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Zimbabwe livestock market assessment report

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Abbreviations

BEST	Beef Enterprise Strengthening & Transformation Project (under ZAGP)
IPVC	Inclusive Poultry Value Chain Project (under ZAGP)
LIPS-ZIM	Livestock Production Systems Zimbabwe Project
LSFP	Livelihoods and Food Security Programme
TRANZDVC	Transforming Zimbabwe's Dairy Value Chain for the Future (under ZAGP)
VALUE	Livestock Upgrading and Empowerment Project (under ZAGP)
ZAGP	Zimbabwe Agricultural Growth Program
ZRBF	Zimbabwe Resilience Building Fund

 Cattle

 Goats / Sheep

 Poultry

 Pigs

 Urban

 Rural

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Executive summary

Zimbabwe is currently in the process of strengthening its efforts to support the livestock sector's contribution to economic development, food security and nutrition especially in the most vulnerable parts of the country. Using a mixed set of tools, a market assessment of selected urban (Bulawayo, Harare, Masvingo) and rural markets (Beitbridge, Buhera, Gwanda, Nkayi, Tsholotsho), representing different livestock catchment areas was done to explore perceptions of consumers, off-takers (private and institutional markets) and key participants who are critical segments in the livestock value chains.

The study found that consumers across all income levels attribute high importance to livestock-based foods. But the rural and low-income urban consumers cannot afford to regularly consume livestock based-foods. More than two thirds of the consumers value livestock products for being nutritious, but they determine diet composition primarily by affordability. The majority of those surveyed consume meat up to once a week or once a month, and consume milk, eggs and fruits less frequently. Many households spend more than 40% of their income on food, the majority on staple foods, which restricts the consumption of livestock-based foods, especially among low-income households. Technologies to improve animal production, husbandry, health and quality product processing (e.g., value addition of goat meat and milk) need to be emphasized. At the same time, well-integrated technology packages could also improve goat productivity and reduce mortality, and avail more goats of better quality for sale and ultimately consumption. Markets need to be improved for livestock-based foods to be available and farmer investments to be profitable.

In terms of livestock market facilities and their operations, the results showed that markets effectiveness differs in rural and urban areas, and market structures limit the transfer of information and incentives to smallholder farmers. Livestock sales peak between November and April when farmers are in dire need of cash to balance food deficits and buy inputs for the next growing period, which also coincides with school fees payment periods. With the replenishing of pastures, livestock conditions also improve. Market planning and implementation should consider the seasonality of livestock sale, to ensure that farmers, including those who sell few animals, benefit during this critical period. Improving access to quality livestock market and processing infrastructure in rural areas is a critical entry point to motivate farmers to improve livestock production. It would also strengthen bargaining power of farmers, and encourage women and youth to engage in market opportunities. Implementing transparent pricing and grading systems at rural and urban markets is also important.

In terms of off-taker and retailer priorities when buying livestock from smallholder farmers, more than two thirds of off-takers and retailers perceived increasing or unchanging t income from buying and selling livestock products. They confirmed a nuanced business environment, with cattle being more price sensitive than goats. Price margins between rural and urban areas were larger for goats, and were mostly adsorbed by traders. Aspects such as product quality expressed in body conditions and weight were critical for all off-takers and are the most commonly used quality criteria when buying livestock. Integrated technologies need to improve these parameters, and ensure that they also focus on small ruminants and not only cattle.

Better structured markets and price information systems will enhance the uptake of technologies, and thereby the supply of livestock products leading to quality improvements based on market criteria. At the same time, measures to lower transaction costs for traders and reduce inefficiencies at farm level will be a win-win for traders and farmers.

1. Introduction

In Zimbabwe's semi-arid areas, integrated and diversified crop-livestock production is relied upon by farmers' for income, livelihoods, food and nutrition security, and livestock are critical to helping households adapt to the vagaries of climate change (Herrero et al. 2010; Blummel et al. 2013; Descheemaeker et al. 2016; Homann-Kee Tui et al. 2021a). The country recognizes the urgency to invest in and strengthen the livestock sector. The Livestock Growth Plan (MLAWRR 2020b) calls on the government, private sector and development agencies to address the multiple challenges in the livestock sector to contribute to economic growth and food security. This is in view of contributing to the national Vision 2030 and shift the economy towards inclusive business for smallholder farmers.

Despite a large livestock herd and an increasing demand for livestock products, livestock production in Zimbabwe has remained below its potential (MLAWRR 2020b). The livestock herd has remined stagnant since the 1980s and currently has about 5.4 million cattle, 4.4 million goats and 0.5 million sheep. Today, most livestock owners are communal smallholder farmers who keep about 90% of the national cattle herd and 97% of the national goat flock. Many of these farmers use cattle for draught power, rather than for commercial purposes. They face challenges to participate in livestock value chains, as they lack access to well-functioning markets, information, and support services. High cost of production and livestock markets not transferring adequate benefits to smallholder farmers, contributes to the low productivity, and hence low incomes.

Livestock market development and functional value chains have a critical role to transform the livestock sector to higher levels of productivity and income. Participation in markets is expected to stimulate more market-oriented behaviour, increased off-take and quality products providing more capital and stimulating re-investment in improved management and inputs, improving productivity and resource use efficiency. Market-oriented behaviour would enable smallholder farmers to make use of improved technologies such as feed, health and breeds, as increased incomes provide the capital needed for investing in farm enterprises, boost overall economic development, and improve livelihoods, food security and nutrition.

For farmers to benefit from participation in livestock markets, there is need to improve the market environment, infrastructure and quality price mechanism, coordinated transactions and human resources. Extension and support systems need to understand market trends and consumer-specific demand (urban, rural, high and low income), quality, food safety, animal welfare requirements, and synchronize livestock production with market demand. They need to capacitate smallholder farmers in critical knowledge gaps, notably technical knowledge on practices to improve livestock production (feed, health, husbandry, breeding), as well as market relevant knowledge (markets, quality requirements, price determinations, food safety, animal welfare).

Extension and support services need to recognize farm types with different resource endowments and the distribution of herd ownership within communities, and tailor their support strategies to these different constellations, instead of focusing on compliant farmers only. Priorities in districts like Beitbridge and Gwanda, which have owners of large cattle and goat herds regularly supplying livestock markets, along with many farmers owning few or no livestock, might be different to those of districts such as Chiredzi and Nkayi, where herd sizes are smaller and less heterogeneous, or districts where farming is more oriented towards crop production, such as Buhera and Mutoko, and where sales of livestock are less regular (Baudron et al. 2021).

1.1. Study objectives

This assessment sought to document the state of current livestock market systems, to inform the Livestock Production Systems Zimbabwe (LIPS-Zim) project entry points for improving livestock markets and technical interventions to enhance livestock productivity, quality and off-take and thereby increase farm incomes, and improve food security and nutrition outcomes.

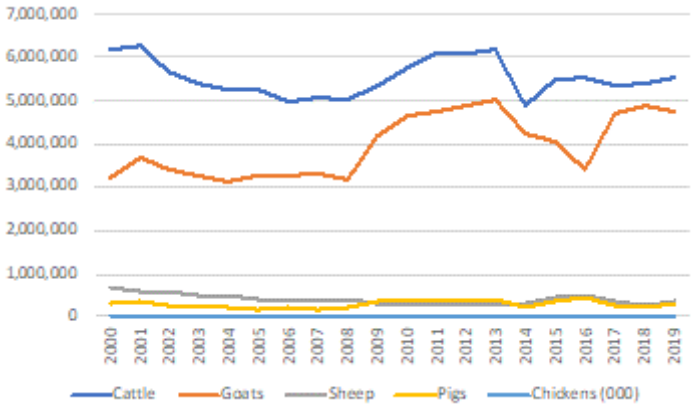
It carried out three surveys:

- Consumer survey: To explain access and affordability, quality preferences and income spent on livestock products and other food groups among consumers at rural and urban markets in Zimbabwe.
- Market survey: To characterize cattle, goat and sheep marketplaces and structures, sales volumes, prices and quality, challenges and opportunities particularly for women and youth, and their potential to increase off-take.
- Off-taker and retailer survey: To assess off-takers (private and institutional markets) requirements and interest to buy from smallholder farmers.

