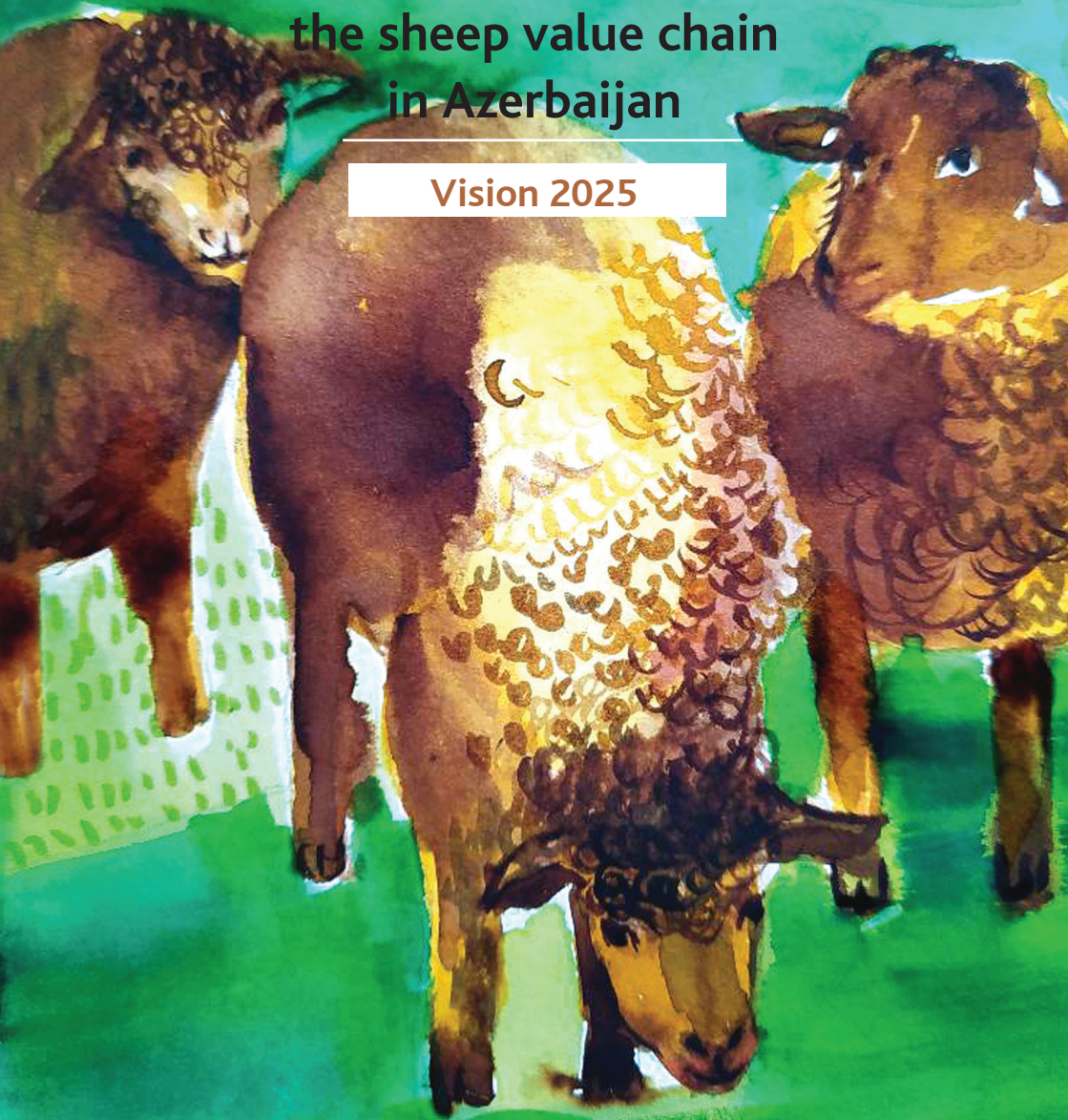




Food and Agriculture
Organization of the
United Nations

DEVELOPING the sheep value chain in Azerbaijan

Vision 2025



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CONTENTS

ABBREVIATIONS AND ACRONYMS IX

EXECUTIVE SUMMARY XI

1	INTRODUCTION	
	1.1 Need for the study	3
	1.2 Objectives and methodology	6
	1.3 Overview of the sheep sector in Azerbaijan	9

2	END MARKET ANALYSIS FOR SHEEP MEAT	
	2.1 Global market	19
	2.2 European Union and Middle Eastern markets	21
	2.3 Regional market (CIS countries)	24
	2.4 Domestic market	27

3	SHEEP MEAT VALUE CHAIN ANALYSIS	
	3.1 Mapping the value chain	33
	3.2 Production practices	37
	3.3 Distribution channels for live sheep	49
	3.4 Slaughter, processing and retailing	53
	3.5 Margins	55
	3.6 Policy and institutional support for sheep sector	56
	3.7 Overall assessment of the sheep meat value chains	66

4	WOOL VALUE CHAIN ANALYSIS	
	4.1 Overview of the wool market in Azerbaijan	77
	4.2 Existing and potential market for Azerbaijan carpets	78
	4.3 Functioning of the wool/carpet value chain	79
	4.4 Assessing the wool/carpet value chain	83
5	SHEEP MILK CHEESE VALUE CHAIN ANALYSIS	
	5.1 Overview of the sheep milk cheese sector	89
	5.2 Existing and potential market for cheese	89
	5.3 Functioning of the cheese value chain	90
	5.4 Cheese value chain assessment	92
6	VISION FOR DEVELOPING THE SHEEP SECTOR	95
7	WAY FORWARD – STRATEGIC ACTION PLAN	107
	REFERENCES	120
	ANNEXURE	124

TABLES

Table 1:	Details of data collection
Table 2:	Sampling approach for household survey
Table 3:	Leading importers of sheep meat in EU (2018)
Table 4:	Leading importers of sheep meat in the Middle East (2018)
Table 5:	Consumption of meat and per capita consumption
Table 6:	Structure of agricultural products purchase channels for the population in Baku
Table 7:	Profile of sheep herd owners
Table 8:	Details on sale of lamb by farmers
Table 9:	Assessment of sheep production practices
Table 10:	Assessment of the marketing and processing of live sheep
Table 11:	Assessment of the policy environment and institutional support
Table 12:	Challenges in the wool/carpet value chain in Azerbaijan
Table 13:	Value chain analysis – cheese (production/marketing/processing/retailing)

FIGURES

- Figure 1: Distribution of sheep among farms in Azerbaijan
- Figure 2: Sheep population and sheep slaughtered in Azerbaijan (2000–2018)
- Figure 3: Production of sheep meat, milk and wool in Azerbaijan (2000–2017)
- Figure 4: Sown area of fodder crops in Azerbaijan (2000–2018)
- Figure 5: Live weight and slaughtered weight of sheep and goat in Azerbaijan (2000–2018)
- Figure 6: Leading countries in sheep population (2017)
- Figure 7: Leading countries in sheep meat production (2017)
- Figure 8: Leading countries in sheep meat exports (2018)
- Figure 9: Leading countries for sheep meat imports (2018)
- Figure 10: Sheep population in the CIS region (2017)
- Figure 11: Meat production in the CIS region (2017)
- Figure 12: Live sheep imports in the CIS region (2016–2018)
- Figure 13: Live sheep exports from CIS region (2016–2018)
- Figure 14: Sheep meat exports from CIS region (2016–2018)
- Figure 15: Movement of sheep across the value chain
- Figure 16: Percentage of herders using high-quality rams for the purpose of breeding
- Figure 17: Source of feed for the sheep
- Figure 18: Percentage of herders facing shortage of availability of feed and water for the sheep at any time of year
- Figure 19: Distance travelled from farm to nearest veterinary point

FIGURES

- Figure 20: Percentage of herders getting their sheep vaccinated and dewormed
- Figure 21: First point of contact for medical help
- Figure 22: Service provider for vaccination
- Figure 23: Service provider for deworming
- Figure 24: Other animals housed together with the sheep (explanation included)
- Figure 25: Sheep kept together or separated based on age and gender
- Figure 26: Location of sale of lamb

ABBREVIATIONS AND ACRONYMS

AI	Artificial Insemination
AZN	Azerbaijan Manat (<i>currency</i>)
AZPROMO	Azerbaijan Export and Investment Promotion Foundation
CIS	Commonwealth of Independent States
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus group discussion
FMD	Foot-and-mouth disease
GDP	Gross domestic product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (<i>German Agency for International Cooperation</i>)
ICT	Information and communications technology
IFAD	International Fund for Agricultural Development
KII	Key informant interview
MOA	Ministry of Agriculture
MT	Metric tonne
NGO	Non-governmental organization
OIE	Office International Des Epizooties (<i>World Organization for Animal Health</i>)
TOT	Training of trainers
UAE	United Arab Emirates
USD	United States Dollar

An aerial photograph of a lush green landscape. A road winds through the lower left portion of the frame. In the upper left, a body of water is visible, with a small island or peninsula. The overall scene is vibrant and natural.

EXECUTIVE SUMMARY

Need for the study
Value chain methodology
Recent trends in the sheep sector in Azerbaijan
End market assessment
Assessment of the sheep meat value chain

NEED FOR THE STUDY

The sheep sector has immense importance in Azerbaijan, as cattle and sheep rearing are the most preferred and productive livestock activities in the country. The sheep sector is an important source of nutrition (meat and cheese) and livelihoods in rural areas. The sector is currently facing an alarming situation due to the changing demand and supply situation, as further elaborated in the following discussion. To address these constraints, policymakers envision a transformation to a modern sheep sector with commercial farms based on semi-intensive and intensive farming approaches.

The sheep sector is an important source of nutrition and livelihoods in rural areas.

In this context, this value chain study has been commissioned under the FAO-Azerbaijan Partnership Project to provide strategic vision and direction to the objective of transforming the sheep sector in Azerbaijan. The insights from the value chain study will help to identify the key areas of interventions to be taken up under the Project and other development initiatives of the government and multilateral agencies. Though the study covers sheep meat, wool and milk value chains, the focus is largely on the meat sector as it is the major source of income for the sheep farmers.

VALUE CHAIN METHODOLOGY

The value chain approach examines the key actors and their functions along the value chain from production to end market, as well as the linkages between them. It also examines the policy, regulatory and institutional environment relevant to the sector. The study is based on secondary and primary information. Primary information was collected through farmer surveys with 300 sheep

farmers, including small, medium and large herd owners; Focus Group Discussions (FGDs) with farmer groups; and in-depth Key informant interviews (KIIs) with value chain actors in order to develop a comprehensive understanding of the functioning of the sector. An end market assessment was also conducted to guide the value chain development process in line with the market demand. Based on the value chain assessment, an approach referred to as Sheep Sector Development: Vision 2025 was developed. The findings from this study were presented at a national validation workshop in Baku on 18 July 2019; the feedback and recommendations from the stakeholders have been incorporated into this report.

RECENT TRENDS IN THE SHEEP SECTOR IN AZERBAIJAN

Review of the recent trends indicates an alarming situation facing the sheep sector in Azerbaijan. Over the period 2000–2015, the sheep population increased from 5.6 million heads to 8.0 million heads. However, over the next three years (2015–2018), the population declined to 7.7 million heads, demonstrating an average negative growth rate of 1.2 percent per annum – a decline of 100 000 heads per year. This is directly reflected in the higher slaughter rates in the past three years. Additionally, during the period 2000–2010 the live weight of animals was 30–36 kg on average, leading to a carcass weight of 15–18 kg. Since 2010 the live weight has been in the range of 25–30 kg, leading to an average carcass weight of 12–15 kg. These dynamics are possibly a direct reflection of the decline in land under fodder cultivation, from 429 000 to 326 000 hectares over the period 2015–2018 – a reduction of almost 25 percent over a period of three years as a result of changes in land use policy.

Overall, the negative pressures on the supply side include: lack of sufficient access to pastures due to land occupation by Armenia; government policy of bringing more land under high-value agriculture; pastureland degradation due to overuse; and climate change issues. Additionally, the veterinary services support lacks the capacity to adequately prevent, detect and control major animal diseases. This is combined with the lack of an adequate extension and research support system, which limits the benefits of new improvements and technologies in reaching farmers. While the supply-side pressures are immense, there is a strong demand for sheep meat from the domestic market and potential opportunities exist for export to the Middle Eastern countries and for meeting the changing food safety norms.

END MARKET ASSESSMENT

Global market: The global export of sheep meat in 2018 was about ~1.1 million tonnes with the top two countries (Australia and New Zealand) accounting for 70 percent of total exports, while global imports were about 823 000 tonnes.¹

EU and Middle Eastern markets: Owing to geographic proximity, the EU (41 percent) and Middle Eastern markets (21 percent) – jointly accounting for 62 percent of global sheep meat imports – present high export market potential for Azerbaijan and other Commonwealth of Independent States (CIS) countries. Unit price for sheep meat is high in these markets due to higher preference for sheep meat as compared with other meats. Currently, there are no exports from the CIS region to the EU markets, though there have been some export shipments to the Middle Eastern countries by Kazakhstan, Kyrgyzstan and, to a very small extent, by



Global market



EU and
Middle Eastern
markets

¹ The data collected by customs offices around the world are not always precise. As a result, we have a small discrepancy between global exports and global imports (www.globaleconomy.com)

Azerbaijan. The Middle Eastern countries present a strong export market opportunity for Azerbaijan.

Regional
market

Regional market: After the dissolution of Soviet Union, the CIS countries (Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Uzbekistan) faced similar challenges to the sheep sector. In the context of Azerbaijan, it is important to understand the sheep meat supply-demand situation in the region. In the CIS region, trade comprises live sheep, mostly cross-border movement of sheep for sale in weekly markets to meet the immediate demand-supply gaps. Russia is the largest exporter of live sheep and meat from the region, while most of the other countries report some cross-border trade and re-exports. Though statistics indicate that the share of sheep meat imports is not more than 4 percent of the domestic production, Azerbaijan is the only net importer of live sheep in the region.

Domestic
market

Domestic market: With production of around 75 000–80 000 tonnes in the past few years, Azerbaijan statistics reflect 98 percent self-sufficiency in sheep meat. However, different researchers have questioned these figures of self-sufficiency, largely implying that if the statistics were better represented, and if purchasing power were higher, the demand would have been higher. For example, there is a possibility of live trade being under-reported under the pretext of importing live sheep for breeding purposes, as that attracts negligible import tariff compared with imports for consumption.

The two key factors potentially influencing demand in the coming years are population growth rate (1 percent) and gross domestic product (GDP) per capita, which has been rather sluggish after the

devaluation of 2014. In this situation, urbanization (currently at 55 percent) and other lifestyle changes will likely be the most important factors influencing the sheep meat demand, not only from the quantity but also quality perspective. The demand for high quality is already evident in the increased sales by supermarkets of premium cuts of meat at 18 AZN/kg, whereas the standard price for sheep meat varies between 11–13 AZN/kg.

In summary, development of the sheep sector in Azerbaijan should focus on meeting the growing domestic demand and reducing imports, while exploring opportunities for exports to the Middle Eastern countries. Food safety and quality issues will become increasingly important in the domestic market, while they are a pre-requisite for the export market. Finally, the export market is only for meat and not for live sheep. Hence, export infrastructure catering to the export market demand will need to be established.

ASSESSMENT OF THE SHEEP MEAT VALUE CHAIN

Production: In Azerbaijan 184 000 households are engaged in sheep-rearing. A large majority (80 percent) owns a herd size of less than 50 sheep, accounting for 35 percent of the total sheep population, while 8 percent of households own 46 percent of the sheep population. For the smaller herders, sheep-rearing is a form of subsistence farming, while the large herd owners are commercial farmers, who also have access to larger land resources as well as better access to services. The variation in herd size ownership is also reflected in the management practices in terms of breed development, housing, feed and fodder and health management.

The variation in herd size ownership is also reflected in the management practices

Key challenges at the production level include the following:

I.) Due to a nearly non-existent extension system, small farmers are not aware of scientific management practices, while the large herd owners have the means to adopt scientific practices.	III.) Most of the farmers are already paying for the veterinary services, which are supposed to be "free".
II.) There is high mortality and morbidity due to poor coverage of preventive and curative health services by the government agencies. Limited access to key vaccines by private veterinary shops further worsens the problem.	IV.) Farmers reported limited access to high-quality breeding rams as a key challenge.
	V.) Last but not least, feed and fodder availability was reported as a key constraint to sheep production.

Marketing of live sheep: There are 28 livestock markets in the country in the production areas as well as in terminal markets of major cities. These markets operate weekly and mostly deal in cattle/buffaloes and sheep. Primary and secondary traders are the main players at the livestock markets engaging in aggregation, transportation and marketing of lambs/sheep.

Sheep-herders sell lambs to the local butchers or to traders in the local weekly livestock markets. While small herders bring 2–3 lambs at a time to the markets, transporting them in cars, medium and large herd owners often bring 20–30 lambs to the

market in small trucks. Most of the lambs are sold at 3–6 months of age, with a live weight of about 30–35 kg or about 15–18 kg of meat weight. The average price received by the herders was 5 AZN per kg of live weight or approximately 130–180 AZN per animal with a live weight of 30–35 kg.

Key challenges at the marketing level include:

I.) Sale of sheep at a low age of 3–6 months results in suboptimal returns from sale while impacting the overall meat production in the country.

II.) The animals are not weighed when sold in the markets and herders are paid based on estimations made by the traders.

III.) Marketing of sheep is largely in the informal domain as there are no marketing regulations, which results in no formal reporting of market arrivals and prices.

IV.) Finally, there is no infrastructure at the livestock markets; these are large open spaces, often leased from the local municipal powers.

Processing and sale of meat: Butchers are the main players engaged in slaughter of animals and sale of meat. They purchase lambs from herders and/or traders. Scale of operations for the butchers ranges from 20–30 kg/day to 200–300 kg/day. The butchers with larger scale of operations are also supplying to restaurants, and for parties, functions, etc. Some chain meat shops and supermarkets are also selling value-added products such as boneless meat, premium cuts, etc. The price of sheep meat ranges from 11–12 AZN/kg in the smaller towns up to 13 AZN/kg in Baku, while boneless meat and premium cuts sell for as high as 18 AZN/kg.

There are slaughter points of varying scale in the towns and near the cities, which offer the service of slaughtering animals for the butchers at a cost of 20 AZN for cattle and 2–3 AZN for lambs. As of now, investment in processing is limited and there are few firms engaging in processing of meat or selling branded processed products.

Key challenges at the slaughter and processing level:

I.) Slaughter is largely done at the butcher level, where hygiene is a major issue.

II.) Significant investments in upgrading the slaughter facilities will be required to implement the food safety norms. Some slaughter points have invested in upgrading the facilities, largely using their own funds, as access to loans is limited. These facilities are operating below capacity as the butchers are still slaughtering at their own premises. Consequently, the slaughter point operators are facing immense financial pressure, as they are unable to recover the cost of investments.

Margins: Two key findings emerged regarding the margins in the value chains:

I.) Farmer share comprises about 65–80 percent of the final consumer prices of sheep meat, which is much higher than the farmer share in the case of agricultural crops.

II.) As reported by the traders, demand is much higher than supply, giving the farmers better bargaining power, especially in the case of young lambs with tender meat.

WOOL/CARPET VALUE CHAIN ANALYSIS

Following the dissolution of the Soviet Union, the wool value chain has collapsed due to lack of market. The population of Merino sheep declined significantly as the farmers shifted to rearing meat breeds. There are hardly any buyers of wool at the farmer level as the wool market is very thin, with very small volumes being traded. Carpet is the most important wool product, but is made largely with imported yarn. However, there are recent efforts by Azerkhalcha (Azer Carpets) to develop the end-to-end carpet value chain through establishing centres for wool collection, setting up carpet manufacturing units and engaging in the sale of carpets. The extent of success of the value chain will depend on the competitiveness of the handmade carpets with the machine-made carpets, which are relatively cheaper. In addition, there may also be scope to establish value chains for collection and exports of greasy wool, so that the wool is not completely wasted, burned or thrown away due to lack of market.

SHEEP MILK CHEESE VALUE CHAIN ANALYSIS

Sheep milk cheese processing in Azerbaijan is a traditional home-based activity. Cheese processed at home is sold directly from home or at traditional markets in the local towns and cities either directly by farmers or through traders. Cheese is produced without pasteurization, which can potentially pose a huge health hazard. Formal processing and marketing of cheese has not been explored. Most supermarkets do not engage in sale of local cheese, as it is not formally processed. Sheep milk cheese is widely established as a gourmet product in other parts of Europe. There is scope to



improve the quality of processing and marketing activities for the domestic market along with tapping the export market. Export markets can be captured using Geographical Indicators, etc.

