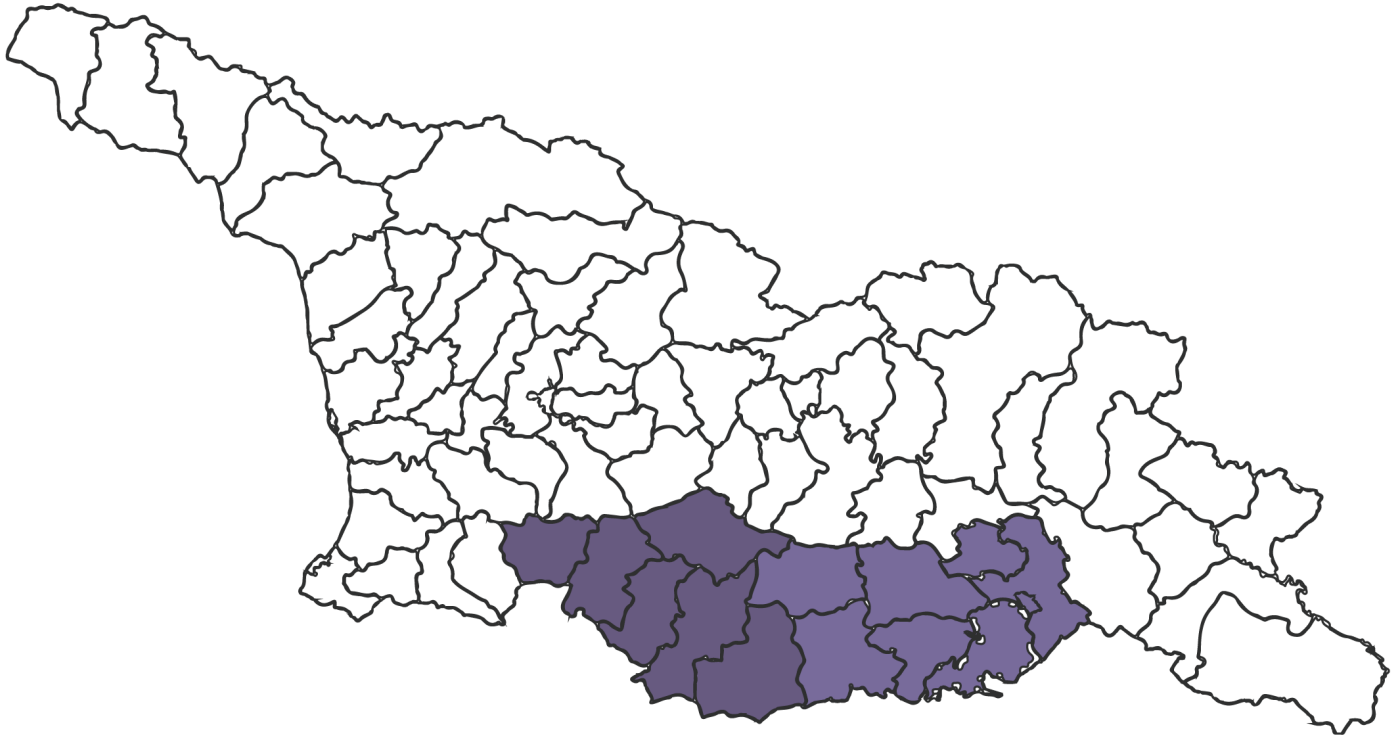




SHEEP VALUE CHAIN IN SAMTSKHE-JAVAKHETI AND KVEMO KARTLI

USAID UNITY THROUGH
DIVERSITY PROGRAM
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1. Introduction

The USAID Unity Through Diversity Program, overseen by UNA-Georgia and under the leadership of USAID, is a five-year initiative with the primary goal of integrating ethnic and religious minority groups into various facets of Georgian society. As a subcontractor working in collaboration with UNA-Georgia, PMCG plays a significant role in the initiative by actively participating in the expansion and reinforcement of socio-economic ties between the majority and minority communities. The ultimate aim is to foster mutually advantageous business relationships that benefit all parties involved.

As part of the program, a key element centers around conducting value chain assessments in designated ethnic and religious minority municipalities. These assessments are designed to pinpoint deficiencies within each stage of production within the sheep value chains, offering recommendations for enhancing the participation of ethnic minorities in these value chains. Moreover, these assessments seek to uncover prospects for integrating the regional value chain into broader national or international value chains.

In the report, separate chapters are dedicated to examining each of the value chain actors within the sheep sector in Marneuli, Gardabani, Dmanisi, Tsalka, Bolnisi, Ninotsminda, Akhalkalaki, and Akhaltsikhe municipalities. These chapters provide detailed insights into various aspects of the value chain, focusing on specific topics and actors involved. The topics covered include:

- Methodology: Examining the quantitative and qualitative analytical approaches employed in the study of the sheep value chain in the selected municipalities.
- Sector Overview in Georgia: reviewing sector trends, consumption, production, export, prices, productivity, and other parameters.
- Value Chain Actors: overviewing the value chain actors and providing an understanding of the value chain processes.

Additionally, a thorough SWOT analysis is conducted to assess the overall resilience of the sheep value chain within the designated municipalities. This analysis provides a comprehensive evaluation of the strengths, weaknesses, opportunities, and threats, encompassing both internal and external factors, which may impact the success and progress of these value chains. This assessment forms the basis for the development of relevant recommendations and strategic approaches aimed at enhancing the value chains.

The report provides strategic recommendations designed to facilitate the expansion of the sheep value chains within the mentioned municipalities. These recommendations place particular emphasis on the integration of ethnic minorities into the value chain and establishing connections between the regional value chain and broader national or international counterparts. The overarching goal is to promote the sustainable progress of the sheep sector in these municipalities, addressing essential facets such as pasture land usage optimization, breed selection, etc.

By tackling the prevailing challenges, leveraging the available opportunities, and encouraging cooperation among key stakeholders, the report aims to unlock the untapped potential within these municipalities. The ultimate goal is to stimulate economic growth and deliver favorable outcomes for both consumers and local communities. Through the successful execution of these recommendations, the sheep industry in these regions can develop further, resulting in enhanced economic opportunities and better livelihoods, all while satisfying market requirements for top-notch products.

2. Methodology

The examination of the sheep value chain in the specified areas of Kvemo Kartli and Samtskhe-Javakheti utilized a combination of quantitative and qualitative analytical methods. This research encompassed not only desk-based investigations but also on-site research. Moreover, the selection of interviewees was made with a focus on their direct relevance to the value chain. Subsequent interviews were carried out as a component of this thorough research approach.

The research commenced with an extensive initial desk research phase. During this phase, the research team reviewed a wide array of existing literature, reports, and studies pertaining to the sheep value chain within the target municipalities. The primary objectives of this phase were to compile foundational information, pinpoint knowledge gaps, and gain insights into the current research landscape.

Before zeroing in on the sheep sector, a comprehensive evaluation of all sectors was carried out using three key criteria: the concentration of produced products¹, import substitution and export potential, and infrastructure and warehouse accessibility. Once the sectors with the highest scores were identified, further desk research and validation workshops were organized to deepen the comprehension of these sectors' impact on the local community, the integration of minority groups into the broader society and economy, and their alignment with municipal priorities.

Following a thorough evaluation of the factors mentioned above, the sheep value chain emerged as the sector displaying the most promising potential and strengths within the municipalities of Marneuli, Gardabani, Dmanisi, Tsalka, Bolnisi, Ninotsminda, Akhalkalaki, and Akhaltsikhe. To gain a firsthand and direct understanding of the dynamics within the sheep value chain, we proceeded with field research aimed at collecting primary data.

This research phase entailed on-site visits to the specified municipalities, enabling direct engagement with key stakeholders who play pivotal roles in the value chain. These stakeholders encompassed both farmers and merchants. The meticulous selection of these participants significantly bolstered the study's representativeness and relevance. To ensure methodological consistency and comprehensive coverage of relevant subjects, we crafted interview guides and questionnaires. The primary objective of these interviews was to collect qualitative insights, perspectives, and experiential knowledge from the participants, specifically related to the sheep value chain. These encompassed aspects pertaining to live sheep, meat, wool, and dairy products. Recognizing the presence of language barriers within the municipalities, it was necessary to conduct some interviews in Russian, with a particular emphasis on Marneuli, Ninotsminda, and Akhalkalaki. This approach facilitated effective communication and engagement with the participants in these regions.

A vital component of this study was the utilization of triangulation, a method employed to enhance the credibility and reliability of the findings. This approach entailed combining diverse data sources, including both quantitative and qualitative data, to obtain a more comprehensive understanding of the sheep value chain. The National Statistics Office of Georgia, Geostat, and UN Comtrade served as the central providers of quantitative data, playing a pivotal role in furnishing the necessary statistical information for the study

¹ Location Quotient (LQ) regional analysis method was used.

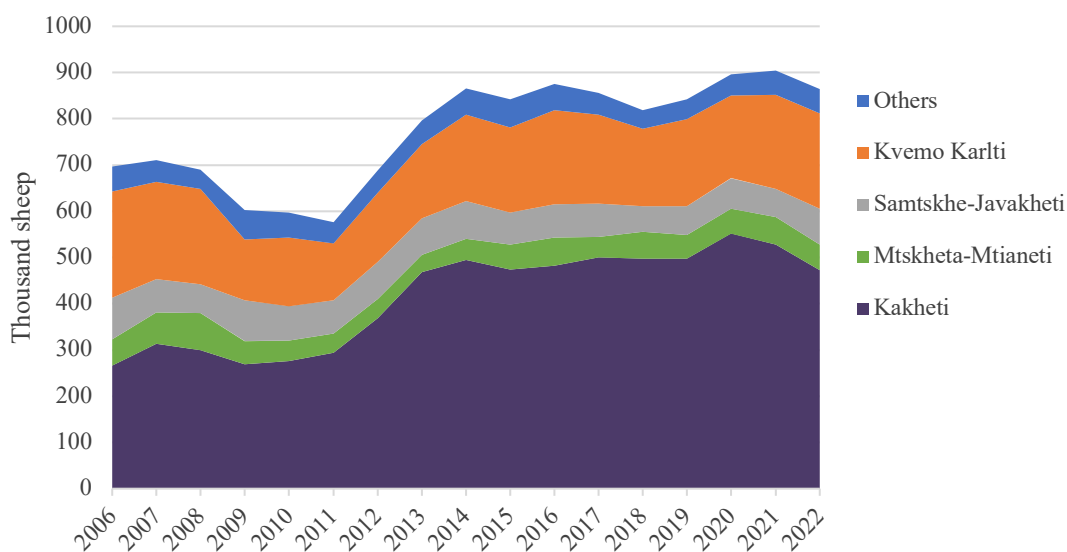
3. Sector Overview in Georgia

Sheep farming has deep-rooted historical and economic significance in the mountainous regions of Georgia, with a heritage spanning thousands of years. This sector has served as a vital source of income, sustaining thousands of families over generations. Characterized by time-honored traditional practices, the essence of sheep farming has remained largely unchanged through the ages. However, in recent times, various factors have brought about significant shifts in the sheep farming landscape. These factors include transformations in pastureland availability, emerging markets, prospects for export, and a noticeable uptick in the prices of animal feed. These changes have introduced new dynamics and challenges to the sheep sector, prompting farmers to adapt and navigate evolving circumstances.

The sheep population in Georgia hovers just below 900 thousand. This number experienced a significant decline during the 1990s but has since been gradually recovering. From 696.8 thousand in 2006 to 863.8 thousand in 2022, there has been a 23.9% increase in the sheep population over a span of 16 years. Notably, this ever-fluctuating figure is primarily influenced by shifts in demand rather than supply.