1.2. Livestock population trends and market characteristics

Livestock population growth trends have tended to stagnate in Zimbabwe over the past 20 years (FAO 2021). While the total cattle population declined by 11%, the goat population increased by 50% between 2000 and 2019 (Figure 1). Sheep and chicken populations followed a downward trend, estimated at 50% between 2000 and 2019.

Figure 1: Livestock population trends (head) in Zimbabwe, between 2000 and 2019



Recent investments in livestock projects and programmes aim at addressing the gaps in the livestock sector, and raising productivity, production and incomes, through capacitating the national support systems (Table 1).

Table 1.
Summary of market characteristics for major livestock species in Zimbabwe

Markets and value chains		Developed markets operations, infrastructure and auctions, through the commercial sector and in communal areas. Implementation of transparent sales, however, varies by location
		Largely informal, poor market infrastructure and price quality mechanisms
		Large-scale industrial, many smallholders
		Large-scale industrial, many smallholders
Production and technical know-how		Targeted for improved feed, health and breeding technologies
		Productivity gaps, limited technical support
		Private and public sector support
		Supported by PIB, wide networks
Policy and institutional		Stronger policy and institutional support
		Largely informal, individual private sector initiatives
		Private sector organized, as well as informal, initiatives
		Private sector-organized
Major livestock specific support programs		ZAGP, BEST, TranZDVC, ZRBF, LSFP
		VALUE, ZRBF, LSFP
		ZAGP, IPVC, ZRBF, LSFP
		VALUE

NB: Data is from authors own information, review of policy and development program documents.

1.3. COVID-19 IMPLICATIONS

The assessment was carried out from May to September 2021, under COVID-19 restrictions. Clearance and authorization for data collection was provided by heads of government departments. Data was collected with minimal exposure to the disease, using digital collection tools.

COVID-19 restrictions, however, affected data collection and its quality in the following ways.

- Inaccessibility of survey sites: It was not possible to implement the surveys in Kwekwe City, due to an areawide COVID-19 outbreak that restricted movement to the area. As a result, institutional markets in the areas were largely inaccessible and due to restrictions on market operations, some enumerators could not visit to the markets that were operational.
- Reservations by respondents: Respondents at formal and informal markets and government institutions were generally reluctant to provide information. Given the COVID-19 restrictions, people working from home, and limits in accessing some areas, many respondents were not comfortable to divulge financial information and were sceptical about how the information would be used. Respondents from important organizations such as institutional markets, schools and universities, which had closed due to COVID-19 did not participate in the assessment.
- It was particularly difficult to collect data on revenues and costs, hence various components of the off-taker and retailer survey had to be dropped from the analysis.

In addition, COVID-19 restrictions affected livestock value chains as verified by a COVID-19 impact survey in Southern Zimbabwe by Homann-Kee Tui et al. (2021b). In particular, the survey showed that the pandemic resulted in the following negative impacts on the agriculture sector:

- Poor harvests: The economic hardships in the country compounded the impacts of COVID-19 restrictions and the consequences of previous drought years. In addition, pests and diseases, as well as reduced availability of veterinary drugs and feed for livestock and currency shortages meant that many farmers had already sold livestock as a coping strategy. Livestock sales prices declined by up to 40% due to feed shortage and diseases, while grain prices increased by more than 36%.
- Restricted livestock output market access: Livestock market activities had been restricted, as part of travel restrictions. These increased the costs of transport, led to closure of markets and trade activities, resulting in low sales, a decline in farmers' incomes as well as limited supply of meat products, with price implications. Goat, sheep and poultry products, which rely more on informal markets, were most affected.
- Restricted livestock input market access: Movement restrictions prevented farmers from buying veterinary drugs and treatment (e.g., use dipping pools). Furthermore, farmers had difficulty in accessing animal feed, which increased animal mortality and reduced animal productivity, which was already low.

2.

Methods of data collection and analyses

2.1. Methods and tools

A mixed methods approach was used to characterize consumer behaviour with regards to livestock-based food, the market operations and how off-takers and retailers engage in livestock markets. The approach included the following elements:

- Consumer assessment (Table 2): Importance attributed to livestock-based foods in rural and urban markets, food consumption and purchase patterns, motivation and constraints. Women consumers, as key decision makers over food and nutrition, were randomly interviewed at respective markets. In urban areas, markets were strategically targeted in both high-income and low-income neighbourhoods. In rural areas markets were predominantly frequented by low-income consumers.
- Market survey (Table 3): Live cattle and goat/sheep market structures and operations, seasonality in supply, price mechanisms, control of livestock theft affecting supply of livestock to markets, challenges and opportunities for women and youth, potential for improving these markets. Market participants were interviewed at the marketplace.
- Off-taker and retailer assessment (Table 4): Inventory of off-takers (private and institutional markets), their requirements and interests to buy from smallholder farmers. Off-takers had been identified at the marketplace, and were interviewed individually.

2.2. Sites for data collection

The assessment was implemented at rural and urban markets at sites near (<15km) and far (>15m) from business centres.

- Rural districts: Beitbridge, Buhera, Gwanda, Nkayi, Tsholotsho,
- Urban centres: Bulawayo, Harare, Masvingo

Table 2.
Consumers interviewed at rural and urban markets (%)

	(n=269)		(n=246)R	
	High income	Low income	High income	Low income
Consumers	7	93	36	64

Table 3.
Market actors interviewed handling cattle and goat/sheep in rural and urban areas (n)

	Cattle		Goats/sheep	
Market actors	36	14	15	15

Table 4.
Distribution of value chain actors interviewed in rural and urban areas (n)

	Cattle		Goats/sheep		Chickens	
Retailer	23	19	10	8	11	15
Institutional buyers	0	5	1	0	0	3
Input suppliers	0	4	1	0	0	6

Note: Low number of institutional buyers was due to COVID-19 restrictions as many organizations were closed during the time of the assessment.

Data was collected by a team of agricultural extension staff based in the rural and urban areas. The data was collected using tablets in Open Data Kit (ODK) format. The data collection instruments were revised at the training held 3–6 May 2021 in Bulawayo. Market and off-taker data was collected May to June 2021. The consumer data was collected August to September 2021.

Data analysis was through descriptive statistics using Stata. Enumerators provided feedback on data collection and the influence of COVID-19 restrictions on the process.

3.

Importance of livestock products for consumers

This section describes the importance consumers attribute to livestock-based foods in their diets, and what motivates and what hinders more regular consumption of livestock-based foods.

3.1. Food consumption

Rural and urban consumers interviewed consumed vegetables regularly, on a daily basis (Table 5 and Table 6; and Table 65 and Table 66 in the Annex). They consumed livestock-based products such as meat, eggs, milk on a weekly basis. Pulses and fruits were consumed less. Rural and low-income urban households less frequently consumed livestock-based products and fruits.

Nutrition was distinctively the most common argument for regularly consuming foods. Many consumers also cited preferences as determining their food choices (Table 7). For rural consumers energy provision and availability were other important criteria. For urban consumers easiness to prepare was more important. For meat consumption, affordability was the most important criteria.

Livestock-based foods were considered the most nutritious. Rural consumers seemed to consume livestock-based products and fruits less often compared to their urban counterparts. Consumption of goat meat was, however, more common among rural as compared to urban consumers.

