

Mapping Crop and Livestock Value Chain Actors in Mbire and Murehwa Districts in Zimbabwe



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Agroecology

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and Frederic Baudron

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Based on data collected from focus group discussions and key informant interviews, this report presents an initial assessment of actors involved in major crops and livestock value chains in Mbire and Murehwa districts in Zimbabwe. It describes the interaction among actors in the specific value chains, existing opportunities, and constraints in developing value chains from agroecological transition and transformation perspectives. Preliminary findings in this report help in guiding business model development supporting agroecological transitions across the identified living landscapes within the broader framework of agroecological principles. In this regard, further finetuning will be done on selected and prospective value chains.

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Acronyms

ADRA.....	Adventist Development Relief Agency
AE	Agroecology
Agritex.....	Department of Agricultural, Technical and Extension Services
AMA.....	Agricultural Marketing Authority
AWF	Africa Wildlife Foundation
CAMPFIRE	Community Areas Management Program for Indigenous Resources
Cottco	Cotton Company of Zimbabwe
CRS	Catholic Relief Services
FGD	Focus Group Discussion
FMD.....	Foot and Mouth Disease
GMB.....	Grain Marketing Board
LGDA	Lower Guruve Development Association
NGO	Non-governmental organization
Pfumvudza.....	Government initiative supporting conservation agriculture through provision of free inputs
SNV.....	Netherlands Development Organization
VALUE	Value Chain Alliance for Livestock Upgrading and Empowerment
ZAGP	Zimbabwe Agricultural Growth Program





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Summary

We conducted a preliminary value chain actors mapping for major crops grown and livestock kept by smallholder farmers in Mbire and Murehwa districts of Zimbabwe. Accordingly, in this report we mapped value chain actors for 11 crops and livestock commodities: namely, sorghum, cotton, sesame, maize, groundnut, sweet-potato, vegetables (tomato and onion), cattle, goats, poultry, and honey/beekeeping. Except sesame from Mbire, most of the crop and livestock commodities are channeled to the main markets in Harare and Marondera for Murehwa. Sesame is smuggled to Mozambique and the market is mainly dependent on middlemen. The Grain Market Board (GMB) is the major actor in sorghum and maize marketing in both districts. Groundnut is sold to both rural and urban consumers after processing it to peanut butter locally within the production zones. Goats and cattle are mostly supplied to the Harare market by middlemen collecting these livestock from village markets and moving door-to-door to buy enough quantity to transport to Harare. Honey production and marketing is still at its initial stage through the support of HELP from Germany and the Zimbabwe Apiculture Trust projects. Long dry season is a challenge in honey production. The *Pfumvudza* program supported by the Presidential free input scheme helped in introducing and scaling conservation agriculture practices in Zimbabwe. Though there is strong integration of crop-livestock systems at both districts, the level of manure use is gradually decreasing because farmers receive chemical fertilizer support from the *Pfumvudza* program and applying manure to crop fields is labor-intensive. The input supply system is more competitive in Murehwa district where there are quite several input suppliers in town.

The possible interventions that favor agroecological transitions are: (1) honey processing plants and supply of beehives to potential areas, (2) encouraging manure use in crop production, possibly linking it to the basins preparation requirement to be eligible for the presidential input subsidy scheme, (3) support the organic vegetable production initiatives and explore market segments in Harare paying premium prices for certified organic products, (4) Expedite payment systems in sorghum and maize marketing with GMB, and (5) sesame production with agroecologically friendly agronomy and improve markets.

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1. General contexts of Mbire and Murehwa

1.1. Mbire District

Mbire is in Mashonaland Central Province of Zimbabwe in the lower Zambezi valley covering an area of approximately 4 696 km². According to the 2022 Census, the district has 17 wards with a total of 83,724 inhabitants and 19,915 households (ZIMSTATS, 2022). The district is sparsely populated, with a density of 17.83 per km². Mbire is situated in the arid region under Natural Agroecological Region (NR) IV and experiences an annual average temperature range from 15 to over 30°C and average rainfall between 450 to 650 mm which is below the national average of 500-900 mm annually. Despite low rainfall and extreme temperature, the district faces several hydrometeorological threats which directly and indirectly impact livelihoods due to its location in the floodplains of the Zambezi River basin. Moreso, the district lies on sedimentary geological formations on sandstone and lime foundations, which have resulted in a variety of soil types, some of which are frequently rich in sodium and deficient in organic matter. While crop production in the district is low, crop and livestock production are the main sources of livelihoods for smallholder farmers in the district. Livestock production, particularly goats, is also well adaptable because of the sweetveld, although incidences of tsetse flies make livestock rearing difficult. The district is also partly falling in the wildlife conservation area and human-wildlife conflicts are common in most parts of the district. Mushumbi is the major administrative and business town in the district. Due to its distance from Harare, there is no banking system in the district.

1.2. Murehwa District

Murehwa is located at mid-highlands of Zimbabwe and located some 75 kilometers northeast from the capital city, Harare and at an altitude of 1400m above sea level. The district has 30 wards with a total population of 205,442 (52% being women) and an average of 4 people per household (ZIMSTATS, 2022)¹. The district covers a total area of 3,556 km² with an average density of 58 people per km². Urbanization is still very low in the district with 91.7% of the people living in the rural areas². The district is categorized under Natural Region (NR) II characterized by reliable high rainfall patterns of 720 to 1000 mm per annum. The region has a tropical climate with dry winter climate between 12 and 21°C and maximum temperature of 42°C. The district is known for its high crop and livestock production potential. The surface and sub-surface water resources also help the district to produce vegetables during off-season. The soil types in the district range from deep sandy soils, sand loamy to deep red clay soils. The average land size per household in Murehwa district is 3.43 acres (1.2 ha) (Mujeyi et al., 2015). The main crops include Maize, Groundnut, and sweet potato, grown by smallholder farmers under dryland production as well as with supplementary irrigation. Livestock production systems include beef, dairy, piggery and poultry. However, due to the

¹ <https://zimbabwe.opendataforafrica.org/fujalme/population-distribution-by-district-and-wards>

² https://www.citypopulation.de/en/zimbabwe/admin/mashonaland_east/306__murehwa/

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outbreak of theileriosis in the district, 74% and 86% of the households do not own any cattle nor goats respectively (ZIMVAC, 2021). Table 1 presents selected characteristics of the target wards in Murehwa and Mbire District. The value chain mapping presented here is more selected main value chains in four wards in Mbire and Murehwa districts. Where feasible, the introduction to specific value chains gives a broader perspective before narrowing down to the specific districts.

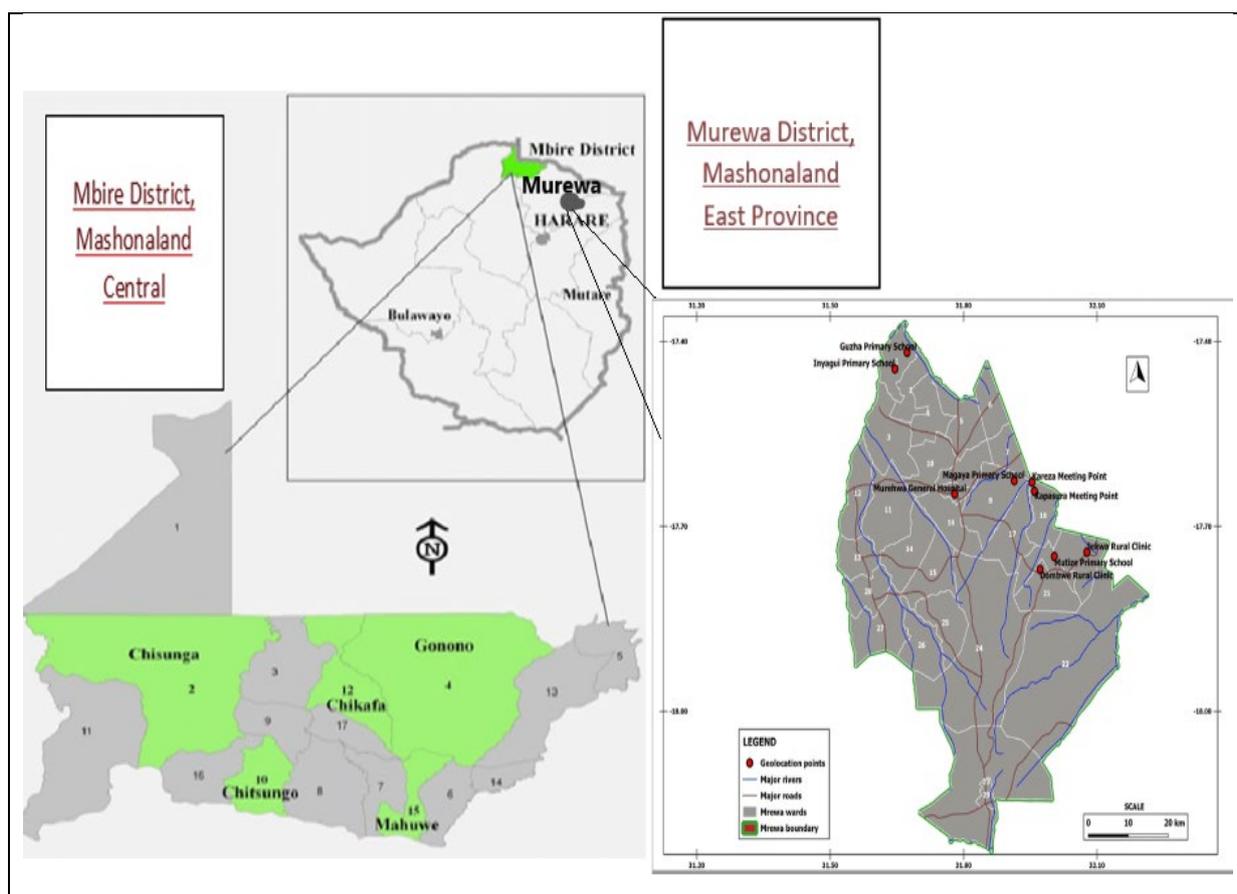


Figure 1. Map of Zimbabwe demarcating Murehwa and Mbire Districts.

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Table 1. Summary of main characteristics of the targeted wards in Mbire and Murehwa Districts

Characteristics	Mbire		Murehwa	
	Ward 2 (Angwa)	Ward 3 (Madzomba)	Ward 4	Ward 27
Number of farm household	1299	1502	1162	2576
Major crops grown (% of farmers growing)	<input type="checkbox"/> Sorghum (100%) <input type="checkbox"/> Sesame (66%) <input type="checkbox"/> Groundnut <input type="checkbox"/> Cowpea <input type="checkbox"/> Cotton (33%)	<input type="checkbox"/> Sorghum (90%) <input type="checkbox"/> Cotton (60%) <input type="checkbox"/> Cowpea (50%) <input type="checkbox"/> Groundnut (30%) <input type="checkbox"/> Sesame (30%) <input type="checkbox"/> Rosella (20%)	<input type="checkbox"/> Maize (50%) <input type="checkbox"/> Groundnut (25%) <input type="checkbox"/> Sweet potato (25%) <input type="checkbox"/> Onion (5%) <input type="checkbox"/> Tomato (40%) <input type="checkbox"/> Leafy-Veg (100%)	<input type="checkbox"/> Maize (50%) <input type="checkbox"/> Groundnut (25%) <input type="checkbox"/> Sweet potato (25%) <input type="checkbox"/> Onion (5%) <input type="checkbox"/> Tomato (40%) <input type="checkbox"/> Leafy-Veg (100%)
Major livestock kept (% of farmers keeping)	<input type="checkbox"/> Goats (100%) ... 5-10 goats, and 45 goats' maxes <input type="checkbox"/> Cattle (25%) ... 3-10 heads and 75 max	<input type="checkbox"/> Goats (95%) <input type="checkbox"/> Cattle (80%) <input type="checkbox"/> Beehives (50%) <input type="checkbox"/> Sheep (30%) <input type="checkbox"/> Guinea Fowls and local chicken (100%) <input type="checkbox"/> Pigs (5%)	<input type="checkbox"/> Goats (50%) ... 5-6 goats <input type="checkbox"/> Cattle (30%) 2 heads <input type="checkbox"/> Chicken (100%) 20+ birds	<input type="checkbox"/> Goats (45%) <input type="checkbox"/> Cattle (50%) <input type="checkbox"/> Poultry (100%)
Average land holding per household	5ha (on average), max is 10ha	4.8 ha for settlers 2ha on average	3 ha (on average), max is 10ha	1ha on average
Available NGO supports	<input type="checkbox"/> Action Aid on Sesame production (just one season back in the days) <input type="checkbox"/> Adventist Development Relief Agency (ADRA) <input type="checkbox"/> Africa Wildlife Foundation (AWF) <input type="checkbox"/> Lower Guruve Development Association (LGDA)	<input type="checkbox"/> Adventist Development Relief Agency (ADRA) supports Sorghum, cowpea, and Velvet Beans <input type="checkbox"/> HELP from Germany supports horticulture <input type="checkbox"/> LGDA on???? <input type="checkbox"/> Sidela and Olam introduced Sesame by	<input type="checkbox"/> SNV (Organic Garlic) <input type="checkbox"/> Caritas, CRS, and Adventist Development Relief Agency (ADRA) support horticulture	<input type="checkbox"/> Waluka Trust Academy <input type="checkbox"/> Champion seed support maize and beans

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	<ul style="list-style-type: none"> <input type="checkbox"/> CAMPFIRE back in the days. 	<p>providing seed and markets back in the days</p> <ul style="list-style-type: none"> <input type="checkbox"/> Export Trading Group (ETG) supported sorghum and cowpeas <input type="checkbox"/> Zimbabwe Apiculture, Carbon Green support beekeeping <input type="checkbox"/> Help Germany supports 		
<p>Co-create knowledge</p>	<ul style="list-style-type: none"> <input type="checkbox"/> For cotton on crop management and facilitate input supply system <input type="checkbox"/> Human-wildlife conflict management <input type="checkbox"/> Better market arrangements for Sesame currently sold to traders from Mozambique <input type="checkbox"/> Pest and disease management in cotton production, e.g., white Milly bugs 	<ul style="list-style-type: none"> <input type="checkbox"/> Better market options for small grains <input type="checkbox"/> Cotton production vs beekeeping conflicts <input type="checkbox"/> There is a Honey processing cottage industry that if completed can help boost production by providing a market <input type="checkbox"/> Human-wildlife conflicts 	<ul style="list-style-type: none"> <input type="checkbox"/> Linkages for farmers to access improved goat breeds <input type="checkbox"/> Hatchery for local kitchen to facilitate commercialization <input type="checkbox"/> Improved marketing strategies, e.g., bulking which would enable farmers to negotiate on prices <input type="checkbox"/> Linkages to a good goat market 	<ul style="list-style-type: none"> <input type="checkbox"/> Improved marketing strategies, e.g., bulking which would enable farmers to negotiate on prices. This applies to both crops and goats <input type="checkbox"/> Linkages to a good goat market <input type="checkbox"/>