Farmers in Georgia have been adapting the size of their sheep flocks on an annual basis, making strategic decisions such as setting aside a certain number of ewes for breeding. They exert substantial influence over the total sheep population as they respond to changing market dynamics and consumer preferences. Over the years, driven by the increasing purchasing power of the population and the emergence of new export markets in the Gulf region, farmers have been able to expand their sheep farming operations. However, it's worth noting that this growth trajectory experienced a plateau in 2014 and has even seen some decline in the past year.

Graph 1: Number of sheep by each region



Source: Statistics Office of Georgia

The distribution of sheep among the regions in Georgia has experienced significant changes over the years. In 2006, the majority of the sheep population was concentrated in Kakheti (38.2%) and Kvemo Kartli

(33.0%). As previously mentioned, over the course of 16 years, the sheep population increased by 167 thousand heads, with this growth primarily attributable to the rising number of sheep in Kakheti. Interestingly, all other regions witnessed a decline in their sheep populations during this period.

By 2022, Kakheti had emerged as the dominant region, accounting for over half (54.6%) of the total sheep population, while Kvemo Kartli's share decreased to 23.9%. Several factors contribute to this trend. One key factor is the declining population in the regions of Samtskhe-Javakheti and Kvemo Kartli, especially in the rural areas where sheep farming has been widely practiced. Additionally, the presence of extensive pasturelands for sheep, both for the winter and summer seasons, has made Kakheti an attractive destination for expanding sheep farms.

In Georgia, sheep farming yields four main products: meat, wool, milk and dairy products, and live sheep. Over the past two decades, sheep meat production in the country has experienced fluctuations, with highs and lows. The lowest point was recorded in 2012, but since then, there has been a gradual increase in sheep meat production.

It's worth noting that sheep meat and live sheep are often considered substitutes by farmers. When there is a surge in demand for exporting live sheep, the production of sheep meat tends to decrease. Concurrently, the sheep population has expanded by more than 100 thousand heads. Presently, the volume of sheep meat production stands at around 5,000 tons. With a conservative estimate, it can be inferred that approximately one in every seven sheep in Georgia is raised for meat production.

Although Kakheti remains the primary contributor to sheep meat production, the rate at which sheep are utilized for meat purposes is notably higher in other regions. This divergence is influenced by various factors, including the practice of using sheep for sacrificial purposes, with lamb and mutton being consumed predominantly in Muslim-majority regions like Kvemo Kartli.

Sheep milk and dairy product production in Georgia has displayed a consistent upward trend over the years, maintaining a stable output of 10 million liters for more than eight years. Unlike meat production, milk production does not face similar constraints. The primary limitation may be the rate of reproduction among ewes, but aside from that, factors such as the prices of meat, live sheep and wool typically do not significantly impact milk and dairy product production.

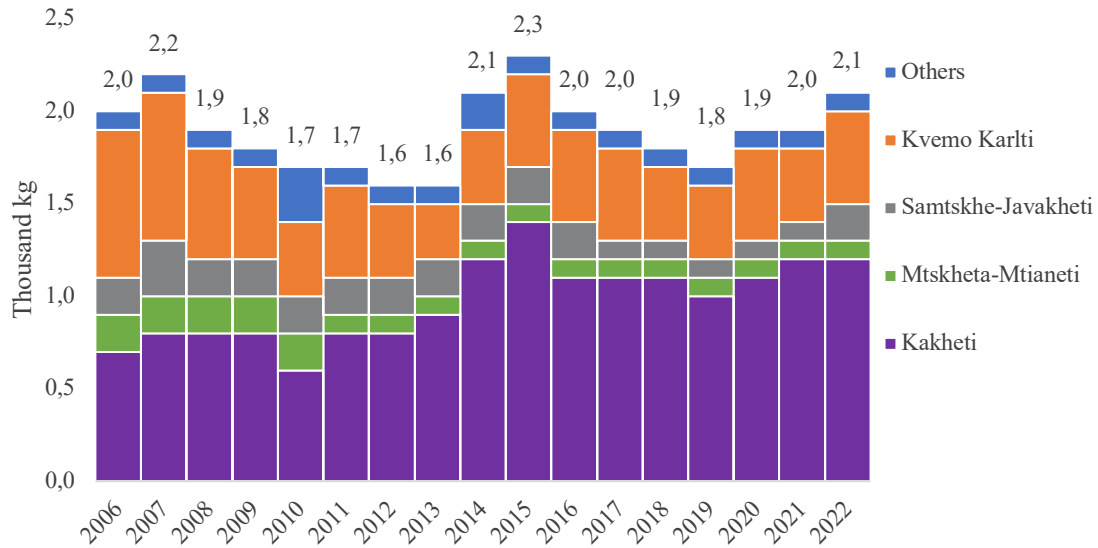
The production of sheep milk and its derivatives has closely mirrored the size of the sheep population in Georgia, albeit with a more pronounced growth trajectory. In comparison to the modest 23.9% growth in the sheep population since 2006, the production of sheep milk and its subsequent products has expanded by 42.4%.

The distribution of sheep milk and dairy product production is relatively uniform across regions, aligning with the population distribution of sheep. However, it's noteworthy that the ratio of dairy products per sheep is somewhat higher in regions such as Samtskhe-Javakheti and Kvemo Kartli. This variation can likely be attributed to cultural distinctions among Georgian, Azeri, and Armenian ethnic groups residing in these regions, as well as differences in sheep breeds used for milk production. These factors collectively contribute to the regional variations observed in sheep milk and dairy production in Georgia.

Wool, among the three primary sheep products (meat, dairy, and wool), experiences the least demand in Georgia. Official records indicate that approximately 2.1 thousand tons of wool are produced in the country.

However, this number can be somewhat misleading. The reality is that a significant portion of the sheared wool is destroyed and disposed of, implying that the actual quantity of wool sheared should be higher.

Graph 2: Production of wool by regions

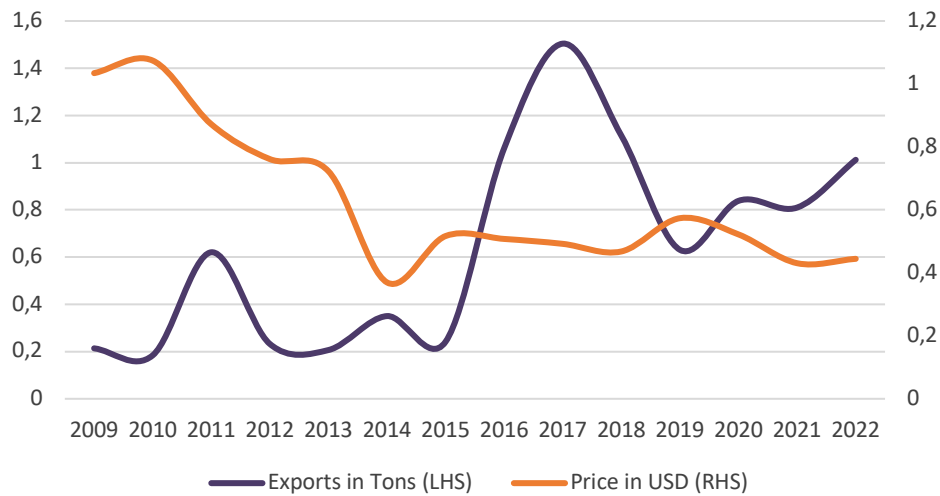


Source: Statistics Office of Georgia

If we make the assumption that around 90% of the sheep in Georgia are sheared twice a year, with each shearing yielding at least 1 kilogram of wool, the total weight of sheared wool would be at least 1,500 thousand tons. This suggests that **less than 0.2% of the sheared wool is put to use for further production**. The underutilization of wool highlights its relatively low demand compared to meat and dairy products, the lack of which was mainly caused by global factors and recent advances in synthetic fibers, like polyester and nylon, in conjunction with the rising demand for vegan-free clothing on the international markets.

In 2022, Georgia exported over a thousand tons of wool to three countries: Afghanistan, Turkey, and India. Among these, India emerged as the largest importer of Georgian wool, accounting for a substantial 56.9% of the total. Notably, India also pays the highest price for Georgian wool, with a rate of USD 0.54 per kilogram. In contrast, Turkey and Afghanistan purchase Georgian wool at lower prices, with rates of USD 0.36 and USD 0.26 per kilogram, respectively.

Graph 3: Export of wool in tons and average weight in USD per kg

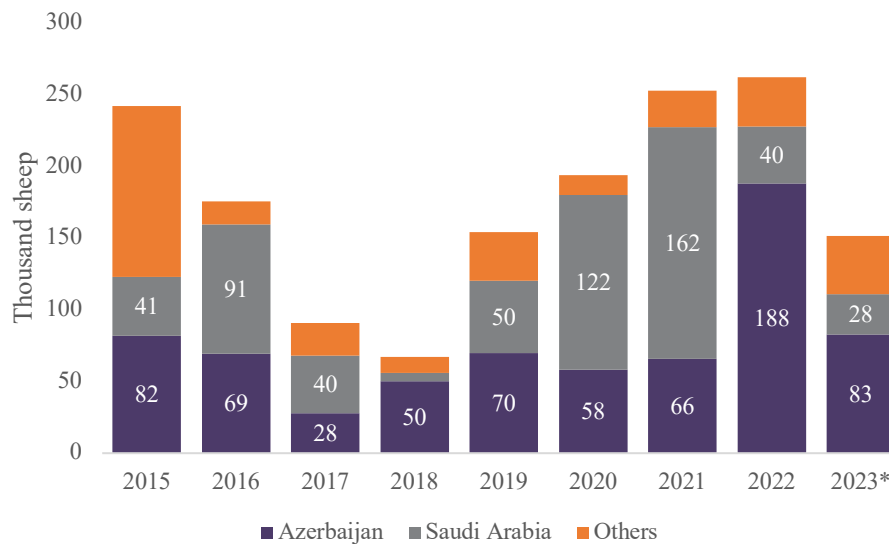


Source: Statistics Office of Georgia

Over the past decade, the quantity of exported wool has shown significant growth, primarily driven by the attractiveness of cheaper wool. During this period, the average price of Georgian wool has decreased from USD 1.03 per kilogram in 2006 to USD 0.44 per kilogram in 2022. It's worth highlighting that the global price for fine wool stands at around USD 10 per kilogram, underscoring the notable difference in wool quality between Georgian wool and fine wool on the global market. The falling wool prices, both on the local and international markets, in conjunction with the increasing popularity of synthetic substitutes, have been noticeable even on the local market levels.