Affordability was seen as the single most common constraint for regular consumption of nutritious foods and restricted the consumption of livestock-based foods (Table 8). This was also reflected in the fact that rural and urban low-income households less frequently consumed livestock-based foods as compared to urban high-income households. Rural households were more exposed to seasonal availability of fruits, vegetables and pulses. Urban households found accessibility and seasonal price fluctuations as an issue. For rural and urban households, product quality seemed less important as compared to affordability and accessibility, which might have implications on the importance attributed to quality.

Table 5.
Regularly consumed foods, by types of consumer markets (% of respondents)

			Total	χ^2 (p-value)
Vegetables	94	92	93	ns
Staples	91	86	89	*
Meat	78	94	85	***
Eggs	42	67	54	***
Milk	34	69	51	***
Pulses	47	44	45	ns
Fruits	27	62	43	***

*** p<.01, ** p<.05, * p<.1

Table 6.
Frequency of consuming foods (% of respondents)

	Daily		Weekly		Monthly		Seasonally		Occasionally	
Staples	92	91	4	9	0	0	0	0	0	0
Vegetables	78	68	16	26	1	2	0	0	4	4
Pulses	6	5	61	66	16	19	3	0	12	11
Eggs	13	32	66	51	7	6	1	1	12	9
Beef	12	22	67	70	7	4	1	0	11	3
Goat	5	2	26	8	24	22	5	6	30	53
Poultry	7`	12	43	70	34	13	2	0	13	4
Fruits	0	0	48	69	21	10	6	1	25	1
Milk	35	51	49	36	9	3	3	0	3	5

Table 7.
Reasons for regularly consuming foods (% of respondents)

	Nutritious		Preferable		Energy		Available		Easy to prepare		Affordable		Convenient	
Staples	53	33	17	31	74	53	35	24	14	21	38	17	5	9
Vegetables	65	49	16	32	19	8	42	29	13	27	8	28	5	14
Pulses	82	49	15	27	20	15	20	10	2	11	6	11	4	3
Fruits	93	62	17	38	24	6	9	11	1	11	1	8	1	18
Eggs	90	56	19	32	14	3	7	16	31	41	5	22	7	17
Meat	82	57	38	64	18	4	28	24	15	29	50	29	10	18
Milk	93	75	16	38	30	9	5	13	12	28	13	11	4	23

Table 8.
Constraints to regularly consuming foods (% of respondents)

	Affordability		Accessibility		Seasonal availability		Seasonal price		Quality	
Staples	78	69	7	22	18	12	19	13	10	9
Vegetables	67	55	10	33	45	22	15	8	9	4
Pulses	79	69	15	26	43	22	18	14	5	5
Eggs	94	75	18	20	5	10	4	19	2	7
Beef	95	79	16	18	0	2	7	14	4	10
Goat	85	59	33	46	5	16	5	20	5	2
Poultry	96	82	13	21	1	2	5	14	3	8
Fruits	87	77	31	27	40	31	21	18	4	5
Milk	90	83	13	14	13	10	2	15	5	5

3.2. Food purchase

Consumers spent almost half their income on food (46% and 41%, respectively, in rural and urban areas). They spent most of their income on staple foods, which they bought monthly. They also spent substantial income on livestock-based products, even though these were consumed less often by both urban and rural consumers. Urban low-income consumers seemed to purchase staples and beef more frequently than high-income consumers, likely related to their lack of access to storage facilities (Table 9, Table 10; and Table 67 and Table 68 in the Annex).

Supermarkets and stores were the most common market channels for livestock-based foods in urban areas. Vendors were important suppliers of poultry and eggs (Table 11). In rural areas the open markets were more important. Stores also supplied milk and eggs.

Nutritional quality was the most important factor when choosing market channels for buying livestock-based foods, and was more distinguished in urban than in rural areas, for all income types (Table 12 and Table 69 in the Annex).

The main reason for choosing food markets in rural areas was convenience, which might relate to accessibility. In urban areas good quality of the food products was rated as more important (Table 13).

Affordability was confirmed as a main challenge for livestock-based foods being sold (Table 14) in rural areas particularly for eggs, poultry and milk, and in urban areas more for beef and poultry. Quality was an issue in rural areas for beef, perhaps reflecting the lack of local processing and cold storage facilities.

Table 9.
Proportion monthly income spent of foods (% of income composition)

			(p-value)
Staples	14.7 (9.4)	14.3 (9.5)	ns
Meat	9.3 (5.5)	9.0 (5.7)	ns
Vegetables	8.6 (5.9)	5.4 (4.4)	***
Pulses	4.9 (3.3)	4.8 (4.2)	ns
Fruits	4.2 (2.8)	3.7 (2.4)	**
Milk	3.8 (2.7)	3.9 (2.7)	ns

*** p<.01, ** p<.05, * p<.1

Table 10.
Frequency in purchases of foods (% of respondents)

	Daily		Weekly		Monthly		Seasonally		Occasionally	
Staples	11	14	8	16	72	64	1	3	0	2
Vegetables	39	50	26	33	3	3	1	0	6	11
Pulses	2	1	26	47	34	40	4	1	14	10
Beef	7	5	59	45	19	46	1	0	12	3
Goat	1	1	17	2	13	15	1	7	21	52
Poultry	1	1	19	50	40	43	1	0	13	3
Fruits	4	13	53	64	17	8	3	1	21	13
Milk	12	28	55	54	23	9	2	1	3	9

Table 11.
Most common sources to buy foods (% of respondents)

	Supermarket		Rural market		Vendor		Farmgate		Wholesaler		City market	
Beef	18	76	31	1	2	0	4	10	6	7	1	1
Goat	3	30	16	18	10	2	5	6	1	4	0	6
Poultry	5	40	25	1	14	29	5	13	1	6	0	4
Milk	72	84	4	0	5	3	1	4	5	7	0	2
Eggs	36	31	10	1	4	32	15	15	1	9	2	8

Table 12.
Nutritional quality as reason for choosing the livestock-based market chatnnel to buy foods (% of respondents)

				Total	χ^2 (p-value)
Beef	Most important	74	55	64	***
	Not important	3	8	6	
	Other factors important	22	37	30	
Goat	Most important	61	35	50	***
	Not important	7	36	20	
	Other factors important	32	28	30	
Poultry	Most important	72	49	61	***
	Not important	4	5	5	
	Other factors important	23	45	34	
Milk	Most important	70	54	60	**
	Not important	4	10	7	
	Other factors important	27	36	33	
Eggs	Most important	67	53	59	**
	Not important	4	12	8	
	Other factors important	29	35	32	

*** p<.01, ** p<.05, * p<.1

Table 13.
Reason for choosing the market channel to buy livestock-based foods (% of respondents)

	Convenient		Good quality		Trust		Low price	
Beef	50	13	16	48	14	27	17	11
Goat meat	27	16	10	29	24	12	18	18
Poultry	55	23	10	28	15	20	12	27
Milk	60	16	15	44	12	32	5	6
Eggs	55	26	12	20	15	17	10	34

Table 14.
Challenges with the livestock-based food products as being sold (% of respondents)

	Affordability		Quality		Availability	
Beef	32	72	60	22	8	6
Goat meat	18	45	49	23	33	32
Poultry	56	65	32	25	12	10
Milk	54	49	37	33	9	20
Eggs	64	49	30	35	7	15

4.

Livestock market characteristics

This section describes the livestock markets for cattle and goats/sheep, how they operate, the sales flows and opportunities to improve them. Markets reporting information on poultry (n=11), pigs (n=3) and fish (n=1) was limited, hence these were excluded in the presentation of results. These commodities are mostly sold by producers through processors and retailers to consumers.

4.1. Livestock market organization

4.1.1. Market organization

The organization of cattle and goat/sheep markets varied (Table 15). Markets in urban areas were better organized than in rural areas and markets for cattle were better organized than for goats and sheep. Urban markets operated daily, rural markets operated weekly on declared days, based on sales volumes, as traders from wider rural catchment areas aggregate and move livestock to urban consumer markets. Cash payment was more common for cattle in rural areas and for goats in urban areas, in comparison to barter trade in both areas.