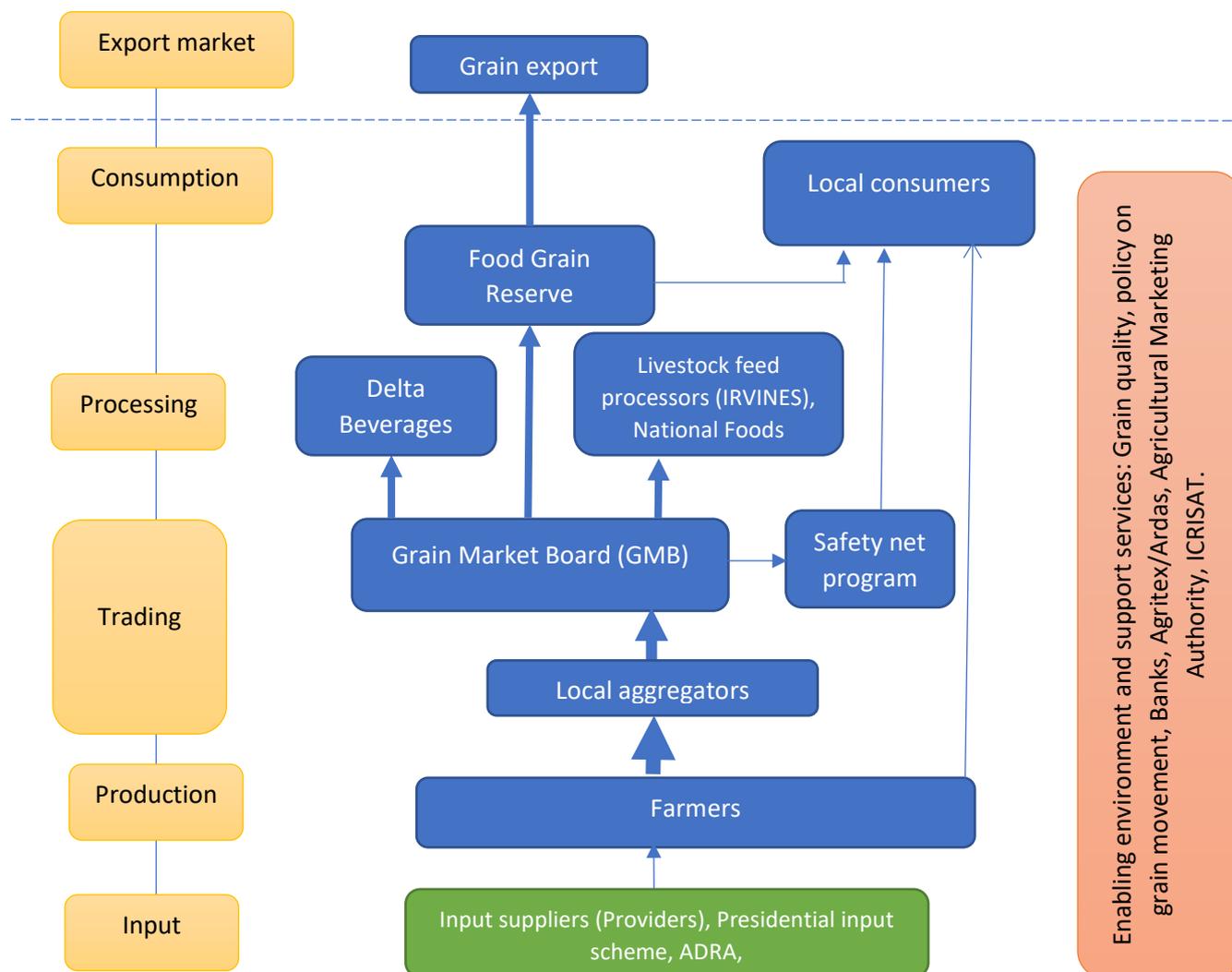
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2. Mapping actors for selected value chains

2.1. Sorghum

Sorghum is a staple crop in the Mbire district where almost all farm households produce it mainly for home consumption and sell some proportion of the produce to meet cash requirements. The production is supported by the presidential free input program whereas surplus produce is purchased by the Grain Marketing Board (GMB). Local collection is made by small traders at village level, who buy from farmers at a lower price. Once they aggregate a certain amount of sorghum quantity, they supply to GMB depots at Mushumbi. Most of the purchased sorghum grain by GMB is transferred to Food Grain Reserve, and some proportion is sold to different processing industries for feed and beverages (Figure 2). The Grain Marketing Board, which is a government parastatal marketing institute, controls the grain prices and movement in the country.

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Enabling environment and support services: Grain quality, policy on grain movement, Banks, Agritex/Ardas, Agricultural Marketing Authority, ICRISAT.

Figure 2. Sorghum Value chain (Mbire, Zimbabwe)

Source: Authors

Inputs used in sorghum production: Farmers use chemical fertilizer provided under the Presidential free input scheme (*Pfumvudza*) and cattle manure. Seed is mostly recycled, and they get some from some NGOs promoting the crop. In some instances, farmers divert pesticide and fertilizer inputs received from cotton companies to sorghum production. Use of chemical fertilizer in sorghum production has increased over time as farmers are less interested in using labor-intensive manure application when chemical fertilizer is made available for free through the free input program. Use of high yielding seed varieties such as Chibuku, Kandevha, Kanzvonzvo, marcia and silla is low in sorghum production when compared to maize hybrid varieties. Research and extension services are provided by the Government (AGRITEX/ARDAS) and other private partners like ICRISAT. In the private sorghum seed system, production of improved seed hybrid and open pollinated varieties (OPV) is done through large international seed companies such as PANNAR and SeedCo. There are limited options through which smallholder farmers in the Mid Zambezi Valley of Zimbabwe acquire improved varieties of sorghum seed.

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Prices of improved sorghum seed differ by seed variety. OPV varieties such as Chibuku and Kandeveha are cheaper than hybrid varieties such as SC Macia. Musara et al., (2019) reported that prices of OPVs range from US\$0.63-0.88 per kilogram whilst prices of hybrid seed range from US\$1.10 - 1.32 per kilogram. The most widely accessible sources are local agro dealers who buy from large seed companies in bulk and re-sell to farmers. For Mbire, inputs are mostly purchased from Guruve town where agrodealers like Farm shop and Farm and City Centre are operating. Another source of sorghum seed is contractual arrangements between farmers and processing companies such as Delta Beverages and ProFeeds Pvt, Muminda Agriculture Pvt Ltd with lead farmers mainly used as agents by contractors. The Zambezi Valley Alliance consortium scaled up seed banking on Crop-Livestock Improvement Centres (CLICs) to include banking of leftover seed from contract farming arrangements to promote scaling up production in the following seasons. The consortium initiated a pass-on scheme to promote the production of improved cultivars of sorghum. Beneficiaries were expected to pass on a 2 kg seed pack enough for to cover 0.2ha.

Production and utilization of sorghum: On average, farmers produce 3 tons of sorghum where they sell about 1 ton and consume the rest. Farmers usually sell sorghum to local collectors both in cash and in kind. In most cases, three-quarters or 75% of the marketed surplus sorghum is sold using barter trading system (using a 20lt bucket as a common measurement unit. However, from the average quantity of sorghum households sell, a quarter is sold in cash and the rest is sold on barter trade system (mostly for household consumption). The selling price of sorghum at farmgate is \$2 per 20lt bucket. Considering that a volume of one litre could be equivalent to 1 kg of grain, the equivalent price for farmgate sorghum would be \$0.1/kg. In 2016, Musara et al., (2019) found that the average weighted farm gate price was US\$0.20/kg and farmers on average sold approximately 90kg. Traders get an average of US\$0.25/kg and sell on average in Mbire district. Market prices of sorghum are variable. Trading of sorghum attached USD value over the years ranged between USD 240 to 290 per MT as officially communicated by GMB and Delta Beverages. In 2022, the producer price for sorghum at GMB was ZW\$100 000 (equivalent US\$150) plus US\$90 per metric tonne (GMB, 2022) whilst Delta Beverages is buying at US\$250/MT. According to the FGD participants in Mbire district, the decision to sell sorghum grain is a joint decision between household head and spouse. However, the participants indicated that the household head is the one in charge of controlling the income realized from sales.

For Zimbabwe in general, sorghum production increased by 135% in the 2020/2021 season from 0.31 MT to 0.67MT with Mashonaland Central and Mashonaland East provinces having an average yield of 1.08t/ha and 0.75t/ha in 2022 (GoZ, 2021). Generally, the communal sector dominated sorghum production accounting for 80% of total production, with average yield of 0.64t/ha. However, the average yields are still low compared to the A2, A1 and Old resettlement sectors with 1.37t/ha, 0.76t/ha and 0.74t/ha respectively (GoZ, 2021). A study by Hungwe et al., (2020) in Mbire, analysed the trends of sorghum production in Mbire as influenced by the ZRBF programme between 2016 to 2020. Substitution effects and/ trade-off have been observed between maize production and sorghum in terms of land sizes and preferences for the period. The results showed a gradual increase in land area for sorghum in the district from 7,000ha in 2015 to approximately 12,000 ha in 2020. The average yield was 0.29 t/ha with upper and lower limits of 0.41 t/ha and 0.10 t/ha respectively. This was attributed to ZRBF's intervention through the provision of seeds and training, contract farming negotiations with Delta indicating that market availability influence production of sorghum in these communities. The farm-gate price for sorghum is low and discourages uptake of sorghum as an income source.

Challenges in sorghum production and marketing: Wildlife (specially herd of elephants) attack and destroy sorghum plants, erratic rainfall distribution, poor marketing system that put smallholders

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always with no bargaining power on prices and monopoly from the government being the only buyer. As the volume of sales per household is low, farmers are price takers and usually prices are low compared to what GMB pays for the same grain quality at that specific period. Farmers also indicated that pests (especially armored crickets) are serious challenges in sorghum production.

Opportunities in sorghum production and marketing: GMB is purchasing sorghum from anyone who is supplying it to their collection points starting from the minimum 50kg transaction per person. Strengthen wildlife guarding systems to protect sorghum from attacks by elephants. Those farmers who sold sorghum grain to GMB also complained of delayed payment systems where farmers lose money due to inflation and/or currency devaluation. There is no financial system in the district to provide credit systems accessible to most smallholder farmers producing sorghum.

Available services in sorghum production and marketing: Extension workers from government and NGOs giving training to farmers on crop production and facilitating the flow of inputs through the presidential free input program.

Recommended interventions:

- There is scope to strengthen farmer groups to facilitate produce aggregation and joint marketing.
- Policy reforms are needed in small grains marketing strategies, e.g., deregulation of market participation
- There is need to mechanize harvesting and processing of small grains to reduce drudgery
- Establishment of rapid, community-based, seed multiplication enterprises and collection centres for sorghum at ward level.
- Vertical and horizontal integration of all actors through development of contract/partnership mechanisms between producers, input providers, intermediate agents and agro processors.
- There is potential for “nucleus farmers” at ward level who serve as the area’s link to, among others, mechanisation and irrigation services of government, agricultural financing, agricultural technologies, highly productive crop varieties and animal breeds, agro-processing centres (which are key under Government’s focus on agro-mechanization) and markets including local and international markets for agricultural products.

GMB in sorghum trading business: After buying grain from farmers and local assemblers, GMB sells sorghum grain to National Foods, Irvines (white sorghum), Delta (red sorghum- small quantities). It also gives some quantity of grain back to community under the social welfare program. For instance, in 2021, 90% of the 5000 tons of sorghum collected at Mushumbi depots was sold whilst 10% was given back to the community. The Mushumbi GMB depot has a carrying capacity up to 8000 tons – but it is not very secure hence they transfer produce to other depots with silos. Grain buying prices at GMB change over the months of a year depending on the volume of supply. Grain suppliers to GMB are mainly aggregators (local assemblers) and they hire their own transport to get the collected quantity to GMB depots. GMB conducts quality inspection on grains mainly for moisture and foreign matter (dirt). There is no grading for the grains purchased. Grain supplied to GMB either passes the quality check and get accepted or rejected if it is below the acceptable threshold for moisture content and physical purity/cleanliness from foreign materials. In addition to buying grain, GMB also supports the government initiatives of free input program as a distribution channel to reach farmers.

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GMB's challenges at Mushumbi depot: There is no secure storage space at Mushumbi depot and grain bags are stored in open air covered by plastic or tents to reduce the effect of rain. In addition, the depot lacks a scale which can be used for weighing lower quantities. The GMB at Mushumbi uses the weigh bridge and average per bag which disadvantages some farmers. So, some prefer to go and sell to other GMB depots in other areas with precise scales. Processing of payments overwhelms GMB when all crops are being sold delaying payments from 3 days to more than a month.

Farmer Challenges: Not every farmer has a bank account to get paid online for the grain they sell to GMB. Thus, farmers opt for local assemblers/aggregators who are paying either in cash or provide them with some consumable household stuff in exchange for sorghum grain. The lack of banking services at Mushumbi created this challenge. There is one bank agent at Mushumbi for Steward, but this agent does not have the capacity to provide bank statements. Thus, one must go to Guruve if there are any queries on their bank account. In addition to experiencing highly unfavourable market conditions, communal farmers face a double-edged problem that lowers net marketing margins. These farmers do not fully benefit from the sorghum value chain because of high transaction costs, low market prices and due to asymmetrical information (Makindara et al., 2013). This is attributed to the remoteness of their production zones, distance to viable markets, complicated marketing channels, lack of institutions and structures, and poor policy environment (Rukuni et al., 2006). The frameworks for financial services, research, and extension that are used in Zimbabwe are inefficient and inattentive to the needs of communal farmers in the arid regions where sorghum thrives. The rents to small-scale farmers at each node of the sorghum value chains have decreased (Musara et al., 2019).

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2.2. Maize

In 2009, the Government of Zimbabwe liberalized the maize market to encourage competition and ensure that farmers get the highest price for their commodity. This has led to the emergence of key private players in the storage and trade sectors. However, in 2019 the Government gazetted the Statutory Instrument 145 of 2019 which prohibits farmers to sale maize to private buyers but only to GMB or contractors. Although there was growth in maize production, this monopoly stifled value chain linkages, competition, and distorted prices. Studies by Kapuya et al., (2010) and Mafuse et al., (2021) identified three supply chains for maize and maize mealie meal in Zimbabwe. The first supply chain involved direct marketing, operating through the informal sector that included roadside marketing. Farmers were selling to mission schools, mission hospitals and villagers for cash or batter trade. In the second supply chain, produce was sold directly to GMB and finally, some maize was passing through maize traders' market dominated by groups of women who buy maize and resale. Nearly 100% of the households in Murehwa district produce maize under rainfed system. However, only 20-40% of the households produce surplus and sell maize grain. Majority of maize produce is consumed at home. Figure 3 shows the value chain map for maize.