POLICIES IMPACTING SHEEP SECTOR

Livestock policy: While there is no specific “Livestock Policy” focusing on the sheep sector, the *Strategic Roadmap on Agriculture for Azerbaijan* presents an overall vision to guide the growth and development of agriculture and the livestock sector. The Strategic Roadmap emphasizes development of the sheep sector with specific focus on import substitution. While the document presents broad guidelines for the development of the sector, there is need for a livestock sector policy which will present a more focused approach considering the practical challenges of the ground situation.

Export/import policy: From the perspective of sheep sector development, the export/import policy is a protectionist policy sheltering the domestic sector from competition (imposing 15 percent custom duty on imports) while stimulating domestic production (with negligible custom duty on imports for breed development).

Food safety policy: The newly established Food Safety Agency of Azerbaijan plans to develop new standards on food production to meet the increasingly high food safety norms. Recognizing that meat can pose significant health hazards, slaughter norms for meat will be an important component of the food safety norms. The food safety norms are relatively new and will require significant efforts and investments to implement.

Land use policy: The policy focus on bringing more land under cultivation of high-value crops raises two serious concerns for the sheep sector: first, there will be a decline in the area under pasturelands, which are an important source of feed and fodder for a large sheep population; and second, the upcoming commercial farms will have limited access to high-quality arable land to grow feed and fodder for intensive sheep-farming.

Farmer associations: Strengthening the capacity of farmer associations has been a widely adopted strategy in many countries to improve farmer incomes. However, the initiatives in Azerbaijan have not been very successful because of issues with formal registration of associations, which does not encourage farmers to participate. In this situation, options of simpler forms of cooperation, without formal registration may be explored.

INSTITUTIONS SUPPORTING THE SHEEP SECTOR

Livestock services: The Agro Services under the Ministry of Agriculture is responsible for implementing veterinary services. With a ratio of 1:6000 veterinary physicians to livestock, the Strategic Roadmap recognizes an almost 40 percent deficiency in the veterinary personnel required to provide effective services. The document recognizes two areas for improving veterinary services: focus on eradication of epizootic and zoonotic diseases; and expansion of services through privatization.

Extension services: Extension services from the Ministry of Agriculture are largely non-existent. Most of the extension and advisory support institutions in Azerbaijan were established under various donor-driven projects.

Veterinary education/livestock research: Azerbaijan State Agricultural University at Ganja is the nodal institute providing veterinary education at highly subsidized rates; however, very few students join the government veterinary profession. The Scientific Research Institute for Animal Husbandry has the mandate to undertake research on livestock-related activities. However, challenges in terms of trained personnel with knowledge of best international practices to lead the research activities is a severe constraint to conducting high-quality research. The Strategic Roadmap presents a realistic assessment of the research and education institutions in agriculture: "Management techniques and programme priorities of these institutions are significantly incompatible with the demands of a market economy. Knowledge of the majority of leading experts at the relevant research institutions about modern agrarian technology is not at the desired level."

Availability of credit to the livestock sector: Loans available to the agriculture sector itself constitute less than 5 percent of the total credit extended in the country, with almost negligible funds going to the livestock sector, while the sheep sector has not received any fund flow. In the way forward, soft loans can be used for enterprise development related to the sheep sector. There is need to engage in policy dialogue to explore options to address the issue of high interest on microcredit to small farmers.

Association of women enterprises: Activities of the association focus on women's entrepreneurship through opening centres across the country for processing livestock products. This would include washing and cleaning of sheep wool, preparing hides for processing, processing of cheese, etc.

VISION FOR SHEEP SECTOR DEVELOPMENT – STRATEGIC ACTION POINTS

The vision statement for the sheep sector development based on the value chain analysis follows the key elements of the Strategic Roadmap in a gradual move from ensuring food security to improving competitiveness to gradually merging with the global value chains. Five vision objectives have been identified to meet the demands of the sheep sector along with specific action points to implement the vision objectives. The action points emphasized in the study refer to the key activities, which can be implemented under the FAO-Azerbaijan Partnership Project. However, they also serve more broadly as a guideline for all government and multilateral agencies engaged in sheep sector development in Azerbaijan. In terms of phasing the activities, production-related activities can be taken up in the first phase to strengthen the production base, followed by activities focusing on enterprise development and marketing. Research and training activities are cross-cutting across all objectives and can be taken up as the need arises. Section 7 of the report presents a detailed description of the implementation partners and approach.

Vision objective 1: Improve production capacity of sheep sector to ensure food security and sufficiency and to generate surplus for exports

Action points for activity 1: Improve production technology

- Conduct training of trainers for officers of the veterinary services
- Set up pilot demonstration farms using the best technologies in sheep production for commercial farms/small farms
- Establish models of extension for improving outreach of scientific practices

Action points for activity 2: Linkages to inputs/services

- Support establishment of commercial breeding farms to supply high-quality breeding rams
- Support a pilot for private veterinary services
- Provide policy advocacy for farmer access to finance

Vision objective 2: Strengthen market regulations and market infrastructure for sheep/livestock

Action points for activity 1: Policy advocacy for market regulations

- Conduct research on best practices for market regulations in the region
- Offer policy advocacy on market regulation

Action points for activity 2: Support development of modern market infrastructure

- Design and develop model market yards
- Support investments in modern slaughterhouses
- Conduct feasibility studies for supporting investments in processing units and cold chain

Vision objective 3: Improve value chains for processing and marketing of sheep products and by-products

Action points for activity 1: Support to enterprises for sheep products and by-products

- Form farmer associations and link them to processors/supermarkets
- Conduct feasibility studies for new enterprises

Action points for activity 2: Improve food safety norms for sheep products

- Train value chain players on food safety norms
- Raise consumer awareness on quality/safety

Vision objective 4: Strengthen institutions for research and training/trained workforce

Action points for activity 1: Strengthen research/trained workforce on animal husbandry

- Support transformation of education/research institutes by strengthening technical capabilities

Action points for activity 2: Support industry-linked research

- Strengthen linkages among industry, policy-makers and research institutes

Vision objective 5: Sustainable sheep development

Action points for activity 1: Improve management of pasturelands

- Collaborate with Land Use Department for management of pasturelands
- Research best practices for pasture management
- Set up pilot programme for improved pasture management practices

Action points for activity 2: Adopt climate-smart livestock practices

- Research climate impact of sheep husbandry
- Identify best practices to address climate impact
- Support adoption of climate-smart practices



1

INTRODUCTION

- 1.1 Need for the study
- 1.2 Objectives and methodology
- 1.3 Overview of the sheep sector in Azerbaijan

1.1 NEED FOR THE STUDY

The sheep sector is of great importance in Azerbaijan, as cattle and sheep-rearing are the most preferred and productive livestock activities in that country. Although small ruminants constitute only a small share of the total output from the livestock and agricultural sector as a whole, they play a much bigger role in terms of their social and economic contribution to the remote and rural areas of the country. The small ruminant sector, consisting largely of sheep in Azerbaijan, is the most important source of nutrition (meat and cheese) and livelihoods in rural areas. Rural households own, on average, 2.18 cattle and buffaloes, of which 1.05 are milking cows, plus 6.58 sheep and goats (SSC, 2019a).

The sheep sector in Azerbaijan is currently facing an alarming situation, demonstrated by the declining sheep population. Notably disturbing is the negative annual average growth rate of – 1.2 percent over the period 2015 to 2018 – implying that the population is actually declining by about 100 000 heads per year. The situation is further exacerbated by the fact that slaughter weights have declined from about 30–40 kg/animal to 25–30 kg/animal, leading to a decline in carcass weights from 16–17 kg/animal to 12–13 kg/animal, with implications for the total sheep meat production in the country. The severity of the situation calls for immediate action. If the challenges facing the sector are not immediately addressed, the sheep population could be severely impacted and reversal to a growth path for the sector will be very difficult.

Historically, natural climatic conditions, with summer and winter pastures, have contributed to natural growth of the sector. Sheep meat and sheep milk cheese are key traditional products widely

consumed in the country. Prior to the dissolution of the Soviet Union, there was a good support system catering to the sector and a large market for lamb and sheep products and there were extensive grazing lands, leading to a relatively stable sector.

The downturn began following the dissolution of the Soviet Union, which had a direct impact on availability of support services and market demand for sheep products like wool and, consequently, on the nature of sheep-rearing as an economic activity. Availability of pastureland has declined due to war and land occupancy by Armenia, which now controls a large share of the winter pastures. Furthermore, to diversify the post-oil economy, there is a policy directive in Azerbaijan to bring larger areas under agricultural cultivation, with a focus on high-value crops, thus reducing the land available for feed and fodder production and pasturelands. The situation is further exacerbated by decline in quality of pastures due to climate change and limited efforts at regeneration of pasturelands (Oglu *et al.*, 2017). The sector has weak institutional support, inadequate to cover its needs; consequently, the danger of spread of zoonotic diseases looms large, due to incomplete coverage of veterinary services. Even as this study was in progress, the country experienced the first death from anthrax in recent years, though ten cases of anthrax have been reported almost every year since 2014.²

While there are immense supply-side pressures, there is strong demand for sheep meat in the country and globally. The State Statistical Committee Report on Food Balances (SSC, 2019b) reports 98.3 percent sufficiency in sheep consumption; however, the UN Comtrade statistics indicate imports of about 4 percent of the domestic consumption.

The Strategic Roadmap on Agriculture developed by the Ministry of Agriculture of the Republic of Azerbaijan (2016) places strong focus on supporting the development of the sheep sector for import substitution. As discussed later in this report, opportunities exist for meeting the increasing local demand driven by higher incomes and urbanization, along with catering to the export markets, especially in the Middle Eastern countries. In addition to improving production and productivity, there is great emphasis on improving quality to meet the new food safety norms imposed by the Food Safety Agency in order to align the food safety systems in the country with global norms.

In response to the changing demand and supply situation, the vision of the policy-makers is to transform the sector from a traditional system based on extensive and semi-intensive farming to a system of modern commercial farms based on intensive production, to cater to the higher meat demand while improving quality throughout the chain. The transition from the traditional system to a modern system is immensely challenging. It is critical to ensure food security for a large number of herders engaged in sheep-rearing, since meat is the most important source of protein, along with sheep milk cheese. Consequently, sheep sector development calls for strong policy and institutional support along with project activities and initiatives to revive the sector and facilitate dynamic growth through modernization.

This sheep value chain study has been commissioned under the FAO-Azerbaijan Partnership Project to provide direction and strategic vision to the objective of transforming the sheep sector in Azerbaijan. The Project has identified broad areas of activity, including value chain development, capacity-building, linkages to services and enterprise development. The value chain analysis will help to assess the existing challenges to meeting the requirements

of the end markets. Based on the assessment, the study presents a vision for the sheep sector development. A strategic action plan for achieving the vision objectives is described in detail, along with the roles and responsibilities of the implementing partners. The study is organized as follows. Section 1 introduces the objective of the study and lays out the methodology, while also presenting an overview of the sheep sector in Azerbaijan. Section 2 presents a detailed assessment of the end market as the driving force for value chain development. Section 3 presents in detail the meat value chain, while Sections 4 and 5 emphasize the sheep wool and cheese value chains, respectively. Based on the detailed value chain assessments, Section 6 presents the vision for developing the sector over the next five years, along with the vision objectives. Finally, Section 7 concludes with a strategic action plan for the way forward.

1.2 OBJECTIVES AND METHODOLOGY

The objective of the study is to undertake a value chain assessment of the sheep sector in Azerbaijan, focusing on sheep meat, wool and cheese sectors. The methodology is based on the sustainable food value chain approach as presented in FAO (2014a). The specific objectives of the study are as follows:

1.1. Conduct a detailed assessment of sheep-rearing practices at the herder level, including taking stock of the current production numbers, breeds, practices, herd sizes, volume and total marketable surplus.

1.2. Identify the challenges and concerns at the herder level in production and marketing of sheep for meat, wool and cheese.

1.3. Map the value chain and assess the roles of each stakeholder, such as input providers, herders, extension functionaries, traders, butchers, slaughter points and consumers across the chain.

1.4. Conduct a detailed assessment of the margins and volumes, along with an assessment of the challenges at each level in the value chain.

1.5. Assess the present demand-supply gap and the seasonal trends in demand and supply.

1.6. Assess current and potential domestic, regional and international markets.

1.7. Carry out a social assessment and identify the gender inequalities to develop a gender-responsive approach for the project.

1.8. Map the policy environment, institutional frameworks and support services relevant to the sheep subsector

The study is based on both a detailed review of the secondary literature and analysis of primary data to yield qualitative and quantitative results pertaining to the various functions and actors of the value chain. *Table 1* shows the stakeholders surveyed, the research tools used and the outcomes achieved through herder household surveys, Key informant interviews (KIIs), focus group discussions (FGDs) and direct observation. Details of the KIIs conducted are presented in Annex 1.

Table 1: Details of data collection

STAKEHOLDERS	TOOLS OF DATA COLLECTION	OUTCOMES
Herders	<ul style="list-style-type: none"> - Household survey - FGD 	<ul style="list-style-type: none"> - Production practices (<i>feed, housing, health</i>) - Availability of the necessary inputs (<i>e.g. feed, vaccines, drugs</i>) and services (<i>e.g. health, credit, insurance, extension</i>) - Cost and risk involved - Selling practices and patterns - Plans for sheep-rearing in the future
Market players <ul style="list-style-type: none"> - Sheep traders - Slaughter points - Butchers - Cheese traders - Cheese retailers - Supermarkets 	<ul style="list-style-type: none"> - KII - Direct observations 	<ul style="list-style-type: none"> - Scale of operations - Sales of lamb/mutton and cheese - Backward and forward linkages - Marketing channels - Regulations for hygiene and food safety - Challenges and opportunities
Other stakeholders engaged in policy-making and providing services <ul style="list-style-type: none"> - Veterinary service providers - Research/education institutions - Food safety agency, export promotion agencies - Financial institutions 	<ul style="list-style-type: none"> - KII 	<ul style="list-style-type: none"> - Farmer access to inputs and services - Regulations governing the sheep sector - Hygiene and food safety regulations - Vision for the sheep sector - Pasture management - Support for exports - Research support - Availability of trained workforce for the sector - Access to finance

Sampling approach for farmer survey

The detailed farmer survey was carried out in three districts of Azerbaijan, namely Zagatala, Beylagan and Aghjabadi, as these districts have been identified as the major areas for project implementation. The sampling approach aimed at ensuring coverage of small, medium and large herd owners to understand in detail their production and marketing practices. The survey was conducted in 300 households across the three districts – approximately 35 households with a herd size of less than 50 sheep, 40 households with herds of 50–200 and 20 households with a herd size of more than 200 sheep were covered in each district. The actual sample is presented in *Table 2*.

Table 2: Sampling approach for household survey

DISTRICT	HOUSEHOLDS SURVEYED			TOTAL HOUSEHOLDS
	Less than 50 sheep	50-200 sheep	More than 200 sheep	
Zagatala	35	40	20	95
Beylagan	35	45	22	102
Aghjabadi	38	42	23	103
Total Households	108	127	65	300

1.3 OVERVIEW OF SHEEP SECTOR IN AZERBAIJAN

Since gaining independence from the Soviet Union in 1991, Azerbaijan has made significant economic progress, supported by fast-growing oil and energy industries. Azerbaijan is rich in oil and

natural gas – the two leading products in the country's industry – along with cement, machinery and cotton. While the industrial sector accounted for 49.6 percent of GDP in 2013, agriculture accounted for 5.7 percent (Asian Development Bank, 2014). Oil and gas constitute 90 percent of Azerbaijan's exports, which means global oil price fluctuations have a direct and drastic impact on the country's GDP. Of late, there has been a growing focus on developing the non-oil sectors for the domestic market as well as for export in order to strengthen the economy.

The agriculture sector, though contributing less than 6 percent of GDP, employed about 37 percent of the country's population in 2017 and is one of the leading non-oil sectors.³ The major crops produced in the country include wheat, barley, corn, wine grapes, tea, silk and tobacco. Azerbaijan has a widely varied topography and diverse agroclimatic conditions. Even though about 55 percent of the country's land is agricultural land, Azerbaijan is a net importing country of agricultural and food products (van Berkum, 2017). Azerbaijan is vulnerable to the adverse impacts of climate change because the level of the Caspian Sea has been rising and the country is becoming drier (Asian Development Bank, 2014), another reason to increase focus on agricultural sustainability in the country.

Cattle and sheep-breeding are the most preferred and productive livestock activities in Azerbaijan. Sheep-rearing takes place mostly on pasturelands in remote and rural areas and therefore has the potential to directly benefit the rural economy. Small ruminants constitute only a small share of the total output in the livestock and agricultural sector as a whole, but they play a much bigger role in terms of their social and economic contribution to the remote and rural areas of the country. The small ruminant sec-

tor, consisting largely of sheep in Azerbaijan, is a source of nutrition and (informal) employment in the rural areas, but structural constraints have restricted the sector's growth following the country's independence in 1991. Sheep-farming is done using traditional practices and, over the last three decades, there has been a gradual shift from focus on both meat and wool production to largely meat production.

The domestic production of sheep meat falls short of the demand and the country imports sheep meat (as well as beef), which is indicative of the demand-supply gap that could be met by increasing production. Data from Azerbaijan's State Statistical Committee (SSC, 2019a) for recent years indicate about 98 percent self-sufficiency in sheep meat. However, the Strategic Roadmap for Agriculture in Azerbaijan recognizes this as an important sector for import substitution. The current situation of demand and supply is further discussed in detail in the section on domestic market assessment.

Baumann *et al.* (2014) contend that socio-economic conflicts (referring to Azerbaijan's war with Armenia) are extreme forms of shock which shape land use patterns. The war and land occupancy by Armenia has had a direct impact on the pasturelands available in Azerbaijan for grazing livestock and, consequently, the profitability of the sector. It is mainly the women who are responsible for daily management and care of the sheep, but as this labour is in the informal domain, it is not recorded or recognized *per se*. The transition from a state economy to a market economy and the occurrence of wars has also had a direct impact on women's employment, pushing them further into the informal space (Najaifizadeh, 2003).

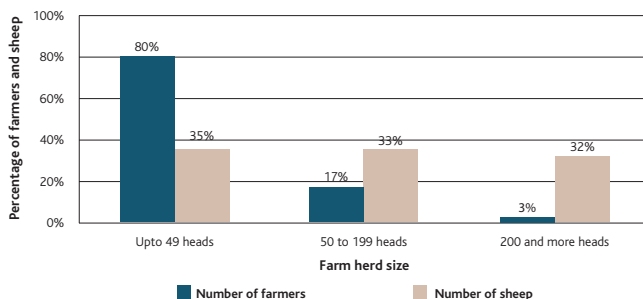
Distribution of the sheep population

The distribution of sheep, like wealth and land assets, is skewed heavily in favour of large herd owners. Of the total 184 000 households engaged in sheep-rearing, 80 percent keep a herd size of less than 50 sheep, while the total share of sheep which belong to them is only a little over a third (35 percent) of the total sheep population. The other side of this inequality in distribution and ownership can be seen from the fact that about 46 percent of the sheep population is owned by only about 8 percent of the population, in the category of farms which have more than 100 heads of sheep each (Figure 1). The situation is similar in the case of land resources, where 5 percent of the farmers own about 40 percent of the land.

This distribution of sheep herds is indicative of two things about the nature of sheep-farming in Azerbaijan. First, it is mostly the smaller herders who are doing the sheep-rearing and any intervention in the sector is bound to benefit a large number of sheep herders. Second, for the smaller herders, sheep-farming is also a means of subsistence and therefore sale of sheep depends on a number of factors, including personal financial requirements of the herder, and is not always done following the market factors of demand and supply.

Figure 1:
Distribution of sheep
among farms
in Azerbaijan

Source: SSC
(various years)



Sheep production trends

The sheep population in Azerbaijan rose steadily over the period 2000–2015 (Figure 2) from 5.5 million heads to 8 million heads in 2015. The population peaked in 2015, reaching 8 million heads for the first time, but fell in the years after that to about 7.7 million heads in 2018. The last three years show a disturbing trend, as the overall population is declining while the slaughter rate has increased. This situation is probably a direct reflection of the decline in land availability for feed and fodder production over the same period.

