
	Yield Per Hectare Planted	251	48
	Yield Per Hectare Harvested	362	161
	Total Maize Holdings	34,828	23,424
	Total Area Planted (ha)	61,706	39,201
	Area Harvested (ha)	51,030	6,660
	Production (Metric Tons)	13,911	987
	Yield Per Hectare Planted	225	25
	Yield Per Hectare Harvested	273	148
Millet	Total Millet Holdings	6,243	5,149
	Total Area Planted (ha)	3,118	3,432
	Area Harvested (ha)	2,538	1,604
	Production (Metric Tons)	1,099	313
	Yield Per Hectare Planted	352	91
	Yield Per Hectare Harvested	433	195
Beans/Pulses	Total Beans/Pulses Holdings	35,628	27,869
	Total Area Planted (ha)	27,251	18,950
	Area Harvested (ha)	15,701	5,700
	Production (Metric Tons)	2,348	583
	Yield Per Hectare Planted	86	31
	Yield Per Hectare Harvested	150	102

Source: Annual Agricultural Survey Report, 2019

The government introduced the Integrated Support Programme for Arable Agriculture Development (ISPAAD) and promoted conservation agriculture to try to overcome the challenges of dryland farming. Whilst the area of land under cultivation has increased, yields under smallholder farming systems remain very low.⁴⁶ Commercial production tends to produce higher yields, though this is not always the case. In 2014 and 2015 the traditional sub-sector achieved higher yields for both millet and groundnuts.

1.6.1 Maize

Maize imports for 2019/20 are estimated at 265,000 tonnes.⁴⁷ White maize is the most popular carbohydrate consumed in the country. Indeed, whilst sorghum is known to perform better than maize under semi-arid conditions due to its high water use efficiency, farmers are still more inclined to plant maize than sorghum. Yellow maize is also produced, and there is growing demand for it within the animal feed industry. Imports are up to an estimated 80,000 tonnes for 2019/20 as compared with the average of 45,000 tonnes per year. Contract maize farming takes place in some areas, including Barolong, Ngwaketse South, areas and Chobe Enclave and Pandamatenga. Millet is most popular in the Central and Northern regions of Botswana, and demand has reportedly grown in recent years.

1.6.2 Legumes and Oil Seeds

Legumes and oilseed crops produced in Botswana include groundnuts, cowpea, soyabeans and sunflower. Botswana Agricultural Marketing Board (BAMB) utilizes sunflower for poultry feed production in combination with maize and sorghum. Sunflower is mainly produced on commercial farms in Pandamatenga and is exported to South Africa due to low domestic demand. Though the price BAMB will pay for legumes can be up to 5 times that of cereals, farmers often opt to grow the latter, possibly due to the intense labour and drudgery associated with harvesting and shelling grain legumes.⁴⁶ However, due to the challenges of climate change, some farmers have transitioned from monocropping to cereal-legume rotation in order to increase resilience and improve water efficiency.

1.6.3 Cowpea

Cowpea is an important crop for food security and nutrition, offering high quality protein, adaptable to drought and heat, and with nitrogen-fixing qualities. It is an important cash crop and the main grain legume in Botswana, mainly produced by small scale farmers under rain-fed conditions. Though it is widely grown, average crop yield is low at just 300 kg/ha, against potential yields of 2500 kg/ha. Low yields are attributed to low yielding varieties, poor soils and poor crop husbandry. Though cowpea is well adapted to drought and heat conditions, changing rainfall patterns and higher temperatures associated with climate change still threaten productivity.⁴⁸

1.7 Horticulture

The horticulture industry, including fruit and vegetables, has been identified as a priority area for economic diversification. The most commonly grown vegetables include tomato, cabbage, potato, onion, beetroot, lettuce, bell pepper, cucumber, butternut squash, and carrots. Some of the fruits grown include citrus, mango, marula, litchi, avocado, stone fruits (e.g. peaches and nectarines), banana, pomegranate, and watermelon. The horticulture sector is yet to realize satisfactory growth for both local and international markets. Challenges to the growth of the horticulture sector in Botswana include drought, poor soils, shortage of water, insufficient infrastructure, pests and diseases, poor organisations of domestic markets and insufficient horticulture technologies.⁴⁹

In 2018, around BWP 344 million (\$30 million) was spent on horticulture imports. The Ministry of Agriculture and Botswana Horticulture Council (BoHoCo) report that local production now meets 60% of demand, up from 20% in 2013-2014, though this is likely an overestimation.⁵⁰ Vegetable production appears to be experiencing encouraging growth. However, fruit production is very low with only 5% of consumed fruit produced locally and the other 95% imported from neighbouring countries.⁵¹ Domestic fruit and veg retailers include Choppies (the largest grocery chain in Botswana), Mr Veg, and Veggieland, in addition to many smaller independent outlets, corner shops, outdoor markets and street vendors.

Compared to other agricultural sub-sectors, horticulture is reported to have the greatest potential for nutritional content and job creation.¹⁰⁶ In 2018/2019 64,000 tonnes of fruit and veg were produced, and 4,137 jobs were created through the sector. BoHoCo asserts that there is significant underutilized land available for horticultural production. Average production area per farmer is generally low at 1-2 Ha; it is estimated that around 4% of farmers cultivate over 10Ha.

Smallholder farmers generally rely on hired machinery for their tillage, ploughing and harrowing needs. They mostly use hand-held tools for activities such as chemical spraying for pest control. Cost prevents most smallholders from acquiring their own machinery, and there is reportedly reluctance to form groups to purchase machinery. Whilst larger farms have better access to equipment, there is a lack of entrepreneurship in horticulture production, combined with limited investment in farm mechanisation compared to international counterparts.⁵²

BoHoCo and others identify a range of opportunities for the development of the horticulture sector. Domestic demand for fruit and veg is high. Botswana also has a progressive land tenure system which allows for land leases for over 50 years made available for horticulture farms at very affordable prices. New farms are being established across the country, and there is land reserved for horticulture development in some regions. LEA also operates Glen Valley Horticulture Incubator near Gaborone, helping new producers to get established.

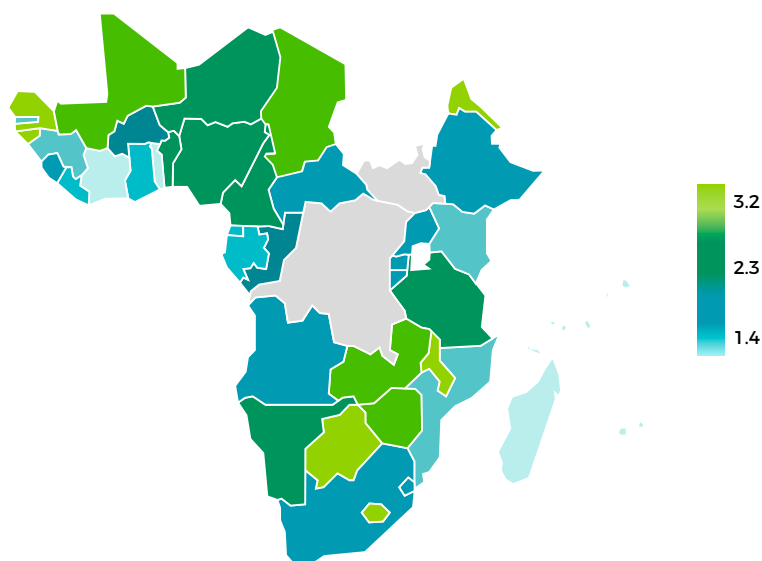
Nonetheless, the sector faces numerous challenges including:

- Lack of implementation of cropping plans and coordination of production between farmers and distribution networks
- Lack of skills and capital for drip irrigation, tunnel and shades production techniques, good agricultural practices for horticultural crops, quality assurance, grading and marketing
- Shortage of collection and storage and chilling facilities
- Limited linkages and lack of coordination among government support programmes
- Lack of tradition related to production and consumption of fruits in Botswana
- Poor quality local produce
- Lack of reliable supply of inputs
- Weak producer organisations
- Widespread dependency on government subsidies limiting entrepreneurship
- Limited financial resources and lack of crop insurance for risk reduction
- Lack of skills on leadership, advocacy and lobbying
- Dependence on widely dispersed domestic market
- Inadequate marketing and promotional activities
- Lack of a market-led approach to production
- Inadequate entrepreneurial and business skills
- Poor research and extension services
- The prevalence of pests and diseases
- Unpredictable weather and unreliable forecasts
- Poor market intelligence leading to inadequate price formation

1.8 Environmental and Natural Resource Base

Botswana's climate is semi-arid, with seasonal rainfall from November to March. Rainfall is low, unevenly distributed and varies from year to year. 2018/2019 was declared a 'severe drought year'. Around two thirds of the country are covered by infertile sandy soils. Types of vegetation cover include grassland, natural woodland, forest land, bush land and savannah. The quality and breadth of vegetation cover is at risk from land degradation, over-grazing and loss of biodiversity, so sustainable land use practices are a priority.⁵³

Figure 4: Projected average temperature change by 2100



Source: World Bank Climate Change Knowledge Portal

A recent IMF country report highlights Botswana's vulnerability to climate change, not only in terms of direct pressure on agricultural production but also knock-on effects of drought such as increased human-wildlife conflict due to competition for scarce water resources.⁵⁴ The report synthesizes long term projections which suggest that Botswana will experience among the most severe temperature increases in Sub-Saharan Africa by 2100. It also ranks second in terms of expected average decrease in annual rainfall. This will put pressure on the domestic water supply and on crop yields.

Botswana's third national communication to the UN convention on climate change gives a full picture of risks, mitigation strategies and future scenarios.⁵⁵

Whilst Botswana does not currently have a dedicated policy to respond to climate change, the government is seeking to put in place a range of measures and initiatives including a Climate Change Policy, Strategy and Action Plan and a Climate Smart Agriculture programme.

In terms of its natural resource base, as previously discussed Botswana's economy is heavily dependent on the fact that it is well endowed with mineral resources including diamonds, gold, copper, nickel, uranium, iron and coal. Tourism is another important revenue source which is dependent on the country's natural resource base. Nature-based activities contribute significantly to revenue from tourism. Botswana has large numbers of wildlife including big game which are found in national parks, game reserves, and wildlife management areas. Chobe National Park and the Okavango Delta are sites of particular importance.

1.9 Public Institutional, Legal, Regulatory, and Policy Framework

1.9.1 Institutional Framework

Table 5: Botswana Ministries, Departments, and Parastatals

Ministry	Departments	Parastatals
Ministry of Agricultural Development and Food Security	<ul style="list-style-type: none"> • Department of Animal Production • Department of Crop Production • Department of Agribusiness Promotion • Department of Veterinary Services • Department of Agricultural Research, Statistics and Policy Development • Department of Corporate Services • Department of Agricultural Research • Division of Agricultural Information and Public Relations 	<ul style="list-style-type: none"> • Botswana University of Agriculture and Natural Resources (BUAN) • Botswana Meat Commission (BMC) • National Food Technology Research Centre (NFTRC) • Botswana Agricultural Marketing Board (BAMB) • Botswana Vaccine Institute (BVI) • National Agricultural Research and Development Institution (NARDI)
Ministry of Local Government & Rural Development	<ul style="list-style-type: none"> • Department of Local Governance and Development Planning • Department of Tribal Administration • Department of Community Development • Rural Development 	
Ministry of Finance and Economic Development	<ul style="list-style-type: none"> • Economic and Financial Policy (EFP) • Development and Budget (DB) • Internal Audit (IA) • Financial Intelligence Agency (FIA) • Corporate Services (CS) 	<ul style="list-style-type: none"> • Botswana Savings Bank (BSB) • Bank of Botswana (BOB) • Botswana Unified Revenue Services (BURS) • National Development Bank (NDB) • Statistics Botswana (SB) • Botswana Institute for Development Policy Analysis (BIDPA)
Ministry of Environment, Natural Resources Conservation & Tourism	<ul style="list-style-type: none"> • Department of Environmental Affairs • Department of Meteorological Services • Department of Waste Management and Pollution Control • Department of Forestry and Range Resources • Department of Wildlife and National Parks 	<ul style="list-style-type: none"> • Forest Conservation Botswana
Ministry of Investment, Trade & Industry	<ul style="list-style-type: none"> • Department of Trade and Consumer Affairs (DTCA) • Department of Industrial Affairs (DIA) • Department for Co-operatives Development (DCD) • Department of International Trade (DIT) • Economic Diversification Drive Unit (EDDU) • Doing Business and Investment Unit • Research Statistics and Policy Development Unit 	<ul style="list-style-type: none"> • Botswana Bureau of Standards (BOBS) • Local Enterprise Authority (LEA) • Botswana Investment and Trade Centre (BITC) • Citizen Entrepreneurial Development Agency (CEDA) • Special Economic Zones Authority (SEZA) • Botswana Development Corporation (BDC) • Selebi-Phikwe Economic Unit (SPEDU) • Botswana Trade Commission (BOTC)
Ministry of Land Management, Water & Sanitation Services	<ul style="list-style-type: none"> • Department of Lands • Department of Surveys & Mapping • Department of Water and Sanitation • Land Tribunal • Deeds Registry 	<ul style="list-style-type: none"> • There are 12 Land Boards across the country whose functions include granting of rights to use land for a range of purposes including agriculture

The most recent policy developments and support programmes affecting Botswana’s agricultural sector have focused on responding to the pressures of the Covid-19 pandemic. The government identified agriculture as an essential service sector and set up a relief fund to support farmers and other key sectors. Responding to the pandemic has meant a shift in government priorities, with efforts geared towards securing a strategic grain reserve. This has resulted in a reduction of funds for planned investment in infrastructure for agriculture and plans for a 3 year push to upscale horticulture have been put on hold.⁵⁶

1.9.2 Legislative, Policy, and Programmatic Framework

Table 6: Key policies and legislation affecting Botswana’s agriculture sector

Policy / Legislation	Content
Vision 2036	<p>The main agriculture-related objective of the new Vision 2036 is for Botswana to have a sustainable, technology-driven, commercially viable, disease-free agricultural sector which optimizes land and other resources.⁵⁷</p> <ul style="list-style-type: none"> • This is to be achieved through private sector led development of agricultural value chains • Pursuit of export-led growth is a key objective • A National Transformation Strategy (NTS) will be developed to deliver Vision 2036 • National Development Plans will be the vehicle for executing the NTS
11th National Development Plan (2017-2023)	<p>The theme for NDP 11 is 'Inclusive Growth for the Realisation of Sustainable Employment Creation and Poverty Eradication'. It focuses on the following 6 national priorities:</p> <ul style="list-style-type: none"> • Developing Diversified Sources of Economic Growth • Human Capital Development • Social Development • Sustainable Use of Natural Resources • Consolidation of Good Governance and Strengthening of National Security • Implementation of an Effective Monitoring and Evaluation System <p>Under NDP 10, within the framework of the Private Sector Development Project, value chain studies were undertaken for 7 agricultural value chains:</p> <ul style="list-style-type: none"> • Beef • Horticulture • Dairy • Piggery • Goat • Poultry & leather <p>Opportunities highlighted in these studies will inform the development of business activities and models under NDP 11.</p> <p>Under NP11, the government of Botswana also aims to improve food security and nutrition through improving access to productive resources such as land, finance, inputs, infrastructure and information. The practice of cluster farming and agro-ecological zones will also be promoted.</p>
National export Strategy (2019-2024)	<ul style="list-style-type: none"> • Designed to increase exports, diversify products, and create new jobs • Agricultural products prioritized within the strategy are leather and leather products, meat and meat products²⁵

Policy / Legislation	Content
Revised National Policy on Agricultural Development (NPAD) (2014)	<p>NPAD guides Botswana's agricultural policies and aims to:</p> <ul style="list-style-type: none"> • improve food security at both household and national level • conserve agricultural and land resources for the future • diversify the sector • mainstream disadvantaged groups into the sector
Agricultural Credit Guarantee Scheme (ACGS)	<p>ACGS is owned by the Government of Botswana through the Ministry of Finance and Development Planning (MFDP). Established in 1986, the scheme is designed to assist dry-land arable farmers in meeting their loan obligations in the event of crop failure due to severe weather including drought, floods, frost and hailstorms.</p> <p>Cover provided depends on the severity of the event and ranges from 0% – 85%. The scheme covers three areas;</p> <ul style="list-style-type: none"> • seasonal inputs • field or farm developments • farm machinery and equipment <p>Critics argue that the scheme has placed a heavy burden on the Government because the level of cover provided is inconsistent with contributions to the scheme and it does not take into account farmer incomes in non-drought years. Furthermore, it works on the assumption that the main driver of poor yields is drought.⁵⁹</p>
Conservation of Agricultural Resources Programme	<ul style="list-style-type: none"> • Under NDP 11 • Seeks to put mechanisms in place to harness indigenous knowledge and utilise local resources to efficiently and effectively manage and conserve agricultural resources • To be attained through involvement of local farming communities. • Rehabilitation of degraded agricultural lands with a view to increasing agricultural production & improving food security
Integrated Planning and Land Management Programme	<ul style="list-style-type: none"> • Promoting land management practices that reduce negative environmental impacts and address the country's current and future socio-economic needs. • Development of a land information system • National mapping programme to provide geo-spatial information
Botswana Climate Change Strategy and Action Plan (in development)	<ul style="list-style-type: none"> • Acknowledges the vulnerability of the agricultural sector and food security to climate change. • Aims to cushion agriculture from climate change impacts, promoting sustainable and climate smart agriculture through: <ul style="list-style-type: none"> » Enhancement of food production and agricultural sustainability; » Exploration and development of innovative agricultural initiatives that can enhance income generation; » Adoption of strategies that will enhance the application of water and nutrient conservation technologies; » Enhancement of the country's competitiveness and access to existing and new markets for green initiatives; » Enhancement of resilience in the livestock sector through acceleration of measures such as rangeland efficiency; » Promotion of access to existing and new information and use of early warning system for agricultural planning and management. • With support from the International Institute for Sustainable Development, the MENCT has developed a National Adaptation Plan Framework for Botswana (2020) to guide the design of a National Adaptation Framework

Policy / Legislation	Content
Private Sector Development Programme (PSDP) (2013 – 2016)	<p>PSDP was a flagship programme aiming to stimulate and sustain growth through diversification of the economy. Elaborated in 2009 through extensive stakeholder consultation, the PSDP was built on 4 priority areas:</p> <ol style="list-style-type: none"> 1. Trade Expansion, 2. Improving labour productivity 3. Support to trade institutions 4. Improving the business climate <p>The programme appears to have had a positive impact on the country's business environment, including agro-industries. Support to agro-industries targeted the following 7 value chains: beef, dairy, goat, poultry, horticulture, leather and piggery, and continues under NDP 11.</p> <p>A request for expressions of interest has recently been released by the Government of Botswana and the ADB for consultancy services to review and update the private sector development strategy and develop an SME improvement programme.⁶⁰ This is part of the economic diversification project.</p>
Past Policies & Programmes	
Botswana Exporter Development Programme⁶¹ (2013-2017)	<ul style="list-style-type: none"> • Managed by BITC, with activities drawn from the National Export Strategy • Focusing on skills and entrepreneurial development through training of business owners and staff • Objectives of the programme were to: <ul style="list-style-type: none"> » establish an exporting culture in Botswana » develop new products for export » increase exports in existing markets » find new markets for Botswana exports » develop new exporters • Of twelve envisaged deliverables there was only satisfactory completion of one – export awareness • Another 8 were partially completed (successful use of exhibitions for exporters, successful use of trade missions for exporters, planning for exports course, market development, continuing export education, introduction to exporting seminar, succeeding in exports programme, and Export Awards) • No progress was shown in the final 3 activities (product development, creation of a database of trade info, and promotion of clusters/export villages) <p>Imani Development developed the revised Botswana Exporter Development Programme, soon to be implemented by the Government of Botswana. The proposed interventions will address issues affecting internal weaknesses that limit the ability of firms to export, enter new markets, or produce new products. Interventions will also contribute towards business environment reforms.</p>
Zambezi Integrated Agro-Commercial Development Project	<p>This project was designed to use water from the Zambezi river to irrigate over 45,000 hectares of Pandamatenga region but failed to secure funders.⁶²</p>

Policy / Legislation	Content
National Master Plan for Arable Agriculture and Dairy Development (NAMPAADD) (2002-2012)	<p>Aimed to support both traditional and commercial farmers to adopt technology and management practices. Focused on irrigation farming. Objectives of NAMPAADD projects include:</p> <ul style="list-style-type: none"> • To support dairy farming with training for farmers and extension workers and demonstration of new technologies • Establish pilot farms to demonstrate the advantages of irrigation • Encourage small-scale horticulture farmers to work in clusters around anchor projects • Encouraging farmers to coordinate the production of tomatoes, potatoes, onions and cabbage • Encourage farmers to use treated wastewater for irrigation • Expand collection and marketing outlets <p>Reports suggest that programme did not achieve great impact, and that there was limited uptake of the promoted technologies due to high costs.⁶³</p>
Integrated Support Programme for Arable Agricultural Development³¹	<ul style="list-style-type: none"> • Introduced in 2008 to replace previous programmes agri programmes which had limited success such as the Accelerated Rainfed Arable Programme and Arable Land Development Programme • Objective to establish Agricultural Service Centres to improve access to inputs and mechanisation for arable farmers. • Other components included cluster fencing, provision of potable water, seeds and fertilizers, and facilitation of access to credit • An ISPAAD facility was set up at National Development Bank to provide seasonal loans • The programme was under review in June 2020, deemed to be unproductive, and reports suggest that the programme has now been shelved.
Agricultural Marketing Strategy (2011-2016)³²	<p>Developed to enable the Department of Agribusiness Promotion (DABP) to better contribute to the development of a sustainable, diversified and competitive agricultural economy. A number of factors were identified as preventing the emergence of freer, more competitive agricultural markets in Botswana:</p> <ol style="list-style-type: none"> 1. poor market intelligence and interference or distortion leading to inadequate price formation, 2. high market share concentration and dominance 3. heavy dependence on trade with South Africa. <p>In response, the AMS aimed to facilitate a more-market led approach to agriculture through:</p> <ul style="list-style-type: none"> • Improved access to more accurate and more useful agricultural data and statistics on the costs • Stronger understanding by producers of the influence of the consumer on the agricultural value chain • Greater efficiency and effectiveness of parastatals • Market-driven and informed policy making by the MoA

Policy / Legislation	Content
Pandamatenga Agricultural Infrastructural Development Plan (PAIDP)	<ul style="list-style-type: none"> • PAIDP was initiated because of the region's higher than average rainfall and potential to increase cereal production. • Water management and ecosystem conservation concepts integrated into crop production • Training and provision of equipment for effective production activities • Support to construction of drainage and road infrastructure within 27,574 ha rain-fed systems • Strengthening capacities of the MoA and farmer associations • The project was completed in 2019 – impacts are as yet unclear

The Botswana Land Policy (2015) is the main policy instrument governing the implementation of Botswana's land tenure system. It was designed to respond to wide ranging land use needs including integrated farming, game farming and agro-tourism, and residential housing. The policy was developed to support the process of land administration through which to identify all land parcels in the country, their size, location and owners.⁶⁶ The purpose of that process was to develop a database of plots and their owners, allowing owners to hold titles to their land, facilitating access to finance from commercial banks and other institutions. Expected outcomes of the policy include rising value of land and higher productivity, with positive livelihoods impacts. Its overarching aims is promotion of productive land use, conservation and protection for future generations. Revisions since the policy's development include the recent change to land ownership rights for married women highlighted previously.

In 2015 the National Policy on Women in Development was superseded by the National Policy on Gender and Development. The policy "*identifies a range of issues, systems, and institutions in which the same opportunities should be available to women and men to maximize their potential as human beings and valuable citizens of Botswana*".⁶⁷ The long-term goal of the policy was to reduce inequalities in the opportunities and outcomes of social, economic, political, cultural and legal development for both women and men. A recent study found that women generally agree with men that gender equality in Botswana has improved in recent years, finding it easier to access public services than they used to.⁶⁸ 83% of women surveyed reported that they approved of the government's efforts to promote gender equality.

Other relevant strategies and policies include, but are not limited to:

- Revised National Food Strategy (2000)
- Revised National Policy for Rural Development (2000)
- National Strategy for Poverty Reduction (2003)
- Poverty Eradication Strategy (2009)

1.10 Development Partners, Organisations, and Initiatives

The Global Forum for Rural Advisory services reports that there are no known NGOs in Botswana that are really engaged in rural and agricultural development. The in-country expert consulted during the VC shortlisting process attributed this to the nation's transition to middle-income country status which was apparently characterized by an exodus of NGOs.

A number of international organisations and development partners are active. Whilst some have focused on one or two sub-sectors, there has been little VC-specific activity.

1.10.1 United Nations Development Programme

The UNDP's work in Botswana focuses on three key areas: i) economic diversification, ii) democratic governance, and iii) environment and energy.⁶⁹

Within the Economic Diversification and Inclusive Growth (EDIG) portfolio, UNDP is running the Supplier Development Programme, launched at the end of 2018. The programme seeks to '*...diversify the economy, create jobs, and promote the concept of buying locally while connecting globally*', improving access to market opportunities, linking suppliers to buyers, and strengthening the entrepreneurial ecosystem. Agro-processing and leather & textiles are both targeted within the programme. Another programme within the EDIG portfolio is providing technical and financial support to horticulture producers in the Okavango Basin in collaboration with the Ministry of Agricultural Development and Food Security.

Within the Climate Change and Environment portfolio, UNDP is helping the Government of Botswana to address priority issues and to '*...manage the trade-off between income generation and environmental sustainability*'. Issues addressed include dryland management, human-wildlife conflict, and biogas production (described in more detail in the 'clean energy' section).

1.10.2 European Development Fund

A study was conducted on behalf of the EDF to inform the potential development of a Support Programme for Economic Development and Inclusive Growth (SPEDIG). The programme was proposed in order to optimise opportunities in livestock, tourism and horticulture value chains in Botswana. Though the programme did not end up going ahead, the study provides some very useful insights into those value chains, including highlighting areas for improving financial inclusion. Four key components were proposed for the programme:⁷⁰

1. Reforms and improvement of policies, legislation, strategies, regulatory framework, marketing, coordination and dialogue for the three value chains
2. Support to private sector value chain investments through
 - a. the improvement of existing national financial instruments (including the Youth Development Fund, the Women Empowerment Fund and the Community Based Natural Resources Management Fund), and
 - b. the creation of new credit lines specifically tailored to address the needs of targeted groups, through financial resources from the External Investment Plan (EIP)
2. Strengthening producers' associations, businesses organisations and non-state actors to support reform, to empower disadvantaged groups (including women and youth) and strengthen the role of small scale producers through the value chains
3. Support to sustainable and market-oriented skills development (in partnership with GIZ)

1.10.3 Food and Agriculture Organisation of the United Nations

Table 7: Current FAO Projects

Technical Cooperation Programme (TCP) ⁷¹	From	to	Total Budget
Development of National Food-Based Dietary Guidelines for Botswana	2020	2021	\$413,000
TCPF: Response to COVID-19 assistance to the Aquaculture and Inland Fisheries Sectors of Botswana	2020	2021	\$91,000
TCPF: Strengthening the Botswana apiculture value chain through coordination and capacity development	2020	2021	\$96,000
Management of the Fall Armyworm (<i>Spodoptera frugiperda</i>) in Botswana	2018	2020	\$202,000

With regard to the potential of the apiculture / beekeeping value chain referenced above, the sub-sector is reportedly still in its infancy despite continued efforts towards its development since the 1980s.⁷² The last reported figures on

Other recent FAO projects in Botswana have included:

- **Reducing Plant Pests and Diseases**⁷³ - carried out an inventory of crop pests and diseases and to improve the import regulation system and the export certification system with the objective of promoting trade and agricultural production and increasing food security.
- **Compliance with agricultural import/export regulations**⁷⁴ - assisted with development of a system for the Ministry of Agricultural Development and Food Security to communicate matters of border control to those involved in the import and export of agricultural products.

1.10.4 World Bank

The World Bank has a Country Partnership Framework (CPF) with Botswana for the period of FY16–FY21. The CPF is closely aligned with NDP 11 and Botswana’s Vision 2036 goals, focusing on the three pillars:

1. Promoting private sector-led, jobs intensive growth
2. Strengthening human and physical assets
3. Supporting effective resource management

Table 8: Selected World Bank projects in Botswana

Name & Budget	Description
Integrated Transport Project (\$186 million)	The WBG is supporting the government in its efforts to improve transport infrastructure development by introducing methodologies on Output and Performance Based Road Contracting, on an estimated 335km road network.
Emergency Water Security and Efficiency Project (\$145.5 million)	The WBG is supporting Botswana in its efforts to improve the availability of water in drought vulnerable areas, increase the efficiency of the Water Utilities Corporation (WUC), and strengthen wastewater management in selected systems.
The Economic Diversification and Competitiveness Reimbursable Advisory Service Programme (\$3.6 million)	The WBG provides support to encourage economic diversification through doing business reforms, secured transaction reform and analysis of labour market skills gap. In addition, providing inputs to the development of the National Entrepreneurship Policy.
Strengthening Public Sector Performance RAS (\$5.05 million)	Botswana is supported by WBG to strengthen public sector performance in certain areas and delivered selected outputs such as implementing a monitoring and evaluation system linked to NDP 11, public investment management and procurement and public service halls analytical work. This activity was recently completed in November 2019.

1.11 Clean Energy

Botswana is party to the Paris Agreement which aims to tackle climate change and to ‘... accelerate and intensify the actions and investments needed for a sustainable low carbon future’.⁷⁵ NDP 11 expresses a clear commitment to improving security of supply and equitable access to affordable modern energy. Almost all of Botswana’s energy is coal-generated, but production is insufficient to meet national energy demands. The Government of Botswana is pursuing a renewable energy strategy in partnership with the World Bank and aims to increase the share of renewables in domestic energy creation and offset the country’s carbon footprint through

renewables. In order to help scale up its use of renewable energy resources the government has instigated a programme to encourage energy efficiency and conservation at both domestic and industrial levels⁷⁶.

Botswana is highly suited to solar energy production and is often described as one of the best irradiated countries in the world. The state-owned Botswana Power Corporation (BPC) was reportedly constructing two solar power stations. The project does appear to be going ahead but it now looks likely to be 100% privately owned⁷⁷. BPC is also said to be exploring a 'mega solar project' with neighbouring Namibia, backed by WEF, World Bank Group, ADB, IFC and others⁷⁸.

In some areas, lack of access to the power grid has led rural farmers and tourist lodges to meet their own energy needs using solar. There are a number of providers of solar equipment such as panels and irrigation pumps (e.g. Megawatt New Energy, Soltake Energy, and Grit-tech). However, there is little available information on the uptake and impact of renewable energy options at household and farm level. Production and use of energy efficient cookstoves have not taken off in Botswana. Whilst the majority of rural households still use wood fuel rather than LPG and operate inefficient stoves,⁷⁹ research towards developing efficient stoves suited to local needs is taking place.⁸⁰

A collaborative project between the Government of Botswana and the UNDP aims to facilitate investment in production and utilisation of biogas from agro-waste.⁸¹ The project targets districts of South-eastern Botswana, where 200 households will be provided with biogas plants which will convert livestock waste into energy for cooking and lighting among other things.

1.12 Value Chains Selected for Evaluation and Research

The objective of this scoping study is to identify the most promising opportunities for interventions by FinMark Trust 'to make markets work for the poor by promoting financial inclusion and regional financial integration'⁸² in order to facilitate and accelerate agricultural development in Botswana, Lesotho, Malawi and eSwatini. The preliminary country review presented in this chapter provided the basis for making an informed decision about which commodities and value chains to select for in depth research in Botswana. It served as the basis to identify a 'long list' of commodities / value chains to evaluate, in order to select a 'short list' to propose to FinMark Trust for in-depth research.

The longlist of VCs for consideration is shorter for Botswana than for other countries because the country has a less diverse agricultural economy in which the production of many commodities is insufficiently well established to be supported without conducting a feasibility study. Consultation with the in-country expert revealed, for example, that none of the pulses and legumes suggested for possible inclusion (e.g. cowpea, soyabean, groundnuts) were anywhere close to being supported by well-established production and marketing systems. The outcome of the scoring is shown in Table 9.