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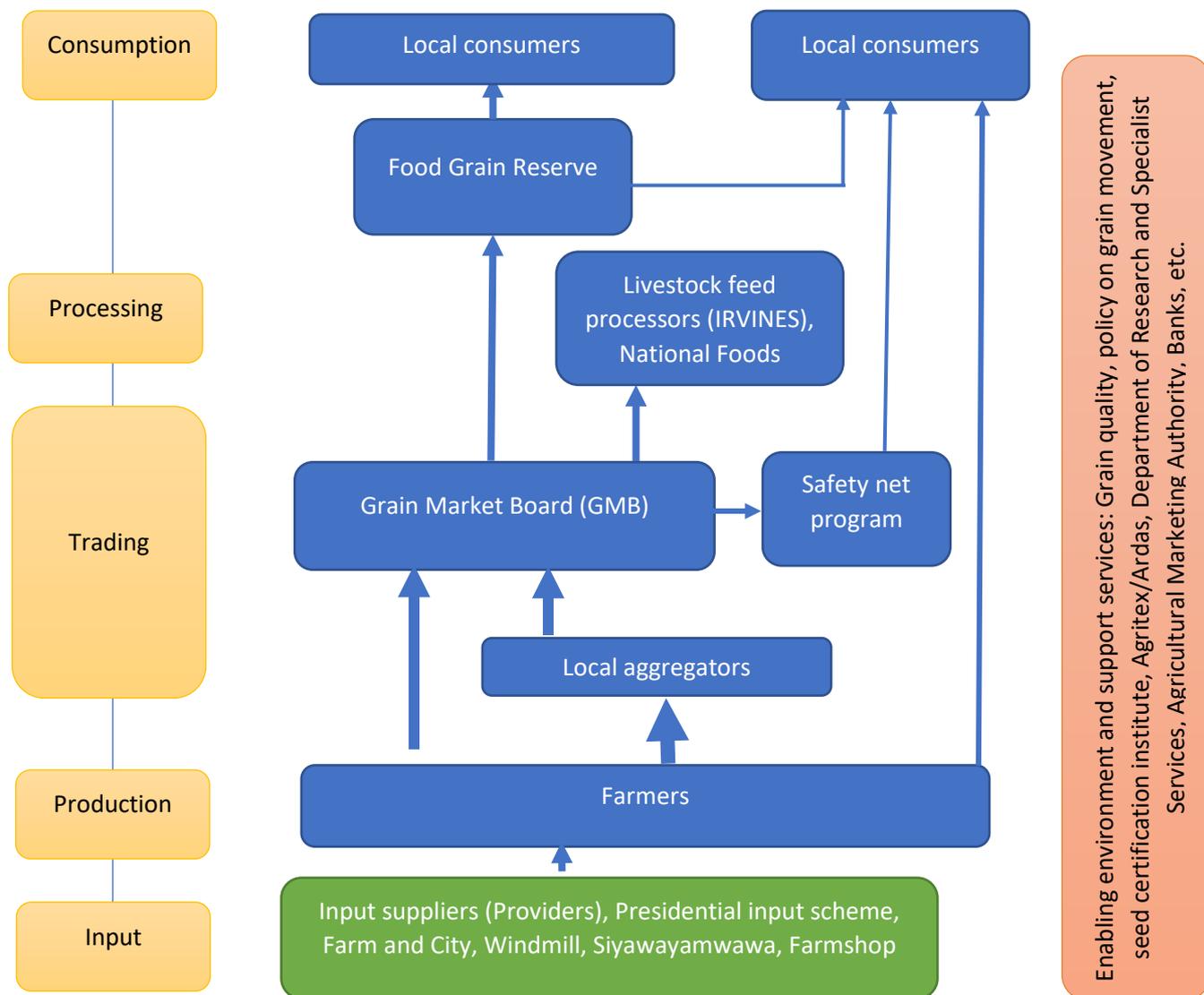


Figure 2. Maize Value chain (Murehwa, Zimbabwe)

Source: Authors

Purchased inputs in Maize production: Maize is produced by nearly all farmers. Production is supported though the presidential free input initiative, but farmers supplement the 5kg seed and 50 kg each for basal and top-dressing chemical fertilizer provided under the free input programs. Farmers buy additional seed, fertilizers, herbicides, and pesticides. Most farmers grow hybrid maize seed in the district.

Main input suppliers for maize: Farm and City, Siyawayamwawa, Windmill, SeedCo, Farm shop, Champion Seed, local agents are the main maize input suppliers at Murehwa district. Inputs are readily available in sufficient quantities within the district.

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Input supply trend: The average fertilizer use in Murehwa district is declining because of the rising cost of inputs. The use of manure is on the rise.

Main challenge in input supply system: A major challenge noted in Murehwa is the rising cost of inputs. While farmers recognize that manure use can supplement and complement inorganic fertilizer, manure availability in larger volumes to cover all crop fields is a challenge.

Opportunity to improve input supply system: There is a scope to increase use of organic fertilizers and manure if supply side constraints can be addressed. Investments in soil amendments and testing can also help farmers ascertain the fertility of their soils to improve crop responses to fertilizer.

Risks in inputs supply system: the main risks in the input supply system are: (1) heavy reliance on inorganic fertilizer on poor soils could limit transition to agroecology if the status quo remains, and (2) continued provision of inorganic fertilizers by the government program also possess a risk where farmers become reluctant to invest in soil fertility management.

Available services in maize: Training and extension, field days, demonstrations from the government extension and NGOs

Service providers in maize: Government through Agritex, Waruka Trust, Champion Seed, SeedCo

Maize production by smallholder farmers in Murehwa district:

- There are 30-40% of female headed households in the target wards (4 and 27).
- Both men and women in the household participate in the production of maize and have a stake in the maize grain marketing.
- Hybrid maize seed is the most used seed type by smallholder farmers in the district
- Maize is seriously affected by the weather variability specially the intra season droughts and late onset and early cessation of rains.
- Farmers mainly sell their maize produce to GMB. Some farmers sell directly to GMB while others sell to middlemen
- Soil health management in maize production:** Farmers use climate smart agriculture principles based on planting basins under *Pfumvudza* program and livestock manure. Others use ripping as a form of land preparation.
- Diversification: Farmer grow more than one crop. Besides maize, groundnuts and sweet potatoes are very popular crops in Murehwa District.
- Promoting productive and income diversification: In addition to crop enterprises, farmers in Murehwa District are also engaged in livestock production involving mainly goats, poultry and cattle.
- At farm-gate, maize fetches about \$0.15/Kg.
- There is a seasonality in production, all under rainfed system
- Maize grain is sold to mostly middlemen who come to the villages to buy and to GMB in Murehwa town. Middlemen pay cash while GMB pays later.

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- Several middlemen come to the wards to buy and sell it to GMB.

Main challenges in maize production and marketing:

- Poor soil fertility limiting crop response to fertilizer
- Increasing pest and disease burden
- Low prices discourage farmers from venturing into maize production
- Delayed payments where farmers must wait for long to receive payments. Volatile exchange rates make this even more complicated because the value of the local currency changes very quickly.
- Rising costs of inputs make it difficult for farmers to access inputs

Main risks in maize production and marketing: Main risks for maize production in Murehwa include weather shocks, price risk, and increased incidence of pests and diseases. According to the ZimVAC (2021) report, average maize grain price was selling at USD7 per 20 litre bucket (US\$350/tonne) in Murehwa, however the GMB' gazetted producer price is ZWL\$100,000 plus US\$ 90/MT. In addition, the average price for processed maize meal in Murehwa was US\$0.5 per kilogram (US\$500/MT) compared to the national average of US\$5.5 per 10 kg.

Policy affecting maize value chain: Government has monopoly over grain buying through GMB.

- Grading and certification of maize grain in marketing:** not as such, but GMB checks for moisture content and cleanliness of grain supplied.
- In maize marketing middlemen come to the homesteads while GMB only buys at its depots in Murehwa and Marondera towns.**
- Post-harvest losses are common in maize.

Recommendations on Maize VCs

- The creation of a futures exchange will increase the connection between farmers and the markets by giving farmers a risk-hedging tool and lowering transaction and search costs with maize dealers.
- Promote agricultural mechanization, agricultural finance, and strengthen agricultural support institutions
- Reform the maize input and product marketing strategies (especially SI 145 of 2019) and liberalize grain marketing and trade policy to encourage competition.

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2.3. Cotton

Cotton (*Gossypium*) production is one of the major sources of income among smallholder farmers in Zimbabwe. Apart from bringing in foreign currency through lint exports, the textile, oil-pressing, the stock feed industries benefit enormously from cotton production. Since the 1970s, cotton has mainly grown under contract farming with contractors lending farmers production inputs like seed, fertilizer, and pesticides. Major contractors include Cottco, Alliance Gineries, China Africa, Sinotex, ETG Parrogate, Graphax, Olam Zimbabwe and Sino Zim. Other buyers common in Mashonaland province are Cargill, Alliance, Synthesis and Insing. The Agricultural Marketing Authority (AMA) is the regulatory body mandated to ensure an orderly production environment and fair marketing of cotton (GAIN, 2016). The legislation, SI 142 of 2009, and currently SI 96 of 2021 regulates the entire cotton value chain from production to marketing and prohibits a buyer to buy cotton from a grower contracted by another merchant. However, poor enforcement of compliance by AMA has led to the reluctance by contractors to commit large financial resources to contract farming. These contractors have either scaled down investment in cotton contract farming or exited the sector. From 2011 through 2016, the country experienced a decline in cotton production from 250 metric tons to a low of 80 metric tons mainly caused by the fall in lint price (CGA, 2016). During this period, the number of major ginners and merchants registered by AMA dropped from 30 in 2005/6 season to 8 in 2017 (Cottco, 2017). To revive the industry, in 2015 the Government provided US\$25.8 million cotton inputs support scheme, targeting 250,000 hectares cotton production (GAIN, 2016). Each farmer received a free input package covering a quarter of a hectare of cotton, comprising the following 5kg of cotton seed; 50 kg Compound L; 25 kg top dressing; 250 grams Carbaryl; 0.25 litres of Lambda/Pyretheroids; 50 grams Acetamak; and 2.5 ml of Acaricides through AGRITEX. In addition to that, through inter alia Cottco's debt takeover, the Government restructured Cottco's costs and mandated them to purchase all cotton from the recipients of the free input scheme.

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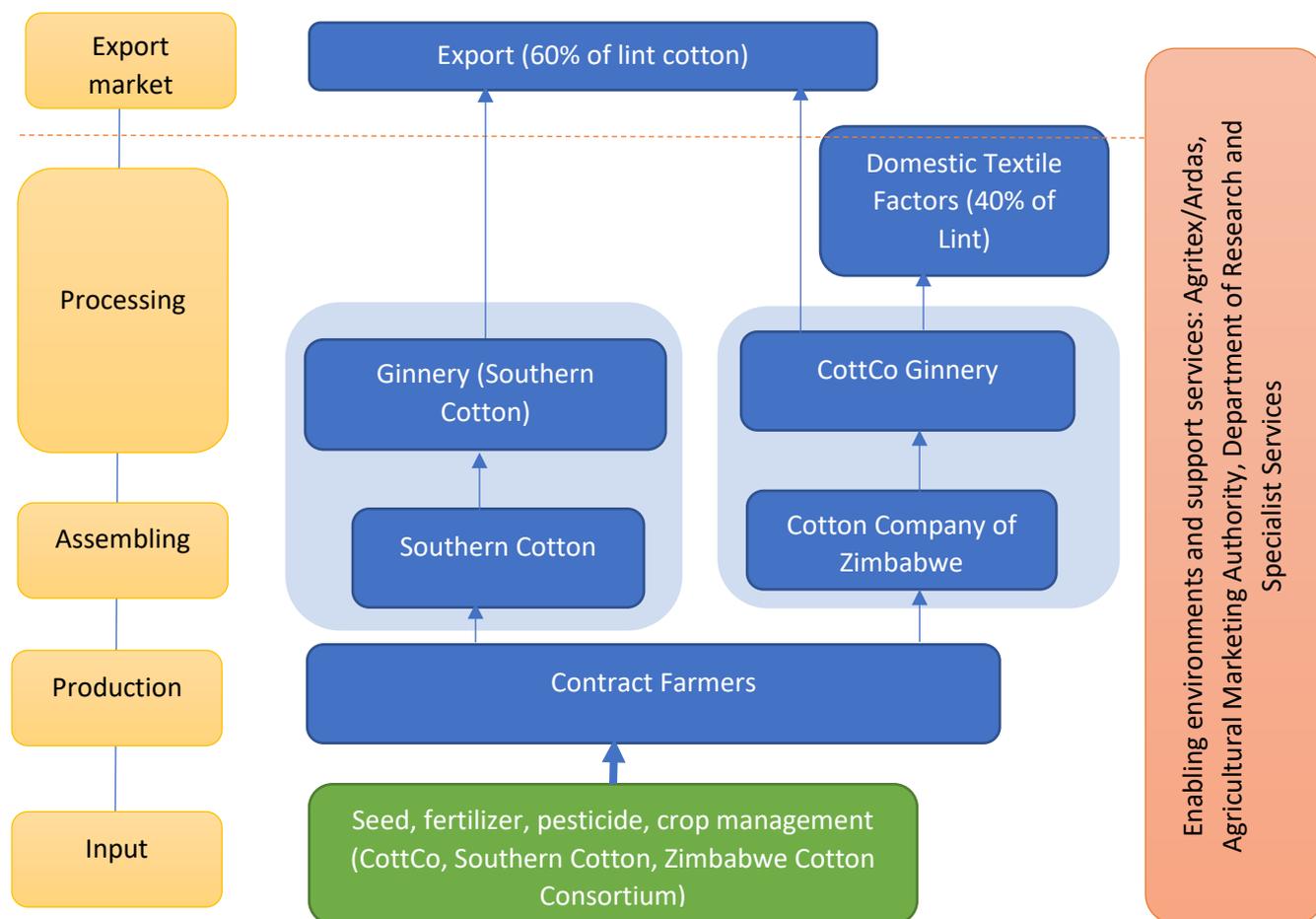


Figure 3. Cotton Value chain (Mbire, Zimbabwe)

Source: Authors

Main suppliers of cotton inputs: Cotton Company of Zimbabwe, Zimbabwe Cotton Consortium and Southern Cotton.

Input prices: The Cotton Company of Zimbabwe (Cottco) is a parastatal that give inputs free of charge to viable and willing cotton farmers under the Presidential free input initiative. CottCo controls about 99.5% of the cotton sub-sector in Mbire District. There are other cotton companies that also pre-finance at least cotton seed, but these account for only 0.5% of the market. All cotton companies pre-finance cotton production and other companies other than CottCo recover their investments after sales.

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Since the price of cotton is determined in the international market including the Liverpool Cotton Index Price (LCIP), local ginners are price takers and normally stick to the LCIP as the benchmark. During the 2020 marketing season, the merchants used household goods, farm implements and groceries as a form of payment. The cotton producer price for 2022 was US\$0,30 plus ZWL\$32 per kilogramme. Before the latest upward review, the Government, through the Agricultural Marketing Authority (AMA), had set the pre-producer price for 2022 at \$111 per kg for the crop funded by private companies and \$63,23 for cotton produced under State-assisted farming programmes, the Presidential Free Inputs Scheme and an additional US\$30 per 250 kg bale. Cottco proposed to release the lint to local spinners at the 60:40 ratio in US\$ and ZWL\$ prices respectively. Government through AMA has set a quota of 30 percent of lint production to be used by the local industry. When the domestic quota exceeds local demand, AMA authorizes the surplus to be exported. At present most of the Zimbabwean lint is sold on the international market as the local value addition industries are very subdued.