In 2009, thanks to an extensive advertising campaign, Georgian sheep exports experienced a significant surge, primarily directed toward the Middle East and Azerbaijan. These export routes often involved sheep passing through Azerbaijan before reaching their final destinations in various Middle Eastern countries. However, beginning in 2015, Armenia became the sole country, aside from those mentioned previously, to import sheep from Georgia, albeit in relatively small quantities (2600 in 2016). Apart from Armenia, the primary importers of Georgian sheep remained Azerbaijan and various Middle Eastern countries. Notably, among the Gulf countries, Saudi Arabia, UAE, Qatar, and Kuwait consistently emerged as importers, with Saudi Arabia holding the title of the largest importer among them. Interestingly, **in 2022, the number of sheep exported to Azerbaijan surpassed that of those exported to the Middle Eastern countries, even though the overall total of sheep exports continued to increase.**

Graph 3: Export of live sheep in thousands²



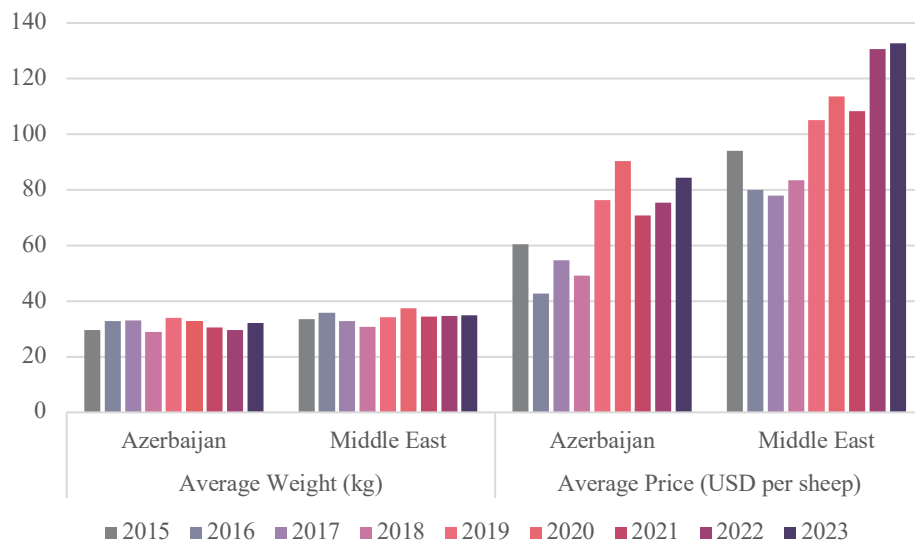
Source: UN Comtrade

Interestingly, the average weight of sheep exported from Georgia varies depending on the destination countries. Sheep exported to Azerbaijan typically range from 30 to 33 kilograms, while those destined for Saudi Arabia weigh between 32 to 38 kilograms. In contrast, countries like Jordan, Iraq, Iran, and Lebanon primarily import sheep weighing above 35 kilograms, and sometimes as heavy as 44 kilograms. This difference in weight categories is reflected in the pricing variations.

For instance, sheep exported to Azerbaijan have an average selling price of USD 67, while those sent to Kuwait fetch an average of USD 77 per sheep. In Saudi Arabia, where larger sheep are preferred, the average price per sheep is notably higher at USD 109. It's important to note that in 2023, both the average weight and average price for sheep exported to the Gulf Countries have seen considerable increases. In 2023, the average Georgian sheep sold to Saudi Arabia commanded a price of USD 170, and in Kuwait, the average price reached USD 140. These prices represent a significant uptick compared to previous years. However, it's worth highlighting that **direct exports to the Gulf countries have decreased substantially, suggesting that only the more expensive export options have persisted.** While the average weight of sheep has remained relatively stable, fluctuating between 32 to 34 kilograms over the years, the price has experienced a notable increase, rising from USD 82 per sheep to USD 110 in 2020, although it has not seen further growth following the pandemic.

² For the year 2023, only the first 7 months are being used

Graph 4: Average weight and price of exported live sheep by destination³



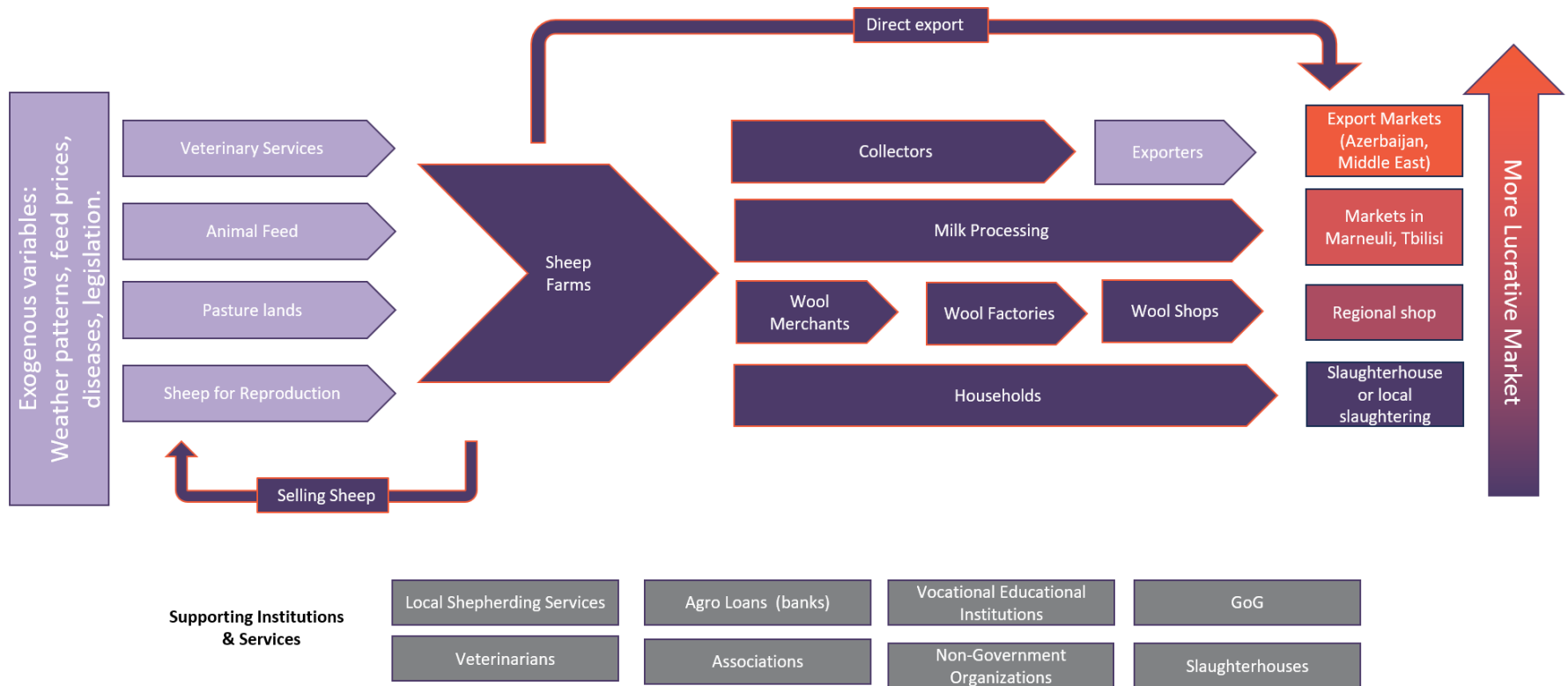
Source: UN Comtrade

The willingness of Gulf countries to pay a high price for Georgian sheep highlights a substantial potential for increasing both the price and quantity of sheep exports to these nations. Additionally, considering the size of markets in countries like Saudi Arabia, Kuwait, and the UAE, it's highly improbable that Georgia could fully satisfy the demand even if all available sheep were exported.

In recent years, there has been a shift in demand in Gulf countries, with an increased preference for heavier sheep and carcasses. Furthermore, the expansion of live sheep and meat supplies from African countries has led to a gradual erosion of the competitiveness of Georgian sheep. This evolving landscape underscores the need for Georgia to adapt to changing market dynamics, improve the quality of its sheep, and explore avenues for enhancing its position in the global sheep export market.

³ For the year 2023, only the first 7 months were taken

Graph 5: Value Chain Map of Sheep Sector



4. Value Chain Actors

4.1. Sheep farming overview

The sheep value chain presents a multifaceted framework, encompassing pivotal sectors including meat, wool, and milk production. While the foundational inputs within this value chain remain consistent across all three sectors, distinctions emerge within the processes, product markets, and consumer dynamics. These divergences are notably pronounced and contribute to the intricate characteristics of the sheep value chain.

Intriguingly, **the geographic context plays a pivotal role in shaping the nuances of this value chain. Notably, the regions of Kvemo Kartli and Samtskhe-Javakheti exhibit distinct characteristics owing to variances in their ethnic compositions.** This intrinsic distinction leads to notable disparities in production practices, market preferences, and consumer behaviors within these locations.

Within the realm of sheep ownership, a spectrum of sizes exists, each marked by distinctive levels of engagement in both input provision and production processes. Notably, the magnitude of sheep ownership creates a diversity that shapes the operational dynamics of this sector. Farms with a flock comprising fewer than 100 sheep are commonly categorized as operating on a smaller scale. This part of ownership often functions with a notable degree of self-reliance, with proprietors assuming various roles encompassing veterinary care, shepherding, and other indispensable tasks. Such farms are usually found near the municipal centers, especially those of Akhaltsikhe and Bolnisi.

It is noteworthy, however, that instances arise where sheep numbers are so modest, often fewer than 40 to 50, that proprietors opt to delegate the care of their animals to fellow farmers or specialized sheep ranchers. In such scenarios, the practicality of outsourcing care takes precedence over maintaining a more direct approach. The associated cost of this arrangement varies heavily, with an average expense of approximately GEL 5 per sheep. As stated previously, such instances usually occur in somewhat abundantly populated areas, where it would make financial sense. Such places include northern parts of the regions, mainly Akhaltsikhe and Marneuli.

When sheep owners engage in the sale of commodities such as lamb, live sheep, cheese, and wool, they retain the entirety of the income. Conversely, individuals responsible for the care of sheep on behalf of others find their earnings relatively diminished as the income is not shared with them. However, such caretakers usually extend their services to cover hundreds, and sometimes even thousands of sheep. Should these caretakers extend their services across a diverse array of owners, the cumulative responsibility of overseeing numerous sheep adds up to a significant amount.

Bigger farms from the target municipalities typically accommodate around 200 to 800 sheep. As the sheep population grows, there is a noticeable reduction in the per-sheep maintenance expenses due to economies of scale. According to the interviewed farmers, this size threshold marks a substantial decrease in maintenance costs. However, it's important to note that as the flock size increases, so does the time and effort required for overseeing the sheep. It is important to note that even at such sizes, the increased revenue does not make hiring additional labor, like extra shepherds or implementing additional management strategies financially feasible. Some of the farmers expressed their desire to hire shepherds, but it would only make financial sense upon increasing the size of the flock to 1000. Thus, farmers who were interviewed and who manage similar-sized sheep populations report a demanding routine wherein they dedicate themselves to herding the sheep every day. This intensive commitment leaves them with no leisure days to even travel to Tbilisi for purposes such as visiting relatives or attending training sessions.

4.2. Sheep breeds

The main input in this value chain is the sheep themselves. There are two popular indigenous breeds of sheep in Kvemo Kartli and Samtskhe: Tushuri and Imeruli. However, one breed of sheep dominates others, to the point that a significant number of interviewed farmers said that they owned standard Georgian breed sheep: Tushuri sheep is a larger breed compared to the Imeruli breed. Rams can weigh up to 80 kg, and ewes can weigh up to 60 kg, though average live weight is significantly less.

Additionally, the ease of feeding Tushuri sheep further solidifies their prominence within the region's sheep breeds. This aspect simplifies the management of Tushuri sheep, as their dietary requirements are more straightforward and manageable, reducing the burden on farmers. Consequently, Tushuri sheep have emerged as the dominant breed among local farmers.

While there are still some individuals in Kvemo Kartli and Samtskhe who maintain small populations of Imeruli sheep, their numbers remain relatively low compared to Tushuri sheep. This discrepancy in ownership can be attributed to the perceived disadvantages of the Imeruli breed, such as lower average weight and reduced milking potential. Nevertheless, for certain farmers, the distinctive taste of Imeruli sheep meat justifies their continued cultivation, making it a viable choice for a select group.

Historically, the Samtskhe-Javakheti region, particularly the municipalities of Akhaltsikhe and the northern parts of Akhalkalaki, where Georgians are more populous compared to Armenians, had been primarily characterized by the presence of a sheep breed known as Javakhuri. These Javakhuri sheep are notably larger than their Tushuri counterparts, with some farmers estimating them to be approximately 50% larger and weighing between 30% to 40% more. During a visit to the sheep pastures near the village of Kotelia, a farmer who owned 600 sheep, both Tushuri and Javakhuri breeds, conducted a comparison between the two.

