

# Evaluating Buhera and Nkayi Goat Value Chains in Agroecological Zone V of Zimbabwe

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## ABSTRACT

Buhera and Nkayi districts are situated in agroecological zone V, which is frequently impacted by droughts. As a result, crop failure and livestock feed and water shortages are more common. Goats, like other small livestock, are crucial in providing nutrition and income for households that rely on agriculture as their primary source of livelihood. The purpose of this study was to examine possibilities and challenges in the goat value chain in Buhera and Nkayi. A review of the literature, key informant interviews, and baseline surveys were used to gather the data. The extensive goat production system is practised in Buhera and Nkayi described as low input and low output. Low productivity is caused by issues with feed quality and supply, a lack of a breeding system, and a high prevalence of diseases that lead to high mortality and low offtakes. These excess goats are sold to abattoirs through formal channels, like direct marketing, which uses a weight-based price structure and a coverage of more than 20 km. Within each district, only one out of three wards had a specialized goat market linking farmers to a wide range of buyers including abattoirs. Informally farm gates and open markets served brokers and traders, local butcheries, and restaurants that sell goats within a 0–5-kilometre radius. The price of the goats in the informal channel is set by their visual appraisal. Men had better access to these marketplaces in Buhera (51% of men and 3% of women) than did women in Nkayi (19% of men and 5% of women). Even though the informal channel does not use weight-based pricing, 33% of transactions in Buhera and 89% of transactions in Nkayi are conducted there. Value chain finance may be essential in helping farmers obtain access to capital and other inputs that can be invested to increase goat productivity. The rural district council must assume a more proactive role in enhancing the road networks, establishing marketing infrastructure, and holding goat auctions. It is essential to create marketing systems that incorporate well-defined weight-based pricing methods to guarantee that farmers receive equitable pricing and value for their goats. Achieving this, the extensive goat farmers can be motivated to transition from extensive production to goat entrepreneurship, allowing goat production to make a substantial contribution to household income and nutrition.

**Keywords:** Goats, markets, pricing system, vulnerability, resilience, value chain, productivity

## INTRODUCTION

Goat production systems have long been prevalent among smallholder communal farmers in Zimbabwe's agroecological zone V. It has been noted that low-income households typically keep small livestock, like goats, rather than large livestock, like cattle, due to the lower capital and nutritional requirements. Agroecological zone V has the sweet veld which comprises palatable grasses and browsable trees and forbs. However, due to mismanagement of common grazing lands overall herbage yield has decreased with high levels of increase in invasive species. The area of grazing land has decreased due to agricultural land conversion from grazing land

to cropping land (Tambo et al., 2021), making it more difficult for livestock farmers to obtain enough feed. Overstocking, overgrazing, and poor management such as the lack of periodic veld reinforcement and frequent burning during the dry season are other factors causing the degradation of communal grazing grounds (Catacutan et al., 2021). The stocking density has declined resulting in small stock being more suitable due to their lower feed requirements. Since goats require less feed and emit fewer greenhouse gases, both the government and non-governmental organisations are promoting goats through the distribution of breeding stock as a strategy to increase climate change adaptation and mitigation (Hristov et al., 2013) in dry agroecological zone V (Ministry of Economic Affairs and Employment, 2020).

In the extensive goat production systems, the goats are penned at night, with the majority of them being free-range during the day (Moyo et al., 2022; Svatwa et al., 2007). The extensive goat production system faces feed challenges, particularly during the dry season, due to its heavy reliance on natural resources and little to no additional supplementary feed (Moyo et al., 2022). Farmers typically use agricultural wastes such as crop residues, browse, hulls and pods collected as fodder, and, to a lesser extent, commercial feed to supplement their livestock (Tambo et al., 2021; Musendo et al., 2022). Since most of these goats are reared in integrated crop-livestock systems, farming methods still depend heavily on the use of crop residues as feed, such as stover and straw (Wicaksana & Rachman, 2018). Inconsistent supply, poor quality feed, and little to no supplemental feeding have all led to low productivity, which is reflected in low conception rates, lengthy intervals between kiddings, high kid mortality, slow growth rates, and long ages at first kidding. Slow herd expansion is caused in part by low productivity and a high mortality rate.