Timely input supply: There are contract farming arrangements where inputs are given on credit and for free by CottCo under *Pfumvudza* program, however inputs are late and not sufficient in Mbire district.

Trend in input supply system: The quantity of cotton produced in the district is going down for various reasons and over the years.

Challenges in cotton input supply system: A major challenge noted in contract farming in cotton includes side selling or marketing where pre-financed farmers opt to sell produce to other buyers after harvest. Another challenge is where farmers divert fertilizers and chemicals provided for cotton to other crops. The advent of the Agricultural Marketing Authority (AMA) brought in control of the buying price where all companies had to buy at the same price. This has killed the competitiveness that was there amongst different companies in the cotton value chain and led to some players leaving.

Opportunities in cotton input supply systems: There is a need to address the problem of side-selling of cotton and improve the output prices. There is scope to venture into specialty and or organic cotton production that could attract better and higher premium prices and is more agroecological.

Risks in cotton input supply systems: High reliance on agricultural chemicals for cotton production interferes with beekeeping and poultry production in some ways. There could be scope to employ price risk management strategies like forward supply contracts, price guarantees, hedging etc.

Available services to farmers in cotton production: Pre-financing of inputs, extension, and marketing

Main service providers in cotton production: Cotton companies through contract farming arrangements, Agritex and company agronomists.

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If there is a difference in entity and inclusiveness (service providers in Cotton production):

Agritex focuses mainly on extension provision while cotton companies provide full range, agronomy advise, pre-financing, production support and marketing.

- Services in cotton production are not demand driven and they are free of charge, at least from CottCo, the main player in Mbire district.
- There are about 1800 households in Ward 2 and 1240 households in Ward 3: among these 20% in Ward 2 and 60% in Ward 3 produce cotton. Relatively, Ward 3 is more engaged in cotton production than ward 2 given the heavy presence of CottCo in the former ward. It is not very clear why the difference, but it appears CottCo has had presence for longer in ward 3 than in ward 2.
- Gender roles in the production of cotton:** All participate in production and in some instances make joint decisions on production and marketing arrangements.
- Cotton seed:** Farmers mainly use hybrid seed provided by cotton companies
- Climate effect on cotton productivity:** Not much, slump in production mainly attributed to farmers losing interest and switching to alternative crops on account of poor output prices.
- Common buyers of cotton from farmers:** Cotton companies, mostly to the Cotton Company of Zimbabwe, others to Southern Cotton and Zimbabwe Cotton Consortium.
- Efforts in managing organic matter and soil health in cotton production:** Farmers use planting basins under *Pfumvudza* and livestock manure. Most of them, however, only use *Pfumvudza* as a precondition for them to access inputs. Nearly 520,000 farm households use *Pfumvudza* in cotton production in Zimbabwe.
- Diversity of species on farm:** Farmers grow more than one crop. Besides cotton, sorghum and sesame are very popular crops in Mbire District.
- Productive income diversification:** In addition to crop enterprises, farmers in Mbire District are also engaged in livestock production involving mainly goats and cattle.
- Selling price for farmers:** Cotton fetches between \$0.1 – 0.5/Kg
- Cotton is rain fed**
- How cotton is marketed:** Mostly pre-arranged marketing with payments made later after delivery. There are few instances where farmers receive spot cash for cotton.
- Cotton Buyers:** 3 major cotton companies in Mbire (Cotton Company of Zimbabwe, Southern Cotton and Zimbabwe Cotton Consortium)

Challenges in cotton production:

- Low prices discourage farmers from venturing into cotton and in other instances, delayed payments where farmers must wait for long to receive payments. Volatile exchange rates make this even more complicated because the value of the local currency changes very quickly.

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- There is a notable increase in the incidence of pests and diseases, e.g., white milly bugs and pests mutate quickly making it difficult to control them using chemicals.
- Human-wildlife conflicts are rife in Mbire District. Farmers, especially in ward 3 are struggling with wildlife destroying their crops

Main risk in production and marketing of cotton:

- Price risk where even major buyers are prices takers of prices decided at the international level, e.g., the Liverpool cotton price index which is always fixed.

Opportunities in cotton production and marketing: There is potential to explore the production and marketing of organic cotton which fetches premium price, and its production is more environmentally friendly.

Incentives to move towards eco-friendly: There is potential for organic cotton and higher-grade cotton bought at higher prices.

Policies and social values affecting the cotton VC: The advent of the Agricultural Marketing Authority levelled the playing field and removed the competitiveness amongst different cotton players. There is now one fixed buying price for cotton supplied to a specific market. Government involvement through the Cotton company of Zimbabwe may be a deterrent to other players engaging in the cotton value chain, especially that CottCo provides free inputs.

Main cotton buyers from farmers: Cotton companies, mostly to Cotton Company of Zimbabwe, others to Southern Cotton and Zimbabwe Cotton Consortium.

Quality inspection: Cotton companies do quality assurance and packaging and hire private transport to mop-up cotton and transport it to buying depots and for depot-to-depot transfers.

Grading in cotton: To some extent. At buying, cotton is graded into A, B, C, D and reject, with each grade A – D attracting different prices.

Ensuring proximity and confidence between producers and consumers: Cotton companies set up buying depots near farmers. For example, the Cotton Company of Zimbabwe has 21 buying centers located close to farmers in Mbire. There is no quality loss due to transportation in cotton. Farmers are sensitized to the grading system right from the start of production. Thus, there are no complaints from buyers or farmers about the product handling standards.

Side-selling/marketing and low commodity prices are the main challenges in product marketing

Upgrading opportunities in cotton Marketing: Forward supply contracts and other price risk management options can be explored for the cotton value chain.

Local buyer of cotton: Most cotton companies have ginneries that process cotton wool into lint and seed. The lint is sold to local textile factories that absorb about 40% of annual

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production while the remainder is exported. Seed cotton is exclusively used on the local market to support cotton production as seed and to make other products like livestock feed and oil.

Cotton export from Zimbabwe: About 60% of the cotton is exported to India and China.

Bulking cotton at Mushumbi/Mbire: Cotton Company in Mbire can store up to 7,000 MT. CottCo buys 5000-7000 if cotton per year per company.

CottCo: exports 60% and the remaining 40% is sold to local textile industries in Zimbabwe

Cotton Processors: Cotton companies, mostly to Cotton Company of Zimbabwe, others to Southern Cotton and Zimbabwe Cotton Consortium. They have their own ginneries and are located out of Mbire District.

There is no premium price for farmers in the current setup, specially from agroecological perspectives. However, better quality cotton lint is favored in terms of fetching better prices.

Recommendations/ Solutions to challenges in Cotton VCs

- Reform the cotton factor and product marketing strategies (especially SI 96 of 2021) – liberalization of cotton marketing and trade policy to encourage competition.
- Vertical linkages between farmers and value-addition firms e.g., oil and stock feed manufacturers.

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2.4. Sesame

There is a growing global demand for the sesame seed as a commodity. Approximately 55% of the world sesame production is sourced from Africa, with Sudan being the largest producer with over 2.1 million hectares of production area (Rayone, 2020).³ All sesame sourced in Africa is exported as raw sesame or processed to international markets in Europe, USA, Japan, China, India, and Turkey. Sesame (*Sesamum indicum*) is widely used in pharmaceutical and cosmetic products, confectionaries, oils and supplements. The primary sesame seed variety grown in Zimbabwe is called Lindi purchased at about US\$ 3.6 per kg.

Sesame production is at a small scale, even though it is commercialized by buyers or middlemen who buy from rural farmers. The major buying centers are the urban markets in the regions where sesame is predominantly cultivated. From 2015 through 2020, major buyers of sesame in Zimbabwe include the GMB, Olam, Open Sesame Pvt Ltd and Sidela Trading. However, farmers are opting to sell their produce through unlicensed middlemen from Mozambique because they pay spot cash. There are few buyers of sesame involving only a small group of export firms/middlemen who purchase the crop from a few small-scale producers. Although they appear to compete in purchasing sesame there is evidence of explicit coordination between exporting firms, which often serve the same destination markets. This type of coordination is not present at the producer level, and imbalances in market power between buyers and sellers appear to be constraining the competitiveness and efficiency of the sesame value chain. In 2019 Zimbabwe exported 56 tons of sesame and earned US\$0.08 million (Selina Wamucii, 2022). There exist several structural imperfections, including on the spot transactions between middlemen/traders and farmers which limit competitive pricing and negotiations between buyers or sellers. The market has some monopsonist features since only a few commercial buyers are present giving them a high degree of explicit coordination and power asymmetry in terms of market information. Buyers like Open Sesame Pvt Ltd are paying US\$850/ZWL at interbank whilst GMB is paying ZWL 750 000 per ton. At the international market, a ton of sesame is paid US\$ 1,100. Current export prices for sesame are about USD 1.100/ton to destination markets in India, Bangladesh and China whilst GMB paid ZWL\$750,000 (US\$1 100/ MT) (AMA, 2022).

Sesame is a common crop grown by smallholder farmers in Mbire district. Its tolerance to drought and minimal reliance on external inputs makes it suitable for dry agroecologies like Mbire. The crop is grown primarily for sale.

³ <https://www.rayoneoilpress.com/news/the-state-of-sesame-industry-development-in-af-56284219.html>

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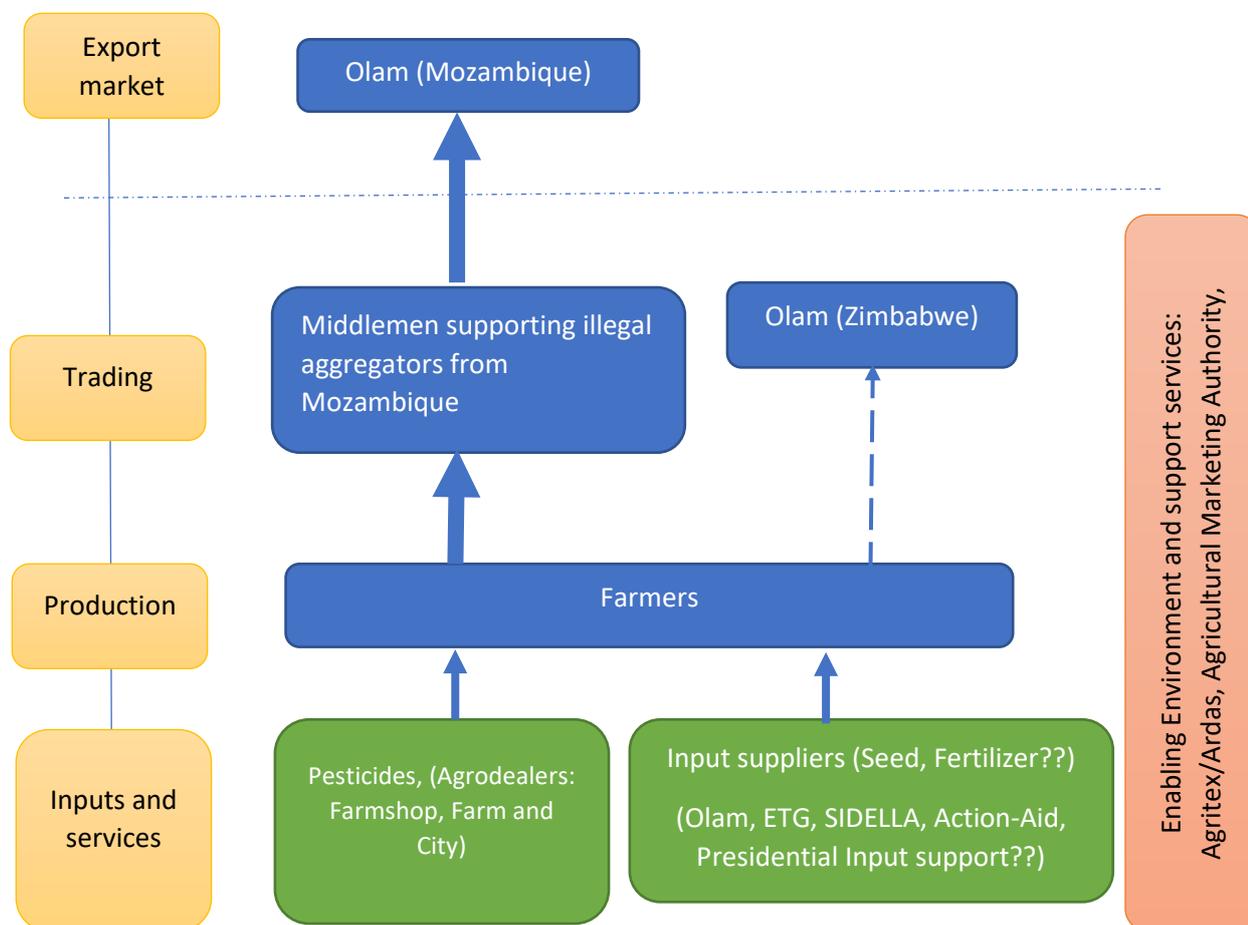


Figure 4. Sesame Value chain (Mbire, Zimbabwe)

Source: Authors

- Purchased inputs** in sesame are Sesame seed and chemicals for pest and disease control.
- Farmers mostly use recycled Sesame seed. Other companies and organizations that provided production support in Mbire District include Olam Zimbabwe, ETG and Sidella and ActionAid.
- No specific roles are assigned to men and women in sesame production. All participate in production and in some instances make joint decisions on production and marketing arrangements.
- Farmers mainly use recycled seed given to them by some organizations in years back when the crop was introduced in Mbire. Other farmers use recycled seed bought from Mozambique.
- Sesame is not climate sensitive.** Not much, sesame is a recent and upcoming crop in the district. It is largely drought tolerant.

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- **Buyers:** Private buyers from Mozambique are the main buyers. Previously, Olam Zimbabwe, ETG and Sidella were active in Mbire District.
- Farmers grow diversified crops: Farmer grow more than one crop. Besides Sesame, sorghum and cotton are very popular crops in Mbire District.
- **Diversification:** In addition to crop enterprises, farmers in Mbire District are also engaged in livestock production involving mainly goats and cattle.
- Sesame fetches about \$0.8/Kg
- Sesame is only rainfed in Mbire
- Sesame: The bulk of the produce is sold to private buyers who come from Mozambique. It is understood that Olam Zimbabwe in the past used to export Sesame to India, China, and Burma.

