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POULTRY CLUSTER

Diagnostic Study in Kvemo Kartli Region



POULTRY CLUSTER

DIAGNOSTIC STUDY IN KVEMO KARTLI REGION

**EU Innovative Action for Private Sector
Competitiveness in Georgia (EU IPSC)**

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1 INTRODUCTION

The Poultry Cluster Diagnostic Study in Kvemo Kartli has been prepared under the program EU Innovative Action for Private Sector Competitiveness in Georgia (EU IPSC). The program is a joint initiative of the European Union and four UN Agencies – United Nations Development Program (UNDP), the Food and Agriculture Organization (FAO), United Nations Industrial Development Organization (UNIDO), and the International Organization for Migration (IOM). The overall objective of the UN Joint Program (UNJP) is to enhance entrepreneurship and business sophistication by strengthening the capacities of the government and local entities to develop and operate clusters and supporting companies directly with strategic investments. Also, to better connect to diaspora groups while demonstrating the effectiveness of these strategies to businesses.

UNIDO's component of the UNJP aims at strengthening the capacities of policymakers and other stakeholders to identify and develop clusters. In 2019, UNIDO conducted a mapping of emerging and potential manufacturing and agribusiness clusters in Georgia. The study identified 57 clusters in Tbilisi and 9 regions, it ranked them according to a set of criteria comprising of economic, social, and environmental factors.

Out of 57 clusters, eight clusters were selected for an in-depth diagnostic study based on the following four criteria:

1. Highest growth potential (from top 20 clusters)
2. Priority clusters for the government
3. No prior diagnostic studies conducted for the cluster
4. No major technical assistance provided by development partners to support the cluster development

This study has been prepared according to the UNIDO cluster development approach by PMC Research Center under the supervision of the UNIDO Project team: Ms. Ebe Muschialli, Associate Industrial Development Expert, Mr. Vedat Kunt, International Cluster Expert, Mr. Giorgi Todua, National Project Coordinator, and overall guidance of Mr. Fabio Russo, UNIDO Senior Industrial Development Officer.

This diagnostic study is prepared for the poultry cluster located in Kvemo Kartli Region, and aims to review business operations of the companies, fix linkages between cluster members and stakeholders, identify challenges hampering cluster development, develop the vision of the cluster, and identify short, medium and long-term objectives.

The study defines the poultry cluster, overviews its history and presents the cluster location map. It reviews the poultry production process, analyses business operations, presents vital statistics and looks at the nature of cooperation in the cluster. The SWOT analysis of the cluster is presented and short-run objectives are defined.

2 METHODOLOGY

The project team deployed a combination of approaches including the review of the relevant documents, secondary data sources, individual interviews and focus group meeting with key stakeholders for conducting the diagnostic study.

In total, 19 in-depth interviews and 1 focus group meeting were conducted. The distribution of interviews is given in the table below:

Table 1: Number of in-depth interviews conducted

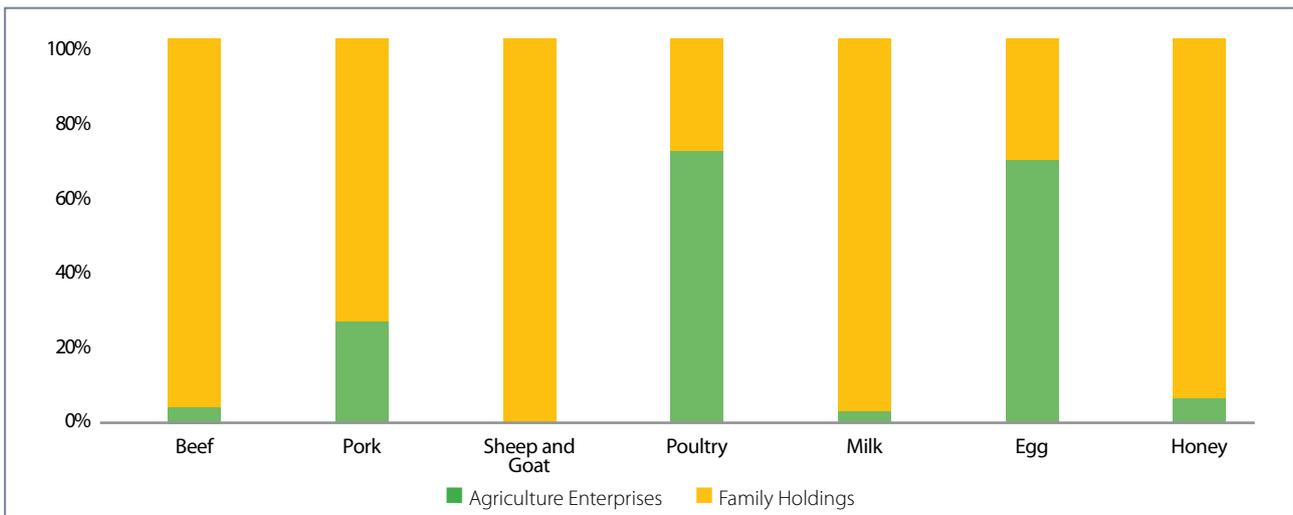
Core Enterprises and Support Institutions	Number of Interviews
Core Enterprises	11
Associations	1
Government Agency	3
Educational Institutions	1
VET Institution	1
Laboratory	2
Total Number	19

3 DEFINITION OF THE POULTRY CLUSTER

The poultry industry represents an important sector for food security¹, employment, regional and local development of Georgia. Since the beginning of the 21st century, the country has achieved some progress in the development of the industry reflected in the creation of new enterprises and import substitution. The local production of poultry meat has recorded significant growth in the period of 2014-2016 and achieved 23.5 thousand tonnes in 2016, 132.7% growth in comparison to 2013. Since then, the production slightly decreased and amounted to 22.8 tonnes in 2019. The highest self-sufficiency ratio² was recorded in 2016 at 35% and decreased to 31% in 2019. Since 2010, it has demonstrated a rise by 8 percentage points, meaning that Georgia's poultry meat security has been increasing over time.

In Georgia, agricultural enterprises in most sectors have a low share in production when compared to family holdings. However, poultry meat production and poultry egg production stand out in this respect. Based on Geostat's report "Agriculture of Georgia 2019", in 2019, 71.5% of poultry meat production and 68.5% of poultry egg production are attributed to agricultural enterprises. These are the highest shares in Georgian Agriculture and correspondingly, the poultry sector could be considered as the most industrialized agricultural sector in the country.

Graph 1: Share of family holdings and agriculture enterprises in animal production, 2019