Goats serve a variety of purposes in smallholder goat production systems, including providing food for the household, generating money, acting as a store of wealth, and serving as a supply of manure used to fertilise the fields and home gardens. The excess stock is sold to generate income. Goat markets, on the other hand, continue to be underdeveloped and marginalised, with only a small number of goats passing through formal marketplaces (Homann et al., 2007) that have little to no established pricing structures. Farmers typically have few options for marketplaces (Homann et al., 2007). The majority of goats are sold at farm gates and spot markets, where prices are set by size, visual evaluation, and bargaining, increasing the likelihood that farmers will be taken advantage of. A significant flaw in the goat markets' implementation is the absence of transparency and quality-based pricing in the marketing systems (Boudron, 2021). The purpose of this study is to examine the current goat value chain and marketing system in Buhera and Nkayi in Agroecological Zone V which is a major goat-producing area.

## METHODOLOGY

Six wards in the districts of Buhera and Nkayi were the focus of the case study methodology study. These wards were specifically chosen to guarantee that at least one ward in each district had either recently finished or was in the process of finishing a goat project. The Buhera wards 25, 27, and 29 as well as the Nkayi wards 5, 16, and 29 were chosen (Figure 1). Goat improvement centres are located in Wards 5 in Nkayi and 27 in Buhera. A variety of data collection methods were employed, such as focus groups, key informant interviews, observations, and household surveys. Lead farmers in ongoing goat programmes, agriculture extension agents, the District Development Coordinator (DDC), the Rural District Council (RDC), a technician from the Department of Veterinary Service (DVS), and council members are among the main informants.

### Sampling Framework

For the survey, a total of 45 households in each of the district's three wards were targeted, in addition to two focus groups and ten key informants. The districts for data collection were chosen using purposeful and targeted sampling. The selection of the households made sure that there was equal representation of male and female family heads.

### Data Analysis and Presentation

Value chain governance, stakeholder analysis, and value chain analysis were among the analyses that were carried out.