Few respondents attributed transparent and quality-based pricing to livestock markets, suggesting weaknesses in implementation of these markets, which seem to restrict the transfer of information and rewards to producers. Urban markets seemed better equipped than rural markets in terms of health and animal welfare control, grading procedures, sales record-keeping and quality-based pricing. These attributes were mentioned more often for cattle markets than for goats markets.

4.1.2. Market infrastructure

Market infrastructure was widely established for cattle, including sale pens with roofed areas and loading ramps (Table 16). Improved facilities such as water, ablution areas and holding pens were mostly mentioned at urban markets. Weighing facilities were not often mentioned. Rural District Councils (RDC) and farmer organizations own the cattle sale pens in rural areas (Table 17). In urban areas private companies own the sale pens.

Goat marketing infrastructure seemed better established in rural areas. In urban areas goats were traded mostly through makeshift holding pens. RDCs owned most of the goat sales facilities. Private sector investment seemed less for goats than for cattle.

Fees for using market infrastructure were collected in both urban and rural markets (Table 18). In urban markets, more respondents believed the fees were being used for maintaining and upgrading the market infrastructure (Table 19). In the rural areas, however, most respondents seemed to not know how the fees were used.

4.1.3. Market information

Cattle sales were advertised more at urban than rural markets through diverse media including newspapers, traders, farmers, farmer organizations, veterinary offices and radio (Table 20 and Table 21) to a wide customer base. Agricultural extension offices and development organizations were not engaged in advertising cattle sales. Goat sales were less advertised in rural areas and were mostly based on farmer-to-farmer information sharing. Mass media did not feature as instrument for advertising goat markets.

4.1.4. Type of buyer at livestock markets

The buyers at the livestock markets also varied (Table 22). At cattle markets, traders were the most buyers; middlemen participated in rural markets; institutional buyers played a greater role at urban markets. At goat markets, traders were the most buyers too, yet consumers were more at rural markets, middlemen predominated in urban markets.

Table 15.
Market organization for livestock sales (% of respondents)

	Cattle		Goats/sheep	
Declared days	69	50	93	13
Everyday operation	25	50	7	87
Cash payment	56	36	7	53
Prices negotiated	28	21	20	47
Animal health control	31	43	7	7
Competition among buyers	31	29	7	20
Animal welfare control	11	50	0	7
Transparent grading system	25	29	0	13
Animals sorted by grades	6	36	0	20
Records of prices of available livestock	0	43	0	13
Transparent price negotiations	25	21	0	7
Sales based on informal assessment	3	14	0	33
Records of available livestock	3	29	0	7
Food safety	11	14	7	0
Prices publicly available	3	14	0	7
Pricing according to quality	6	14	0	0
Marketing committee	11	0	0	0

Table 16.
Infrastructure at markets for livestock sales (% of respondents)

	Cattle		Goats/sheep	
Sale pens	81	57	100	13
Roofed areas	53	64	73	13
Loading ramps	53	43	60	7
Ablution facilities	36	50	20	13
Improved holding pens	17	50	33	13
Makeshift holding pens	28	7	0	67
Transparent weighing facilities	19	36	27	7
Water facilities	11	57	7	13
Vending stalls	11	7	7	20
Refrigeration facilities	3	36	0	0

Table 17.
Ownership of market infrastructure for livestock sales (% of respondents)

	Cattle		Goats/sheep	
Local authorities (Rural District Council)	72	0	93	60
Private company	3	86	7	33
Farmer organization	25	14	0	7

Table 18.
Fees collected at livestock markets (% of respondents)

	Cattle		Goats/sheep	
Fees collected	64	79	40	70

Table 19.
Use of fees collected at livestock markets (% of respondents)

	Cattle		Goats/sheep	
Don't know	42	43	60	7
Infrastructure maintenance	19	43	27	33
Salaries	14	7	13	7
Upgrading	0	29	0	27
Police services	6	7	0	0
Grading services	3	7	0	0

Table 20.
Advertising medium for livestock sales (% of respondents)

	Cattle		Goats/sheep	
Poster	31	29	0	20
Farmers	19	43	40	20
Traders	8	43	27	13
Newspaper	3	56	0	20
Vet	6	29	7	13
Farmer organization	0	36	0	13
Radio	0	36	0	20
Extension	6	0	7	0
NGO	0	0	0	0

Table 21.
Sale information advertised for livestock sales (% of respondents)

	Cattle		Goats/sheep	
Dates of sale	44	64	40	33

Table 22.
Main livestock buyers at livestock sales (% of respondents)

	Cattle		Goats/sheep	
Traders	72	64	67	66
Middlemen	58	29	33	80
Institutional	39	64	0	0
Consumers	33	43	80	20

4.2. Supply volumes and prices

Supply volumes: Cattle and goat sales peaked at different times in rural and urban markets (Table 23). In rural areas, cattle, goats and sheep were mainly sold from November to April. This falls during the lean period when food stocks from own harvests are often depleted and farmers tend to sell livestock in need of cash to buy food, farm inputs and pay school fees. Urban markets had a high supply of cattle, goat and poultry products during the festive season with a pronounced peak in December. During the supply peak, prices for cattle, goats, sheep as well as poultry were higher (Table 24).

Table 23.
Peak sale months for livestock sales (% responses)

	Cattle		Goats/sheep	
December	44	50	47	73
April	53	7	60	53
November	44	43	47	27
January	44	14	67	7
March	53	0	73	0
February	36	7	67	7
June	25	29	33	20
August	28	7	7	53
May	28	14	40	7
October	36	21	20	0
July	22	21	20	13
September	25	0	13	0

Table 24.
Months with peak prices for livestock sales (% of respondents)

	Cattle		Goats/sheep	
December	53	43	60	73
November	50	36	47	27
October	36	7	67	47
March	47	0	67	0
May	33	21	53	7
April	25	29	27	13
June	25	7	40	7
February	44	14	20	0
January	22	7	33	7
July	8	7	0	53
September	14	14	7	7
August	19	0	7	0

4.3. Quality rewards, food safety and animal welfare

4.3.1. Quality rewards

Urban livestock markets seemed to reward quality products more than rural markets and had more refined quality criteria (Table 25). At cattle markets weight and disease-free status were important quality criteria, while at goat and sheep markets the condition and sex were more important (Table 26). In rural areas age was the most important quality criteria for cattle, goats and sheep. The instruments to determine quality were also more refined at urban livestock markets, through body scoring and weighing scales, whereas at rural markets quality was mostly determined by visual appraisal (Table 27).

A few respondents suggested measures for improving livestock quality (Table 28). Mostly mentioned was improved feeding and livestock health. At urban markets, price incentives were mentioned to stimulate farmer to improve livestock quality.

4.3.2. Food safety rewards

Food safety was also more rewarded at urban markets, more in cattle markets than in goats and sheep markets (Table 29). For cattle, the most cited criteria were animal health and hygiene. Fewer respondents provided criteria for goats (Table 30). Eye-based mechanisms and safety standards were cited as options to control food safety in urban cattle markets (Table 31). Knowledge about how to improve food safety seemed limited, given few options provided (Table 32).

4.3.3. Animal welfare

Animal welfare was also more rewarded at urban markets, more at cattle markets than at goats and sheep markets (Table 33). Animal health, condition, welfare standards and being free of bruises were listed as criteria (Table 34). For rural markets and goats few respondents provided the criteria for assessing animal welfare.

Eye-based evaluation was used to assess animal welfare at cattle markets (Table 35). Knowledge on improving animal welfare seemed limited, given few responses provided by participants. (Table 36).

4.3.4. Livestock theft

Theft of goats stood out as a problem especially in rural goat markets than theft of cattle at rural cattle markets (Table 37). The main causes for theft seem to be a combination of destitution and poor control (Table 38).