In this comparative analysis, it was observed that Tushuri rams born in December would typically weigh around 40 kilograms by August, whereas a Javakhuri ram of the same age, under similar conditions, would weigh approximately 50 kilograms. However, it's important to note that the advantages of Javakhuri sheep over Tushuri are somewhat limited. Javakhuri sheep face constraints, such as an inability to travel long distances and a lower milk production capacity. Some farmers even describe Tushuri sheep as having significantly greater endurance.

This lack of endurance in Javakhuri sheep became evident two seasons ago when, due to the high cost of animal feed, sheep had to be relocated to pastures in Kvemo Kartli and Kakheti. Farmers reported that the sheep struggled during such long journeys. Consequently, due to these limitations and the expensive nature of animal feed, the population of Javakhuri sheep in the region has declined by over 50% in recent times. These challenges underscore the complex dynamics and trade-offs faced by farmers in choosing between sheep breeds and the management of their livestock. **The majority of farmers who continue to raise Javakhuri sheep do so out of a sense of cultural heritage and tradition.** It remains uncertain how the distribution of this sheep breed will evolve in the region. On one hand, the cost of animal feed is steadily rising, while the selling price of the sheep has not seen a corresponding increase. On the other hand, the expenses associated with securing pastures are also on the rise.

The dynamics of the local sheep market have recently witnessed another transformation. In the southern part of Javakheti, particularly in the villages of the Ninotsminda municipality, **a growing number of farmers with Armenian heritage have introduced a new breed known as the Armenian Semicoarsewool sheep.** Some refer to it by its older, informal name, Baldas, although its official designation is the Armenian Semicoarsewool sheep. This breed was originally introduced approximately

50 years ago in the mountainous regions of Armenia, with specific adaptations for the challenging alpine environment characterized by cold temperatures and harsh winter conditions in sheep pens.

The primary advantage of the Armenian Semicoarsewool sheep lies in its remarkable weight. Half-year-old lambs from this breed can weigh as much as fully grown Tushuri sheep, while fully mature Armenian Semicoarsewool ewes typically average around 60 kg, and rams can reach an impressive 100 kg in weight. It's worth noting that some farmers near the Armenian border have reported even higher weights, with certain rams, according to the farmers themselves, reaching between 110-120 kg. The advantages are further bolstered by the high milking capacity of this breed.

Table 1: Sheep breeds and their characteristics

	Ram Weight	Lambing Rate	Milking Potential	Endurance over distance	Present in regions
Tushuri	40	100%	High	High	Both Kvemo Kartli and Samtskhe-Javakheti
Imeruli	30	250%	Medium	Medium	Same as Tushuri, but considerably lower rates
Javakhuri	55	100%	Low	Low	Akhalkalaki and Akhaltsikhe municipalities
Semicoarsewool & Baldas	60	150%	High	Low	South-Eastern villages in Ninotsminda Municipality

Source: Interviewed farmers and merchants in the target municipalities

4.3. Sheep reproduction

The majority of farms in the regions of Samtskhe-Javakheti and Kvemo Kartli, compared to other regions, are fully self-sustaining, meaning that farmers do not need to purchase additional sheep since they engage in breeding practices. The rate of reproduction can vary depending on the specific breed of sheep and the type of farming operation. On average, Tushuri sheep have an annual reproduction rate ranging between 0.9 and 1, while Imeruli sheep typically exhibit a rate of 2. In the case of Armenian Semicoarsewool sheep, the annual reproduction rate reported by farmers varies considerably, ranging from 1 to 1.5. However, it's worth noting that this breed is often used for heavy milking in some farms, which may lead to a potentially higher actual reproduction rate.

As farmers, mainly Armenian ethnic minorities, have highlighted, the milking process itself can potentially impact the fertility of ewes: during milking, essential nutrients are removed from the ewe's body, which can hinder her ability to conceive and successfully carry a lamb to term. Additionally, farmers are advised to avoid subjecting pregnant ewes to vaccinations, shearing, or significant changes in their environment during the early stages of pregnancy, which can be particularly difficult in mountainous areas.

Some farmers, particularly those in the Marneuli municipality, have shared their insights into optimizing reproduction rates and ensuring the overall health of their sheep, particularly ewes. They emphasize the importance of adhering to specific guidelines. To begin, ewes should not be bred until they reach a critical

weight, which is typically a proportion of the weight of fully mature ewes. It's crucial to allow ewes to reach this weight naturally, without overfeeding, a process that usually takes between 6 to 8 months. Similar attention should be given to rams, as they tend to lose weight during the reproductive period and require a specialized diet. It's noteworthy that not every interviewed farmer possesses this knowledge, rather following more traditional approaches. Such orthodox methods are more prominent in farms belonging to ethnic minorities, with Georgians being far more involved in various trainings.

For effective reproductive management, maintaining an appropriate ratio of ewes to rams is of high importance in sheep farming. Ideally, this ratio should exceed 1 to 30, although it may vary when considering ram lambs. There are instances where a higher number of rams is required when the reproductive cycles of ewes overlap. In a typical farm comprising around 500 sheep, an additional 150 sheep are usually generated through reproduction each year. Among these, approximately 80 are typically rams, while the remaining 70 are ewes. Generally, the majority of rams are sold, while all ewes are retained for either fattening or further reproduction. In some cases, rams are directly exchanged for ewes. This practice serves to minimize the interval between selling and acquiring ewes, expedite farm expansion, and reduce the risk associated with potential arbitrage losses.

4.4. Sheep Market Price and Costs

The pricing of rams upon sale, as reported by farmers, tends to vary depending on the type of buyer. Local buyers typically offer approximately GEL 250-300 per sheep, whereas foreign buyers, or rather second-hand dealers who are then selling the sheep to foreigners, pay USD 85 per sheep. It is worth noting that, given the prevailing exchange rates, the latter offer represents a considerably lower value in local currency. Due to this discrepancy, when farmers want to expand the size of their farm, they typically avoid selling the rams and afterward buying the ewes, as other than time lost during trading, farmers can lose somewhere between GEL 50-100.

4.4.1. Medical and Veterinary Costs

The predominant expenditures incurred by sheep farmers mainly revolve around maintenance costs. Among these costs, medications represent a relatively smaller portion, with two primary types being regularly utilized: dewormers and tick control medication. Dewormers are administered once a year and typically amount to GEL 1 per sheep, while tick control products necessitate five applications annually, each costing around GEL 5. Although these expenses may appear modest on an individual basis, they can accumulate significantly over the course of a year. In fact, an annual outlay of GEL 26 for medications alone could account for more than 10% of the selling price of a sheep, especially if the sheep is retained for longer than a year. Fortunately, the accessibility of these medications is generally not a concern for farmers, at least for those living in the lowlands. Even in instances when farmers have limited free time to travel to Tbilisi or to a municipal center (such a case was common, the products are readily available through local resellers and shops, particularly in areas like Marneuli and Akhaltsikhe.

Despite the effort of farmers to maintain sheep as healthy as possible in addition to the government-provided annual vaccination, the average loss of sheep in the region each year is around 5%. The losses were relatively high in the mountainous regions of samtskhe-Javakheti: sheep are more likely to become prey to predators and dogs, and higher infection rates were recorded there.

4.4.2. Pastureland costs

The predominant expenses in sheep farming typically revolve around the cost of feeding the sheep. During our interviews, we encountered three distinct approaches to sheep farming with varying degrees of emphasis

on grazing practices. All of these farming operations are essentially pastoral in nature, yet they exhibit different levels of grazing intensity.

Among small-scale farmers who own fewer than 200 sheep, approximately half expressed reservations about adopting a nomadic system that involves relocating sheep to new pastures each season. For these farmers, the feasibility of such an approach is often questioned, as their sheep primarily graze on the nearest available pastureland, located in a close vicinity to the owner's farm. This particular strategy should not be equaled with an intensive farming model, and it is worth noting that many of these farmers engage in mixed farming practices, which include both sheep and cattle. Consequently, they tend to prefer not to incur additional expenses related to hiring caretakers.

On the other hand, farmers who embrace a semi-nomadic or fully nomadic style typically manage larger flocks, ranging from 200 to 2,000 sheep. These farmers adopt a more dynamic approach to grazing management, emphasizing the seasonal movement of their sheep to different pastures.

Farmers from the designated municipalities who adhere to a nomadic pastoral way of life have a seasonal pattern of movement. During the summer months, they typically relocate to the mountainous regions of Samtskhe-Javakheti, while in the winter, they shift their operations to either Kvemo Kartli or Kakheti. However, this migration presents certain challenges, especially for Georgian farmers in Akhaltsikhe who practice nomadic pastoralism.

One notable issue they face is the **lack of adequate infrastructure that caters to the specific needs of their sheep**. This concern is particularly prominent in the Marneuli and Bolnisi municipalities, where the sheep are required to traverse various highways and private lands during their seasonal migrations. These routes are not always conducive to the well-being and safety of the animals, which has led to a few accidents and significant financial losses.

When it comes to the main costs, prices for pasturelands differ by region and time. Farmers from Akhaltsikhe reported that the cost of allowing sheep to graze on pasture land in the mountainous regions of Samckhe-Javakheti was calculated based per sheep: in 2021 it cost 25 GEL per sheep, GEL 10 in 2022, and in the current season, it cost about GEL 7. The prices are for the summer season, as the mountainous region of Samchke-Javakheti rarely offers winter pastures, however when it does, the winter pastures are considerably expensive. In the region of Kvemo Kartli, pasture lands are offered both in winter and in summer, though the price is the same regardless of season. As an example, during the last season, prices were the following: GEL 18 in Tetrtskaro, GEL 16 in Gardabani, and GEL 10 in Tsalka.

4.4.3. Labor costs

The rising costs associated with sheep farming have become a pressing concern, especially for farmers who own flocks comprising over 1000 sheep. To effectively manage such large herds, these farmers often find it necessary to employ 2 or 3 shepherds. In the past, the monthly salary for a shepherd typically ranged from GEL 600 to 700. However, in recent years, these wages have experienced a significant surge, creating financial challenges for sheep farmers. This wage inflation is particularly pronounced in the rural regions of Akhalkalaki, Ninotsminda, and Aklahtiskhe. In response to the escalating labor costs, families of shepherds are compelled to relocate to different villages in closer proximity to the pasturelands. Among these areas, Ninotsminda stands out as the most affected, where the highest shepherding cost per thousand sheep reached a staggering GEL 4500. This situation is a direct consequence of the **severe labor shortages prevalent in these mountainous regions**. Despite the active involvement of sheep owners in the shepherding process, the persisting labor scarcity, especially in hilly areas, poses a significant threat to the traditional nomadic lifestyle of sheep farming.

4.5. Changes in Nomadic Pastoralism

The traditional way of raising sheep by constantly moving them from one grazing area to another, which used to be common among both Georgian and Armenian farmers, has become a thing of the past in particular for the latter - for those who own Armenian Semicoursewool sheep. Such a difference can be explained by the fact that the Armenian Semicoursewool sheep are not well-suited for long-distance travel due to their weight, unlike other breeds such as Tushuri or Imeruli sheep.

Over the years, Armenian farmers have adapted their practices by choosing to settle in close proximity to the pasture lands. The exact distance between their settlements and the pastures can vary, but in our observations, the farthest distance was approximately a one-and-a-half-hour walk on foot. This shift in approach allows the sheep to spend most of their day grazing on the pastures, while they are brought back to sheep pens for shelter during the night. This approach also allows farmers to be far more mobile and less constrained, as farmers with such an approach could afford to have other animals as well, the most common being livestock.

However, this approach has its drawbacks, primarily because the sheep are confined to sheep pens and require continuous feeding. The duration of the winter season when the pastures become unusable varies across different regions. In Kvemo Kartli, particularly in the Marneuli municipality, some pastures remain available for grazing throughout the entire year. In contrast, in Samtskhe-Javakheti, there is a noticeable period during which the pastures are covered with snow, making them inaccessible to the sheep.