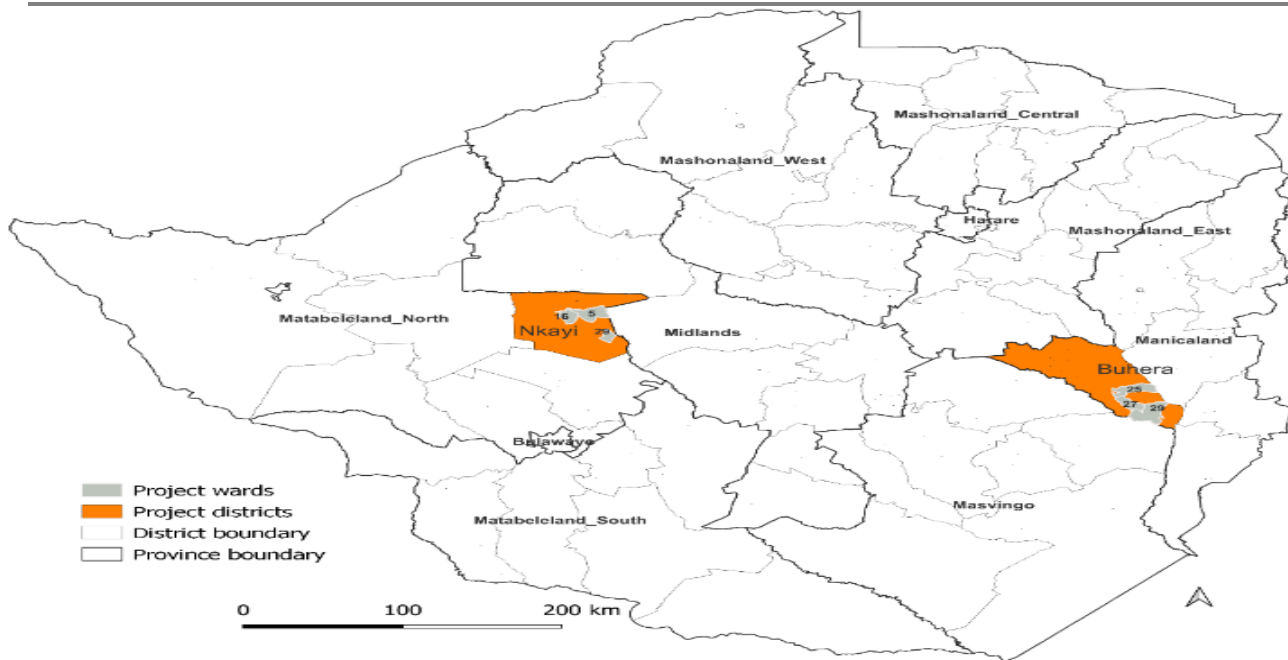


Figure 1: Site map

## RESULTS AND DISCUSSION

### Input Supply

The goat production system is mostly extensive which can be defined as a low input and low output, highly dependent on resources that are obtained locally. The majority of goat breeds are indigenous breeds that farmers trade with one another in the community. Development organisations have introduced other breeds, including exotic breeds like the Boer breeds, by introducing bucks and crossing them with indigenous does. The success rate of such interventions varies as some of the exotic bucks failed to adapt and died. There is no defined breeding system; the bucks run with the does year-round, therefore there is no breeding season even in Ward 27 in Buhera and Ward 5 in Nkayi which have goat improvement centres. It can be challenging to choose the buck you want to utilise for breeding because most farmers only have one pen for all of their goats, and these goats graze in the same common areas. Due to the low percentage of buck ownership 38% in Buhera and 53% among farmers, many farmers rely on the bucks of other farmers. Due to a lack of controlled goat breeding, the majority of goat breeds in the two districts can only be defined as non-descript breeds worsened by the high rate of inbreeding as a result of a low buck replacement rate.

The majority of the feed resources are obtained locally from communal grazing and browsing areas and relatively little feed is brought in. During the dry season, crop residues are used as supplementary feed (Kunaka et al., 2023; Charambira et al., 2021). This crop is stockpiled just after harvesting. Very little processing or nutrient enhancement is carried out on the crop residues, as such they are fed as is. Even though they are sold at local agro-dealers stores, other supplements including concentrates, molasses, and minerals are not frequently used (Hove et al., 2022; Mutsamba-Magwaza et al., 2022; Mukondwa et al., 2021) as farmers cannot afford them. Veterinary inputs such as antihelminths, antimicrobials, and dipping chemicals are sourced locally from agro-dealer shops. Some veterinary products need to be prescribed and administered by experts, in some of the local agro-dealer shops farmers can purchase and use these treatments without a prescription. Both humans and goats are at significant risk of developing antimicrobial resistance as a result of misuse of antimicrobials. Farmers often utilise ethnoveterinary remedies to supplement or replace store-bought remedies because they struggle to afford veterinary goods.

### Production

In Zimbabwe's arid communal areas, the extensive goat production system is widely practised within integrated crop-livestock systems. Goat herd sizes are typically small; in Buhera, 44%, and Nkayi, 57%, the herd sizes

range from 0 to 10. (figure 2). In Buhera, bucks made up 8% of the herd, 55%, and young stock 37%; in Nkayi, bucks made up 5%, 54%, and young stock 42% of the herd, respectively.