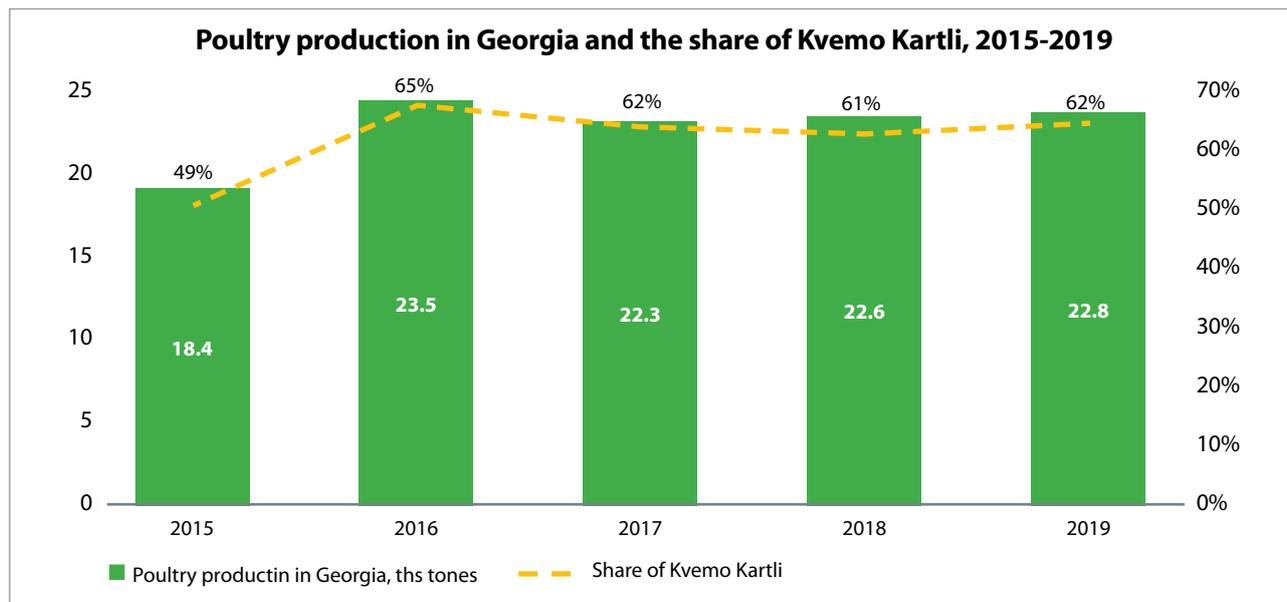
Source: Geostat

Kvemo Kartli represents the main region in terms of poultry and egg production in Georgia. The leadership of the region is reflected in these respective graphs:

¹ Physical, social and economic access of the population to sufficient, safe and nutritious food that meets its dietary needs and preferences

² Self-Sufficiency ratio is calculated as a share of production compared to production + imports - exports, and is a proxy for food security for agricultural products

Graph 2: Poultry production in the country and share of Kvemo Kartli Region



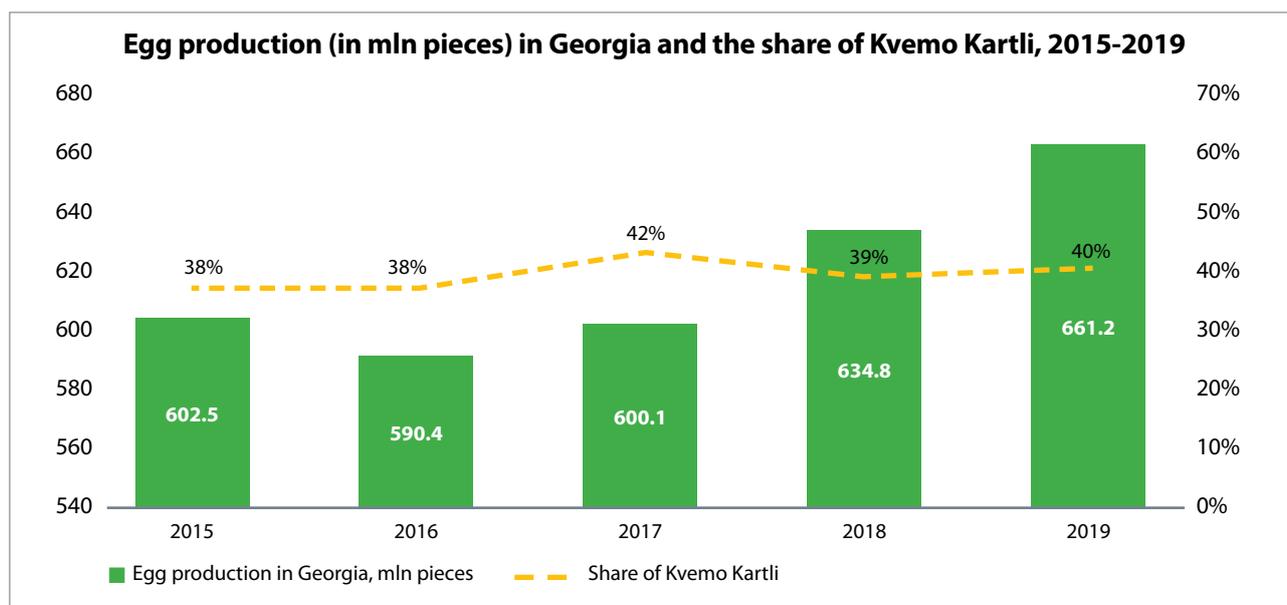
Source: Agriculture of Georgia reports by Geostat

According to the national statistical data, 62.3% of all poultry meat and 39.7% of eggs were produced in Kvemo Kartli in 2019. It is also worth noting that 98% of poultry meat produced in Kvemo Kartli is chicken meat.

In addition, according to Geostat, Kvemo Kartli has a high share in the number of poultry birds in Georgia. Specifically, in 2019, 54% of the country's poultry birds were located in the region. This number has grown significantly over the decade, from 24% in 2010 to 54% in 2019.

The region's share in egg production is relatively modest in comparison to poultry meat. In 2019 Kvemo Kartli accounted for 40% of egg produced in Georgia.

Graph 3: Egg production in the country and share of Kvemo Kartli Region



Source: Agriculture of Georgia reports by Geostat

Kvemo Kartli poultry cluster consists of 20 enterprises. The majority of them are located in Gardabani Municipality.

Table 2: Number of enterprises in poultry sector in Kvemo Kartli by municipality

Municipality	Total number
Gardabani	11
Bolnisi	3
Tetritskharo	2
Marneuli	1
Rustavi	3
Total	20

Source: The National Statistics Office of Georgia, Business Register

3.1 HISTORY OF THE CLUSTER

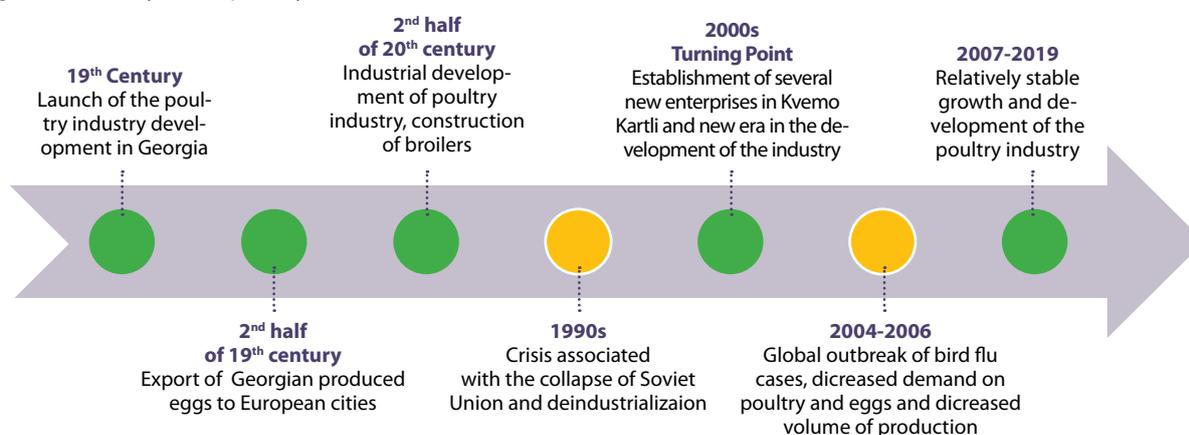
The development of the poultry industry in Georgia starts in the 19th century. In the 2nd half of the 19th century, the Georgian eggs were exported to the European cities. The industrial development of the poultry sector was launched in the second half of the 20th century, when several large broilers were constructed with a cumulative capacity of 30 million broilers. In parallel, the eggs industry was intensively developed and reached 450 million units in the 1990s³. As in other sectors of the economy, the poultry sector experienced a crisis after the collapse of the Soviet Union and during the initial period of independence, the market was dominated by imported frozen poultry meat and eggs.

The industry's active recovery launched from the mid-2000s. However, in the middle of the 2000s, the global increase of bird flu cases and the risk of an outbreak in Georgia negatively affected the trajectory of development. In the period of 2004-2006, due to the decreased poultry and egg consumption, the production in the country decreased by 30%⁴.