- **Challenges:** Lack of reliable market for Sesame. Buyers from Mozambique are not reliable, and their business is illegal. Their prices are non-negotiable. It is on 'take it' or 'leave it' basis. These buyers also use fake scales that disadvantage farmers. Previous actors/buyers left at a time when government regulations were mandating all players to pay farmers through banks and in local currency. This then lowered the actual value of the money farmers received.
- **Risk:** Main risk is lack of a reliable market. Farmers are hesitant to invest more in production with no clear marketing arrangements.
- **Opportunity:** There is potential to improve the sesame value chain if more private sector players could provide production support and market for produce. This would require some flexibility at policy level to allow companies to pay in cash and to use USD, two aspects that would be attractive to farmers.
- **Incentives for Sesame:** Sesame prices are very good and attractive for farmers. There is potential to develop the Sesame value chain in Mbire District.

Recommended interventions to improve Sesame VCs

Strengthening the value chain will require addressing each of these obstacles through a comprehensive, multi-stakeholder approach. Effective interventions in the sesame subsector will involve: (i) expanding market information networks; (ii) building direct linkages between producers and exporters; (iii) establishing partnerships with actors at each level of the value chain; and (vi) promoting the use of improved seed varieties.

2.5. Horticulture (Tomato and Onion)

Horticulture is one of fastest-growing subsectors in Zimbabwean agriculture, contributing to both smallholder- and large-scale incomes, employment, and foreign exchange earnings. Although the sector is the most protected with an average applied most-favored nations (MFN) tariff rate of 25.1%, the fruits and vegetable market in Zimbabwe is mostly dominated by imports (Liesdek & Ansenk, 2020). Zimbabwe's horticulture has a competitive advantage owing to its off-season lines of high-value crops. The subsector is diversified, producing

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vegetables and fruits for local and export markets, and flowers particularly for export market. The area harvested under vegetables increased to 26,224 hectares in 2020 with tomatoes topping the market, accounting for 25,113 tonnes, followed by chilies, onions, beans, and cabbage (Intelligence, 2022).

Tomatoes Value Chain

On a global scale, the annual production of fresh tomatoes (*Solanum lycopersicum*) amounts to approximately 180 million tonnes (FAO, 2019). However, about a quarter are grown for the processing industry, which makes tomatoes the world's leading vegetable for processing. Value added products from tomato common in Zimbabwe include tomato juice, paste, sauce, jam and powder. Almost 39 million ton of tomatoes are processed every year in factories belonging to the greatest labels of the global food industry (ibid). A value chain analysis by (Madhovi, 2018) highlighted that various stakeholders are linked to the horticultural value chain including input suppliers, growers, local traders, commission agents, wholesalers, and retailers to the consumers. Apart from the chain actors there are also specialized services and chain enablers within the value chain which include the research and financial institutions, and the Government ministries. The major tomato varieties grown in Zimbabwe are from Prime SeedCo, National Tested Seeds, and Avanos include Roma VF, Tengeru 97, Star 9006, Royale Plus, Rodade, Daisy F1, Supersweet F1, Thomas F1, CandellaF1, Akella F1, Alambra F1, Perseo F1, etc.

Onions Value Chain

Onion (*Allium Cepa*) is a cool season crop and one of the most important commercial vegetables after tomatoes. Zimbabwe consumes approximately 15-20 MT of onions yearly, with local production around 7,000 tons. The major onion varieties grown include Irati, Ngwazi, Festive, Goblin, Elad F1, Eptune F1 among others. The onion value chain just like other horticultural crops comprises of input suppliers, farmers, importers, transporters, wholesalers, retailers and consumers. Onions are marketed through the formal and informal markets. Over the years, Zimbabwe has been a net importer of onions recording about 445 tons in 2020, a 105.07% increase from 2018/19 season. Onion offers a huge potential for value creation through processing. Value added products from onions include onion paste, dehydrated onion flakes, onion powder, onion oil, onion vinegar, onion sauce, pickled onion, onion wine and beverages etc.

Horticulture (mainly tomato and onion) production is very common among farmers in Murehwa district. Its proximity to Harare and Marondera provides farmers with huge market potential for horticultural products.

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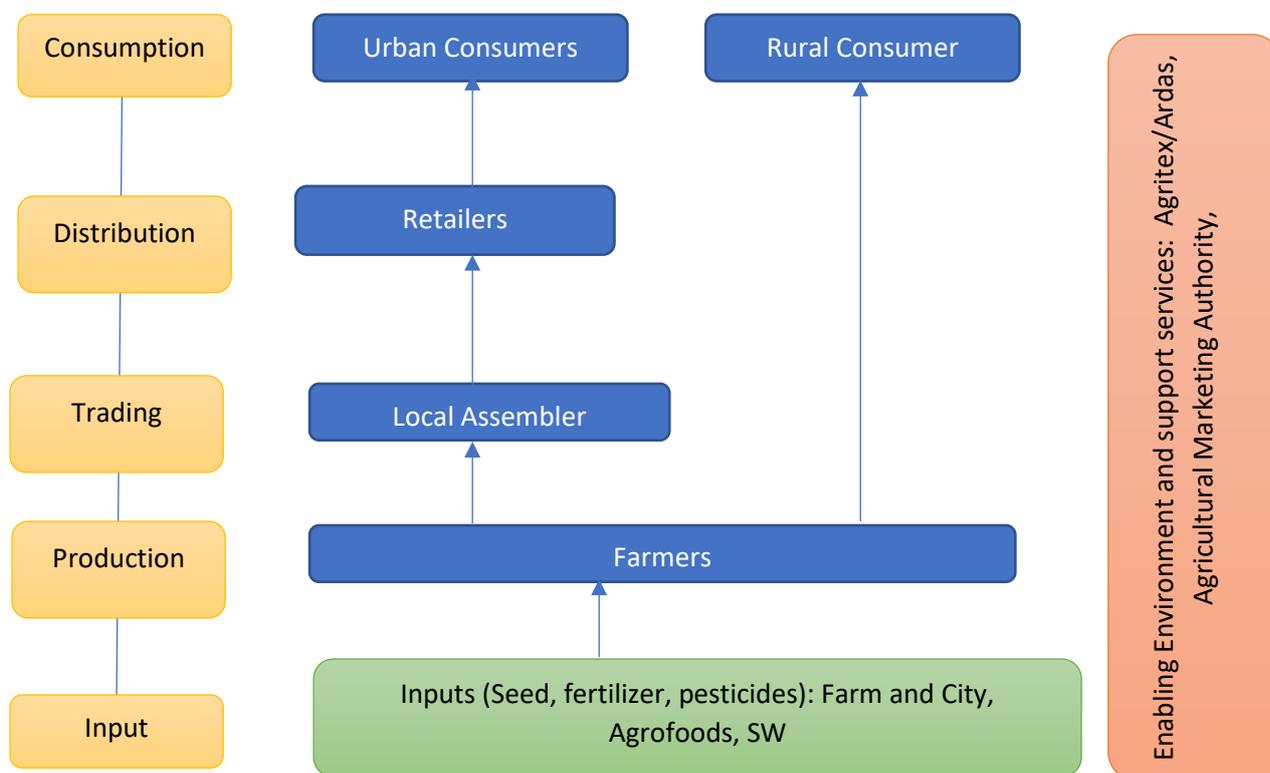


Figure 5. Horticulture value chain (Murehwa, Zimbabwe)

Source: Authors

Marketing arrangements: The export market is supplied by large-scale producers while the local market is supplied by small-large-scale producers. The horticultural marketing structure is categorized into two groups, the informal and formal sectors with perfectly competitive markets. The latter is market driven emphasizing grades and produce quality whilst the former is market driven supplying through the Municipal markets. According to the AfDB (2018), the subsector is the fifth largest export earner contributing 7% to agriculture’s Gross domestic Product (GDP) share. Major hubs for horticulture are in Marondera, Mazowe, Honde Valley, Cashel Valley, Chipinge, Chimanimani among others. The fruit and vegetables harvests are sold through the informal market to most consumers, whilst the minority are contracted to supply formal markets retailers, agro-processors and export markets for example Food Lovers market and Cairns Foods. However, there exist exclusive marketing arrangements involving backward and forward integration within the subsector. Some wholesalers have integrated sourcing and retail systems and are selling through their own retail outlets (Liesdek

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& Ansenk, 2020). In addition to that, this informal market is mainly dominated by the middlemen who buy produce at the farm gate and resell to the informal markets e.g., Mbare Musika and other supermarkets.

Tomatoes are mainly sold in retail businesses such as supermarkets, fruit and vegetable shops/markets and street vendors. At the major informal markets, pricing is market based with an average of ZWL\$ 210/ kg equivalent to US\$0.30/ kg at the Harare and Bulawayo Municipal markets (AMA, 2022). Onions sell between US\$1.10 – US\$1.20 per Kg at Mbare and Bulawayo municipal markets.

Challenges: The performance of the subsector is constrained by several factors which include (i) institutional – operational inefficiencies, weak coordination including supply chain integration and linkages, and poor enforcement of rules and regulations; (ii) functional – with inefficient handling, transportation, storage, and trading and market diversification; and (iii) structural – with concentrated market power, unsuitable road systems, equipment (Jackson et al., 1997; Dube, 2021; Madhovi, 2018). The perishability nature of many horticultural crops coupled with limited access to cold chain logistics are also critical marketing constraints in the subsector (Liesdek & Ansenk, 2020).

Solutions/Opportunities for Horticultural VCs

- Developing a user-friendly marketing information system to improve the market information delivery and dissemination
- Develop a tax incentive package that pushes investment in cold storage chains
- Localization of the Standards Association Boards (SAZ)
- To reduce post-harvest losses, modern standard facilities and norms are needed to improve e.g., production – with mechanized harvesting and handling, standard weight and packing practices, storage, and commodity specific transportation.
- Vertical and horizontal linkages from local, regional and global markets.
- Moving market to the local levels to reduce transaction costs.

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2.6. Groundnuts

Legumes are the most significant supplementary food and cash crop in smallholder farming systems after cereals. Homann et al., (2015) reiterated that more than 36% of smallholder farmers grow groundnuts as a source of food and income in Zimbabwe. Although groundnut production has increased by 139% from 87 498 MT to 208 864 MT in 2021, productivity remain low and stagnant at less than 0.5 t/ha yet yields between 3 and 4 t/ha can be achieved from improved varieties in Zimbabwe (GoZ, 2021; Homann et al., 2015). The most common varieties found in local markets are Tumbe and Kasawaywa.

Groundnuts (*Arachis hypogaea*) are a common crop produced by nearly all the 2,043 households in ward 4 and 2,730 in ward 27 of Murehwa district. However, only about 25% of households produce enough to sell. All farmers mainly use recycled or local groundnut seed.

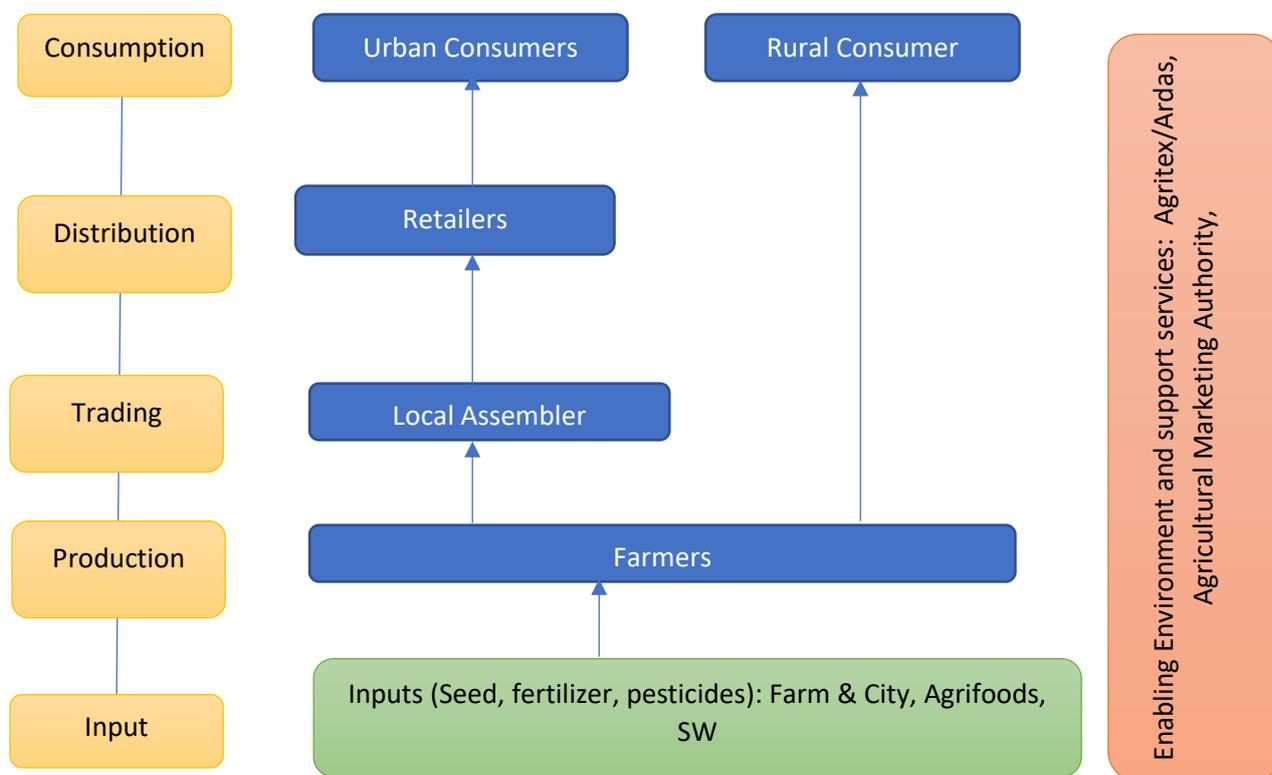


Figure 6. Groundnut value chain (Murehwa, Zimbabwe)

Source: Authors

Purchased inputs in Groundnuts: Groundnuts are mainly produced using recycled or local seed. The only input bought in isolated cases is gypsum and basal fertilizer.

Main suppliers of inputs: Farm and City, Siyawayamwawa, Windmil

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- Inputs are readily available in sufficient quantities in the district.
- Rising costs of inputs in Murehwa was mentioned by FGD participants.
- There is scope to increase use of improved groundnut seed that can help raise productivity. There is need for awareness raising and demand creation for improved groundnut seed in the district. Farmers indicated that if there is access to improved seed, they were willing to buy if it is demanded by buyers.
- Any risk in the input supply system: High reliance on recycled local seed is contributing to low productivity. This may reduce farmer interest in growing groundnuts.
- Overall, about 30 – 40% of farm households in the two wards are headed by females.
- All participate in production and make joint decisions on production and marketing arrangements.

Seed types used: Farmers mainly use local recycled seed and Tumbe and Kasawaya varieties.

Marketing: Many agro dealers participate in groundnut aggregation, grading, packaging, selling and processing into peanut butter or cooking oil. The informal market has become a major player in the groundnut value chain because it presents a ready market with farmers paid in cash. For example, Mango et al., (2018) found that farmers either sell through the informal market (i.e., at the farm gate, or local village roadside market, or local town or a combination of the markets), barter trade or the formal markets including the Grain Marketing Board (GMB), Probands, and Nutrie Foods. At the Mbare market, unshelled groundnuts are priced at ZWL\$ 780/ kg (US\$ 1.15/kg) whilst on other markets, a bucket range between ZWL\$ 3 800 and ZWL\$4 800. In addition to that, shelled groundnuts are priced between ZWL\$ 16 000 and ZWL\$ 21000 per bucket (US\$20-30) per bucket (AMA, 2022).