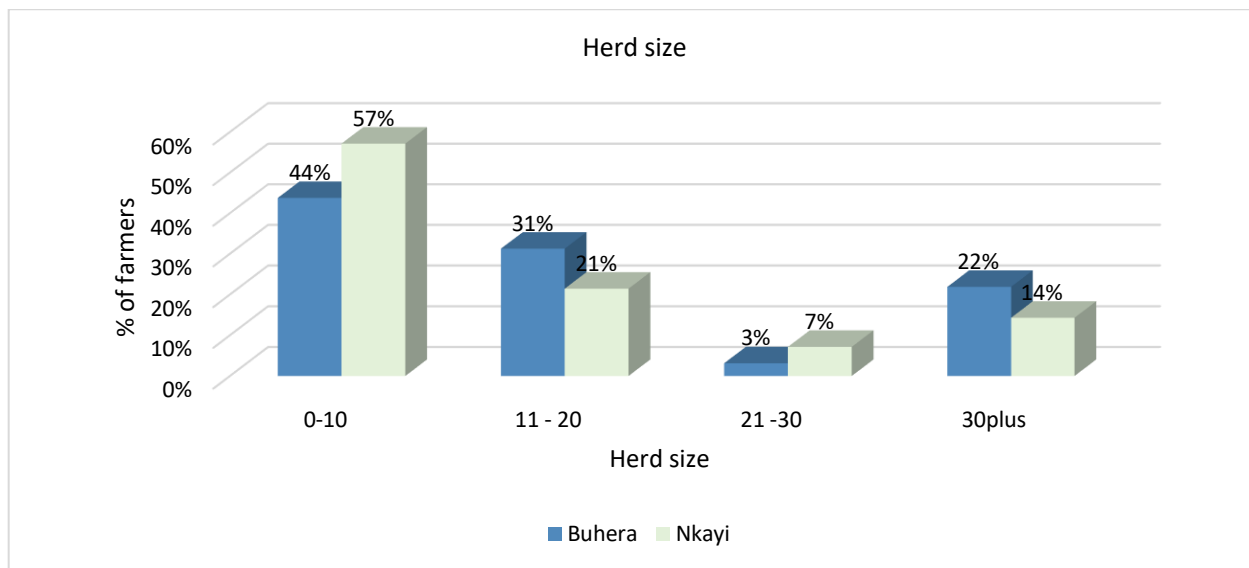


Figure 2: Herd size

The small herd sizes are a result of both high mortality and low productivity. Since does only give birth once a year on average and young stock mortality is 40% on average herd growth is very slow resulting in farmers having less disposable stock. Low productivity, which includes long ages to reproductive maturity, long ages at first kidding, long intervals between kidding, and low conception rates, is another factor contributing to slow herd growth. Veterinary services and agriculture extension play a proactive role in empowering farmers to increase goat productivity. Compared to paid labour, family farm labour is mostly utilised in both districts for a variety of goat production tasks. While anyone available in the home cleans the goat enclosures, children are in charge of herding and watering the goats. During the school term goats sometimes remain penned until the children come back from school, therefore, reducing feeding time and consequently impacting on goat productivity. Ownership of livestock including goats is mostly by men although women and children can also own goats. (Table 1).

Table 1: Roles of men women and youth from production to marketing

Activity	Buhera			Nkayi		
	Men	Women	Children	Men	Women	Children
Ownership	75-80%		15-20%	60-80%	30%	10%
Goat herding	0-20%		80-100%		0-20%	80-100%
Cleaning pens	Everyone			Everyone		
Watering	10%		80-90%	10%	10%	80%
Marketing	80%	20%		100%		
Slaughtering	100%			100%		
Decision to sale	100%			100%		
Decision to slaughter	100%			100%		

In Nkayi, men alone decide whether to sell or slaughter a goat; whilst in Buhera, women participate in 20% of goat marketing decisions and decide whether to sell or slaughter the goats. Goat consumption in households is widespread, particularly during family gatherings like Christmas and Easter and other customary rituals like weddings and *lobola*.

### Goat Markets

Small herd sizes mean that producers don't always have goats for sale therefore contributing to low offtake rates. These low offtake rates result in inconsistent supply and impact large-scale buyers, driving up transaction costs. Where farmers have extra goats to sell, they are sold locally via farm gate sales and at community spot markets, where there is no set price and the buyer is free to bargain (Figure 3). Although it was noted that some traders were implementing a weight-based pricing system, farmers accuse dealers of tampering with the scales to indicate lower weights because there is a lack of trust and confidence between farmers and traders. Farm gate sales are highly seasonal with farmers disposing of goats around the same time resulting in high supply versus demand as the goats are mostly sold to neighbours and friends. Such a situation includes the beginning of a school term when farmers are trying to raise funds to pay for their children's school fees.