The length of this snow-covered period varies from one location to another. For instance, in Akhaltsikhe, the region experiences an extremely cold winter lasting only about two months, during which the pastures are inaccessible to the sheep. In contrast, in Ninotsminda, the flock may face a more extended period, exceeding four months, during which they are unable to graze on the pastureland due to the heavy snow cover.

The practice of semi-nomadic pastoralism is also facing significant challenges. Nearly every farmer, whether in Kvemo Kartli or Samtskhe-Javakheti, has voiced their discontent with the current system of pastureland leases. This issue dates back to the dissolution of the Soviet Union, as prior to that, the primary winter destination for these farmers was Dagestan and the northeastern regions of Azerbaijan.

Since the dissolution of the Soviet Union, farmers resorted to self-assigning unused pastureland, a practice that was often considered the most optimal solution. This approach offered several advantages. Firstly, it ensured that pastureland was utilized by those farmers who genuinely needed it. Additionally, since there were no financial gains associated with this land and farmers understood that they would be using it over the long term, they took care to manage the land responsibly, preventing overgrazing and ensuring its sustainability. However, with the introduction of agricultural land leasing systems, unregistered agricultural land has been either auctioned or leased to individuals residing within the same municipality as the land.

The challenges stemming from the land leasing arrangements have had varying impacts on different farmers, primarily falling into three main categories of issues:

Misuse and Overuse of Leased Land: One prevalent issue involves the misuse of leased land by its new owners. This misuse often takes the form of overpricing and overgrazing, which can harm the long-term health and sustainability of the pastureland. Overgrazing, in particular, can lead to soil degradation and a decrease in the quality of forage available for livestock.

A farmer in Bolnisi municipality has expressed his dissatisfaction regarding a recent development. For the past twenty years, he and his family have used a piece of pastureland in Marneuli for grazing their livestock.

However, this land has now been leased to an individual from Marneuli, who not only imposed fees for its usage but also changed the traditional practice of rotational grazing to continuous grazing.

Rotational grazing is a customary method employed by local farmers to sustain the quality of pasturelands. In this system, pasturelands are divided to facilitate the movement of sheep from one section to another, allowing plants to regenerate. Alternatively, farmers rotate their sheep across different pasturelands. While this approach is simpler and less intensive than weekly rotational grazing, it still serves to maintain the grass's quality.

The issue arises when financial incentives and time constraints encourage the new landowner to permit sheep to overgraze the pasturelands. This can lead to the degradation of the pastureland and a decline in the quality of the grass. Consequently, the traditional practice of rotational grazing, which prioritizes the long-term sustainability of the pastureland, is being replaced by a less sustainable approach due to economic pressures and land lease terms.

Access Restrictions: Another significant concern is that some new landowners prohibit the original farmers from using the leased land for grazing or as a passageway. This restriction can disrupt traditional grazing patterns and migration routes that have been practiced by these farmers for generations. It not only affects the livelihoods of the farmers but also increases the maintenance costs significantly.

Such issues predominantly arise in the mountainous regions of Samckhe-Javakheti, where the distance between farms and pasturelands is relatively short, often taking around two hours to traverse. This is in contrast to longer paths, which require three to four times more time for travel. During our interviews with two farmers located near Paravani Lake, situated on the border of Tsalka and Ninotsminda municipalities, both farmers shared their concerns about a situation where an individual had purchased several hectares of land. This land was strategically positioned between their sheep pens and the pasture lands near the Godorebi Mountain, a route they had used for over a decade. The new owner of this land has objected to the passage of the flock through their property, and with no viable alternatives available, the farmers and shepherds are now faced with the challenging decision of potentially risking legal repercussions to access their essential pasture lands.

During the interviews conducted, one of the farmers raised the possibility of corruption as an explanation for the land allocation issues. However, upon closer examination and additional discussions with officials from the municipality of Ninotsminda, it was revealed that the land had been leased through an online auction. This revelation shows the critical aspect of the situation: the farmers in the region have extremely limited access to the internet and predominantly rely on older mobile phones for communication. Consequently, they were not even aware of the online auction process. In fact, a significant number of farmers, both those engaged in small-scale and large-scale agriculture, have expressed their concerns regarding these online auctions. Their primary concern is that they are effectively excluded from participating due to their limited internet access. This inability to engage in online auctions, which has become the preferred method of land allocation, has raised substantial issues and challenges for farmers in the region.

Limited Access to Pasture Lands: The third issue centers around farmers who were unable to participate in the land lease auctions. This exclusion leaves them without access to pasture lands, which are essential for their semi-nomadic pastoral way of life. These farmers face the risk of losing their livestock or being forced to alter their traditional practices, which may not be sustainable or feasible.

This issue is particularly pronounced in the western region of Akhalkalaki Municipality, specifically in the village of Gogasheni near Vardzia. According to local farmers, the outskirts of the Vardzia Monastery have served as winter sheep pens for centuries, complemented by the nearby lands and canyon for pasture.

However, the authorities have now called upon the farmers to relocate their sheep from these culturally significant locations. The predicament emerged when the farmers began seeking alternative pasturelands in close proximity to their historical grazing areas, only to find that most of these lands had already been leased for different purposes. Even when individual farmers sought to participate in online auctions as a means to obtain land, they consistently found themselves outbid by more financially resourced competitors. While pooling their resources, the farmers could potentially have collectively secured the necessary lands. Nevertheless, at present, there are no cooperatives or initiatives in place to assist farmers in navigating such circumstances.

The issue of insufficient pasturelands has become increasingly critical, driven by a notable rise in the cost of feeding sheep over the past three years. As previously mentioned, a substantial number of farmers resort to housing their sheep in pens during the winter, providing them with supplemental animal feed. The primary feed sources utilized by farmers consist of barley and hay. In contrast to other agricultural sectors, such as livestock farming, the predominantly nomadic pastoral lifestyle doesn't afford farmers the opportunity to cultivate their own crops. Consequently, they engage in early stockpiling of feed, particularly in Samtskhe-Javakheti, where this practice can commence as early as the beginning of summer. To put this into perspective, a single sheep requires approximately 10 kilograms of barley and one hay bale, with each costing around GEL 10. It's worth noting that the cost of sustaining larger sheep, such as the Armenian Semicoarsewool, which has significantly greater weight, can be even higher. In comparison to the fees associated with accessing winter pasturelands, ranging from GEL 10 to 18, manual feeding proves to be relatively more expensive, reaching levels of GEL 20-25. In some cases, feed transportation costs are added, but in the case of Samtskhe-Javakheti, most of the farmers supply their own feed as they follow a semi-nomadic lifestyle, whereas in Kvemo Kartli the distance between the nearest animal feed market or a farm is usually minimal, therefore during the interviews transportation costs were usually neglected.

4.6. Wool Production

4.6.1. Wool Shearing and Costs

Wool shearing represents an additional expense in the context of sheep farming - contrary to the popular image, it's important to note that wool shearing has not yielded profits in this region for over a decade; instead, it has become a necessary practice. This shearing occurs seasonally, typically during the Spring and Late Fall periods. Its primary purposes are to reduce the risk of parasite infection, prevent heat stress, and maintain the mobility of the sheep.

All of the farmers we interviewed mentioned that they employ manual shearing methods, utilizing traditional shears. The use of electric shearing machines is not a viable option, primarily due to the absence of electricity in the mountainous areas. Even in areas where electricity is accessible, the cost associated with mechanized shearing is seldom financially justifiable.

The costs associated with shearing sheep in the region display significant variation, ranging from GEL 2 to 5. The primary factor contributing to this cost disparity is the type of labor utilized for the shearing process. In our interviews, the majority of farmers indicated that wool typically held little to no financial value for them, and they often preferred to dispose of it. This tendency is particularly pronounced with wool sheared in the spring. Wool sheared during the spring tends to be less desirable due to its longer exposure to the sheep, resulting in deteriorated quality and a notably higher level of dirtiness. In contrast, wool sheared in the fall (or occasionally in late summer) is sometimes sold to wool merchants at a rate of GEL 2 per kilogram. This practice is often not financially advantageous but is primarily undertaken as an efficient means of disposing of wool.

4.6.2. Wool Merchants In most cases, wool merchants play a crucial role in handling the transportation logistics and establishing connections with sheep farmers. The number of wool merchants is limited, and

many of them are based in Akhalkalaki and Marneuli. It's important to note that wool trading is not their primary occupation. The primary task undertaken by these wool merchants involves washing the wool with cold water, which is then sold in the market for around GEL 5 per kilogram.

The ultimate destination of this wool is not always easy to pinpoint precisely, primarily because of the very low demand for wool in the region. However, there are extremely limited options. One of them is a wool shop located in Akhalkalaki, which employs a small staff of less than half a dozen people. This shop specializes in traditional wool products and primarily serves the Samtskhe-Javakheti region. It typically doesn't require additional wool from other areas due to the already high supply in the nearby municipalities.

On the other hand, the fate of sheared wool in Kvemo Kartli is somewhat less clear. The wool that isn't immediately discarded, although a relatively small fraction, finds its way to Azerbaijan through the Marneuli market or to wool factories situated across Georgia. Usually, the wool is transported to Azerbaijan by Azerbaijan nationals or Azerbaijan minorities living in Kvemo Kartli. One such factory that is somewhat popular among farmers in Marneuli operates in Dusheti, outside of the Region. These channels serve as the final destinations for the wool, reflecting the relatively limited demand and utilization of wool in the region.

4.7. Dairy Production

Milk and meat products derived from sheep experience notably limited demand within the regions under consideration. A variety of cheeses are crafted from ewe's milk, including Chogi, Kalti, and the most renowned among them, Guda. All these cheeses are exclusively derived from Georgian sheep breeds. In contrast, Armenian farmers living in Samtskhe-Javakheti predominantly favor the production of Lori cheese. Within the Ninotsminda municipality, approximately six farmers are actively engaged in the sale of Lori cheese on a somewhat larger scale.

Lori cheese is characterized as a soft, brined sheep cheese with strong ties to Armenian culinary traditions. It is made from the milk of Semicoursewool sheep that graze on high mountain pastures. In comparison to Guda cheese, Lori exhibits a more pronounced sourness and a bolder flavor profile. Typically, Lori cheese presents itself in hues of white or pale yellow and possesses a crumbly texture. It is commonly available in a brine solution, although dried or smoked variants can also be encountered.

Lori cheese primarily finds its place as a complementary addition to various dishes rather than being a standalone food item. It is worth noting that Georgians, in general, exhibit a lesser degree of familiarity with this particular cheese variety and often refrain from its purchase. The presence of black portions in some Lori cheese varieties further contributes to this reluctance. Consequently, Lori cheese occupies a distinctive niche within the market, predominantly appealing to the Armenian communities in both Tbilisi and Ninotsminda.

Farmers have highlighted that the most challenging aspect of the cheese-making process revolves around milking, a task that demands a delicate and meticulous approach. Milking sheep is a particularly intricate undertaking because the udder represents an exposed wound, making it imperative to safeguard against the intrusion of bacteria into the milk. While maintaining good hygiene practices is undeniably essential, it is equally crucial to employ a skilled and adept approach. Acquiring costly milking machines was deemed unfeasible by all the farmers interviewed.

Regrettably, sourcing such skilled labor can pose a considerable challenge, especially in the mountainous regions of Samtskhe-Javakheti. This scarcity of skilled milkers has had a tangible impact, resulting in the production of only about a third of the potential milk and dairy products that could otherwise be generated. Given the rising labor expenses and the declining prices of cheese in the market, largely attributed to the substantial influx of milk powder, the economic viability of cheese production has significantly diminished.

4.8. Meat and Live Sheep Market

4.8.1. Meat Sector

Concerning the meat sector, it is noteworthy that no farmers in either of the mentioned regions have reported the sale of lamb meat and mutton over the past and current seasons. Instead, rams and lambs are primarily marketed alive and subsequently processed through household or slaughterhouse operations within the Kvemo Kartli region.