The evolution of the poultry industry in Kvemo Kartli Region may be attributed to the following factors:

- Orientation of the industry on the local market and proximity to the main market – capital city Tbilisi
- Availability of main infrastructure facilities
- Well-developed agriculture sector in Kvemo Kartli Region
- Access to labour
- Access to hotels and restaurants and proximity to Tbilisi and Kakheti tourism regions
- Development of several modern enterprises since the 2000s

Diagram 1: History of the poultry cluster



³ <http://fof.ge/index.php?m=1260>

⁴ http://enpard.ge/en/wp-content/uploads/2015/05/Market_Assessment__Poultry_AYEG_ENG.pdf

3.2 PRODUCT

According to the Business Register of the National Statistics Office of Georgia, enterprises in the poultry sector in Kvemo Kartli are operating in the following subsectors: raising and breeding of chicken (9 companies) and production of eggs from poultry (9 companies).

The poultry industry in Kvemo Kartli Region has been developing in recent years in two main directions: Broiler and egg-laying poultry. The growth of the industry has mostly been the result of adopting international technologies, standards and automatization of production processes. As reported by the interviewed respondents, the ready products from poultry farming and production are: eggs, day-old chicks, live broilers, live egg-layer chicken, fresh and frozen chicken, chicken sausage and finally, fresh and frozen chicken parts. Most of the interviewed enterprises produce eggs (70%), while only some of them produce other poultry products in addition to egg production (30%). Only a few of interviewed entities have developed breeding farming, offering the market day-old chicks for sale, which actually are one of the main input products for egg processing facilities. However, such local actors do not have close business cooperation. The day-old chicks are mostly imported in the country mainly from Turkey. There are also companies engaged in poultry trading, buying live poultry from regional farm companies, as well as from Shida Kartli Region (for example, the newly opened breeding company "Noste" LLC) and selling to distributors that supply products to agrarian markets and villages.

The table below summarizes the respective varieties of products of the Kvemo Kartli poultry companies. As mentioned, the product produced by most of the actors is eggs, followed by fresh whole chicken and live broilers. On the other hand, the leading actor of the country's poultry sector produces nearly all types of poultry and derived products, including recycled products.

Table 3: Type of poultry products by company

	Eggs	Day old chicks	Live Broilers+ Colored	Live egg-layers	Fresh Chicken, whole	Fresh Chicken parts	Chicken sausage	Frozen Chicken	Frozen Chichen parts	Compost, fertilizer	Enterprise Size
LLC Chirina											Large
LLC Savaneti 99											Medium
LLC Kumisi XXI											Medium
LLC Dila Products											Medium
LLC Sabudara											Medium
LLC GPS Georgian Poultry											Small
LLC Teleti Poultry											Small
LLC Perma											Small
I/E Besiki Natenadze											Small
LLC Sani +											Small
LLC Elma											Small

3.3 POULTRY COMPANIES

Among the main actors of the value chain in Kvemo Kartli region, Chirina LLC is one of the largest agricultural enterprises not only in the local area, but also in the south Caucasus region. This company has already implemented vertically-integrated production cycle meaning the ownership and management of the whole poultry production supply chain. In some components, this process involves other actors resulting in backward and forward linkages described below. Chirina LLC comprises of breeder, pullet and broiler farms, feed mill, grain dryer factory, meat processing plant, hatchery, wastewater treatment plant, rendering plant and veterinary laboratory. The company is certified by ISO 22000 with HACCP principles.

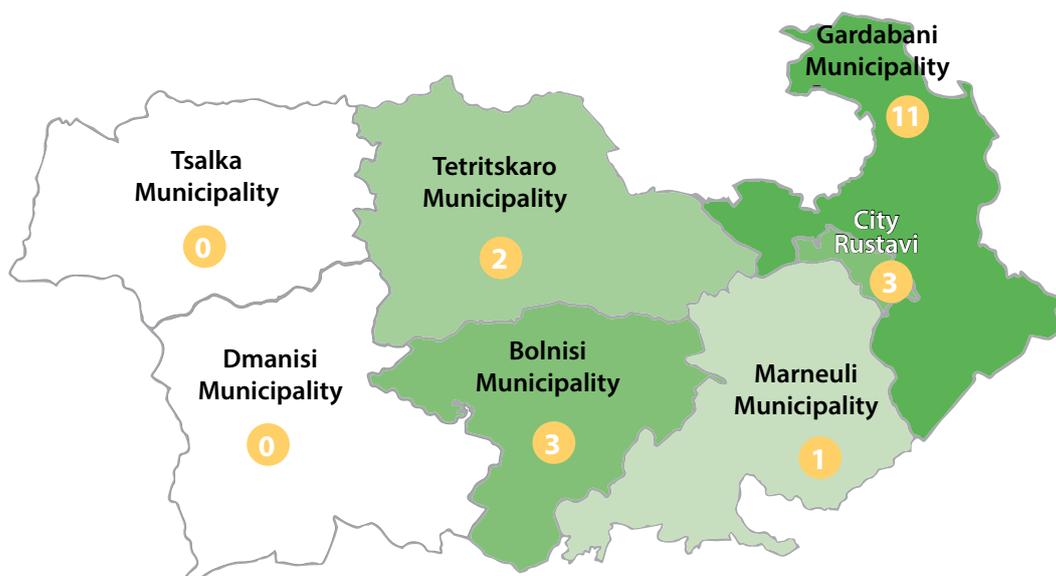
There are several medium-size companies like Kumisi, Dilis Produktebi, Savaneti 99, and Sabudara, specializing only in poultry egg production. Dilis Produktebi comprises of the poultry farm equipped with automated modern systems and feed mill. It is specialized in egg production and is certified with ISO 9001. Kumisi XXI concentrates on the production of eggs and poultry meat and consists of two complexes. The first one specializes in layers and breeds, while the second complex is dealing with poultry meat production. In 2017, the company acquired the ISO 22 000 certificate.

The majority of cluster companies are small-size enterprises, producing eggs, live and fresh chicken products, satisfying only a small portion of local and regional market demand.

The important players of the cluster are input suppliers. Apart from day-old chicks, mentioned above, the decisive input for all types of poultry industry products is combined food, which is being produced using a combination of wheat, corn and concentration ingredients. Other inputs include packaging materials, veterinary medicines for the poultry, vaccination means, and poultry cages for those enterprises that keep the birds in the cage. The support institutions in the cluster are laboratories, poultry association, private sector support governmental agencies, National Food Agency and VET establishment.

3.4 CLUSTER LOCATION MAP

The cluster map below demonstrates the distribution of enterprises in the municipalities of Kvemo Kartli Region:

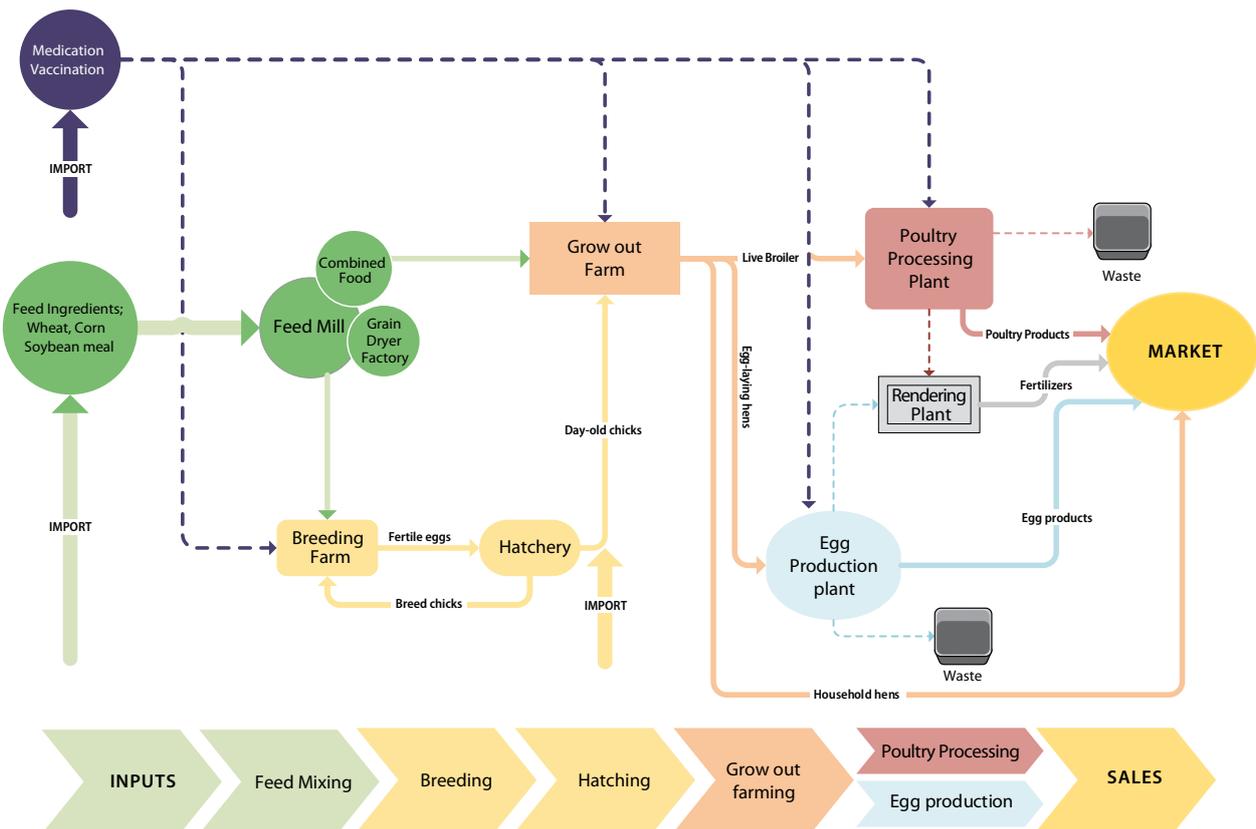


4 PRODUCTION PROCESS OF THE CLUSTER

4.1 OPERATION OF POULTRY SECTOR VALUE CHAIN

The diagram below demonstrates the full operation of the poultry sector value chain, including subsequent processes of production from purchase of input products until the end market.

Diagram 2: Poultry sector operation process



As diagramed above, the poultry value chain operation process incorporates: Feed mixing – firstly, drying the grain products (wheat, corn), mixing with protein, calcium, vitamins, minerals and other nutrients resulting in feed mix ration. Such combined feed is the main input for the breeding farm, producing fertile eggs for Hatcheries, which in turn hatches broiler chicks (common breeds: Ross 308 and Cobb 500) or egg-laying breeds (Lohmann Classic, Sandy, Brown). Chicks are raised in grow-out farms, the main input of which is again mixed feed. Such farms raise either egg-laying hens (for egg production plant), live broilers (poultry meat processing plant) or household hens (house yard poultry). Rendering plant depicted in the diagram represents an important facility for poultry recycling, producing fertilizer and compost products. Finally, the end market is supplied with a variety of poultry products: fresh and frozen chicken and chicken parts, eggs, live chicken, and recycled products.

The 'import arrows' show the respective steps and processes where import is being made: First and foremost, poultry feed ingredients are mostly imported (grain group, protein sources, vitamins and minerals). Besides, poultry medication and vaccination means are also imported, and last but not least, live poultry (day-old chicks) or fertile eggs are purchased by local actors from abroad.

4.2 RAW MATERIALS AND INTERMEDIATE GOODS OF THE POULTRY CLUSTER

The paramount inputs the industry actors use for the production of poultry and derived products are feed and feed ingredients. This major set of raw materials account for 75-80% of the total production cost of a business operator. Along with the main feed ingredients, representing grain group - wheat, corn, barley, bran, as well as protein sources, feed has to incorporate vitamins, minerals and medication. All these and other principal input ingredients, necessary for the operation of the poultry industry, are summarized in the table below:

Table 4: Raw materials

Main ingredients	Other inputs
<p>Grain group</p> <ul style="list-style-type: none"> • Wheat • Corn • Barley • Bran <p>Live birds</p> <ul style="list-style-type: none"> • Day-old Chicks (DOC) • Fertile eggs <p>Protein sources</p> <ul style="list-style-type: none"> • Soybean meal • Sunflower meal 	<p>Vitamins and minerals</p> <ul style="list-style-type: none"> • Premix • Calcium • Phosphorus <p>Medication</p> <ul style="list-style-type: none"> • Additives against bacteria and toxin • In-feed antibiotics <p>Vaccination means</p> <p>Disinfections means</p> <p>Packaging materials</p> <p>Other</p> <ul style="list-style-type: none"> • Sunflower Oil • Soda • Sault • Limestone • Chicken cages

For some industry actors, among the main raw materials are live inputs – fertile eggs and day-old chicks. Such baby chicks are being purchased either from local breeding farms, or mostly imported from neighboring countries. Such import is being carried out mostly by egg production companies.

As marked earlier, the majority of raw materials are imported. Thus, the industry is very sensitive towards international price and exchange rate fluctuations. The local production of wheat is very small (SSR ratio 10-12%⁵), while that of corn is higher but still insufficient (part of corn production is exported to Armenia). According to one interviewee, the reasons for the low production volumes of the main inputs are low productivity and low market price. Locally produced raw materi-

⁵ Self-Sufficiency Ratio (%) = production x 100/(production + imports - exports).

als are mostly corn, but also wheat, barley, sunflower meal, bran, limestone, soda and salt. Despite the insufficient quantity, the quality of local products is also lower in comparison to imported products. However, such low quality is basically a result of poorly processed and treated grain products (absent of normal grain dryers), as the fresh corn and wheat yield is of a good quality and quite often even better than that of imported – as marked by the respondents.

Business relations with suppliers of raw materials are stable and major problems were not stated in this regard. However, one of the medium-sized cluster companies stated the delays at border crossing points with the Russian Federation, where imported raw materials of the industry may be stalled. The company deals with this challenge by making the necessary reserves.

Feed and feed ingredients' prices are higher in spring when a periodical deficit occurs on the market.

5 VITAL STATISTICS

5.1 NUMBER OF COMPANIES ACCORDING TO THEIR SIZE

The cluster consists of 20 companies operating in the poultry sector in Kvemo Kartli Region.⁶ Most of these 20 enterprises are LLCs.

Table 5: Number of enterprises in poultry sector in Kvemo Kartli by form of ownership

Form of ownership	Total number
LLCs	17
Individual entrepreneurs	3

Source: The National Statistics Office of Georgia, Business Register

Out of 20 firms, 1 (Chirina LLC) is classified as large, 4 as medium and 14 as small (1 firm's size is unidentified). The majority of companies are located in Gardabani Municipality.

5.2 ESTIMATED TURNOVER

The table below demonstrates the number of interviewed small, medium and large enterprises falling in selected 2019 FY annual turnover ranges:

Table 6: Turnover ranges of poultry enterprises

Enterprise Size	0 – 500K ₾	500K ₾ - 1mln ₾	1mln ₾ - 3mln ₾	3mln ₾ - 5mln ₾	5mln ₾ - 10mln ₾	10mln ₾ - 20mln ₾	20mln ₾ - 50mln ₾	> 50mln ₾
Large								1
Medium						1		
Medium							1	
Medium						1		
Small		1						
Small		1						
Small		1						
Small	1							
Small	1							
Small	1							

According to presented information, an average annual turnover of 2019 for small-size enterprises amounts to 510K, while for medium-size companies amounts to 16.5mln, and lastly, for the large entity- 58mln.

⁶ Source: Business register, National Statistics Office of Georgia, October 2020

5.3 PROFITABILITY OF SELECTED POULTRY ENTERPRISES

The analysis of key profitability indicators of poultry companies⁷ reveals several observations about the poultry cluster in Kvemo Kartli. The average Gross Profit Margin of poultry companies in Kvemo Kartli cluster was 25% in 2018, while their average Net Profit Margin was -3%. Their Return on Assets (ROA) and Return on Equity (ROE) amounted to 6% and 16%, respectively.