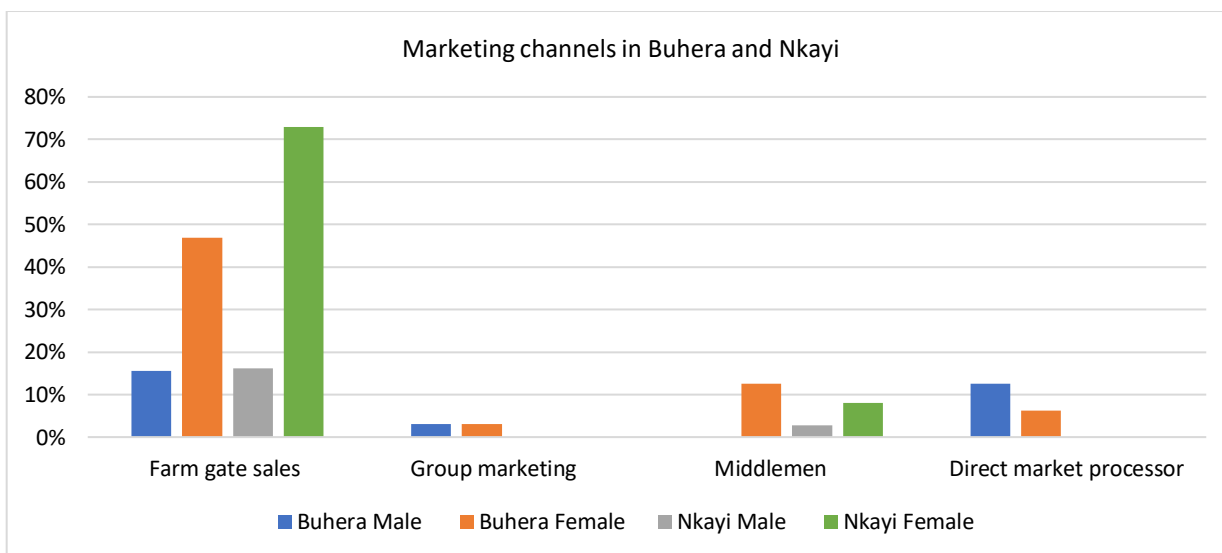


Figure 3: Marketing channels in Buhera and Nkayi

Even though all animal sales would need to be approved by the police, have animal movement licenses issued by the Department of Veterinary Services (DVS), and be subject to taxes and levies from the Rural District Council, these transactions tend to be carried out under the regulatory radar. Goats are occasionally sold by farmers near business hubs and growth areas to nearby butcher shops and restaurants. This presents serious issues concerning disease transmission, hygiene and sanitary standards and animal theft. Because there aren't enough abattoir facilities, most slaughtering and processing takes place in backyards, which means it might not adhere to food safety and health regulations. This was typical in Buhera, where there were a few restaurants and butcher shops selling goat meat, but no such establishments existed in Nkayi due to the locals' strong preference for beef over goat meat.

Live goats are also bought by brokers, dealers, or middlemen who then resell them in cities through both official and informal channels. The middlemen/broker may sell the live goats through informal routes, such as restaurants, butcheries, and spot markets, or they may sell them legitimately, through abattoirs that serve supermarkets and licensed butcheries. Accessibility problems stemming from insufficient road networks force farmers in isolated communities to rely increasingly on farm gate sales, serving a radius of less than five kilometres (figure 4). The largest barriers are the additional expenses associated with transportation, permits for the movement of animals, and police clearance. It is challenging to monitor and trace goats from the farm to the markets due to inadequate identification and documentation at the farm level. These additional processes and costs discourage farmers from organising and trying to enter urban goat markets, even though there is a year-round demand for goats.