Control measures seemed less effective in rural areas, depending mostly on local prosecution and local neighbourhood watch (Table 39). At urban markets, formal control procedures and more effective persecution resulted in more effective theft control (Table 40). Cross-border trade did not influence livestock sales in significant ways (Table 41).

Table 25.
Livestock markets that reward quality (% of respondents)

	Cattle		Goats/sheep	
Quality rewarded	47	86	27	53

Table 26.
Quality criteria at livestock markets (% of respondents)

	Cattle		Goats/sheep	
Age	42	64	20	33
Condition	31	64	13	47
Weight (measured)	17	79	13	27
Disease free	31	71	13	20
Sex	31	50	7	40
Castrated	25	57	13	27
Breed	25	43	20	33
Size	28	43	0	33
Free of bruises	19	50	13	13
Fatness	8	36	13	27
Pelt condition	14	36	0	7
Weight (apparent)	11	7	0	7
Grade of carcass	6	14	0	0
Pelt colour	11	7	0	0

Table 27.
Quality determination mechanisms at livestock markets (% of respondents)

	Cattle		Goats/sheep	
Visual assessment	47	50	27	47
Weighing scale	8	64	7	20
Body score	3	71	0	53
Predetermined category	3	21	0	8

Table 28.
Measures to improve livestock quality (% of respondents)

	Cattle		Goats/sheep	
Improved feeding	28	21	27	13
Improved health care	25	21	20	7
Improved handling in transport	11	14	0	13
Price incentive	6	21	0	7
Awareness creation	8	0	7	13
Capacity development	11	0	7	7
Improved handling during market processes	14	7	0	0
Participatory quality guarantee strategy	3	0	0	0

Table 29.
Food safety rewarded at livestock markets (% of respondents)

	Cattle		Goats/sheep	
Food safety reward	6	64	0	33

Table 30.
Food safety criteria at livestock markets (% of respondents)

	Cattle		Goats/sheep	
Animal health	6	50	0	33
Hygiene	3	50	0	0
Contamination free	0	29	0	7

Table 31.
Food safety mechanism at livestock markets (% of respondents)

	Cattle		Goats/sheep	
Eye-based decision	19	50	13	33
Safety standards	3	43	0	13
Testing/monitoring	0	14	0	0

Table 32.
Measures to improve food safety at livestock markets (% of respondents)

	Cattle		Goats/sheep	
Vaccination	6	7	0	0
Food safety surveillance	3	7	0	0
Animal health surveillance	3	7	0	0
Disinfection	0	7	0	0
Binders for animal feed	3	0	0	0
Awareness creation	3	0	0	0
Capacity development	3	0	0	0
Price incentive	3	0	0	0
Penalty	0	7	0	0
Participatory control strategy	3	0	0	0
Reporting facilities	0	0	0	0

Table 33.
Welfare rewards at livestock markets (% of respondents)

	Cattle		Goats/sheep	
Animal welfare reward	31	79	5	40

Table 34.
Animal welfare criteria at livestock markets (% of respondents)

	Cattle		Goats/sheep	
Free of diseases	31	79	7	33
Condition	19	64	7	33
Free of bruises	22	50	7	27
Welfare standards	6	57	7	20

Table 35.
Animal welfare mechanism at livestock markets (% of respondents)

	Cattle		Goats/sheep	
Eye based evaluation	31	64	7	33
Safety standards	6	43	0	7
Testing/monitoring	0	29	0	13

Table 36.
Measures to improve animal welfare at livestock markets (% of respondents)

	Cattle		Goats/sheep	
Welfare standards during market processes	14	14	0	13
Welfare standards for transport	11	14	0	7
Price incentive	6	21	0	0
Awareness creation	11	0	0	0
Capacity development	8	7	0	0
Participatory control strategy	6	0	0	0
Penalty	3	0	0	0
Reporting facilities	3	0	0	0

Table 37.
Theft at livestock markets (% of respondents)

	Cattle		Goats/sheep	
Theft	42	14	93	20

Table 38.
Root causes of theft at livestock markets (% of respondents)

	Cattle		Goats/sheep	
Destitution	25	14	47	13
Poor control	11	0	33	7
Greed	3	14	7	20

Table 39.
Theft control at livestock markets (% of respondents)

	Cattle		Goats/sheep	
Local prosecution	69	36	80	40
Neighbourhood watch	53	21	27	13
Formal procedures	39	50	20	60
Informal procedures	3	7	7	53

Table 40.
Effectiveness of theft control at livestock markets (% of respondents)

	Cattle		Goats/sheep	
Effective	50	93	0	93
Thieves not prosecuted	36	0	67	0
Thieves not caught	25	0	40	7
Collusion in the prosecution process	0	7	7	7

Table 41.
Cross border trade affecting livestock sales (%)

	Cattle		Goats/sheep	
Cross-border trade	14	7	0	7

4.4. Opportunities in livestock markets for women and youth

Enabling women and youth to participate in cattle, goat and sheep markets was seen as the most important opportunity (Table 42). Market participation would empower women and youth at rural and urban markets. Better market access was an important precondition for participating in and benefiting from livestock markets. In urban markets, women were primarily restricted by social norms and insecurity issues (Table 43). At rural markets, poor negotiation power and poor access were the most important barriers to women and youth market participation.

More respondents saw a high potential for improving livestock off-take at urban than at rural markets, and more saw a high potential at cattle markets than at goat and sheep markets (Table 44). Two areas stood out for improving livestock off-take for cattle, goats and sheep at urban and rural markets (Table 45). The implementation of a grading and pricing system, and strengthening farmers bargaining power were seen as most critical. Product labelling was not considered important.

Table 42.
Women and youth's opportunities at livestock markets (% of respondents)

	Cattle		Goats/sheep	
Women/youth participate in this market	72	71	60	80
Empowerment through participation at this market	33	57	67	67
Better access to the markets	36	36	60	13
Available price information	17	36	13	27
Safety provided	3	43	0	33
Mechanisms for transparent negotiation	19	14	7	13
The way payments are made	8	7	13	7
Good transport support	8	0	7	7

Table 43.
Women and youth deterrence at livestock markets (% of respondents)

	Cattle		Goats/sheep	
Social norms	28	36	27	80
Security issues	17	36	7	86
Poor negotiation power	47	29	27	27
Poor access to price information	19	21	27	40
Challenges on transport	11	29	20	33
Poor access to the markets	33	7	0	27
The way payments are made	6	21	0	0

Table 44.
Potential for improving livestock off-take (% of respondents)

	Cattle		Goats/sheep	
High	19	57	40	47
Average	47	14	20	20
Low	25	7	33	13
Very high	3	21	7	20
Very low	6	0	4	0

Table 45.
Area to improve livestock off-take (% of respondents)

	Cattle		Goats/sheep	
Grading and price application	64	71	87	87
Strengthening farmers bargaining power	36	64	60	67
Labelling livestock products as originating from this area	6	7	7	33
Labelling livestock products product quality	3	0	7	20
Labelling livestock products for animal welfare	3	7	0	13
Labelling livestock products for food safety	0	0	0	20

5. Off-taker characteristics

This section deals with t off-takers and retailers, and their priorities and requirements when buying livestock from smallholder farmers. Information about institutional markets was not assessed due to COVID-19-related restrictions.

5.1. Enterprise characteristics

5.1.1. Off-takers and retailer activities

Off-takers and retailers in rural areas mostly buy livestock directly from smallholder farmers. In urban areas they also buy through other agents (Table 46). They often vertically integrate multiple value chain activities (Table 47). In rural areas, they engage in buying live animals and at the same time, produce livestock and crops. In urban areas, retailers focus more on selling meat. Cattle-related activities make up a major share of income for rural and urban entrepreneurs, whereas goats and poultry, especially in urban areas, are more combined with other sources of income generation (Table 48).