Table 9: Scores and rankings of commodities / value chains from the long list

Rank	Value Chain	% score
1	Beef	83%
2	Horticulture	68%
3	Sorghum	63%
5	Poultry	57%
6	Leather /Tannery	55%
4	Piggery	55%
7	Goat	54%

Given the importance of beef to Botswana’s agricultural economy, it is perhaps unsurprising to find that it scored highly. Of the remaining commodities and value chains, horticulture and sorghum sit comfortably above the tighter cluster of lower scores for poultry, leather/tannery, piggery and goat (54-57%).

The three top scoring commodities proposed to FinMark Trust to go forward for detailed research were beef, horticulture and sorghum. However, due to some focus on leather in another project, FMT took the decision to include leather / tanneries rather than sorghum in the final selection in order to developing a more holistic picture of the leather value chain and for continuity.

Consequently, the value chains selected for in depth research in Botswana were:

- beef
- horticulture
- leather / tannery

2. BEEF

2.1 Current status of value chain

2.1.1 Primary production

Beef cattle production is of huge importance in Botswana, both to rural livelihoods and as the agricultural sector's most significant contribution to GDP. Despite having significant production potential and well-established markets, the sector has struggled in recent years and there has been a dramatic decline in cattle production. There are a variety of reasons for this, not least the longer and harsher droughts that have caused some pastoralists to give up their livestock.

The most recent annual agricultural survey report from Statistics Botswana was published in 2020, covering the year 2019.⁸³ The report focuses on the traditional sector (just the cattle post/village level) and does not cover commercial agriculture. Headlines include a decline in the cattle population for the traditional sector from 1.1 million in 2017 to 935 thousand in 2019. This is attributed in large part to the severe drought that ravaged the country during the 2017/2018 and 2018/2019 seasons, resulting in a high mortality rate. Cattle deaths increased from 64,447 in 2017 to 102,255 in 2019, as reflected in a doubling of the mortality rate from 5.9% to 10.9% over the same period. Accompanying the decline in the cattle population is a 13.2% decline in traditional sector cattle holdings, meaning that fewer households were raising cattle in 2019 than in 2017.

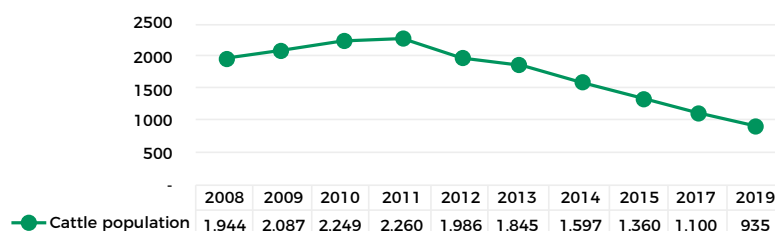
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Table 10: Livestock holdings, population and indicators 2017 – 2019 (traditional sector)

Indicators	2017 Traditional	2019 Traditional
Cattle: Total Cattle Holdings	33,819	29,355
Total Cattle	1,100,375	934,732
Offtake Rate (%)	5.5	7.0
Birth Rate (%)	47.3	56.5
Death Rate (%)	5.9	10.9

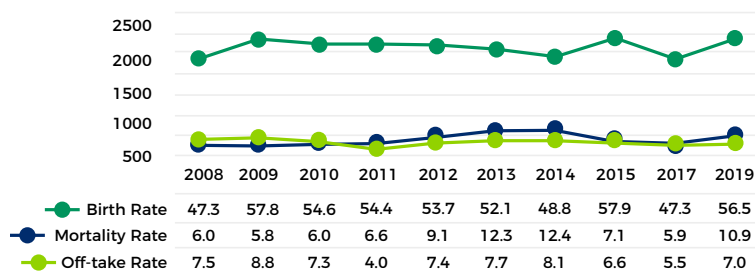
Source: Annual Agricultural Survey Report, 2019

Figure 5: Cattle population trend 2008 – 2019 (traditional sector)



Source: Annual Agricultural Survey Report, 2019

Figure 6: Cattle production indicator trends 2008 – 2019 (traditional sector)



Source: Annual Agricultural Survey Report, 2019

The most recently available figures on the commercial sector are from the 2015 agriculture census. At that time the total commercial sector cattle population was 383,699 compared with a traditional sector population of 1,360,467. It is unclear whether the commercial cattle population has since risen as a proportion of the total cattle population of Botswana, but it is clear that the majority of cattle are still smallholder owned. The total cattle population, including the traditional and commercial sectors, is roughly estimated at 1.4 – 1.5 million.

Traditional cattle farming

Traditional livestock farming in Botswana takes two forms; i) the traditional system based on small herds / cattle posts, and ii) the traditional system based on larger herds managed under communal grazing systems but operating on a commercial basis. Some communal farmers graze their cattle in open pastures that are communally owned and managed. Farmers who graze their animals around cattle posts operate in unfenced areas, usually with one or more boreholes. Cattle posts are often remote, located away from settlements or towns. Peri-urban communal farmers, on the other hand, graze their cattle around villages and surrounding areas; these are mainly subsistence or hobby farmers, many of whom have another source of income. The numbers of these peri-urban communal farming setups have been declining as their land is increasingly lost to fenced farms and cattle posts.

Smallholder farmers usually practice traditional farming methods which are less efficient and often unprofitable. They are much less likely to participate in commercial activities. 80% of all traditional sector farmers (including crops and livestock) engage in full time farm work, but this is reportedly much lower for cattle farming where many farm owners are employed elsewhere and hire staff to tend to their herd, visiting once or twice a month.

Commercial ranches and weaner based production

Traditional systems are quite different from fenced commercial ranch production systems which utilize modern husbandry practices, specialized breeding and strategic feeding, producing high-value beef.⁸⁴ Commercial ranches are usually large, operating on fenced freehold or leasehold land, with exclusive rights to grazing resources. Many ranches have transitioned to weaner based production, often with their own feedlots, which the Botswana Meat Commission (BMC) began promoting around 2006. Weaner based production systems are expensive to run but offer the benefits of improved breeding and off-take performance. The BMC’s desire to promote this system was in part due to issues of seasonality whereby it was unable to secure a stable supply. In a weaner based system, calves are weaned young (at around 7 months) and are reared on range for around 15 months before being moved on to feedlots for another 90-120 days for fattening. This means that they reach ideal weight much earlier and that meat quality is much higher, though they fetch a lower price due to their young age. In contrast, cattle raised in traditional farming systems are held for much longer before sale, resulting in declining fertility and reduced meat quality.

Because calves are weaned much earlier in a weaner based system, the number of births increases, reducing the seasonality of supply and freeing up grazing resources for other animals. Because the cattle are held in feedlots, the practice is also aligned with EU export requirements which stipulate that cattle must be held within a territory for at least 40 days prior to slaughter, with inter-territorial traceability for an additional 90 days before that. However, whilst they have benefits, weaner based production systems are costly to run, requiring infrastructure and high quality feed and supplements. The profitability of the industry is reportedly low, and performance measures compare unfavourably with regional competitors such as South Africa and international competitors like Brazil.

There is an increasing aversion to weaner based systems and feedlot production methods amongst European consumers due to concerns relating to animal welfare and the environment. Botswana's dependence on EU markets makes this an important issue to monitor.

Participation and employment in cattle farming

Farming in Botswana continues to be dominated by men. The results of the agriculture survey indicate that in the 2019 agricultural season, male farmers accounted for 63.1% of participation whilst female farmers accounted for just 36.9%. In the cattle sub-sector this gap appears to be widening; in 2017 males owned 73% of cattle, rising to 85% in 2019.⁸⁵ This is undoubtedly in part due to enduring cultural perceptions regarding gender roles, particularly in more rural areas. However, it may also relate to the relative capacity of male and female farmers to engage in supplementary feeding of their cattle during drought periods. For example, women farmers may have less available capital or access to credit to purchase feed.

The participation of youth in agriculture is still low according to the 2019 survey results. Out of a total of 54,908 traditional farmers countrywide, only 5.3% were aged between 15 and 35 years. 35% of farmers were aged 65 years and above and a further 12.4% were aged between 55-59 years. In the cattle sub-sector the statistics are even more striking. 47% of cattle farmers are ages over 60, and just 3.5% are aged under 35. Land ownership and issues of succession are a significant barrier to youth participation in cattle farming, though some young people are given opportunities on land belonging to family members. Youth perceptions of cattle farming are also a factor, with many young people seeing farming activities as labour intensive and unprofitable.

There is no available data on employment specific to cattle farming. 24% of farm holdings across Botswana employ workers. The total number of farm workers decreased by 3.4% between 2017 and 2019, when it stood at 14,898. The majority of farm workers (90%) are permanent and most are male (95%). The government set a minimum wage for agricultural farmers at BWP 1,000. The average farm wage stood above this in 2019 at BWP 1,174. Many farm owners pay their workers both in cash and in kind and average farm wages can be quite a lot higher than the approved rate when this is taken into account.

Straying and stock theft

Losses due to straying and theft decreased from 79,799 in 2017 to 53,571 in 2019. Stock theft has been described as one of the biggest challenges facing the livelihoods of Botswana people. A stock theft bill was introduced in Botswana in 1996, providing for stiffer penalties and making prosecution easier. Though this was intended to have a deterrent effect on stock thieves, evidence suggests that this has not been the case, and the bill has recently been amended with provision for harsher penalties still. There are now reportedly well organised and resourced syndicates operating in Botswana that have turned stock theft into a lucrative business. It is particularly difficult to enforce laws to counter stock theft in the context of rural cattle posts where livestock is often kept outside villages and free to mix and roam through communal grazing lands. However, at night cattle are usually rounded up and penned into a kraal. There are also stray cattle, known as *matimela*, which roam freely. Responsibility for rounding up

these stray cattle and locating their owners falls on local councils. It is unclear whether they are able to do this effectively.

Under the Botswana Animal Identification and Traceability System (BAITS), all cattle must be tagged by the time they reach 3 months and assigned to a registered keeper. In theory this should reduce theft, but there are reports that tags can be removed and that thieves re-tag stolen cattle and register them in their own names. Furthermore, the Ministry of Defence, Justice and Security reports that the majority of livestock stolen are calves for rearing. Calves are targeted because they are not yet branded and tagged, and so can then be marked up by the criminals. Stolen cattle are often taken and hidden in secret kraals in bushy areas. Some criminals keep matimela that they have rounded up in these kraals and then brand and tag their offspring, often then killing the parents to destroy evidence. Cattle are often slaughtered in the bush or in abandoned farms at night, with the carcasses then transported to butcheries and other meat outlets. The perpetrators of stock theft include hired herders who are not properly remunerated who sometimes slaughter cattle for consumption and then claim that it went missing or died from disease or wild animal attack. There are also organised syndicates involving government officials, farmers, stock traders and business owners. Sometimes foreigners also collude with locals to steal livestock and drive it across the border.⁸⁸

An anti-stock theft operation dubbed *KgomoKhumo* being implemented by the police is reportedly having some impact. Although neighbouring countries are often blamed for stock-theft, the police chief responsible for the operation reports that locals are in fact the leading perpetrators. The police have appealed for community support, highlighting their dependence on information from community members who report noticeable accumulation of stock or wealth, and meat dealers selling at lower than market rates.

Traceability

EU livestock traceability rules tightened in 1997, requiring permanent identification of individual animals and their edible products. This was designed to reduce the spread of infectious disease, improve beef traceability for public health reasons, and to better organize the market. Each animal now has to be issued with a unique identification number, all animal movements must be registered, and all holding areas must be registered in a database.

In response to these tightening rules, Botswana's MOA initially attempted to introduce an advanced traceability system using boluses inserted into the stomach (Livestock Identification and Traceability System – LITS). This was eventually abandoned, and in 2013 the transition to the BAITS digital ear tagging system began. The law requires that all cattle should be tagged within 3 months of birth, but it is not entirely clear how strictly this is adhered to or enforced. There are reports that some farmers are reluctant to register all their animals due to fear of taxation, whilst other don't record all animals and transfers of ownership due to difficulties accessing the digital platform. Tags are purchased from Livestock Advisory Centres (LACs) and linked to the registered keeper on BAITS. They are issued in pairs; one analogue and one electronic. Tags for local animals are yellow and those for imported animals are red.

Under National Development Plan 11 BWP 85 million is earmarked within the MOA budget for BAITS. The Department of Veterinary Services periodically offers trainings to farmers on a first come first serve basis. There are also youth-led 'BAITS café' sessions where farmers who struggle with the ICT can get assistance with registering their animals online, though reports on the value of this service are mixed.

Farmers in Kgalagadi North have clashed with the Department of Veterinary Services over BAITS due to issues with network connectivity in their region which apparently renders the system ineffective. They reportedly preferred the previous bolus system and claim that stock theft has increased under BAITS as ear tags can be removed and thieves can re-tag the cattle and register them as their own. However, a new version of the system is apparently being rolled out, and this is to have an offline function.

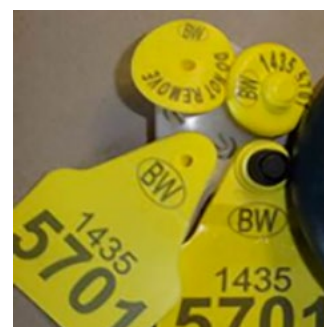


Figure 7: BAITS ear tags, analogue (l) and electronic (r)

An ex Minister of Trade commented that the EU has reported dissatisfaction with the way traceability rules are applied in Botswana. Specifically, Botswana's large livestock is free-range owing to efforts to keep the supply-side as inclusive of smaller producers as possible, and the EU felt this was too loose. However, Botswana holds all livestock in a controlled feedlot for 30 days before slaughter, so the MOA's position is that any issues can be identified and addressed during this time.

Beef exports

In 2016 Botswana was Africa's largest beef exporter, ranked 18th in the world with a share of 0.5 percent in total world exports by value. In 2019, Botswana was the ninth largest exporter of beef to the European Union. However, between 2010 and 2018, earnings from beef exports dropped from \$130 million to \$80 million. Botswana's exports of fresh and chilled beef products dropped from \$62 million in 2015 to \$29 million in 2019. Exports of frozen beef products dropped from \$53 million to \$32 million over the same period. Livestock production is particularly affected by weak market linkages. The lack of clustering of production centres also has implications for access to services such as extension services, water, energy, and product interchange.⁸⁹

Botswana's beef production, processing and export performance lags behind that of its competitors. Botswana captures a price for its beef that is comparable with the average world price but significantly lower than the average export price of neighbouring Namibia. Namibia is a key competitor for Botswana, also supplying the EU, UK and Norway, and last year becoming the first African nation to export beef to the US.

When it comes to beef exports to the EU, under the EU-SADC economic partnership agreement (EPA) Botswana (and Namibia) benefits from duty free quota free access to a sector normally controlled by tariff related quotas. Whilst South African beef does not currently benefit from EPA tariffs, it is also an important regional competitor for Botswana. The country has been seising opportunities to increase exports to the Middle East. However, foot and mouth disease (FMD) is a constant challenge, and periodic border closures have resulted from threats to South Africa's FMD-free status.

Botswana is concerned about the threat of increased competition, particularly from Brazil. The landed cost of Botswana beef in the EU is BWP 50/kg, compared to BWP 23/kg for Brazilian beef. Botswana is seeking to niche its product to insulate from direct price competition with mass producers. One example of this is a push to scale up grass fed production, though there are problems with organic certification due to lack of certifying capacity.

Botswana's beef exports are highly concentrated in South African and European markets, notably the Netherlands, Greece and Italy. South Africa accounts for almost all of Botswana's live exports and most of its exports of frozen beef, whilst the Netherlands accounts for the lion's share of fresh and chilled beef.

Table 11: Botswana's frozen beef exports 2015-2019 (USD thousands)

List of importing markets for a product exported by Botswana:					
Product: 0202 Meat of bovine animals, frozen					
	2015	2016	2017	2018	2019
South Africa	27,887	29,360	32,085	36,466	22,582
Netherlands	2,562	2,436	2,762	3,354	4,473
Greece	3,503	5,696	5,198	2,560	1,279
DRC	569	149	128	1,692	1,211
UK	16,916	12,140	6,894	5,788	0
World	53,198	52,183	49,004	51,219	31,871

Sources: ITC calculations based on UN COMTRADE statistics

Table 12: Botswana's fresh and chilled beef exports 2015-2019 (USD thousands)

List of importing markets for a product exported by Botswana:					
Product: 0201 Meat of bovine animals, fresh or chilled					
	2015	2016	2017	2018	2019
Netherlands	12,129	12,370	10,706	21,036	25,173
South Africa	8,810	14,252	7,194	4,582	2,702
Angola	1,611	1,033	399	653	396
Italy	11,667	8,344	954	4,807	277
UK	26,412	16,231	15,292	10,596	75
World	62,209	52,845	34,808	42,946	29,091

Sources: ITC calculations based on UN COMTRADE statistics

The decline in beef exports to the UK is striking. Formerly Botswana's primary market for fresh and chilled beef and second biggest market for frozen beef, the UK now imports virtually none. Botswana used to have consolidated distribution for the EU28 via the UK to save costs. The implications for its cost structure of having to serve two markets post-Brexit were significant given that distribution costs are 8% of sales.⁹⁰ The dramatic decline in exports to the UK reflects a resulting change in strategy. The EU market remains a key target for Botswana, but diversification will be essential if the country is to access opportunities in higher value niche markets.

In an effort to reduce dependence on EU and South African markets, Botswana has been looking to China. Botswana is expected to deliver its first consignment of beef to China in early 2021 and projects that sales to the country will reach 10,000 tonnes within the first quarter.

BMC has until recently been the sole entity licensed to export meat. The parastatal's mandate is to find a market for cattle farmers. It is not a profit oriented organisation. Because Botswana is not a big player in the global beef market its approach is to look for niche markets where a premium is available for high quality products. This involves seeking out lucrative markets for each specific cut e.g. prime steaks go to nations such as Norway and Belgium with big hotel trade, and shin is popular in Malta and Greece. BMC is niche market focused and demand driven, looking at what raw material is available and seeking to determine how best to create value for the farmer. However, this can be challenging in a competitive market and when quality and consistency of supply varies. BMC is widely perceived to hold a monopoly over the sector,

and cattle farmers claim that the lack of competition at abattoir level results in producers having to accept prices that aren't viable. BMC has experienced significant losses in recent years and has been heavily criticised for reasons including inconsistent supply, failing to meet export quota, and not paying producers on time.

Though Botswana exports to the EU, it is not currently able to exploit the true potential of EU markets due to the supply challenge. BMC purchases cattle from farmers operating across different scales – at the top end a few big ranches supply upwards of 5,000 head each per year, whilst at the bottom end thousands of smallholder farmers each supply fewer than 20. Meat destined for the EU market has to be disease-free (originating from an FMD 'green zone') and meet certain age and quality requirements. The requirements for non-EU markets (local and regional) are more lenient but high quality standards are still adhered to.

BMC has at times taken action to address the supply issues. During the 2019/20 financial year a total of 283,388 cattle were slaughtered at BMC and other private facilities, up from 238,795 in 2018/19. The increase (14.3%) in cattle off-take is attributed to a BWP 3/kg price incentive that was effected between the 1st of June 2019 to 30th September 2019 during which a total of 38,273 cattle were purchased (out of 63,000 targeted).

Despite its challenges, the BMC has had some significant achievements. These include implementation of a structured pricing system used as a tool to ensure adequate supply of quality beef. Whilst traditionally cattle are kept as a store of wealth, this system has encouraged farmers to operate on a commercial basis, selling their younger animals. Those older animals that would fetch a lower price are now more often used for social functions such as celebrations. Nonetheless, among traditional livestock farmers raising small herds, commercial practices, including the use of inputs, are limited.

In March 2020, the Minister of Agricultural Development and Food Security, Edwin Dikoloti stated that a meat industry regulatory authority would be created to facilitate the liberalisation of beef exports, further opening up the beef industry to allow farmers to export directly and creating new opportunities for private sector participation.⁹¹ There has already been some progress along these lines with a few private abattoirs recently having been licensed for export. This is a very positive development, though progress is slow and abattoirs can wait up to 3 months to secure permits to export beef. There seems to be a consensus that establishing a regulatory authority and pursuing liberalisation of the sector will only be effective if problems with the broader regulatory framework are addressed in parallel.

There is a feeling amongst some indigenous farmers that the sector is held captive by wealthy non-indigenous farmers with foreign connections, especially in South Africa. These feed lotters buy cattle at a low price from smallholder farmers then fatten them up and sell them on at a much higher price to BMC. By way of example, during 2020 feedlots were buying at BWP 10/kg live weight when the "winner" would be about 120kg, then fattening the animal for 90-120 days during which it would increase to an average of 400kg (240 cold dress mass) to then be sold to BMC at BWP 38/kg. These farmers comprise an estimated 5% of those supplying to BMC but reportedly make over 90% of the revenues. Smallholder farmers often sell some of their cattle to feedlots due to cashflow problems when their animals are still too small to sell directly to BMC. This helps them to address their short term needs as they wait for the rest of their livestock to reach the required weight but reduces margins.

The new administration in Botswana has allowed some export of live cattle to South Africa. The export window has resulted in farmers getting double what the local feedlots were offering. Though this was in many ways a good disruption, it has not been entirely popular with BMC or feedlotters. Though there are short term advantages of live export for smallholder farmers, better coordination among domestic value chain players that resulted in favourable pricing for smallholder producers would improve Botswana's export prospects and facilitate domestic value addition. It was noted that some farmers who exported live cattle to South Africa were

selling their breeding stock in desperation which of course has long term consequences for their business and for the sector more broadly.

Many of Botswana’s important economic activities have been affected by the Covid-19 pandemic, and the beef sector is no exception. The decline in travel and tourism has had a knock-on effect on the beef sector, with reduced demand for more expensive meat cuts to supply hotels and restaurants.⁹² Border closures have also had an impact on trade flows. Early on in the pandemic the SADC community worked hard to keep trade flows open as far as possible, despite some temporary physical border closures. The significant second wave of infections and concerns about the spread of the new variant led South Africa to close borders with Botswana, Mozambique, Namibia, Lesotho and eSwatini on 11th of January 2021. These borders reopened again a little over a month later. Along with these closures, other factors have affected the beef trade such as a temporary ban on the import of cattle into Botswana due to an FMD outbreak in South Africa in 2019 which lasted until August 2020. Botswana has also periodically opened temporary windows for live export to South Africa. Consequently, it is difficult to isolate the impacts of Covid-19 on beef trade flows to and from Botswana.

BMC is among the many public and private sector actors that have had to adapt quickly to the pandemic and to restrictions. The parastatal responded by staggering its operations throughout the week, restricting certain activities (deliveries, slaughter and deboning) to set days in order to reduce its active workforce and allow for social distancing. BMC’s already low supply means that overall throughput has not been seriously affected. Private meat processors have also had to work with a reduced number of staff to facilitate social distancing. Information on the effect this has had on the volumes of meat processed and marketed is lacking.

The beef value chain

Farmers sell their cattle either directly to processors, to local butchers, to agents or speculators at marketing centres, to private feedlots, or direct to BMC. Local butcheries are a particularly important market for the traditional sector representing 41.5% of total sales. Sales to feedlots are becoming increasingly common (18%). As discussed earlier, under current circumstances this is not necessarily to the benefit of the farmer.

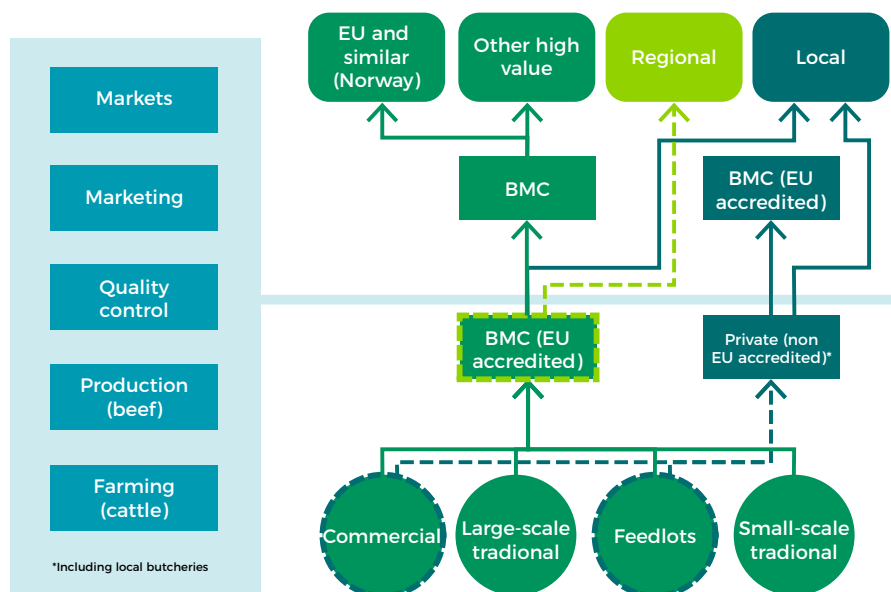
Table 13: Traditional sector cattle sales by buyer (2019)

	BMC Direct	BMC Agent	Auction Sale	Another Farmer	Trader	Butcher	Feedlot	Other
No.	6,447	1,835	481	8,197	2,540	24,227	10,537	4,109
%	11.04	3.14	0.82	14.04	4.35	41.50	18.05	7.04

For export markets, BMC buys cattle directly from farmers (both big ranches and smallholders), or through agents. It places them in contracted feedlots, which charge a margin on inputs and a standing charge for the animals, until slaughter. Private feedlots also sell direct to BMC for export, and as the table above demonstrates, this is becoming a more common route for cattle raised in the traditional sector to reach the BMC.

Beef is sold in the local market through the larger grocery chains who purchase their meat from processors, some of them forming part of the same group of companies. Most of the remaining meat is sold directly by butchers.

Figure 8: Beef Value Chain Map



Source: ITC 2014

2.1.2 Inputs

Feed and fodder

Fewer than half of farmers within the traditional sector engage in supplementary feeding (41.7%), as shown in table 14. Traditional farming systems mostly rely on open grazing, in part due to cultural preference, but also due to cashflow constraints which limit farmers' ability to purchase feed and other inputs. Whilst some are able to purchase feed to see them through difficult periods, many farmers lose cattle during droughts due to the lack of grazing and inability to purchase feed.

Most finishing feed and supplements are imported from South Africa (though there is reportedly at least one domestic supplement manufacturer). During consultation it was noted that this gives an advantage to non-indigenous commercial farmers who often have South African connections and can secure feed and supplements at favourable rates, reducing the cost of production. The majority of other feed ingredients are imported and mixed in-country making feed expensive compared to neighbouring countries. Some fodder is imported (e.g. Napier grass from South Africa), but it is costly and there is limited availability. There is scope for increasing fodder production in Botswana.

District	Supplementary Feed – Cattle		
	Yes	No	Total Cattle Holdings
Ngwaketse	1677	1421	3098
Barolong	1252	884	2136
Ngwaketse West	140	88	229
South East	190	94	284
Kweneng East	1617	1715	3332
Kweneng West	1033	690	1723
Kgatleng	979	1131	2110
Central Serowe / Palapye	1013	1685	2698
Central Mahalapye	673	1191	1864
Central Bobonong	449	1098	1547
Central Boteti	370	697	1067
Central Tutume	641	1372	2014
North East	511	1422	1933
Ngamiland East	291	1084	1375
Ngamiland West	623	1722	2345
Chobe	17	81	98
Ghanzi	427	436	863
Kgalagadi South	371	281	651
Kgalagadi North	63	139	202
Total Traditional	12337	17231	29567

More attention to research and development is required to develop feeds using indigenous ingredients. This is reportedly on the agenda at Botswana University of Agriculture and Natural Resources (BUAN), but with limited progress to date.

Feed is sold by both private retailers and regional outlets. These include LACs which are distributed across the country (38 in total) and are operated by Botswana Agricultural Marketing Board (BAMB). LACs offer feed (sometimes subsidised as stipulated by MOA) but can't always meet demand due to challenging geography and logistics, and a lack of storage capacity, particularly in rural areas.

Veterinary drugs and animal health services

A review of the veterinary services available in Botswana, published in 2019, found that Botswana has highly qualified and competent veterinary professionals operating in both the public and private sectors. There are District Veterinary Office and Sub-district Veterinary Office field staff, and the Department of Veterinary Services (DVS) carries out annual official vaccination programmes for various diseases including FMD, anthrax, quarter evil (black leg) and rabies. There have apparently been attempts at delegating FMD vaccination to the veterinary private sector, but these were unsuccessful due to tender offers far exceeded costs for public sector vaccine application.

70% of cattle within the traditional sector are vaccinated. Statistic Botswana provides information on the number of holdings by type of cattle disease controlled and district. However, the data does not provide insight into the extent to which holdings which aren't controlling are affected by those diseases. The control rate for FMD appears low at just 3,762 holdings since vaccination is not practised in designated FMD-free zones.

Most rural livestock keepers use public sector veterinary services through DVS, with the initial contact usually made through veterinary paraprofessional (VPP) extension officers. BAMB has

also started offering a new 'Bushvet' call out service through which farmers can access on-farm veterinary services. The initiative so far has very limited capacity, currently operating with just one vehicle and a team of 4. There are plans to expand this, but it is unclear whether this service will be accessible to small scale producers.

LACs have historically offered veterinary drugs at subsidised prices but carry quite limited stocks and have limited technical capacity. Drugs are expensive, so when they're unavailable at subsidised rates through LACs, they are often inaccessible to farmers. There are also reports that BAMB purchases some drugs in large quantities and may not always sell them before their expiry dates.

As a means of encouraging livestock producers to register with BAITS, BAMB requires a livestock keeper's ID in order to purchase drugs at LACs. Ear tags for BAITS are also sold through LACs and are linked on the system to farmers' brands and their BAITS ID number.

Breeding

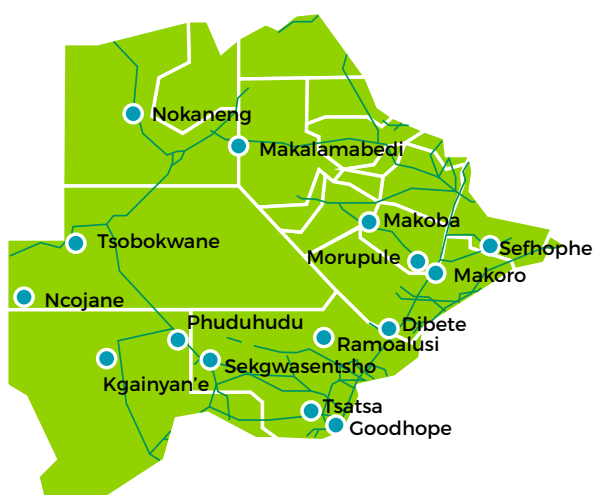
Local cattle breeds are the Tswana, the Africander and the Tuli – the Tuli is reportedly the best performing of these. Crossbreeding occurs with foreign breeds, but often at random, so the benefits of local breeds can be lost or diluted.

Within traditional livestock systems breeding is predominantly done naturally, often without a clear breeding strategy in place. The 2019 annual agricultural survey found that of 29,355 registered livestock holdings, just 373 used artificial insemination (AI) services (of which 181 used just AI and 192 used a combination of AI and bull servicing).

AI technology was introduced in Botswana in the mid-1960s to improve herd quality, particularly for beef cattle.⁹⁴ The government introduced AI services so that herd quality could be improved, and farmers given a choice of breeds, without having to invest in expensive breeding bulls. Formerly coordinated by the DVS, AI now falls under the responsibility of the Department of Animal Production (DAP). DAP runs a free three week on-farm AI course for 30 participants twice a year.

There are 15 AI centres to which farmers can send their cattle for insemination. These are spread across the country, as shown in figure 9. Whilst semen used to be imported from South Africa, it is now mostly supplied by Ramatlabama Bull Stud in the Southern District, though imports are sometimes required when equipment breaks down. The centres are underutilised, in part due to the long distances involved for the more remote ranches. Transport would be too costly for many farmers to consider and trekking over long distances results in lost body condition. AI adoption is much higher amongst those who are within 15km of an AI centre. Movement restrictions caused by FMD outbreaks also have an impact on uptake.