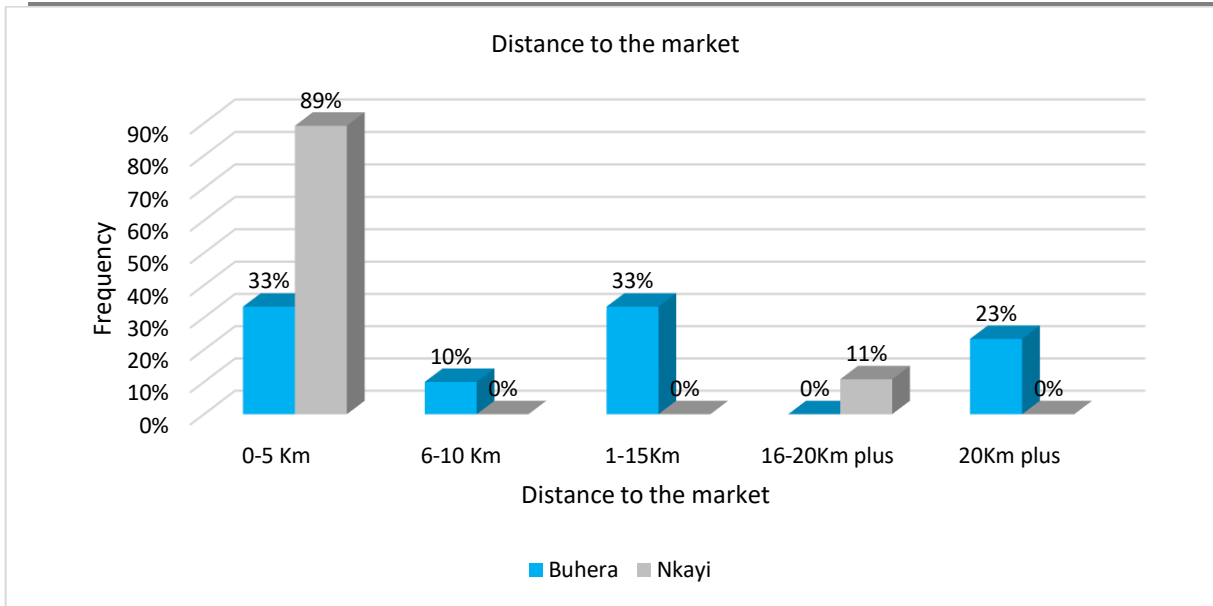


Figure 4: Distance to the market

Out of the three wards, only one featured a goat improvement centre with multiple features like goat dipping, demonstration plots for forage, breeding, and selling goat aggregation. Farmers have been connected to direct markets through the Zimbabwe Agriculture Growth Program-Value initiative. The direct market links farmers to processors such as abattoirs mostly located in urban areas far away from producing communities (Figure 4). This is a formal channel where all regulatory procedures are observed and the pricing structure is based on goat weights. These approved abattoirs then sell the meat to approved outlets like supermarkets and registered butcheries. By removing the middlemen's role and connecting farmers directly with processors, farmer value share increases (Figure 5). Since the goats are being moved in large quantities, the transaction costs are shared. The goat improvement facilities in the two districts, however, were at different stages of development, with Buhera having a more advanced group marketing and direct marketing system than Nkayi (figure 3).

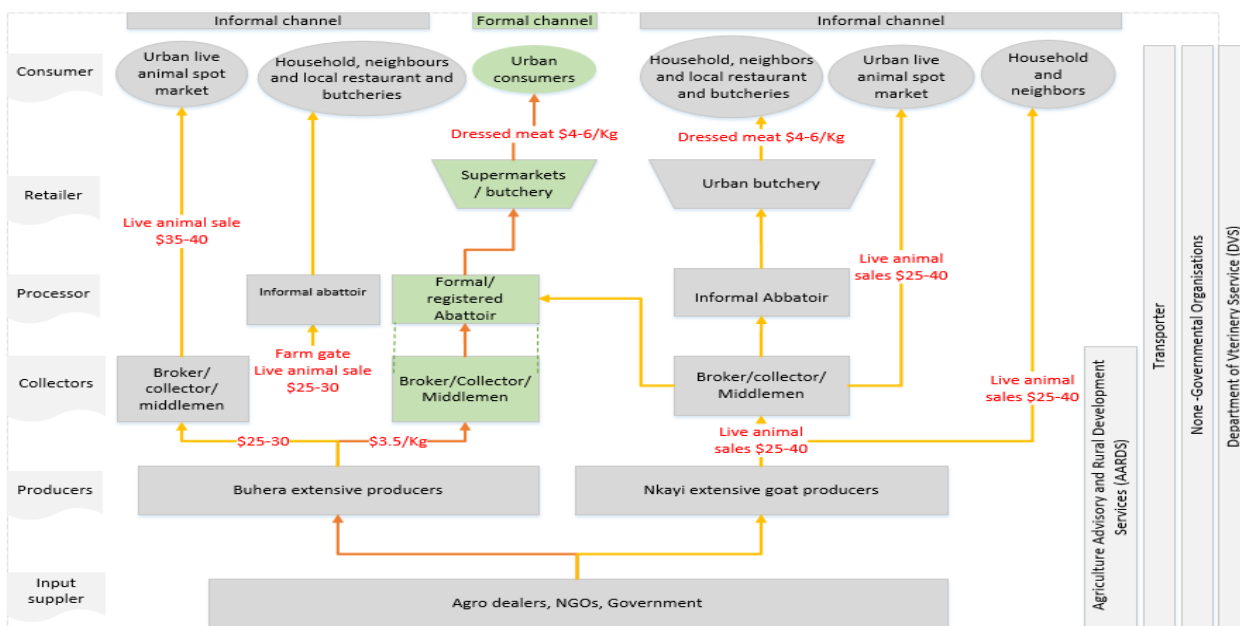


Figure 5: Buhera and Nkayi goat value chain map

### Market Access and Gender

Men and women have different levels of access to goat markets in Buhera; among the male respondents, 51% had market access, while just 40% did not. Only 9% of the female respondents said they owned goats, with 6%

of the women having no access to goat markets. Just 58% of the male respondents in Nkayi reported not having access to goat markets. When compared to Buhera, where just 9% of women-owned goats, Nkayi had 24% of women who owned goats (figure 6).