5.1.2. Trends in buying and selling livestock products

Prospects for buying and selling livestock and meat were seen as positive (Table 49 and Table 50). The majority perceived increasing trends in buying livestock and selling meat products. Sale of processed meat was less pronounced (Table 51).

Table 46.
Percentage of retailers and off-takers purchasing livestock from smallholder farmers

Cattle (n=23)		Goats/sheep (n=19)		Chickens (n=27)	
85	28	100	33	45	19

Table 47.
Activities of retailers and off-takers in livestock value chains (% of respondents)

	Cattle		Goats/sheep		Chickens	
Sell meat	100	100	100	100	100	100
Buy live animals	90	29	100	38	82	27
Cattle production	45	35	70	25	55	27
Poultry production	45	18	50	13	73	20
Goat production	30	12	60	50	36	13
Processing	10	53	10	50	10	50
Crop production	40	18	50	13	36	20
Buy meat	10	29	10	38	18	40
Supply inputs	15	18	20	25	18	20
Fodder production	10	12	22	13	10	7
Sell live animals	15	0	10	0	18	0

Table 48.
Proportion of income (mean) from buying and selling livestock products

	Cattle (n=)		Goats/sheep (n=)		Chickens (n=24)	
Buy live animals	47 (7)	64 (12)	45 (19)	17 (20)	26 (18)	19 (5)
Sell meat	38 (27)	48 (34)	40 (24)	13 (16)	18 (18)	16 (14)

Table 49.
Change in share of income (%) buying livestock

	Cattle (n=23)		Goats/sheep (n=13)		Chickens (n=24)	
Increasing	56	40	50	33	33	53
No change	28	40	40	33	44	27
Decreasing	17	20	10	33	22	20

Table 50.
Change in share of income (%) selling meat

	Cattle (n=36)		Goats/sheep (n=15)		Chickens (n=24)	
Increasing	35	47	43	38	n/a	n/a
No change	41	32	43	25	n/a	n/a
Decreasing	24	21	14	38	n/a	n/a

Table 51.
Change in share of income (%) processing meat

	Cattle (n=36)		Goats/sheep (n=15)		Chickens	
Increasing	25	17	43	38	n/a	n/a
No change	75	50	43	25	n/a	n/a
Decreasing	0	33	14	38	n/a	n/a

5.2. Supply volumes and quality

5.2.1. Supply period

Off-takers and retailer confirmed the peak of sale of cattle, goat and sheep around January and February (need for cash) and for chicken November to December (increased consumption) (Table 52). This was more pronounced in rural than in urban areas. Their information on prices suggest cattle marketing is more sensitive to seasonal price fluctuations. Contrary to market participants, the off-takers saw cattle prices plummeting during the peak season. Price levels were similar in rural and urban areas (Table 53 and Table 54). Goat prices were seen as less sensitive to seasonal changes, and were distinctively higher in urban than in rural areas. This could be a reflection of transport costs per unit goat, and low prices for goats traded in rural areas. Chicken prices were similar across seasons, rural and urban areas.

5.2.2. Market quality

Off-takers and retailers confirmed that the quality of livestock is important (Table 55). They specified criteria that affect the prices for buying livestock. Body condition was a common determinant for all types of livestock. Weight was also important for cattle. For goats and sheep, age was most important in rural areas,

and weight in urban areas. Weight was important for chickens (Table 56). Mechanisms for quality inspection and rewarding quality products, for cattle, goats and sheep, were seen in urban more than in rural areas (Table 57). Disease status and body condition were most important in determining the prices of livestock (Table 58).

5.2.3. Demand for high-quality animals

Off-takers and retailers recommended smallholders to sell healthier animals and more during the peak season (Table 59). Cattle in rural areas should be sold in fatter condition, goats in urban areas at a younger age, and chicken should be of larger size. These recommendations indicate important gaps in the current supply of livestock products, opportunities for greater benefits from livestock.

Table 52.
Distribution of peak supply months from small-scale farmers (% of respondents)

	Cattle (N=23)		Goats/sheep		Chickens	
	(N=18)	(N=5)	(N=10)	(N=9)	(N=10)	(N=9)
January	67	80	80	22	9	13
February	39	80	80	0	18	6
March	28	40	40	22	18	0
April	61	40	40	22	18	6
May	44	40	50	11	18	0
June	17	40	50	0	18	6
July	17	40	40	0	18	0
August	50	20	30	0	18	13
September	39	20	30	0	18	0
October	0	20	20	0	18	0
November	17	20	20	0	27	6
December	33	40	20	0	27	13

Table 53.
Mean peak volumes (N per month) and prices (USD per N, (Std)

Cattle				Goats/sheep				Chickens			
(N=17)		(N=5)		(N=10)		(N=9)		(N=5)		(N=3)	
Volume	Price	Volume	Price	Volume	Price	Volume	Price	Volume	Price	Volume	Price
20 (23)	295 (71)	12 (4)	287 (197)	53 (46)	36 (8)	170 (199)	59 (27)	46 (36)	6 (0.8)	3,700 (5,456)	5 (0.9)

Peak

Table 54.
Mean peak volumes (n per month) and prices (USD per n),(Std)

Cattle				Goats/sheep				Chickens			
(n=17)		(n=5)		(n=10)		(n=9)		(n=5)		(n=3)	
Volume	Price	Volume	Price	Volume	Price	Volume	Price	Volume	Price	Volume	Price
12 (6)	374 (116)	10 (8)	334 (273)	25 (19)	32 (7)	151 (2,150)	61 (7)	13 (10)	6 (1.1)	2,800 (4,158)	5 (0.5)

Low

Table 55.
Quality important when buying livestock (% of respondents)

	Cattle (n= 23)		Goats/sheep (n=13)		Chickens (n=13)	
Yes	94	80	90	100	100	100

Table 56.
Important factors affecting prices when buying livestock (% of respondents)

	Cattle (n=23)		Goats/sheep (=13)		Chickens (n=)	
Age	39	0	80	33	0	0
Weight	33	60	30	100	33	50
Body condition	89	80	60	67	67	0
Breed	11	20	40	33	11	25
Sex	n/a	n/a	40	0	33	25
Competitor level	11	20	10	0	0	0
Demand level	11	0	10	0	10	0
Delivery point	11	0	0	0	11	0

Table 57.
Standards inspections and reward mechanisms when buying livestock (% of respondents)

		Cattle (n=23)		Goats/sheep (n=13)		Chickens (n= 13)	
Standard inspection (% yes)	Quality	33	40	60	67	33	0
	Food safety	72	80	30	33	56	25
	Animal welfare	72	60	20	0	56	0
Price mechanisms to reward quality (%)	Quality	11	80	60	67	0	50
	Food safety	11	60	30	33	0	50
	Animal welfare	17	80	30	67	0	100

Table 58.
Important quality criteria when pricing (% of respondents)

	Cattle (n=23)		Goats/sheep (n=13)		Chickens (n=13)	
Disease	62	40	60	33	10	33
Body condition	42	40	40	33	100	100
Age	62	40	40	0	56	25
Weight	19	40	0	0	33	50
Size	43	20	40	0	33	25
Carcass	29	20	10	0	0	0
Sex	33	20	20	0	0	0
Breed	5	40	30	0	0	0

Table 59.
What smallholder farmers should change (% of respondents)

	Cattle (n=23)		Goats/sheep (n=13)		Chickens (n= 13)	
Sell healthier animals	89	60	60	100	67	25
Sell more in December	89	40	60	33	100	50
Sell more in November	50	40	40	33	67	50
Sell more in September	17	60	30	67	44	25
Sell more in April	39	20	60	0	67	50
Sell more in March	39	40	50	0	56	50
Sell more in October	22	60	30	67	22	25
Sell larger animals	17	20	33	0	67	75
Sell more in August	28	40	60	0	56	25
Sell more in February	33	60	30	0	33	50
Sell more in May	28	40	60	0	22	50
Sell fatter animals	61	20	30	33	22	25
Sell younger animal	17	40	30	67	0	25
Sell more in January	28	40	30	0	22	50
Sell more in June	17	20	50	0	22	50
Sell more in July	17	20	40	0	22	50
Sell more animals	17	20	10	33	0	25

5.3. Access to information and innovation

5.3.1. Business capacity

Livestock off-takers in rural areas saw themselves operating largely at business capacity. Capacity in urban areas was underutilized (Table 60).