Figure 9: Geographical distribution of artificial insemination centres



AI services provided at the government-run centres are subsidised, costing around BWP 20 per cow for a maximum of 5 cows per farmer. Subsidised on-farm AI services are also available for farmers with fenced ranches. Free inseminator training and technical advice is provided. It is reported that 170 farmers are registered on this programme, but that participation varies from year to year, averaging at just 60 farmers. This is due to a range of factors including persistent drought, difficulties paying the wages of trained inseminators, and a lack of commitment from some farmers. Two community AI ranches were established, but both are reportedly underutilised.

2.1.3 Value addition

Primary processing / slaughter

Botswana's main slaughtering capacity is under BMC which has 3 slaughterhouses at Lobatse, Francistown and Maun. The Lobatse slaughterhouse is located at BMC headquarters and is the biggest facility with an annual slaughter capacity of 143,000. The Francistown and Maun facilities have a slaughter capacity of 83,000 and 26,000 respectively.

There are also privately operated abattoirs and rural slaughter slabs. DVS licenses these on an annual basis and provides guidelines on all aspects of approval. It is unclear how many privately owned slaughter facilities are in operation, but DVS maintains a register of abattoirs, slaughter-slabs and processing plants in the country through BAITS.

The Livestock and Meat Industries Act 2006 sets out standards for slaughter. The DVS licenses meat inspectors and has developed SOPs for ante- and post-mortem meat inspection processes. However, enforcement of standards at rural slaughter slabs is reportedly difficult.

Issues with seasonality can result in quieter periods at slaughter facilities. It is likely that the increasing trend towards feedlotting is helping to address this.

Secondary processing

There are a number of players engaging in secondary processing, including Senn Foods, Quality Meat, the grocery chain Choppies, and large butcheries such as Gantsi Beef, Afro Butchery and Butcher Shop. Secondary processing includes cutting meat into portions and cuts, as well as further processing to produce meat products such as sausages and canned beef. Products are then packaged and distributed for sale at the main grocery stores or are sold to restaurants and caterers.

BMC conducts its own secondary processing activities including deboning and cutting meat, packaging and chilling or freezing it for export. It also produces a number of products including corned beef, stewed steak, biltong, as well as offal and various by-products.

The bigger meat processors tend to operate an integrated supply chain model with their own cattle farms, feedlots, abattoirs, meat processing plants, distribution facilities and sometimes also retail outlets.

Table 15: BITC export profile of selected beef processors

Organisation	Description	Product Information
Botswana Meat Commission	<p>BMC is a Parastatal and was established in 1965 to promote the development of the country’s livestock industry. Its headquarters is in Lobatse, where there is an integrated complex housing an abattoir, cannery and by-products plant as well as a tannery. Besides owning three abattoirs in Botswana, BMC has cold storage facilities in South Africa and marketing subsidiaries in the EU and South Africa.</p> <p>BMC currently sells its products both locally and internationally with the ability to reach more markets regionally and beyond. BMC meets high internationally recognised standards.</p>	<p>Frozen meat</p> <ul style="list-style-type: none"> • Total production: 11,700 tons • Raw materials: Cattle • Country of source: Botswana • Current Export markets: Norway, RSA, & EU (90%) • Potential Export markets: Further EU • Product Intl. Standards: Very High <p>Canned Meat</p> <ul style="list-style-type: none"> • Total production: 124,971 cartons • Raw materials: Beef • Country of source: Botswana • Current Export markets: None • Potential Export markets: EU • Product Intl. Standards: Very High <p>By-products</p> <ul style="list-style-type: none"> • Total production: 198 tons • Raw materials: Beef by-products • Country of source: Botswana • Current Export markets: None • Potential Export markets: SADC • Product Intl. Standards: Very High
Senn Foods	<p>Senn foods is a privately owned domestic company that began its operations in 1982. The company currently has 480 employees. Situated in Gaborone the company is committed to creating high quality wholesome foods. Their products are processed meat, beef.</p> <p>Senn foods exports processed meat but has been unable to export beef due to the BMC export monopoly. It is unclear if this has changed with the recent licensing of some abattoirs for export.</p>	<p>Processed Meat</p> <ul style="list-style-type: none"> • Total production: 4,800 tonnes • Country of source: Botswana and SA • Export markets: Not specified <p>Fresh Meat Beef</p> <ul style="list-style-type: none"> • Total production: 7,200 tonnes • Raw materials: Cattle • Country of source: Botswana • Export markets: NONE <p>Chicken</p> <ul style="list-style-type: none"> • Total production: 1,200 tonnes • Raw materials: Chicken • Country of source: Botswana • Export markets: NONE

Organisation	Description	Product Information
Target Meat	<p>Target meat is a privately owned domestic company that began its operations in 1994. The company currently has 26 employees. Situated in Lobatse, in the Southern district, the company manufactures beef by-products/meat products.</p> <p>Target meat is interested in exporting products and has established links in Angola and Ghana. The company is restricted by the BMC act which does not allow export of meat by private companies. Expansion plans for the company are mainly restricted by working capital.</p>	<p>Russians</p> <ul style="list-style-type: none"> • Total production: 6423 kg • Raw materials: Beef • Country of source: Botswana, SA • Current Export markets: None • Potential Export markets: Africa (Angola and Ghana have shown interest) • Product Intl. Standards: High <p>Chilli Bites</p> <ul style="list-style-type: none"> • Total production: 69 kg • Raw materials: Beef • Country of source: Botswana • Current Export markets: None • Potential Export markets: Africa (Angola and Ghana have shown interest) • Product Intl. Standards: High

Source: BITC Botswana Export Ready Database

2.1.4 Transport

As highlighted in relation to accessing AI services, many cattle posts are remote and not easily accessible by road. There is no organized transportation system for cattle movement, and it is reported that this often results in farmers selling to agents for a reduced price.

Local transport, notably for transporting cattle to slaughterhouses, is mostly provided by the larger farms themselves e.g. processors, agents and municipal authorities. There are also a large number of independently owned truck or van operators. Processors usually transport meat to retailers in their own vehicles.

In line with livestock traceability rules, all cattle movement requires a permit. Movement may be for the purpose of slaughter, rearing or translocation. Farmers can apply online through BAITs, or offline through BAITs cafés. There is no cost to attaining a permit and the process is said to take one working day. Issuance of movement permits has been suspended for most purposes, with the exception of slaughter, at various periods during the pandemic.

A transit permit for livestock and livestock products is required by those wishing to move animals across the country to another destination country. Issuance of a permit requires that there are no notifiable diseases present e.g. FMD.

All beef exported to the EU passes through South Africa where the BMC has cold storage facilities. The lack of alternative routes poses a risk e.g. if there is an FMD outbreak in South Africa and consignments from Botswana can no longer travel through the country.

2.1.5 Environmental aspects of value chain

The prevalence of traditional farming systems in Botswana means that the beef value chain is highly susceptible to the effects of a changing climate, including increased incidence of drought, and reduced and erratic rainfall. There is a shortage of groundwater in Botswana which makes periods of drought particularly challenging to weather. When lakes and other water sources dry up, farmers **have to** walk long distances with their animals to find grazing; some cattle succumb to the heat.

Nonetheless, 93.5% of traditional sector farmers do report having a relatively reliable water source for their livestock. The most common source by far is a borehole (54.6%), followed by a dam (17.6%) or a river (15.8%). Other water sources include wells, ponds, tanks and pans. Ownership of these water sources varies. Some are owned by an individual or family, others are collectively owned by a community or syndicate, whilst some are government owned.

Data from the 2019 annual agricultural survey suggests that 70% of farmers within the traditional sector have access to some kind of weather information. 89% of these report using the information that is available to them. 88% of farmers claim to be aware of climate change; 52% of these have noticed a shift in the seasons and 54% have observed increased incidence of drought. Relatively few have seen more outbreaks of pests and diseases (3.6%), or heavy rainfall (5.2%).

The Musi composite cattle breed was developed in Botswana in order to improve animal productivity and adaptability to harsh climatic conditions.⁹⁵ Drought tolerant livestock like Musi cattle can reduce communities' vulnerability to the impacts of climate change. However, in order to reap these benefits, attention to breeding practices is essential so that the resilient characteristics of the breed are maintained. Whilst the total population of cattle in Botswana has been rapidly decreasing, as explored earlier, the population of Musi cattle appears to have increased by 39% between 2015 and 2019, as shown in table 16 below. Whilst encouraging, these figures should be interpreted with caution given the patchy availability of data. The Tswana breed, also favoured for its tolerance to drought, is reportedly experiencing a slight decline.

Table 16: Musi drought tolerant cattle population by district 2015-2019

Agricultural District	2015	2016	2017	2018	2019
Kweneng (Matlolakgang Ranch)	246	249	262	260	271
Mahalapye (Morale Ranch)	251	187	213	269	216
Ghanzi (Xanagas Ranch)	189	183	190	171	172
Barolong (Morapedi Ranch)	112	119	102	105	140
Serowe Region (Makhi Ranch)	-	-	24	33	33
Maun Region (Tsetseku Ranch)	4	4	2	1	-
Barolong (Goodhope Ranch)	67	80	89	104	73
Francistown Region (Impala Ranch)	-	-	10	18	9
Gaborone Region (Sebele Ranch)	-	-	-	-	-
Barolong (Ramatlabama – RMTc)	-	-	-	88	92
Barolong (Farmer – Lobatse)	-	-	-	-	33
Mahalapye (Farmer)	-	-	-	-	33
Sherwood (Farmer)	-	-	-	-	29
Gobogoo (Farmer) Central Region	-	-	-	-	103
Total	869	822	92	1049	1204

Source: Statistics Botswana 2019

The issue of land degradation due to overgrazing is another major constraint to production, especially around boreholes. Inappropriate land use can undermine productivity and contribute to desertification, exacerbating the issue of inadequate fodder availability. In some areas, communities are undergoing training in community rangeland management and pastoral production practices.

A Land Degradation Assessment, Monitoring and Restoration project was launched in 2020 on the strength of a partnership between the Ministry of Environment, Natural Resources Conservation and Tourism's Department of Forestry and Range Resources and the FAO. The project is reportedly worth \$1 million and will be implemented over a 3-year period. One of the components will be the development of a land restoration strategy, which is likely to have a strong focus on herd management practices.

Foot and Mouth Disease

Botswana has for a long time had a zoning system in place for FMD control, and this reportedly functions effectively.⁹⁶ The country is separated into "red zones" in the north (Ngamiland) and "green zones" in the south. Ngamiland is cordoned by approximately 10,000 km of fencing into different disease control and protection zones that have evolved over time as they have served as boundaries in the control of FMD outbreaks and as required by the EU. There is also a buffalo fence surrounding the Okavango Delta to prevent buffalo from coming into contact with cattle. Maintaining these fences is reportedly a significant burden on DVS in terms of both manpower and financial resources. Elephants present one of the biggest challenges; a huge increase in numbers over the past decade has resulting in increasing instances of damage and repairs need to be made on a daily basis.

Botswana exports beef to the EU from the green zones, and the EU regularly and rigorously inspects the zoning system, checking fences to ensure that cattle movement from north to south is strictly regulated and that buffalo-cattle contact is prevented. The DVS is reportedly rethinking the fencing system with a view to offering livestock producers in Ngamiland better incentives for beef production and building movement corridors for wildlife.

Botswana Vaccine Institute (BVI) and Botswana National Veterinary Laboratory (BNVL) are responsible for national and regional FMD-specific diagnostic and investigatory needs. There is an FMD active surveillance programme in operation, with the primary objective of ensuring continued access to EU markets. Regular audits are conducted by the European Commission's Food and Veterinary Office. These seek to ensure that controls of FMD and controls for production of meat for export to the EU are thorough and strictly enforced. A recent review found that together BVI and BNVL meet the needs of a competent national animal health laboratory system, and that DVS has built up significant experience with FMD disease control which enhances its efficiency and effectiveness in preparedness and response. To date, Botswana's action plans for FMD response have met with EU approval and allowed beef exports to continue.

Food Safety

BNVL has a food safety section and carries out weekly validation tests for meat hygiene at BMC. There is also a private food hygiene lab that carries out testing for non-BMC abattoirs, but not across the board.

DVS is responsible for food hygiene and traceability of meat products up to the point of processing. The Veterinary Public Health Division licenses registered meat inspectors. Packaged meat products are traceable back to the batch of animals that arrived under the same movement permit, but not to the individual livestock producer. This is because meat from different producers and animals may be packed into one box. Regular simulation exercises are reportedly carried out at abattoirs to test their capability to trace meat products back to the producer(s).

2.2 Support to the Beef Sector

2.2.1 Institutional Framework, National Policies and Programmes

MOA is the principal support to beef sector, and has outlined its spending under NDP 11 as follows:

- Livestock Management and Infrastructure Development II (P 475 million)
- Control and Eradication of Food & Mouth Disease (P 150 million)
- Emergency & Disease Control (P 40 million)
- Botswana Animal Information and Traceability System (P 85 million)
- Agricultural Infrastructure Development (P 35 million)
- Integrated Offices at Extension Areas (P 165.2 million)

MOA supports the sector through the activities of its various departments, notably:

Department of Veterinary Services – DVS provides veterinary and animal health-related extension services, enforces regulations and standards relating to production and processing, distributes subsidized inputs through LACs, and inspection services through the national veterinary laboratory. Historically the department has been short on personnel and this has resulted in unavailability of extension officers. Those that are available have to travel long distances. Whilst it has on occasion been reported that their knowledge is sometimes outdated, a recent external review found DVS staff to be knowledgeable and competent.

Department of Animal Production – DAP provides extension services (e.g. improving breeding methodology), provides training on production, supports trade associations, implements subsidy schemes.

Botswana Agricultural Marketing Board – BAMB took over responsibility for LACs in 2016. There are 38 centres across the country, providing inputs and advisory services. BAMB is not government funded but relies on trading income to operate. Whilst some centres are profitable, rural centres with low footfall and high operating costs operate at a loss. Transport and logistics costs are high, and there is insufficient storage at many centres to keep up with demand. Sometimes they sell out of a product the day after delivery; some people purchase products in bulk and resell which is allowed but exacerbates the supply issue. BAMB has an MoU with CEDA whereby if someone is approved for finance then BAMB will provide the input/service and will then be reimbursed by CEDA. The government sometimes subsidizes inputs, with BAMB bearing the cost at the point of sale and then being reimbursed by the government.

Department of Agricultural Research – DAR carries out research in support of improved animal production, including breeds and breeding methodology.

Department of Agri-Business Promotion – DABP provides a range of agribusiness advisory support to farmers and processors. Support areas include marketing, farm management, and policies and regulations relating to cooperatives.

Livestock Management and Infrastructure Development

The livestock management and infrastructure development (LIMID) programme's aims include, among others, promoting food security through improved cattle productivity, improved livestock management practices, and improved range resource utilisation and conservation. It is a one off support programme through which livestock farmers can apply for varying degrees of support under 7 different packages. Three of these are focused on small livestock in an effort to reach resource-poor households. The remaining 4 are for infrastructure development including water development, and animal husbandry and fodder support.

The animal husbandry and fodder support component of LIMID is open only to applicants who farm in communal areas and can be used for fodder processing (up to BWP 12,000), kraals, crushes and loading ramps (up to BWP 28,000), and fodder barns (up to BWP 15,000). The required contribution ranges between 30% for groups of more than 10 and 80% for individual farmers.

The water development component includes borehole drilling (max. BWP 120,000), borehole/well equipping (max. BWP 40,000), water reticulation (max. BWP 120,000) and borehole/well purchase (max. 120,000). This component is open to individuals and groups owning between 60 and 200 cattle. The required contribution ranges between 30% for groups of more than 10 and 50% for individual farmers.

There is also a special package which targets groups of farmers who own between 1 and 40 cattle each in areas with little underground water resources. The package assists farmers to equip existing boreholes and to reticulate water and is open to groups comprised of a minimum of 15 members. No contributions are required from farmers applying for this package.

Whilst the programme is long running and clearly provides important support, reviews have unearthed significant challenges facing applicants including difficulty raising their contributions and inadequacy of funds. For example, the water development element of LIMID (including borehole purchase, drilling, equipping or reticulation) is meant to be accessible to livestock farmers operating in communal grazing areas who own up to a maximum of 200 cattle. However, the BWP 120,000 ceiling on support is reportedly insufficient for farmers in some areas (e.g. Kgalagadi) who have to drill particularly deep to reach the water table. There were also problems with service providers e.g. shortage of drillers, shortage of transport, inadequate LIMID Programme Officers. Uptake of the infrastructure development packages has reportedly been particularly low due to the high contributions that farmers are required to make in advance of grant disbursement. It has also been noted that youth participation in the programme was low.

The LIMID programme is reportedly currently under review by the Government of Botswana to enhance its efficiency and effectiveness. It is not yet clear if any changes will be made.

The Botswana Grass-fed Beef Cluster Initiative

The Botswana Beef Grass-fed Cluster Initiative was launched in 2016 on the back of government funded, consultant-led research geared towards diversifying the economy and promoting private sector development. A number of activities took place in the early days, including consultation with communal and commercial farmers, companies and other institutions in the sector, strategic analysis and benchmarking with South Africa and the United States, and local validation with farmers and other stakeholders through group meetings. This process resulted in a strategy composed of six action lines:

- training programmes for grass-fed beef farmers and companies
- a regenerative grazing transfer programme
- grass-fed beef research programme
- a transparent traceability system that seeks to improve BAITS
- unique positioning of Botswana grass-fed beef
- direct access to advanced markets

Whilst some of these issues still appear to remain on the government's agenda there has been little discernible progress to date. The cluster implementation group has reportedly faced challenges, mainly funding related, and has been unable to operationalise core activities.

The grass-fed stream of the beef cluster initiative is seeking to scale up fully grass-fed production through communal farming syndicates, sensitising farmers to the additional market value of high-quality grass-fed beef. Whilst there is demand for high quality grass-fed beef in Europe, there are significant challenges to fully grass-fed production in Botswana. The semi-arid climate means that grass quality is generally poor so livestock for export need to be fattened using protein and carb-rich feeds, as occurs at feedlots. This ensures that they reach the required weight for marketing before they are too old and while the meat still qualifies as top grade. The approach proposed under the initiative is not to eliminate feed-lotting, but to take cattle that are raised free-range and then adhere to high feedlotting standards e.g. staying away from grain-based feeds. The initiative would then identify the right certification and branding pathway to enter a niche market e.g. 100% veld or pasture raised. This project is still in the early stages of development and seems to lack momentum.

2.2.2 Finance

Beef production requires substantial funding, particularly when operating on a commercial basis. Capital investment is required for purchasing land, infrastructure such as fencing and machinery, and cattle holdings. The production cycle is also long at between 3 and 5 years so significant working capital is required to maintain operations.

Producers operating traditional livestock farming systems often require finance at the end of the year when it is dry and there is no grazing. Most who are employed and are part-time or absent farmers are able to purchase feed, but full-time farmers often lack the available funds and sometimes resort to selling some animals in order to feed others.

Parastatals the National Development Bank (NDB) and CEDA both provide concessional finance to the sector and there are indications that the level of uptake is fairly good. The CEO of Business Botswana noted that the range of financial products and services available, both to the beef sector and more generally, is significant, and that often there is a lack of willingness on the part of the individual to undergo the necessary application and assurance procedures and to take on the financial risk themselves.

However, wider consultation suggests that access to such concessional finance options is difficult for smaller producers. CEDA requires personal surety which favours those who are well connected and which many smallholders and vulnerable group members aren't able to provide. In the absence of land and other fixed collateral, many farmers find it difficult to borrow so that they can develop their farms in order to operate on a commercial basis. This is also the case for some communal farmers seeking to cover costs such as fencing off ranches and syndicated fields, collective purchase of inputs to maximise on economies of scale, securing a water source, electrification and so on. Developing infrastructure such as connecting to the power grid and drilling boreholes is more costly for remote cattle posts, further disadvantaging those who are already cut off.

Many farmers depend on their families for funding, but this is often unreliable and usually insufficient to make the necessary investments. Family affiliations have further complications as commercial banks sometimes refuse customers credit if other family members have defaulted even where the borrower was not a guarantor. Delayed payments by BMC also cause some farmers to default on their obligations. Those who have difficulties servicing their loans may then struggle to access finance in the future. This is one of the reasons why farmers often opt to sell to feedlots for quick cash, even if the prices are less favourable. Low prices result in poor margins also making it difficult for some farmers to service their loans, or to reinvest in optimal husbandry practices.

Citizen Entrepreneurship Development Agency

CEDA is a development finance institution providing subsidised loans and business mentoring services to 100% citizen-owned firms. Established in 2001, CEDA aims to encourage and support entrepreneurial development in all areas of business and across a range of economic sectors including agriculture. CEDA provides a range of services through its 11 branches and 3 mobile offices which are spread across the country. As well as subsidized loans, CEDA offers equity, credit guarantee, letters of credit, and entrepreneur mortgage assistance.

CEDA specializes in pre-financing for smaller enterprises that are still finding their feet and require business support to reduce the risk of their investment. Its levels of assistance are as follows:

- **Micro-scale projects:** BWP 500 – 300,000; interest rate equivalent to the prevailing bank rate per annum, but for special sectors including agriculture a reduced rate of prime lending rate minus 3% is charged; maximum repayment period of 7 years; personal surety and security over assets financed is required.
- **Small-scale projects:** BWP 300,001 – 1,000,000; interest rate equivalent to the prevailing bank rate per annum, but for special sectors including agriculture a reduced rate of prime lending rate minus 3% is charged; repayment period of 7 years; personal surety and security over assets financed is required.
- **Medium-scale projects:** BWP 1,000,001 – 10 million; prevailing prime lending rate per annum is charged but for special sectors including agriculture the prevailing bank rate per annum will be charged; maximum repayment period of 10-15 years depending on the value of the loan; personal surety and security over assets financed is required.
- **Large-scale projects:** citizen owned companies or joint ventures with foreign investors/ technical partners; BWP 10,000,001 – 50 million; prevailing prime lending rate per annum is charged but for special sectors including agriculture the prevailing bank rate per annum will be charged; maximum repayment period of 20 years with maximum grace period of 48 months; personal surety and security over assets financed is required, and additional security requirements may be discounted based on job creation, economic diversification or location.

Around 40% of the CEDA's lending portfolio is to the agricultural sector. Historically this has largely been to producers, but the organisation is keen to support other value chain actors such as abattoirs and agro-processors in pursuit of value addition and economic diversification. It is also keen to support SMEs venturing into export markets (across sectors) but reports that to date there has not been much demand for funding by companies involved in exports.

CEDA finances a range of activities along the beef value chain from breeding through to processing. Business feasibility is the organisation's main concern and is the focus of CEDA's appraisal process through which proposed capital costs, working capital requirements, markets etc. are reviewed. It has previously been reported that some costs (e.g. drilling boreholes) are not eligible, but CEDA representatives report that cost eligibility is considered on a case-by-case basis. For example, a bore hole may be eligible for funding if the company had invested in infrastructure prior to the loan application. It is unlikely to be considered if an applicant is not yet established and has not invested in any other supporting infrastructure.

Most applications CEDA receives for beef are in production and these are mainly from medium to large scale producers (i.e. already commercialized). The medium scale applicants include those operating traditional / free range farming systems, within which the number of animals is limited to avoid over population and land degradation. CEDA assists some producers to purchase feed towards the end of the year when it is dry and there is no good grazing available. It is looking into options for funding feed producers, including lablab (a legume also known as hyacinth bean) and lucerne. They are looking to increase funding of lucerne projects as this is the main feed that farmers purchase due to its comparative affordability (though it is still considered expensive), and some South African players have apparently entered the Botswana market.

Though much of CEDA's lending to the agricultural sector to date has been to producers, some feel that this has primarily benefited medium to large-scale producers, allowing them to invest in the growth of their businesses whilst smaller producers are unable to do so.

Consultation suggests that many farmers find CEDA difficult to deal with. Due diligence requirements are a constraint to many applicants, and high default rates and pressure by the government to reduce non-performing loans have made CEDA increasingly stringent. For smaller producers and communal farmers who lack collateral and personal surety options CEDA's products are not accessible. A key issue here is whether livestock can be used as collateral, particularly for farmers do not hold land titles. A CEDA representative indicated that they can, though wider consultation suggested that this has not been the case, or if it is then this is a recent development and not widely known. There is also fear amongst those who do that if they default on a payment then their land will be taken from them. CEDA can take a very long time to adjudicate an application and complete the financing process. They are not obliged to commit to a definite turnaround period, although oftentimes the delays are due to the applicant's inability to provide the required information.

National Development Bank

NDB is a development finance institution owned by the Government of Botswana. It was established under an act of parliament in 1963 to provide financial services to the business sector and the general public. It works across agriculture, commerce, industry, real estate and human development. Crucially, NDB is designed to be a profit-making enterprise.

NDB's commercial agriculture loan facility provides financing for both crop animal production projects within Botswana and is said to cover a wide range of activities. This includes livestock and breeding stock, agricultural machinery and equipment, inputs, water development, and farm development. Loans for commercial agriculture range from BWP 20,000 to 60 million, with a flexible repayment period of up to 12 years.

NDB also finances smaller agricultural projects for individuals and business, reportedly tailoring loans according to needs. Eligible costs include, livestock purchase, farming implements, farm development needs, and include seasonal loans. The same constraints that inhibit smaller producers from accessing CEDA loans also apply here.

Insurance

In 2010 the Botswana Insurance Company launched a range of livestock insurance products developed in South Africa. The cover options include:

- *Feedlots Insurance* – covers livestock from death caused by fire, lightning, accident or illness, with special extensions available for explosion, accidental bloating and poisoning by plants, feeding, giving water or dipping to a maximum of 75% of sum insured.
- *Herd Select Policy* – covers the entire herd against all risks mortality (death occurring from disease or sickness and accident), theft, transit.
- *Herd Essential Policy* – covers selected livestock against death from fire, lightening, theft, accidents
- *Stud Animal Policy* – for ranch livestock kept for breeding purposes, covering against theft, all risks mortality, impotence following accidental injury, and gap cover following a government slaughter order.

As evident in the descriptions, these products are mainly aimed at larger commercial farmers.

AON also offers livestock cover for the beef sector, covering cattle against fire, lightening, death caused by disease, impotency, and death during transit. AON's cover also extends to infrastructure including farmhouses, fences, kraals, borehole and water storage equipment, employees, and vehicles. The product offering is said to be flexible according to the needs of the applicant, but the extent to which this facilitates access for smaller producers is not clear.

It is not clear whether any index-based livestock insurance products are available to cattle farmers in Botswana.

In addition to insurance for livestock producers, there is also credit insurance available to SME exporters through BECI (Export Credit Insurance and Guarantee Company Botswana). BECI is a private company wholly owned by BDC whose primary function is to equip businesses with Trade Credit Insurance policies to protect them from the danger of non-payment by credit customers. BECI covers credit sales made in the local market as well as exports.

2.2.3 Development Partner Initiatives

UNDP has a project in South-eastern Botswana promoting the production and utilisation of biogas as an environmentally source of energy for farms. Waste such as cow dung can be converted into biogas for a range of uses including cooking, lighting and heating, or processed further to produce electricity. The project is based on a partnership with Botswana Institute of Technology Research and Innovation (BITRI) and has 3 main components:

1. Capacity building and institutional strengthening
2. Establishment of biogas plants
3. Establishment of biogas utilisation platforms

In order to facilitate low-carbon investments and public-private partnerships to support biogas production, UNDP has been delivering capacity building exercises with farmers and has established demonstration sites. It has also worked with government personnel and advocated for regulations and policies that support the use of biogas and development of biogas standards.

Having understood the difficulty that smallholder producers face when it comes to investing in biogas technology, UNDP secured finance to subsidise 200 digesters for small-scale farmers. It was hoped that this would build local capacity and serve to demonstrate the benefits to the wider community. Progress has been slow because farmers have struggled to raise the rest of the capital. So far 12 have been completed and 33 are still under construction. UNDP has also worked with abattoirs to investigate the potential for medium- and large-scale applications of the technology. Two feasibility studies have been completed, one on behalf of BMC (requiring BWP 15 million investment) and the other on behalf of a private multi-species abattoir (requiring a BWP 5 million investment). Whilst enthusiastic about their potential, neither entity has the available funds to invest in the project.

Financial institutions including NDB have been trained on best practices in assessing and financing renewable energy projects and accessing concessional and climate financing. A dedicated investment facilitation platform on low-carbon waste-utilisation technologies has been established at BITRI and is operational with an independent budget. The project has also facilitated engagement between DOE and NDB who have been working to develop a financing model using NDB's existing funding platforms.

The programme was established to promote the production and utilisation of biogas digesters, but not to construct them. It has focused on disseminating knowledge and equipping people with the skills to set up and use biogas digesters. It has also sought to create an enabling environment, dealing with issues such as standards for biogas use and biofuels guidelines, regulation for monitoring effluent flows from abattoirs, developing green certification standards, and capacity building with organisations such as Water Utilities Corporation (WUC) and Department of Waste Management and Pollution Control (DWMPC). However, the programme has struggled to gain traction due to limited capacity to invest amongst both small-scale producers and the private sector.

Whilst UNDP has engaged with CEDA and NDB to look at developing finance options and building capacity to assess proposals, progress has been limited to date. NDB is a profit-focused entity, charges quite high interest rates and is risk averse. UNDP suggests that the Bank isn't equipped to assess the risks and benefits of this kind of long-term environment-focused investment. CEDA has also expressed concerns about recuperating funds if it invests in small-scale projects. The organisation's eligibility criteria are also prohibitive to many small-scale producers, most of whom are full-time farmers and don't have income from part-time jobs or assets that might facilitate access to a loan. Given the shortage of capital at household level, this kind of initiative seems to be too far down the priority list for people to want to invest their scarce capital. Indeed, UNDP tried a similar project in Lesotho with solar energy for rural lighting some years ago, but found that it collapsed as soon as the substantial subsidy they were providing for the capital investment households needed to make was withdrawn.

UNDP is also running a project in collaboration with the Ministry of Environment, Wildlife and Tourism around managing the human-wildlife interface to sustain the flow of agro-ecosystem services and prevent illegal wildlife trafficking in the Kgalagadi and Ghanzi Drylands. The project began in 2017 and is scheduled for completion in December 2022. It aims to help address issues arising from competition and conflict between conservation goals, economic development and livelihoods in the Kalahari. There is apparently little effective coordination in tackling poaching and wildlife poisoning, along with weak capacities for improving rangeland management in the communal lands, and limited incentives for local communities to protect wildlife. The project seeks to address this through 4 key components:

1. Coordinating capacity for combating wildlife crime/trafficking and enforcement of wildlife policies and regulations at district, national and international levels
2. Incentives and systems for wildlife protection by communities increase financial returns from natural resources exploitation and reduce human wildlife conflicts, securing livelihoods and biodiversity in the Kalahari landscape
3. Integrated landscape planning in the conservation areas and SLM practices in communal lands secure wildlife migratory corridors and increase productivity of rangelands respectively, reducing competition between land-uses and increasing ecosystem integrity of the Kalahari ecosystem
4. Gender mainstreaming, knowledge management, monitoring and evaluation

2.3 Opportunities and Challenges for the Beef Sector

The beef value chain was closely studied under PSDP and an action plan presented for its development.⁹⁷ The following summary brings together key constraints identified through that study and updates them with insights from further research and consultation. These constraints represent potential areas for growth an improvement which point to opportunities to provide targeted support to the development of the value chain.

2.3.1 Supply-side issues

Capacity development

An FAO study of the beef value chain found that with improved management practices, Botswana's beef production could double, even without increasing herd size. The study is somewhat dated now, but the beef sector has only declined since and the study's underlying assumptions relating to improving the proportion of breeding cows, higher calving rates, reduced mortality and improved offtake still hold water.

The beef sector is dominated by small, potentially uneconomic holdings. Producers with experience in the sector perceive there to be good opportunities for strengthening communal farming practices. Community farming initiatives can be pursued through the development

of clusters and syndicates which have the potential to enhance competitiveness through collaboration and economies of scale, particularly if combined with training in good husbandry. Whilst there are many existing communal farms, consultation suggests that increasing awareness of the potential benefits of communal farming could help to stimulate further interest. Though climactic conditions are challenging, some producers are confident that fodder production could be successfully managed within communal production systems, increasing resilience through periods of drought. Drought resistant fodder crops such as lablab are already in production in some areas.