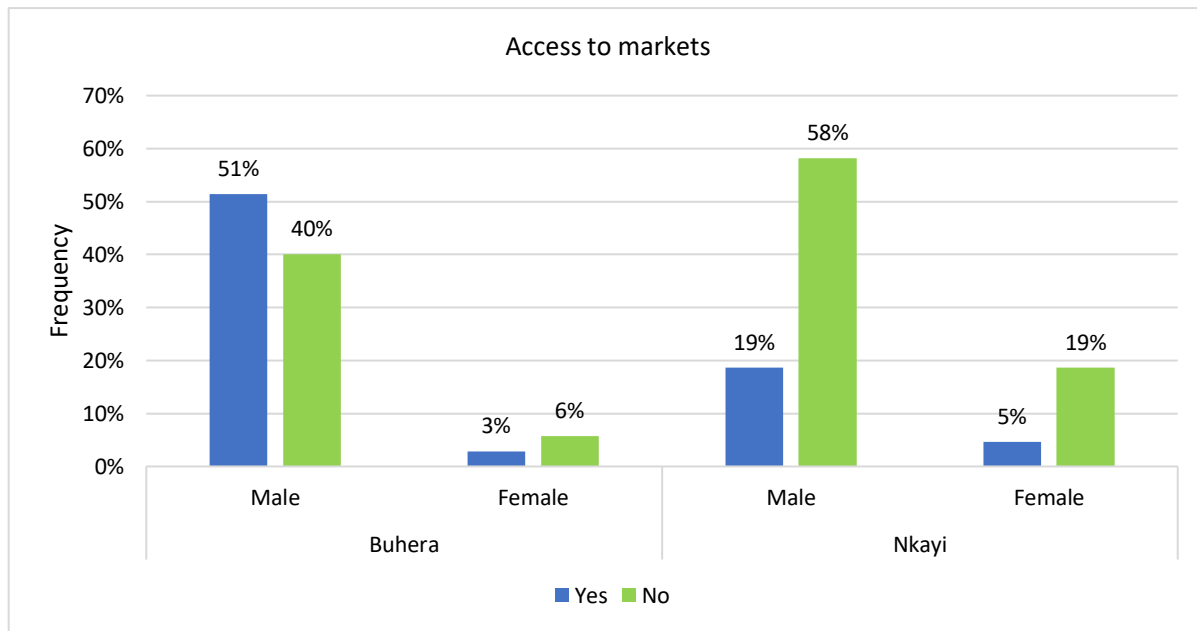


Figure 6: Access to markets

This can be attributed to cultural differences in Nkayi, where men place a higher value on cattle therefore women have higher opportunities of owning small stock such as goats. Despite 24% of women in Nkayi owning goats, the decision to sell has to be approved by the men considering men on the land, the homestead and the livestock pens as such they retain the power to approve the slaughter or sale of all livestock.

Table 2: Strategies to improve the goat value chain in Buhera and Nkayi

Value chain level	Challenges	Solution	Responsible authority
Input supply	High cost of veterinary products	Group purchasing is a way to share the cost and also since farmers have small herd sizes	Farmers, farmer groups
	Misuse of veterinary products e.g. antimicrobials	Enforcement of restricted access to controlled veterinary products Farmer awareness of risks surrounding misuse of antimicrobials	Veterinary officers, Agriculture extension, Agrodealers
Production	No breeds and breeding method	Selection of locally adapted breeds -implementation of a breeding system - castration of inferior bucks and replacement of bucks every 2years	Farmers, Farmer groups, non-governmental organizations, private goat breeders
	Feed challenges	Production and conservation of own legume and grass forages timely harvested	Farmers, feed entrepreneurs,
	Quality of goat	Implementation of a clear tracking tracing system supported by accurate farm records	Farmers, agriculture extension