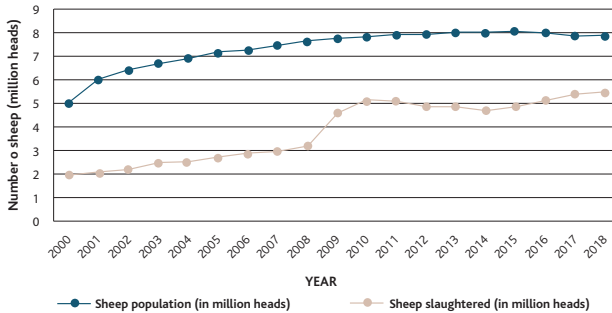


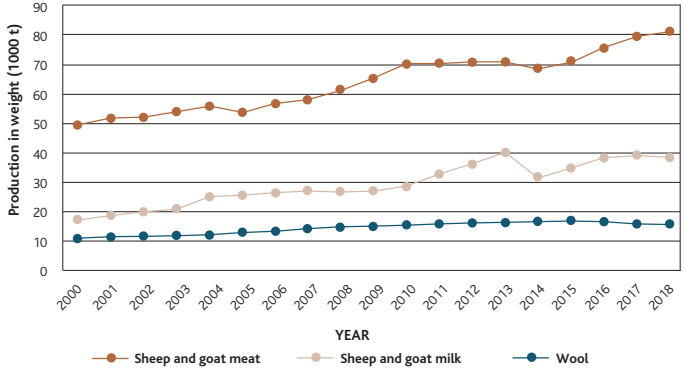
Figure 2:
Sheep population
and sheep slaugh-
tered in Azerbaijan
(2000–2018)

Source: SSC
(various years)

Figure 3 shows the trend in sheep meat, milk and wool production over the period of 2000–2018. Meat production has increased at a steady pace from 60 000 tonnes in 2000 to 80 000 tonnes in 2018. The significant increase in meat production even while the sheep population is declining is a clear indication of the high slaughter rate. Production of sheep milk has been steadily rising; there was a sharp decline between 2013 and 2014 but production has been on the rise since then. Production of wool has continued to be under 20 000 tonnes throughout this period and has almost stagnated over the last five years, registering a decline after 2015.

Figure 3:
Production of sheep
meat, milk and wool
in Azerbaijan
(2000–2018)

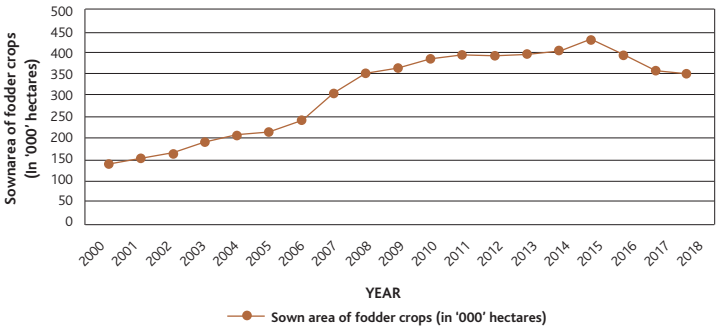
Source: SSC
(various years)



Fodder crops form a significant part of the rural economy by providing cheap forage for cattle as well as small ruminants. Pastures can provide only certain nutrition requirements for the animals and are not available throughout the year, making cultivation of fodder important for sustainable livestock production. The sown area of fodder crops has risen steadily over the years, peaking in 2015 with 429000 hectares of land under fodder cultivation, after which a downward trend began (Figure 4), reaching 349000 hectares in 2018, a sharp decline of almost 25 percent.

Figure 4:
Sown area of fodder
crops in Azerbaijan
(2000–2018)

Source: SSC
(various years)



This growing pressure on land and insufficient feed and fodder availability threatens the growth and development of the sheep as well as the livestock sector as a whole. Along with other production factors, feed and fodder are major determinants of carcass weight. In *Figure 5*, we see that the average carcass weight of a slaughtered sheep has declined from about 17–18 kg in the year 2000 to about 12–14 kg in the past few years. There is a decline of about 3 kg carcass weight per animal, which translates to about 7–8 kg live weight. This is possibly a direct reflection of a lack of adequate nutrition, as farmers mentioned lack of fodder as a critical challenge to sheep production.

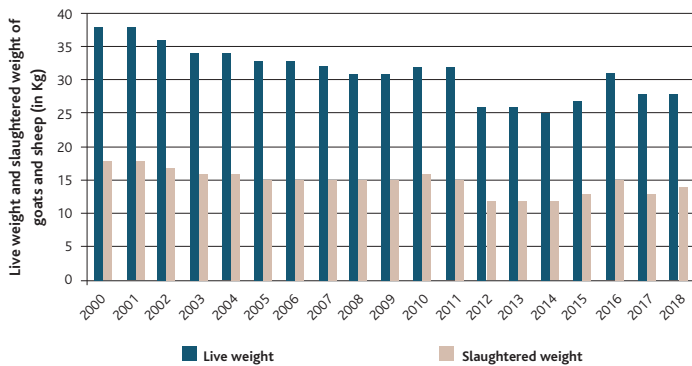


Figure 5: Live weight and slaughtered weight of sheep and goat in Azerbaijan (2000–2018)

Source: SSC (various years)

A key point emerging from these trends is that declining feed and fodder resources are putting enormous pressure on the sheep sector, as evidenced in higher slaughter rates and lower carcass weights. A combination of these factors has resulted in the diminishing growth rate of the sheep population. The feed and fodder issue requires immediate attention to stop the decline in numbers, which can potentially have a lasting negative impact on the availability of sheep meat in the country.

A watercolor illustration of a brown lamb with large ears, looking towards the viewer. The lamb is positioned in the center-left of the frame, partially obscured by tall, vibrant green grass. The background consists of a bright green field that transitions into a deep blue sky with soft, white clouds. The overall style is soft and artistic, with visible brushstrokes and a rich color palette.

2

END MARKET ANALYSIS FOR SHEEP MEAT

- 2.1 Global market
- 2.2 European Union and Middle Eastern markets
- 2.3 Regional market (CIS countries)
- 2.4 Domestic market

2.1 GLOBAL MARKET

The global sheep population increased from 1.1 billion heads to 1.2 billion heads over the period 2007–2017, an increase of about 8.5 percent over the decade. Sheep meat production increased from 8.7 million tonnes to 9.5 million tonnes over the same period, with a similar growth rate of 8.7 percent. Figure 6 and Figure 7 present the leading countries in sheep population and sheep meat production. The sheep population in New Zealand, the leading meat exporter, was less than 30 million heads in 2017.

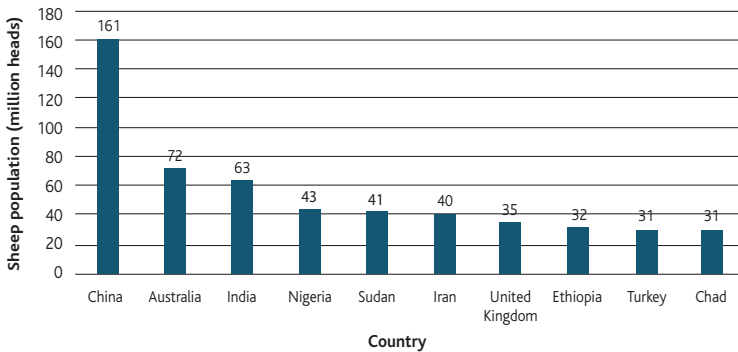


Figure 6:
Leading countries
in sheep population
(2017)

Source: FAO
(2017a)

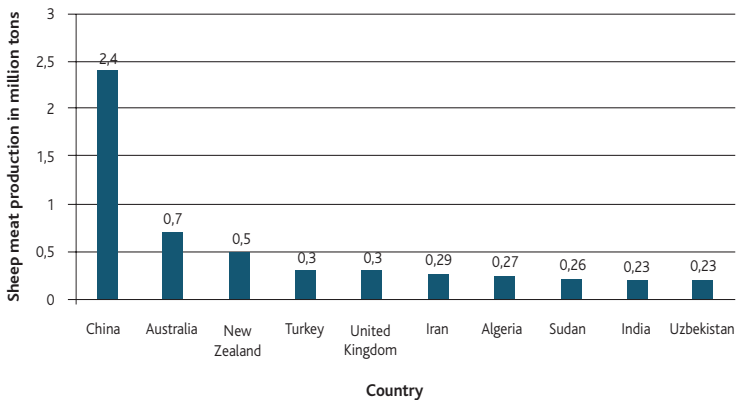


Figure 7:
Leading countries
in sheep meat
production (2017)

Source: FAO
(2017b)

Figure 8 and Figure 9 present the leading countries in sheep meat exports and imports. Global meat exports totaled 1.1 million tonnes; New Zealand and Australia accounted for 70 percent of the total meat exports.

In 2018 global imports of sheep meat were valued at about USD 600 million (~823,000 tonnes). The United States of America was the leading importer of sheep meat, followed by the European Union (EU) and Middle Eastern countries. The EU (41 percent) and the Middle Eastern countries (21 percent) jointly accounted for 62 percent of the global sheep meat imports.

Figure 8:
Leading countries in
sheep meat exports
(2018)

Source:
UN Comtrade
(2018)

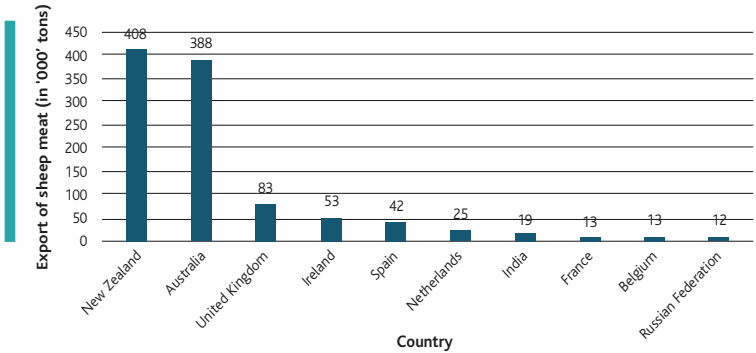
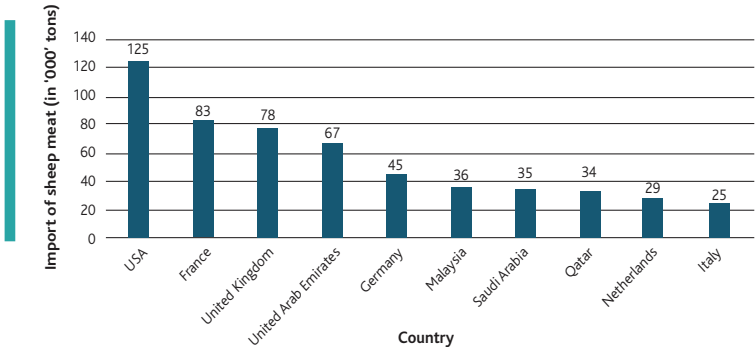


Figure 9:
Leading countries for
sheep meat imports
(2018)

Source:
UN Comtrade
(2018)



2.2 EUROPEAN UNION AND MIDDLE EASTERN MARKETS

A study by Euromonitor International (2017) has identified EU and Middle Eastern markets as high potential export markets for sheep meat from Central Asian countries. The findings are equally relevant in the case of Azerbaijan. The price points for lamb in Germany (as well as in other EU countries) are high, the packaging is typically quite small, and consumers expect to pay more than the average meat price for lamb, to benefit from its health properties and nutritious value. Likewise, the United Arab Emirates (UAE) strongly relies on agricultural imports from international markets. Consumers in the UAE generally prefer high-quality tender beef and lamb. However, lamb benefits not only from market demand, but also from cultural/religious demand over the Hajj period, which also features higher price points.

We take a closer look at the EU and Middle Eastern markets as the biggest potential export markets for sheep meat from Azerbaijan, followed by an assessment of countries in the Commonwealth of Independent States (CIS), as there is a fair amount of cross-border trade across countries in the region.

Eu Market for sheep meat

The EU is the second largest importer of sheep meat in the world, as it is about 85 percent self-sufficient in sheep meat. Currently, there are 85 million sheep on 830 000 farms in Europe.⁴ The number of sheep producers in the EU has declined by 50 percent since 2000 and during the past ten years sheep productivity has decreased by up to 40 percent, depending on the country and the farming system. This decline in sheep production may be due to a number of factors, including level of profitability,

⁴ <http://www.sheepnet.network/node/303>

part-time farmers, reduced labour availability, lack of uptake of technology and innovation, etc.

In 2018 total imports of sheep meat into the EU was 340 000 tonnes, with the top six countries accounting for more than 75 percent of the total imports (see Table 3). The leading sources of imports for the EU partners are New Zealand, Australia, Spain and Ireland. Currently, the CIS countries do not have much trade with the countries in the EU.

Table 3: Leading importers of sheep meat in EU (2018)

COUNTRY	SHARE IN EU EXPORTS BY VOLUME (PERCENT)
France	24
UK*	23
Germany	13
Netherlands	8
Italy	7
Belgium	6
EU Total Imports ('000 tonnes)	340

Note: UK is included here as data were reported before 2019

Source: UN Comtrade (2018)

Middle Eastern market for sheep meat

In 2018, the top three importers in the Middle Eastern region (UAE, Saudi Arabia and Kuwait) accounted for more than 75 percent of sheep meat imports in the region (Table 4). A major point of difference from the EU imports is that these countries import from a large number of countries across the globe. Though New Zealand and Australia are the leading suppliers, several other countries

from different continents, including Brazil, India and Ethiopia, are also exporting to the Middle East. These countries receive imports from CIS regional countries, including Georgia and Kazakhstan, and there are some very small imports from Azerbaijan. Clearly, there is potential to export to the Middle East after catering to the requirements of the domestic market and meeting the quality requirements of the importing countries.

Table 4: Leading importers of sheep meat in the Middle East (2018)

COUNTRY	SHARE IN TOTAL IMPORTS BY MIDDLE EASTERN COUNTRIES BY VOLUME (PERCENT)
UAE	38
Saudi Arabia	20
Kuwait	20
Middle East Total Imports ('000 tonnes)	176

Source: UN Comtrade (2018)

The Euromonitor International study (2017) emphasizes some practical approaches to improve the trade from Central Asian countries to the EU and Middle Eastern region: I.) Raise awareness of taste and attributes of meat produced in this region; II.) Consolidate production to enhance quality consistency and volume supply; III.) Develop livestock populations for long-term trade sustainability; IV.) Achieve international certification (GLOBAL GAP, HACCP, etc.); V.) Learn from international best practices to modernize laboratories; and VI.) Identify opportunities for partnerships in air freight.

2.3 REGIONAL MARKET FOR SHEEP MEAT (CIS COUNTRIES)

When considering the sheep market of Azerbaijan, it is important to understand the situation of the key CIS countries. After dissolution of the Soviet Union, the CIS countries, including Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan, faced similar challenges to their sheep sectors. Major markets for wool and meat were lost in Russia, herd sizes were depleted, returns from the sector fell and herders moved towards focusing on meat production as opposed to a combined focus on both meat and wool. The sheep sector followed a similar pattern over the years in these countries in terms of dominance of informal markets, informal cheese production and a sharp drop in the market for greasy coarse wool. Consequently, the situation of the sheep sector is similar in most of these countries.

Figures 10 and 11 present the details of the sheep population and meat production in the regional countries. We also include Russia in the discussion of the regional market, as it is an important player in the region and evidently one of the largest. With ~7.7 million heads of sheep, Azerbaijan falls in the middle category. Russia, along with Uzbekistan and Kazakhstan, have sheep populations of higher than 15 million. On the other hand, countries like Georgia, Armenia and Ukraine have sheep populations of less than one million heads. Likewise, with about 80 000 tonnes of sheep meat production, Azerbaijan also falls in the middle category, with Uzbekistan leading sheep meat production at 220 000 tonnes.

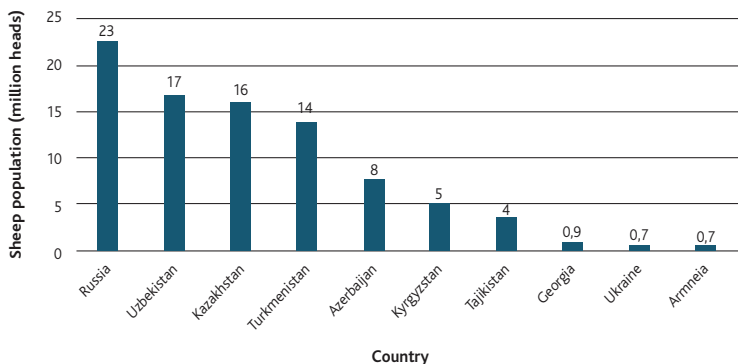


Figure 10:
Sheep population
in the CIS region
(2017)

Source: FAO
(2017a)

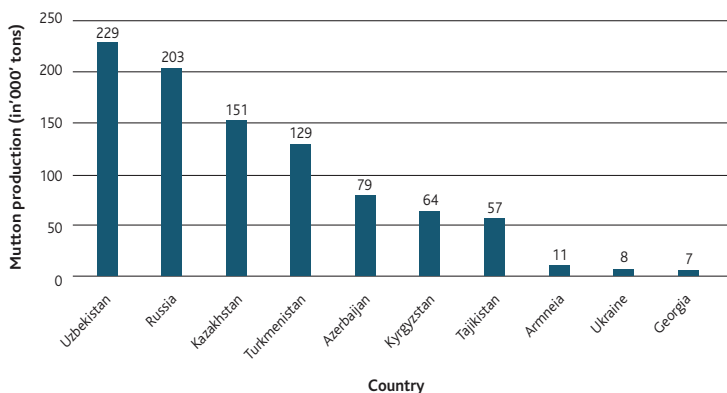


Figure 11:
Meat production
in the CIS region
(2017)

Source: FAO
(2017b)

Figures 12 and 13 present the details of trade in live sheep. In 2017, Azerbaijan was the largest importer, with imports of more than 100 000 heads, while Russia was the largest exporter, exporting more than 200 000 heads. Georgia has almost equal export and import (probably re-export) volumes, while other countries also export small volumes. Import of meat into the region is very negligible. Overall assessment of the regional countries reveals that Azerbaijan has the highest deficit in sheep meat, while Russia is the highest exporter (Figure 14).

Figure 12:
Live sheep imports
in the CIS region
(2016–2018)

Source:
UN Comtrade
(2016–2018)

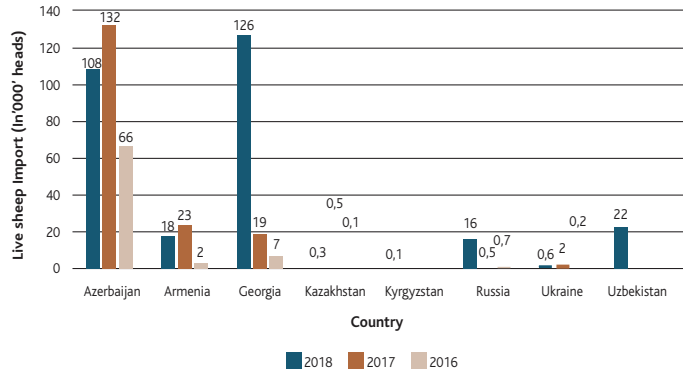


Figure 13:
Live sheep exports
from CIS region
(2016–2018)

Source:
UN Comtrade
(2016–2018)

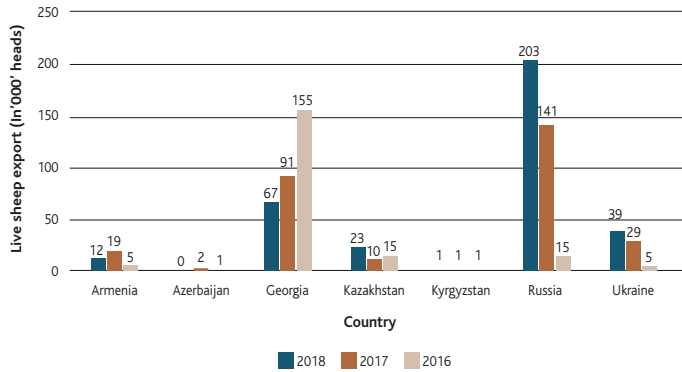
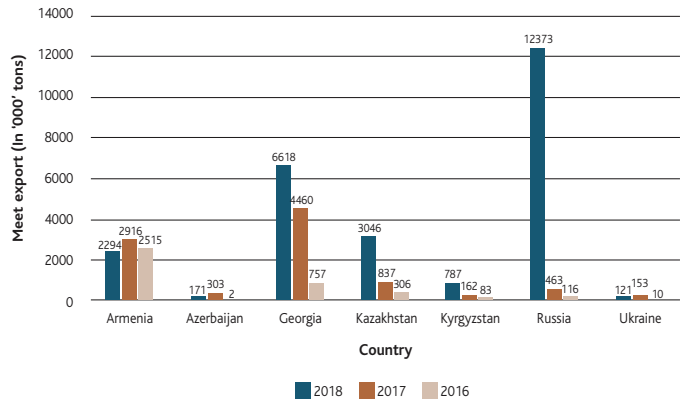


Figure 14:
Sheep meat exports
from CIS region
(2016–2018)

Source:
UN Comtrade
(2016–2018)



2.4 EXISTING AND POTENTIAL DEMAND FOR SHEEP MEAT IN THE DOMESTIC MARKET

Beef has the highest market demand in Azerbaijan followed by poultry and sheep meat. While the production of lamb and beef has been increasing steadily over the past few decades, the poultry meat production has increased exponentially (Table 5).