Distinct from other Georgian regions where sheep play a significant role in orthodox traditional sacrifices, Samtskhe-Javakheti and Kvemo Kartli primarily target Muslim-majority communities in areas like Marneuli and its surrounding municipalities. This strategic focus is underpinned by the fact that sheep meat is considered permissible, or halal, in accordance with Islamic dietary laws. This halal designation, combined with the cultural significance of sheep meat in various festivals, serves as a key driver for its sale and consumption in these regions. Consequently, these areas have carved out a unique market niche, capitalizing on the demand for halal sheep meat and its role in cultural festivities.

4.8.2. Collectors, Exporters and International Markets

In many instances, when sheep are sought after for religious or cultural purposes, the intermediaries involved between the farmers and the ultimate consumers are relatively few in number. Collectors or household members typically engage directly with the farmers, assuming responsibility for transportation costs. Nevertheless, it is worth noting that a subset of farmers residing in the Marneuli municipality have indicated their use of sheep as a means to generate immediate cash flow. They achieve this by selling their sheep slightly below the prevailing market price at the Marneuli market. It's important to highlight that farmers in this context have limited influence over pricing, primarily due to the decreasing demand for Georgian sheep.

The majority of sheep, in certain instances exceeding 95% of the total, find their way to international markets. The journey of these sheep involves multiple transitions, as they are initially sold to collectors and subsequently passed on to exporters. It is worth noting that some farmers, particularly those of Georgian origin residing in the Armenian-dominated regions of Akhalkalaki and Ninotsminda, have voiced their discontent with the considerable profit margins collectors are able to extract from them. Through our interviews, it became evident that, on average, farmers sold their sheep to collectors for approximately USD 85, whereas these collectors then resold the same sheep for USD 100. It is important to emphasize that only a small number of farmers possessed any information regarding the ultimate selling price or the destination of their sheep.

A relatively recent development in the sheep-selling landscape involves the categorization of sheep based on their weight, signifying a departure from the previous practice of selling them in bulk quantities with less emphasis on individual weight. Currently, the average price hovers around GEL 10 per kilogram, but sheep weighing as low as 35 kilograms are typically sold for GEL 270. This pricing structure reflects a new trend wherein collectors and exporters segregate sheep based on their weight, with sheep under 30 kilograms no longer being sought after. In some instances, smaller sheep are discouraged from entering the market through notably lower purchase offers, as illustrated in the aforementioned example, and at times, they are outright declined by buyers.

Farmers generally lack a clear understanding of the rationale behind these significant changes in the market dynamics. Collectors, on the other hand, cite their adherence to the demands of larger exporters as the primary reason for these shifts. Some collectors have mentioned that Gulf countries, in particular, have begun to favor larger sheep carcasses. The preference for larger carcasses offers several advantages, including reduced transportation costs, lower logistical expenses, and extended shelf life, as it inhibits rapid

carcass discoloration. This emerging trend also accounts for the increased desirability of physical attributes, such as a higher degree of fat cover on sheep, as they align with the evolving demands of the export market.

A prevailing observation among the majority of farmers is a substantial decline in the demand for sheep. Interestingly, when we conducted interviews with various farmers, a diverse array of ideas and speculations emerged to explain this phenomenon. However, one hypothesis echoed most frequently is that the Georgian sheep market has lost its appeal to Gulf markets due to instances of exporting low-quality sheep. Additionally, some farmers have pointed out that heightened competition from African countries, such as Ethiopia, Nigeria, Sudan, and others, has eroded the competitiveness of Georgian sheep in the international market.

4.9. Funding and External Stakeholders

This section includes the analysis of value chain financing and value chain technical assistance (skills development), focusing specifically on shepherders and producers of products derived from sheep-related activities.

4.9.1. Government Agencies

Two government agencies, the Rural Development Agency (RDA) and Enterprise Georgia (EG), play pivotal roles in supporting agricultural activities related to sheep herding, as well as manufacturing activities associated with the production of products derived from sheep-related activities.

Rural Development Agency (RDA)

The Rural Development Agency (RDA) operates as a Non-entrepreneurial Non-commercial Legal Entity (NNLE) under the Ministry of Environment and Agriculture of Georgia. Its central mission revolves around promoting agricultural development across the country. RDA oversees a range of support programs aimed at enhancing access to finance for agricultural entrepreneurs and fostering their capacity development, thereby strengthening the overall resilience of the sector.

Although none of RDA's programs specifically target the sheep value chain, they do encompass comprehensive support for the sector. For further information about the specific programs provided by RDA, please refer to the table below.

Preferential AgroCredit Project

Launched in 2013, this program aims to increase access to finance for individuals involved in agriculture by providing them with cheap and affordable terms on commercial bank loans. Beneficiaries can obtain preferential loans to establish new enterprises or expand existing ones. The program covers primary production, agro-processing factories, packaging, and storage facilities. The program consists of three financial products – preferential agrocredit project for current assets, preferential agrocredit project for fixed assets, and preferential agro leasing.

In the frames of the program, RDA covers a portion of the interest rate on loans issued by banks and provides secondary collateral for it. Loan amounts vary from 20,000 GEL to 5 million GEL, depending on the project type. This program is well-known among rural entrepreneurs. The interviews attested that all of them have heard of it, and most of them are using it.

In Samtskhe-Javakheti and Kvemo Kartli, the program counts 11,049 (9,496 in target municipalities) financed projects since its launch. Out of these, 901 (859 in target municipalities) were related to the sheep value chain. The table below (table 1) shows the number of financed projects in the target municipalities. This is the only program where data allows disaggregating sheep-sector-related projects.

Table 2: Number of projects supported within the Preferential AgroCredit Project as of July 31, 2023, by municipality

Region	Municipality	All financed projects	Projects related to the sheep value chain
Samtskhe-Javakheti	Akhalkalaki	1,452	4
	Akhaltzikhe	951	4
	Ninotsminda	1,227	37
Kvemo Kartli	Bolnisi	778	85
	Gardabani	1,388	221
	Dmanisi	256	91
	Marneuli	2,495	414
	Tsalka	949	3
	Total	9,496	859

Source: RDA

State Technical Assistance Program

To participate in the project, potential beneficiaries must have a co-financing agreement concluded within the framework of the Agency's programs/projects, and they must be registered in the Registry managed by the "Farms/Farmers Registration Project" of the Agency. The terms of co-financing vary depending on the activity and the beneficiary (an entrepreneur or an agricultural cooperative), ranging from the introduction of international food safety management systems and standards to creating branding and packaging design and purchase of equipment.

14 beneficiaries were supported in the target municipalities (Akhalkalaki, Gardabani, Dmanisi, and Tsalka) through this support mechanism as of July 31, 2023. A majority of these (9 beneficiaries) were located in the Gardabani Municipality of Kvemo Kartli.

Co-financing of Processing and Storage Enterprises

For processing enterprises, the financial support consists of (1) co-funding, capped at 40% of the overall project expenses, with a maximum limit of 500,000 GEL, and (2) preferential credit or leasing options, not surpassing 1,500,000 GEL. The total cost of the project proposal should be at least 250,000 GEL.

For storage enterprises, financial support encompasses (1) co-financing, which will not surpass 40% of the total project cost, with an upper limit of 500,000 GEL, and (2) favorable terms for agrocredit or agroleasing.

Both components include provisions to support projects implemented in high-mountainous settlements and villages adjacent to the demarcation line, or projects carried out by cooperatives with agricultural status.

This support mechanism counts 19 projects to date in the target municipalities, most of which (11 projects) were located in the Gardabani Municipality.

Pilot Program for Women

The goal of the program is to integrate economically inactive women into full-fledged members of society within the pilot municipalities by improving their socio-economic status and stimulating women's involvement in agricultural activities. The task of the program is to provide financial and technical assistance to potential female beneficiaries for setting up a new greenhouse in the municipalities of Marneuli and Lagodekhi.

The program stipulates that beneficiaries can receive co-financing for setting up a greenhouse, which covers up to 90% of the greenhouse's cost, with an upper limit of 25,000 GEL. However, to be eligible for this support within the program, the greenhouse must have a minimum area of 200 square meters, and beneficiaries are required to register under the "Farms/Farmers Registration Project.

RDA reports supporting 32 women in the Marneuli municipality.

Enterprise Georgia

Enterprise Georgia is a Legal Entity of Public Law that operates under the Ministry of Economy and Sustainable Development of Georgia, with a primary focus on stimulating domestic production and fostering entrepreneurship. One of the notable programs implemented by Enterprise Georgia is the "Micro and Small Business Support," which specifically targets rural small and medium enterprises (SMEs). Under this program, Enterprise Georgia provides grants of up to GEL 30,000 to support the development of micro and small businesses. However, beneficiaries are required to contribute 20% of the total project cost as co-financing. The program, however, does not cover the activities that fall into section A (Agriculture, Forestry, and Fishing), as it mostly focuses on secondary rather than primary processing. This includes some activities of producing sheep-related products, such as textiles from wool, dairy, and meat, however, the data from the Agency does not allow for disaggregation on this level. In addition to financial assistance, the program offers technical support to help beneficiaries develop essential entrepreneurial skills. This includes training in business plan writing prior to receiving financing.

In 2015-2022, the Micro and Small Business Support Program (MSBS Program) has funded 8,209 projects, of which 1,053 projects (12.8% of total) were implemented in the municipalities of interest – Akhaltsikhe, Akhalkalaki and Ninotsminda of Samtskhe-Javakheti region, and Bolnisi, Gardabani, Dmanisi, Marneuli and Tsalka of Kvemo Kartli region. The table below (Table 1) shows municipal-level data for the number

of projects funded, the volume of grants issued, and total employment generated by the projects. These municipalities have received 11.8% of total grants issued through the program and account for 11.6% of jobs created through the funded projects. Unfortunately, the data does not allow to see which activities were related to sheepherding and the production of sheep-related products. The 2023 call is currently ongoing.

Table 1: Projects funded under the MSBS Program, 2015-2022, by municipality

Region	Municipality	Number of Projects	Volume of Grants (in 1000 GEL)	Employment
Samtskhe-Javakheti	Akhalkalaki	84	980.03	179
	Akhaltzikhe	505	4,305.40	1,059
	Ninotsminda	42	537.01	117
Kvemo Kartli	Bolnisi	66	778.35	151
	Gardabani	90	1,165.08	271
	Dmanisi	35	380.10	77
	Marneuli	158	1,719.75	397
	Tsalka	73	882.36	202
	Total	1,053	10,748.07	2,451

Source: Enterprise Georgia

Enterprise Georgia also has an industrial program through which it provides subsidies to SMEs on the interests of commercial bank loans. The table below (table 2) shows the number of funded projects, total employment under the projects, total volume of investment, and the volume of issued subsidies (as of June 2023) in the municipalities of interest.

Table 2: Beneficiaries of the Industrial Component by municipality, 2014-2023

Region	Municipality	Number of projects	Total employment	Total investment (in million GEL)	Issued subsidies (in thousand GEL)
Samtskhe-Javakheti	Akhalkalaki	2	14	0.90	0.00
	Akhaltzikhe	18	213	42.62	1,289.79

Kvemo Kartli	Bolnisi	5	329	4.64	323.87
	Gardabani	51	815	104.36	5,880.27
	Dmanisi	2	0	3.80	248.60
	Marneuli	23	228	15.83	463.01
	Tsalka	2	160	15.00	1,247.09
	Total	103	1,759	187.15	9,452.63

Source: Enterprise Georgia

As the table above shows, almost 50% of all projects are implemented in the Gardabani municipality, with Marneuli and Akhaltsikhe taking up the vast majority of the remaining share (40% total). Enterprise Georgia has issued a total of 9,452 thousand GEL in subsidies to fund projects in these areas.