The changing climate, weather fluctuations and drought are a serious constraint to production. Training farmers in regenerative pasture and land management has the potential to help reduce the negative impacts of overgrazing and land degradation, particularly around boreholes. The concept is based on putting entire herds to graze intensively on small areas and then moving them on quickly. This enables dung to be trodden in more thoroughly thereby enabling grass to recover better, without destroying it and without preventing animals from getting sufficient nutrition. Though there is a good deal of talk about the potential for regenerative pasture management in Botswana there does not seem to be any entity driving this forward. There are also infrastructural constraints given that much of Botswana's beef is free-range and regenerative pasture management requires fencing.

There is an opportunity to improve production capacity through investment in breeding and genetics, leading to better conversion rates. Some pioneers within the sector are bringing new breeds and hybrids into the country such as the high value Japanese Wagyu. Increasing public awareness of the benefits of artificial insemination and the use of improved breeding material is also important. This could be encouraged by organized agriculture promoting bull-sharing schemes to improve production drivers, including fertility rates, weaning rates, feed conversion rates etc. However, there is some indication that farmers are highly protective of their bulls and may be reluctant to participate in such schemes.

There are high overhead costs at BMC, and these are exacerbated by inconsistent throughput. This is a result of seasonality of supplies to slaughtering facilities which reduces supply chain efficiency and imposes a cost on the entire sector.

Capacity diversification

Meat processing is a strong potential growth area for Botswana. Some consultees observed an increase in the availability of domestically processed meat products such as corned beef. However, the range of secondary processed beef available is fairly limited, and there is strong potential to grow the range of cuts and products on offer and increase production capacity. This would require significant investment in R&D, technology and supporting infrastructure. To get the best out of such an investment, sufficient attention would also need to be given to packaging, branding and marketing for export.

Given the small domestic market, to capitalize on this opportunity the export constraints posed by the BMC need to be addressed. It is also very costly to set up a processing plant because of strict regulatory requirements, particularly for exports to Europe.

Development of skills and entrepreneurship

Traditional pastoral farming methods often impede the introduction of modern animal husbandry techniques. In part due to the fact that cattle farming is so integral to Botswana culture and history, most communal farmers do not approach livestock farming commercially, regarding it rather as a lifestyle-related practice. Consequently, issues relating to herd management such as choice of inputs, pasture and land management, herd movement are often not approached with profitability and long term business sustainability in mind.

Support to public education can help to make farmers aware of how to run profitable cattle farming enterprises, equipping them to understand the benefits and drawbacks of different production methods, and to weigh them up according to their own needs and circumstances. There is often little awareness or consideration of different market opportunities. There is also an opportunity to facilitate the development of the leather sector by sensitising farmers to the value of investing in hide quality. The fledgling leather industry will need a reliable supply of good quality hides, and this will require farmers to maintain their grasslands free of thorny bushes that scratch and damage hides, as well as reinforcing fences to prevent straying. Public education can be expanded through a range of channels such as the media, social media, establishment of field schools, and through strengthened farmers' associations.

2.3.2 Business Environment Issues

Infrastructure

Underdeveloped transport and communication infrastructure increases costs and disrupts access to supplies and markets. Many farmers have to travel long distances on bad roads to access services such as AI, or to make a sale. Some have to transport hundreds of cattle in loads of 20 at a time due to accessibility issues and poor road quality. Investments in supporting infrastructure, such as grading of rural access roads, would help to address these issues and reduce the comparative disadvantage of rural farmers.

On-farm infrastructure such as fencing, boreholes and water equipment, and electrification are also a challenge. There is potential for solar pumps to replace noisy and pollutant diesel generators that are currently in widespread use. The use of solar power can be motivated by incentives and education. Such initiatives have apparently taken place around domestic use but not at cattle posts. CEDA is reportedly receiving more applications to finance solar pumps demonstrating that there is an appetite for such technology. Making biogas technology accessible can also help meet domestic energy needs for farming households, though evidence from the UNDP programme suggests that there is limited capacity or willingness to invest at farm level.

A lack of facilities at cattle posts leads to poor hygiene practices and the contamination of grazing areas. The lack of facilities not only discourages women and youth from getting involved, but also contributes to disease outbreaks e.g. bovine measles.

Use of ICT is limited within the sector. BMC manages its payments through an internal system which is linked to commercial banking outlets. Most payments are made by transfer to farmer accounts, but sometimes by cheque. Whilst mobile payment systems have proved efficient in other countries and sectors, BMC is sceptical about their potential in Botswana's beef sector where around 80% of cattle are smallholder owned. In 2016/17 BMC looked at initiating a cash card system instead of cheques but was met with some resistance due to the low (but increasing) level of commerciality within the sector and lack of confidence with new technologies. Connectivity can also be a challenge for those farmers located in more rural areas.

Investing in improved processing infrastructure would reap benefits, both within the private sector and at the BMC, which lacks modern, flexible packaging facilities for exports.

Regulatory issues

In spite of the recent window for live exports, BMC's monopoly on exports continues to disrupt the beef value chain. Whilst exporting live cattle can erode value within the domestic sector (e.g. through the sale of breeding stock), banning live exports reduces competition and severely restricts the prices that farmers can get for their cattle. BMC is alleged to have become complacent and inefficient, riding on its export monopoly and guaranteed EU market. The lack of competition discourages innovation and puts a stranglehold on the private sector, particularly the smaller players for whom it is more difficult to overcome constraints.

The proposed establishment of a meat industry regulatory authority has significant potential to open up the sector to competition and create new opportunities for farmers, should it have sufficient authority to take the necessary steps. There is a need for targeted advocacy to ensure that the interests of all parties are considered rather than just the BMC and large feedlot owners who are better placed to make their voices heard.

BMC's pricing policy favours weaners compared with more mature cattle. This encourages farmers to sell their young stock, driving the trend towards feedlotting. This trend may turn out to be counterproductive in the long term as more premium priced segments in export markets demand more naturally grown beef. Some argue that the drive towards feedlotting threatens to undermine Botswana beef's positioning as a premium brand. The grass-fed beef cluster initiative seeks to address this issue but has not been very active to date.

Quality of institutional support

Previous assessments of the beef sector have highlighted a lack of flexibility in the DVS, attributing this to limited capacity. However, a recent review of veterinary services in Botswana found the technical authority and capability of DVS, BVI and BNVL to be sound, particularly when it comes to FMD control. However, the DVS is not commercially oriented, and it has been suggested that service delivery could be improved by privatising or outsourcing some of its activities. There are growing numbers of private practitioners offering veterinary and animal production services, but these are not necessarily accessible to smallholder farmers.

Compliance with EU regulations is no simple matter and since BNVL isn't fully equipped to carry out all the necessary tests (e.g. for hormones and chemical residues) it has to outsource some of these tasks which is costly and can cause delays.

FMD is an ever-present threat, but Botswana has done well to maintain FMD free status outside red zones. As long as that continues, there are good prospects for increasing Botswana's beef exports.

The research capacity of DVS and DAR is limited. Robust research could strengthen the sector, for example mitigating declining fertility rates and to acquire superior genetic varieties e.g. wagyu which is gaining currency.

Beef producer associations have a key role to play in farmer organisation and capacity building but are currently underdeveloped.

Cost of doing business

The cost of doing business is high, particularly when compared with South Africa, and there is limited private sector investment. Many commercial producers rely on expensive imported inputs including feeds and veterinary products. The need to comply with a wide range of certification requirements and limitations in local testing facilities can also cause delays and increase costs.

2.3.3 Market Entry Issues

Trade coordination at the SADC level is limited and South Africa's interests at times differ from those of other countries within the region which can weaken export negotiations.

There is a high degree of reliance on exporting through South Africa. This poses the risk of disruption, especially as FMD outbreaks and movement restrictions in South Africa can impact upon trade with the country and exports in transit.

The beef sector is quite consolidated, there are relatively few large players (predominantly South African owned) who dominate and run vertically integrated operations which are difficult for smaller producers to compete with.

National promotion and branding

Though the quality of Botswana beef is high, BMC could be stronger when it comes to marketing strategy and differentiation, and exports are heavily concentrated within South Africa and the EU. Improved branding and increased marketing capacity at BMC could help seize new market opportunities. In order to facilitate this there is a need to build capacity in institutions responsible for quality and certification of Botswana products. Opportunities are said to exist in organic and grass-fed production, building on the strength of Botswana's predominantly free-range production system. Markets for organic products are lucrative but require strict supply-chain management systems and matching of products to viable markets. Botswana Exporter Development Programme (BEDP) highlights opportunities for developing standards and certification, but there has been limited progress to date.

2.3.4 Social & Development Issues

Poverty alleviation and employment generation

Traditional communal practices and the lack of commercialisation constrain the sector's income generation and growth potential. Many farmers lack the capacity and know-how to invest in their operations and infrastructure effectively. The recent window for live exports has seen a significant price increase that has buoyed the entrepreneurial spirit and business objectives of some producers. Though the sector has been in decline for several years now, if the anticipated reforms do take place and the beef market opens up then there is good potential for employment generation at farm level, in processing, and the provision of inputs and services.

Gender and youth inclusiveness

There is low involvement of women and youth in the sector. Cattle farming is traditionally a male activity so there is limited knowledge of livestock husbandry among women. Improving the level of participation of women in cattle farming in Botswana is no easy given the historically strong culture of patriarchy which still persists in many areas and is especially pronounced in cattle production. Affirmative action and gender mainstreaming have their place, but addressing the practical constraints to women's participation is equally important. For example, the limited facilities at cattle posts put many women (and youth) off participating in cattle farming. Ensuring that there are power/lighting and decent ablutions would remove that barrier to women's participation. The limited knowledge of livestock husbandry among women highlights the need for training and extension services. Ensuring that these are accessible to women (e.g. at a central location and a time of day that doesn't clash with other household responsibilities) can help increase participation.

Youth represent an important opportunity for the development of the sector as they are often more commercially minded and more open to new methods and technologies. Whilst it is not easy to get started and access to land can be a constraint, some young farmers are given opportunities through their families. Communal farming and cluster development are by nature more inclusive and opportunities for women and youth could be explored in fodder production or in agro-tourism initiatives e.g. taking visitors to cattle posts to experience bush life and participate in farming activities.

2.4 Conclusion

Despite the poor performance of the beef sector in recent years, there has been a sudden wave of enthusiasm regarding its prospects, inspired by the recent window for the export of live animals. Reviving the sector is firmly on the presidential agenda, including a commitment to increase participation of smallholder farmers. The current administration has included the beef sector (along with finance, tourism and mining) among the four high priority growth areas. Talk of a meat industry regulatory authority and further reforms to address the BMC monopoly are encouraging. However, there is some scepticism regarding the commitment to and depth of these reforms across the sector.

There is strong potential for Botswana's beef exports to recover, leveraging off EPA support to increase sales to the EU. The increasing drive towards feedlotting is designed to help achieve this by ensuring export compliance and guaranteeing consistent quality and supply. However, feedlots are costly to run, particularly in Botswana where supplements are predominantly imported. Furthermore, compliance with EU regulations is no simple matter and since BNVL isn't fully equipped to carry out all the necessary tests (e.g. for hormones and chemical residues) it has to outsource some of these tasks which is costly and can cause delays.

Whilst demand for beef is declining or static in many developed markets, demand is likely to continue to rise in developing countries where populations are growing and incomes are increasing. There is potential to further develop regional trade in beef and beef products, notably with DRC which has been meeting with BITC to discuss increasing imports. Botswana has recently begun exporting to China where there is huge potential to increase volumes, and there are further opportunities to explore in the Middle East.

Feedlotting undoubtedly addresses the typically low offseason throughput resulting from the semi-arid climate conditions in Botswana. However, there are alternative routes to consider and pursuing a range of approaches may facilitate diversification and resilience within the beef sector. Botswana is a relatively small producer by global standard and lacks the scale to compete on volume. However, the country's predominantly grass fed and naturally reared beef is of high quality and should attract a substantial premium if quality standards and certification were in place. There is also increasing aversion to feedlotting in the EU where many consumers are looking for more naturally and humanely grown animal produce. Technology uptake to increase grass-fed production could reduce or provide balance to the drive towards feedlotting through irrigated fodder production in a more commercialized production environment.

Beef cattle production requires substantial funding, particularly when operating on a commercial basis. Capital investment is required for purchasing land and supporting infrastructure, and the production cycle is long at 3-5 years, necessitating significant working capital to maintain operations. Producers operating traditional livestock farming systems often require finance to purchase feed at the end of the year when it is dry and there is no grazing; those who lack available funds sometimes resort to selling some animals in order to feed others. A range of support to the beef sector is available through the various departments of the Ministry of Agriculture, through targeted support programmes such as Livestock Management and Infrastructure Development, and through concessional lending through the Citizen Entrepreneurial Development Agency.

Access to concessionary finance options can be difficult for smaller producers. Many smallholders aren't able to provide personal surety and lack land or other fixed collateral, making it difficult to develop their farms in order to operate on a more commercial basis. Cattle are rarely accepted as collateral, though they are the primary asset of many rural households. Proper identification and traceability is one of the requirements for supplying formal markets on a regular basis. This requirement is now being widely met through Botswana Animal Information and Traceability System (BAITS), though the system is not without its challenges. BAITS may offer a route to improved access to finance for smallholders if some of these

challenges can be overcome and lenders perceive BAITS registration as sufficient for accepting livestock as collateral.

Fewer than half of farmers within the traditional sector engage in supplementary feeding. Traditional farming systems mostly rely on open grazing, in part due to cultural preference, but also due to cashflow constraints which limit farmers' ability to purchase feed and other inputs. Whilst some are able to purchase feed to see them through difficult periods, others resort to selling some animals in order to feed others. Many farmers lose cattle during droughts due to the lack of grazing and inability to purchase feed. There is an opportunity to improve smallholder capacity to access finance to purchase feed towards the end of the year when it is dry and there is no grazing. CEDA is looking at options for funding feed producers growing lablab and lucerne and could be supported to explore funding requirements to ensure minimal constraints to access for smallholder producers.

A key factor inhibiting the transition to commercial livestock production is herd composition. Export markets such as the EU require Grade A meat, meaning that animals need to be slaughtered at a young age. Not all breeds are suitable for commercial production; some do not gain weight quickly enough to reach the desired weight in time for slaughter. Smallholder producers often don't have the knowledge or resources to invest in good genetics and controlled breeding practices. Some choose to raise indigenous and drought-resistant breeds which are not suitable for commercial production.

The current structure of the market does not incentivize smallholders to invest in herd composition for commercialisation. Feedlots offer low prices and are seen as a last resort for quick payment by many smallholder farmers. BMC (which sends animals to feedlot upon purchase) may offer slightly better prices but is unreliable when it comes to payment. Consequently, many smallholder producers prefer to hold onto their animals until they are 4 or 5 years old and sell them to butcheries or on the informal market where they are assured of up-front payment and a good price. However, by this point their meat is classed as C-grade and is no longer of export quality, though it serves the domestic market.

Infrastructure is also a significant barrier to commercial production for smallholders. Remote cattle posts are often inaccessible with bad roads that can only accommodate small trucks. This makes a high volume production system very costly to implement. The cost of delivering inputs or transporting animals for feedlotting and slaughter can be significantly higher due to the multiple trips that have to be made.

In addition to the above challenges, there are major constraints to establishing sustainable feedlot operations in Botswana, particularly in more remote areas. The cost of inputs is high, most being imported from South Africa. Supporting infrastructure and technical expertise is required, not to mention significant working capital. Feedlots also need a steady flow of animals in order to operate efficiently, which is increasingly difficult to secure. Together these factors make it very difficult to make feedlots work well in Botswana without heavy subsidy which wouldn't be sustainable. Those feedlots that are operating sustainably are large, vertically integrated and centrally situated players, and conditions are challenging even for them. Interventions at the feedlot level would therefore seem to be high risk. However, the number of smallholder producers selling to feedlots is slowly increasing, and for that reason the most promising opportunities to catalyse commercial production are those that facilitate investment in herd composition and effective herd management upstream.

2.5 Recommendations for FMT

2.5.1 BAITs-compliant livestock as collateral

Proper identification and traceability is one of the requirements for supplying formal markets on a regular basis. It appears this requirement is now being widely met through BAITs which is now well-established in Botswana, even amongst small producers. It is mandatory to register and tag cattle within 3 months of birth, and livestock keepers must have a BAITs ID in order to sell cattle and to purchase veterinary drugs at LACs.

Opportunities to consult directly with lenders to understand whether they see BAITs as sufficient for accepting livestock as collateral have been limited. Broader consultation suggested that this is not currently happening; several interviewees highlighted this as a significant constraint to farmers wishing to access credit to invest in their operations. However, a contact at CEDA indicated that the organisation does now accept livestock as collateral.

The generally high level of BAITs-compliance, and the indication that livestock can be used as collateral to secure concessionary loans from CEDA, presents a significant opportunity for FMT. If FMT is able to build on this foundation, there is strong potential for many more small producers to access loan finance to invest in their businesses. Smallholder farmers with access to capital can invest in **improving herd composition and genetics**, thereby laying the foundations for some to graduate into commercial producers.

Partnering with CEDA, FMT could work to bring this to scale through the following key activities:

- Explore the terms under which livestock is accepted as collateral and work with CEDA to make this as accessible as possible for smallholder producers.
- Identify a facilitator to improve outreach and communication around this opportunity.
- Explore the extent to which other lenders accept BAITs-compliant livestock as collateral and advocate for them to do so.
- Identify a third party to underwrite the risk of accepting livestock as collateral, for CEDA and for other financial institutions. If insurance against drought, disease and theft is included as a requirement for livestock to be used as collateral then it may not be necessary to find an underwriter. However, if the cost of insurance is high then this may discourage smallholder producers from borrowing. This issue warrants further investigation.
- Bring in a third party that can provide TA to smallholders to facilitate their advance towards commercialisation.
- Take up an advocacy role to help improve the relationship between BMC and smallholder farmers.

Such a system might be further developed by promoting increased coordination among value chain players. For example, FMT could explore opportunities to secure off-taker finance from commercial banks for large ranchers/feed-lotters. Acting as financial intermediaries, these would be well placed to purchase at a good price from smallholder farmers, providing fattening and AI services and the market linkage. This would ensure a sustainable market and reliable pricing for smallholder farmers, increasing their capacity to continue investing in their operations.

Whilst there are very promising opportunities here there are also some challenges with the BAITs system. It may be that preparatory or parallel supporting activities need to take place to improve BAITs in collaboration with MOA in order to achieve buy-in from FSPs. Issues with the BAITs system include:

- The system is overly complex to navigate and not all farmers are able to use it competently. It could be adapted to be much more user-friendly and made accessible through an app. The system is not currently app driven.
- Those who can't access the platform easily have to pay BWP 50 to register or transfer an animal through an agent. This disincentivises use of the system and contributes to inaccuracy of BAITS data. In partnership with mobile network providers, government could bear the cost of farmers accessing the platform.
- Not all animals are registered – some farmers feel the system is a means of enforcing taxes (payable on herds over a certain size) so don't register all their animals. In fact the BAITS system is not used to determine herd size for tax purposes.
- The data held within the system is not accurate because it is not updated frequently enough when various transactions take place (e.g. an animal goes for slaughter). As a result the stock numbers in the system are much higher than they should be. Transactions are not monitored and data is not validated effectively. MOA staff could be mobilised to address this.
- The system lacks nuance e.g. a record shows the age of an animal when it was registered rather than real time information.
- The system does not secure adequately against stock theft. Tags are too easily removed to support secure identification. This problem is difficult to overcome, even with microchip systems.

The benefits of addressing these issues with BAITS would extend beyond the issue of livestock being accepted as collateral. Improved traceability along the value chain would facilitate certification and entry into high value niche markets. Access to more reliable information on cattle ownership and the transactions taking place within the sector would facilitate effective decision making and intervention design. Whilst there is certainly potential to improve BAITS, there is probably a point at which investment in doing so would stop paying off. The most value would come from developing it to a point where lenders and importing countries have sufficient assurance. FMT might usefully explore what specific improvements would be required to get to this point.

2.5.2 Community-based animal health scheme

Whilst the veterinary health services available in Botswana are reportedly of high quality, the public sector services provided by DVS are in high demand in relation to the number of available VPP extension officers. Geography is a particular challenge, making it difficult for more remote cattle posts to access animal health services. BAMB has started offering a new 'Bushvet' call out service through which farmers can access on-farm veterinary services, but with just one vehicle and a team of 4 practitioners they can cover only very limited ground.

There are reportedly many retired VPPs and agriculture diploma holders across Botswana. These may represent an opportunity for a more community-based approach to animal health. Under this system, basic services including drugs and advisory support could be delivered at community level.

To facilitate such a scheme, FMT could help to establish a credit scheme for community-based vets to tap into so that they can purchase stocks. This would need to be done in partnership with other organisations. For example, a veterinary meds provider (private or public sector) could be approached to put up the capital to set up a revolving loan fund for the purchase of meds. A partner NGO could be tasked with implementation.

2.5.3 Access to feed and support to fodder production

Fewer than half of farmers within the traditional sector engage in supplementary feeding (41.7%). Traditional farming systems mostly rely on open grazing, in part due to cultural preference, but also due to cashflow constraints which limit farmers' ability to purchase feed

and other inputs. Whilst some are able to purchase feed to see them through difficult periods, others resort to selling some animals in order to feed others. Many farmers lose cattle during droughts due to the lack of grazing and inability to purchase feed.

Access to finance to purchase feed is required towards the end of the year when it is dry and there is no grazing. CEDA assists some producers with this, but the usual constraints to access apply, disproportionately affecting smaller producers. CEDA is exploring options for funding feed producers, including lablab (a legume also known as hyacinth bean), and lucerne. It is looking to increase funding of lucerne projects as this is the main feed that farmers purchase due to its comparative affordability (though it is still considered expensive), and some South African players have apparently entered the Botswana market.

FMT could:

- Work with CEDA to explore opportunities for funding fodder development projects – specifically, what the funding requirements are likely to be and how they might overcome the kinds of constraints that prevent uptake by smallholder producers.
- Working with fodder grantees to integrate mechanisms to ensure that the fodder is accessible to vulnerable producers e.g. subsidising the cost.
- Work with other partners to facilitate fodder production by livestock producers themselves (individuals and community grazing associations) e.g. establish a revolving loan fund for grass seed and alternative fodder e.g. lablab and lucerne. Potential partners might include BAMB (which has reach through LACs and could manage input provision) or a private sector player.

3. LEATHER

3.1 Current status of value chain

Trade in leather and leather products reportedly exceeds \$80 billion a year worldwide. They are already some of the most widely traded products, and the sector is projected to continue growing on the strength of increasing demand from developing economies. There is large untapped growth potential within many developing economies that have large livestock populations, including Botswana.

A report published by UNCTAD describes the leather and leather products industry as a source of tremendous opportunity for Africa to form regional value chains and add greater value to exports.⁹⁸ This is due to the continent having the largest source of the industry's raw material, and an increase in imports of leather products to the region in recent years. The global leather industry is fragmented with production, processing and components spread across the globe. Processing has shifted to less developed countries, in part due the high cost of labour and tighter environmental laws in developed nations.

The UNDP study identifies the potential for developing regional value chains within 3 trade blocs; COMESA, ECOWAS and SACU. It recommends exploring the potential for harmonisation of technical standards, regulations and procedures, lower tariffs, and measures to address non-tariff barriers within the blocs as a means of catalysing regional trade in leather and leather products. The study relies on data from 2011 and so the fine grained analysis is somewhat dated. However, it emphasises the importance of South Africa both as an exporter of finished leather goods and as a producer of competitive leather inputs, highlighting the importance of the nation both as a trading partner and a competitor for Botswana's fledgling leather industry.

The leather sector is a key focus of efforts to diversify Botswana's economy and a leather strategy is reportedly in development as part of the wider economic diversification package. However, the sector is currently only in the nascent stages of development and a great deal of investment, innovation, and technical upskilling is required to move it forward in a meaningful way.

Hides and skins are currently exported almost exclusively in their raw form, estimated at around 300,000 per annum. The supply of hides has dwindled in recent years as the cattle population has declined and the BMC, currently the main player in the leather sector, has struggled to secure a steady supply of hides. The fact that hides are exported in their raw form hinders the development of domestic leather processing and manufacturing activities so that important value addition opportunities are missed.

Botswana has identified potential to grow the leather sector through the development of tanneries for the export of processed goods. The development of a leather park, overseen by LEA, is scheduled to be underway in Lobatse and it is hoped that this will attract investors and open up new value addition opportunities. However, this has been under discussion for a considerable period of time with little progress to date, and many stakeholders seem sceptical about the prospects of the park. A good steady supply of hides will be needed for the park to operate efficiently, emphasising the need for strong breeding stock, good herd management practices, slaughter facilities and transport. Leather processing also has severe environmental impacts so rigorous waste management and environmental and human health and safety systems are a requirement for the sustainable development of the sector, with critical cost implications.

A report published by UNCTAD describes the leather and leather products industry as a source of tremendous opportunity for Africa to form regional value chains and add greater value to exports.⁹⁸ This is due to the continent having the largest source of the industry's raw material, and an increase in imports of leather products to the region in recent years.

In short, the obstacles to the development of an economically, socially and environmentally sustainable leather sector in Botswana, though not insurmountable, are many and substantial.

3.1.1 Primary production

Primary production for cattle is covered in the previous chapter. The primary production issues are largely the same for the beef and leather sectors. One key difference is the importance of hide quality which is a key concern in relation to the development of the leather sector given the conditions in which most livestock in the traditional sector are raised. Unfenced farming systems leave cattle free to wander, often getting snagged in undergrowth or on broken fences. Many farmers also refuse to leave behind traditional branding systems which further compromises hide quality.

Whilst cattle hides are the primary focus of Botswana’s leather sector, sheep and goat hides also play a limited role. These are traded informally on the domestic market making it very difficult to assess the scale of local trade. Whilst the cattle population has dwindled over the last decade, the population of sheep and goats has increased. This is in spite of the number of holdings having decreased, indicating a greater number of small livestock per farmer and perhaps a trend towards commercialisation.

Table 17: Key indicators for goats and sheep, traditional sector 2017-2019

Indicators	2017 Traditional	2019 Traditional
Goats: Total Goats Holdings	58,332	42,179
Total Goats	1,199,661	1,228,744
Offtake Rate (%)	7.3	6.6
Birth Rate (%)	39.1	39.2
Death Rate (%)	23.3	18.9
Sheep: Total Sheep Holdings	12,992	11,905
Total Sheep	234,621	242,911
Offtake Rate (%)	3.9	7.7
Birth Rate (%)	33.6	32.8
Death Rate (%)	16.1	14.1

There is much interest in the potential to process exotic hides, namely ostrich and crocodile. However, neither has a well-established primary production system in Botswana. The country has a large wild ostrich population, and commercial ostrich farming began in the mid-1980s.⁹⁹ However, producers faced challenges including high input costs (especially feed), prolonged closure of the only abattoir, a lack of technical expertise, and inadequate extension services. The farmed ostrich population stood at around 6,000 birds in 2010, declining to around 2,200 in 2015. Up to date figures are not available, but anecdotal evidence suggests that commercial production has not recovered. The situation with crocodile farming is similar, with the population of farmed crocodiles estimated in the thousands rather than tens of thousands.

3.1.2 Key players

The key players in the leather sector are:

- **Farmers** – producers of raw hides and skins
- **Abattoirs / slaughterhouses** – 3 operated by BMC and ± 18 private and municipal facilities
- **Tanneries / processors** – limited processing (salting) conducted by BMC
- **Collectors** – niche buyers of hides and skins
- **Exporters** – private players mostly exporting raw and wet blue hides and finished leather products
- **Artisan / cottage yard tanners** – conducting small scale vegetable tanning
- **Manufacturers of leather products** – using some locally vegetable tanned hides but mostly imported leather to make products such as shoes, belts and bags

The BMC is currently the main player in the sector, conducting the bulk of the limited processing activities that take place domestically, and responsible for the lion's share of exports. Cattle purchased by BMC go through one of the parastatal's three slaughter facilities at Lobatse, Maun and Francistown. Here, the hides are obtained as a by-product of the meat industry. The BMC's Lobatse facility has a tannery which processes the hides of all the cattle that come through its slaughterhouse, salting them on mechanically operated drums. Operations are reportedly inhibited by two main factors; i) inconsistent and low supply of hides, and ii) mechanical breakdowns. Wet salting also takes place at BMC's Maun facility, but has ceased at the Francistown facility where most hides now reportedly go to waste.

Figure 10: BMC salting drums (top) and finished salted hides (bottom)



Prior to 2006, BMC was tanning hides up to the wet blue stage, servicing an established export market in Italy.¹⁰⁰ Around that time, it was reported that up to 50% of hides exported were in their raw form, the rest being wet blue. However, in 2006 BMC ceased its tanning operations due to environmental issues. From that point onwards, almost all Botswana’s exported hides and skins have been in their raw form. Therefore, though BMC’s Lobatse facility is described as a tannery, the hides are currently only being salted/preserved rather than tanned.

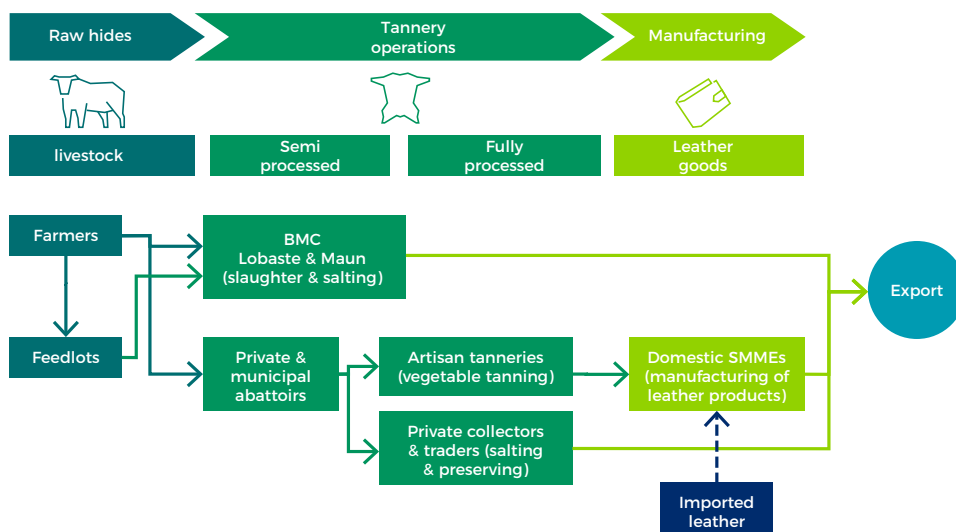
Opportunities stemming from the development of the leather industry currently seem to be very limited for smallholder farmers. Because the BMC already buys the whole animal, there is no additional value available to the smallholder producer from the sale of the hide. That is to say that though the BMC benefits from the sale of both meat and hides, the additional value from the hide does not accrue to the producer and therefore adds nothing to household income or food and nutrition security. This setup disincentivises further investment in good herd management practices for optimal hide quality.

Some hides are sold to collectors or traders of raw skins and hides, and to artisan tanners to preserve and cure for export or to process into leather. Collectors usually preserve and sell the hides to exporters who ship it across borders to other countries (notably RSA, Namibia, China and Pakistan) to be processed into finished leather.

There are a few leather products manufacturers who utilize cottage yard vegetable tanned leather or imported leather to manufacture various products. The quality of both the locally tanned leather and imported leather is usually low, so the resulting products (e.g. shoes, belts and bags) are of limited quality.

The value chain map shown in figure 11 below identifies the key actors operating in the leather value chain. The grey arrows clearly identify the missed value addition opportunities, highlighting that the bulk of hides and skins are exported whilst still in a semi-processed state.

Figure 11: Botswana’s leather value chain



Source: author’s own

3.1.3 Exports

In 2019 Botswana’s exports of raw skins and hides of bovine animals were worth just \$212,000, serving markets in Pakistan, South Africa and Namibia. Table 18 demonstrates the dramatic decline in exports between 2015 and 2019, corresponding with the decline experienced by the beef sector. The focus is on cattle hides here as these make up the vast majority of exports. There is domestic trade in sheep and goat skins but this is difficult to quantify as they are mostly marketed informally.