5.3.2. Access to information

Information about demand and supply and the influence on price levels is critical for off-takers to plan their business. The feedback from off-takers and retailers suggests that most off-takers do not organize as associations and use contractual arrangements to cost effectively access information and structure their livestock businesses (Table 61). Their main source of information is own market observations, and to some extent their interactions with traders and retailers.

5.3.3. Constraints for successful sales

Feedback from off-takers indicates gaps in the livestock business (Table 62). Uncertainty over costs and costs being considered high, reflects possible inefficiency in the livestock value chain, which hinders business-oriented planning. Low consumer demand suggests that the information on the actual demand does not translate to off-takers, and might be confounded by consumers' low purchasing power.

5.3.4. Opportunities for sale

The opportunities for sale reflect a situation where off-takers aim at low purchase prices, which, however, affect producer incentives and their ability to invest in improved livestock enterprises (Table 63). The solution lies in recognizing the demand, promotion of new products, especially at urban markets, and structuring livestock marketing to become more cost efficient for greater financial benefits of both producers and off-takers (Table 64).

Table 60.
Business capacity (% of respondents)

	Cattle (n=23)		Goats/sheep (n=19)		Chickens (n=13)	
Operate at full capacity	75	33	90	44	73	44

Table 61.
Main sources of information, for cattle, goats/sheep and chickens (% of respondents)

	Cattle (n=23)		Goats/sheep (n=19)		Chickens (n=13)	
Member of association	5	28	0	33	0	31
Contract used	n/a	n/a	0	22	9	25
Main sources of information						
Market observations	80	50	70	20	90	56
Traders	60	44	80	33	55	31
Retailers	20	50	10	55	18	44

Table 62.
Constrains for successful sale (% of respondents)

	Cattle (n=17)		Goats/sheep (n=6)		Chickens (n=12)	
	(n=5)	(n=12)	(n=1)	(n=5)	(n= 3)	(n=9)
Uncertainty over costs	20	17	100	0	33	11
Low consumer demand	60	8	0	20	33	11
High other costs	0	17	0	20	0	22
Poor access to sales market	20	0	-	-	0	33
Processor skills knowledge behaviour	0	8	0	20	0	11
Variability in sales prices	0	8	0	20	0	11
Competition from imports	0	17	-	-	0	22
Consumer skills knowledge behaviour	0	8	0	20	-	-
High purchase prices	0	17	-	-	0	11

Table 63.
Opportunities for sale of livestock (% of respondents)

	Cattle (n=17)		Goats/sheep (n=6)		Chickens (n=12)	
	(n=5)	(n=12)	(n=1)	(n=5)	(n=3)	(n=9)
Low purchase prices	20	42	100	20	33	56
High consumer demand	40	8	0	20	33	22
Better cost planning	20	17	0	40	0	22
Trader skills, knowledge	20	8	-	-	33	11
Consumer skills knowledge	0	8	0	20	-	-
Increasing sale prices	0	8	-	-	-	-
Reducing other costs	0	8	-	-	-	-

Table 64.
Innovation in livestock marketing (% of respondents)

	Cattle (n=38)		Goats/sheep (n=19)		Chickens (n=27)	
	(n=20)	(n=18)	(n=10)	(n=9)	(n=11)	(n=16)
New product	20	17	60	22	27	19
New inputs	5	6	20	11	18	6
Organize business	10	11	10	11	0	6
New way of producing	0	17	0	0	0	19

6. Conclusion

Livestock-based products are critical for nutritious diets in the study area. However, their affordability restricts their consumption especially in rural areas where households, as net buyers of food, already spend a large part of their income on staple foods. It is therefore critical to improve access to rural livestock markets and increase the numbers of animals for sale which will boost rural incomes and make livestock and livestock-based products affordable.

As shown in earlier studies, encouraging farmers to participate in livestock markets exposes them to knowledge and market information. Implementation of appropriate market infrastructure, grading and pricing mechanisms, linked with technology packages and inputs that allow farmers to producing livestock according to market requirements are critical preconditions so farmers benefitting from their investments in livestock. Fair prices and improved productivity translating to higher incomes from livestock sales will improve farmers' capacity to invest in their farm businesses. These, in turn, will avail more livestock to markets, enhance livestock off-take, sale and consumption of better-quality products. Investment in inclusive livestock value chains is a critical pathway to improve incomes and nutrition in rural and urban areas of Zimbabwe.

7.

Recommendations for improving participation in livestock markets

7.1. Functional market structure

Structured markets, market infrastructure and market information are critical to ensure that price quality information translates into adequate income from livestock sales for farmers. Urban livestock markets provide good examples for ensuring quality, food safety, animal welfare standards and theft control. In rural areas, and notably for goats, sheep and poultry, there is need to revitalize and improve existing market infrastructure with transparent operations, information and price quality systems. Clear ownership and management structures are required between farmer organizations, the private sector and support services to ensure that facilities are being used and price quality mechanisms implemented.

In particular, there is need to promote abattoir infrastructure, aggregation, pricing and grading systems for small ruminants, supported by tailored technology packages (e.g., in feed and health), to increase livestock off-take and make animal-source foods affordable for consumers in rural areas.

7.2. Market-oriented behaviour

This is a change towards market-oriented production systems, use of improved technologies and commercial inputs and increased offtake involving farmers, stakeholders and support services. To achieve this, knowledge gaps need to be addressed and how they interrelate regarding market demand, market information, appropriate technologies. Transparent livestock markets are also needed to transfer information

about market demand to farmers, especially women. Farmers investing in feed must have access to appropriate agronomic practices to reduce production risks. Support services must be well integrated to build capacity to speak to market requirements, policies and governance structures to facilitate appropriate business conditions. Output markets must be linked to input markets to drive investments in increased productivity, quality products and off-take.

7.3. Enhanced livestock productivity

It is critical for interventions to concurrently address feed gaps, animal health control and improved husbandry to enhance and not compromise the vitality of existing livestock breeds. Enhancing livestock productivity requires better integrated farming systems that support efficient resource use, and reduce losses, wastage and mortalities. Increased productivity, more healthier animals available for sale, and supply of livestock products to markets will make livestock products more available and affordable.

7.4. Co-designing market and technology development

Improving livestock market participation in a way that responds to farming systems' specific challenges and priorities, and is socially inclusive, will enable farmers at different levels of resource endowment, women and youth, to benefits more from livestock-related enterprises.

There is hence need for strategies that support the majority of farmers who own few animals, are cash constrained, thus tend to sell to solve urgent needs, and together dispose of large volumes livestock compared with the few farmers with large herd sizes and who can afford to invest in technologies and inputs and deliver quality livestock products regularly.

To come up with more context-specific recommendations for investing in and supporting the livestock value chain, we draw also on the LIPS-Zim project baseline and innovation platform reports, and own observations characterizing production systems and distribution of farm types and herd ownership (See Boudron, F., 2021; Boudron, F. and Homann-Kee Tui, S., 2021).