Table 5: Total consumption and per capita consumption of meat in Azerbaijan

INDICATORS/ YEARS	2007	2011	2012	2013	2014	2015	2016	2018
Beef	103 558	131 297	126 321	139 345	139 353	143 014	139 742	158 328
Mutton & Goat meat	58 702	70 216	70 538	72 086	70 176	71 901	75 834	84 698
Pork	5 257	4 841	2 917	2 072	3 931	4 029	6 617	8 912
Poultry	82 535	85 627	97 351	95 445	100 741	100 130	119 899	142 040
Total meat consumption ('000 tonnes)	250 052	291 981	297 127	308 948	314 201	319 074	342 092	390 351
Population ('000)	8666.1	9111.1	9235.1	9356.5	9477.1	9593.0	9705.6	9961
Consumption per capita (Kg/annum)	28.9	32.0	32.2	33.0	33.2	33.3	35	39.1
Consumption per capita (Mutton & Goat)	6.8	7.7	7.6	7.7	7.4	7.5	7.8	8.5

Source: SSC (Various years)

Production of sheep meat increased from 50 000 tonnes in 2000 to 81 000 tonnes in 2018. Azerbaijan statistics (SSC, 2019b) report 98 percent self-sufficiency in sheep meat production with imports of 2–4 percent of the total domestic consumption in the past few years. There are some concerns with this notion of self-sufficiency, however. First, the Strategic Roadmap for Agriculture has identified sheep sector development for import substitution and improving self-sufficiency. Second, the imports are largely in the form of live sheep at markets located near the border. Key stakeholders indicated that imports might actually be higher than reported. As discussed later in the report, this is because the imports for breeding purposes attract almost negligible customs duty as compared with 15 percent customs duty on imports for consumption. Third, a study by Bonnier (2017) raises concerns regarding this concept of self-sufficiency. The specific argument is: would demand be much higher if the disposable income of the population were higher? Disposable incomes for average families are relatively low in Azerbaijan. The author refers to a study conducted by supermarkets concluding that an average family has an income of 1 300 AZN per month, of which 350 AZN is available for food purchases at supermarkets. This limits the spending to 3 AZN per person/day, which means that priorities have to be assigned for what is needed and meat may not always have the highest priority.

Two key factors for future potential demand of sheep meat are population growth rate and GDP per capita. Population growth in Azerbaijan has been positive, although at a relatively low rate (1 percent) over recent years, with 9.961 million inhabitants in 2018. The GDP per capita in Azerbaijan increased rapidly from USD 665 in 2000 to a high of USD 7 891 in 2014. In 2015, the GDP per capita plummeted to USD 3 381 and since then has seen a rather sluggish upward movement. Data from the International Monetary Fund predict an upward movement to USD 5 554 in 2025, implying an increasing trend in meat consumption.

Other key factors driving the demand for sheep meat include urbanization, increasing health consciousness, lifestyle changes and a move towards processed and high-value products. Urbanization, especially in regions outside the developed countries, is expected to be an important driver of the composition of food demand. Wealthier, urban populations consume more animal-based and processed products, which call for more industrialized and lengthy food supply chains (e.g. FAO, 2017c). Officially, about 25 percent (2.5 million) of all inhabitants of the country reside in the city of Baku but an estimated 4 million live in the Baku metropolitan area. Another aspect of urbanization is the shift in consumer preference towards high-quality and convenience products – processed, pre-cut, pre-packaged and ready-made.⁵ The main supermarkets in Baku – Spar, Bravo, etc. – are now selling meat in this modern format. The high prices for premium meat and cuts are reflected in the high prices for premium products. As shown in Table 6, about 12.5 percent of the population in Baku is already purchasing beef from the supermarkets. The figures for sheep meat are likely to be similar.

Table 6: Structure of agricultural products purchase channels for the population in Baku

PRODUCT NAME	Traditional markets	Supermarkets	Small local shops	Travelling salesperson	Gifts, fairs, home, etc.	Does not buy
Milk (industrial)	0%	44.1%	5.4%	0%	0.2%	51.2%
Milk (rural)	8.7%	0.7%	5.4%	47.4%	17.8%	25.1%
Dairy products (industrial)	1.1%	62.0%	9.6%	0%	0.4%	29.7%
Dairy products (rural)	16.0%	0.7%	4.1%	29.6%	25.2%	32.1%
Beef	22.1%	12.5%	62.8%	2.5%	7.0%	2.6%

Source: *Bonnier (2017)*

⁵ euromonitor.com/Azerbaijan

Overall, the end market for sheep meat in Azerbaijan is to meet the domestic demand, along with the potential to export to the Middle Eastern countries. However, the increase in the export market will be based on the quality requirements of the importing country and will require investments along the value chain to establish the relevant infrastructure for processing and exports. An additional factor, not analysed in detail in this report, is that of increasing tourism, which will also lead to higher demand for sheep meat.



3

SHEEP MEAT VALUE CHAIN ANALYSIS

- 3.1 Mapping the value chain
- 3.2 Production practices
- 3.3 Distribution channels for live sheep
- 3.4 Slaughter, processing and retailing
- 3.5 Margins
- 3.6 Policy and institutional support for sheep sector
- 3.7 Overall assessment of the sheep meat value chains

In this chapter we present the details of the sheep meat value chain. First we present an overview of the existing value chain, to provide a broad understanding of the key players in the chain and the functioning of the chain. This is followed by a detailed assessment of the activities at all levels in the value chain – production practices at the farmer level, marketing of live sheep, slaughtering/processing and sale of meat to final consumers, along with an indepth assessment of the policy environment and institutions supporting the sector. Finally, we present an overall assessment of the challenges in the meat value chain. The current value chain map is illustrated in Figure 15.

3.1 MAPPING THE VALUE CHAIN

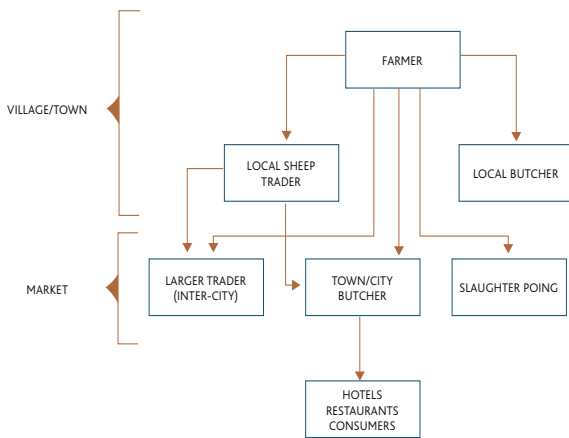


Figure 15: Movement of sheep across the value chain

It is important to mention that, at all levels in the value chain, all the players deal in both sheep meat and beef – including farmers, traders, butchers and slaughter points. Most livestock markets are also joint markets for cattle and sheep/lambs. Hence, the overall

incomes and costs for all players are shared among these operations. The volume of beef is, in general, somewhat higher and the price is somewhat lower.

Production: At the production level, 184 000 households, categorized as small (<50 heads), medium (50–100 heads) and large (100–500+ heads) herd owners, are engaged in sheep-rearing. A significant majority (80 percent) own a herd size of less than 50 sheep, accounting for 35 percent of the total sheep population, while 8 percent of households own 46 percent of the sheep population. The sheep farming systems are largely extensive and semi-intensive, based on the availability of pastures and arable land for fodder production.

Marketing of live sheep: In the production areas, herders sell lambs to the local butchers or to traders in the weekly livestock market nearby. Livestock markets are combined markets for lamb and cattle. Small herders bring 2–3 lambs to the markets each time, transporting them in cars. Medium and large herd owners often bring 20–30 lambs to the market in small trucks. Some herders in this category come to the market with one or two sheep, contact traders in the market and then sell to the traders directly from their farms. This is largely done to avoid the marketing fees (1 AZN/animal) and the transportation costs.

Most of the lambs are sold at 3–6 months of age, with live weight of about 35 kg or 15–16 kg of meat weight. The average price received by the herders is 5 AZN per kg for live weight or approximately 130–180 AZN per animal for 30–35 kg live weight.

Primary and secondary traders are the main players engaging in aggregation, transportation and marketing of lamb/sheep at the

livestock markets. Primary traders aggregate lambs from herders within the markets and sell to the secondary traders. Secondary traders buy lambs directly from herders and primary traders for sale in terminal markets in the cities. Many secondary traders deal in both lambs and cattle and usually transport them to the cities jointly.

Processing and sale of meat: Butchers are the main players engaged in slaughter of animals and sale of meat. Butchers operating in cities closer to production regions purchase sheep directly from the herders and from the primary and secondary traders operating in the markets.

Butchers operating in big cities like Baku purchase sheep largely from the secondary traders and to a lesser extent from the herders who bring sheep directly to the market from nearby areas. There is a significant difference in the scale and operations of the butchers, who vary from small butchers (20–30 kg/day) engaging in retailing, to some large-scale butchers (200–300 kg/day), who are also supplying to restaurants, and for parties, functions, etc.

Some chain meat shops and supermarkets are also selling value-added products such as boneless meat, etc. Meat dishes are also very popular when served in restaurants and hotels. The price of meat ranges from 11–12 AZN/kg in the smaller towns to 13 AZN/kg in Baku, while some premium cuts also sell for as high as 18 AZN/kg. As of now, investment in processing is limited and there are few firms engaging in processing of meat or selling branded and processed products (Bonnier, 2017).

Apart from butchers, there are slaughter points in the towns and near the cities, which offer services of slaughtering the animals for

the traders and butchers at a cost. They also purchase and slaughter both cattle and sheep, mostly for sale to butchers, although some of them also have retail outlets. The fee for slaughtering is 20 AZN for cattle/buffalo and 2–3 AZN for lambs. These slaughter points differ in scale and size depending on the size of towns and cities.

Box 1 presents a mapping of the existing meat value chains in the regions as well as in Baku. There are a number of interlinked players involved in the purchase and sale of lamb. In the rural areas, the chains are relatively short due to proximity of production and consumption. Rural consumption of meat is quite prevalent where the meat is sold within the village itself. In other cases, the butcher has direct connections with the herder and purchases directly from the herder within or outside the rural market.

Box 1: Channels for sale of mutton

VALUE CHAINS IN AGJABEDI/BAYLAGAN

Chain 1: Herders – Consumer

Chain 2: Own farms/Herders – Local butcher – Consumer

Chain 3: Herders – Primary/Secondary trader – Local butcher – Consumer

Chain 4: Herders – Slaughter point – Local butcher – Consumer

VALUE CHAINS IN BAKU

Chain 5: Own farms/Herders – Butcher – Consumer

Chain 6: Herders – Primary/Secondary trader – Butcher – Consumer

Chain 7: Herders – Trader – Slaughter point – Butcher – Consumer

Chain 8: Own Farms/Herders – Supermarkets – Consumers

Note: Chain 3 and Chain 6 are most dominant

An important observation emerged from the overall assessment of the sheep value chain. There is a fair amount of vertical inte-

gration in the chain; the downstream players, including slaughter points, butchers and leading meat chains, own large sheep farms for supplying to their own operations, while also procuring from the market as required. This is a good indicator for the future opportunity to meet the requirements of export quality, as the lead players will have good control over the quality aspects along the chain.

3.2 PRODUCTION PRACTICES

As discussed above, the sheep population in Azerbaijan is distributed among small, medium and large herd owners. The description of the production practices followed by each category of sheep rearers is based on an in-depth survey of farmer households.

For the small herders, sheep-rearing is a form of subsistence farming, contributing to small incomes while mostly catering to the nutrition needs of the family through meat and cheese. The large herd rearers have herd sizes of 200 to 500+ or in some cases even higher. The large herd owners are better supported in terms of having better access to resources and services, due to formal/informal linkages with the government agencies. Often, they are ex-employees of the government agencies or related to employees or ex-employees. Usually, they have access to more land area, largely leased out from the government agencies, and have better access to information regarding scientific breeding practices and livestock services. It is usually the relatively larger herders who are selling lamb, as well as by-products like cheese, on a regular basis to the traders and in the market as compared to the smaller herders.

The key findings from the herder survey have identified the sheep management practices followed by the small, medium and large herd owners. The profile of the sheep herders is presented first, followed by the practices for breed development, feed and fodder, health management, housing and marketing of lamb, wool and cheese by the herd owners.

The main veterinary service provider for sheep is the Agro Services Agency of the Ministry of Agriculture, which extends veterinary services through the Ministry's regional centres. For better outreach to farmers, there is a veterinary field point for every 2–3 villages. The veterinary officers of the field points extend veterinary services to the farmers. The regional centres are also responsible for agricultural and livestock extension. In addition to the government services, private veterinary shops in small towns and rural areas in the regions are also actively engaged in providing veterinary services along with supplying vaccines, medicines, etc.

Profile of the sheep-herders: As discussed in the methodology section, the total sample size for the survey was 300 herders, of which 108, 127 and 65 belonged to the small, medium and large herd size categories, respectively. The average herd size across these categories was 28, 95 and 480, respectively.

Table 7 presents a brief profile of the herd owners participating in the survey. Two key points emerge. First, there is not much difference in the education level of the sheep herd owners across all the three categories. Almost 70–80 percent of the sheep herd owners had secondary education. As reported by van Berkum (2017), the general education level in Azerbaijan is relatively good – 98.5 percent of the population over 25 years old have completed primary school, of which 95.6 percent finished second-

ary school and a significant part (30 percent) completed post-secondary school. Second, most of the large herd owners belong to the “old adult” category. This is an important point to bear in mind for the transformation of the sheep sector from traditional to intensive system.

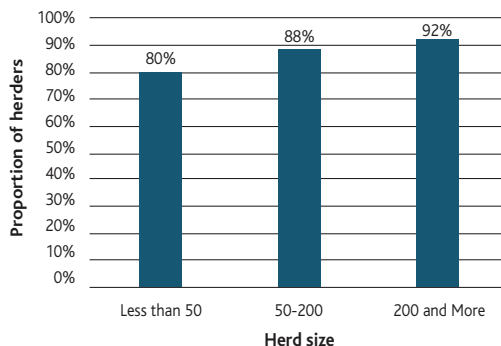
PROFILE OF THE HERDERS			
	Less than 50	50–200	200 and more
Age			
Young adults (up to 35)	15%	28%	14%
Middle-aged Adults (36-55)	56%	39%	39%
Old adults (above 55)	30%	33%	47%
Education			
Secondary school (till grade 11)	67%	78%	72%
College (technical school)	11%	8%	8%
Higher education	22%	14%	20%

Source: Field Survey

Breed development: Farmers in the survey areas largely reported rearing Karabakh and Karadolakh sheep breeds. Most of the herders have shifted to rearing sheep primarily for meat as opposed to for meat and wool, which leads to a focus on meat breeds. During the Russian regime, Merino was a popular breed in the area, largely reared for wool. However, this breed is not very popular with the farmers now, as the demand for wool declined significantly after the dissolution of the Soviet Union.

*Figure 16:
Percentage
of herders using
high-quality rams
for the purpose
of breeding*

*Source:
Field Survey*



About 80–90 percent of all herders across all categories were proactively using high-quality rams from their flocks for breeding. In general, herders reported limited availability of high-quality rams and were mostly identifying high-quality rams from their own flocks (Figure 16).

There is no scientific breed-related research in the country, which means most herders continue to rear the local breed of average productivity. The government permits import of foreign breeds and some herders are importing exotic sheep breeds from neighbouring countries (Spain and other European countries) for specific purposes, such as milk production, etc. The government also supports the import of high-value breeds through a policy of zero customs duty. However, given the lack of a scientific support system to identify and test breeds that can be acclimatized to the country, these initiatives might also result in high losses for the businesses importing the sheep, as well as a loss of government funds subsidizing these initiatives.

Feed and fodder management: Sheep-rearing can be done under an extensive, semi-intensive or intensive production system de-

pending upon various factors, such as availability of land (agricultural land, pastureland or forest land) and availability of fodder and other feed supplements. Under the extensive system of production, sheep are taken out to graze freely, feeding on grass, leaves, shrubs and crop residue on pastures and agricultural lands. Under the intensive system of production, the sheep are fed in a confined space, usually in cases of unavailability of grazing land. The intensive system therefore becomes more labour-intensive (in terms of housing management, feed collection and purchase, and waste management) and also requires a higher cash input. The semi-intensive production system is a combination of intensive and extensive systems, where the sheep are allowed to graze and are also fed supplements to complement grazing.

The nature and extent of combination of the two systems in the semi-intensive system depends on the availability of pastures, type of crops grown and the availability of additional feed as well as availability of water. Herders have more access to summer pastures, which serve as grazing grounds for 3–4 months every year after the lambs are born in February/March. Winter pastures are not widely available. Most herders who have access to land grow fodder crops to cater to the feed requirement during the winter months, while many of the small herders who have limited or no access to land are forced to purchase high cost feed/grains or to sell the animals at a young age.

The government normally rents out pasturelands to herders for a period of 2–10 years with an annual rent of about 80 AZN/hectare. In recent years, bringing larger areas under agricultural cultivation has had a severe impact on access to rented pastureland.

Figure 17:
Source of feed
for the sheep

Source:
Field Survey

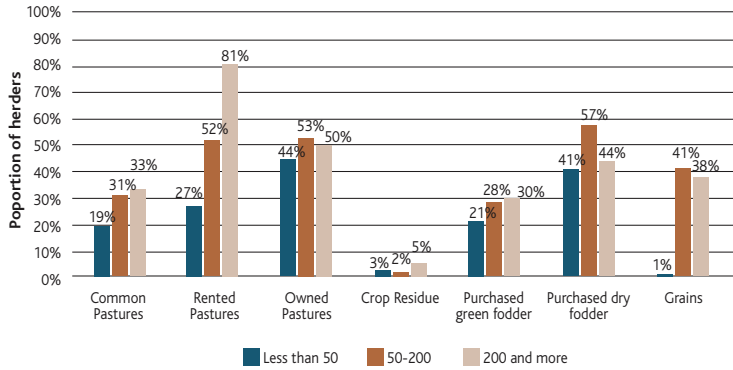


Figure 17 shows that large herders had more access to rented land (81 percent) as compared to 27 percent of small herd owners and 50 percent of medium herd owners. Almost all categories of herders were purchasing dry and green fodder. The medium and large herd owners who had access to land (10–15 hectares) were also growing and feeding grains (alfalfa and barley). The small herders reported a near desperate situation regarding fodder. They were renting land from their neighbours who had hazelnut or other plantations at high rates, even for a few weeks. They also reported death of animals due to lack of fodder in summer. Lastly, desperate sales of lambs as young as 3–4 months old were reported due to lack of availability of fodder. As shown in Figure 18, almost all herders reported shortages of feed and water resources for their flocks.

While a completely extensive production system produces high-quality, organic meat, there is a push by the government towards semi-intensive and intensive production systems for sheep. Pasturelands are being used for agricultural production, leaving less land available for grazing and making the existing produc-

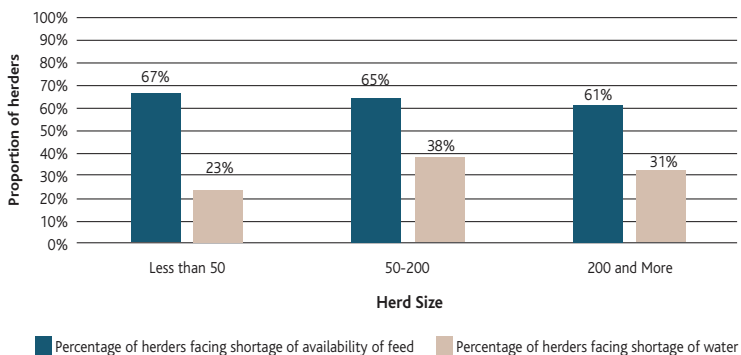


Figure 18: Percentage of herders facing shortage of availability of feed and water for the sheep at any time of year

Source: Field Survey

tion practice a challenge. The quality of pastures has been declining over time due to overgrazing and the resulting erosion. As a result, the quality and quantity of the fodder available becomes a concern for developing the sector. The smaller herders are unable to produce sufficient fodder due to small land holdings and are forced to purchase fodder at high prices to sustain their flocks. In this situation, the government vision to move to intensive sheep farming must be adopted with caution so that the feed and fodder requirements of this sector, critical for food and nutritional security, are not compromised. The feed and fodder needs of the small farmers need to be addressed urgently.

Health management: The main veterinary service provider is the Agro Services Agency, under the Ministry of Agriculture. The veterinary services are rendered through regional offices of the Ministry of Agriculture. There is a veterinary field point for every 2–3 villages to provide services to the farmers. Each field point has two veterinary technicians. The technicians responsible for managing the veterinary field points have technical degrees but not necessarily veterinary degrees. As reported by the key stakehold-

ers, many of these technicians are middle-aged or older and it is a challenge for them to cover all the animals in their vicinity. The salary of these technicians is about 200–250 AZN a month (~USD 125), which is very low. Apart from this, there is no additional payment for travel to villages for vaccine coverage. There is evidence that herders also make small token payments for getting vaccine service and other veterinary services. Hence the services are in essence not “free”. Private veterinary shops are the other key players catering to the veterinary health needs of the farmers.