It is interesting to observe that the ratios of companies in Kvemo Kartli cluster outperform ratios calculated for the aggregated cluster (national level) in 3 of the key profitability indicators, while Net Profit Margin was negative, with absolute values close to each other for both sets of companies (-3% and -2%).

Table 7: Key profitability ratios for poultry companies in Kvemo Kartli and for poultry companies in Georgia

	Poultry Companies in Kvemo Kartli	Poultry Companies in Georgia (incl. Kvemo Kartli)
Gross Profit Margin	25%	21%
Net Profit Margin	-3%	-2%
ROA	6%	2%
ROE	16%	9%

Source: Investment analytical platform ebita.ge

It is worth noting that the profitability ratios are likely to be affected negatively in 2020 due to increased prices of raw materials.

5.4 ESTIMATED EMPLOYMENT

Based on in-depth interviews conducted with the targeted companies, on average, small-size enterprises employ 11 persons, medium-size firms - 130, and the large firm hires a total of 450 employees. The table below shows respective employment figures in more details as well as estimated total employment in the poultry sector of Kvemo-Kartli.

Table 8: Employment per size of interviewed enterprises

Size ⁸	Number	Average employment per size	Total
Large	1	450	450
Medium	4	135	540
Small	15	11	165
Total Estimated Employment			1,155

⁷ The analysis includes only those enterprises that have presented their audited financial statements on platform reportal.ge. As only a fraction of companies was analyzed, one should be cautious about extrapolating the results of the subsequent analysis to the broader cluster. Still, it provides a general overview of the financial profitability of the sector.

⁸ According to Geostat, **Large-scale** enterprises include all organizational-legal forms of enterprises, where the average annual number of employees exceeds 250 people or the average annual turnover is 60 million GEL.

Medium-sized enterprises include all organizational-legal enterprises in which the average annual number of employees ranges from 50 to 249 people, and the average annual turnover is from 12 million GEL up to 60 million GEL. **Small** enterprises include all organizational-legal enterprises in which the average annual number of employees does not exceed 49 employees and the average annual turnover does not exceed 12 mln. GEL.

As the above table confirms, the role of small enterprises in employment is negligible. One company has only 2 employees, other family business 3, and the highest employment reaches 30 persons. They use various types of remuneration systems, such as fixed salaries, hybrid system with a mix of fixed and performance-based remunerations. The employees of the companies are not engaged in the professional education programs and on-the-job trainings are practiced when necessary. Novelties of the sector are basically obtained through the internet or from colleagues.

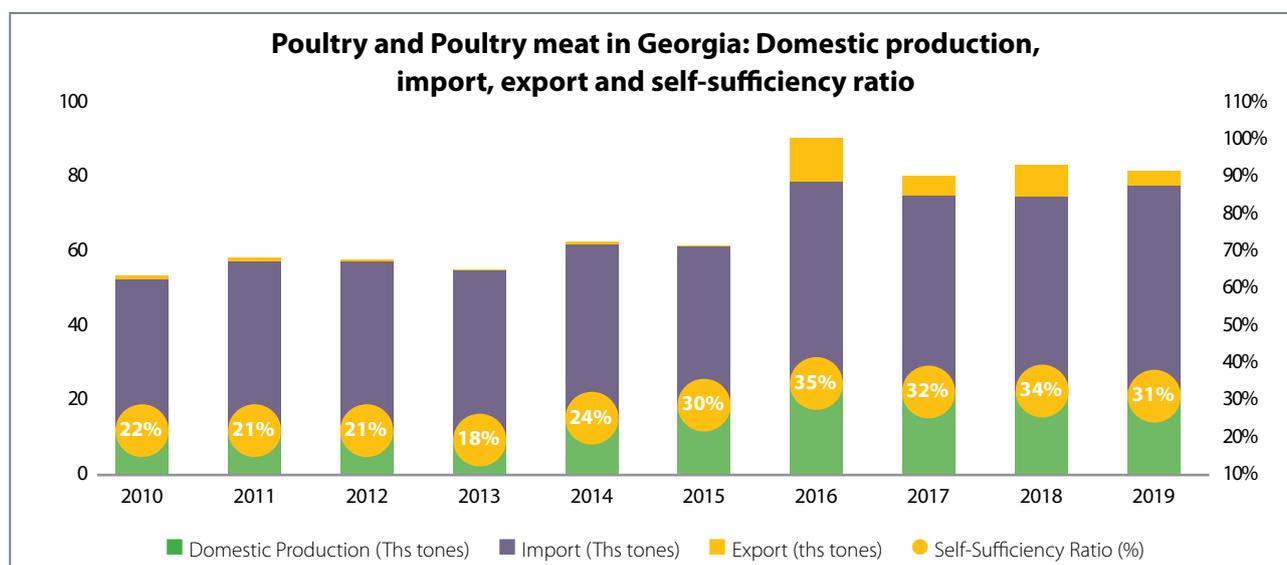
Medium and large enterprises have an important role in employment generation. One medium enterprise, that deploys mostly automated production technologies employ 210 persons. Due to automated processes, these employees are engaged in technical maintenance and operation of production lines, maintenance of hygiene and distribution. The administration staff has fixed remuneration, while the production staff salaries are based on performance and output. Distributors are also remunerated on a performance-based model. The trainings are conducted in the framework of ISO by invited specialists, labor safety, customs procedures and finance and accounting.

5.5 EXPORT INFORMATION IN VOLUME, VALUE, AND MARKETS⁹

At the beginning of the 2010s, a high dependency of the Georgian market on imported frozen chicken was explained by the high input costs of feed, that was mostly imported and electricity price for local production (UNDP, 2013).

Currently, the Georgian market still mostly depends on imported poultry meat and self-sufficiency ratio in 2019 was only 31%.

Graph 4: Domestic production, trade and self-sufficiency ratio of poultry



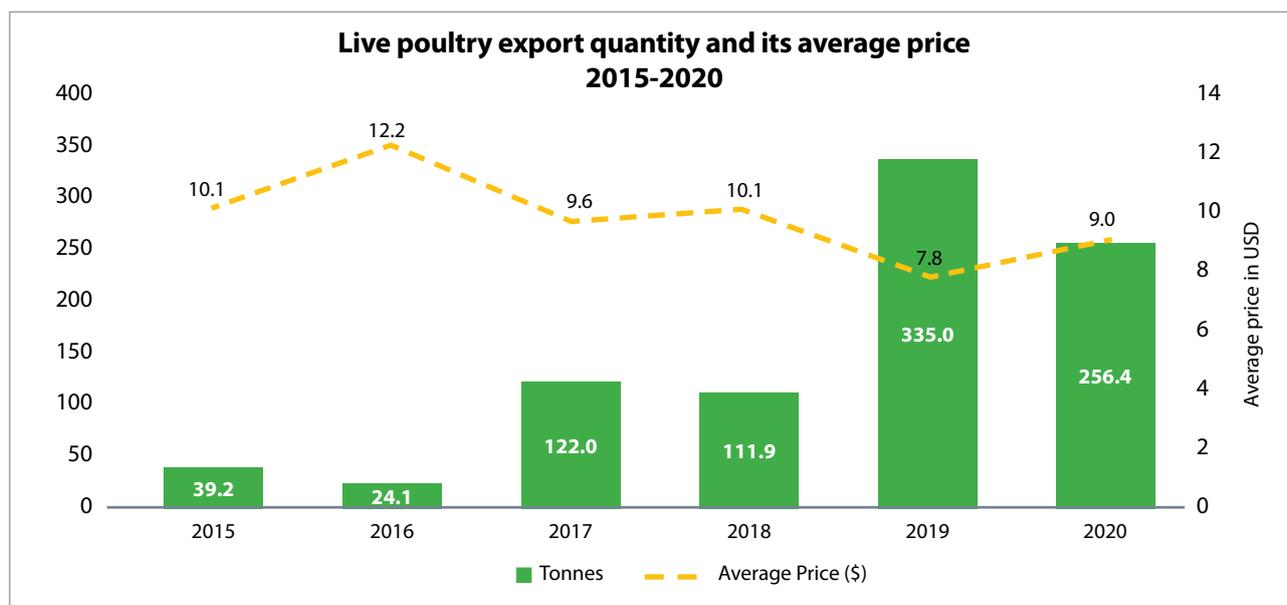
Source: Agriculture of Georgia reports by Geostat

It is worth noting that according to Geostat's quarterly bulletin, in Georgia, there were 11.5 mln live poultry at the end of Q3 of 2020, and this number increased by 22.5% in the Q3 of 2020.