		Improve information flow of the quality of goats required	Processors, retailers, traders
	Low feeding time	Better management of common grazing and browsing areas	Farmers, agriculture extension officers
		Ensure goats have adequate feeding time e.g. introduction of a paddocking system or use of other forms of family farm labour so that there is no need for children to herd them	Farmers, agriculture extension
	High mortality rate	Implement disease prevention measures e.g. vaccinations, biosecurity measures and dipping	Farmers, agriculture extension, veterinary officers
		Enhanced enforcement of legal structures to prevent the spread of disease e.g. restriction on animal movements from red zones	Farmers, agriculture extension, veterinary officers, abattoirs, traders
Collector	Bad road networks	Improvement in road networks	Rural district council
	Limited goat marketing infrastructure	Setting up goat markets and organising regular goat auctions	Rural district council, abattoirs, traders/middlemen
	Inconsistent supply of goats	Increase goat productivity	Farmers, Agriculture Extension Officers, Veterinary Officers
		Formation of farmer groups so that they ensure sufficient quantities	
	Pricing system	Implement a transparent and standardized pricing system	Farmers, traders, agriculture extension
Farmer organizations to give farmers a voice and bargaining power		Farmers, agriculture extension	
Processor	Abattoirs located far away	Farmers to increase productivity and offtakes that warrant the need for an abattoir in the producer communities	Farmers, Agriculture Extension Officers, Veterinary Officers
		Development of abattoirs in producing goat-producing communities	Farmers, agriculture extension
	High transaction costs	Organize supply such that large volumes of goats are moved to reduce transaction cost	Farmers, Agriculture Extension, Rural District Council



	Limited farmer capacity to finance the goat business	Use value chain financing to improve farmer access to inputs, breeds, supplementary feeds and veterinary products	Abattoirs, farmers, traders/middlemen
	Limited flow of information	Improve information flow and increase transparency of all processes	Farmers, agriculture extension, traders, abattoirs, retailers
Retailer	Inconsistent supply of goat products in supermarkets and butchereries	Improve information flow which will inform farmers of the expected quality and trends in demand	Farmers, traders/middlemen, abattoirs
Consumer		Increase the volume of goats that go through the formal value chain	Farmers, traders, abattoirs
		Introduce quality standards in the informal goat value chain	

## CONCLUSION

The importance of a resilient and sustainable goat value chain in Buhera and Nkayi's agroecological zone V cannot be overemphasized, as these communities are severely affected by recurrent droughts that have the likelihood of crop failure, reduction in veld stocking densities and high water shortages for livestock. Given their diverse eating habits, goats continue to thrive serving various purposes such as nutrition, income, storage of wealth, and a source of manure. Small herd sizes, low productivity, and low offtake rates are evidence that the goat value chain in Buhera and Nkayi has remained a low input and low output production system. Farmers in one of the three wards per district assessed had limited access to optimal marketing infrastructure, which means they mostly rely on farm gate sales within an operational radius of 0–5 kilometres. As farmers sell their goats to traders or other farms, this rapidly gets saturated because of the low coverage. Farmers must deal with the causes of low output, such as feed, breeds, and high death rates, with the assistance of veterinary and agriculture extension staff. Farmers must rely less on children to herd and water the goats because this shortens the time the goats spend feeding during the school term, which is not ideal for the goats. To boost productivity and offtakes, value chain actors like abattoirs may provide farmers with loans to help them overcome an inability to invest more in their goat business. Over time, this will reduce the transaction costs associated with shipping small volumes from far-off locations. Establishing price, quality and food safety standards for goats supplied through informal channels can guarantee farmers receive fair payments while also protecting consumer safety. The improvement of road networks and the establishment of auctions explicitly for goats are crucial roles that the rural district council may play in promoting improved access for farmers to markets. To increase trust and shared value along the value chain, better information and increased transparency are required. Because women make up the majority of people living in rural areas, there is a need to expand the role that women play in the goat business in both districts, beginning with greater access to these marketplaces and goat ownership. The sustainability of the goat value chain in Buhera and Nkayi can be improved by guaranteeing equitable returns for each actor in the chain, ensuring benefits for all parties involved.

This study is a component of the Livestock Production system in Zimbabwe (LIPS-Zim), which is run by the Scientific and Industrial Research and Development Centre (SIRDC). Its title is "Promoting the Adoption of Sustainable Goat Business Models and Improved Fodder Production Through the Promotion of Gender Sensitive Fodder Production Equipment."

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