Until very recently, the State Veterinary Services, which is also under the Ministry of Agriculture, was the nodal agency for providing veterinary services. The recent change to appointing the Agro Services Agency for extending veterinary services is part of the ongoing changes to strengthen the Food Safety System at all levels. Any results from this change will only become evident over time.

About 50 percent of the herders in all the categories reported having a veterinary field point less than 10 km away, while the remaining herders have to travel more than 10 km to reach the nearest veterinary point (Figure 19). Almost all the herders in the survey reported vaccination and deworming of sheep flocks (Figure 20). About 70–80 percent of the herders across all categories reported a government veterinarian as their first point of contact when they need medical help for their animals (Figure 21). Figures 22 and 23 illustrate the service providers for vaccination and deworming. About 60–70 percent of the sheep herd owners reported using government veterinary services, while almost all sheep herd owners were deworming their sheep on their own.

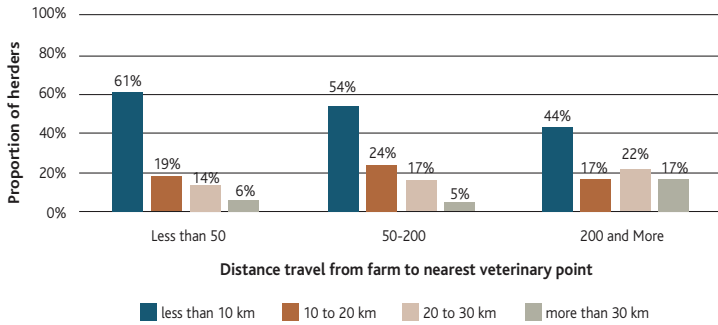


Figure 19:
Distance travelled
from farm to nearest
veterinary point

Source: Field Survey

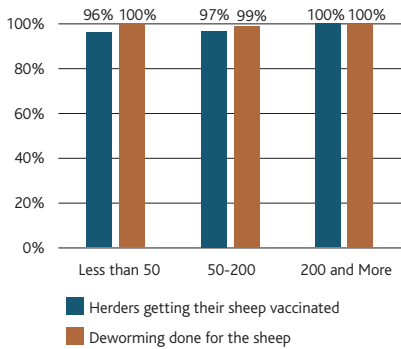


Figure 20: Percentage of herders
getting their sheep vaccinated and
dewormed

Source: Field Survey

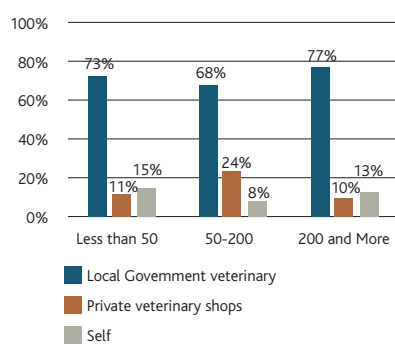


Figure 21: First point of contact
for medical help

Source: Field Survey



Private Veterinary Pharmacy

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The vaccine coverage of 60–70 percent of sheep through the government vaccination service is a very critical finding. This finding assumes importance in the light of the World Organization of Animal Health (OIE) norms of complete coverage for high-risk diseases, as there are significant trans-boundary risks. Specific vaccines to cover the high-risk diseases are stocked only by the government as a policy norm; the private players do not have access to these vaccines. The government centres keep vaccines and the government veterinarians/technicians are responsible for vaccinating the sheep.

Brucellosis was a major disease reported to be prevalent by many herders. Brucellosis vaccination is one of the priority vaccines for the Agro Services Agency in Azerbaijan. It is now a free and compulsory vaccination currently being provided across the country by state veterinarians. Other major diseases reported by herders were foot-and-mouth disease (FMD) and sheep pox. This information is based on discussion with herders and not on scientific testing. The

adult sheep mortality rates reported by herders ranged from 15–20 percent, while lamb mortality was in the range of 7–10 percent across categories. Abortion rates ranged from 7–15 percent, which are significantly high and could be a result of infections.⁶ These findings should be used with caution, as this is a first study covering farmer practices and is based only on the observations of the past year. Usually a consensus on the field situation emerges as several studies are conducted across regions over a period of years, along with diagnostic tests conducted by laboratories to assess the situation. Needless to say, the current situation brings to light the immense importance of improving coverage of farmer extension and veterinary services; possible options include support to private veterinary services as discussed later in the report.

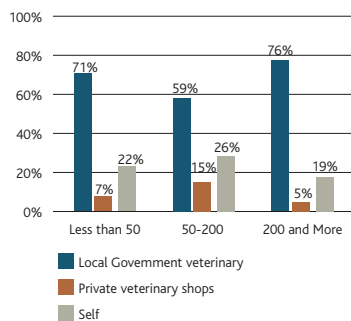
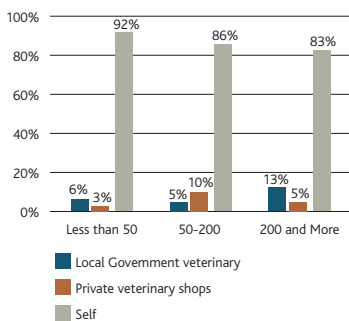


Figure 22:
Service provider
for vaccination

Figure 23:
Service provider
for deworming

Source: Field Survey

Housing: As with all other aspects of sheep management, there was a stark difference in the housing practices followed by the small and large herd owners. The majority of the small herders are using fenced enclosures/pens for housing sheep. Often, these pens are open air without any roof. While these pens seem sufficient in the summer, they are not entirely suitable for the sheep in the

⁶ <https://www.agric.wa.gov.au/livestock-biosecurity/infertility-and-abortion-ewes>

winter and during rain. This threatens the health of the sheep, and they are prone to diseases like foot rot in such weather conditions. It also creates circumstances for a prolonged phase of unhygienic living conditions.

On the other hand, the better-resourced herders who keep bigger herds have sheds with thatched roofs and walls made of rocks or wood. This dichotomy in terms of access to better feed and fodder, veterinary services and housing is quite evident and is indicative of the uneven resource distribution among the small and large sheep herd owners.

Figure 24: Other animals housed together with the sheep (explanation included)

Source: Field Survey

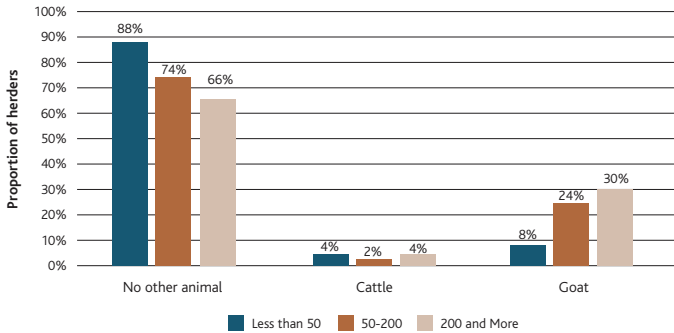
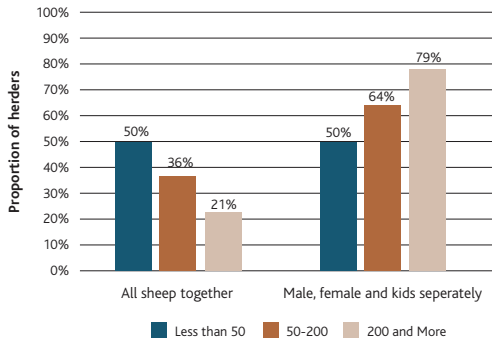


Figure 25: Sheep kept together or separated based on age and gender

Source: Field Survey



Farmers usually keep sheep and cattle separately, though in some cases sheep and goats are kept in the same shed (Figure 24). The majority (79 percent) of large herders were separating the herds by age and gender, while this share was 64 percent for medium herd owners and 50 percent for small herd owners (Figure 25). Lack of appropriate housing poses a critical risk to the growth of the sector and also puts the animals under significant risk of contracting diseases due to exposure to extreme temperatures or unhygienic conditions created due to rain. Hence, housing will be an important factor in developing the sheep sector in the country.

3.3 DISTRIBUTION CHANNELS FOR LIVE SHEEP

Sale of sheep at the farmer level: More than 80 percent of the sheep herd owners in the small and medium category are selling lambs at the local livestock market. For the large herd owners, more than 40 percent of the trade happens at the farmgate. The large herders go to the market and then bring the interested traders to their farms to transact the sale. As discussed earlier in the report, this is done to save on market fees per animal at the livestock market, as well as transportation costs (Figure 26).

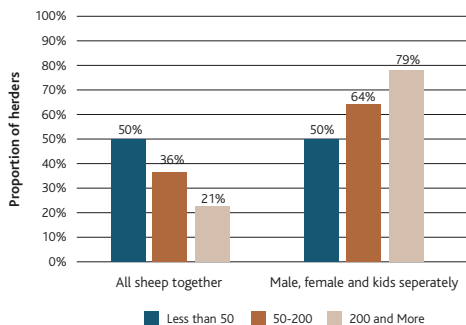


Figure 26:
Location of sale
of lamb

Source:
Field Survey

As discussed earlier, the average flock size for the small, medium and large herd owners was 28, 95 and 480 animals, respectively. The average number of sheep sold by each category of farmer annually was 19, 60 and 195, respectively. About 75 percent of the large and medium herd size owners reported selling their sheep at the time of festivals like New Year, Nowruz and Qurban Bayram (Eid), as compared with 50 percent of small herd owners, indicating the lower holding capacity of the smallholders. The average price benefit during festival season is about 10–12 AZN per animal over and above the normal price. Finally, about 80 percent of the herd owners reported a higher price for sheep in the last three years, signifying a high and increasing demand.

AGE OF LAMB (MONTHS)	WEIGHT (KG)	PRICE RECEIVED (AZN)/LAMB	PERCENTAGE OF FARMERS SELLING LAMBS AT THIS AGE
3–6	30–35	120–180	70%
7–9	35–40	180–200	18%
10–12	40–45	200–220	12%

Source: Field Survey

The farmer survey presented details on the sale of lambs by farmers (see Table 8). Most of the lambs were sold before the age of 6 months. This is likely also related to the fact that the lambs are born in February/March; summer pastures are available until September and most farmers have access to summer pastures. Another reason for sale before September is that the festivals fall during August/September. A few farmers who have higher access to land and have been involved in production of feed/fodder are able to retain the herd during the winter months for sale at a

higher price. Another important aspect emerging from the Table is that farmers get about 4.5–5 AZN/kg of meat weight. There is a perception that lambs sold at younger ages fetch a premium due to tender meat. However, this is not reflected in the survey, which shows that the price received is largely linked to the meat weight. However, it is possible that farmers selling lamb at a young age might have better bargaining power within that band of prices and the sale would be easier.

Trading at livestock markets: There are about 28 livestock markets distributed across 23 cities and districts of the country (Bonnier, 2017). The largest wholesale markets for live animals are in Agjabadi, Sumgait and Imishli, followed by Barda and Goygol regions. The study team visited four markets – Agjabedi, Baylagan, Barda and Baku. From the regional markets many heads of cattle and sheep are transported to Baku, which is the largest market for meat. The markets are an important place for trading animals, but in addition farmers sell sheep and cattle directly to butchers. The Barda market also gets sheep from across the border.



Livestock Market in Barda

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Livestock markets are usually on the outskirts of towns and cities. These are weekly markets, held mostly on Saturday/Sunday, where herders, traders, collectors and butchers are present in large numbers. Most markets have both cattle and sheep.

The markets are largely open spaces with no walled boundaries. There is no infrastructure in terms of sheds or any provision for drinking water or feed/fodder. Private players operate these markets, probably with land leased from local government agencies. Fees are collected in the market from the herders bringing in the sheep as well as from the traders for every vehicle they bring. The cost to the farmer is 1 AZN/sheep. The cost to the buyers is based on the size of vehicle. The market players were not forthcoming with information regarding the market fees.



Traders and Farmers at Livestock Market in Barda

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In the regional markets the main sellers are herders while some primary traders who purchase from herders are also involved in sale of lambs. The main buyers are butchers from nearby areas, owners of slaughterhouses and secondary traders who purchase

for sale in terminal markets of major consumption centers, including Baku, Ganja, etc. In the terminal markets, the sellers include herders from nearby areas along with traders who have purchased from regional markets. The buyers are largely butchers and slaughter point operators in cities and larger towns.

As these markets operate informally, there is no formal data collection in terms of the number of livestock traded, price, source, etc. Based on the available information and discussion with key stakeholders, we arrived at some indicative estimates of the number of heads sold per week at these markets. The total number of sheep slaughtered in 2018 was about 5.5 million heads, which is about 100 000 heads per week. Based on the data, we estimate about 10 percent is used for home consumption, while the remaining 90 000 heads are sold through the markets, with an average of 3 000–4 000 heads per week in each of the 28 markets. The bigger markets, like Agjabedi, will have much higher numbers, up to 6 000–8 000 heads per week, while in the smaller markets, the numbers might be lower. Of course, the number of animals coming to the markets also varies by season.

3.4 SLAUGHTER, PROCESSING AND RETAILING

Butchers are the main players engaged in slaughter and retailing of meat. Based on crude estimates of the number of sheep coming to the markets and the sale of operations of the butchers, there are about 2 000 shops for selling meat in Azerbaijan. This number is close to the number reported by Bonnier (2017). Some of the shops in small towns sell about 20–30 kg of meat, which can go up to 200 kg per a day during peak season. The large-scale butchers are also selling to restaurants and for parties, etc. Sales are

highest during 3–4 months in autumn. Most weddings are also planned for this season, leading to high demand for sheep meat for parties. Sale of meat declines in summer and during Ramzan and Muharram.



Small scale slaughterhouse near Beylagan

©FAO/Eran Raizman

Most butchers are slaughtering the sheep themselves; very few use the services of a slaughter point. The study team was able to meet the veterinarian responsible for certification of lambs at the time of slaughter in some markets. However, overall, very few butchers reported getting their lamb certified at the time of slaughter, at a cost of 2 AZN per animal.

Slaughter points are other important players engaged in slaughtering of animals, at a fee of 2 AZN/sheep and 20 AZN/cattle. The slaughter points vary significantly in size and scale. In recent years, significant new investments have been made in upgrading the slaughter points to meet the food safety norms. The monitoring of an animal's certification for health and method of slaughter is becoming stricter as a step towards developing an export potential. At the behest of the local government, many slaughter points have undertaken new investments to meet the food safety requirements. However, most of them are currently working at far

below capacity, as most of the butchers are slaughtering in their own shops. Unless the food safety norms are strictly implemented and butchers are mandated to slaughter at the slaughter points, many of these slaughter points are likely to be working below capacity, which incurs a heavy financial cost for them. The transformation to improved systems that are better aligned with global food safety norms comes at a cost and it is a big challenge for the slaughter points, which have operated rather informally until now, to recover the cost of investments.

Supermarkets and high-quality restaurants are also important players in the realm of quality meat products. As discussed in the section on domestic market assessment, consumer preference is shifting towards purchase from supermarkets. A similar development took place in western European countries and signs in Baku already point in that direction. The prices at supermarkets are relatively higher, due to focus on quality issues along with packaging and refrigeration. The processed premium products at the supermarkets in Baku included premium lamb fillet, lamb ribs, lamb loin and minced meat. The prices ranged between 12–18 AZN/kg with fillet being the most highly priced product. Investments in slaughter and processing of meat are relatively new but this sector is seeing a rise in investments (Bonnier, 2017).

3.5 MARGINS

Relevant information was not available to undertake a detailed assessment of margins at all levels in the meat value chain. However, based on crude estimates, there are two very relevant findings. First, the sale price of 1 kg meat (live weight) at the farmer level is 4.5 to 5 AZN, implying a price of 8.5 to 9 AZN/kg of dressed meat

(~ 55 percent of live weight). The retail price of dressed meat ranges between 11 and 13 AZN/kg in the regions and in the terminal markets of Baku. This implies that the farmer share in consumer price of sheep meat is about 65 to 80 percent. It is important to note that this share is much higher than the farmer share for most agricultural crops. Second, this high margin is a reflection of the high demand for sheep meat. The traders mentioned a shortage of lamb as compared with the demand. In this situation, the farmers were able to negotiate a better price for lambs, especially the lambs sold at a young age.

The margin of 2.5 to 4.5 AZN per kg is distributed among other players in the chain, including traders and transporters, along with accounting for the costs incurred for transportation and retailing of meat. Overall, the butcher/retailer is able to generate higher returns by the sale of specific cuts as per the preference of the buyers and also from the sale of offal, skin, etc.

3.6 POLICY AND INSTITUTIONAL SUPPORT FOR SHEEP SECTOR

Policies impacting livestock sector

Conducive policy environment is the basis for the growth of any sector. It is a critical element of the business environment in which the sector operates. Policies can support or hinder the growth of the sector. From this perspective it is important to examine the policies and the supporting institutions for the sheep sector in Azerbaijan.

● *Livestock policy*

While there is no specific “livestock policy” focusing on the sheep sector, the government has prepared a Strategic Roadmap on Agriculture for Azerbaijan to guide the growth and development of agriculture and the livestock sector. The Strategic Roadmap provides guidelines covering all aspects of the sheep sector with focus on developing the sector for import substitution: improved production practices; market regulations and development; support for developing sheep products with focus on quality; support for technically trained workers; along with focus on increasing efficiency in terms of production, hygiene, processing and information in a sustainable manner for agriculture and livestock. The document envisions intensification of livestock production focusing on breeding purebred animals and a simultaneous decrease in carbon emissions from livestock production. It recognizes the gap in domestic production and aims at increasing production to meet the domestic demand along with capturing international markets. It supports the establishment of large livestock farming complexes based on intensive farming as well as family farms specializing in meat and dairy products. Focus will also be on developing the market for concentrated fodder and improvement in provision of veterinary and phytosanitary services.

The Strategic Roadmap presents broad guidelines for development of the sector. However, the study recommends developing a livestock sector policy, which will be a more focused approach for livestock development, based on a comprehensive assessment of the sector. Also, the policy should be scientifically backed by research on key aspects of sheep production and management along with market research and socio-economic research regarding the livelihoods of people engaged in sheep-rearing.

● *Export/import policy*

In 2018, a new set of import tariffs was adopted in Azerbaijan, which included only three rates: 0 percent, 5 percent or 15 percent, depending on the import. While the majority of raw materials and machinery are exempt from customs duties, finished products and agricultural produce are all being charged a 15 percent tariff. These tariff norms can help to improve the competitiveness of the sector. Breeding stock can often be imported duty-free. The import and export of veterinary drugs require the approval of the government. Two specific aspects are important with respect to the competitiveness of the sheep sector. First, breeding animals attract a minimal duty of 0.5 percent, implying animals imported for breeding purposes are free from customs duty. Second, all agricultural and food products for consumer consumption attract a customs duty of 15 percent. Thus any meat imports will attract a customs duty of 15 percent. In general, this protective policy shelters domestic products against foreign competition and through this method the government interventions stimulate domestic production (FAO, 2018).

● *Food safety policy*

The Food Safety Agency was established on 10 February 2017 by decree of the President of Azerbaijan, with focus on additional measures to improve the food safety in the country. Under the decree, the Food Safety Agency will help ensure the regulatory framework of food safety (development and approval of sanitary norms and rules, as well as hygienic standards), and will carry out risk analysis and hygiene certification, as well as provide a quality certificate for food products exported to foreign countries and

ensure state control over protection of the rights of consumers of food products and at all stages of food production on the basis of the “from field to table” principle.

The Food Safety Agency of Azerbaijan plans to develop new standards on food production to meet the increasingly high food safety norms. Recognizing that meat can pose significant health hazards, slaughter norms for meat will be an important component of the food safety norms.⁷ Under the Food Safety Agency, the Azerbaijan Food Safety Institute has been established in the country. The Institute will conduct scientific and practical research in food safety and risk assessment and develop regulations in food safety.

The food safety norms are relatively new and require significant efforts and investments to implement. Leading international agencies are supporting the efforts of the Azerbaijan government in establishing the new food safety system. The Food and Agriculture Organization of the United Nations (FAO) is responding to the request of the Food Safety Agency of Azerbaijan for support to strengthen the food safety control system, and develop national Codex activities.⁸ The Twinning project, “Support to the State Veterinary Surveillance Service in strengthening the epidemiological surveillance system in Azerbaijan”, was implemented by the Ministry of Agriculture with the support of the European Union. It started in May of 2016 and continued until May of 2018. The main objective of the Twinning project was to support improvement in the fields of animal and human health in Azerbaijan, improvement in economic growth and food safety in accordance with the requirements of OIE in the field of epidemiology, as well as prevention and disease control in the country.⁹

⁷ <https://en.trend.az/business/economy/2872861.html>

⁸ <http://www.fao.org/fao-who-codexalimentarius/news-and-events/news-details/en/c/1181257/>

⁹ https://eeas.europa.eu/delegations/azerbaijan/area/projects_en

● *Land use policy*

The State Committee for Management of State Property is responsible for giving land on lease (for pastures and other industrial and development purposes) and for privatization of land. At the same time, according to the local legislation (Land Code, Article 70.5), the privatized and leased land can be withdrawn for state needs (Khanalibayli, 2008). With more land being brought under cultivation of high-value agricultural crops, there are two concerns for the sheep sector. First, this will cause a decline in the area under pasturelands, which are an important source of feed and fodder for a large share of the sheep population. Second, the upcoming commercial farms will have limited access to high-quality arable land to grow feed and fodder for intensive sheep farming.