Main groundnut buyer from farmers in Murehwa are private buyers within the wards and some processors. Other farmers prefer to process their groundnuts into peanut butter which is later sold in distant markets such as Harare and Marondera.

- Most farmers use recycled groundnut seed
- Diversification: Farmer grow more than one crop. Besides groundnuts, maize and sweet potatoes are very popular crops in Murehwa District.
- Efforts in promoting productive and income diversification on farms:** In addition to crop enterprises, farmers in Murehwa District are also engaged in livestock production involving mainly goats, poultry and cattle.
- Groundnut farmgate price:** \$0.25/kg
- Groundnut is a rainfed crop in Murehwa.**
- Groundnut Mostly sold to middlemen who come to the villages to buy and to fellow farmers. Several middlemen come to the wards per year.
- Challenge in production and marketing of groundnut: Use of low yielding recycled seed
- Main risks for groundnut production in Murehwa is the use of recycled seed and poor soils which limit productivity. Another challenge is the absence of a well-integrated seed system and a functioning groundnut value chain which limits access to good quality seed

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such as improved varieties, good agronomic and processing practices and poor market linkages.

- **Opportunities in improving groundnut production and marketing systems:**
 - There is potential to introduce high-yielding improved varieties.
 - Farmers identified a need to introduce specific varieties that are preferred by processors. For example, there are preferred varieties with high oil content and some for making energy peanut butter. foster strategic partnerships among stakeholders along the value chain
 - release of new stress resilient, nutrient dense varieties with suitable post-harvest, handling and food safety qualities (aflatoxin).
 - Ensure continuous supply of breeder and foundation seed of improved groundnut varieties, following market demand
 - Sustain massive production, bulking and distribution of certified high-quality seed

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2.7. Sweet potato

Globally, sweet potato (*Ipomoea batatas*) is the second most important tuber crop after Irish potato. Its adaptability to water stress and tropical climate makes it very popular in sub-Saharan Africa, including Zimbabwe. Sweet potatoes are an important source of food for urban and rural populations, and it is consumed as a snack or in lieu of bread as boiled or roasted. There is limited value addition for sweet potatoes as most are consumed raw. Its bulky nature and limited processing pose significant post-handling challenges. The most common storage method uses underground pits and trenches, but these can only preserve the tubers for 2 – 3 months. Sweet potatoes are mainly considered as a woman’s crop in southern Africa but are common to almost every farm household. According to Mutungamiri et al (2001), sweet potato varieties in Zimbabwe include Brondal (red skinned), Chingovha (Light Khaki skinned), Magutse (Khaki skinned), Cordiner (bronze skin color), and Mozambican white (red skinned), with an average yield potential of 15 tons per hectare. As would be expected, nearly 100% of farmers both in Wards 4 and 27 produce sweet potatoes in Murehwa district. The sweet potato value chain is very short (Figure 8).

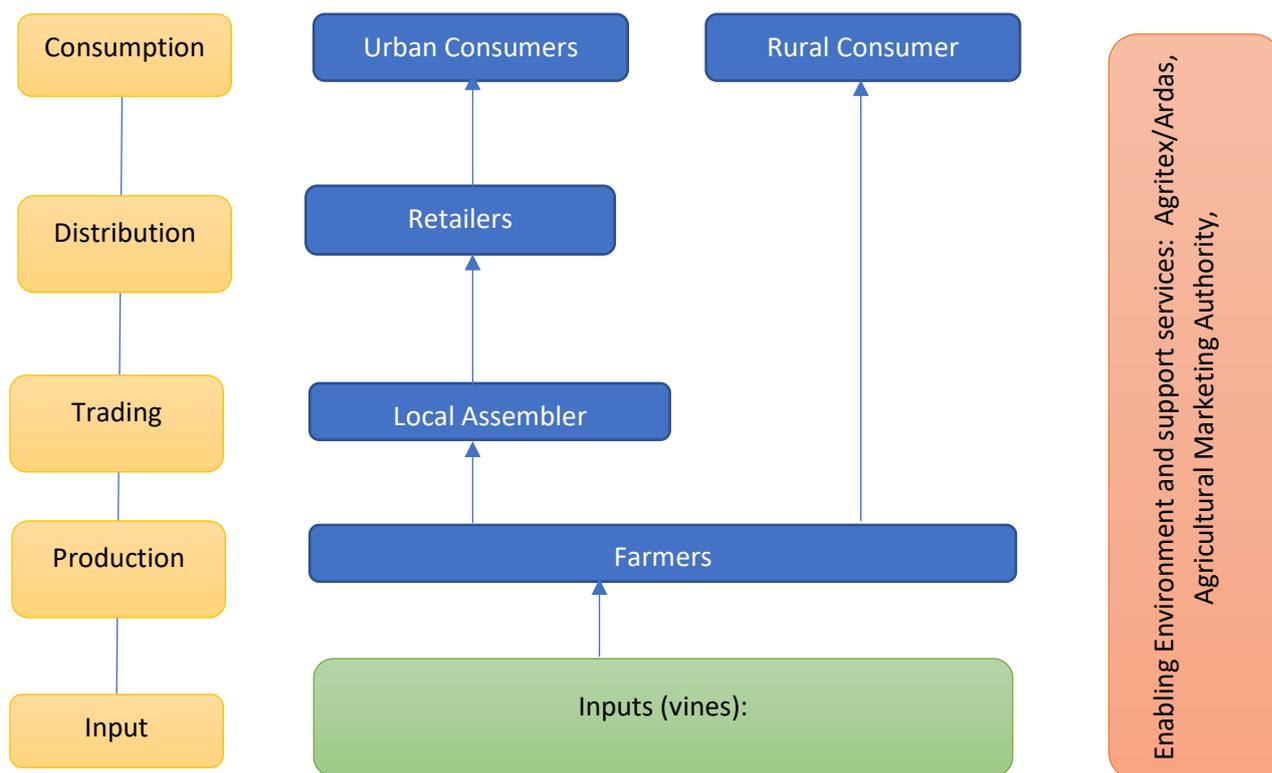


Figure 7. Sweet potato value chain (Murehwa, Zimbabwe)

Source: Authors

Overall, about 30 – 40% of farm households in the two wards are headed by females. Gender role: All participate in production and make joint decisions on production and marketing arrangements.

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Planting material that farmers mainly use local recycled vines

- Main buyers of sweet potato:** Mainly private buyers within the wards. Some farmers in ward 4 sell at Mbare market in Harare while those in ward 27 sell in Marondera.
- Farmers in the district mainly use recycled vines and cuttings.
- Farmer grow more than one crop. Besides sweet potatoes, groundnut, horticulture and maize and are very popular in Murehwa District.
- In addition to crop enterprises, farmers in Murehwa District are also engaged in livestock production involving mainly goats, poultry, and cattle.
- Sweet potato fetches about \$0.25/Kg
- Sweet potato production is only rainfed in Murehwa
- Mostly sold to middlemen who come to the villages to buy and to fellow farmers. Some farmers sell in large markets in Harare and Marondera.
- Several middlemen come to the wards per year.
- Use of low yielding local vines
- Increased pests and diseases, e.g., sweet potato weevils
- Limited markets for sweet and low productivity of common local varieties
- There is a potential to introduce high yielding improved and biofortified varieties which are available at specified markets. Farmers can contribute and send someone to buy for them improved vines.

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2.8. Goats

The global consumption of goat meat is increasing in Africa to approximately 400 million tons per annum. In Zimbabwe, the population of goats is increasing with Beitbridge having 190,432 whilst Mbire district has 89,139 goats (Zimbabwe Agricultural Growth Program [ZAGP], 2021). The key functions in the goat value chain are the input supply, production, collection and brokering, processing, wholesaling, retailing and consumption (end markets) (Dube et al, 2017; Homann et al., 2007; ActionAid, 2021). Goat production in most communal areas is characterized by limited application of veterinary drugs and feeds mainly supplied by VETCO, INTERVET, Fivet, Coopers, Vet Distributors, etc. There is no registered goat breed stud in Zimbabwe although a few institutions and individuals are supplying the breeding stock including Zvikomborero Farm, Anita Farm, Chris Grant, Grasslands and Matopos Research Institutes. In addition to that, women are more dominant in this sub sector. Although it is informal, many breeds are now predominant in the country including Matebele goat, Boer, Boer-Matebele cross, Red Kalahari and the traditional Shona breed. The cost of producing a three-month-old Boer is US\$100. The ZRBF interventions in Mashonaland and Matabeleland are focusing on developing fodder seed banks and goat feeding centers. Fodder seed costs US\$1.70 per 3 kg package. The goat value chain has vertical and horizontal linkages. ZVA (2021) scoping study reported that the goat value chain governed by middleman/brokers who are self-acting or buy on behalf of abattoirs and NGOs involved in goat breeding projects. These brokers found out that the brokers collect 55% of the value created in the value chain. There is a lot of information asymmetry in the sub-sector including pricing information and markets. There are many existing value chains (Dube et al., (2017; ActionAid, 2021) including, (i) farmer-farmer channel; (ii) farmer – market; (iii) farmer-broker/middleman; (iii) Farmer-Middleman-Abattoir; (iv) Farmer-Middleman-Consumer; (v) Farmer-Middleman-Abattoir-Wholesale/Retail-Consumer. Key active wholesalers and retailers are the butcheries, supermarkets who are supplied by the farmers, brokers or from the abattoirs. These brokers also wholesale and retail in urban markets especially the live goats at Harare (for example., Mbudzi, Tynwald and Koala areas).

Goats are common in both Mbire and Murehwa districts where local breeds dominate, and their value chain is simple and uncomplicated (Figure 9). There are opportunities for farmers to access improved breeds, but these only account for about 5% of the goat stock in both districts. Goats are more prevalent in Ward 2 of Mbire district where farmers own between 5 and 45 goats compared to an average of 10 in ward 3. In Murehwa, farmers own between 4 and 5 on average in both ward 4 and ward 27. The high prevalence of goats in Mbire is as expected given that goats are browsers and better suited to dry agro-ecologies that are large ruminants.

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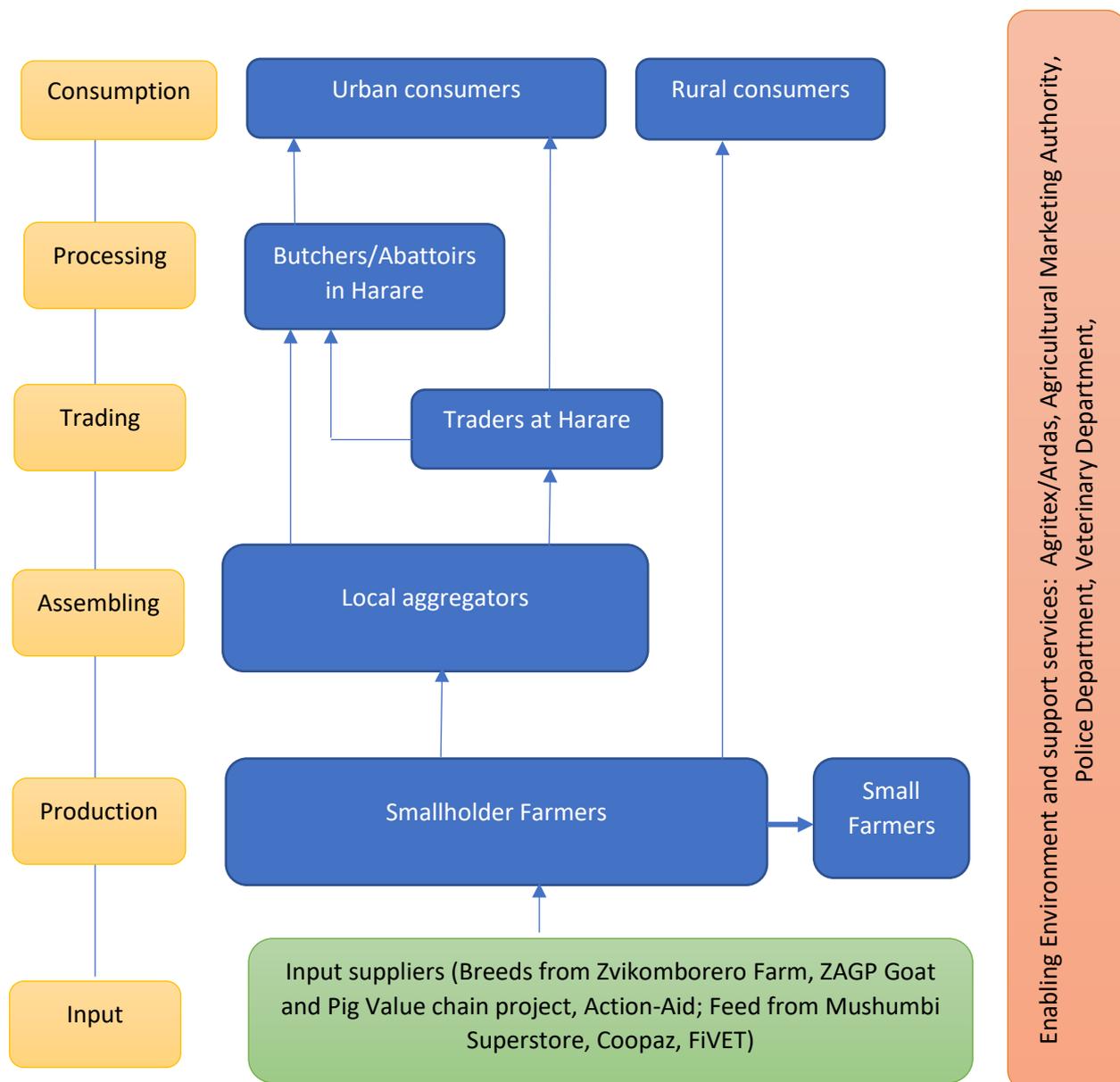


Figure 8. Goats value Chain in Mbire and Murehwa Districts, Zimbabwe.

Source: Authors

Marketing: Dube et al., (2017) found that transporters were charging US\$2 per live goat. There are no linkages to the export market concerning the sale of live and chevon meat which is available in the Middle East and regional markets for example Angola which demands 25 tonnes per week. However, there are high costs of formalization and abattoir costs in goat

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business. For example, export grade abattoirs pay between of US\$300 and US\$500 as annual licence fees. The prices of the adult goat in the market differ by breeds with the Mashona/ Matabele goat costing US\$100 on the local market and at the commercial price of the Boer or Kalahari red is between US\$500 – US\$600 (ActionAid, 2021). However, in Beitbridge, Dube et al., (2017) purported that goats are auctioned at prices between US\$40 to US\$ 60. Chevron is purchased at an average of USD3.00/kg and sell to customer at USD4.50/kg regardless of quality. In some instances, farmers barter goats with pesticides, herbicides, household supplies or clothes.