Table 18: Botswana’s exports of raw bovine hides and skins 2015-2019 (USD thousands)

List of importing markets for a product exported by Botswana:					
Product: 4101 Raw hides and skins of bovine “incl. buffalo” or equine animals, fresh, or salted, dried, limed, pickled or otherwise preserved, whether or not dehaired or split (excluding tanned, parchment-dressed or further prepared)					
	2015	2016	2017	2018	2019
Pakistan	111	11	59	99	76
South Africa	7,256	5,096	1,581	492	75
Namibia	12	5	0	9	61
China	803	284	47	5	0
World	8,195	5,632	1,748	646	212

Sources: ITC calculations based on UN COMTRADE statistics

Table 19 demonstrates the lack of exports of tanned or crust bovine hides (under HS code 4104 which accounts for wet blue) prior to 2017. The data for 2017 shows an increase to the value of \$448,000 before exports of tanned hides decreased again to just \$9,000 in 2019. It is not clear where these hides were being tanned, but it is likely that this was the work of private collectors and exporters.

Table 19: Botswana’s exports of tanned or crust bovine hides and skins 2015-2019 (USD thousands)

List of importing markets for a product exported by Botswana:					
Product: 4104 Tanned or crust hides and skins of bovine “incl. buffalo” or equine animals, without hair on, whether or not split (excluding further prepared)					
	2015	2016	2017	2018	2019
Pakistan	0	0	0	28	9
China	0	0	2	18	0
Hong Kong	0	0	3	7	0
Namibia	0	1	10	16	0
South Africa	0	1	433	64	0
World	0	2	448	134	9

Sources: ITC calculations based on UN COMTRADE statistics

Table 20: Total exports of tanned and crust bovine hides and skins for selected African countries 2015-2019 (USD thousands)

List of selected African exporting markets for:					
Product: 4104 Tanned or crust hides and skins of bovine "incl. buffalo" or equine animals, without hair on, whether or not split (excluding further prepared)					
	2015	2016	2017	2018	2019
South Africa	106,332	81,748	82,759	64,497	43,505
Kenya	36,802	23,428	22,964	16,664	8,745
Namibia	12,867	10,239	9,271	6,711	3,679
Zimbabwe	5,782	2,106	1,256	1,178	132
Zambia	3,367	1,867	1,896	605	525
Botswana	0	2	448	134	9
World	6,072,170	4,999,300	5,126,371	4,517,421	3,398,952

Sources: ITC calculations based on UN COMTRADE statistics

There is a notable decline in exports of tanned hides across the selected African nations included in table 20 above. However, a key difference is that with most of these comparators, an increase in exports of leather further prepared after tanning or crusting (HS code 4107) is also observable, indicating further domestic value addition before export. In the case of South Africa there is also a marked increase in the export of composition leather (HS code 4115). Meanwhile, Botswana's exports under both these categories are still very low and sporadic.

3.1.4 Value addition

Commercial value addition is very limited within the leather sector. Consultation confirmed that there are currently no operational commercial tanneries in Botswana. There was an attempt to establish a processing facility through a joint venture between the private sector (a Botswana national in collaboration with a Bulgarian company) and Botswana Development Corporation (BDC). The result, Tannery Industries Botswana, is now a white elephant in Phakalane. The project was projected to cost BWP 23 million but reportedly ended up costing close to BWP 30 million and still failed to get off the ground.

Some cottage yard vegetable tanning takes place, but the volumes are small and the resultant leather is of low quality. Leather products manufactured locally mainly use imported leather, though sometimes the locally tanned leather is used.

Table 21: BITC export profile of selected manufacturers of leather products

Organisation	Description	Product Information
Leather Products Botswana	Leather products Botswana is a privately owned domestic company that began its operations in the late 1970s. The company currently employs 15 people. Situated in Pilane, in the Kgatleng district, the company manufactures school bags, traditional attire, handbags, sandals, belts and pistol holsters.	<p>School Shoes</p> <ul style="list-style-type: none"> • Total production: 6,000 units • Raw materials: Leather, soles • Country of source: South Africa • Export markets: SA, Lesotho, eSwatini <p>Traditional Attire</p> <ul style="list-style-type: none"> • Total production: 3,000 units • Raw materials: Processed and semi processed Leather • Country of source: Botswana and SA <p>Bags</p> <ul style="list-style-type: none"> • Total production: 1,000 units • Raw materials: Leather, glue, thread • Country of source: South Africa • Export markets: Lesotho, eSwatini, Namibia, SA
Kings Leather Works	Kings leather works is a shoe producing private manufacturer located in Letlhakane. The company started operations in 2005 and has grown through the years to employ around 11 employees. As well as shoes, the company produces other leather goods such as belts and other accessories.	<p>Shoes</p> <ul style="list-style-type: none"> • Total production: 100 pairs per day • Raw materials: Leather, soles and other shoe accessories • Country of source: SA • Current Export markets: None • Potential Export markets: SADC • Product Intl. Standards: Medium
Other SMMEs working to similar scale/ product type:	<ul style="list-style-type: none"> • Dipuo Leather Craft Botswana • Dilomakwati Leather Work Botswana • Seloka Tanning and Leather Craft • Star Tailor and Leather Works Botswana 	

Source: BITC Botswana Export Ready Database

One of the key issues inhibiting domestic value addition in the leather sector is that BMC is export focused, sending raw hides and skins overseas in bulk. Some stakeholders feel that unless BMC supports the fledgling domestic leather processing and manufacturing sector it is unlikely to gain traction.

Botswana has undertaken numerous efforts to increase EU foreign direct investment (FDI) into the sector. This apparently includes discussions with Italy about setting up a tannery that would supply directly to high end designers such as Gucci. This is reflected in the continued push to move ahead with the development of the proposed Lobatse Leather Park. In 2020, the government approved BWP 292 million for the development of the park, including construction of a common effluent treatment plant, a secure landfill facility, factories, warehouses, an administration block, and one fully equipped tannery. This was after the government’s original plan to identify technical partners to contribute 50% of the cost of the project and provide technical expertise was scrapped. The revised plan will reportedly see the government construct enabling infrastructure which it will lease out to private sector operators.

LEA is responsible for the development of the leather park and reports that it is on schedule. A leather engineer with significant experience has recently been hired to guide the project. The tender for construction of the park was due to be awarded in January 2021 with the project due for completion within 18 months. However, it is not yet clear whether responsibility for the running of the park will be transferred to private operators or to the government. Whilst the government anticipates the park creating 4,700 jobs initially, and 7,000 jobs when full capacity is reached, this is clearly a long way off. BMC has been meeting with LEA to discuss the development of the park and is intended to be the key supplier of hides, though it is likely that more raw hides would have to be imported to meet processing requirements, raising concerns regarding cost and efficiency.

The LEA leather park coordinator projects that at full capacity the park will be able to process 75 tonnes of hides per day, made up of 60% bovine hides and 40% exotic hides (ostrich and crocodile). Exotic skins and hair on tanned hides and skins are of high value and are consumed in high volumes in Europe, America and China. Whilst there is potential for Botswana to target these markets, it will require a real focus on technical training and installation of costly equipment. The current and dwindling cattle population will be unable to meet this level of demand should it materialise, once again emphasising the importance of addressing supply side herd management issues. Consultation suggests that the supply of exotic hides is likely to be no more straightforward.

3.1.5 Environmental aspects of value chain

When it comes to the raw material level of leather production there are of course all the same considerations arising from livestock farming as for the beef sector. These include the negative impacts of livestock production on the environment, such as rangeland degradation from overgrazing and methane emissions from ruminating cattle.

They also include issues of climate resilience. As discussed in the beef section, drought and the shortage of groundwater are significant constraints to production. Many farmers lose livestock due to the harsh conditions and scarcity of fodder during the dry season. This is reflected in the decline in livestock populations, and also in the number of households raising livestock, particularly cattle.

At the processing level, the negative environmental impacts of leather production are severe. Chromium tanning during leather processing produces large amounts of hazardous solid and liquid waste. Chromium has poisonous qualities and presents a threat to ecosystems if is not disposed of properly. Contamination can also pose a significant risk to public health; the chromium compound predominantly used in tanning (trivalent chromium) is a suspected carcinogen and can also cause skin irritation.¹⁰¹ This is a major barrier to the development of the sector in Botswana and was the reason BMC ceased tanning hides into wet blue leather in 2006. The standards set by the department of environment, particularly when it comes to the treatment of effluents, are reportedly very difficult and costly to comply with. This is a constraint for the BMC and private players alike.

Leather processing also requires a lot of water, which is no simple matter given that Botswana is projected to experience among the most severe temperature increases and average decrease in rainfall in Sub-Saharan Africa by 2100.¹⁰² The Lobatse Leather Park is likely to consume two million litres of water per day. The proposed solution is to build the park close to a sewerage treatment facility near Lobatse from which water can be extracted and treated for use in leather production. Wastewater from tanning operations would then be treated and used to irrigate a nearby farm. Plans for the park also include a dedicated secure landfill site for the disposal of solid waste.

There is apparently increasing interest in eco-friendly technologies to minimize the production of and improve the management of chromium wastes in leather processing in Sub-Saharan

Africa. It is unclear if these have been considered for the development of the Lobatse Leather Park.

3.2 Support to the Leather Sector

As yet there is little support specific to the leather sector due to its early stage of development and the lack of established private sector players.

The main support to primary production is through the same government ministries and sub-departments as addressed in the beef section. These are:

- Ministry of Agriculture
- Department of Veterinary Services
- Department of Animal Production
- Botswana Agricultural Marketing Board
- Department of Agribusiness Promotion
- Department of Agricultural Research

There is a leather unit under the MOA, but it is not clear whether this has dedicated staff or provides any specific services.

Botswana University of Agriculture and Natural Resources – BUAN has an MoU with LEA to collaborate on education and entrepreneurship. One of the objectives of this MoU is to provide access to entrepreneurship opportunities in leather technologies. However, this is in its very early stages. Consultation with BUAN revealed that there was a curriculum in development for a leather course to be delivered at the university, but that it is currently tied up at the Botswana Qualifications Authority and may stay that way for a while.

At industry level the two most relevant associations are LIAB and BEMA:

Leather Industry Association of Botswana – represents hides and skins traders, tanners and leather products manufacturers. BITC reports that LIAB works with the government on legislation, policy guidelines and strategies to improve the industry; to improve quality and increase collection of hides and skins; and to encourage the establishment of tanneries and leather products manufacturing plants. However, there is little to indicate that LIAB is currently playing an active role in the development of the sector.

Botswana Exporters and Manufacturers Association – Whilst Business Botswana is the main apex body for the private sector, BEMA has a distinct focus on the manufacturing sector, particularly exporters. BEMA aims to improve the competitiveness of Botswana's manufacturing and export sectors both regionally and internationally, doing so through a range of activities including advocacy, market awareness training, promotion of joint venture, networking events and so on. BEMA's engagement will be key to the development of the leather sector, but the limited leather manufacturing and export activities currently taking place in Botswana mean that its focus is predominantly elsewhere.

MITI provides the main thrust of institutional support at industry level, predominantly through the parastatals under its responsibility, including BITC, CEDA and LEA. Through these, it coordinates activities in three key areas, namely investment promotion, export development, and SMME development.

Botswana Investment and Trade Centre

BITC is a parastatal falling under MITI. It plays a central role in export development through its three main functions:

- **Export Development and Promotion:** training and guiding Botswana firms to become exporters; supporting firms to expand their exports; providing market information; assistance with improving product quality and developing marketing plans; participation in trade fairs etc.
- **Investment Promotion:** promoting investment opportunities in Botswana to both foreign and domestic investors; in view of the small size of the domestic market, this mainly involves promoting investment into export sectors.
- **Business Facilitation Services:** through its investment facilitation centre the Botswana One-Stop Service Centre (BOSSC). BOSSC services are particularly helpful (although are not restricted to) to incoming foreign investors and exporters.

BITC has been at the forefront of trying to drum up international interest in Botswana's fledgling leather sector, but with very limited success to date. Representatives of BITC stated that a concerted effort is needed to "*show the private sector that the government is serious*" by reshaping the regulatory framework and financing models around projects like the Lobatse Leather Park. However, it was unclear what this might look like in practice. The incentives for investors in the Lobatse Leather Park reportedly include:

- No foreign exchange controls; remittance and full repatriation of profits and dividends
- No restrictions on business ownership
- Duty-free import of machinery and equipment for manufacturing purposes
- Customs duty exemption on raw materials for goods going outside of SACU

Figure 12: Key opportunities in the leather sector as reported by BITC

- **High premium leather production:** Botswana's animal and raw hide production meets industry and environmental standards creating opportunities for producing eco-friendly leather;
- **High premium leather goods production:** production of high premium & luxury leather products ranging from OEM car seats to consumables;
- **Preferential market access through trade agreements to key growth markets for leather and leather products:** the African Growth and Opportunity Act (AGOA), European Union (EU), Mercado Común del Sur (MERCOSUR), Southern African Development Community (SADC), and the Common Market for Eastern and Southern Africa (COMESA);
- **Exporting leather and leather goods to high growth markets:** growing demand for leather and leather goods in China, the US and EU has been reflected in high compound annual growth rates (CAGR) in the last five years and these countries present significant export opportunities for Botswana's leather and leather goods;
- **R&D for the leather sector:** training rebates and migration laws for innovation are supported by modern facilities and a strong legal framework; and
- **Investment in supporting sectors:** such as waste management, training, marketing, distribution, logistics and supporting infrastructure particularly around the prospective leather cluster, the Lobatse Leather Park.

A liberal tax regime: 22% corporate and 25% personal tax, with 15% corporate tax for manufacturing and IFSC- registered companies (lowest taxes in the SADC region)

- Negotiable tax holiday (up to 10 years)
- Deductible training rebate of 200%

BITC is also responsible for the **Botswana Exporter Development Programme**, first established in 2013 after the launch of the government's second National export strategy (2010-2016). The aim of BEDP was to increase exports through targeted interventions. The revised BEDP (2020-2024) was launched in 2020 with a vision to develop a diversified export-based economy. This is to be achieved by supporting interventions in three main areas:

1. Exporter education
2. Linking products to markets
3. Practical problem solving

The programme categorises firms according to how far along they are in their journey towards exporting and uses this to help determine which interventions are most relevant to them. The programme will run a call for proposals at least once every two years and will operate a cost-sharing model (to be defined in the call for proposals).

Leather and leather products were both identified as priority sectors under BEDP. At least one leather company took part in phase 1 of BEDP (Lebang Setso Leather Crafters), receiving export awareness training and support to develop an export marketing plan, standards awareness training, and support from an expert on skills transfer. However, the impact of this support is undocumented. Phase 2 is reportedly underway, though it is as yet unclear whether applications have been received from any leather companies.

3.2.1 Finance

At the producer level, the capital required and financial services currently available are the same as those discussed in the beef section. Support to develop infrastructure is available through LIMID, concessional finance is available to eligible applicants through CEDA and NDB, and standard financial services are available through commercial banks including ABSA, Standard Chartered, Stanbic, First National, and Capital Bank. The same constraints to accessing finance also apply, notably risk aversion, collateral, and creditworthiness.

There are currently no products or services available to producers that recognise the distinct requirements of the leather sector. To generate higher quality processed leather, investment in hide quality needs to take place at farm level. This may include investment in fencing solutions that reduce the incidence of snagging and scarring. For example, barbed wire fencing can be replaced over time with single strand solar-powered fencing. This also has the advantage of being moveable which would facilitate grazing control and the promotion of regenerative grazing practices. There is also a need for support to the transition away from traditional branding practices. A strong sensitisation and change management approach is said to be required here due to ingrained cultural norms. State owned FSPs like CEDA with a mandate to support SMME development and promote entrepreneurship should be looking to incentivize such practices with accessible products that enable producers to invest in their farming businesses.

With regard to processing, what support is available is predominantly aimed at SMEs and artisans making leather products and accessories. This includes initiatives such as BEDP and the business support available through CEDA.

The core elements of primary processing infrastructure for processing and leatherworks are not in place. Capital requirements for setting up a tannery are far beyond what is on offer through CEDA and the failed attempt to establish TIBS highlights the fact that even the best efforts

of NDB fell short. The Lobatse Leather Park is designed to help address this issue, putting in place much of the supporting infrastructure that will be required by new entrants in the hope of attracting investment.

3.3 Opportunities and Challenges for the Leather Sector

3.3.1 Investment in primary processing infrastructure

There is a lack of primary processing infrastructure required to convert raw hides into leather (i.e. tanneries). The only tanning that takes place is cottage industry vegetable tanning and the resulting leather is low quality. There are some artisanal producers of finished leather products, but they use imported leather or the low quality locally tanned leather. The quality of their finished products is reasonable, but the scale is very small. If the leather sub-sector is to develop then there will need to be significant investment in primary processing capacity.

Tanneries are capital intensive, requiring significant investment in machinery, equipment, tools and supporting infrastructure, as well as working capital to sustain high operational costs. Attempts to finance new operations to date have fallen short (e.g. TIBS) and financiers reportedly do not see leather enterprises as sustainable and viable businesses due to the lack of development within the sector. There is not yet a domestic success story that new entrants and financiers can look to for learning. However, there are tanneries within the region that may provide a useful comparator for new entrants, such as Midland Tannery in Sasolburg, South Africa, which has capacity to tan 1,500 hides per day and supplies leather to the shoe and automotive industries.

In the short term, the main potential lies in availing good quality processed leather at affordable prices to support domestic manufacturing of leather products. Leather enterprises at times collapse due to scarcity, high prices and unavailability of inputs. This would require BMC to divert its focus from exporting raw hides to either processing them further itself or supplying a local processor to tan them into workable leather, in support of domestic value addition. It would then be possible in the longer term to build on this experience and capacity to establish more processing plants. If Lobatse Leather Park receives sufficient investment and can provide an attractive business environment for private sector investment then there is potential for growth.

BMC is currently operating a low cost bulk primary processing model, resulting in very limited value addition and relatively low quality hides. If Botswana invests in hide quality at production then this needs to be maintained through processing. One of the innovations that has proved effective in other nations is the use of static flaying frames. These increase the speed and efficiency of removing the hide from the carcass, ensure no meat is left on the hide, and reduce the instance of cuts and holes in hides.

3.3.2 Skills development

The leather sector currently offers relatively few employment opportunities beyond those already supporting the beef sector. Additional jobs lie predominantly in the BMC operated tannery in Lobatse, informal / cottage tanning operations, niche collectors / exporters, and a few SMME leather products manufacturers. The scope for employment creation is great but this opportunity cannot be realized without significant investment in processing infrastructure, and in upskilling the labour force to take on this technical work.

There is a lack of formal training opportunities to support the development of skills required for the proposed development of the sector in both leather processing and manufacturing of processed leather goods. LEA reports that once the Leather Park is complete, operations will be handed over to private operators or to the government. A significant pool of technically skilled labour will be required and as yet this does not exist.

In terms of manufacturing of processed leather goods, most leatherwork skills are informally acquired, and training is needed to move manufacturing of processed leather products beyond basic leather craft. The MOA leather unit would like to see manufacturers given more exposure to leather operations in other countries in order to facilitate transfer of skills and new product development, and to identify opportunities for regional integration. There are currently no plans in place for this to happen.

BUAN is exploring the development of a leather skills course, details of which are not yet available.

3.3.3 Securing adequate supply of quality hides

Herd management practices are a significant factor inhibiting hide quality which will need addressing in order to support the development of the leather sector. Improved grazing practices and/or fencing systems can reduce hide damage from thorny bushes and broken fences. Education is required alongside such interventions to highlight the benefits of eliminating traditional branding practices and working to improve hide quality. At the moment this is inhibited by the BMC's one price per beast approach through which it wins twice on the beef and the export of raw hides with no additional benefit to the farmer. Advocacy work with BMC is therefore required to ensure that producers are compensated for the value of the hide and thus incentivized to invest in herd management practices for good high quality.

A reduction in traditional branding practices should be supported by BAITS. Uptake of BAITS is good, and the system is described as 'largely effective'. However, there seems to be reluctance amongst smallholder producers to leave behind traditional branding practices. Further research is required to understand why this is and to address any outstanding issues e.g. security of tags.

3.3.4 Develop regional trade links for processed leather

Botswana is currently unable to conduct tanning operations to supply high quality finished leather for local artisanal manufacturing. Whilst this is the case, contractual agreements with neighbouring countries where hides are exported and a certain percentage of finished leather is imported back may help to address the need for e.g. school shoe upper leather.

In the longer term there is potential to develop mutually beneficial links with regional trading partners. South Africa is a promising partner, itself exporting partly processed hides (to Europe and Asia) and importing processed leather for the automotive industry¹⁰³. Key players in leather for the automotive industry include Eagle Ottawa, Mario Levy, Bader SA, Seton and **Kolosus Automotive Leathers**. South Africa is looking to develop its own supply and is well placed to do so with a strong and mostly vertically integrated beef supply chain. Nonetheless, the South African market presents a significant opportunity for Botswana if quality and consistency of supply can be secured.

3.3.5 Work to address environmental constraints

A further challenge to the development of primary processing capacity is environmental compliance requirements. The Ministry of Environment regulations are very difficult for private players to comply with, particularly those pertaining to treatment of effluents. The amount of water required and the location and land use requirements are seen to be prohibitive. The design of the proposed Lobatse Leather Park takes these issues into account and will make matters easier for those that choose to set up there, if it proceeds as planned.

Targeted advocacy to support legislative changes could boost the development of the sector, provided they don't compromise the environmental protections that need to be in place. For example, it may be possible to supply water at subsidized rates, or to relax land use laws where appropriate.

New and more environmentally friendly approaches to tanning are in development. It would be prudent to keep abreast of these from a public health perspective. Botswana also has the advantage of being at the early stage of the development of the industry and can seek to build these in from the start.

3.4 Conclusion

Since Botswana is home to a well-developed if not thriving beef sector, it might be expected that the leather sector would build on this existing capacity, bringing new value addition opportunities towards a vibrant and integrated livestock value chain. Whilst the potential is certainly there, to date this has not been the case. The sector is still in its infancy; to date there has been a tendency to look at cattle solely from a meat perspective and this has held back the development of the leather sector. For example, the fact that BMC does not compensate farmers for the hide but only for the meat denies the farmer the additional value that could be reinvested in production and improving hide quality. There is currently no incentive for producers to make such an investment, nor do prices allow it.

With the sector in its current state Botswana cannot compete in the global leather market. Indeed, it is not currently a producer of leather but of raw hides and skins, and a consumer of leather and leather products. Botswana imports most of the processed leather required to support those SMEs that are manufacturing leather products. It also imports most of its finished leather products such as school shoes, belts, and handbags. There is potential to support domestic value addition by availing good quality processed leather at affordable prices to support domestic manufacturing of leather products, but this would require BMC to divert its focus from exporting raw hides to either processing them further itself or supplying a local processor to tan them into workable leather. The lack of basic processing infrastructure such as a wet blue processing plant or a bigger commercial tannery means that this is unlikely to happen in the near future.

Though there is a lot of talk about the development of the leather sector, and it is high on the government's economic diversification agenda, action to date has been limited. There are some signs of progress, such as talks with Italian buyers regarding supplying designer outlets (e.g. Gucci). There are clear market opportunities, notably with neighbouring South Africa to supply the country's automotive industry. However, without processing capacity these are not realizable. Work on the Lobatse Leather Park was scheduled to start in December 2020; whilst it has been delayed numerous times, LEA reports that it is now on schedule. Whilst this is promising news, there are concerns regarding the long term feasibility of the project, including the level of investment required, securing an adequate supply of quality hides for the park to operate efficiently, and the lack of technical skills required for tannery operations within the existing workforce.

Given the infancy of the sector, the immediate focus should be on building readiness to support its development. Key steps towards that readiness include: i) investing in primary processing infrastructure and attracting private sector investment to support the development of the sector, ii) ensuring a stable supply of good quality hides by investing in good herd management upstream, iii) skills development to equip the workforce with the technical skills required for tannery operations, iv) developing regional trade links for processed leather, and v) environmental policy review and support to compliance with regulations.

3.5 Recommendations for FMT

Given the infancy of the sector, leather currently seems to be a high risk area for intervention. The political support and existing systems and infrastructure of the beef sector are a good foundation to build on, but primary processing infrastructure, private sector investment and

technical expertise are lacking. It is therefore difficult to identify any promising partnerships or realistic interventions that are economically, environmentally and socially sustainable. It is especially challenging to do so for a financial services facilitator, such as FMT, which is not able to offer new financial services or grants of any magnitude. To conclude, it seems that the best approach is for FMT not to look to intervene directly in the leather industry in Botswana until some of the key constraints to its development have diminished, especially given the long likely gestation period relative to FMT's 3-5 year time horizon.

However, production focused interventions with value for both the beef sector and the fledgling leather sector have potential for impact at much lower risk than would direct interventions in leather processing. In addition to the possible interventions presented in the beef section, supporting a transition to solar-powered fencing is a potential opportunity for FMT to support the development of the leather sector.

3.5.1 Solar-powered fencing

There is a clear need for good quality hides to supply the leather sector. One of the key constraints to hide quality is the frequent snagging that occurs in free range farming systems.

FMT could consider working with public and private sector role players to look at how to support a transition away from barbed wire fencing towards single strand solar-powered fencing. As well as reducing snagging, moveable solar-powered fences would facilitate grazing control and the promotion of regenerative grazing. However, several challenges would need consideration, including:

- how best to lend to voluntary associations for the purchase of capital items
- the need for voluntary compliance on communal land
- grazing associations may prefer to substitute labour for capital by using herders for this purpose, suggesting that sensitisation work may be required to make clear the benefits of solar fencing

Botswana does not currently have a dedicated policy to respond to climate change. However, its commitment to addressing the challenge is clear in NDP 11 and a climate change policy, strategy and action plan is in development. There is strong government support for solar technologies in the energy sector. Whilst there is less explicit acknowledgement of the potential for application of solar technologies in agriculture, the NDP 11 acknowledges that "smart agriculture" will be required to help Botswana transition towards more productive, efficient, resilient and sustainable agricultural systems.

4. HORTICULTURE

4.1 Current status of value chain

4.1.1 Primary production

The horticulture industry, including fruit and vegetables, has been identified as a priority area for economic diversification. The most commonly grown vegetables include tomato, cabbage, potato, onion, beetroot, lettuce, bell pepper, cucumber, butternut squash, and carrots. Some of the fruits grown include citrus, mango, marula, litchi, avocado, stone fruits (e.g. peaches and nectarines), banana, pomegranate, and watermelon. Horticulture production is dominated by cabbage, tomato, potato and oranges, which together account for 60% of total output.

The horticulture sector is yet to realize satisfactory growth for both local and international markets. Challenges to the growth of the horticulture sector in Botswana include drought, poor soils, shortage of water, insufficient infrastructure, pests and diseases, poor organisation of domestic markets, insufficient investment in technology, and weak support services. Production is also severely affected by input prices which are reportedly on average 26% higher in Botswana compared to South Africa. There is also limited adoption of good farming practices, record keeping and technology in farms, especially among small and medium-sized farms.

The scarcity in current and reliable information noted by the most comprehensive study of the horticulture value chain, conducted in 2015 under the PSD programme, remains a problem to date.¹⁰⁴ Statistics Botswana does not report separately on horticultural production, instead including it under a broad category of 'others'.

The sector is small by international standards, and even by SADC standards. MOA and Botswana Horticulture Council (BoHoCo) report that local production now meets 60% of demand, up from 20% in 2013-2014, though this is likely an overestimation.¹⁰⁵ Vegetable production appears to be experiencing encouraging growth. Indeed, the value of vegetable imports declined from \$34 million in 2015 to \$31.5 million in 2019. This increase is in part attributable to an increase in land under production, though the level of production has not kept up with this increase (so yields per hectare are actually lower). MOA estimates that 83% of land under horticulture is used for vegetable production, and the remaining 17% for fruit production. The Central region leads with over 40% of national horticulture output. Fruit production is very low with only 5% of fruit consumed in Botswana produced locally and the other 95% imported from neighbouring countries.¹⁰⁶

Most large horticulture farms are concentrated in the Central District where the bulk of production takes place. These are usually managed on a more commercial basis than smaller farms, though many still don't adopt the latest available technology or modern farming methods. Small and medium-scale farms are distributed more widely around the country and are often poorly resourced and unprofitable. In general, technology uptake is very limited amongst producers, though the number of farms using simple shaded structures, tunnels or greenhouses is increasing. A lot of farms remain under traditional open production systems which tends to limit productivity and means producers are restricted by seasonality which results in inconsistent supply of produce.

The Covid-19 pandemic has proved challenging for producers who supply the tourism industry.

Reduced international travel has had a marked impact on hotels and restaurants, resulting in a drop in their purchases of horticultural produce. However, since domestic production still does not meet demand, many producers have found alternative markets for their produce.

The most commonly grown vegetables include tomato, cabbage, potato, onion, beetroot, lettuce, bell pepper, cucumber, butternut squash, and carrots.

Some of the fruits grown include citrus, mango, marula, litchi, avocado, stone fruits (e.g. peaches and nectarines), banana, pomegranate, and watermelon.

Horticulture production is dominated by cabbage, tomato, potato and oranges, which together account for 60% of total output.

Furthermore, the pandemic has reportedly served as a pertinent reminder of the importance of local food systems and reducing reliance on imports which has buoyed the entrepreneurial spirit of some new and aspiring producers.

Domestic fruit and veg retailers include Choppies (the largest grocery chain in Botswana), Mr Veg, and Veggieland, in addition to many smaller independent outlets, corner shops, outdoor markets and street vendors. There have been several failed attempts over the years to develop markets in Lobatse, Francistown, and Palapye. Eventually the government succeeded in establishing the Botswana Horticulture Market (BHM) in Broadhurst Gaborone with BoHoCo overseeing operations and a manager hired by the state. For a time this was an important centralized intermediate market for fresh fruit and vegetables. However, it never found financial sustainability, with the government continuing to pay rent on the warehouse until BHM's eventual demise in 2018. Factors contributing to the collapse included:

- Huge losses by farmers due to spoilage/wastage. The market was commission based; farmers would deliver their produce and wait for payment when the goods were sold. Fresh fruit and veg are perishable and would spoil when buyers were not forthcoming.
- The target market was the large wholesalers and retailers, who often opted to purchase supplies from South Africa with local produce ending up going to waste. Some retailers entered into contracts with farmers who would then bypass the central market and supply directly to them.
- At the time production levels were low; Botswana was only producing around 20% of the local demand.
- There was lack of consistency in quality and quantity, feeding into buyers' decisions to import.
- Farmers lacked knowledge of good agricultural practices: use of poor methods exacerbated unpredictability and inconsistency in production.
- Lack of coordination of the supply chain, and of producers e.g. no collective procurement of inputs to obtain economies of scale and lower cost of production.
- Very limited demand from agro-processing facilities so all produce not purchased went to waste.

The lack of data available on the sector makes it difficult to get a picture of the level of involvement of women in horticultural production. However, consultation suggests that there are good opportunities for women entrepreneurs. Additionally, the number of women who own land has increased in recent years due to positive changes in the legal system, including the Deeds Registry Act, and the Married Persons Property Act. More recently, an amendment to the 2015 Land Policy means that a woman can now own land alongside her husband, giving women independence within marriages. The most recent available figures suggest that 49.3% of women in Botswana now own land,¹⁰⁷ and this is only likely to increase on the strength of the amendment. This has improved the prospects for women keen to engage in horticultural production.

Some attribute previously low levels of horticultural production in Botswana to the sector having been dominated by older small-scale farmers predominantly producing for household consumption. Though these producers did sell produce in local markets, communities and nearby cities, the focus was more on subsistence than on commercialisation. In recent years, more land has been allocated to young farmers in an effort to boost horticultural production. The government's Youth Development Fund has also provided finance on a 50% grant 50% loan basis for young people wanting to get started in agriculture. Whilst this has had some effect, research indicates that there are still significant barrier to youth participation in horticultural production. These include negative perceptions of agriculture among younger people (e.g. assumption that it is unprofitable or childhood association with punishment), poor knowledge of agriculture, and lack of access to finance.

The Government of Botswana has established Special Economic Zones in an effort to attract domestic and foreign investors to participate in the development of the sector. The objective is to support economic diversification efforts by offering a hassle free business environment with developed infrastructure where inter-sectoral linkages can be made and economies of scale can be leveraged. The Selebi-Phikwe Economic Development Unit (SPEDU) seeks to attract investment and offer business incentives in the Selebi-Phikwe area. The unit is geared towards manufacturing, agriculture and agro-processing with a view to attracting FDI and promoting exporting firms.