● *Farmer associations*

It is widely recognized across the world that small farmers face challenges in integrating with value chains due to numerous constraints – ownership of resources, access to productive resources, land tenure, control of natural resources, scale of production, degree of market integration, etc.

In general, it is difficult for service providers and donor organizations to reach out to individual farmers. Individual farmers are also weak partners for marketing their products and for purchasing inputs and/or sale of outputs at advantageous rates. This combination of factors makes it beneficial for them to form associations. Until recently, the word “association” has often been connected with the idea of “collective” and carried a negative connotation, especially given the history with the Soviet Union. In many

countries, farmers have united in cooperative systems, which have proven to be very effective. In these cases production is the responsibility of the individual farmer, while the group takes care of marketing and inputs.

In Azerbaijan the forming of associations has been attempted by a number of non-governmental organizations (NGOs), with varying degrees of success. Failures may be the result of various factors, such as:

- Formal registration of associations is problematic, which does not encourage farmers to participate;
- There is no clearly defined goal which binds the farmers together;
- Some large farmers gain all the benefits, while others see very little advantage; and
- There is a lack of management skills and transparency in financial issues.

In many cases a simple form of cooperation, without formal registration but with a few clear goals, can be very effective for such activities as: marketing raw sheep as a group; purchasing inputs in sufficient quantities to obtain discounts; contracting artificial insemination (AI) services and/or extension services.

Institutional support for livestock sector

● *Livestock services*

The Agro Services Agency under the Ministry of Agriculture is responsible for implementing veterinary services. According to the Strategic Roadmap on Agriculture while 4 400 veterinary physicians are needed to provide effective veterinary services for the current 3.8 million heads of cattle, there are only about 2 600 vets

employed in all structures of veterinary services, meeting only 60 percent of the demand. Considering the country's sheep population of 7.7 million, this gap is even higher. Currently, there is one veterinarian per approximately 6 000 animals; almost twice the number of veterinary officers are required to offer effective veterinary care.

In 1995, Azerbaijan became a member of OIE. As a member country, Azerbaijan has the mandate to follow OIE's science-based guidelines in providing veterinary services. This includes full coverage with vaccines for the identified critical diseases for small and large ruminants.

The Strategic Roadmap on Agriculture emphasizes two areas for improvement of public policy in the veterinary field:

- ❶ Focusing on eradication of epizootic and zoonotic diseases and strengthening effective control in this field in the areas of food safety and risk management as a direct task of the state in the veterinary area;
- ❷ Transferring the work on providing farms with relevant veterinary services to the private sector and expanding the private veterinary network to this end.

● *Veterinary education/livestock research*

Azerbaijan State Agricultural University is a public university located in Ganja. The university has eight schools, including a veterinary training school. While the university has immense infrastructure, the personnel for training in veterinary education is insufficient and there are limited seats for veterinary education. The university charges a very nominal fee for education; however, very few veterinary students join the government veterinary pro-

fession. They either enter other areas of work or join private farms or move overseas to practise in other countries.

The Scientific Research Institute for Animal Husbandry undertakes research on livestock-related activities. Some recent initiatives focus on sheep husbandry activities but there are challenges in finding trained personnel with knowledge of best international practices to lead the research activities.

● *Extension services*

The Ministry of Agriculture is responsible for providing agricultural extension services. The regional offices of the Ministry of Agriculture are supposed to work on adapting and demonstrating technologies released by research institutes; however, in fact, these services are largely non-existent. Most of the extension and advisory support institutions in Azerbaijan were established under various donor-driven projects (financed by, among others, the World Bank and GIZ).

In addition to the regional offices, private advisory centres and NGOs perform a variety of extension advisory services. Private international and local companies also provide extension advice to the farmers during the sale and promotion of their respective products. The technical soundness and objectivity of such advice, however, remain doubtful as the main objective of these companies is to expand their business and enhance profits.

The Global Forum for Rural Advisory Services assessment (GFAR, 2013) concluded that the present situation of Azerbaijan's extension advisory services, both public and private, is far from satisfactory. The generally low level of education among those working in

agriculture and the unsatisfactory state of institutions that should be providing the sector with scientific and applied knowledge may be serious impediments to adopting modern technologies that could help to expand agricultural production and improve the quality of the produce.

Lastly, there is a vast network of regional television channels and regional newspapers in the country but the media are not well utilized when it comes to coverage and delivery of agricultural information. The agricultural community is not really well served in terms of agricultural information and topics. Most regions have local TV channels and newspapers but they cater largely to the urban population. Despite a literacy rate of over 99 percent and vast coverage of electricity supply, there is next to no information regarding livestock management, nutrition, health or hygiene being circulated among the rural areas through print and visual media. This remains a large underutilized avenue for delivery of extension services in Azerbaijan.

- ***Availability of credit to the livestock sector***

Investments are critical for the growth and support of any sector. The study team had in-depth discussions with several players in the agricultural finance sector. Also, a study conducted by Wageningen Economic Research (van Berkum, 2017) presents a detailed assessment of the loans available to the livestock sector. The aspects relevant to sheep sector financing are presented here. First, though agriculture has been identified as a key sector for economic growth, the total loans to agriculture have been less than 6–7 percent of the total loans extended since 2005 and have also declined in recent years following the devaluation of the local currency. Second, microcredit is an important form of credit to farm-

ers in Azerbaijan. Some of the leading agencies include Agrakredit, Access Bank and KredAgro. However, the rate of interest is close to 20 percent, which is very heavy for the farmers. Third, loans to commercial enterprises are in the form of commercial loans and soft loans. While commercial loans have no specific concessions for agriculture, soft loans are available through two channels: I.) State Agency on Agriculture credits for agriculture-related activities (production and processing, modernization and development of food sector, agricultural machinery, pilot projects and breeding farms); and II.) Azerbaijan National Fund for Entrepreneurship support (for livestock complexes, green supermarkets, agroparks, feed production facilities, greenhouses, etc.) The Wageningen Economic Research report presents the details of the loans extended by various agencies.

● ***Association of women entrepreneurs***

The Association of Women Entrepreneurs was established in Azerbaijan in 2017. Their activities will be dedicated to development of women's entrepreneurship. The Association is working towards opening centres across the country for processing livestock products. This would include washing and cleaning of sheep wool and hides for processing. The Association plans to export the produce to Turkey and South Korea.¹⁰

¹⁰ <https://www.azernews.az/business/149607.html>

3.7 OVERALL ASSESSMENT OF THE SHEEP MEAT VALUE CHAINS

This section presents a comprehensive assessment of the challenges in the sheep meat value chain development at the production, marketing and processing levels, along with assessing the policy framework situation and the institutional support for the sector.

Table 9 presents an overall assessment of the challenges at the production level. The variation in herd size ownership is also reflected in the management practices in terms of breed development, housing, feed and fodder, as well as health management. The large herd owners have a good network with veterinarians and are more informed about health aspects and scientific management practices, while the small herd owners largely follow the traditional farming system approach. This is a reflection of the weak extension system, wherein there is an information gap impeding adoption of new developments in technologies and scientific management practices at the farmer level.

Table 9: Assessment of sheep production practices

SHEEP-REARING	AGENTS	ROLE IN THE VALUE CHAIN	CHALLENGERS
ISSUES AT THE PRODUCTION LEVEL			
Sheep-rearing	- Herders/ - Producers	Small (<50), medium (50-200), large (200-500), very large (500+) herd owners	Differences in management practices of small and large herd owners - Large herd owners follow scientific practices – scope for improvement - Small herd owners follow traditional management practices – low productivity

(Table 9)

SHEEP-REARING	AGENTS	ROLE IN THE VALUE CHAIN	CHALLENGERS
ISSUES AT THE PRODUCTION LEVEL			
Extension services	Ministry of Agriculture	Demonstrating scientific production practices to farmers	Very weak extension services leading to poor management practices (e.g. housing, feed & fodder) and consequently low production/productivity
Health services	<ul style="list-style-type: none">- State Veterinary Services, MoA- Private Medicine Stores	<ul style="list-style-type: none">- Provision of preventive and curative health services through veterinary field points- Local medicine shops actively involved in providing services	<ul style="list-style-type: none">- Current services inadequate due to limited human resources- Prevalence of diseases- Small herders struggle with access to services
Medicines/ vaccines	State Veterinary Services	Importing vaccines and supplying to state veterinary institutions	<ul style="list-style-type: none">- No vaccines being manufactured in the country- Limited access to key vaccines by private veterinary stores limits coverage by only government service providers
Breeding bucks	Herders	Supplying high-quality breeding bucks	<ul style="list-style-type: none">- Lack of supply of high-quality breeding bucks- No formal initiative for supply of breeding bucks
Feed & fodder	<ul style="list-style-type: none">- Local Executive Power - Municipality- Herders	<ul style="list-style-type: none">- Rental of land to herders- Management of common pasture-lands- Production of feed/ fodder crops	<ul style="list-style-type: none">- Highly unequal distribution of land resources – access to pastures, land rental by small herders- Declining availability/ quality of pastures- Need for scientific approach to feed/fodder management

Source: Author's analysis based on data collected for the study

There is high mortality and morbidity among the animals due to limited coverage of preventive and curative health services by the government agencies. Limited access to key vaccines by the private veterinary shops further worsens the problem, as the key vaccines are only available from the government department; hence, some of the players cannot engage in vaccination against key zoonotic diseases. Furthermore, most of the farmers are already paying for veterinary services which are supposed to be “free”. In this situation, to make the services more demand-driven, private veterinary services can be a good option.

Though farmers are aware about breed development and are proactively identifying the best breeding rams, there is limited supply of high-quality breeding rams. Activities focusing on commercial supply of high-quality breeding rams can help to address the issue.

Last but not least, the issue of adequate feed and fodder needs to be a top priority in the short, medium and long term. As discussed in the overview section, as a consequence of the distress situation in fodder, the slaughter rate in recent years is very high, leading to a negative growth rate of sheep population. Some initiatives need to be taken with immediate effect to address the situation; these are discussed in the strategy section. An important general observation from all herders was that they were very keen on increasing the herd size of their animals if adequate feed/fodder pastures were available.

Table 10: Assessment of the marketing and processing of live sheep

ACTIVITY	AGENTS	ROLE IN THE VALUE CHAIN	CHALLENGES
MARKETING PROCESSING AND RETAILING			
Marketing of lambs at herder level	- Herders/ - Producers	Sale of lambs to traders/butchers at farmgate/livestock markets	Early sale of animals (at 3 months) due to fodder stress/ financial stress leads to suboptimal returns for farmers and lower meat production in the country
Marketing of lambs at live-stock markets	Primary/sec-ondary traders	Purchase and transport of sheep/ lambs	- Informal markets - No regulations - No data on price and volumes - No infrastructure at markets - Poor transportation
SLAUGHTER PROCESSING AND RETAILING			
Slaughter	Traditional/modern slaugh-terhouses	Slaughter of large/ small ruminants	- Traditional facilities are not hygienic - Modern facilities face investment challenges
Sale of meat to consumers	- Traditional butchers - Supermarkets - Restaurants	- Purchasing lamb for meat sale - Processing and packaging	- Limited focus on quality norms - Suboptimal use of by-products - Modern processing firms are limited
Investments in processing	Private sector processors	- Investing in process- ing, retailing and exports of meat products - Exports and retail- ing	Very few private in- vestors have invested in the meat-process- ing sector.

Source: Author's analysis based on data collected for the study

Table 10 presents a detailed assessment of the issues in marketing, processing and retailing of meat. Key issues in marketing are found at the farmer level, along with policy-level issues related to marketing. First, many farmers are engaging in sale of sheep at the early age of 3–6 months, resulting in suboptimal returns from sale. Sale at early age is largely driven by lack of fodder and as distress sale when money is required. Furthermore, at the macro level, it results in lower meat production in the country. Second, the animals are not weighed when sold in the markets and herders are paid based on estimations made by the traders. Because demand exceeds supply of lamb in the country, the herders will always have a market for lamb. However, with strategic marketing management the herders can optimize returns from the sale of lambs. Third, as reported, the marketing of sheep is largely informal. There are no regulations regarding marketing of sheep. There is no infrastructure at the markets for feed/fodder or shelter for sheep. Also, there is no formal reporting of the number of sheep coming into the markets and the sale price. Due to lack of data it is difficult to have any estimation of the market size.

As discussed above, slaughtering is largely done at the butcher level, where hygiene is a major issue. In order to follow the new food safety norms, slaughtering will have to be done at upgraded slaughter facilities. Key challenges include strong implementation of the food safety norms along with significant investments in slaughter facilities. Some slaughter points have invested in upgrading, largely using their own funds, as access to loans is limited. The situation is further worsened as these facilities are operating below capacity because the butchers are still slaughtering at their own premises. This situation puts immense financial burden on the slaughterhouse operators.

Table 11 presents an overall assessment of the policy environment and institutional support for the meat sector. The policy environment for the livestock sector reflects the overall situation of the country, which is in transition to a market economy along with trying to develop agriculture as an alternative sector to support stable growth of the economy because the economic situation has been very volatile due to heavy dependence on the oil sector. The Strategic Roadmap is a good overall direction for the agriculture, livestock and natural resources sectors. However, there is need for a strong livestock policy, taking into account the people engaged in livestock-rearing, current resources (livestock heads, breeds, natural resources) and existing and future demand, and developing pathways to meet that demand.

As agriculture is becoming an important sector, a strong land use policy is critical to the growth and development of that sector. However, the traditional livestock sector has been dependent on natural pastures and the like. The land use policy has to focus strongly on the existing needs of the sector, while developing alternative models for land use. The immense impact of land use is already evident in the diminishing livestock population, along with reduced carcass weights, which can potentially have a long-term negative impact on the sheep sector.

Implementing the new food safety policy will be a challenge as it calls for significant changes in the functioning of the existing system. New investments will be required to upgrade the existing infrastructure, along with stronger implementation of food safety norms. Technically trained personnel will be required to implement these activities.

The export/import policy of Azerbaijan has two key aspects that favour the sheep sector: first, it imposes almost negligible cus-

tom duties on importing live animals for breed development; and second, it protects the sector with high custom duties on import of meat for consumption. Needless to say, there is scope to bring in live sheep for consumption under the pretext of breeding, which can underestimate the imports.

Lastly, there is no formal policy to support formal farmer associations but even informal farmer associations will help to support the development of the sector by supporting the needs of the small farmers.

Table 11: Assessment of the policy environment and institutional support

ACTIVITY	AGENTS	ROLE IN THE VALUE CHAIN	CHALLENGES
POLICY ENVIRONMENT			
Livestock policy	Ministry of Agriculture	<ul style="list-style-type: none"> - Creating livestock policy - Initiatives and activities for transforming from traditional to modern farming 	<ul style="list-style-type: none"> - Strategic Roadmap for Agriculture provides direction - There is no livestock sector policy
Food safety policy	Food safety agency	Developing and implementing food safety norms	<ul style="list-style-type: none"> - Newly established agency, needs clarity on roles and responsibilities - Investments required in infrastructure and human resources to implement food safety norms
Land use policy	Land use department	Planning land use	Land increasingly brought under agriculture while land for pastures/fodder production is declining

(Table 11)

ACTIVITY	AGENTS	ROLE IN THE VALUE CHAIN	CHALLENGES
POLICY ENVIRONMENT			
Export/import policy for live animals	Ministry of Agriculture	<ul style="list-style-type: none">- Permissions for export/import of live animals for breeding/for consumption.- Subsidizing imports of live animals for breeding	<ul style="list-style-type: none">- Imports of live animals for breeding not based on scientific information regarding adaptability- Inefficient use of public resources
INSTITUTIONAL SUPPORT			
Research	Research Institute of Animal Husbandry	<ul style="list-style-type: none">- Research on breed development- Scientific management practices	Lack of human resources capability to undertake the required research
Livestock services	Agro Service Agency	Providing curative and preventive health services	<ul style="list-style-type: none">- Lack of clarity on the roles due to ongoing changes- Scope for privatization of livestock services
Training in Veterinary Sciences	Azerbaijan State Agricultural University	Training young professionals for veterinary and related professions	<ul style="list-style-type: none">- Selection process of the candidates- State funding for training veterinary graduates- Graduates not joining the veterinary services- Capacity of teaching staff
AI	Republican AI Centre	<ul style="list-style-type: none">- Engages in AI for large ruminants- Has plans for implementing AI in sheep	Learning lessons from other countries regarding success of AI in small ruminants
Credit	Agrakredit	Providing credit for agriculture and livestock sector	<ul style="list-style-type: none">- Very limited formal credit for livestock sector- Almost negligible funds for the sheep sector

Source: Author's analysis based in data collected for the study

The institutional support to the sector comprises veterinary services, extension services, and veterinary training and research institutes. It is widely recognized that the institutional support to the livestock sector is weak. The Strategic Roadmap for Agriculture also recognizes these weaknesses:

“Management techniques and programme priorities of these institutions are significantly incompatible with the demands of a market economy. Knowledge of the majority of leading experts at the relevant research institutions about modern agrarian technology is not at the desired level. Furthermore, the institutions are in need of modern laboratories, devices and equipment, highly effective agricultural machinery appropriate to their line of activity and other modern logistical means in order to achieve scientific results that meet the requirements of the market economy and international standards.”

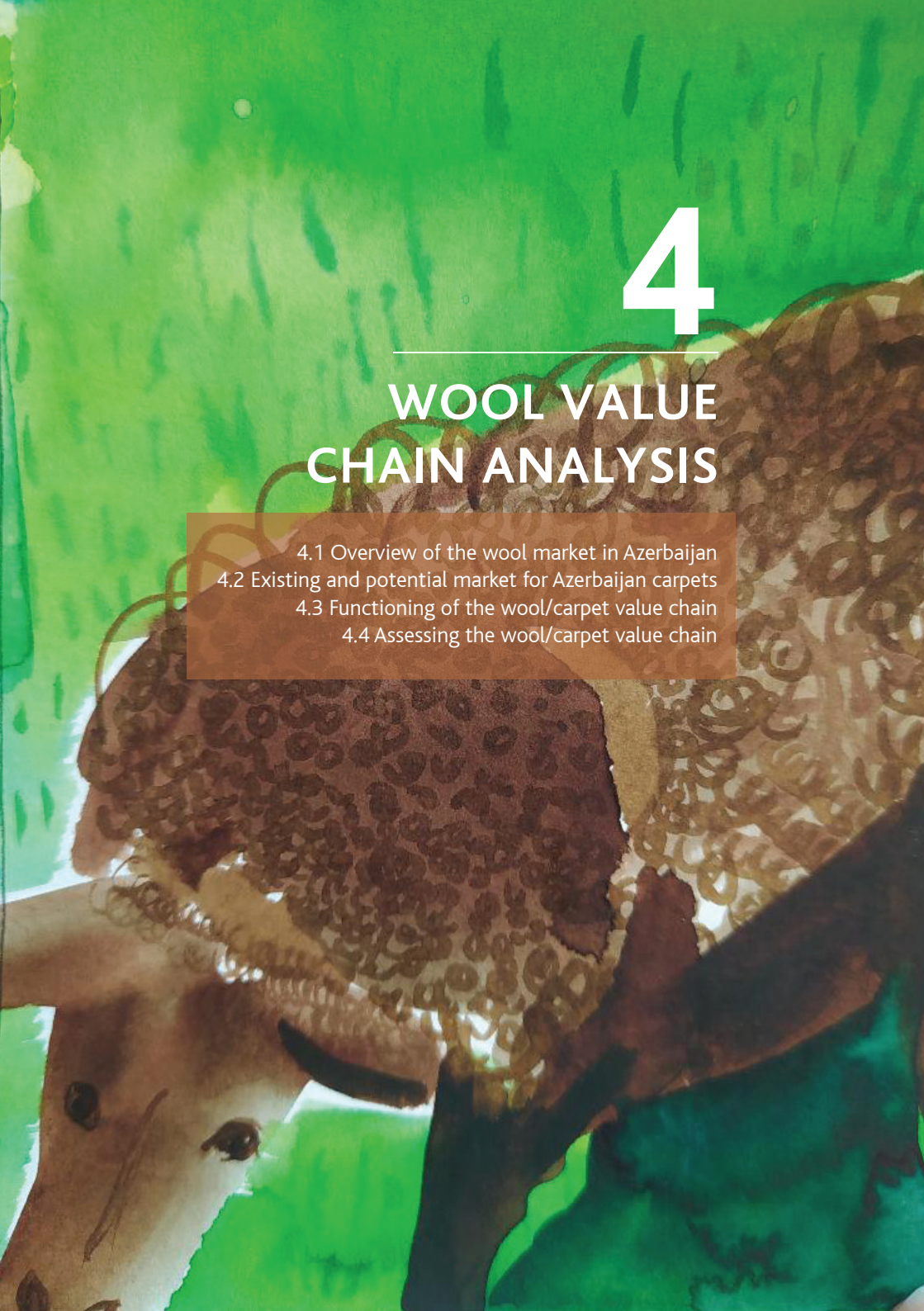
There is recognition in the country of the need to strengthen these institutions to provide strong support to the development of the livestock sector.