In 2019, the export volume of live poultry increased by almost 200% in comparison to 2018 and reached 335 tonnes. It remained at a relatively elevated level in 2020 as well (256 tonnes).

⁹ As trade data for December 2020 is yet unavailable, the graphs in the trade section of the report will be updated for the final report and will include 2020. The graphs will also be accompanied with respective descriptive and analytical text. In addition to analyzing poultry products, the final report will also include short overview of trade in wheat and corn, as the issue with importing inputs turned out to be one of the most stressing ones the companies faced.

Graph 5: Live poultry export quantity and its average price

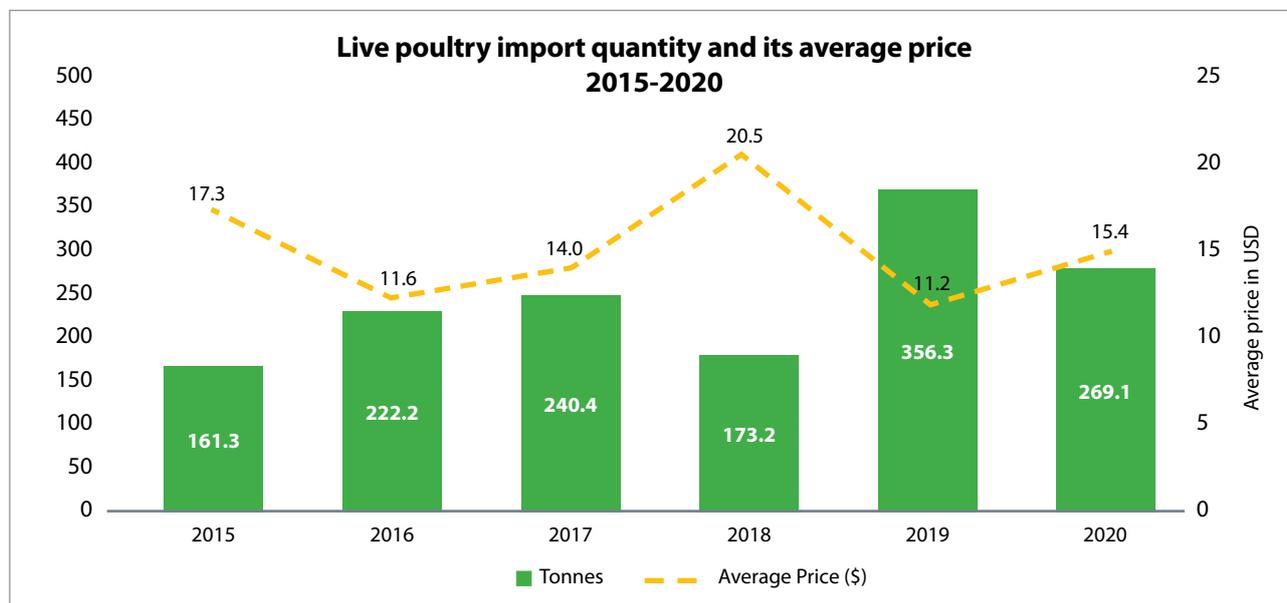


Source: External trade portal of National Statistics Office of Georgia

It is worth noting that throughout the period of 2015-2020, there were only two export markets for live poultry – 93.5% of the total was exported to Armenia and 6.5% to Azerbaijan.

The growth of live poultry import was also notable in 2019 with an increase of 105.7% when it reached 356 tonnes. The difference between import and export prices is worth noting, with import prices surpassing export prices by an average of \$5.2.

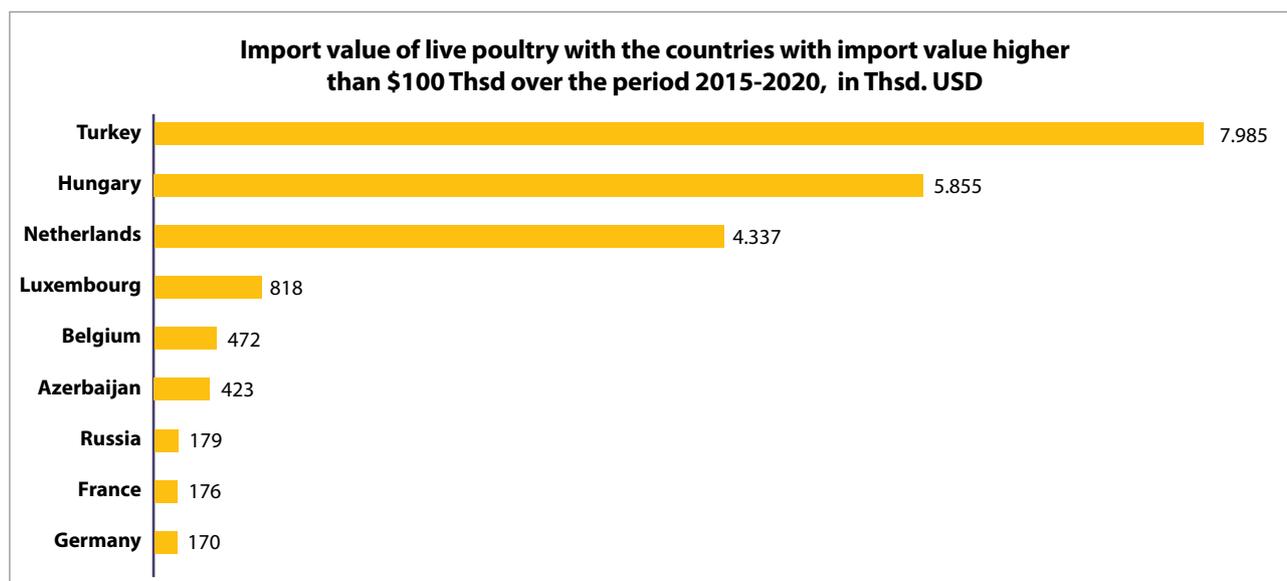
Graph 6: Live poultry import quantity and its average price



Source: External trade portal of National Statistics Office of Georgia

The main source markets for live poultry import in the period of 2015-2020 were Turkey, Hungary and the Netherlands, with the three accounting for 89% of the total live poultry imports.