The research findings indicate that most of the interviewed farmers in the target regions are aware of the government programs offered by RDA and Enterprise Georgia. However, considering the program's priorities on secondary rather than primary production, none of the farmers reported applying for Enterprise Georgia's "Micro and Small Business Support" program. On the other hand, some farmers mentioned that they are benefiting from RDA's "Preferential Agrocredit" program and expressed satisfaction with the support received.

4.9.2. Non-Government Organizations

Mercy Corps Georgia

The desk research and interviews have revealed that Mercy Corps Georgia implemented, and the Swiss Development and Cooperation Agency funded *Alliances Programme* has played a pivotal role in the development of the sheep value chain in Georgia over the last decade. This is the longest MSD program in Georgia, with different phases connected to each other:

Alliances-KK (2011-2014), focused on enhancing the dairy, beef, and sheep sub-sectors in three municipalities within the Kvemo Kartli region, namely, Dmanisi, Tsalka, and Tetrtskaro municipalities. This region was identified as heavily reliant on livestock production. Dozens of specific interventions were undertaken during the reporting period, ranging from training and assessments on food safety and hygiene and the renovation of a cheese factory, to the purchase of equipment for a wool collection center and the establishment of a new business model for a slaughterhouse.⁴

⁴ For more information, please see Market Alliances Against Poverty in the Kvemo Kartli Region of Georgia, Alliances Kvemo Kartli, Intermediate Report, Swiss Agency for Development and Cooperation, Mercy Corps, November 2013.

In the first phases of the implementation of this program, it became evident that there had been no documented information or reports on Georgian sheep farming or the sheep market since 1947. When Alliances KK initiated its involvement in the sheep sector in 2012, this lack of information emerged as a significant obstacle to the development of effective interventions. To address this, the Programme conducted extensive market research and commissioned a report to Beka Gonashvili, who presently serves as the Head of the Shepherds' Association of Georgia. According to Helen Bradbury, the Programme Director, this initiative marked the first publication created by the new generation of shepherds working in the post-Soviet era.

Alliances Lesser Caucasus Programme (2014-2017) and Alliances Caucasus Programme (2017-2021) ALCP, funded by the SDC and the ADA, were focused on enhancing the dairy, beef, sheep, and honey sub-sectors in the Kvemo Kartli, Samtskhe-Javakheti, and Adjara regions of Southern Georgia. Under this initiative, specific steps were taken to support the **exports and sales of wool**. While for several years, this type of active support enabled some Georgian shepherds to sell wool for as much as 0.8 GEL per kg (in 2015), the prices on the international market for wool have since dropped to levels so low that exporting it no longer makes financial sense. When they did export, they used the money received through sales to pay herdsmen, buy salt for sheep, and necessary medicines.

Currently, the organization is implementing **Alliances Caucasus 2 (2022-2026) (ALCP2)**, which is a market systems development program targeting rural producers in Georgia, funded by the Swiss Development Cooperation (SDC) in cooperation with the Austrian Development Cooperation (ADC) and the Swedish International Development Cooperation SIDA.

The Alliances Programmes have been actively involved in the development of the sheep sector value chain since 2011. The key constraints for Georgian sheep sector development were identified through a market analysis and Sheep Study conducted in 2011-2012. The Georgian Shepherds Association (GSA) and the National Food Agency (NFA) were the main stakeholders in the initiatives undertaken by the Programmes to support the development of the sheep sector. The program Advisory Committee was created to discuss and make decisions on sheep sector-related issues, such as disease control, Animal Movement Route (AMR) infrastructure rehabilitation, and the creation of BioSafety Points (BSPs), etc.

National, regional, and municipal governments and the association worked together to monitor the seasonal movement of sheep on the **Animal Movement Road**. [The Road](#) - a new documentary about shepherds, was produced to influence public perception and impact the political arena. Instead of being a straightforward advocacy tool, the film was intentionally crafted as a visually stunning and high-quality documentary. Its objective was to draw attention to the isolated issue of the animal migration route, where approximately one million livestock, mainly sheep, annually make the journey from winter to summer pastures following an ecologically driven pattern crucial for their survival.

The program facilitated a regeneration of the AMR, a vital lifeline of the livestock system in Georgia, by the establishment of **Bio Security Points (BSPs)** along the road. The latest BSP was opened in the Mtskheta-Mtianeti region in Dusheti municipality in Spring 2021, making a total of 7 active BSPs in the country. The other locations are:

- Kvemo Kartli: Rustavi (near the cemetery), Marneuli (in the village of Jandara), and Bolnisi (in the village of Dzedznariani) Municipalities.
- Kakheti: Kvareli (in the village of Shakriaani), Dedoplistskaro, and Signaghi (in the village of Magharo) municipalities.

These Bio Security Points are designed to accommodate both cattle and sheep owners, and their services are provided free of charge by the National Food Agency. They are equipped with facilities such as disinfecting and bathing ponds for cattle and sheep, showers, water reservoirs, warehouses, wet points, and quarantine areas. Each point has the capacity to process an average of 8,000 units per day using disinfectants that meet European Union standards. The disinfection process is supervised by the NFA veterinarians.

By opting for these BSPs instead of private sheep dipping facilities, shepherds save about 250 Gel per 500 sheep. This is because the animal dipping/showering process at these BSP's is less labor intensive than at the private sheep dipping facilities. Access to the water points at the newly opened BSP points helps maintain animal health during movement. Farmers from other regions are also using this BSP on their way to winter pastures as they prefer dipping their sheep right before they go up the mountains. The model of the BSPs and the first two points were facilitated and financed by the ALCP.

In 2022-2023 the ALCP 2 coordinated a collaboration between the sheep sector stakeholders to develop the Animal Movement Route Sustainable Development Road Map for 2023-2027, which is set to become an integral part of Georgia's National Pasturelands Management Policy Document. The AMR Road Map is a step-by-step guide for the government and shepherds to ensure the long-term and sustainable development of the road and the whole sheep sector in Georgia.

4.9.3. Sectoral Associations

The Shepherd's Association of Georgia, active since 2010, has been trying to coordinate efforts to tackle issues that the Georgian shepherds face regularly. It was founded by around 15 shepherds who took it upon themselves to create a platform where their collective issues and concerns could be effectively communicated to relevant authorities. Over time, the association's membership has grown and fluctuated, with up to 50 active members participating, depending on the specific challenges the association is addressing. Notably, there are no membership fees, and members do not receive any material benefits from their participation. Instead, the association serves as a strategic conduit, enabling shepherds to engage with other stakeholders, voice their concerns, and work towards solutions collaboratively.

- Beka Gonashvili, the founder and the Head of the Georgian Shepherds' Association, shared insights on various aspects of the sheep value chain and external stakeholders. **Leadership:** Beka Gonashvili has led the Georgian Shepherds' Association since 2010 but expressed a desire to step down in 2023 due to the perceived inaction of the shepherders and the tendency to completely depend on external entities for problem-solving. He believes that the government or donors should not be the sole solution providers (even though they are the main ones), and individuals should take the initiative.
- **Education Challenges:** Beka noted significant challenges in education and cooperation within the industry, making discussions about new breeds and technologies seemingly futile with some stakeholders. Shepherds are largely unwilling to explore ways to improve efficiency and productivity.
- **Sheep Crossing Routes:** Beka raised concerns about the registration and management of sheep crossing routes. He anticipates problems in the coming weeks and emphasizes the need for the government's involvement in resolving this issue. The problem here is that people are only concerned while they are directly dealing with the problem, which happens for 2 weeks twice a year when sheep are crossing from summer to winter pastures. Yet, people are unwilling to organize themselves and cooperate to seek permanent solutions to their problems.
- **Infrastructure and Rest Areas:** He highlighted the necessity for designated resting areas along routes traversed by shepherds, especially since infrastructure changes have affected their traditional routes.

- **Foreign Market Challenges:** Challenges in exporting sheep and related products to countries like Saudi Arabia were discussed. The fluctuating exchange rate of the Georgian Lari and stringent veterinary requirements pose hurdles (Saudi Arabia requires all sheep to be tested for Foot and mouth Disease (FMD), which costs 19 GEL per sheep). The exports were at their peak in 2020-2021 when the local currency experienced the highest levels of depreciation. Now that GEL is stabilized, exports have declined.
- **Manpower and Nomadism:** Manpower scarcity is a significant issue (also highlighted throughout multiple other interviews), with the traditional nomadic system being unfit and unsuitable to the modern lifestyle sought by most people. The solution to this may be breeding high-yielding species and mechanizing processes (such as milking) to increase productivity and profits.
- **Pasture Leasing:** A majority of sheep owners lack their own pastures and must lease them from the state or other private actors. The prices here vary across municipalities and may fluctuate from year to year.

These insights shed light on the challenges and opportunities in the sheep value chain in the specified regions and underscore the importance of addressing various issues, including infrastructure, education, and market access, to ensure its sustainability and growth.

4.9.4. Vocational Educational Institutions

In the target municipalities in Samtskhe-Javakheti, there are five educational institutions offering Vocational Education and Training (VET) programs. Three of these are located in the Akhaltsikhe municipality, while two are located in Akhalkalaki. There are no vocational educational institutions in the Ninotsminda municipality.

In Kvemo Kartli, there are 9 registered vocational educational institutions. However, the majority (5) of them are located in Rustavi, which is outside of the municipalities of interest for the purposes of this paper. Three of the remaining four are located in Marneuli, while one is located in the Dmanisi municipality.

The Table below (table 5) lists these vocational education providers and the programs they offer that are relevant to the sheep value chain.

Table 5: Vocational educational institutions in the target municipalities

Region	Municipality	Educational institutions with VET programs	Program name
Samtskhe-Javakheti	Akhaltzikhe	College "Opizari"	Veterinary; farming (includes modules of both, growing crops and raising livestock (including sheep));
	Akhaltzikhe	Samtkhe-Javakheti State University	No programs connected to the sheep value chain
	Akhaltzikhe	Akhaltzikhe Community College	No programs connected to the sheep value chain

	Akhalkalaki	Ltd.-Javakheti Vocational College	No programs connected to the sheep value chain
	Akhalkalaki	St. Zosime Kumurdoeli Public College	No programs connected to the sheep value chain
Kvemo Kartli	Marneuli	Marneuli Medical College	No programs connected to the sheep value chain
	Marneuli	Marneuli College	No programs connected to the sheep value chain
	Marneuli	Marneuli Community College	No programs connected to the sheep value chain
	Dmanisi	Swiss Agricultural School Caucasus	VET Programs – Farmer, Dairy Production Practical Training – animal husbandry, dairy processing, etc.;; Advisory Services;

Source: Vet.ge; Field research

Most of the institutions listed above, that do not offer programs related to shepherding and producing sheep-related programs, offer certification courses in finances, accounting, IT, nursing, and pharmaceuticals.

College "Opizari"

College Opizari, founded in 1977, has 28 professional certification courses listed on its official website. Of these, two (namely, veterinary and farming, 22 and 17-month-long programs, respectively) are connected to the sheep value chain.⁵ According to the College, since 2014, 158 individuals have completed the certification course in veterinary medicine on two levels. The course for farming was also administered in two levels in 2017 and 2022. A total of 25 people completed these courses. The tables below show a breakdown of the former students of the college by municipality of residence.