An important point emerging from the discussions is that there has been very limited fund flow to the sheep sector. Consequently, there are no large-scale enterprises established as yet, unlike in the case of dairy farms. In moving forward, soft loans can be used for enterprise development and the issue of microcredit to small farmers needs to be further discussed in order to better meet the needs of the farmers.

4

WOOL VALUE CHAIN ANALYSIS

- 4.1 Overview of the wool market in Azerbaijan
- 4.2 Existing and potential market for Azerbaijan carpets
- 4.3 Functioning of the wool/carpet value chain
- 4.4 Assessing the wool/carpet value chain



4.1 OVERVIEW OF THE WOOL MARKET IN AZERBAIJAN

Azerbaijan was one of the main wool-producing republics of the Soviet Union for much of the twentieth century. This was based on a large population of Merino sheep adapted to local conditions – the “Azerbaijan Mountain Merino” – and on systems for collecting, washing and baling wool that could handle not just the Azerbaijan crop but also wool imported from other Soviet republics and abroad. Most of the wool was sent to Russia for spinning, weaving and garment-making – i.e. for final value-addition (FAO, 2017d).

Since the fall of the Soviet Union, the system has changed entirely. The government has abandoned previous policies of production targets and non-market pricing impositions, while private herders switched from wool-oriented Merino sheep to meat-oriented local breeds, to cater to the strong local demand for sheep meat.

The wool value chain has deteriorated considerably, with perhaps half of total production not even marketed. What is collected is partly sold through local bazaars and partly exported, with exports mainly consisting of unsorted, unwashed and relatively coarse wool going to China, either directly or via Kazakhstan.

As carpets currently comprise the main wool product in the country, this study focuses on the carpet value chain. Apart from carpets, wool is also used for making Doshak (traditional term for comforter with wool filling). The tradition of giving Doshak at the time of marriage is still followed quite strongly. Apart from this, after a gap of almost ten years, last year about 60 000 tonnes of coarse wool was exported to Russia. This section focuses on the carpet value chain, as it is currently the leading wool product.

4.2 EXISTING AND POTENTIAL MARKET FOR AZERBAIJAN CARPETS



Azerbaijan has a long history of carpet-making. Azerbaijan carpets have traditionally been widely recognized in the international markets. Locally made carpets are an important purchase item for the tourists. Furthermore, there is scope to explore options for greater export of Azerbaijan carpets to international markets.

Due to a lack of existing wool value chains in the country, the carpet weavers largely buy imported wool coming into the country. Carpet-weaving is largely done in small units that are household-based. Due to small-scale production, the carpets made in Azerbaijan are also relatively expensive as compared with the carpets made in nearby countries like Turkey. The locals prefer to purchase the relatively cheaper imported carpets.

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Traditional wool carpets in Baku market

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4.3 FUNCTIONING OF THE WOOL/CARPET VALUE CHAIN

The carpet value chain essentially starts with imported yarn sold by the specific shops dealing in wool yarn. Carpet-weavers – individual women or small groups – engage in carpet-weaving with imported yarn. The sale of carpets is largely done by retailers in the regions, especially in the tourist areas and in the major cities such as Baku, Ganja, Sheki, etc. Recognizing the demand for Azerbaijan carpets in the international markets and the potential to improve incomes of the women engaged in carpet-weaving, Azerkhalcha, an open joint-stock company was established in May 2016 through a special decree of the President. The company plans to develop an end-to-end value chain for carpets, including establishing wool collection centres, starting carpet-weaving industries near rural areas and establishing linkages with national and international markets for sale of carpets.

Apart from the carpet chain, the wool market is very limited, as very small volumes are being traded. The wool market consists of sale of coarse wool by some stores in traditional markets, who purchase wool from collectors and sell it to buyers largely engaged in making Doshak. If there are no buyers in the area, many herders throw away wool or burn it or give it to neighbours and relatives who need wool for making Doshak, especially if there is a marriage in the family. The detailed value chain for wool is presented below.

Herders: Sheep need to be sheared at least once every year. Due to the coarse quality of wool of most sheep and an almost absent market, most of the wool sheared is either burned or thrown away. Furthermore, specific hygienic norms for shearing are rarely followed.

In the farmer survey, a large proportion of herders in each herd size group reported that they were shearing wool from their sheep. While small herd owners were engaged in manual shearing, about 20 percent of the large herd owners were using machines for shearing. About 30–37 percent of medium and large herd size owners were selling wool, as compared to 19 percent of small herd size owners. For the most part, they were selling to local traders coming to the farm. Herders who were not able to sell their wool were giving it away to relatives or friends and either throwing away or burning any remainder.

Wool-shearers: There are some shearers who visit the farms to provide shearing services. Wool-shearing is largely done manually, but there are also entrepreneurs who provide mechanical shearing services.

The study team interacted with one shearer during the field visit, who operates an enterprise providing mechanical shearing services. The service provider has engaged 6–7 people in his team who jointly provide the services. This team can shear about 100 sheep an hour (one sheep takes about 5–10 minutes). The service charge is 0.8 AZN per animal. They shear about 10 000 animals in spring and 12 000 in autumn – or about 22 000 sheep in a year. This earns them approximately 16 000 AZN every year. However, the machine requires servicing after shearing 1 000–1 200 sheep, which costs around 150–200 AZN. There are not many service providers available for shearing, which means that repair and service also becomes a difficult task, as there are few service providers. The shearers do not take the wool with them; however, when developing a value chain, these mechanical shearing service providers can be an important link in the chain for collection of wool.

Traders: There are wool traders who buy wool from the herders and sell wool to retailers in the traditional market and in Baku. On the whole, this activity is very limited.

Wool-processors: As discussed above, in the past the processors were largely traditional processors, engaged in processing Merino wool. With the decline in the Merino sheep population, these processing units are lying idle.

Wool yarn shops: There are many wool yarn shops in the major cities, engaged in selling wool yarn to the small weaving factories and women who are engaged in carpet-making at home. Due to lack of processing facilities, most of this yarn is being imported, largely from Turkey.

Carpet-weavers: Carpet-weaving is a traditional art of the women of Azerbaijan who largely engage in it as a home activity. Also, there are small units for carpet-making, along with bigger units established by Azerkhalcha, as discussed later in this section.

Retail carpet shops: Retail shops in the regions and in the major cities like Baku, Sheki, and other tourist locations have shops engaging in sale of locally made carpets. Most of the retailers reported having connections in the regions for direct procurement of carpets from women engaged in carpet-weaving or from carpet-making units.

Azerkhalcha: Azerkhalcha plans to establish an end-to-end value chain for Azerbaijan carpets by engaging in wool procurement



Traditional wool carpets in Baku market
©FAO/Eran Raizman

through establishing collection centres across the country, engaging in processing of wool and setting up units for carpet-making, along with engaging in national and international marketing of Azerbaijani carpets through participation in international fairs as well as tapping other marketing opportunities.

In the future, Azerkhalcha can potentially engage wool-shearers to collect wool at their collection centres. The collected wool can be processed to yarn, which will be supplied to the carpet-making centres. In the three years of operation, Azerkhalcha has established ten carpet-making centres in different parts of the country, engaging 830 women carpet-weavers.

Box 2: Existing wool value chains in Azerbaijan

WOOL VALUE CHAIN

Chain 1: Herders – neighbours/friends for making Doshak (comforter with wool filling)

Chain 2: Herders – traders – wool-retailers – buyers (for making Doshak)

CARPET VALUE CHAIN

Chain 3: Imported yarn – carpet-weaving (at home or cottage units) – retail shops

AZERKHALCHA CARPET VALUE CHAIN

Chain 4: Wool collection from herders – processing into yarn – supplying yarn to processing units – carpet-weaving – sale of carpets in national and international markets

Note: Chain 3 is the dominant chain

The existing value chains for wool and carpets in Azerbaijan, generally small and undeveloped, are presented in *Box 2*. The emerging end-to-end value chain developed by Azerkhalcha is a more modern and evolved value chain. Furthermore, along with wool for carpets, Azerkhalcha can also channel the wool in a form required for exports to other markets for making various wool products.

4.4 ASSESSING THE WOOL/CARPET VALUE CHAIN

Table 12 emphasizes the main challenges in the wool value chain in Azerbaijan. The functioning of the entire value chain is affected by low demand for wool, resulting in poor price realization by farmers and essentially wastage of the wool produced in the country. Recent efforts by Azerkhalcha can help to revive efforts to develop the entire value chain through establishing centres for wool collection, setting up carpet-manufacturing units and engaging in the sale of carpets. The Azerkhalcha value chain, if operated successfully as planned, has the potential to revolutionize the carpet industry in Azerbaijan and to reestablish the traditional glory of Azerbaijan carpets. The extent of success of the value chain will depend on the competitiveness of the handmade carpets against the machine-made carpets, which are relatively cheaper. In addition, there may be scope to establish value chains for collection and exports of greasy wool, so that the wool is not completely wasted, burned or thrown away due to lack of market.

Table 12: Challenges in the wool/carpet value chain in Azerbaijan

ACTIVITY	AGENTS	ROLE IN THE VALUE CHAIN	CHALLENGES
Sheep-rearing	Herders/producers	<ul style="list-style-type: none"> - Manual or mechanical shearing of wool - Marketing of wool 	<ul style="list-style-type: none"> - Wool-shearing is largely being done manually - Hygiene and quality issues related to shearing of wool - About 60-80 percent of small, medium and large herders do not have access to market for wool - Most of the wool is burnt or thrown away
Marketing of wool	Traders	Purchase of wool from herders for sale to retail shops	<ul style="list-style-type: none"> - The market for coarse wool is very thin; hence, very few players engage in this activity - Very small volumes of wool come to the market - Promoting collection, processing and sale of wool to export markets
Processing to wool yarn	Private processors	Collection and processing of wool and sale of yarn	<ul style="list-style-type: none"> - Wool yarn is largely imported - No processing units exist for coarse wool (one was started last year, and one will be started by Azerkhalcha) - Very limited collection of wool from herders, leading to huge wastage of coarse wool - Processing and exploring market linkages for wool yarn

(Table 12)

ACTIVITY	AGENTS	ROLE IN THE VALUE CHAIN	CHALLENGES
Carpet-weaving	Women engaged in carpet-weaving	Weaving carpets at home or in small-scale units	Very few carpet-making units in the country (though new units have now been created by Azerkhalcha)
Marketing of carpets	- Retail shops - Azerkhalcha	- Sale of carpets in the domestic/international market - Promoting sale of carpets from Azerbaijan	Sale of carpets has been low (largely sale to tourists) due to high price of local carpets as compared with imported carpets (Azerkhalcha has now engaged in promoting sale to international markets)

Source: Author's analysis based on data collected for the study



Traditional wool carpets in Baku market

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5

SHEEP MILK CHEESE VALUE CHAIN ANALYSIS

- 5.1 Overview of the sheep milk cheese sector
- 5.2 Existing and potential market for cheese
- 5.3 Functioning of the cheese value chain
- 5.4 Cheese value chain assessment

5.1 OVERVIEW OF THE SHEEP MILK CHEESE SECTOR

The sheep milk cheese processing sector is entirely in the informal domain, with processing taking place at the farm level. There are no formal sheep milk cheese processing units. Sheep milk cheese is sold in traditional markets in the regions and cities in loose form, without any packaging. It is important to note that hardly any sheep milk cheese is sold in supermarkets or modern stores. Due to lack of formal processing, the supermarkets are not engaged in marketing of local sheep milk cheese, as they are not able to ensure quality norms.

5.2 EXISTING AND POTENTIAL MARKET FOR CHEESE

In the European market, sheep milk production is a significant sector, chiefly for the southern countries: Greece, Romania, Spain, Italy and France (in order of production). Sheep milk is richer in fat, solids and minerals compared to cow milk and goat milk and these characteristics make it ideal for cheese-making. The global sheep cheese market is dominated by Europe, which produces more than 50 percent of total world cheese production (FAOSTAT, 2014b). A significant amount of this production is exported to United States of America, but the greatest amount of sheep cheese is exchanged within the European countries themselves.

The most popular sheep cheeses worldwide are the Roquefort of France, the Feta of Greece, the Manchego of Spain, the Pecorino Romano, Pecorino Sardo and Ricotta of Italy and the Serra da Estrela of Portugal (Skapetas and Kalaitzidou, 2017). Azerbaijan is producing large quantities of local sheep cheese but is not cater-

ing to this vibrant European and global market. Traditional production methods, low hygiene and poor market linkages have been factors which restrict cheese produced in Azerbaijan to only the local markets and informal processing.

Discussions with some leading dairy processors revealed that they have not engaged in formal processing of sheep milk cheese as there is limited demand from consumers. However, research on potential demand may identify market opportunities. The sector presents immense scope for capturing the local and export market, by improving hygiene and engaging in formal processing units, even at small scale.

5.3 FUNCTIONING OF THE CHEESE VALUE CHAIN

In the traditional markets in cities and towns, there are 4–5 retailers engaged in marketing of sheep milk cheese along with cow milk cheese. The price of sheep milk cheese is slightly higher than cow milk cheese and the volumes sold are slightly less. The price of sheep milk cheese ranged from AZN 5–15/kg, depending on the variety, while the price of cow milk cheese ranged from ANZ 4–12/kg for different varieties. In the regions, the average volume sold by each retailer was 4–5 kg/day, while in Baku city, the average volume sold by retailers was about 100 kg/day. Hotel and restaurant owners also buy sheep milk cheese from these markets.

Herders: Based on the farmer survey, very few herders reported milking their sheep on a regular basis. Only 6 percent of small herders, 12 percent of medium herders and 25 percent of large herders were collecting sheep milk, which was largely used for making cheese. Motal and other traditional varieties were the main types of cheese produced by the herders. Most of the large

herd owners reported marketing their cheese, while the small and medium herd owners were producing cheese for their own consumption.

Most of the herders are producing cheese at home from the milk they obtain from the lactating sheep. While the smaller herders produce enough for consumption at home, the relatively larger herders (with herd size of 500+ animals) are producing cheese in larger quantities. It is mostly the women in these households who engage in cheese production activities. Often, cheese is sold directly from the home instead of going to the market. Alternatively, cheese is sold to retailers operating in the nearby markets or to traders who then sell to retailers in distant markets.

Traders: Traders procure cheese from herders in the region for sale to retailers in the major consumption centres.

Retailers: Retailers operating in the regions purchase cheese directly from herders. Retailers operating in the cities, and in regions where cheese is not locally produced, purchase the cheese from traders who procure directly from herders.

Cheese market in Baku

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Box 3: Mapping the cheese value chains

Chain 1: Herders (Processing and retailing) → Consumers
Chain 2: Herders (Processing) → Retailers → Consumers
Chain 3: Herders (Processing) → Traders → Retailers → Consumers

Note: Chain 3 is the most dominant chain

The cheese value chains are small and traditional, with very few players in the chain (Box 3). The chain involving traders to reach to urban consumers is the most dominant chain.

5.4 CHEESE VALUE CHAIN ASSESSMENT

Table 13: Value chain analysis – cheese (production/marketing/processing/retailing)

ACTIVITY	AGENTS	ROLE IN THE VALUE CHAIN	CHALLENGES
Sheep- rearing/Milk collection	Herders/ producers	<ul style="list-style-type: none">- Few small and medium herd owners engage in milking the sheep- Mostly herders with large herd sizes (500+) are engaged in milking the sheep	Low milk production per lactation
Processing of cheese	Herders/ producers	<ul style="list-style-type: none">- Small herd owners process cheese only for home consumption- Large herd owners process cheese at home for sale	<ul style="list-style-type: none">- Traditional method for cheese-making- No pasteurization of milk (potentially high risk from infected sheep)- No uniformity of product- Different varieties of sheep cheese available with different names/ prices- Food safety and quality issues

(Table 13)

ACTIVITY	AGENTS	ROLE IN THE VALUE CHAIN	CHALLENGES
Marketing of cheese	<ul style="list-style-type: none">- Herders/producers- Traders	<ul style="list-style-type: none">- Herders sell cheese to consumers or to retailers/traders- Traders supply to retailers in nearby cities/major consumption centres	Sale of cheese is not in the formal domain so difficult to know price and volumes
Retailing of cheese	Retailers in the traditional markets in the regions and in Baku	<ul style="list-style-type: none">- Purchase cheese from traders/herders- Sell to consumers/institutional buyers such as hotels/restaurants, etc.	<ul style="list-style-type: none">- Limited focus on quality norms- Issues related to storage, expiry dates, etc.

Source: Author's analysis based on data collected for the study

Table 13 presents an assessment of the cheese value chain. The cheese value chain in Azerbaijan is very traditional and small with very few players. It is largely a home-based activity, where cheese is produced without pasteurization, which can potentially pose a huge health hazard. Formal processing and marketing of cheese has not been explored, even at the domestic level. Local sheep milk cheese is not even stored in the supermarkets and is largely sold only through traditional markets. There is significant scope to improve the processing of cheese, to improve quality and hygiene and to cater to the domestic market. Furthermore, sheep milk cheese is a widely established gourmet product in other parts of Europe, as well as other developing countries. There is scope to improve the production and marketing activities for the domestic market, as well as tapping the export market. Export markets can be captured using Geographical Indicators – e.g. Mountain cheese from Azerbaijan.



6

VISION FOR DEVELOPING THE SHEEP SECTOR

The Strategic Roadmap for Agriculture year presents a comprehensive approach to the development of the agriculture and livestock sector in Azerbaijan in the short term, medium term and long term. The emphasis is on a gradual progression: from addressing issues related to food security, sustainability and improving competitiveness (Strategic Vision 2020); to focusing on intensive farming, market-oriented and value-added production (Long-term Vision); to gradually moving to international norms for food safety, environmental standards, technological development and merging with global value chains (see Box 4).

The vision statement for the sheep sector developed during the course of this value chain study applies the key elements of the Strategic Roadmap for Agriculture specifically to sheep sector development. The vision objectives and the activities to achieve these objectives focus directly on addressing the key challenges identified in assessment of the sheep meat, wool and cheese value chains. This vision statement and the vision objectives articulated by the author were shared at a stakeholder workshop. Key points from the discussions at the workshop have been incorporated in this report.



A shepherd near Beylagan

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"The vision for 2025 is comprehensive growth of the sheep sector with equal focus on developing the modern commercial and small-scale farms along with emphasis on organized marketing and processing of sheep products and by-products to ensure global quality norms, gender quality, while ensuring environmental sustainability and nutrition security."

Box 4: Strategic, long-term and target vision from the Strategic Roadmap for Agriculture

STRATEGIC VISION 2020 FOR AGRICULTURE AND AGRICULTURAL PROCESSING SECTOR

"2020 strategic vision for agriculture of Azerbaijan is to create favourable conditions for competitive agriculture and agricultural processing sector that contributes to economic diversification and social welfare in rural areas, ensuring further strengthening of food security and is based on sustainable development principles."

LONG-TERM VISION 2025 FOR AGRICULTURE AND AGRICULTURAL PROCESSING SECTOR

"2025 long-term vision for agriculture of Azerbaijan is to create competitive agribusiness by strengthening the transition from traditional management to market-oriented, value-added, intensive agriculture."

TARGET VISION FOR AGRICULTURE AND AGRICULTURAL PROCESSING SECTOR FOR THE PERIOD AFTER 2025

"Post-2025 vision for the strategy of agricultural development in Azerbaijan is creation of industry-oriented agriculture built upon high technological development, meeting the requirements of environmental standards and effectively integrated into the global value chain."

Source: Ministry of Agriculture (2016)

Five vision objectives have been defined to achieve the results of the vision for the sheep sector. The key steps towards achieving the vision objectives address the main issues identified in the value chain assessment.