Goat breeds: Most of the goats are local breed (95%) with only about 5% being mixed and improved breeds. Interested farmers can buy improved breeds from Chivhu at Zvikomborero Farm and there is also an initiative to provide farmers with improved goats through Zimbabwe Agricultural Growth Program’s Value Chain Alliance for Livestock Upgrading and Empowerment (VALUE) where they source their goats from Zvikomborero farm, who also supplies improved goat breeds to farmers. Zvikomborero farm also supplies Boar Goats. Improved goat breeds, especially the Boar goats, are not browsers. So, supplying them with purchased feed is important. Farmers in Mbire access feed for goats from Super Store located at Mushumbi town and while those in Murehwa buy from Fivet in Harare.

Challenges:

- Lack of direct marketing to consumers
- Getting improved breeds both for goats and cattle
- Wildlife attack (Baboons, Hyena, Goats, etc.).
- Removal of the red zone status so Mbire farmers can freely sell their livestock outside the area.
- No formal market facilities exist for goats and most farmers rely on farm gate sales hence, goat enterprises are not levied or taxed at any level.
- Infrastructures- no established centres for collection and slaughtering infrastructure at the district/ ward level.
- No visible marketing channels to the international markets given the high demand of chevon in the Middle East.
- Limited market access and high market discovery/search and transaction costs (KIT et al., 2006; Homann et al., 2007), Dube et al., 2017)
- Lack of value addition options besides fresh goat meat

Opportunities

- Value addition from goat meat including goat meat sausages, biltong, milk lotions,
- Goat milk production
- Export market for chevon and milk on the international market

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2.9. Cattle

The beef value chain in Zimbabwe was dominated by few large-scale farmers and one State owned company, the Cold Storage Company (CSC) and partly based on its veterinary services managing market access. The formal beef value chain in Zimbabwe has elements of vertical integration (Bennett et al, 2019). With beef off-take switching from commercial farmers to partially commercial/communal and fully communal farmer categories, actors in the processing sectors have had to move down their value chains to maintain throughput. The abattoirs are the new key players of this value chain. They are well structured horizontally, in through the Zimbabwe Abattoirs Association. They have integrated vertically within the value chain, investing in animal collection, feed lots, feed processing, and out grower schemes demonstrating innovation and flexibility in the face of challenging economic conditions. Abattoirs have developed buying strategies and have switched to toll slaughter where no ownership is taken of the animals or the meat. Some meat processing companies have incorporated abattoirs to guarantee throughput, whilst others have divested or moth-balled their abattoirs to limit risk. Many urban abattoirs and meat processors have opened allied businesses in meat wholesaling, catering, and retailing including factory off-sales. (Mujeyi et al., 2015) identified three existing beef cattle value chains in Goromonzi and Murehwa districts of Zimbabwe which include (1) the domestic butchery chain, (2) farmer to urban middlemen channels, and (3) farmer to abattoir channel. Similarly, Bennett et al, (2019) reported that cattle leaving farms are either slaughtered for local use or transferred via middlemen or auctions to abattoirs. They reported that abattoirs are very active in vertical integration nationwide. For example.

- animal collection (through employing their own agents or by organizing buying stations where farmers gather the animals for sell, e.g., Sabie Meats in Chiredzi).
- *extension services*: advice, vaccination, animal tagging, possibly providing stock feed at credit, even improved breed (e.g., Sabie Meats)
- *contract feeding schemes*: One abattoir, Kaola Park, is experiencing the following system: Farmers can send to this abattoir a batch of 15 animals. The abattoir keeps them in their own feed lot for 90 days and charge the owner/farmer, \$3.52/ day/ animal.
- *beef production*: many abattoirs have their own feed lots (e.g., Binder, Kaola Park, Sabie Meat) and in some instances farms for back-grounding cattle or breeding (Koala Park, Caswell Meats, MC Meats and Surrey Abattoir).

Cattle production is common in both Mbire and Murehwa districts where local breeds dominate. Cattle are more prevalent in Ward 2 of Mbire district where farmers own between 3 and 10. In Murehwa, farmers own between 2 and 5 on average in both ward 4 and ward 27. Figure 10 presents the cattle value chain for Mbire and Murehwa districts.

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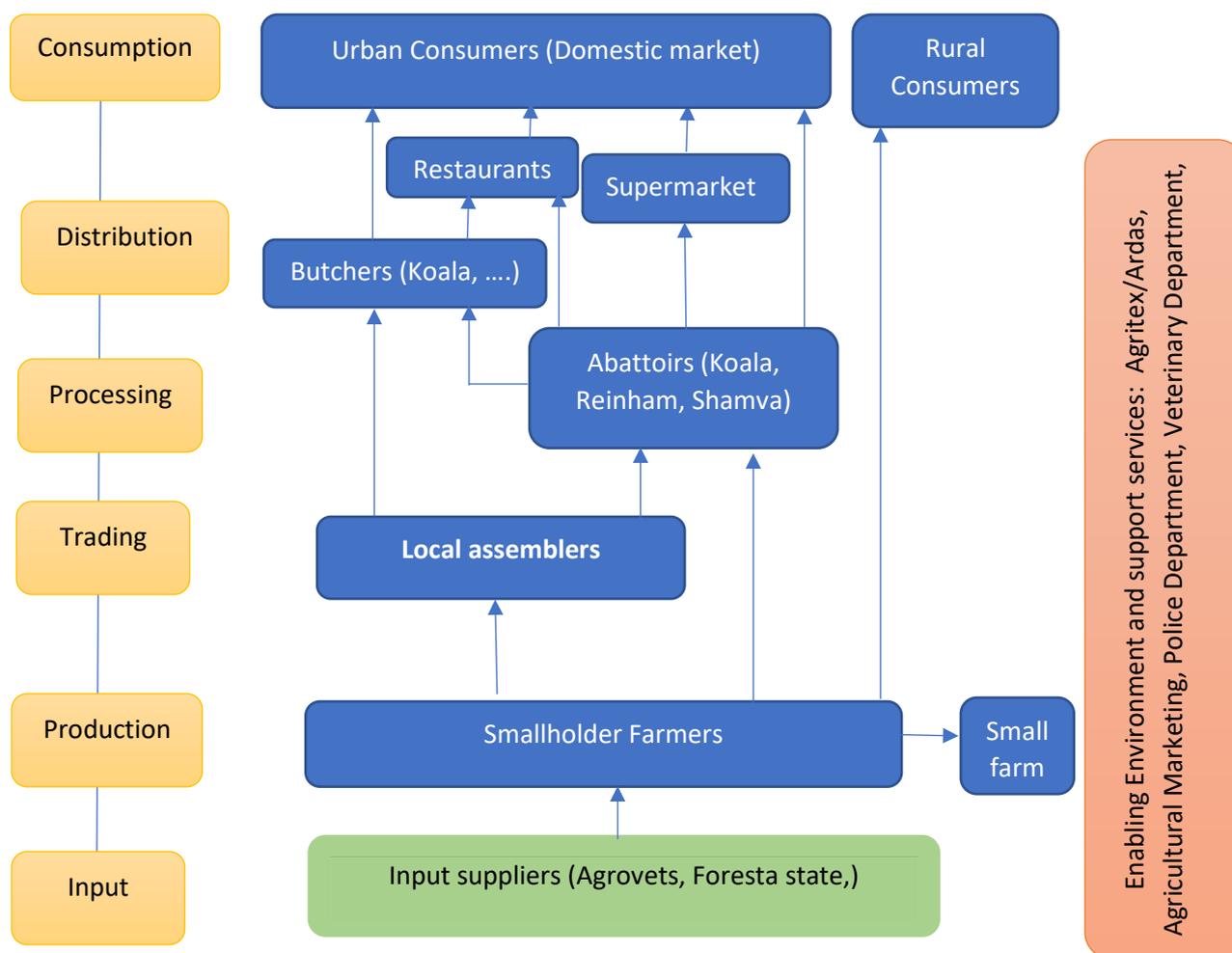


Figure 9. Cattle value Chain in Mbire and Murehwa Districts, Zimbabwe.

Source: Authors

Cattle is owned by 80% of the farm households at Ward 3 (Madzomba) and 25% of the households at Ward 2 (Angwa) in Mbire district. Cattle-holding at Angwa is less due to cattle disease and the cattle trade restrictions at this location due to Red-Water disease and Foot and Mouth Disease (FMD).

Marketing: Average carcass weight of animals slaughtered has declined from 200kg/animal to 167kg/animal as animals are kept longer and traditional breeds increase (Bennett et al, 2019). About 96% of all purchases are from ‘smallholders’ and that the share of this function is 42% local buyers (middlemen), 51% direct sale from farmers to abattoirs and only 7% sale through auctions (ZAA, 2017). Producer prices range from \$200 to \$300 per beast at the farm

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gate whilst abattoirs pay between \$500-900 per beast. Traders, therefore, make a 50% profit when selling to abattoirs (Mujeyi et al., 2015). The profit margins at the producer level suggest that returns are greater if cattle are sold at abattoirs compared to selling locally within the district as shown by \$8 gross margin obtained at farm gate against \$211.4 when sold at abattoirs. Pricing strategies vary by abattoir. Some charge a fee of \$25 per head, whilst others are charging a slaughter fee and retaining the 5th quarter (e.g., total \$60-70 per head. ZAA (2017) assess that demand for beef is somewhere between 2,700 and 3,500mt per month at an average wholesale price ex-factory between \$3.75- \$4.50 per kg. Post slaughter meat is sold to retailers, butchers, caterers, and meat processors. Zimbabwe has a small but well-established meat processing sector, largely making sausages, burgers and pies for local sale. Bennett et al., 2019 found out that in Chiredzi and the Lowveld, cattle are purchased from neighbouring communal and A1 farms, at an average price of \$450. On average, these animals produce a carcass of only 140 kg (sold to final consumers in average at 4 to 5 \$/kg) and 18 kg of offal (sold at \$3/kg). Head is sold for \$10 and each foot for \$1. Butchers can also buy carcasses in large scale abattoirs, at \$3.2/kg.

In Ward 3 of Mbire districts, a household sells at least one animal a year. The average buying price for cattle at farm-gate ranges between \$150 to \$200 depending on the body condition and time of marketing. In Murehwa the average price per beast is \$300. Buyers are mainly local traders who roam around and buy animals. When they have enough number of animals to transport to Harare, they call for transport. Bulking animals from different traders to get a full truck load is common. When cattle are sold to Abattoirs, they are sold at \$3/kg of dressed carcass weight. A dressed carcass weight for an ox could be 150kg. Traders pay \$10 to the Veterinary Department for a license per truck to travel on the road with livestock. Market prices are high during September to November, and it gets lower during the rainy season (January to August).

Challenges in the Cattle value chain: Animal diseases are a major challenge in cattle production. Foot and mouth and Lump Skin disease is a real challenge in Ward 3 (Madzomba) whereas farmers use dipping service to control ticks (Acaricide). They pay \$2 in Mbire and \$1.20 in Murehwa per cattle per year and get dipping service twice during the dry season and once a week during the rainy season. In most cases, farmers find these dipping services 3-5km away from their homestead, on average. Veterinary service is rather poor in the areas though some farmers keep stock of some medications for livestock health where neighboring farmers could buy when they notice their animal is diagnosed with some sickness. There is continued use of the same acaricide leading to pest resistance and disease outbreaks. There are opportunities for interested farmers to buy improved breeds from Mvurwi at Forester State. Capital is a challenge for local aggregators to collect more animals as there are no credit services for cattle trading. Thus, traders maintain the capital they have and use the profit to finance household needs. And there is no banking service at Mushumbi in Mbire district

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2.10. Poultry

Local chicken production is very common amongst rural households in developing countries despite age or class (Tembachako and Katanha, 2019; Chalchisa and Deressa, 2016). Most farm households in Murehwa keep indigenous chicken both for home consumption and sale. They are cheap to raise as they require minimum inputs as they often free range and scavenge for food and they are also easy to acquire, making them common in almost every household (Kitalyi, 2012). Mhlanga et al., 1999 estimated the population of local chickens in Zimbabwe at over 30 million. Chickens form an important and multifaceted component of rural livelihoods as they are seen as a source of protein, food security, income, insurance against emergencies, and have the potential for commercialization and wealth creation (Tembachako and Katanha, 2019). In Zimbabwe, preference is shifting towards local chickens from broiler chickens for taste and health benefits (Hailu et al., 2014). Tembachako and Katanha, (2019) found that on average households have 5 or more chicken for subsistence purposes.

Chickens are mainly considered women's livestock such that even in male headed households, women make decisions on chickens (Muchadeyi et al., 2004). Poultry is considered as the last step to getting out of poverty. Aklilu (2007) considers chickens as "the seed you sow to get the fruits, which is cattle". Bwalya (2014) in Ethiopia reported that almost 99% of small holder households keep local chickens but productivity and production is very low leading to low and unplanned sales. He noted that production is low because of high mortality of indigenous chickens which is caused by limited knowledge of methods of disease and breeding practices by producers. Pedersen, 1998 considers local chickens as a low input/output practice and has been a traditional component of small farms all over the developing world for centuries and is thought to continue as such in the future. However, this is changing with the introduction of crosses such as the Bushveld where people are going at a larger scale. The chicken value is shown in Figure 11.