Table 22: Botswana’s Special Economic Zones

SEZ Site	Industry focus
1. Gaborone (SSKIA)	Mixed use (including manufacturing, agro-processing, logistics, diamond beneficiation).
2. Gaborone (Fairgrounds)	International finance, Business services and Technology
3. Lobatse	Meat and Leather
4. Pandamatenga	Integrated agriculture, Agro-processing
5. Francistown	Mixed use (including mineral beneficiation, logistics)
6. Selebi-Phikwe	Mixed use (including mineral beneficiation, agro-processing, garments/textiles, other manufacturing)
7. Palapye	Energy
8. Tuli Block	Horticulture

Source: BEDP (2020-2024)

National Agro Processing (NAPro) is a company based at Selebi Phikwe, supported by BITC, and operating under the commercial arm of the National Food and Technology Research Centre (NFTRC). NAPro was established as a developmental project focusing on adding value to horticultural products (tomato, onion, cabbage, beetroot and carrot) and extending their shelf life. Key products include tomato sauces, tomato puree, mixed vegetable pickle (achar), pickled beetroot, pickle onion and some dried vegetables. These are sold under the ‘Harvest Haven’ brand, mainly on the domestic market, notably through Seflana and Spar chain stores.

Consultation suggests that the NAPro project has not been very successful. Several stakeholders suggested that insufficient supply was one of the main reasons for this, in part due to the fact that products such as tomato puree require particular varieties that farmers are less accustomed to growing. NAPro itself reports that the supply of raw materials is reliable, though it experiences a number of other challenges. For example, the factory is operating at 30% capacity due to market constraints. It is difficult to compete with the big South African suppliers, and products are not certified. The company asserts that market research is expensive and this has affected its progress. This is borne out by comments from other consultees who suggested that there is limited demand for the products due to Harvest Haven products not comparing favourably with other brands they are accustomed to.

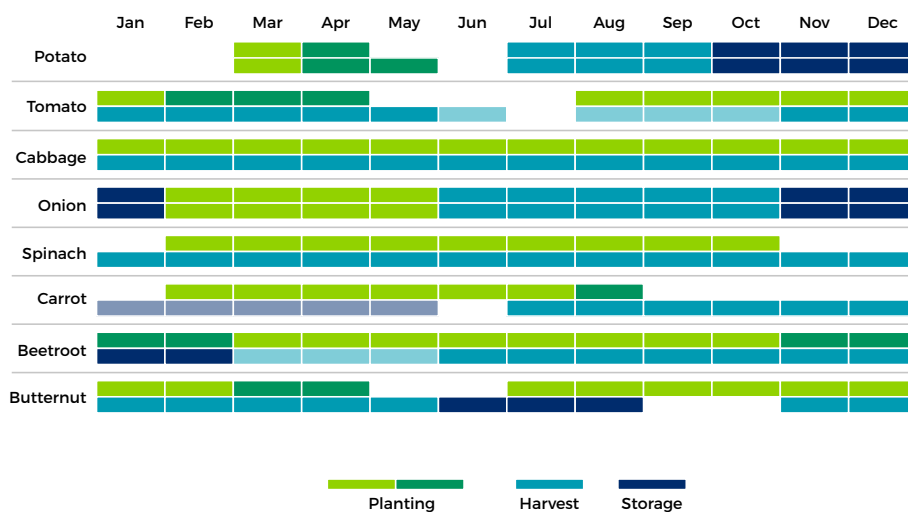
In January 2019, the Ministry of Agriculture and Food Security announced that the government had invoked the Control of Goods, Prices and Other Charges Act to impose restrictions on the imports of selected horticulture products. This ban was imposed in order to protect Botswana farmers from cheap produce mostly from South Africa. Farmers are now requesting a permanent ban; one group claims to be developing cropping plans that would boost production but are reluctant to invest in scaling up operations without reassurance that they will be able to sell their produce.¹⁰⁸ Such a ban would of course contravene SADC trade agreements and would also create market distortion and have a negative impact on pricing for consumers. Any ban introduced through legislation would also likely have an impact on the sector’s ability to

raise financing through normal channels. Banks perceive interference in markets as a lending risk, and changes to a ban would affect the ability of borrowers to repay loans of any kind. The only time that legislation should really be used is via trade agreements and anti-dumping regulations. Nonetheless, periodic bans on some produce continue to take place.

Whilst it is widely acknowledged that the horticulture sector has great scope for generating employment, government initiatives have been criticised for not focusing on attracting dedicated, full-time farmers who will increase production and create more jobs. The vast majority of famers (estimated at 90%) are owned by part-time / absentee farmers. Compared to other agricultural sub-sectors, horticulture is reported to have the greatest potential for job creation.¹⁰⁶ However, farms often employ foreign workers, and farming is reportedly not seen as an attractive employment prospect locally. BoHoCo reports that in 2018/19, 64,000 tonnes of fruit and veg were produced, and 4,137 jobs were created through the sector, but asserts that this could be much improved as there is significant underutilized land available for horticultural production. The average production area per farmer is generally low at 1-2 Ha; it is estimated that around 4% of farmers cultivate over 10Ha.

Seasonality is a key issue for the sector. Production can increase threefold during the productive season when climatic conditions are favourable. The variation in production across seasons and types of produce means that imports remain an important source of supply for the domestic market. There is seasonal over-production of some vegetables which can result in low prices and wastage. Price variation associated with seasonality is less pronounced in hardy vegetables such as potatoes and onions as it is in, for example, tomatoes.

Figure 13: Horticulture calendar



Smallholder farmers generally rely on hired machinery for their tillage, ploughing and harrowing needs. They mostly use hand-held tools for activities such as chemical spraying for pest control. Cost prevents most smallholders from acquiring their own machinery, and there is reportedly reluctance to form groups to purchase machinery. There is also a lack of appropriate crop planning to anticipate issues of demand, seasonality and pricing, and record keeping to monitor the crop growing cycle. Whilst larger farms have better access to equipment, there is a lack of entrepreneurship in horticulture production, combined with limited investment in farm mechanisation and technologies compared to international counterparts.¹⁰⁹

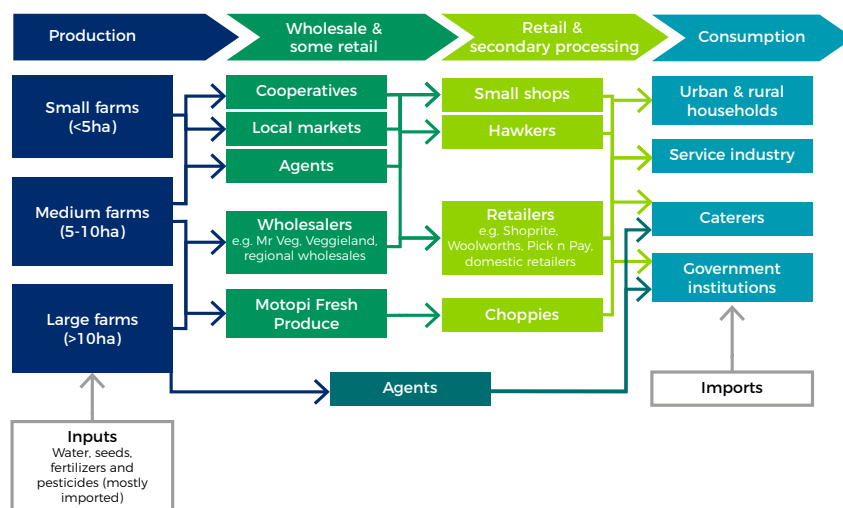
Average wastage rates in fresh fruit and vegetable production are estimated at 20-25%, but are lower for durable produce such as potatoes, carrots and butternut, and much higher (up to

50%) for softer more perishable produce such as lettuce and tomatoes. Higher rates of wastage occur at farm level when storage facilities are lacking - produce is picked to meet demand and otherwise is left to rot in the field. Wastage also occurs at the point of sale, but rates vary widely depending on the retailer.

The horticulture value chain is still in the relatively early stages of development and as such is fairly fragmented. Key actors include:

- **Large scale farms** (> 10ha) – Many of these are in the Tuli block area. These contribute a large proportion of domestic production (estimated at 70%). They are usually mechanized and often have their own transport to ensure timely delivery.
- **Small-medium scale farms** (small < 5ha, medium 5 - 10ha) – many of which are situated in the eastern part of the country, though they are also generally more distributed around the country than large farms. The number of these has been growing in recent years, though many are apparently unprofitable, in part due to poor resourcing and lack of mechanisation.
- **Retailers** – including domestic players such as Choppies and smaller local retailers, as well as South African franchises Woolworths, Shoprite, Spar and Pick n’ Pay.
- **Wholesalers** – including Mr. Veg, Veggieland, and Fruit and Vegetables Market (owned by Choppies)
- **Agents** – who purchase from individuals and wholesalers and sell on to a range of end-users.
- **Street vendors** – who turn over relatively small volumes but play a very significant role in supporting household food and nutrition security by serving rural and peri-urban communities.
- **Cooperatives** – these currently play a very limited role but BoHoCo has registered new coops and plans to revitalize their role in production, processing and marketing.

Figure 14: Horticulture Value Chain Map



Source: adapted from International Trade Centre (2015), Horticulture Value Chain Analysis and Action Plan

4.1.2 Inputs

The key inputs used for horticultural production are pesticides, fertilizers and planting material (e.g. seeds, seedlings, seed potato). Pesticides, fertilizers and seeds are commonly stocked by input suppliers. It used to be that vegetable and tree seedlings could only be sourced through the MOA nursery, however some private nurseries now operate such as Agri-Serv's *Kolbeng Seedlings* in Gaborone.

BAMB has also started offering horticulture inputs (seeds, fertilizers and agro-chemicals) through its LACs. This currently accounts for a very small proportion of BAMB's business, but the organisation expects it to increase and BAMB has entered into an MoU with BoHoCo for the provision of inputs. BAMB has also just launched a new app whereby agronomists can take a picture of produce affected by a pest or disease and obtain information on relevant care practices and inputs.

The vast majority of inputs are imported from South Africa, which has an important bearing on the cost of horticultural production in Botswana. One study found an average price differential of 26% between the cost of inputs in South Africa and Botswana. Importation of chemical pesticides and fertilizers requires a permit under the Agro Chemicals Act, and agro-dealers supplying them must undergo an agrochemicals course. Since most inputs are imported, a lack of seed varieties suited to local conditions is also highlighted as a key constraint to production, though the Department of Agricultural Research is apparently working to breed and test the suitability of new varieties, sometimes partnering with BoHoCo to do so.

A range of different packaging materials are used depending on the type of produce. Some buyers prescribe packaging specifications for produce. The most commonly used are boxes (estimated unit cost BWP 3) for tomatoes, green pepper and brinjal, brown bags for potatoes, perforated bags for cabbages, onions and butternuts. Packaging is mostly imported from South Africa and can be quite costly.

4.1.3 Value addition

Post-harvest activities are largely limited to cleaning, sorting and some packing, predominantly on larger farms. There are no organised pack houses or chilling facilities that farmers can utilise on a rental basis.

There are several voluntary horticulture product standards, developed by BOBS, that can aid post-harvest operations, mostly relating to quality grading. However, the level of implementation of such standards is reportedly low. Because limited grading and testing occurs and there is no certification, produce of different grades is sold at the same price which disincentivizes investment in technology and enhanced farming practices.

Secondary processing is very limited. Along with NAPro, some SMMEs produce pickles and pastes, reportedly relying on a combination of local produce and imports due to the issue of seasonality. Retailers also do their own secondary processing, offering pre-cut fruit and veg, packaged salads and so on.

BoHoCo is planning to begin trialling some processing activities through a cooperative model. Some of its member associations are already supplying schools with fresh vegetables. There is a strong indication that a premium would be available for pre-prepared vegetables (e.g. cubed butternut) which would reduce labour for the schools.

BoHoCo also sees an opportunity to train farmers to conduct basic processing on their own premises. NFTRC trained some farmers in processing activities such as making chakalaka and drying rape and chillies. Open sun drying is currently the predominant means of preservation, scattering produce in thin layers on flat open surfaces until it is dried by exposure to sun and wind. However, this method is labour intensive and inefficient, and produce is vulnerable to

birds, pests and contamination. Solar drying technology offers a much more efficient means of value addition and post-harvest loss reduction. However, a recent study found that in spite of the need and appetite for solar dryers in Botswana, particularly for tomato which experiences high rates of post-harvest loss (28%), the technology is scarce.¹¹⁰ Research in other nations has also found that when solar dryers are available, they are often inaccessibly priced for smallholder producers.

4.1.4 Environmental aspects of value chain

Botswana experiences low and erratic rainfall and high temperatures, as well as frost. The country is expected to experience among the most severe temperature increases in Sub-Saharan Africa by 2100. These conditions make horticultural production challenging; water seasonality and overall scarcity is a significant constraint to production, and it was reported that crops are often lost. Farms generally use ground water from boreholes, rivers and small dams. The use of recycled wastewater is strongly encouraged, though the quality is questionable and availability outside Gaborone is low.

Vegetable production requires adequate soil moisture conditions, so because of Botswana's climactic conditions, irrigation is essential to production. However, access to water for irrigation can be challenging; groundwater is not evenly distributed across the country and varies widely in quality. Drilling boreholes is risky, expensive, and does not always yield good results. Water requirements can be a blocker to accessing finance, particularly for smaller producers, as will be discussed further in the finance section.

A range of different pumping units are used for drawing and pressurising water, the most commonly used being submersible, mono, and centrifugal pumps. Assuming there is an existing borehole, the costs of complete set drip and sprinkler irrigation systems are estimated at BWP 120,000 and BWP 80,000 respectively. There is reportedly some limited use of solar water pumps. Whilst these require up-front investment, they are much more economical to run and have none of the negative environmental impacts of the diesel generators that are often used. CEDA reports having recently financed the installation of some solar pumps.

Soil quality is generally low across the country, necessitating the use of inputs. While some vegetables prefer acidic conditions, others thrive on neutral to alkaline conditions. Not all producers have the knowledge or experience to appropriately balance soil conditions and water needs to facilitate optimum production for their chosen crops. Whilst soil analysis is encouraged to determine the right type and quantity of inputs, generally Botswana soils are deficient in phosphorus. Use of organic manure including crop residues, farmyard manure, and compost to add nutrients and improve the structure of the soil is widespread.

A range of pests and diseases affect horticultural production in Botswana. Infestations occur more frequently during Summer when the temperatures are high, reducing in winter when the temperatures drop and are no longer allow them to thrive and multiply. Integrated pest management (IPM) techniques are promoted as the preferred means of controlling pests with minimal dependence on the use of pesticides, though pesticides are often required. As noted previously, the cost inputs including crop protection products, which are mostly imported, is a significant constraint to producers.

Table 23: Common pests and diseases of vegetables in Botswana

Crops	Pests	Control	Diseases	Control
Cabbage, Kale, Rape, Cauliflower, Broccoli	Diamond Back Moth, Cabbage Aphid, Bagrada bug, American bollworm, Cutworm	Curator, Carbofuran, Diclovors, Dimethoate, Chlorpyrifos, Cypermethrin	Black rot, Downy mildew	Cypermethrin, Copper Oxychloride, Mervinphos
Tomato, Green-pepper	Red Spider mite, American Ballworm, Nematodes	Copper oxychloride, Nemacur, Cypermethrin, Dicofol	Bacterial spot, Blossom end rot, Canker, Fusarium wilt, Curly due to virus	Cypermethrin and Deltamethrin
Onion	Thrips, Aphids	Endosulfan, Deltamethrin, Trichlorfon	Fusarium rot, Purple blotch	Mancoze
Spinach, Beetroots	Nematodes, Caterpillars	Nemacur, Alphemethrin, Mevinphos, Malathion 50%, Chloroprifos	Leaf spot	Captan dust
Butternut	Red spider mite, Aphids, Rootknot nematodes	Metasystox, Dimethoate 40EC, Omite	Fusarium wilt, Anthracnose, Mosaic, Powdery and Downy mildews	MZ72WP, Copperoxychloride
Carrots	Nematodes, Aphid, Mole rats	Nemacur, Dimenton-smethyl, Aluminium phosphate, Mancozeb/ Dithane M45	Bacterial soft rot, Leaf blight	Crop rotation, use of certified seed
Potato	Fruit fly, Aphids,	Dimenton-s-methyl, Dimethoate	Black scurf, Leaf Roll Virus, Soft Rot, Fusarium Dry Rot, Early & Late Blights	Benodanil, Mancozeb, Chlorthalonil

Source: MOA

Food safety

The Ministry of Health is mandated to set standards for food processing, manufacturing and promotion. It is also responsible for investigating and assessing risks, inspecting all food items that are made available to the public, and monitoring compliance with set standards. It operates a laboratory under the Food Control Division, though this is reportedly understaffed. Horticulture-related activities are limited to pesticide residue controls which are carried out on selected imports but rarely on domestic produce. The laboratory is also responsible for ensuring guidelines on water quality usage on farms are complied with.

There have been concerns around the levels of toxic metals affecting urban and peri-urban agriculture in Botswana due to high usage of agrochemicals and use of urban wastewater for irrigation. A study of potentially toxic metals in horticultural production in areas surrounding Gaborone, namely Glenn Valley and Mmankgodi, found copper and chromium levels above threshold levels as per FAO and BOBS standards. There are policies on the use of sewage effluent and agrochemicals, but these are apparently not well enforced. The distribution, use and disposal of agrochemicals is not well regulated, though the Agrochemicals Act and subsidiary 2003 legislation are in place.

BoHoCo is concerned about the lack of rigor in food safety standards for horticultural produce for the domestic market, the Chairperson asserting that "*right now anyone can produce anything and take it anywhere*". BoHoCo has communicated to NAFTEC and the Plant Protection Division that there is a need for officers to visit cooperatives to take samples and test for residues. This kind of safety and quality assurance is essential to the reputation and sustainable development of the sector.

4.2 Support to the Horticulture Sector

4.2.1 Institutional Framework, National Policies and Programmes

MOA is the principal means of support to the horticulture sector, delivering assistance through the following departments:

Department of Agricultural Business Promotion – has 4 divisions relevant to horticulture, namely i) Agricultural Cooperatives, ii) Farm Management, iii) Agricultural Trade, and iv) Agricultural Marketing. Through these departments, DABP aims to support the sustainable development and commercialisation of the horticulture sector through business skills transfer, negotiations to access the national market and promotion of cooperatives and associations. DABP also collaborates with BOBS on standards for the horticultural sector.

Department of Crop Production – delivers technical capacity building in areas such as productivity and yields, plant health and disease management, irrigation and water management technologies. It does this through 4 divisions, namely i) Land Utilisation, ii) Plant Protection, iii) Horticulture and Beekeeping, and iv) Agricultural Engineering. The efficacy of the DCP is somewhat stunted by the lack of skilled extension officers and transport.

- **Land Utilisation Division** - responsible for soil survey and mapping, land husbandry, agricultural land use planning, cartography, and GIS. The key activities of this division include promoting appropriate land husbandry practices, sustainable land resources management and developing water resources for irrigation. Works closely with Ministry of Lands and Housing on allocation of land for horticultural production.
- **Plant Protection Division** – mandated to control and manage crop pests and diseases through environmentally friendly practices such as IPM. The core functions of the division include the provision of technical support to farmers and extension officers on pest control, implementing the Agrochemical Act, limiting post-harvest losses and issuing phytosanitary certificates and import permits.
- **Horticulture and Beekeeping Division** – established in 2008 to strengthen the horticulture sector and showcase new technologies through training and field days, and to train new extension officers. There is a shortage of extension workers and those that are available often lack the practical and technical skills required. There is also a lack of transport making it difficult to service more remote areas.
- **Agricultural Engineering Division** – focuses on effective water management, particularly under extreme conditions such as drought and implementation of irrigation technologies. Water resources support to farm clusters under ISPAAD.

Department of Agricultural Research – conducts a range of research to support the productivity of the sector including research into plant and seed varieties and irrigation techniques suitable for the Botswana environment.

Botswana Horticulture Council

BoHoCo is an apex body representing around 500 small and medium scale producers from 9 district horticulture associations. The organisation's mandate is to be a mouthpiece for farmers, lobbying the government on policies affecting the development of the agricultural sub-sector. BoHoCo also lobbies financiers and has recently entered into a partnership with NDB.

The council engages with the DAR to test new crops and seed varieties, and to disseminate information about new farming practices.

BoHoCo is a proactive organisation, and in 2019 published a plan to unlock business opportunities in horticulture. The main core elements of this are as follows:

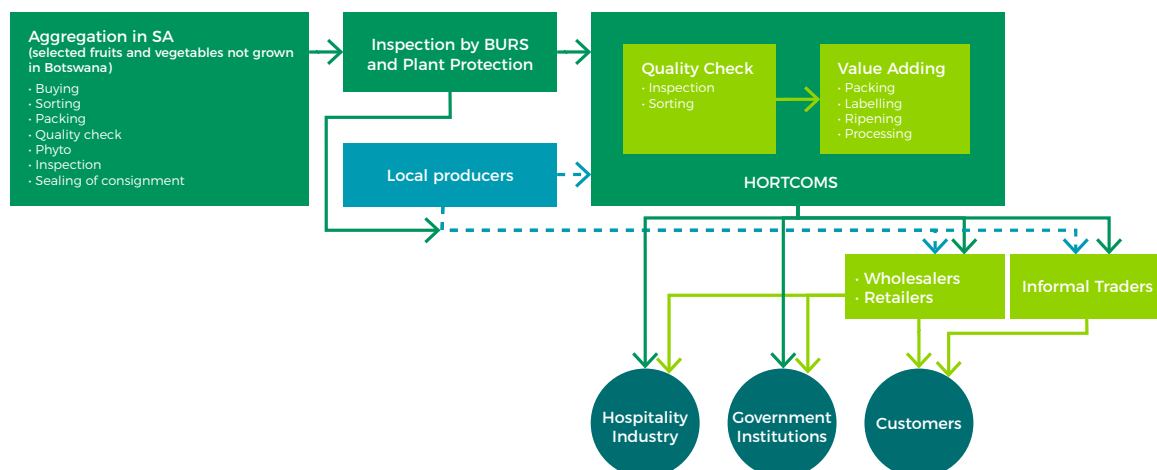
- Collaboration with Stakeholders to ensure establishment of effective farmers associations;
- Establishment of Horticulture Cooperative Marketing Societies;
- Establishment of insurance cover for farmers;
- Implementation of National Horticulture Cropping Plan;
- Advocacy for enabling environment;
- Farmer empowerment:
 - » Negotiating with suppliers for discounts
 - » Seeking cooperation with financial institutions
 - » Liaise with extension workers, training institutions and private individuals and or companies for OJT
 - » In collaboration with stakeholders, avail resource so that experts can be engaged to help farmers comply with Good Agriculture Practices

BoHoCo is already making progress with some of these plans. For example, it has worked with Aon to design a horticulture insurance product. Recognising the challenge of access to markets for its members, BoHoCo has also been working to establish two market centres in Lobatse and Francistown. It has registered a new cooperative - Horticulture Cooperative Market Society Limited (HORTCOMS). The aim is to source fruits and vegetables from local farmers to supply the market centres. The coop will also run collection centres where produce will be sorted, graded and packaged according to standards and customer needs, and establish service centres where producers can purchase inputs. Key objectives include:

- Stimulate production by availing and facilitating market for produce;
- Consistent supply of quality produce to consumers;
- Supply of farm equipment, consumables such as fertilizers, packaging and seeds;
- Arranging transport and storage facilities including cold storage;
- Facilitating marketing of the produces through own marketing set up;
- Direct supply of fruits and vegetables to factories, hospitals, hostels, clubs, social functions and processing industries.

MOA has provided facilities for BoHoCo to use in Lobatse and Francistown, and the Lobatse market centre is reportedly on track to open in the third week of March 2021. BoHoCo is seeking funding from CEDA and from AFDB to support these activities. Whilst BoHoCo is proactive and engaged, there is some concern that insufficient attention may have been given to market considerations under the HORTCOMS plan. BoHoCo might do well, for example, to lobby to secure a contract for a proportion of horticultural produce procured by government institutions so that there is some assurance of a market before too much is invested in infrastructure.

Figure 15: Flow of produce envisaged under BoHoCo’s HORTCOMS initiative



Botswana Investment and Trade Centre

Under its export development and promotion mandate, BITC has been working with 6 horticulture companies to achieve Fairtrade certification and meet export requirements. These medium sized enterprises are some of the biggest horticulture producers in the country. They have apparently done well and are now exporting fresh produce, including tomatoes, carrots, beetroot, green peppers, cabbage, lettuce, and potatoes.

Whilst BITC is pleased with the progress of these companies, it acknowledges that this was the low-hanging fruit, and that the road to export for smaller producers will be longer and more challenging. Challenges such as the cost of imported inputs, water resource availability, and lack of farm management skills (e.g. bookkeeping and cropping plans) mean that smaller players require a much higher degree of support than BITC can currently offer.

The revised BEDP was launched by BITC and UNDP in October 2020. The programme seeks to develop the capacity of the private sector to help implement the Botswana Export Strategy. Support to agribusiness clusters is planned, including:

- **Growers** - facilitating common procurement of inputs, facilitating sharing of farm equipment, usage of common storage facilities, sharing of irrigation technology, and joint training on various aspects.
- **Processors** - sharing of common processing facilities, sharing of transportation facilities, sharing of packaging facilities, use of common advertising, joint application for financial services, joint training on various aspects.

Botswana University of Agriculture and Natural Resources (BUAN)

The University’s overarching goal is to produce market-ready graduates for the agricultural and natural resource sectors. BUAN works closely with several other institutions, including the Local Enterprise Authority (LEA). The two organisations have an MoU to collaborate on education and entrepreneurship:

“The collaboration will focus on Skills development in the agriculture and natural resources sectors; capacity building and provision of targeted interventions to develop the SMME sector; provision of business advisory, mentorship and training needed to capacitate BUAN students and graduates; research and development as well as provision of facilities to benefit both LEA and BUAN business objectives”

Since 1999, BUAN, in collaboration with LEA, has offered a one year 'Agripreneur' programme which is open to all final year students of regular programmes offered at BUAN. BUAN also offers a 3 year incubator programme. This is not the same as the Glen Valley incubator but runs parallel, offering similar support. Participants in the BUAN incubator receive input from academic staff and external partners, and by the third year of the programme are expected to be running their project as a business.

Upon graduating from the programme participants have production and business skills but are not necessarily totally 'business ready'. When it comes to relocating and getting set up then it can be difficult to secure land and access to finance. Part of the aim of the programme is to build the entrepreneur's skills and strengthen their position by building relationships with financiers and retailers. BUAN helps to solve the issue of land ownership and access to water by giving them space on BUAN land at favourable rates. This helps graduates to build up their asset base so that they do have collateral, but this is more difficult with horticulture.

Some graduates of the programme who are producing on BUAN land are reportedly supplying supermarkets including Spar, Pick n' Pay and Choppies, however this is on a supplier registration basis rather than a secure offtake agreement. It is difficult to graduate to an offtake agreement without producing to sufficient quality and scale. For the bulk of their supply, retailers tend to stick to the bigger suppliers (±1,000 hectares) producing under controlled conditions (i.e. polytunnels and irrigation).

BUAN GRADUATES HORTICULTURE INCUBATION PROJECT

22 MAY, 2020



Botswana university of Agriculture and Natural Resources has engaged five of its graduates in a horticulture incubation project which started in January 2020. The Business Development unit of the university offers mentorship in the form of technical advice, sales and marketing of their produce. The graduates use basic crop production technologies that utilizes less land to produce to yields of good quality produce, as well as using less water through the drip irrigation system. It is through this project that our graduates are demonstrating that a profitable or high performance farming is achievable only if proper technologies are put into practice. Current crops planted are cabbage, tomatoes, green peppers and green mealies in a total of two hectares. As of 15 May 2020, the following harvests were made: Cabbage - 3760 kg; Tomatoes - 2443 kg; Green Peppers - 713. The produce has been sold to retailers such as Spar, Square Mart, Saverite, BDF and to individuals from the BUAN Farm Shop. It is anticipated that Green Mealies will be harvested from the 25th May 2020. The university is already in discussions with relevant stakeholders to develop value chains that will support food production in Botswana for sustainable food security.

BUAN has also recently signed an MoU with BAMB to collaborate on business and research relating to the provision of inputs, market scheduled produce, marketing programmes, promotion of new technologies and food security initiatives among others. Whilst this partnership is yet to get off the ground, BAMB is said to be interested to explore opportunities for providing precision agricultural advisory services, pest & disease surveillance (e.g. through mobile apps), and macro agricultural intelligence.

National Food and Technology Research Centre

NFTRC is a research and development organisation funded by the government of Botswana and reporting to the MOA. NFTRC engages in activities relating to food quality, food security and nutrition. A big part of its mandate is developing and disseminating food processing technologies in support of the government's economic diversification agenda.

The centre offers a range of services including nutritional and chemical analysis for food labelling, shelf-life analysis to determine expiry dates, and food safety analysis. It also offers skills transfer programmes and vocational training courses (accredited by the Botswana Qualifications Authority) to equip entrepreneurs with food and agro-processing skills. There is a course on processing of fruits and vegetables, amongst others including processing of meat and dairy products, cereal products and oilseeds, and food safety management. The topics

covered include Botswana Food Legislations, Hygiene and Sanitation, Basic Principles of Food Processing, Product Manufacturing Equipment Requirements, Good Manufacturing Practices (GMP), Hazard Analysis Critical Control Points (HACCP) and Hands-on Demonstration Sessions.

Local Enterprise Authority

LEA is a parastatal mandated to support entrepreneurship and enterprise development in Botswana. It works to provide support to SMMEs through several routes including training, development of business plans, and subsidised business premises. LEA operates through 13 branches and five incubators, one of which is the Glen Valley horticulture incubator, based in Gaborone. The incubator aims to help introduce innovative technologies into horticultural production, growing high demand, high yield and high value crops in order to reduce dependence on imported produce. LEA supported pilot farms have sought to adopt technologies such as poly tunnels and greenhouses. There has been some interest amongst established producers in developing hydroponics systems. CEDA has received a few applications of this nature but reports that there is currently a lack of technical skills to support such enterprises.

Glen Valley reportedly only produces tomatoes at the moment due to high off-season demand. The incubator provides space, inputs, training and technical support to producers, and markets the produce on their behalf. Enterprises are expected to graduate from the incubators in 2 years but there is no data available on the number that have graduated since inception of LEA. However, LEA has a new strategy which is now focusing on the broader impact on the ground including jobs created, export volumes and values, and reduction of the import bill.

LEA offers training and continued support to graduates, covering 85% of the cost of courses in areas such as marketing. BoHoCo identified land ownership as a challenge for graduates (particularly youth) of the incubator who often have nowhere to put into practice what they've learned. LEA is apparently working to secure some land which graduates could use as a starter plot from which they could work towards purchasing land of their own.

It was reported that graduates of the programme at Glen Valley often struggle. They spend 6 months training and doing production in a controlled environment then when they leave, they don't have the requisite land, infrastructure and business skills to get established. There is often a lack of understanding of market requirements such as specifications on product handling. Many producers are therefore ill-equipped to tailor production to the needs of a specific buyer (e.g. Woolworths' requirements are strict and require significant capital investment in cold storage and other equipment).

Integrated Support Programme for Arable Agricultural Development

The ISPAAD programme was introduced in 2008 to replace previous agri programmes which had had limited success such as the Accelerated Rainfed Arable Programme and Arable Land Development Programme. One of its objectives was to establish Agricultural Service Centres to improve access to inputs and mechanisation for arable farmers. Other components included cluster fencing, provision of potable water, seeds and fertilizers, and facilitation of access to credit. An ISPAAD facility was set up at NDB to provide seasonal loans. Horticulture was included as a component of ISPAAD in 2003, and has reportedly supported horticultural farmers with equipment such as irrigation systems and inputs.

The programme was under review in June 2020, deemed to be unproductive. The eligibility conditions were described as detailed and cumbersome, and there were concerns that the heavy subsidy regime threatened to undermine long term competitiveness.

However, on the 20th of January 2021 MOA began receiving applications for a new component of ISPAAD called the Horticulture Impact Accelerator Subsidy. The processing of applications, assessment and approvals are scheduled to take place in a period of six months up to 30th June 2021. The objectives of the initiative are to:

1. Facilitate horticultural farmers to increase production levels;
2. Reduce the import bill by enhancing the local market;
3. Relieve horticultural farmers from losses or impacts associated with Covid-19.