VISION OBJECTIVE 1: IMPROVE PRODUCTION CAPACITY OF SHEEP SECTOR TO MEET FOOD SECURITY AND SUFFICIENCY AND GENERATE SURPLUS FOR EXPORTS

Activity 1: Improve production technology for sheep in inclusive manner

- Intensive, semi-intensive production based on global best practices on large commercial farms
- Support smallholder extensive system
- Capacity-building/extension mechanisms to improve production systems

Activity 2: Improve access to inputs/ services

- Veterinary services/inputs
- Feed and fodder management/feed concentrate industry
- Management practices – extensive training programme for farmers
- Innovative extension models
- Breed improvement
- Finance

Vision objective 1: Improve production capacity of the sheep sector to meet food security and sufficiency and generate surplus for exports

The primary objective is to improve the production capacity of the sheep farms towards first ensuring food security and sufficiency and then leading to generating export surplus. This will be achieved by focusing on adoption of technological improvements in sheep-farming while ensuring access to key inputs and services.

Improve production technology: Upgrading production technology will be undertaken in an inclusive manner, to include both large commercial farms and small farms. With the large commercial farms the focus will be on intensive production systems based on scientific production techniques. Demonstration farms based on the latest technology for sheep-farming can be showcased to facilitate the transition to modern commercial farming. For small farmers, the focus will be on moving from traditional farming

methods to adoption of scientific management practices. Effective extension models will help to ensure wider adoption of best practices in sheep management.

Ensure access to inputs/services: The focus is on improving access to all key inputs and services. This includes improving the coverage of veterinary services through privatization of services. At the same time, efficient extension models educating the farmers on the need for preventive and curative care will help to create a demand for private services. Innovative extension and mass media campaigns may be implemented to create awareness about livestock diseases, leading to higher demand for these services. This will further strengthen the financial sustainability of the private veterinary model. For improving breed management practices, it is important to ensure a supply of high-quality breeding rams. Specific farm enterprises can be supported to focus on supplying high-quality breeding rams to farmers. Ensuring access to finance is a cross-cutting issue for all levels of the sheep value chains. In this case, the emphasis is on ensuring access to finance by sheep-rearers interested in improving their herd and/or management practices.

VISION OBJECTIVE 2: STRENGTHEN MARKET REGULATION AND MARKET INFRASTRUCTURE FOR SHEEP SECTOR

Activity 1: Research and policy advocacy for market regulation

- Policy research on best practices for regulation of livestock markets
- Workshops organized for knowledge-sharing and policy advocacy

Activity 2: Support development of modern infrastructure

- Development of market infrastructure
- Investment support for modern slaughterhouses
- Infrastructure for meat exports
- Mobile slaughterhouses

Vision objective 2: Strengthen market regulation and market infrastructure for sheep sector

Market regulation: Research, knowledge-sharing workshops and advocacy on the best practices for market regulations will help to move from the informal market system to an organized market system.

Market infrastructure: Market infrastructure emphasizes improving infrastructure of market yards, as well as slaughter points, processing and transport of livestock products. Along with investments in developing market yards, implementing the new food safety norms will require improvements in infrastructure for slaughtering and transport. Investments in advanced processing infrastructure, cold storage and transportation will facilitate export shipments.

VISION OBJECTIVE 3: IMPROVE PROCESSING AND MARKETING OF SHEEP PRODUCTS AND BY-PRODUCTS

Activity 1: Support to enterprises for sheep products and byproducts

- Promote efficient use of by-products – skin, blood, offal
- Formalize cheese processing through small processing units and farmer associations
- Support farmer associations to meet export requirements
- Develop market linkages with supermarkets and niche export markets
- Develop brand "Azerbaijan"/Geographic Indicator for accessing niche markets

Activity 2: Implement food safety norms

- Improve information flow along the value chains to meet quantity and quality norms
- Enhance information regarding various quality/certification norms

Vision objective 3: Improve processing and marketing of sheep products and by-products

Support to enterprises: Improved processing emphasizes improving the quality norms as well as improving the competitiveness of Azerbaijan in the export market through support of small-scale enterprises along with large-scale investments. Small-scale enterprises will help to support enterprise development engaging women and rural youth. Some of the potential enterprises include small-scale cheese-making units, support for commercial farms to supply breeding rams, and fattening units that purchase young lambs for fattening. This last initiative will also limit the distress sale of very young lambs by farmers. Many by-products, including sheep offal, leather, etc., are also not utilized efficiently. Specific market-focused enterprises may be supported, along with linkage to specific markets. Likewise, some large-scale investments will be required to develop a quality value chain for exports, including investments in processing units, export infrastructure, modern/mobile slaughterhouses, etc.

Implement food safety norms: Focus on food safety and quality norms prevalent in the international markets is critical to be competitive in the global market. Efforts should be made towards improving the implementation of food safety norms along with support for knowledge-sharing regarding certification norms, etc.

VISION OBJECTIVE 4: STRENGTHEN INSTITUTIONS FOR RESEARCH AND TRAINING

Activity 1: Strengthen research on animal husbandry

- Offer training and exposure visits for scientists
- Promote higher interaction with international experts and researchers

Activity 2: Strengthen institutions for trained workforce

- Support transformation of education institutes by strengthening technical capabilities
- Strengthen linkages among industry, policy-makers and research institutes

Vision objective 4: Strengthen institutions for research and training:

Strengthen research on animal husbandry: Strong research support and technically trained personnel are the basic requirements for the success of any sector. Key research areas for sheep sector development include research on appropriate intensive sheep-breeding systems in Azerbaijan and breed development to identify the most suitable breeds for the agroclimatic conditions of Azerbaijan. Additionally, research areas on food processing, packaging and marketing will be required to support the process of enterprise development. Exposure of scientists to the best practices in the region for supporting these activities can be organized through study tours, workshops, etc. Additionally, experts can be brought in as consultants or short-term employees to provide technical support as required.

Strengthen institutions for trained workforce: As the sheep sector transforms from a traditional system to a more modern commercial system, with a focus on product development and food safety/quality issues, trained personnel in all aspects will be required to support the sector, including veterinarians, food safety

specialists, food processing and packaging experts, engineers, etc. Technical institutes will need to be strengthened by hiring new staff trained internationally, along with providing exposure visits and international training for the existing staff. Strong linkages with the industry will help to understand the requirements of the growing industry and the technical capabilities required.

VISION OBJECTIVE 5: PURSUE SUSTAINABLE SHEEP DEVELOPMENT

Activity 1: Improve management of pasturelands
 Assess the issues related to pasturelands
 Identify approaches to control degeneration and
 improve pasturelands; study international best practices
 Implement projects/activities on efficient management of pasturelands

Activity 2: Adopt climate-smart livestock practices
 - Support research on climate-smart practices
 - Promote efficient use of scarce feed and fodder resources
 - Find feeding strategies and management practices for reducing emissions from sheep farming
 - Support adoption of climate-smart practices

Vision objective 5: Sustainable sheep development

Improve management of pasturelands: Improved pasture management will include assessment activities from various perspectives, soil and water management, issues of salinity, appropriate use of pasturelands, etc. Agrometeorological approaches using Geographic Information System (GIS) technology can be employed to develop a database of the existing pasturelands. This activity is already being undertaken in association with GlZ. Based on a sound assessment of the situation, proper projects/activities can be planned to improve the situation of pasturelands. Best practices from the region and globally can be identified

to control further deterioration while improving the quality of pasturelands. The GIS mapping can be used to assess the improvement in situation over time and see the progress of the activities.

Adopt climate-smart livestock practices: As a first step it is important to undertake in-depth research to gain a sound understanding of the areas where improvements in management practices are required. This includes researching the most efficient utilization of scarce feed resources and identifying management practices to reduce emissions. Suitable technologies appropriate to the agroclimatic conditions and the sheep management system in the country may be identified. To support large-scale adoption of such practices it is important to train the key officials on these sustainable farming approaches, who will in turn work with farmers to improve adoption at the farm level.

A watercolor illustration of a sheep farm. In the foreground, a brown sheep with a thick, curly white and brown woolly coat is grazing. To its left, another brown sheep with curly wool is looking towards the viewer. To the right, a brown sheep's head and eye are visible. The background features a green field and a white fence with a pattern of small green dots. The overall style is soft and artistic.

7

WAY FORWARD –
STRATEGIC
ACTION PLAN

This study is a first attempt to undertake a comprehensive assessment of the sheep value chain in Azerbaijan. It is based on a detailed farmer survey and an in-depth survey of all the actors along the value chain, for a holistic understanding of the functioning of the value chain from the production, processing and marketing perspectives for the meat, wool and sheep milk cheese sectors. This assessment is a critical first step to identify and implement the key interventions to support sheep sector development in line with the vision for the sheep sector, which was developed along the lines of the government's Strategic Roadmap for Agriculture.

It needs to be re-emphasized that the sector faces two critical challenges that need to be addressed in the short and medium term. First is the issue of feed and fodder scarcity, brought about by the change in government policy to bring more area under cultivation of high-value crops, along with occupation of the winter pastures by Armenia. The government envisions addressing this issue through transforming the extensive production system to a semi-intensive/intensive one. However, this transformation will take time and the decline in population over recent years indicates that much of the productive sheep population will be lost if immediate steps are not undertaken to address this issue. For example, the government could arrange temporary fodder banks, or organize the sale of feed/fodder at low prices during winter months. Second is the issue of the reform of the veterinary sector to ensure wider coverage of veterinary services for the sheep sector.

After addressing these constraints, the sector can evolve along a growth path. The vision objectives and activities pave the way for development of the sector. In this section a detailed action plan

for the vision objectives is presented. The focus here is to implement these activities under the FAO Azerbaijan Partnership Project. However, the plan can also serve as an important roadmap for all agencies interested in sheep/livestock sector development in Azerbaijan.

In terms of phasing the activities, production-related activities can be taken up in the first phase to strengthen the production base, followed by activities focusing on enterprise development and marketing. As a technical support agency FAO can support research, knowledge-sharing and policy advocacy workshops and organize training and study tours for capacity-building of key government officials, staff of universities and research centres and other key stakeholders. The project officials can identify the research needs, workshops, trainings and study tours to be organized. A detailed calendar for implementing these can be prepared to ensure implementation of the activities in a timely manner.

The main implementing partners will include FAO, with support of the leading government agencies, including Agro Services Agency of the Ministry of Agriculture, Food Safety Agency, Veterinary University and Livestock Research Institutes, Azerbaijan Agricultural Research Institute, credit organizations and the Azerbaijan Export and Investment Promotion Foundation (AZPROMO). Private players at all levels in the chain, from farmers to supermarkets and exporters, will be involved in implementing the sheep sector development activity. Specific action points are discussed here in detail from the perspective of the approach to implementation and the partners involved.

Vision objective 1: Improve production capacity of sheep sector to meet food security and sufficiency and generate surplus for exports

Action points for activity 1: Improve production technology

- *Conduct training of trainers for officers of the veterinary services*

The project can help to identify international/regional experts in sheep husbandry for providing training of trainers (TOT) on managing commercial farms using the latest production technologies and for a scientific and efficient approach to small farms. The participating officials from different regions that will undergo TOT will be identified by the Agro Services Agency. These officials will be the nodal experts to facilitate the transformation to a modern sheep sector by extending technical expertise to the farmers.

- *Set up pilot demonstration farms with best technology in sheep production for commercial farms/small farms*

The regional offices of the Ministry of Agriculture will help to identify the farmers who can be supported to establish demonstration farms. FAO can identify international/regional experts to provide technical support to establish these demonstration farms. The officers trained under the TOT programme will provide continued technical support to these demonstration farms.

- *Establish models of extension for improving outreach of scientific practices*

Extension is a key requirement to facilitate the move from traditional to modern sheep farming. Various models of extension are being implemented globally. For example, use of mass media approaches such as radio/television, etc. for information on vaccination of animals and use of digital information and communication technology (ICT)-based technologies for management practices.

Under the project, a small study can be undertaken to explore some practical approaches for extension in the context of Azerbaijan. The findings can be shared at a stakeholder workshop with participation of officials of leading government organizations and institutions in Azerbaijan (Agro Services Agency, Livestock Research Institute, Veterinary University), representatives of multilateral agencies engaged in the livestock sector (World Bank, IFAD), private veterinary stores, international extension experts and other key stakeholders.

Under the project, FAO can support the Agro Services Agency in initiating some extension activities – for example, hiring a communications agency to develop audio/video clips for television/radio to promote vaccination, or video clips and booklets demonstrating management practices. Collaboration with ongoing projects of World Bank, IFAD, etc. can be explored for developing and disseminating communication materials.

Action points for activity 2: Linkages to inputs/services

- *Support establishment of commercial breeding farms to supply high-quality breeding rams*

Supply of high-quality breeding rams is a key requirement for transformation to a modern sheep sector that will facilitate efficient use of resources by ensuring high-quality animals. Specific commercial farms can be supported under the project. Progressive farmers who have the required resources in terms of access to land and knowledge of good sheep husbandry practices may be identified to establish breeding farms. Technical support can be provided through the trainers trained in the TOT programme. These farms may be linked to credit agencies for access to financial resources.

- *Support pilot program for private veterinary services*

The government is already considering privatization of livestock services. The project can support the initiatives of the government through research and providing input to design the pilot program. The pilot program can be initiated in the project area of the project where farmer linkages have been established through extension models.

- *Policy advocacy for farmer access to finance*

The most important source of access to finance by the small farmers is through microcredit. High interest rates are a major deterrent to farmers accessing credit. Policy advocacy workshops can be organized with policy-makers, banks and financial institutions to deliberate on the approaches to improve access to finance by small farmers.

Vision objective 2: Strengthen market regulation and market infrastructure for sheep/livestock

Action points for activity 1: Policy advocacy for market regulation

- *Research best practices for market regulation in the region*

The project can support specific research on existing market regulation and related best practices in the region. The findings can be shared at a stakeholder workshop to determine the most relevant approaches in the context of Azerbaijan. A document presenting the research and the workshop deliberations can be shared with the relevant agencies in Azerbaijan to implement the required legislations.

- *Policy advocacy on market regulation*

The findings of the study can be shared at a stakeholder workshop to brainstorm the most appropriate options in the context of Azerbaijan and the steps required to implement these regulations. A key document presenting the findings of the study and the workshop deliberations will serve as a key input to the policy-makers to implement the market regulations.

Action points for activity 2: Support development of modern market infrastructure

- *Design and develop model market yards*

The project can support the designing of model market yards with the required infrastructure for weighing of animals, shelter for animals, feed/fodder facilities, space for resting of animals, etc. FAO has technical expertise in design of model market yards. The project can possibly support investments in developing one or two market yards as models for developing other market yards.

- *Support investments in modern slaughterhouses*

The project, in collaboration with the Food Safety Agency, can organize training workshops for slaughter point operators to increase knowledge about scientific practices. The project can support model design for slaughterhouses suited to the field conditions in Azerbaijan. Another area for collaboration with the Food Safety Agency is to work towards strictly implementing the regulation restraining slaughtering at butcher shops. This will also help to ensure financial viability of the investments in modern slaughterhouses.

- *Conduct feasibility studies for supporting investments in processing units and cold chain*

The project can support initial feasibility studies for investments in processing units for the domestic and export market. These feasibility reports may be shared with financial institutions and other lending agencies to develop confidence in investing in these infrastructure projects.

Vision objective 3: Improve value chains for processing and marketing of sheep products and by-products

Action points for activity 1: Provide support to enterprises for sheep products and by-products

- *Support formation of farmer associations and link them to processors/supermarkets*

AZPROMO in Azerbaijan has supported farmer associations for bees, fruits and vegetables, and hazelnuts. These associations have been linked to buyers in the export markets. The project can support formation of formal/informal farmer associations. In collaboration with AZPROMO the members of the farmer association can be linked to leading exporters/processors to meet the specific quality and food safety requirements.

- *Conduct feasibility studies for new enterprises*

Background work required for establishing enterprises based on sheep products and by-products can be undertaken under the project. Research studies can be commissioned on specific models for sheep-related enterprises (e.g. micro-enterprises for cheese-making, wool-washing units, leather-related activities, mobile slaughterhouses) relevant to the local context of the size and scale required in Azerbaijan could be undertaken. Feasibility studies can be conducted for the most promising models to assess the financial viability of these enterprises. This will serve as a critical

first step towards establishing enterprises focusing on sheep products and by-products.

Action points for activity 2: Improve food safety norms for sheep products

- *Train value chain players on food safety norms*

The project, in collaboration with Food Safety Agency, can organize training for the existing players in the traditional sheep meat and cheese value chains to increase awareness regarding food safety issues. For sheep meat, trainings can be organized for the butcher shops, slaughter points and processors. For cheese, the training participants will include lead farmers engaged in making cheese at home, along with traders and retailers to increase awareness regarding food safety aspects for production, storage and packaging of cheese.

- *Increase consumer awareness on quality/safety*

While improving the production aspects it is important to increase consumer awareness about the health hazards of traditional processing so that the consumers also demand quality products. The project can support initiatives to develop impactful campaigns for increasing consumer awareness.

Vision objective 4: Strengthen institutions for research and training workforce

Action points for activity 1: Strengthen research on animal husbandry

- *Support transformation of education/research institutes by strengthening technical capabilities*

FAO, as the lead technical agency, can facilitate knowledge-sharing among the leading universities in the region. Exchange programmes can be organized with lead faculty of the agricultural and veterinary universities in the region to deepen the knowledge of sheep husbandry. Faculty and experts in the region can be invited as visiting faculty to facilitate knowledge-sharing. Study tours can also be organized under the project to facilitate learning.

Action points for activity 2: Support industry-linked research

- *Strengthen linkages among industry, policy-makers and research institutes*

Through organizing stakeholder meetings, the project can facilitate linkages between research and industry. Potential topics for research can include feasibility studies for establishing new enterprises, market demand for new products (e.g. demand for packaged sheep milk cheese).

Vision objective 5: Pursue sustainable sheep development

Action points for activity 1: Improve management of pasturelands

- *Collaborate with Land Use Department for access to pasturelands*

The Land Use Department under the Ministry of Agriculture is the nodal agency responsible for decisions regarding use of pasturelands. Collaboration between the Livestock Department and Land Use Department is essential to ensure that the needs of livestock sector are not overlooked while moving on the path to agricultural development. The project can support policy advocacy dialogue for ensuring access to pasturelands for the livestock/sheep sector.

- *Research best practices for pasture management*

Specific research can be initiated to document the best practices for pasture management through the government research centres, agricultural universities and/or leading national or international consultants. The findings can be shared with the policy-makers and other key stakeholders to initiate the required activities.

- *Establish pilot programme for improved pasture management practices*

The project can support a pilot programme for pasture management in collaboration with Land Use Department and other relevant agencies as a demonstration for scaling up through other projects in the coming years.

Action points for activity 2: Adopt climate-smart livestock practices

- *Research climate impact of sheep husbandry*

As the sheep sector transitions from a traditional to a modern sector, research on the climate impact (greenhouse emissions, carbon foot print, etc.) related to sheep husbandry would help to provide a sound understanding of the key issues to be addressed. The research can be taken up under the project through hiring national/international experts and/or in collaboration with the agricultural/veterinary university and/or agricultural research centre of the Ministry of Agriculture.

- *Identify best practices to address climate impact*

Another area of research that can be undertaken through the project is to identify the best practices to address the issues related to climate impact of the livestock sector being implemented in

the region and globally. The technologies and approaches most suitable to the context of Azerbaijan will be identified and documented. The findings can be shared with the policy-makers and other key stakeholders engaged in implementing activities related to mitigation of climate impact.

- *Support adoption of climate-smart practices*

The project can support TOT for lead farmers and identified officials of the Agro Services Agency on climate-smart livestock practices, who will in turn be responsible for outreach to farmers for adoption of the practices at the farmer level.

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ANNEX 1

Key informant interviews

MEAT VALUE CHAIN	CHEESE VALUE CHAIN	WOOL/CARPET VALUE CHAIN
Individual farmers in all categories	Farmers involved in cheese- processing in the regions	Individual farmers in all categories
Traders in the markets in Agjabedi, Baylagan, and Baku	Retailers selling cheese in traditional markets in the regions (Agjabedi, Baylagan and Zagatala) and Baku	Wool-shearers with machines
Slaughter points in the region	Dairy processors in Baku	Wool-retailers in the regions
5 butchers each in all of the regions and Baku	2 supermarkets in Baku	Wool-traders in Baku
2 supermarkets in Baku		Wool yarn shops in Baku
Meat chain store in Baku		Carpet units in the regions
State veterinary offices in the regions		Women entrepreneurs engaged in carpet-making at home
Veterinary field points in the regions		Carpet retail shops in Baku
Private veterinary stores in the regions		Azerkhalcha/Azer Carpets
Officers of the Ministry of Agriculture, Baku		Representative of wool processing unit in Zagatala
Representatives of credit institutions		

MEAT VALUE CHAIN	CHEESE VALUE CHAIN	WOOL/CARPET VALUE CHAIN
Representatives of Food Safety Agency		
Azerbaijan State Agricultural University		
Scientific Research Institute of Animal Husbandry		
Artificial Insemination Center		
Representatives of IFAD and other projects in Baku		
Agrarian Research Center, Baku		
Veterinary inspector in the traditional markets		

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