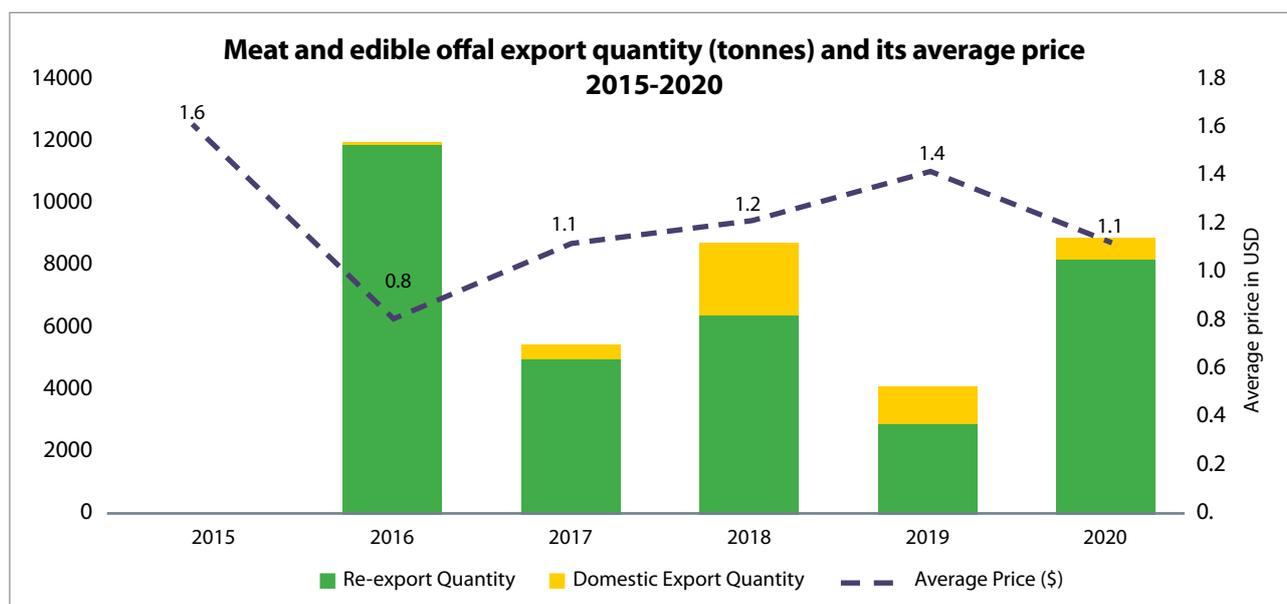
Graph 7: Live poultry import with top live poultry exporter countries to Georgia



Source: External trade portal of National Statistics Office of Georgia

The exports of poultry meat¹⁰ have higher values than live poultry exports, however, re-exports dominate. Domestic exports are negligible except for 2018 when they reached 2 236 tonnes.

Graph 8: Poultry meat export quantity and its average price

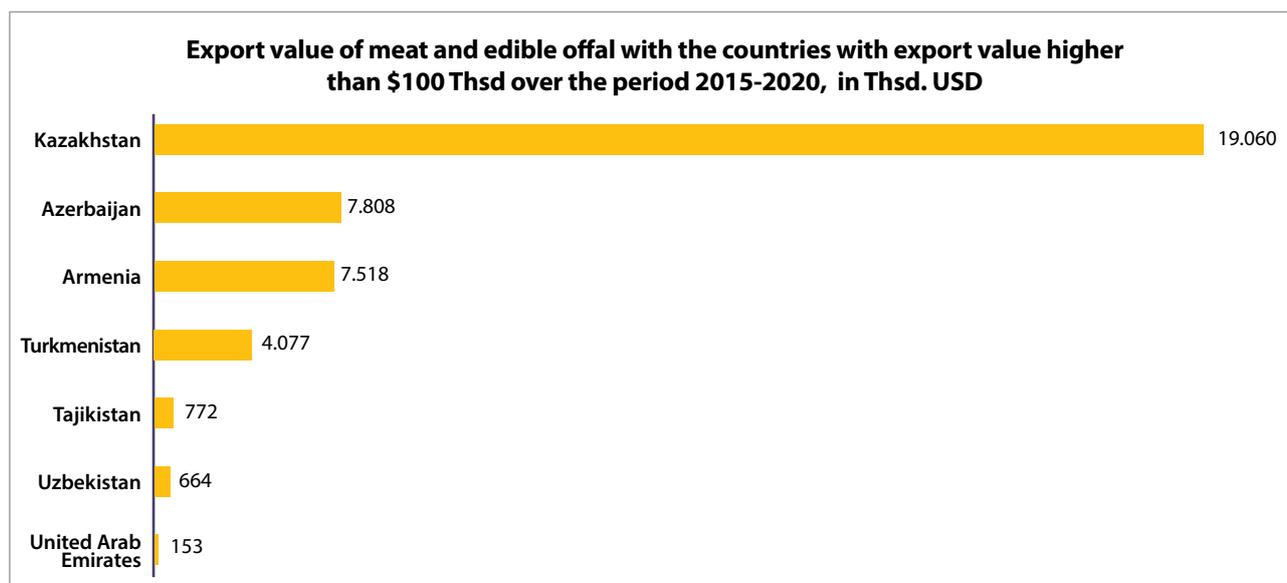


Source: External trade portal of National Statistics Office of Georgia

The main destination markets for the exported (including re-exported) Georgian poultry meat in the period of 2015-2020 were Kazakhstan, Azerbaijan, Armenia and Turkmenistan, with Kazakhstan being the destination for 47.5% of exports.

¹⁰ HS code 0207

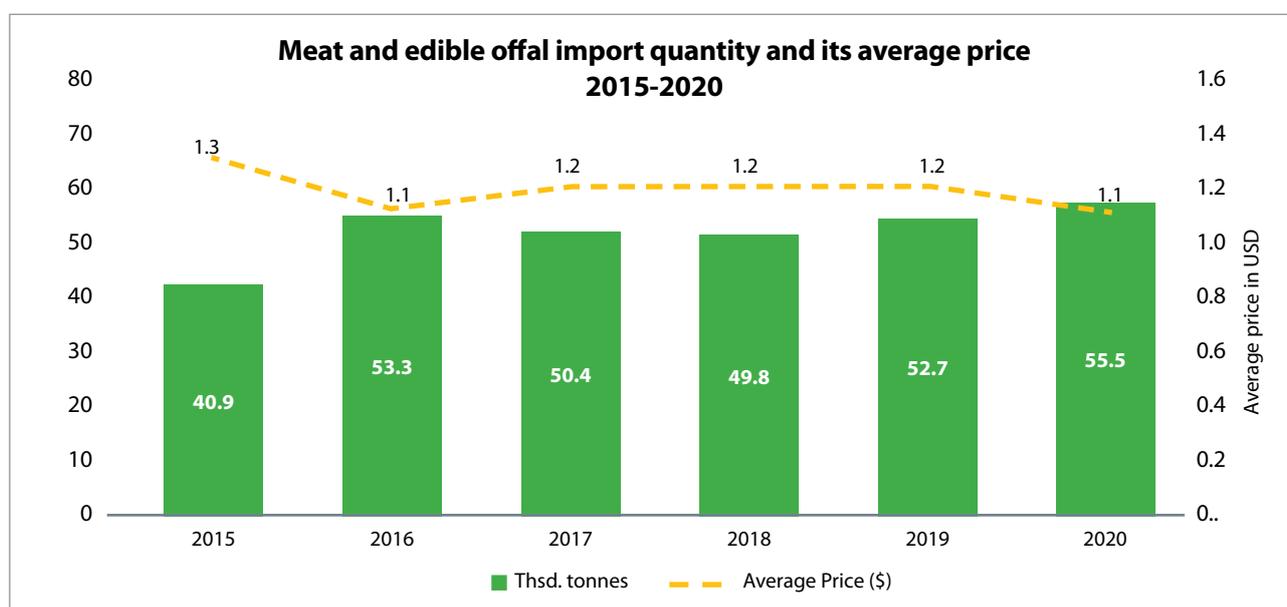
Graph 9: Poultry meat export with top poultry meat importer countries from Georgia



Source: External trade portal of National Statistics Office of Georgia

As for the poultry meat imports, the amount is quite sizable. In 2020, it reached its peak of 55 500 tonnes. The average price for imported poultry meat has been stable, averaging \$1.2 over the six-year period. The average price difference between imported and exported poultry meat has been negligible.