The programme is to be administered by CEDA on behalf of MOA. It is worth BWP 20 million and will be based on a 50:50 cost-sharing model. Emerging farmers will also receive a 35% subsidy on the cost of seed, fertiliser and herbicides for a maximum area of 150 hectares, whilst commercial farmers will receive a 30% subsidy for a maximum area of 500 hectares. The decision for CEDA to implement the programme is a result of an ongoing review of ISPAAD geared towards increasing the efficiency and sustainability of the programme.

Agricultural Credit Guarantee Scheme (ACGS)

The ACGS is designed to assist dry-land arable farmers in meeting their loan obligations in the event of crop failure due to severe weather including drought, floods, frost and hailstorms. The cover provided depends on the severity of the event and ranges from 0% – 85%. The scheme covers three areas; i) seasonal inputs, ii) field or farm developments, and iii) farm machinery and equipment. Critics argue that the scheme has placed a heavy burden on the Government because the level of cover provided is inconsistent with contributions to the scheme and it does not take into account farmer incomes in non-drought years. Furthermore, it works on the assumption that the main driver of poor yields is drought when there are a range of other factors at play.¹³³ ACGS only applies to rainfed agriculture and there is apparently very limited uptake amongst horticultural producers.

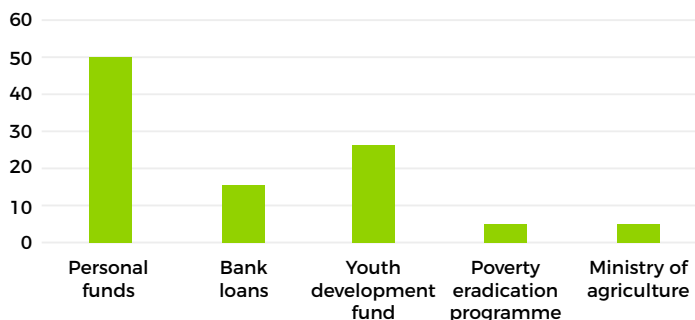
Youth Development Fund

The Youth Development Fund was established in 2006 to promote active participation of youth in the socio-economic development of Botswana. It falls under the Ministry of Youth Empowerment, Sport and Culture Development (MYSC). The key objective of the fund is to get out of school, marginalised, unemployed and underemployed youth to venture into sustainable and viable income generating projects, to reduce rural to urban migration, and to create sustainable employment opportunities for young people. MYSC works in collaboration with other stakeholders such as LEA to build the spirit of entrepreneurship and other government ministries and parastatals who offer technical support.

Funding of up to BWP 100,000 is available to start-ups on a 50% grant 50% interest-free loan basis. Funding is available on the same terms to youth cooperatives up to the value of BWP 450,000. Repayment periods range between 36 months and 72 months depending on the value of the loan, with a 12 month grace period for horticulture projects. Applicants have to demonstrate that they have sufficient knowledge and experience to run the project, either through formal qualification or by undergoing a competency assessment. Applicants must put together cash-flow projections and a budget, succession plans, proof of market, and a range of other supporting documents.

The fund has reportedly been quite successful in launching new projects, including in horticulture. Indeed, Figure 16 from a study investigating youth participation in horticulture demonstrates that after self-funding the Youth Development Fund is the primary means of young farmers getting started in horticulture production.

Figure 16: Source of funds for young farmers establishing horticulture projects in Glen Valley



Source: Tselaesele et al, 2020

It has been reported that business sustainability can be an issue for such startups due to a lack of business experience and sector-specific knowledge amongst grantees. Beneficiaries have the opportunity to undergo entrepreneurship training, however, many young entrepreneurs still fail to pay back their project loan. For example, in Letlhakeng sub-district during 2019/20 only BWP 46,640 was collected against the expected target of BWP 269,246. This has an impact on the viability of the revolving loan fund system. A lack of commitment from beneficiaries and inadequate attention to market linkages have also been cited as challenges. Furthermore, there is no monitoring and evaluation framework in place so it is difficult to gauge the impacts of the Youth Development Fund and to identify areas for improvement.¹¹²

4.2.2 Finance

Horticultural producers require access to finance both for capital investment (e.g. drilling boreholes and laying irrigation equipment) and for working capital (e.g. purchase of inputs, labour costs).

Some of the provisions described in the previous section have helped to address these needs. However, small farmers often struggle to make the necessary contributions for government schemes such as ISPAAD, which requires farmer to cover 40% of costs. BoHoCo reports that farmers are willing to invest and there is uptake of ISPAAD to cover costs such as irrigation equipment, fencing, tunnels and shade nets, but it is slow as farmers take time to save to make their contribution. It was also noted that the funding available is limited to some specific inputs and infrastructure works, leaving significant gaps still needing to be addressed. Working capital to cover wages, packaging and transport was a notable omission. However, working capital costs are now increasingly being covered by other programmes such as CEDA and the Feed the Nation Campaign as discussed below.

Difficulties with seasonality of production and periods of drought have particularly affected producers practising open-cultivation. For some, this has resulted in defaulting on loan repayments which has apparently affected credit ratings and overall profiling of the sector by financial service providers. Such experiences also contribute to hesitancy among producers to take out loans that they fear they won't be able to service.

Participation in savings and loans groups reportedly helps some producers to cover smaller costs and weather less productive seasons. However, the low level contributions and returns do not amount to enough to make significant investments in production.

Supplier credit is provided by some retailers but only really to larger farms. Choppies previously gave advances to some suppliers to facilitate investment in production but has ceased to do so since becoming a publicly listed company.

Equity and debt finance is available for agriculture through BDC, though horticulture represents a very small proportion of its investments since support is geared towards established commercial players.

CEDA

CEDA offers concessionary loans to SMMEs. Though the majority of its support to the agriculture sector is directed to livestock, it is seeing more applications for horticulture entrepreneurs. The rates and terms are the same as those specified in the beef section, with some additional requirements specific to horticulture:

Horticulture

This refers to the production of vegetables, fruits, flowers, etc.

Requirements:

- There must be developments on leased farms as determined by CEDA.
- A minimum of 0.5 hectares must be a net shade subject to cropping plan.
- A water yield of 5-6 m³ per hour per hectare.
- For citrus production, a minimum of 6m³ per hour of water is necessary.
- Soil and water test report must be available.

CEDA representatives described the requirements as 'reasonable' and stated that most applicants are able to meet them, noting that the organisation has financed people who "just have an idea and not much else", starting as small as half a hectare.

A previous study found that the maximum loan of BWP 500,000 was insufficient to fully finance a horticulture start-up, and that the grace period was considered too short i.e. farms were not adequately operational in time. However, this has improved under CEDA's updated guidelines which stipulate a maximum loan of BWP 1 million for small projects. It was also previously reported that working capital (e.g. for wages, packaging and transport) was not covered by existing financing options. This too has been rectified, and CEDA is able to cover working capital costs presented within a feasible business plan that meets eligibility criteria.

However, concerns persist regarding some of CEDA's requirements, such as the minimum water yield. This is perceived to be unnecessarily prohibitive given that projects can be viable outside of these conditions e.g. herbs which require less land and water but fetch premium prices.

When CEDA receives an application, the applicant is invited for an interview in which their proposal and business skills are assessed. If they are deemed to have insufficient experience then they are referred to LEA where training, proposal development and mentorship support is offered. It was noted that whilst trainings in financial management, accounting, record keeping etc are available, more needs to be done to facilitate business readiness including financial management and planning and understanding of the business environment. The existing courses are considered to be too short and insufficient to adequately prepare participants for running a business.

Pre-project / compliance costs such as undertaking feasibility studies were highlighted as a significant constraint to SMME development in Botswana. This is now being addressed through collaboration between CEDA and LEA. In support of its objective to boost growth and economic diversification, MITI is pursuing a 3-pronged strategy of SMME development, Investment Promotion and Export Development. CEDA and LEA have coordinated under the SMME development strand to develop the **Project Facilitation Fund** which provides grants of between

P5,000 and P200,000 for pre-project funding for high impact projects.¹³³ The fund works on a grant-loan contributory arrangement, with applicants expected to contribute 50% in the form of a loan or paid-up capital. An interest rate of 5% per annum is payable on loans. Agro-processing is one of the priority sectors, alongside manufacturing and tourism. Services to be funded include:

- environmental impact assessment
- environmental management plans
- soil tests
- specialized licenses

So far uptake of the fund has been very low and as yet no agro-processing projects have been supported.

National Development Bank

NDB is currently running the *Feed the Nation Campaign*, aiming to support the national strategic goals of food security, employment creation and SME development. The campaign is funded under the NDB Agribusiness Stimulus Fund. *"The Bank is calling on citizen companies to embrace innovative smart farming methods and participate in addressing Government's call for increased participation in local food production"*. The campaign also seeks to respond to some of the challenges experienced as a result of the Covid-19 pandemic. It covers 5 agricultural sub-sectors, namely horticulture, small stock, cereals, beef and poultry.

The first phase of the campaign was launched mid-2020, focusing on horticulture. It was open to Botswana registered farming entities wishing to expand their existing horticulture businesses, as well as those supporting the horticulture value chain. Businesses needed to have been operating for a minimum of 12 months. The following costs were eligible for finance:

- Working capital (wages, seeds, fertilisers and other inputs)
- Machinery and equipment (e.g. polytunnels, greenhouses)
- Farm developments

The fund requires applicants to have access to land (minimum 1Ha) with proof of ownership, as well as access to water with proof of water rights. The maximum loan amount is BWP 15 million with a repayment period of between 1 and 15 years. Interest rate charges are risk based, ranging between Prime +2% and Prime +4% with a 1% subsidy for majority women-promoted businesses.

Applicants must contribute a minimum of 20% of the total project cost, in cash or in kind. This can include existing farm developments such as buildings, greenhouses, boreholes and irrigation equipment, subject to their valuation. Collateral is required in the form of moveable and/or immovable property (with title deeds).

Insurance

Until recently no insurance products specific to the horticulture sector were available. This has presented an obstacle to producers who are faced with the challenge of changing climactic conditions and often unpredictable weather patterns. BoHoCo has worked to address this and Aon is now offering tailored cover at relatively low premiums. BoHoCo reports that this development is reassuring to farmers who take comfort in knowing that they will at least get something if their crops are badly affected.

Uptake has reportedly been slow but is gradually improving. BoHoCo's Chairperson reports that the council is teaching new members about the benefits of insurance and believes it will take time for producers to learn and gain the confidence to make the necessary investment. Commercial producers are also increasingly registering for workman's compensation for their employees.

4.2.3 Development Partner Interventions

UNDP

The UNDP's work in Botswana focuses on three key areas: i) economic diversification, ii) democratic governance, and iii) environment and energy.¹¹⁴ Within the Economic Diversification and Inclusive Growth (EDIG) portfolio, UNDP is running the Supplier Development Programme (SDP), launched at the end of 2018. The programme seeks to "diversify the economy, create jobs, and promote the concept of buying locally while connecting globally", improving access to market opportunities, linking suppliers to buyers, and strengthening the entrepreneurial ecosystem. Agro-processing and leather & textiles are both targeted within the programme.

UNDP SDP works with SMEs that employ up to 100 members of staff, and that have operated as a registered business for at least 2 years. The programme looks to support businesses that are innovative and have high barriers to entry, where there is a niche market and potential to expand it, simultaneously creating employment opportunities. To be eligible for support, an SME must also be at least 51% owned by a Botswana national, and must already be supplying large local and/or regional buyers. In its selection process, the programme favours SMEs that work in the vicinity of the buyer.

Through its team of trained business consultants, UNDP then works with buyers to understand what issues they have with their current cohort of suppliers, such as not delivering on time, consistency of quality, pricing etc. The aim is to find solutions that ensure that as these issues are addressed, both the buyer and supplier benefit.

In its first (pilot) year, the programme supported 47 SMEs and 7 buyers. It is hoping to scale that up to at least 100 SMEs in the second year. Ratoccs Farms, supplier to NAPro, was one of the SMEs to receive support in the first year, as detailed below.

"Since Ratoccs Farms joined UNDP SDP, it has in one year increased its turnover with around 4 per cent. Ratoccs Farms supplies to the National Agro Processing Plant (NAPro), and other buyers, have increased with almost 645 per cent during the same period.

Product Diversification: Ratoccs Farms has been able to diversify from 5 to 8 vegetables and is in the process of adding an additional 3 vegetables in the coming months.

UNDP SDP Experience: The farm has been debushed and water-connected. This has increased the land cultivation area from 4,5 hectares to 6 hectares. The remaining 0,5 hectare will be used to raise chickens. The construction of a ring wall around the river basin water extraction point has been completed and three out of four damaged tunnels have been repaired and are in use. A farm technology, and infrastructure improvement plan has been developed and a business plan, for funding expansion is currently being developed"



Founder and owner Kagiso Johane ©/2019/Gareebine

Source: bw.undp.org

Another programme within the EDIG portfolio is providing technical and financial support to horticulture producers in the Okavango Basin in collaboration with MOA. With financing from the Global Environment Facility (GEF), UNDP is supporting the Permanent Okavango River Basin Water Commission (OKACOM) to implement its Strategic Action Programme (SAP). This includes demonstration projects which advocate for Basin communities to improve their livelihoods by harnessing natural resources with minimum adverse impacts on the environment.

One of these is a horticulture project through which farmers in the Maun area have been adopting climate smart agricultural techniques and benefitting from training and mentorship. Technical support under the project also includes soil sampling, selection of marketable crops, and engaging with local fresh produce retailers. So far seven farmers have been supported through this project.¹¹⁵

4.3 Opportunities and Challenges for the Horticulture Sector

As with the beef value chain, the horticulture value chain was closely studied under PSDP and an action plan presented for its development.¹¹⁶ This summary brings together key constraints identified through that study and updates them with insights from further research and consultation. These constraints represent potential areas for growth and improvement which point to opportunities to provide targeted support to the development of the value chain.

4.3.1 Supply-side Issues

Capacity development

Whilst the horticulture sector is growing in size and capacity, it is still dominated by small, often unprofitable farmers who lack the resources to invest in modern farming technologies. Many farmers are well educated and could readily improve production with training and support. However, because most of these farmers haven't received any formal training, they often fail to implement cropping plans which reduces productivity and exacerbates issues of seasonality and poor produce quality. They are also unlikely to be acquainted with the farming methods and technical and business skills associated with commercial horticultural production. Many also lack the knowledge and experience to deal effectively with pests and diseases and this sometimes result in misuse of inputs, including over-application of some chemical products which can leave unacceptable residue levels on produce as well as negatively affecting soil health and water quality.

Botswana has a progressive land tenure system which allows for land leases for over 50 years made available for horticulture farms at very affordable prices. New farms are being established across the country, and there is land reserved for horticulture development in some regions. However, BoHoCo reports that much of the land allocated to horticulture remains unutilized, reducing production potential. Land which is utilized is often owned by part-time farmers which reduces farm performance. Where farms are well attended to, challenges still persist. For example, there are inadequate post-harvest handling facilities for sorting and grading, collection, storage and chilling.

Nonetheless, there are signs that support to the sector is taking effect and that more producers are gaining relevant knowledge and skills and are investing in their operations. Buyers report that produce quality has markedly improved over the last decade. However, many of the benefits of improved product quality, and of the high level of organic/predominantly natural production, are lost due to the lack of grading and certification.

To date there has been limited cooperation between farmers to coordinate production and marketing. This has had a significant impact on pricing, with producers often undercutting each other in desperate bids to sell their produce before it spoils. The lack of quality grading and sorting also contributes to pricing pressure. BOHOCO is working hard to address these issues under its new cooperative model HORTCOMS, including establishment of local collection centres and storage and distribution facilities and new primary processing activities.

Capacity diversification

There is currently very little value addition taking place in the horticulture sector and the agro-processing initiatives such as NAPro have struggled to get off the ground. Developing

agro-processing would add value to horticultural produce and reduce post-harvest losses. However, efforts to date have been hampered by supply issues as well as a lack of innovation in product development and market research to ensure that new products can compete in the marketplace.

Development of skills and entrepreneurship

Limited skills and entrepreneurship are two of the main factors inhibiting producers' capacity development within the sector. Some argue that widespread dependency on government subsidies limits entrepreneurship and makes producers less attentive to long term planning and issues of business feasibility. Record-keeping and financial management at farm level is often inadequate, particularly amongst older farmers who haven't received any training or support. Many of the new generation of producers have received some business training or support through programmes such as the Youth Development Fund and, and the BUAN and LEA horticulture incubators.

The same can be said for farming skills. Many farmers, especially small and medium-sized ones, lack farming skills and particularly the more technical skills required to implement new technologies. Again, those that have received support through established programmes have greater capacity, and the general level of farming skills and implementation of good agricultural practices is steadily increasing.

There is an acute shortage of extension support to horticulture as Botswana's field services have traditionally focused on rain-fed farming and livestock. The extension workers that are available through DCP to support the horticulture sector often don't have adequate practical and technical skills.

4.3.2 Business Environment Issues

Infrastructure and regulatory issues

Transport and logistics infrastructure supporting the horticulture sector is weak, which presents a particular challenge in Botswana where producers and the domestic market are widely dispersed. There is an acute shortage of collection and storage facilities, especially chilled ones. Seasonality and large fluctuations of supplies leads to wide variation in prices and wastage. Investment in cold storage and better logistics could reduce post-harvest losses and improve the efficiency of the sector.

Consultation confirms that access to infrastructure is a major issue for horticultural producers, particularly for medium and largescale production. For example, electricity distribution to farmers is challenging due to remoteness and the cost of electricity is too high for most farmers. Difficulties in accessing suitable water resources is also a key factor restricting farmers from increasing production. Clustering of value chain actors, including suppliers and buyers, is something that has been supported under the UNDP Supplier Development Programme and is now also targeted for support through the next phase of BEDP (2020-2024). However, it is reported that there is widespread reluctance among producers to set up at such production centres e.g. Palape, Gaborone, in part due to issues of trust.

The government periodically closes the border to selected horticulture imports. Many producers favour this approach and lobby for a permanent ban, but there are distortionary effects on the sector which may have negative effects in the longer term, not to mention the impact on prices for consumers. Seasonal import controls should be carefully considered and managed to avoid creating complacency and to increase knowledge of production cycles and varieties.

Quality of the institutional support

The availability of market intelligence is lacking and its distribution is very limited. This means

that there is no strategic approach to price formation and producers often undercut each other unnecessarily in a bid to sell their produce before it spoils. However, MOA is seeking to address this in collaboration with a trader association. A virtual marketing platform called Agrima has been developed and is undergoing trials, soon to be launched. The platform will allow producers to post information on what produce they have available, facilitating links with traders. It is unclear whether there will be any specific terms in place or a coordinated approach to pricing by producers.

CEDA's lending products have been criticised as being poorly designed and often failing to meet borrower needs, particularly for young farmers. Whilst there are still issues with accessibility, CEDA seems to have improved its offering and is now offering broader range of finance options.

BoHoCo and regional associations are chronically under-resourced. In spite of this challenge, BoHoCo works hard to provide support to farmers and is pushing for better coordination amongst producers and lobbying for government support to the sector, including establishment of a horticulture development and marketing authority.

MOA support to the sector is improving but extension services are still poorly resourced and fragmented. Government institutional support programs operate in parallel but often lack coordination so that opportunities to link up and provide complementary support are missed. This is partly a symptom of the fact that there is no national horticulture policy under which to develop effective support programs for the sector. Furthermore, Statistics Botswana does not gather or produce statistics on the horticulture sector so there is a lack of information to support effective decision making.

Cost of doing business

Almost all inputs are imported from South Africa which significantly increases the cost of production. There are also reports that labour is scarce and expensive.

4.3.3 Market entry issues

Marketing is a challenge for many producers. It is difficult for smaller players to enter the market on any formal level since the bigger retailers dominate. However, there are good opportunities in supplying these retailers and many chains have been establishing direct channels with farmers, building their own distribution and logistics functions. Relationships between the two are sometimes difficult...

Streamline marketing by enhancing organisation of farmers and addressing compromising behaviour of large wholesalers and retailers.

Developing and implementing a code of conduct for retailers in respect to their relationship with FF&V suppliers. Limited engagement between farmers and large buyers remains a constant threat to effective production and marketing.

There is some cross-border trade, notably to South Africa from the Tuli Block in North/Central region.

There is an opportunity to implement quality standards and certification beyond the basic standards developed by BOBS. Botswana has no local certification agency and it is costly to bring people up from South Africa. A local certification body or support to the cost of importing certification from South Africa would make this more accessible and cost effective for small and medium food processors. BITC have worked with some of the larger horticultural producers to obtain Fairtrade certification and improve their export prospects.

4.3.4 Social and development issues

Horticultural production is generally perceived to hold good opportunities for women entrepreneurs, particularly now that laws around land ownership have changed and more women own land. However, there are no special dispensations for women in government schemes to promote horticulture even though their challenges are unique, particularly limited working hours due to other domestic responsibilities. Women also often struggle more than men to access finance due to a lack of collateral to secure loans, though the changed land ownership laws are having a positive impact on this.

Extension services to the horticulture sector have historically been very limited but are reportedly improving. Women comprise the majority of street vendors and hawkers selling horticultural products as well as food and other products. Because they are small traders doing their business in an unstructured way, the majority of these women traders lack formal training. The uptake of extension services may be a challenge to them considering the range of demands on their time.

Government support programmes such as the Women's Economic Empowerment Programme and the Women's Grant have provided seed money to help launch women-led small business projects but have been criticized for failing to provide issue-specific support in areas such as access to market, credit, and business skills development. In fact, recent research indicates that whilst women entrepreneurs face a complex web of such challenges, the legal and regulatory environment in Botswana is actually highly conducive and supportive of women entrepreneurship.

This suggests that targeted support initiatives have good potential to improve the prospects of women entrepreneurs.

Government schemes have made specific provision to encourage youth participation in horticulture. Whilst these have been far from perfect in design, more youth are engaging, though perceptions of agriculture are still reportedly a key blocker.

4.4 Conclusion

According to MOA, Botswana's horticultural production now meets an estimated 60% of national demand, up from 20% in the 2013. Though this seems an optimistic estimation (a recently published article estimates 48%), it is clear that the sector is growing both in terms of production volumes and the technical capacity of producers. There is strong potential to scale up production and further reduce reliance on imports from South Africa. Though there is a good deal of unmet demand for horticultural produce in Botswana, the domestic market is limited in size. However, a few companies are starting to explore exports and there are further opportunities for cross-border trade to be explored should the sector continue to grow.

Small and medium-scale producers are often poorly resourced and unprofitable. In addition to business skills and agronomy support, producers need access to finance to invest in production. Technology uptake is generally very limited amongst producers and this limits productivity, exacerbates issues of seasonality, and increases the drudgery of farm work. For qualifying applicants there is financial support available from commercial and concessionary lenders. Whilst medium scale commercial producers are reportedly taking advantage of these, small-scale producers often struggle to pull together the required contribution or to meet collateral requirements. Others are fearful of defaulting on payments and having their assets taken, or don't know how to position themselves to meet eligibility requirements. However, this is beginning to change as more producers go through the financing process and demonstrate to others that it can be navigated successfully. Nonetheless, work to facilitate smallholder capacity to access finance, alongside targeted advocacy to refine the eligibility criteria for concessional lending, could catalyse this progress.

To date there has been limited cooperation between farmers to coordinate production and marketing. This has had a significant impact on pricing, with producers often undercutting each other in a bid to sell their produce before it spoils, driving prices down across the sector. The lack of quality grading and sorting also contributes to pricing pressure. The quality of vegetables produced in Botswana has improved in recent years, without grading and certification capacity the benefits of these improvements are often lost. Post-harvest losses are a particular challenge to producers due to a range of factors including seasonal gluts and a lack of adequate storage facilities. Interventions to optimize value addition opportunities, such as facilitating access to solar drying technologies, have the potential to reduce spoilage rates whilst also presenting new income generation opportunities for women and youth.

BoHoCo is working hard to address the challenges of the sector under its new cooperative model HORTCOMS, including establishment of local collection centres and storage and distribution facilities, service centres, and primary processing activities. The council is active and engaged, committed to getting the right support, linkages and infrastructure in place to facilitate the development of the sector, and plans to open market centres in Lobatse and Francistown in March 2021. BoHoCo has also been lobbying for a horticulture development and marketing authority to be established, whose role would include development and enforcement of standards, certification for domestic and export markets, promotion of cropping plans and so on. These efforts have been supported by BITC, and representatives of both entities indicated that the government is on the verge of establishing such a body. Whilst these are positive developments, if the same issues that led to the demise of BHM in 2018 are to be avoided, adequate attention must be paid to market side issues.

Supermarket chains and large food retailers such as Shoprite, Pick n' Pay and Choppies are a large and growing market for horticultural produce in Botswana. Supermarket chains face increasing pressure to up the volume of produce procured domestically and present a good market opportunity for producers. However, it is not easy for suppliers to access these supply chains which often have exacting quality standards. Supplier development programmes can be effective, helping to develop market linkages and provide targeted technical assistance to producers, or establishing fully-fledged outgrower systems. Whilst such an intervention may prove effective in Botswana's horticulture sector, experience suggests that it can be difficult to get adequate buy-in from retailers to intervene in meaningful ways e.g. covering the cost of technical assistance and extending credit to suppliers.

There is strong political support for the development of the horticulture sector, evidenced in the recently launched Horticulture Impact Accelerator Subsidy component of ISPAAD and the Feed the Nation Campaign. This is in addition to ongoing support through institutions such as CEDA, Glen Valley horticulture incubator, and BUAN's agripreneur incubator programme. This support has seen growing interest in the sector and has undeniably fostered growth. Horticulture is perceived to hold good employment opportunities, particularly for women and youth. Initiatives such as the Youth Development Fund and the Women's Economic Empowerment Programme have seen an increase in the number of women and youth entrepreneurs in horticultural production. To realize such opportunities, higher quality, issue-specific support in areas such as access to markets, financial and business skills development is required to ensure long term business sustainability.

4.5 Recommendations for FMT

4.5.1 Supplier development

Supermarket chains and large food retailers are a large and growing market for agro-processed goods. They are key players in the agricultural sector and often have well developed regional trade and production networks. South African retailers dominate this space, with Shoprite and Pick n' Pay operating 250 and 148 stores across the rest of Africa, respectively. However, it is not easy for suppliers to access these supply chains. These supermarkets chains are large food

exporters and importers, but in recent years they have faced more pressure to up the volume of produce procured domestically.

Although supplier development is in the interests of most stakeholders, there are many challenges to overcome, including high quality standards (ISO 9001 and HACCP certification are usually required), weak infrastructure, and an underdeveloped supply base. A range of stakeholders are involved in supplier development initiatives, including government agencies and NGOs (notably UNDP), and many supermarkets have themselves initiated SDPs. Support ranges from provision of productive assets, development of market linkages, and targeted technical assistance, to fully integrated outgrower schemes.

It is possible that there is a complementary role for FMT to play alongside UNDP on the strength of FMT's experience with supplier development. It would make sense to work with a partner (provided that there is good buy-in from both sides) so as to avoid having to build a programme from scratch, instead putting FMT's resources to more efficient use (i.e. broader ecosystems impact) by adding value through an established programme.

The UNDP SDP in its current form does not present very strong opportunities for the development of the horticulture sector. This is due to the fact that the programme is geared towards SMEs that are innovative and have high barriers to entry, limiting opportunities in horticulture to agro-processing. This sub-sector is not yet developed in Botswana, as evidenced in the poor performance of NAPro,

Therefore, if FMT was to partner with UNDP then it would be desirable to work with UNDP to shape the priorities of year 2 of the SDP programme in alignment with FMT's objectives. This may include broadening the scope to include retailers. Such an approach would have some advantages. For example, FMT has established links with some SA retailers with branches and franchises in Botswana. There is potential for these retailers to increase local procurement if suppliers can be supported to meet volume and quality requirements. Working with retailers could also bring a bilateral trade element to the programme, with some buyers sourcing across borders. Some stakeholders have also shown tentative interest in the potential for such a programme, including Choppies (the largest domestic retailer) and DABP which would be well placed to play a facilitative role.

However, a key constraint that may limit the potential of such an initiative is that retailers are often reluctant to engage in a meaningful way e.g. covering the cost of technical assistance and extending credit to suppliers. Previous experience suggests that it can be difficult to get adequate buy-in; the level of interest will vary between retailers and it may be that those where decision making is centralised are more likely to engage than franchise managers.

Where there is insufficient buy-in from retailers, it may be possible to work through another private sector player such as a commercial horticulture producer. This approach would see the commercial producer acting as an intermediary between smaller suppliers and buyers through an outgrower scheme, extending credit and coordinating technical assistance to outgrowers in order to meet produce volume and quality standards. There are many commercial horticulture producers working at a reasonable scale in Botswana, with most of the largest based in the Tuli block area. FINMARK would need to gauge the appetite of commercial producers to engage with such an initiative.

Alternatively, BAMB may be well placed to take on such a role within the horticulture sector. With a mandate to provide a market for locally grown crops, the organisation has experience in working with producers and arranging the transport, storage and sale of produce. Whilst BAMB's focus to date has been on grains, oil seeds and pulses, the organisation has been dealing more with the horticulture sector of late, particularly through the provision of inputs at LACs for which it is responsible. FMT could explore opportunities to work with BAMB to develop a financing and support model for the horticulture sector.

FMT may wish to explore the above supplier develop opportunities in their different forms with UNDP, BAMB and commercial producers to gauge whether there is potential for a fruitful partnership within the horticulture sector.

4.5.2 UNDP Climate smart agriculture project

UNDP's livelihoods and environment-focused CSA project provides technical and financial support to horticulture producers in the Okavango Basin in collaboration with MOA. Through this project, farmers in the Maun area have been adopting climate smart agricultural techniques and receiving technical support in areas such as soil sampling, selection of marketable crops, and engaging with local fresh produce retailers. UNDP has worked to create linkages with government programmes and financial institutions such as LEA and NDB to ensure the sustainability of the project and enable farmers to implement and scale up what they've learned. However, the financial mechanisms of the programme to date (e.g. for the provision of working capital) are not known.

FMT may wish to explore opportunities to work on financing mechanisms for wider rollout of such a programme. For example, UNDP could set up and capitalize a revolving loan fund for a permanent local player such as BoHoCo to run, assisting with design and operationalisation. It should be noted that there is likely a limit to the potential scalability of such a programme which to date has focused on high value crops sought by the lucrative but limited high end tourism industry in the Okavango area.

4.5.3 Facilitate access to solar drying technology

Post-harvest losses are a particular challenge to horticulture producers due to a range of factors including seasonal gluts and a lack of adequate storage facilities. One potential avenue to reducing food waste and increasing income generating opportunities for women through value addition is facilitating access to solar drying technology. A recent study found that in spite of the need and appetite for solar dryers in Botswana, the technology is scarce.

NFTRC delivers training in small scale processing and value addition opportunities and likely has technical capacity to deliver training in solar drying. FinMark could work to identify a suitable private sector partner (e.g. Dryers for Africa) to deliver solar drying technology alongside such training. A suitable NGO/development partner would also need to be identified to support the delivery of such a project. Though there is no immediately obvious candidate for such a role, it is possible that UNDP would consider integrating this kind of initiative within the model described above.

One of the main challenges to such initiatives is the cost of the technology, averaging \$600 for a smaller dryer, which can be prohibitive to smaller producers. Whilst solar drying technology certainly has potential, it should be noted that (as with the aforementioned biogas project) the NGO/development partner would likely need to take a very active role in driving such a project for it to be taken up on the ground. Relatively few smallholders will have the resources to pursue it unassisted and, if they do have the resources, they're unlikely to prioritize it.

However, there are potential approaches through which some of these limitations could be reduced. For example, horticulture cooperatives could be encouraged to invest in solar dryers if FinMark was to broker accessible financing arrangements between private sector partner/suppliers and BoHoCo.

Another approach to leveraging the corporate buying power of cooperatives to facilitate uptake of solar drying technology is to pursue a low-cost approach that utilizes locally available materials rather than expensive technology. This can reduce the cost of solar drying technology to as little as \$200 per unit. The added benefit of such an approach is that it can be youth-driven, providing opportunities for young entrepreneurs who are trained to construct the dryers and market them to cooperatives and traders, or even offer pay-as-you-go drying services at

drying centres. FMT could establish a revolving fund to finance young entrepreneurs, with a development partner providing hands-on support and delivering training.