Table 6: Alumnae of the Veterinary course, 2014-2018 – level 3, 2021-2022 – level 5, by municipality

Region	Municipality	2014	2015	2016	2017	2018	2021	2022	Total
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⁵ Information is taken from the official website of the college – www.opizarivet.ge;

Samtskhe-Javakheti	Akhaltzikhe	8	3	12	8	12	5	8	56
	Adigeni	1	9	1	10	10	4	3	38
	Aspindza	3	2	-	6	10	3	2	26
	Borjomi	4	1	5	6	5	-	4	25
	Ninotsminda	-	2	-	-	-	-	4	6
	Akhalkalaki	-	-	-	1	5	-	-	6
Tbilisi	Tbilisi	-	-	-	-	-	-	1	1
Shida Kartli	Kaspi	-	-	-	-	-	-	1	1
	Total	16	17	18	31	42	12	23	159

Table 7: Alumnae of the Farming course, 2017 – level 3, 2022 – level 5, by municipality

Municipality	2017	2022	Total
Akhaltzikhe	7	10	17
Adigeni	4	1	5
Aspindza	1	2	3
Total	14	13	27

5. SWOT Analysis

SWOT Analysis	
Strengths	Weaknesses
<ul style="list-style-type: none"> □ Long-Lasting Tradition: For many individuals, sheep farming is deeply ingrained in their way of life, a commitment that persists even when more favorable opportunities present themselves. This enduring attachment to the sector grants it remarkable resilience, even during the most challenging circumstances. □ Local Demand: In the regions of Kvemo Kartli, there remains a consistent demand for live sheep, primarily driven by their significance in religious ceremonies and traditional festivals. □ Breed Variety: In the target municipalities, farmers actively utilize at least four distinct sheep breeds, with more at smaller scales, each with its unique advantages and intended market. □ Alpine Area: Sheep that graze at higher altitudes tend to yield superior-quality milk. This improvement in milk quality is further enhanced when these sheep belong to breeds that excel in milk production. This synergic relationship between high-altitude grazing and well-suited milking breeds offers a combination for the success of intensive sheep dairy farms. □ All year-round pastures: Kvemo Kartli boasts a plentiful supply of pasture lands that can be effectively utilized throughout the year, spanning both winter and summer seasons. In contrast, Samtskhe-Javakheti offers cost-effective summer pasture lands. □ International Recognition: For over a decade, Georgian sheep have been widely exported to Gulf countries, specifically Saudi Arabia, the United Arab Emirates (UAE), and Kuwait. These exports have established a strong presence in these nations, with the Georgian sheep product being well-recognized and appreciated by consumers, all without the necessity for additional marketing efforts. 	<ul style="list-style-type: none"> □ Unusable Products: Currently, farmers predominantly market live sheep as their primary product, with a few also engaging in the sale of dairy products. However, the sale of live sheep, as well as sheep meat and wool, presents challenges in achieving favorable profitability, particularly in the case of wool. □ Overgrazed Pastures: Due to shifts in pastureland ownership, the new proprietors may have diminished motivation to prioritize the long-term well-being of the land. This situation poses a potential risk of overgrazing and the consequent degradation of the land, rendering it unsuitable for sheep grazing. □ Expensive Maintenance: As the prices of pasture lands have experienced considerable inflation, farmers have turned to the practice of confining sheep to pens and providing them with supplemental animal feed. Nevertheless, the costs associated with animal feeds have also risen significantly, resulting in a notable escalation in maintenance expenses for farmers. □ Lack of Labor: The most prominent demographic shift occurring in the rural areas of Samtskhe-Javakheti is the decline in population. This decline has several noteworthy implications: firstly, there is a shortage of skilled workers available for tasks such as milking and processing. Additionally, the existing labor force, such as shepherds, has become notably expensive to hire. As a result, farmers are left with little choice but to limit the size of their farms to levels that can be feasibly managed given the available workforce. □ No Direct Access to the Final Markets: The primary market for farmers' products, specifically live sheep, is situated outside the country's borders. In this context, farmers lack control over the destination and pricing of their goods, as they are subject to the directives of collectors. The entire supply chain, from purchasing sheep from farmers to reselling to exporters who then market them in the Middle East or Azerbaijan, operates without a clear and transparent system.

	This lack of transparency undermines trust within the sheep sector.
Opportunities	Threats
<ul style="list-style-type: none"> □ Increased Exports to More Lucrative Markets: At present, the bulk of exported live sheep are destined for Azerbaijan, where the price for a single live sheep is notably lower. However, there exists an opportunity to expand exports to more lucrative markets, particularly in Saudi Arabia, where buyers are willing to pay nearly double the price. □ Increased Production of Dairy Products: Dairy products, particularly cheese, enjoy great popularity in Georgia. However, only a minority of sheep farmers in the country engage in milk production and the associated dairy product processing. Notably, milking remains underutilized, especially in the alpine regions of Samtskhe-Javakheti, where the predominant Javakhuri breed has limited milking potential. This situation presents an opportunity to introduce other breeds specifically chosen for their milking capabilities into these farms, thereby enhancing the dairy production potential and diversifying the production. □ Implementing new breeds in farms: Georgian sheep farmers tend to be somewhat hesitant when it comes to introducing new breeds like Baldas, Javakhuri, or even Tushuri into their farms. However, given the evolving agricultural landscape and shifting market dynamics, there is considerable scope for farmers to embrace new opportunities, particularly since various sheep breeds are already accessible within Georgia. These readily available local breeds can offer farmers a means to adapt and diversify their livestock holdings in response to changing conditions and market demands. 	<ul style="list-style-type: none"> □ Significant Shortage of Pasturelands: As farmers face challenges in terms of affordability and participation in land auctions, an increasing amount of pastureland is slipping out of their reach. Over time, some pasturelands may experience overgrazing, while others may be repurposed for different uses. This trend raises concerns about the availability of sufficient, usable, and cost-effective pasture lands to support the current sheep population. □ Damaging Reputation in Export Markets: Farmers commonly express concerns about collectors and exporters potentially engaging in dishonest practices when dealing with their partners in the Gulf countries. There is apprehension that they might misrepresent the quality of the sheep or sell them in suboptimal conditions. Such actions could potentially harm the reputation of Georgian sheep and substantially diminish the export prospects for this valuable commodity. □ Increased Competition: In recent years, African nations like Ethiopia, Nigeria, and Sudan have seen a notable rise in their exports of live sheep to Gulf countries. This trend has led to increased competition for Georgian sheep in these markets, making it more challenging for Georgian livestock to maintain their competitive edge. □ Changing Markets: Gulf countries have witnessed a growing demand for larger-sized sheep. However, Georgian farmers, accustomed to selling live sheep weighing between 30-35 kilograms, have yet to fully adjust to these evolving market preferences. While the 30-kilogram sheep are still acceptable in Middle Eastern countries, there is a potential trend toward the increasing prominence of heavier sheep, which may eventually replace their lighter counterparts in the market.

6. Recommendations

Following an in-depth examination of the sheep value chain spanning the municipalities of Bolnisi, Marneuli, Gardabani, Dmanisi, Tsalka, Ninotsminda, Akhalkalaki, and Akhatsikhe, a set of recommendations has been developed to facilitate the progression of this value chain. These suggestions primarily revolve around critical factors, including stimulating economic expansion, more effective usage of pasture lands, using the potential of milk dairy production, ensuring cost-effectiveness, and fostering the acquisition of vital skills.

6.1. Recommendations for Farmers

Setting The Optimal Size for Farms: As previously highlighted, sheep farms of a larger scale tend to exhibit notably reduced expenses per individual sheep. For many farmers who may not have the means to employ shepherds, the prospect of hiring shepherds becomes financially feasible when they decide to expand their sheep farms by just a few hundred more sheep. Interestingly, some farmers may not pursue this avenue because they perceive it as unprofitable. However, it's crucial to recognize that achieving enhanced profitability often hinges on attaining the appropriate farm size, which can translate into cost efficiency and overall financial viability. Thus, farmers would have to expand the scale of their operations.

Changing Approach Towards Sheep Farming: For numerous farmers, engaging in sheep farming and nomadic pastoralism represents more than just a profit-oriented business; it embodies a way of life deeply rooted in tradition. During interviews, only a small subset of farmers expressed contemplation about enhancing the efficiency of their farms. These forward-thinking individuals have experimented with various strategies, including transitioning to different sheep breeds, adjusting milking practices, seeking new market outlets, and even exploring changes in pastureland management, among other initiatives, all in an effort to optimize their operations. It is highly recommended that sheep farmers to follow market trends and adapt their products in these changing conditions.

Increasing Milking Hygiene: Sheep milking is an intricately delicate procedure wherein the milk can easily become contaminated, leading to alterations in flavor and quality. The incorporation of even cost-effective machinery is anticipated to yield substantial improvements in cheese quality. In case the machinery is unavailable or out of reach, it is always possible to improve the hand milking methods.

Timely Vaccination: While sheep vaccination is entirely funded by the government, there have been instances, notably in Akhalkalaki Municipality, where the public sector experienced delays in administering vaccinations to sheep. Consequently, some farmers opted not to bear the cost of vaccines, resulting in a significant loss of sheep due to diseases. Regrettably, this experience has left a lasting reluctance among farmers to undertake sheep vaccinations independently, even when their flocks are at risk of potential harm.

Pricing: In light of evolving market dynamics, the weight of sheep has assumed considerably greater significance than in the past. Nevertheless, a substantial portion of farmers continue to refrain from pricing their sheep based on their weight. This practice poses challenges for collectors and exporters who must sell these sheep in Gulf countries. Farmers should Shift towards pricing sheep according to their weight, which could serve as a pivotal change, incentivizing farmers to ensure proper feeding and management practices to attain the desired weight, thus improving the marketability of their sheep.

6.2. Recommendations for public entities and international partners

Incentivizing Cooperatives: The establishment of cooperatives could offer numerous advantages to sheep farmers, especially in terms of their ability to collectively afford the rental of substantial pasture lands.

Presently, the formation of sheep cooperatives is infrequent, and farmers are generally reluctant to take the initiative in establishing them. The requirement of cooperatives in future projects or funding the initiatives for farmers who want to establish cooperatives should significantly incentivize the farmers to do so.

Additional Experience: A significant number of farmers engaged in various sectors across the Samtskhe-Javakheti and Kvemo Kartli regions have received training from foreign experts, either within Georgia or abroad. This newfound expertise and knowledge have played a pivotal role in augmenting crop yields and enhancing product quality. However, in the realm of sheep farming, the prevailing trend remains rooted in traditional practices, with most sheep farmers displaying little inclination to modify their existing approaches despite the potential benefits of adopting new knowledge and techniques. Further funding for such training should give a chance to the farmers to better evaluate and understand the importance of modern methods in sheep farming.

Introducing New Breeds: While Georgia boasts a variety of sheep breeds, each with its unique characteristics, farmers have the opportunity to enhance their livestock by pursuing crossbreeding strategies. By selectively mating their sheep with breeds possessing the desired traits, such as higher weight, improved milking capabilities, and enhanced endurance for covering longer distances, farmers can potentially improve the overall quality and performance of their sheep herds.

Improving Infrastructure: Nomadic pastoralism entails the movement of sheep over several hundred kilometers each year, often from one region to another. Along these migratory routes, there are various points where sheep must traverse congested roads and private lands, posing logistical challenges for shepherds and herders. Improving the infrastructure for sheep herding in critical points, such as highways and rural areas, should significantly ease the nomadic-pastoral challenges.

Alternative winter pens: As farmers are no longer permitted to utilize the sheep pens located near cultural sites during the winter season, they find themselves without viable alternatives. It is crucial to avoid completely restricting farmers' access to these winter pens and instead collaborate with them to reach mutually agreeable solutions before implementing such decisions.

By implementing these comprehensive recommendations, significant advancements can be realized within the sheep value chain across the municipalities of Bolnisi, Gardabani, Marneuli, Tsalka, Dmanisi, Ninotsminda, Akhalkalaki, and Akhaltsikhe. This holistic approach holds promise for substantial enhancements in economic growth, the overall sheep sector, and more efficient government support. These collaborative efforts have the potential to make a substantial contribution to the overall development and long-term sustainability of the meat, wool, and milk industries within the specified municipalities.