7.4.1. Livestock oriented systems: Beitbridge and Gwanda

Here markets are more commercialized, targeting high-income markets in Harare. Farmers with large herd sizes are important as they establish regular supply of quality animals, predominantly to primary markets. Price quality mechanisms (auction sales, holding infrastructure, weighing facilities) exist, their distribution and functionality needs to be verified and root cause for transferring low prices to farmers assessed. Local abattoirs for small ruminants need be expanded to cater to local consumers, given most livestock tends to be traded to urban high-income markets. Feed production, processing and feedlot technologies as well as health management are more advanced in areas closer to sale pens and higher livestock off-take. Individual farmer initiatives in improving livestock production provide opportunities to create farmer interest groups and associations, which are critical to unite farmers in input procurement and output marketing. Farmers with

few or no animals can benefit from these market linkages and off-farm opportunities to establish local feed processing and animal health services, and supply to commercializing livestock farmers.

7.4.2. Mixed crop-livestock systems: Chiredzi and Nkayi

Livestock production in these areas is less market-oriented. Market flows are towards local markets and fast-growing secondary cities. Farmers practice crop-livestock farming, disposing off cattle is restricted by the need for draught power, and less attention is given to small ruminants. Livestock body frame and quality are naturally less favourable and herd sizes are smaller. Entry points here should be to promote improved livestock markets, and local abattoirs and butcheries to sell meet to nearby residents to entice farmer groups to raise off-takes. Cattle need to be released from mostly providing draught power by promoting no tillage technologies. Opportunities to multiply forages and produce and process feed need to be developed, given the high biomass availability in the region. Veterinary services should also support efforts to enhance productivity through interventions that empower farmers groups.

7.4.3. Crop-oriented systems: Buhera and Mutoko

Given the focus on crop production and limited land in Buhera and Mutoko herd sizes and offtakes are also low and zero-grazing systems are more common. Households with livestock fatten a few animals for market. Local markets for livestock are not developed. Introducing abattoirs and butcheries would make available more meat for local consumption. Feed rations from local raw materials can enable farmers to add value to their products while reducing feed costs. Veterinary services need to be more accessible to farmers.

7.5. Requirements for programs and policies

- Lack of policy implementation is a key barrier to functional livestock markets. Policymakers need to ensure implementation of enabling livestock market and business environments that incentivize farmers to make market-oriented decisions. Access to livestock markets is also a key driver for improved support services, including extension, finance and insurance. Root causes for poor implementation of functional market infrastructure and organization need to be understood and addressed.
- Given livestock markets are a pathway out of poverty, more investment is required in social protection programs around livestock markets and making livestock-based foods available to vulnerable consumers. Restocking and pass-on schemes are a way to support vulnerable households in rearing livestock; they also need to be linked to markets to become sustainable. The county's move towards boosting livestock productivity and restocking poor households supports this process.
- Local knowledge-based systems, e.g., farmer field schools, must be revitalized and include marketing, business and entrepreneurship and women/youth empowerment as

central components in learning. Markets need to be included as key drivers to determine technology packages and to stimulate higher off-takes.

- Regional research stations, extension support services and private sector engagement must ensure that the basic preconditions for productive and profitable livestock production are met, business innovation supported by integrated feed and health technologies, and monitoring consistent implementation of livestock policies
- Development programs should allocate more resources to strengthen livestock market development as a key driver for livelihood and food security, and nutrition improvement. This must address the strategic gaps of transparent and rewarding price quality mechanisms in livestock markets to ensure fair prices for producers.
- Research is needed to provide more evidence for the drivers and motivations for farmers and market actors' behaviour in a high-risk trading environment and how these related to competing objectives. Cross linkages between markets and production investments and links to farm income, food security and nutrition, human health, and education need to be better understood.
- The requirements for complementary interventions need to be understood, including collective action business models and information networks and market actors' influence on institutions and processes.

8.

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9. Annexes

Food consumption and purchase differentiated by types of urban consumer markets.

Table 65.
Regularly consumed foods, by types of consumer markets (% of respondents)

	High income	Low income	Total	χ^2 (p-value)
Vegetables	93	91	92	ns
Staples	84	87	86	ns
Meat	99	92	94	**
Eggs	75	64	68	*
Milk	73	67	69	ns
Pulses	44	44	44	ns
Fruits	82	49	61	***

*** p<.01, ** p<.05, * p<.1

Table 66.
Frequency of consuming foods (% of respondents)

		High income	Low income	Total	χ^2 (p-value)
Staples	Daily	87	93	91	ns
	Weekly	13	7	9	
Vegetables	Daily	67	68	68	ns
	Weekly	31	24	26	
	Monthly	1	2	2	
	Occasionally	0	5	4	
Pulses	Daily	4	5	5	ns
	Weekly	74	63	67	
	Monthly	16	19	18	
	Occasionally	6	13	10	
Eggs	Daily	54	18	31	***
	Weekly	38	59	51	
	Monthly	4	7	6	
	Occasionally	1	12	8	
Beef	Daily	34	16	22	***
	Weekly	63	74	70	
	Monthly	0	7	4	
	Occasionally	1	4	3	
Goat	Daily	5	0	2	ns
	Weekly	10	6	8	
	Monthly	26	18	21	
	Seasonally	2	8	6	
	Occasionally	49	56	53	
	Never	5	8	7	
Poultry	Daily	18	10	12	ns
	Weekly	72	69	70	
	Monthly	9	14	12	
	Occasionally	1	6	4	
Fruit	Weekly	86	61	68	*
	Monthly	8	11	10	
	Seasonally	0	2	1	
	Occasionally	5	25	20	
Milk	Daily	66	42	51	**
	Weekly	26	49	40	
	Monthly	3	3	3	
	Occasionally	4	6	5	

**** p<.01, ** p<.05, * p<.1*

Table 67.
Proportion monthly income spent of foods (mean % of income composition)

			Total	(p-value)
	High income	Low income		
Staples	11	16	14	ns
Meat	7	10	9	ns
Vegetables	4	6	6	ns
Pulses	3	6	5	ns
Fruits	3	4	4	ns
Milk	3	4	4	ns

*** p<.01, ** p<.05, * p<.1

Table 68.
Frequency in purchases of foods (% of respondents)

		High income	Low income	Total	χ^2 (p-value)
Staples	Daily	14	14	14	***
	Weekly	5	23	16	
	Monthly	75	58	64	
	Seasonally	4	2	3	
	Occasionally	4	1	2	
Vegetables	Daily	49	51	50	ns
	Weekly	34	33	33	
	Monthly	5	1	3	
	Occasionally	10	12	11	
Pulses	Daily	0	1	1	ns
	Weekly	40	51	47	
	Monthly	46	38	41	
	Seasonally	4	0	1	
	Occasionally	8	11	10	
Beef	Daily	3	6	5	***
	Weekly	27	55	46	
	Monthly	66	35	46	
	Occasionally	4	3	3	
Goat	Daily	0	2	1	**
	Weekly	0	3	2	
	Monthly	27	6	15	
	Seasonally	0	11	7	
	Occasionally	49	55	52	
Poultry	Daily	0	1	1	*
	Weekly	40	56	50	
	Monthly	55	36	43	
	Occasionally	2	3	3	
Fruit	Daily	26	4	13	***
	Weekly	66	62	64	
	Monthly	5	10	8	
	Seasonally	0	1	1	
	Occasionally	3	20	13	
Milk	Daily	26	29	28	ns
	Weekly	59	51	54	
	Monthly	10	9	9	
	Seasonally	1	0	1	
	Occasionally	4	11	9	

Table 69.
Nutritional quality as reason for choosing the livestock-based market channel to buy foods (% of respondents)

		High income	Low income	Total	χ^2 (p-value)
Beef	Most important	60	52	55	ns
	Not important	8	8	8	
	Other factors important	32	40	37	
Goat	Most important	29	40	36	ns
	Not important	39	34	36	
	Other factors important	32	26	28	
Poultry	Most important	54	47	50	ns
	Not important	7	4	5	
	Other factors important	39	48	45	
Milk	Most important	66	49	55	*
	Not important	7	11	10	
	Other factors important	27	40	35	
Eggs	Most important	51	55	54	
	Not important	15	9	11	
	Other factors important	33	35	35	

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