4.5.4 Financial literacy, business and marketing skills development

FMT might consider strategic partnerships to support the delivery of financial literacy, business and marketing skills development to better equip horticultural producers to run commercially sustainable enterprises. Research and consultation indicate that a lack of such skills particularly inhibits the participation and success of women and youth entrepreneurs for whom there are good opportunities in horticulture.

Botswana Horticulture Council

As a proactive organisation working hard to drive the development of the horticulture sector, and as the apex body representing many horticulture producers in Botswana, BoHoCo would make sense as a strategic partner for delivery of financial literacy, business and marketing skills development activities. The organisation itself is well placed but relatively ill-equipped to provide business support to its members and would benefit from capacity building in this area.

BoHoCo has been lobbying for a horticulture development and marketing authority to be established, whose role would include development and enforcement of standards, certification for domestic and export markets, promotion of cropping plans and so on. These efforts have been supported by BITC, and representatives of both entities indicated that the government is on the verge of establishing such a body. Working with BoHoCo and selected retailers, FMT could support the development of a horticulture suppliers and retailers code of conduct to facilitate mutually beneficial relationships between producers and retailers, to be implemented by the proposed horticulture development and marketing authority. Should the horticulture development and marketing authority not materialise, there may be alternative options such as oversight from the competition and marketing authority.

Such a code of conduct may also help to govern transactions undertaken on the new virtual marketing tool (Agrima) developed by MOA and a traders' association. This presents another potential angle for addressing the pricing issue, feeding into the development of the tool to ensure that it meets the needs of producers as well as traders. Though it has not been possible to discuss the tool with MOA, a representative from Motopi Fresh Produce (sister company of Choppies supplying its horticultural produce) has been involved from the traders' side and is willing to engage.

Botswana University of Agriculture and Natural Resources

BUAN runs an incubator programme for students in collaboration with LEA, with a strong focus on horticulture. The two organisations have signed an MoU around collaboration to promote education and entrepreneurship. A review of the agripreneur incubation programme found that 44% of graduate respondents had their own agri-business, and the majority of respondents felt they had been 'moderately' equipped with financial management skills (in budgeting, cash flow management and record keeping). The review highlights that one of the 3 main challenges facing institutions such as BUAN that want to promote successful entrepreneurship through their programmes is how to "attract strategic partners who can offer various forms of support and expertise".

The programme is well-established, presenting an accessible entry point for FMT. The Vice Chancellor and team at BUAN were very receptive to the idea of working with FMT to draw on the organisation's expertise in finance in order to improve the business and financial management support offered through the incubator programme and to help establish the connections to successfully integrate graduates into the value chain.

Such a partnership could serve as a pilot for working with LEA to roll out broader support through its enterprise development work and mentorship of CEDA applicants.

BUAN also has a leather course awaiting approval by Botswana Qualifications Authority. If a relationship was established with BUAN and LEA on horticulture entrepreneurship then if and when the leather course is approved, support to the development of the leather sector could be extended through the same channel and at low risk.

Youth Development Fund

FMT could explore opportunities to work with MYSC to enhance the Youth Development Fund, which is a key route into horticultural production (as well as other business activities) for young farmers. Whilst the fund has been fairly successful at launching new project, repayment rates are reportedly low and this limits available funds to support new ventures and threatens the viability of scheme which works on a revolving loan basis.

There is little clear evidence on the long term prospects of business ventures launched through the fund, but anecdotal evidence suggests that many fail. This is in part attributed to a lack of business skills as well as a lack of commitment from beneficiaries, the two likely being related. Attendance at several workshops is a pre-requisite for applying to the Youth Development Fund. The workshops are in Business Awareness Creation, Entrepreneurship Development, and Business Planning. It is not clear who delivers the training, but it is likely to be LEA which partners with MYSC to deliver the programme and provides similar support to the likes of CEDA applicants. Whilst the depth and quality of training is unknown, the fact that many of the new business ventured launched through the fund do not thrive suggests that the level of support received by young entrepreneurs is inadequate.

FMT could work with MYSC and partners to identify and address gaps and limitations within the financial literacy, entrepreneurship and business skills development elements of the Youth Development Fund. This would equip the Fund to offer a higher degree and quality of support, ensuring that young entrepreneurs have the best possible chance of succeeding in their new business ventures. Since it has not been possible to engage with MYSC during consultation, FMT would need to gauge the Ministry's appetite to collaborate and its commitment to working together to enhance the Fund.

It is worth noting that LEA emerges as an important strategic partner when considering the range of intervention options identified for FMT. Mandated with entrepreneurship and enterprise development in Botswana, the organisation is involved in a range of business support and capacity building activities and provides training and mentorship in relation to several of the opportunities described in this report, including the Youth Development Fund, BUAN's agripreneur programme, and concessional finance from CEDA. Engaging with LEA may help FMT to identify the intervention areas with most impact potential. Working closely with LEA, FMT could help build the organisation's capacity to understand the range of needs across its portfolio and to develop training materials and deliver financial literacy, business skills and entrepreneurship training suited to those needs.

4.5.5 Advocacy to refine eligibility criteria for concessional lending

Some of the eligibility criteria for concessional finance for horticulture enterprises are unnecessarily prohibitive. For example, CEDA will only lend to producers with a certain threshold of water supply, even though a project can be viable outside of these conditions e.g. herbs which require less land and water but fetch premium prices. Targeted research and advocacy with CEDA to negotiate more nuanced eligibility criteria and funding parameters which focus on project feasibility could open up opportunities for entrepreneurs in horticulture. This is also a role that FMT could consider.

Notes from sections

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5. APPENDICES

5.1 Appendix A - Value chain selection longlist

Commodity /VC	Justifications
LIVESTOCK	
1. Beef	<ul style="list-style-type: none"> • Most important ag. export for Botswana • Commercially viable though reduced productivity in recent years • Important to rural livelihoods • Key store of value, component of food security • Key government and donor priority • VC study under NDP 10 (PSDP) to inform action under NDP 11
2. Leather /Tannery	<ul style="list-style-type: none"> • Identified as a priority area for economic diversification • VC study under NDP 10 (PSDP) to inform action under NDP 11 • Part of national export strategy • New leather park in Lobatse
3. Goat	<ul style="list-style-type: none"> • Very important to rural livelihoods and food security • Good for climate resilience • VC study under NDP 10 (PSDP) to inform action under NDP 11
4. Poultry	<ul style="list-style-type: none"> • High domestic demand • Established commercial production • Indigenous production important to rural livelihoods and food security • VC study under NDP 10 (PSDP) to inform action under NDP 11
5. Piggery	<ul style="list-style-type: none"> • Rising demand for pork in urban areas • Identified as having potential re economic diversification • VC study under NDP 10 (PSDP) to inform action under NDP 11
GRAINS	
6. Sorghum	<ul style="list-style-type: none"> • Second most widely grown crop, important for subsistence • Widely produced and consumed – most people eat sorghum porridge for breakfast • Very good market potential locally • Widely milled – bran used for stock feed • Women are the primary producers and involved in preparation • More climate resilient than other grain crops e.g. maize • More nutritious than maize – rich in vitamins minerals, fibre and protein • Supported through various government initiatives including the ACGS and NAMPAADD
HORTICULTURE	

<p>7. Vegetables -tomato, cabbage, potato, onions, beetroot, lettuce, bell peppers, cucumber, butternut squash, carrots</p>	<ul style="list-style-type: none"> • Sub-sector experiencing encouraging growth though still far from meeting domestic demand • Nutritional importance – increasing dietary diversity • Identified as a priority area for economic diversification • VC study under NDP 10 (PSDP) to inform action under NDP 11 • Supported by Department of Agricultural Business Promotion • Commercial production established though at limited scale • Some small scale processing – limited but gaining traction • LEA have formed incubation hubs and clusters • Gov & development partners are prioritizing inclusion of women and youth in the sub-sector • MITI has drawn attention to value addition opportunities
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5.2 Appendix B – Botswana value chain scoring matrix

5.2.1 Beef

SELECTED KEY & ADDITIONAL CRITERIA			Weight of criteria of total %	Beef		Evidence to support scoring
1	CATEGORY	MARKET DEMAND & COMPETITIVENESS	15%	Score	Weighted score	Justification
a	economic	"Market demand prospects (local and/or export). Consider the current demand but growing demand as well."	10%	5	0,5	
b	economic	Substantial percentage of local producers have the capacity or potential to produce the commodity competitively.	5%	5	0,5	
2	CATEGORY	VALUE-ADDITION	10%	Score	Weighted score	Justification
a	economic	Potential for value addition (up and downstream) - different options exist, there is existing capacity or potential for these different value-added products	10%	5	0,5	
3	CATEGORY	INCOME, EMPLOYMENT & INCLUSION	20%	Score	Weighted score	Justification
a	economic	"Size of contribution to gross value of agricultural output"	5%	5	0,25	
b	economic	Current and prospective opportunities to integrate a significant number of producers and/or employees into the VC, with positive impact on HH income	10%	4	0,4	
c	social	Inclusion of disadvantaged groups esp. women, youth	5%	3	0,15	

4	CATEGORY	"ENVIRONMENTAL/HEALTH/ FOOD SAFETY	10%	Score	Weighted score	Justification
a	environment	"Impact of the value chain functions on the environment (score low for negative environmental impact). Potential for intergation of clean energy technologies"	4%	1	0,04	
b	environment	"Resilience of the value chain functions to climate change / environmental factors (e.g. drought, erratic rainfall) Potential for intergation of clean energy technologies"	4%	3	0,12	
c	environment	Health/food safety risks to consumers (e.g. tobacco, groundnuts due to aflatoxin) (score low for high risk)	2%	4	0,08	
5	CATEGORY	FOOD SECURITY & NUTRITION*	10%	Score	Weighted score	Justification
a	social	Contribution of VC to HH food security i.e. availability of sufficient calories, mainly referring to staple crops	5%	4	0,2	
b	social	Contribution to improved nutritional status at HH level e.g. improved dietary diversity	5%	4	0,2	
6	CATEGORY	NATIONAL PRIORITY & SUSTAINABILITY	20%	Score	Weighted score	Justification
a	Institutional	Donor activity is currently supporting / has recently supported this VC	10%	5	0,5	
b	Institutional	Coherence with National Policies	10%	5	0,5	
7	CATEGORY	ACCESS TO FINANCE/ ADDITIONALITY (for FMT)	15%	Score	Weighted score	Justification
a	Institutional	"There is currently good financial inclusion across the VC (therefore less scope for additionality for FMT) (score low for high level of financial inclusion)"	10%	3	0,3	
b	Institutional	Opportunities to increase access to finance exist and can be capitalised on	5%	3	0,15	
TOTAL (max score = 5 points)			100%		4,14	
					83%	
Scores:		" 1 = Very poor/Very low ; 2 = Poor/Low ; 3 = Acceptable/Moderate ; 4 = Good/High ; 5 = Very good/Very high"				
		* If applicable - disregard category 5 for non-food commodities				

5.2.2 Leather

SELECTED KEY & ADDITIONAL CRITERIA			Weight of criteria of total %	Beef		Evidence to support scoring
1	CATEGORY	MARKET DEMAND & COMPETITIVENESS	15%	Score	Weighted score	Justification
a	economic	"Market demand prospects (local and/or export). Consider the current demand but growing demand as well."	10%	3	0,3	
b	economic	Substantial percentage of local producers have the capacity or potential to produce the commodity competitively.	5%	2	0,1	
2	CATEGORY	VALUE-ADDITION	10%	Score	Weighted score	Justification
a	economic	Potential for value addition (up and downstream) - different options exist, there is existing capacity or potential for these different value-added products	10%	4	0,4	
3	CATEGORY	INCOME, EMPLOYMENT & INCLUSION	20%	Score	Weighted score	Justification
a	economic	"Size of contribution to gross value of agricultural output"	5%	3	0,15	
b	economic	Current and prospective opportunities to integrate a significant number of producers and/or employees into the VC, with positive impact on HH income	10%	1	0,1	
c	social	Inclusion of disadvantaged groups esp. women, youth	5%	3	0,15	
4	CATEGORY	"ENVIRONMENTAL/HEALTH/ FOOD SAFETY	10%	Score	Weighted score	Justification
a	environment	"Impact of the value chain functions on the environment (score low for negative environmental impact). Potential for intergation of clean energy technologies"	4%	1	0,04	
b	environment	"Resilience of the value chain functions to climate change / environmental factors (e.g. drought, erratic rainfall) Potential for intergation of clean energy technologies"	4%	2	0,08	
c	environment	Health/food safety risks to consumers (e.g. tobacco, groundnuts due to aflatoxin) (score low for high risk)	2%	3	0,06	

5	CATEGORY	FOOD SECURITY & NUTRITION*	10%	Score	Weighted score	Justification
a	social	Contribution of VC to HH food security i.e. availability of sufficient calories, mainly referring to staple crops	5%		0	
b	social	Contribution to improved nutritional status at HH level e.g. improved dietary diversity	5%		0	
6	CATEGORY	NATIONAL PRIORITY & SUSTAINABILITY	20%	Score	Weighted score	Justification
a	Institutional	Donor activity is currently supporting / has recently supported this VC	10%	1	0,1	
b	Institutional	Coherence with National Policies	10%	4	0,4	
7	CATEGORY	ACCESS TO FINANCE/ ADDITIONALITY (for FMT)	15%	Score	Weighted score	Justification
a	Institutional	"There is currently good financial inclusion across the VC (therefore less scope for additionality for FMT) (score low for high level of financial inclusion)"	10%	4	0,4	
b	Institutional	Opportunities to increase access to finance exist and can be capitalised on	5%	4	0,2	
TOTAL (max score = 5 points)			100%		2,48	
					55%	
Scores:		" 1 = Very poor/Very low ; 2 = Poor/Low ; 3 = Acceptable/Moderate ; 4 = Good/High ; 5 = Very good/Very high"				
		* If applicable - disregard category 5 for non-food commodities				

5.2.3 Goat

SELECTED KEY & ADDITIONAL CRITERIA			Weight of criteria of total %	Beef		Evidence to support scoring
1	CATEGORY	MARKET DEMAND & COMPETITIVENESS	15%	Score	Weighted score	Justification
a	economic	"Market demand prospects (local and/or export). Consider the current demand but growing demand as well."	10%	2	0,2	
b	economic	Substantial percentage of local producers have the capacity or potential to produce the commodity competitively.	5%	3	0,15	

2	CATEGORY	VALUE-ADDITION	10%	Score	Weighted score	Justification
a	economic	Potential for value addition (up and downstream) - different options exist, there is existing capacity or potential for these different value-added products	10%	2,5	0,25	
3	CATEGORY	INCOME, EMPLOYMENT & INCLUSION	20%	Score	Weighted score	Justification
a	economic	"Size of contribution to gross value of agricultural output"	5%	1	0,05	
b	economic	Current and prospective opportunities to integrate a significant number of producers and/or employees into the VC, with positive impact on HH income	10%	3	0,3	
c	social	Inclusion of disadvantaged groups esp. women, youth	5%	4	0,2	
4	CATEGORY	"ENVIRONMENTAL/HEALTH/ FOOD SAFETY	10%	Score	Weighted score	Justification
a	environment	"Impact of the value chain functions on the environment (score low for negative environmental impact). Potential for intergation of clean energy technologies"	4%	2	0,08	
b	environment	"Resilience of the value chain functions to climate change / environmental factors (e.g. drought, erratic rainfall) Potential for intergation of clean energy technologies"	4%	3	0,12	
c	environment	Health/food safety risks to consumers (e.g. tobacco, groundnuts due to aflatoxin) (score low for high risk)	2%	3	0,06	
5	CATEGORY	FOOD SECURITY & NUTRITION*	10%	Score	Weighted score	Justification
a	social	Contribution of VC to HH food security i.e. availability of sufficient calories, mainly referring to staple crops	5%	4	0,2	
b	social	Contribution to improved nutritional status at HH level e.g. improved dietary diversity	5%	4	0,2	
6	CATEGORY	NATIONAL PRIORITY & SUSTAINABILITY	20%	Score	Weighted score	Justification
a	Institutional	Donor activity is currently supporting / has recently supported this VC	10%	1	0,1	
b	Institutional	Coherence with National Policies	10%	3	0,3	

7	CATEGORY	ACCESS TO FINANCE/ ADDITIONALITY (for FMT)	15%	Score	Weighted score	Justification
a	Institutional	"There is currently good financial inclusion across the VC (therefore less scope for additionality for FMT) (score low for high level of financial inclusion)"	10%	3	0,3	
b	Institutional	Opportunities to increase access to finance exist and can be capitalised on	5%	4	0,2	
TOTAL (max score = 5 points)			100%		2,71	
					54%	
Scores:		" 1 = Very poor/Very low ; 2 = Poor/Low ; 3 = Acceptable/Moderate ; 4 = Good/High ; 5 = Very good/Very high"				
		* If applicable - disregard category 5 for non-food commodities				

5.2.4 Poultry

SELECTED KEY & ADDITIONAL CRITERIA			Weight of criteria of total %	Beef		Evidence to support scoring
1	CATEGORY	MARKET DEMAND & COMPETITIVENESS	15%	Score	Weighted score	Justification
a	economic	"Market demand prospects (local and/or export). Consider the current demand but growing demand as well."	10%	3	0,3	
b	economic	Substantial percentage of local producers have the capacity or potential to produce the commodity competitively.	5%	2	0,1	
2	CATEGORY	VALUE-ADDITION	10%	Score	Weighted score	Justification
a	economic	Potential for value addition (up and downstream) - different options exist, there is existing capacity or potential for these different value-added products	10%	1	0,1	
3	CATEGORY	INCOME, EMPLOYMENT & INCLUSION	20%	Score	Weighted score	Justification
a	economic	"Size of contribution to gross value of agricultural output"	5%	4	0,2	

b	economic	Current and prospective opportunities to integrate a significant number of producers and/or employees into the VC, with positive impact on HH income	10%	2	0,2	
c	social	Inclusion of disadvantaged groups esp. women, youth	5%	3	0,15	
4	CATEGORY	"ENVIRONMENTAL/HEALTH/FOOD SAFETY"	10%	Score	Weighted score	Justification
a	environment	"Impact of the value chain functions on the environment (score low for negative environmental impact). Potential for intergation of clean energy technologies"	4%	4	0,16	
b	environment	"Resilience of the value chain functions to climate change / environmental factors (e.g. drought, erratic rainfall) Potential for intergation of clean energy technologies"	4%	3	0,12	
c	environment	Health/food safety risks to consumers (e.g. tobacco, groundnuts due to aflatoxin) (score low for high risk)	2%	4	0,08	
5	CATEGORY	FOOD SECURITY & NUTRITION*	10%	Score	Weighted score	Justification
a	social	Contribution of VC to HH food security i.e. availability of sufficient calories, mainly referring to staple crops	5%	4	0,2	
b	social	Contribution to improved nutritional status at HH level e.g. improved dietary diversity	5%	5	0,25	
6	CATEGORY	NATIONAL PRIORITY & SUSTAINABILITY	20%	Score	Weighted score	Justification
a	Institutional	Donor activity is currently supporting / has recently supported this VC	10%	1	0,1	
b	Institutional	Coherence with National Policies	10%	4	0,4	
7	CATEGORY	ACCESS TO FINANCE/ ADDITIONALITY (for FMT)	15%	Score	Weighted score	Justification
a	Institutional	"There is currently good financial inclusion across the VC (therefore less scope for additionality for FMT) (score low for high level of financial inclusion)"	10%	3	0,3	
b	Institutional	Opportunities to increase access to finance exist and can be capitalised on	5%	4	0,2	
TOTAL (max score = 5 points)			100%		2,86	
					57%	

Scores:	" 1 = Very poor/Very low ; 2 = Poor/Low ; 3 = Acceptable/Moderate ; 4 = Good/High ; 5 = Very good/Very high"
	* If applicable - disregard category 5 for non-food commodities

5.2.5 Piggery

SELECTED KEY & ADDITIONAL CRITERIA			Weight of criteria of total %	Beef		Evidence to support scoring
1	CATEGORY	MARKET DEMAND & COMPETITIVENESS	15%	Score	Weighted score	Justification
a	economic	"Market demand prospects (local and/or export). Consider the current demand but growing demand as well."	10%	3	0,3	
b	economic	Substantial percentage of local producers have the capacity or potential to produce the commodity competitively.	5%	1	0,05	
2	CATEGORY	VALUE-ADDITION	10%	Score	Weighted score	Justification
a	economic	Potential for value addition (up and downstream) - different options exist, there is existing capacity or potential for these different value-added products	10%	3	0,3	
3	CATEGORY	INCOME, EMPLOYMENT & INCLUSION	20%	Score	Weighted score	Justification
a	economic	"Size of contribution to gross value of agricultural output"	5%	2	0,1	
b	economic	Current and prospective opportunities to integrate a significant number of producers and/or employees into the VC, with positive impact on HH income	10%	2	0,2	
c	social	Inclusion of disadvantaged groups esp. women, youth	5%	3	0,15	
4	CATEGORY	"ENVIRONMENTAL/HEALTH/ FOOD SAFETY	10%	Score	Weighted score	Justification
a	environment	"Impact of the value chain functions on the environment (score low for negative environmental impact). Potential for intergation of clean energy technologies"	4%	2	0,08	

b	environment	"Resilience of the value chain functions to climate change / environmental factors (e.g. drought, erratic rainfall) Potential for intergation of clean energy technologies"	4%	4	0,16	
c	environment	Health/food safety risks to consumers (e.g. tobacco, groundnuts due to aflatoxin) (score low for high risk)	2%	2	0,04	
5	CATEGORY	FOOD SECURITY & NUTRITION*	10%	Score	Weighted score	Justification
a	social	Contribution of VC to HH food security i.e. availability of sufficient calories, mainly referring to staple crops	5%	3	0,15	
b	social	Contribution to improved nutritional status at HH level e.g. improved dietary diversity	5%	3	0,15	
6	CATEGORY	NATIONAL PRIORITY & SUSTAINABILITY	20%	Score	Weighted score	Justification
a	Institutional	Donor activity is currently supporting / has recently supported this VC	10%	1	0,1	
b	Institutional	Coherence with National Policies	10%	4	0,4	
7	CATEGORY	ACCESS TO FINANCE/ ADDITIONALITY (for FMT)	15%	Score	Weighted score	Justification
a	Institutional	"There is currently good financial inclusion across the VC (therefore less scope for additionality for FMT) (score low for high level of financial inclusion)"	10%	3	0,3	
b	Institutional	Opportunities to increase access to finance exist and can be capitalised on	5%	4	0,2	
TOTAL (max score = 5 points)			100%		2,68	
					54%	
Scores:		" 1 = Very poor/Very low ; 2 = Poor/Low ; 3 = Acceptable/Moderate ; 4 = Good/High ; 5 = Very good/Very high"				
		* If applicable - disregard category 5 for non-food commodities				

5.2.6 Sorghum

SELECTED KEY & ADDITIONAL CRITERIA			Weight of criteria of total %	Beef		Evidence to support scoring
1	CATEGORY	MARKET DEMAND & COMPETITIVENESS	15%	Score	Weighted score	Justification
a	economic	"Market demand prospects (local and/or export). Consider the current demand but growing demand as well."	10%	4	0,4	
b	economic	Substantial percentage of local producers have the capacity or potential to produce the commodity competitively.	5%	3	0,15	
2	CATEGORY	VALUE-ADDITION	10%	Score	Weighted score	Justification
a	economic	Potential for value addition (up and downstream) - different options exist, there is existing capacity or potential for these different value-added products	10%	3	0,3	
3	CATEGORY	INCOME, EMPLOYMENT & INCLUSION	20%	Score	Weighted score	Justification
a	economic	"Size of contribution to gross value of agricultural output"	5%	3	0,15	
b	economic	Current and prospective opportunities to integrate a significant number of producers and/or employees into the VC, with positive impact on HH income	10%	3	0,3	
c	social	Inclusion of disadvantaged groups esp. women, youth	5%	3	0,15	
4	CATEGORY	"ENVIRONMENTAL/HEALTH/ FOOD SAFETY	10%	Score	Weighted score	Justification
a	environment	"Impact of the value chain functions on the environment (score low for negative environmental impact). Potential for intergation of clean energy technologies"	4%	4	0,16	
b	environment	"Resilience of the value chain functions to climate change / environmental factors (e.g. drought, erratic rainfall) Potential for intergation of clean energy technologies"	4%	4	0,16	
c	environment	Health/food safety risks to consumers (e.g. tobacco, groundnuts due to aflatoxin) (score low for high risk)	2%	4	0,08	

5	CATEGORY	FOOD SECURITY & NUTRITION*	10%	Score	Weighted score	Justification
a	social	Contribution of VC to HH food security i.e. availability of sufficient calories, mainly referring to staple crops	5%	5	0,25	
b	social	Contribution to improved nutritional status at HH level e.g. improved dietary diversity	5%	3	0,15	
6	CATEGORY	NATIONAL PRIORITY & SUSTAINABILITY	20%	Score	Weighted score	Justification
a	Institutional	Donor activity is currently supporting / has recently supported this VC	10%	1	0,1	
b	Institutional	Coherence with National Policies	10%	2	0,2	
7	CATEGORY	ACCESS TO FINANCE/ ADDITIONALITY (for FMT)	15%	Score	Weighted score	Justification
a	Institutional	"There is currently good financial inclusion across the VC (therefore less scope for additionality for FMT) (score low for high level of financial inclusion)"	10%	4	0,4	
b	Institutional	Opportunities to increase access to finance exist and can be capitalised on	5%	4	0,2	
TOTAL (max score = 5 points)			100%		3,15	
					63%	
Scores:		" 1 = Very poor/Very low ; 2 = Poor/Low ; 3 = Acceptable/Moderate ; 4 = Good/High ; 5 = Very good/Very high"				
		* If applicable - disregard category 5 for non-food commodities				

5.2.7 Vegetables

SELECTED KEY & ADDITIONAL CRITERIA			Weight of criteria of total %	Beef		Evidence to support scoring
1	CATEGORY	MARKET DEMAND & COMPETITIVENESS	15%	Score	Weighted score	Justification
a	economic	"Market demand prospects (local and/or export). Consider the current demand but growing demand as well."	10%	4	0,4	
b	economic	Substantial percentage of local producers have the capacity or potential to produce the commodity competitively.	5%	2	0,1	

2	CATEGORY	VALUE-ADDITION	10%	Score	Weighted score	Justification
a	economic	Potential for value addition (up and downstream) - different options exist, there is existing capacity or potential for these different value-added products	10%	2	0,2	
3	CATEGORY	INCOME, EMPLOYMENT & INCLUSION	20%	Score	Weighted score	Justification
a	economic	"Size of contribution to gross value of agricultural output"	5%	2	0,1	
b	economic	Current and prospective opportunities to integrate a significant number of producers and/or employees into the VC, with positive impact on HH income	10%	2	0,2	
c	social	Inclusion of disadvantaged groups esp. women, youth	5%	4	0,2	
4	CATEGORY	"ENVIRONMENTAL/HEALTH/ FOOD SAFETY	10%	Score	Weighted score	Justification
a	environment	"Impact of the value chain functions on the environment (score low for negative environmental impact). Potential for intergation of clean energy technologies"	4%	4	0,16	
b	environment	"Resilience of the value chain functions to climate change / environmental factors (e.g. drought, erratic rainfall) Potential for intergation of clean energy technologies"	4%	3	0,12	
c	environment	Health/food safety risks to consumers (e.g. tobacco, groundnuts due to aflatoxin) (score low for high risk)	2%	4	0,08	
5	CATEGORY	FOOD SECURITY & NUTRITION*	10%	Score	Weighted score	Justification
a	social	Contribution of VC to HH food security i.e. availability of sufficient calories, mainly referring to staple crops	5%	4	0,2	
b	social	Contribution to improved nutritional status at HH level e.g. improved dietary diversity	5%	5	0,25	
6	CATEGORY	NATIONAL PRIORITY & SUSTAINABILITY	20%	Score	Weighted score	Justification
a	Institutional	Donor activity is currently supporting / has recently supported this VC	10%	4	0,4	
b	Institutional	Coherence with National Policies	10%	5	0,5	

7	CATEGORY	ACCESS TO FINANCE/ ADDITIONALITY (for FMT)	15%	Score	Weighted score	Justification
a	Institutional	"There is currently good financial inclusion across the VC (therefore less scope for additionality for FMT) (score low for high level of financial inclusion)"	10%	3	0,3	
b	Institutional	Opportunities to increase access to finance exist and can be capitalised on	5%	4	02	
TOTAL (max score = 5 points)			100%		3,41	
					68%	
Scores:		" 1 = Very poor/Very low ; 2 = Poor/Low ; 3 = Acceptable/Moderate ; 4 = Good/High ; 5 = Very good/Very high"				
		* If applicable - disregard category 5 for non-food commodities				

5.2.8 VC Scores & Ranking

Rank	Value Chain	Percentage Score*
1	Beef	83%
2	Vegetables	68%
3	Sorghum	63%
4	Poultry	57%
5	Leather/Tannery	55%
6	Piggery	54%
7	Goat	54%

5.3 Appendix C – Additional cross-cutting interventions

Strengthening capacity to access finance

Both the literature and consultation confirm that there is a good range of traditional and concessionary finance options available to those entrepreneurs and established businesses with the means to access them. However, there are several blockers that often inhibit access for small-scale producers and vulnerable groups.

Consultation indicated that there is often a lack of willingness and/or capacity on the part of individuals to undergo the necessary application and assurance procedures and to take on the financial risk of investment themselves. Many applicants fail to pass due diligence, in part due to lack of understanding of eligibility criteria and how to position themselves to meet them. This suggests that there may be a role for FMT to play in equipping people to take on the products and services that are already available (e.g. through CEDA and NDB) and encouraging entrepreneurship within the targeted VCs. This might include, for example, short courses on business planning and financial management.

CEDA and LEA already work in close partnership in this area. CEDA applicants undergo a business skills assessment and those considered in need of support are referred to LEA. LEA then offers subsidised pre-business training and business plan development support. However, consultation suggests that this is insufficient. Partnering with LEA to develop pre-business training could help to improve the success rate of CEDA applicants. Whilst it has not been possible to scope out the appetite for collaboration with LEA directly, the partnership with BUAN would be an opportune entry point, as described in more detail in the horticulture section.

Collateral is a huge impediment to smaller players, particularly given that cattle, primary asset of many households, are not accepted by most FSPs. CEDA will accept personal surety, but this favours those who are well connected and eligibility criteria are not always applied consistently e.g. people who haven't defaulted on a loan are sometimes refused finance because a family member has defaulted, even though they are not a guarantor. Credit reference profiles could help to overcome this challenge to accessing finance for small-scale producers and associations, as explored in more detail in the Malawi section.

Mobile & ICT extension and market data services

Access to extension services is a persistent challenge in Botswana. Though there are knowledgeable extension workers active under MOA, several factors constrain effective extension support. The biggest of these is geography, with a population of a little over 2 million people spread across a vast land area. The services of DVS extension staff are in high demand for beef cattle production, but the number of extension personnel is insufficient to cover such a vast area. There are some technical extension workers to support the development of the leather industry. However, it is reported that their skills stagnate due to inactivity. Whilst support to horticultural producers is improving, this has historically focused on rain-fed farming and the capacity of DCP extension staff to support commercial horticultural production is reportedly limited.

A lack of accessible market information also has an impact across the board, particularly in horticulture where this can result in high spoilage rates. Digital service delivery has the potential to help overcome the challenges associated with Botswana's geography and to increase the level of coordination between actors along agri-VCs. The development of apps for purposes such as pest and disease diagnosis is already underway at BAMB and is likely to be further explored in the organisation's partnership with BUAN. BAMB also has aspirations to provide services in macro-agricultural intelligence. This is ambitious and would require significant technical capacity and a substantial base of data, neither of which appear to be in place.

Increased private sector participation and technical support in this area would help to identify feasible mobile/ICT extension and data services projects and streamline their delivery. Further information on the potential development of mobile/ICT extension and market data services is provided in the Malawi section.

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Sanofi House, Second Floor,
44 on Grand Central Office Park,
2 Bond Street, Grand Central
Ext 1, Midrand

Tel: +27 11 315 9197
Fax: +27 86 518 3579
info@finmark.org.za
www.finmark.org.za