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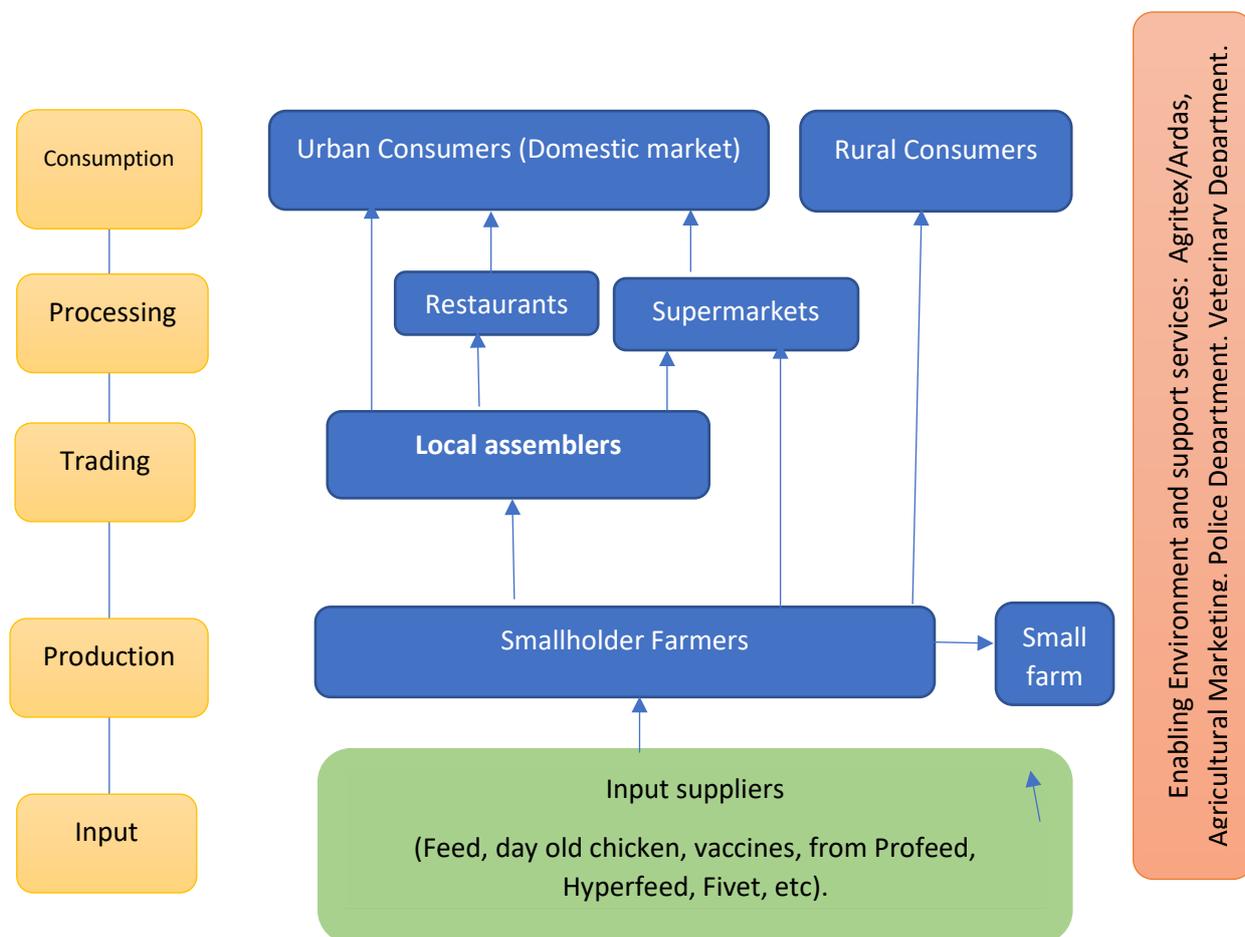


Figure 10. Poultry value chain (Murehwa, Zimbabwe)

Source: Authors

Poultry: Poultry production by farmers in both Mbire and Murehwa are mainly local breeds.

Breeds and inputs: Chicks, and Vaccines are purchased from Shops, Farm &City, Siyawamwaya, Presidential scheme, ProFeeds, Hyperfeeds, Fivet. There are the ordinary local chickens and of late there is the Boschveld which is a cross between Venda from South Africa, the Ovambo from Namibia and the Matabele from Zimbabwe. This was initially done in Zimbabwe and the inventor left the country and later it was reintroduced in Zimbabwe in 2016 by Novatek and promoted by government and NGOs. This breed is beneficial in that they are good for meat and eggs whilst they can also scavenge for food.

Local chickens scavenge for most of the time from as early as 5am to 6pm, it is only delayed to 11am during the planting season to protect crops (Muchadeyi et al., 2004). This is the time

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where most farmers supplement their chicken feed by giving energy supplements of maize, sorghum and millet and sunflower.

Marketing: The local chicken farmers sell directly to local assemblers and supermarkets and consumers. There also middlemen who buy from farmers and sell native chickens directly to urban markets and consumers in Harare and Murehwa. A few others source for markets in Murehwa and/ or Marondera town and some restaurants. This is like Ethiopia according to Janet, (2021) where most of the farmer's produce is sold to neighbors, then some to middleman who later sell to the market profiteering more than the producer. Farmers mainly sell their poultry locally amongst themselves. Local chickens are considered organic and a delicacy thereby fetching a higher price in restaurants and on the market (Ayieko et al., 2015). Padhi (2016) reports that local chickens meat fetches a higher price up to 13% and 27% in compared to prices of meat from commercial chickens. In the project sites local chickens sell from \$5-\$7/bird.

Integration: Farmers other than poultry production venture into livestock and crop production. They use manure from chicken in their fields for crops and horticulture production. Chicken manure was regarded to be of high value for vegetables in comparison to goat or cattle manure (Muchadeyi et al., 2004).

Challenges: Frequent disease outbreak, low growth rates, undeveloped marketing channels and predation have been cited as the most common challenges for local chickens.

Opportunities: Have the veterinary department giving timely advice about a disease outbreak before it destroys all chickens. The reintroduction of the Boschveld chicken, which is more resilient and has improved growth rates, has provided an opportunity for growth of the sector.

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2.11. Honey

In Zimbabwe, honey production has traditionally been done for consumption and sales into local markets or wholesalers to generate income for immediate consumption or purchase of goods (ILO, 2017). Before the current support from different organisations, little was known of small-scale beekeepers independently producing and selling into formal markets (ILO, 2017). However, recently beekeeping is becoming an income generating activity which is lucrative across all age groups due to the increasing demand of honey and its by-products locally and abroad. There are a few commercial-scale honey processing plants in Zimbabwe, which include Westale, Organo Seven and Natural Forests (ILO, 2017).

Honey is common for its sweet flavor and its health benefits, as an aid to boosting the immune system and the 'natural' sugars which are a better alternative to processed types (ILO, 2017). Honey is recognised as a nutritious and healthy food, and so is sought after, especially during the winter period and it became very popular in the face of COVID19 to strengthen people's immune systems. Zimbabwe has a hive population of more than 85,794, with an estimated number of 15,967 beekeepers producing an average of 69,730 kg against a potential of 427,000 kg (Nyatsande et al., 2014).

Apiculture also tends to fit well with existing land uses which are agroecological like wildlife management and carbon trading, subsequently ensuring sustainable forest and fire management. This has attracted the interest of developmental organizations like Carbon Green Africa, Zimbabwe Apiculture Trust, and UNDP/GEF projects. Bees have also been used for pollination services in horticulture presenting a potential to generate income for beekeepers especially in Nyanga where stoney fruits are produced. According to the Beekeepers Association of Zimbabwe (BAZ), despite the high demand, honey production is still low such that demand has always exceeded supply. BAZ reports that only 20% of honey produced locally goes through the formal market. There is an opportunity to expand honey production through increased production and use of improved technologies like the Kenyan Top Bar Hives. Goredema et al, 2019 highlighted the importance of establishing markets whilst making sure there are establishing value chains for byproducts like candle and wax for value addition.

Beekeeping is a recent business introduced in Mbire district, particularly at Ward 3 through the support of HELP from Germany project. The main reason was to deter elephants and at the same time preserve forests when people see value in them. Zimbabwe Apiculture Trust started a project with farmer groups for honey production. Farmers were provided modern beehives and related accessories for beekeeping. The project also provided training to farmers on beekeeping and honey harvesting. On average, a farmer harvests 20 kg of honey per season where 25% of it is consumed at home and the remaining is sold to other fellow farmers within the village (Figure 12). There are few aggregators buying honey from these villages and selling to urban consumers. In ideal conditions, honey is typically harvested over 2 seasons a year, which are the December – January and May – June periods. Harvesting can also be done anytime of the year, even outside the season if conditions permit. Environment

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Africa revealed in a study in 2015 that 15kg of honey is produced per hive located within 3km from an orchard compared to an average of 10kg per hive produced by hives located beyond 3km from an orchard. However, this is still very low compared to the estimated potential of 40kg per KTBH per year if optimally functioning (ILO, 2017).

Beekeeping and honey production in Zimbabwe is regulated by the Bees Act which is administered by the Department of Veterinary Services (DVS). The Forestry Commission trains beekeepers to enhance the conservation of trees and forests. Environmental management authority also assists in the preservation and management of forests enforcing the bylaws.

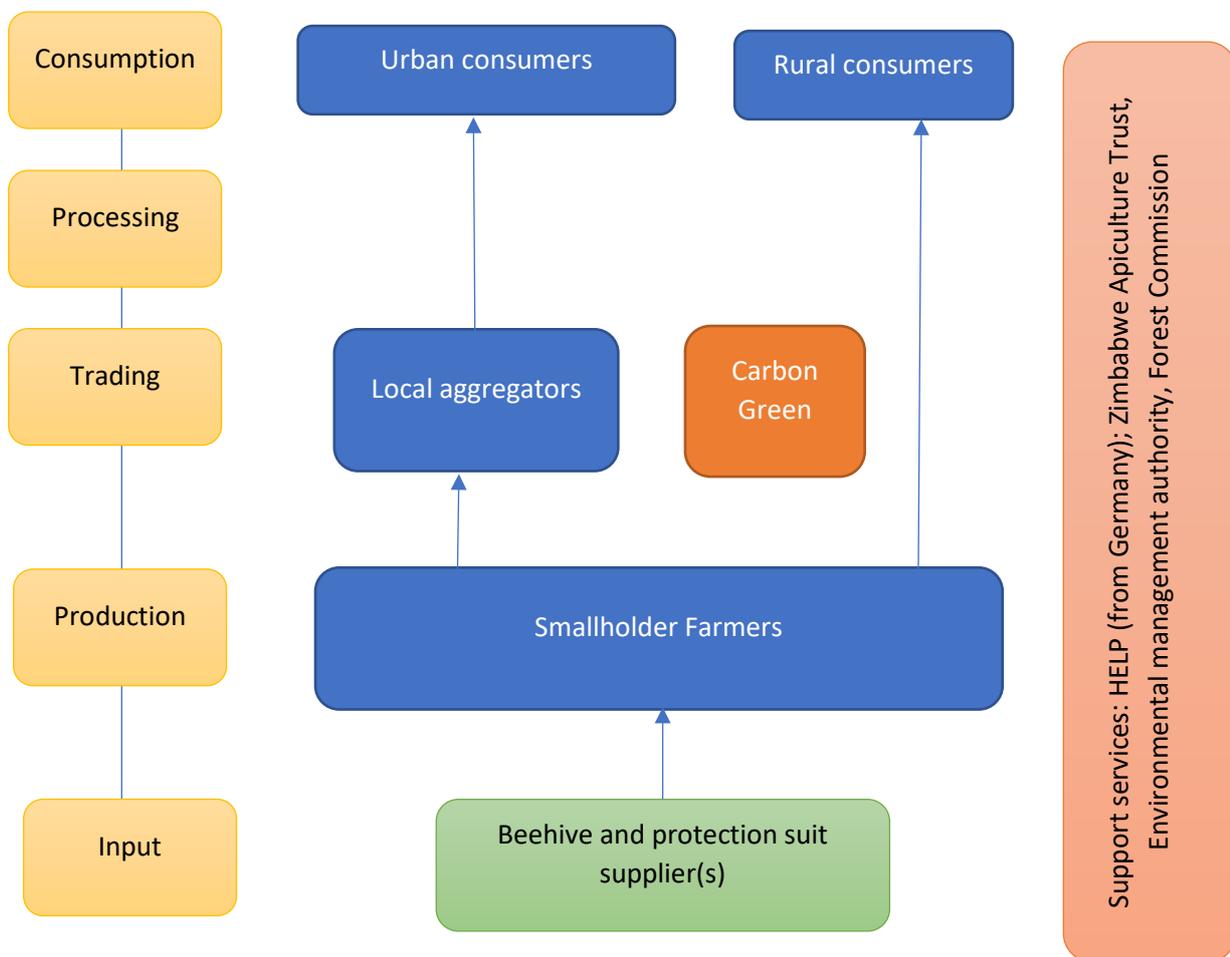


Figure 11. Honey value chain (Mbire, Zimbabwe)

Source: Authors

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- At Ward 3, half of the farmers at least have one beehive through the HELP project support.
- Though there was a traditional beekeeping practice at Ward 3, recently HELP project supported farmers in providing beehives (one modern beehive per farmer with a bee suit), and training on beekeeping and its management
- A farmer could harvest up to 20kg honey from a modern beehive, and 10kg honey from traditional beehives (on average). From the average 20kg honey produce, farmers consume 5kg and sell the rest (15kg) to local buyers in cash or using barter system for grain (usually sorghum).
- There are two grades of honey (Grade A and B). Grade A receives \$2/kg whereas Grade B receives \$1.5/kg. ILO, 2017 also presented the prices of honey to range from \$1.20 to \$2.50/kg, with the lower prices being offered by middleman. In 2016 ILO, 2017 reports that retail supermarkets buying from commercial producers were selling honey at \$3,89 per bottle. Honey from Zambia and South Africa are also finding their way in the Zimbabwean shop shelves competing with the local brands. There were considerations for an export market, however there were barriers of quantity and certification on quality. European buyers are said to require at least 20MT of processed honey per shipment, but with the already low production this is not feasible (ILO, 2017).
- Barter system in local honey marketing (sorghum in 5lt container for 300ml bottle of honey)
- Carbon green is the only buyer of honey currently.
- There is a plan where honey processing plant could be established to support the value chain.

Challenges:

- Farmers are not allowed to cut trees and make their own hives. So, they rely on external supply of beehives.
- Only one harvest per season due to the dry weather in the area.
- Market price is too low to encourage farmers to produce more or invest in more beehives.
- Conflict between cotton production and beekeeping. There is intensive pesticide use in cotton production in the area which is not friendly for beekeeping within the same vicinity.
- Water source is a challenge in beekeeping as some rivers get dry during the extreme dry season.

Opportunities:

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- Drilling of a water source and establishment of a citrus and flower plantation to ensure all year-round production of honey improving viability of the honey enterprise.
- The potential for beekeeping as an enterprise is high but there is need to develop viable markets and increase the capacity of local producers
- Research on bee species and diseases is also an important function that should be done by the CSO through responsible authorities to reduce diseases.
- High-value honey needs to access the market but will require appropriate branding, storage, and marketing.
- ILO, 2017 recommends the engagement of the appropriate stakeholders for sustainability of honey processing centers since many have been seen to collapse after withdrawal of expertise by supporting organizations.

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3. Business Arrangements

Table 2. Business partners where APT should focus on for the Business Model Canvas Development

Value Chain Actors	Crops			Livestock		
	Sorghum	Sesame	Cotton	Goats	Cattle	Apiculture
Input suppliers	Herbicide supplier	Pesticide supplier	Pesticide supplier	Breed suppliers Feed suppliers Vet service providers ZAGP's VALUE project	Breed suppliers Feed suppliers Vet service providers	Beehive supplier Apparatus supplier
Producers (Farmers)	Smallholder farmers	Smallholder farmers	Smallholder farmers	Smallholder farmers	Smallholder farmers	Smallholder farmers
Local aggregators	Individual traders and farmers running par time aggregation business	Individual traders coming from Mozambique	<input type="checkbox"/> Cotton Company of ZIM <input type="checkbox"/> Southern Cotton <input type="checkbox"/> Cotton Consortium of Zimbabwe	Individual traders and farmers running par time aggregation business	Individual traders and farmers running par time aggregation business	Individual traders and farmers running par time aggregation business
Wholesalers	GMB	Olam				Carbon Green
Processor	Feed processing industry		Ginnery(ies)	Abattoirs	Abattoirs	Carbon Green
Retailers				Butchers	Butchers	

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ANNEX

List of participants in FGDs at the four wards in the two districts will be provided based on request



Mbire Ward 2 & 3 Focus Groups Discussions



AE-I Zimbabwe Team in Murehwa District, Zimbabwe

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Focus Group discussions in Murehwa District Ward 4 and 27.

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