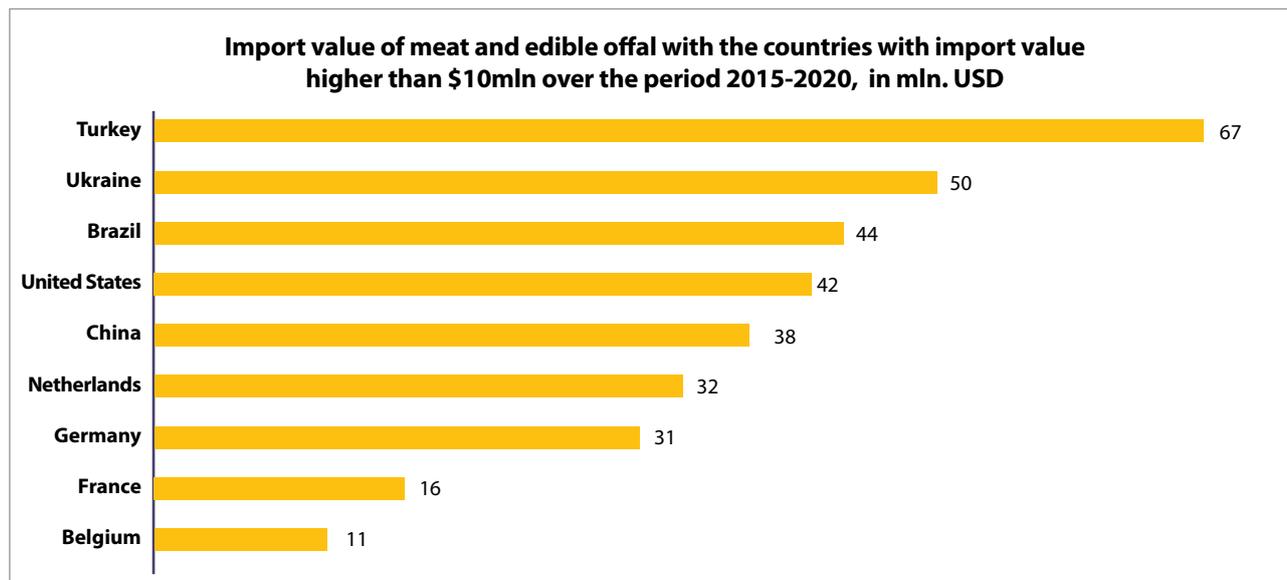
Graph 10: Poultry meat import quantity and its average price



Source: External trade portal of National Statistics Office of Georgia

The main source markets for poultry meat import in Georgia are Turkey, Ukraine, the USA, China, Brazil and Germany, with Turkey accounting for 18.5% of total imports over the period of 2015-2020.

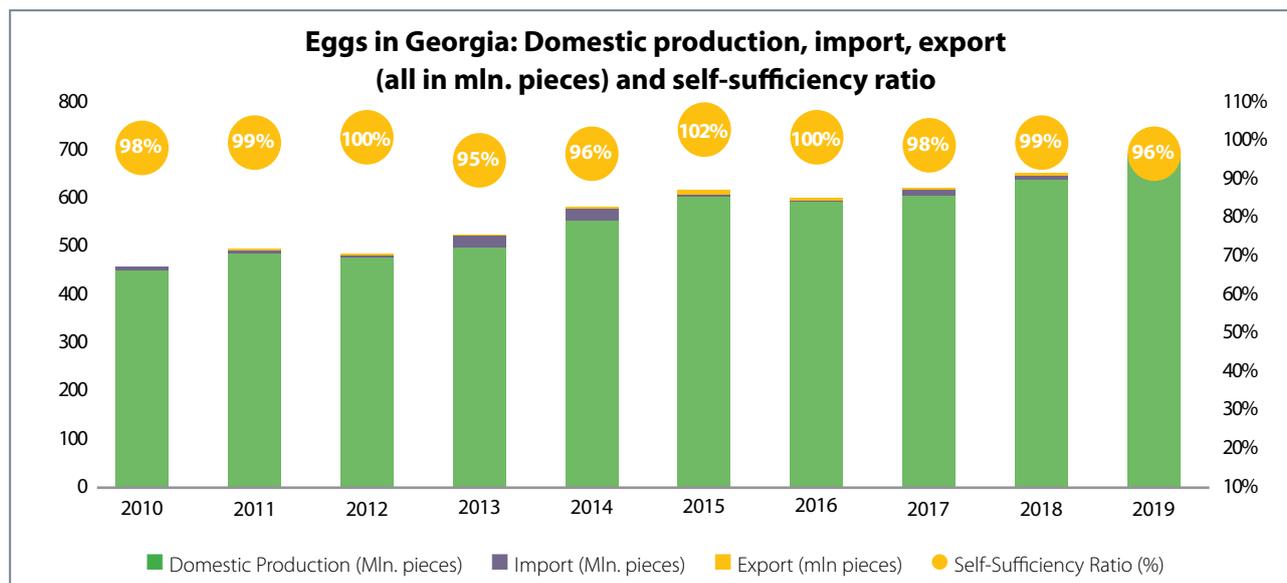
Graph 11: Poultry meat import with top poultry meat exporter countries to Georgia



Source: External trade portal of National Statistics Office of Georgia

Domestic production of eggs has increased over the last decade. The local production almost fully meets Georgia’s market demand, thus, the self-sufficiency ratio has been stable and close to 100% over the 2010s.

Graph 12: Domestic production, trade and self-sufficiency ratio of eggs

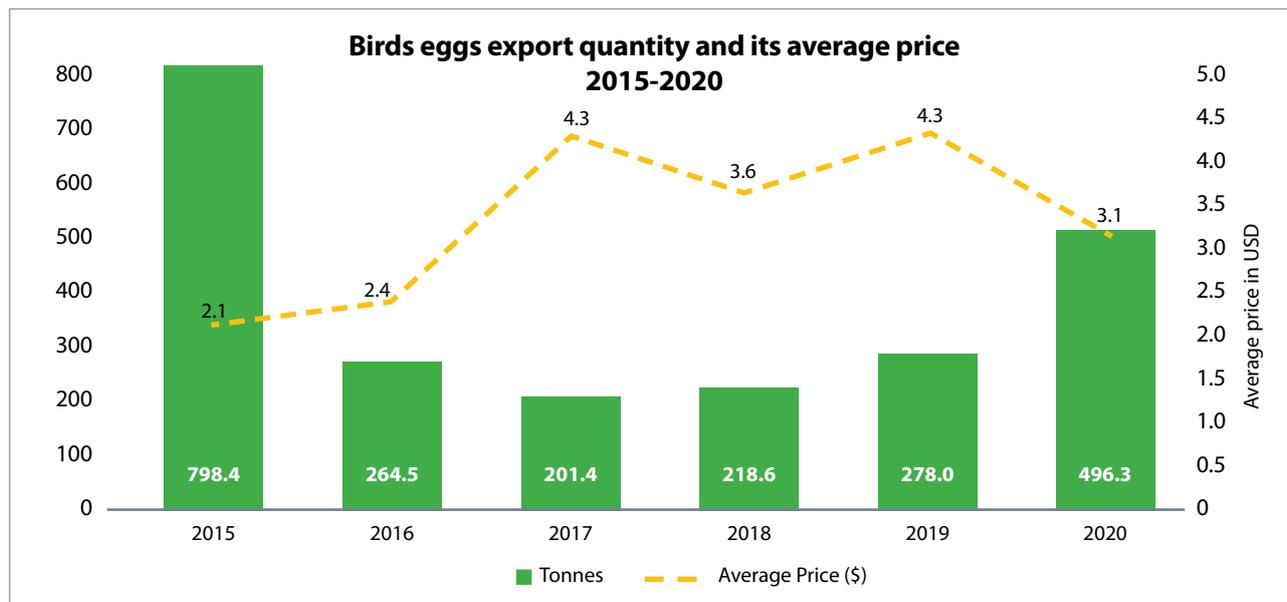


Source: Agriculture of Georgia reports by Geostat

According to Geostat’s quarterly bulletin, the number of eggs produced in the first 3 quarters of 2019 and 2020 were quite similar (both close to 480 mln eggs). However, it is worth noting that in Q3 of 2020, the number of eggs produced decreased by 9.6% compared to the corresponding period of 2019. This is largely explained by the fall of tourism in 2020. As most tourists are visiting Georgia in the third quarter, their absence decreased the demand for eggs in this period.

As for external trade, the highest export volume of eggs over the period of 2015-2020 was recorded in 2015 and 2020 – approximately 800 and 500 tonnes, respectively. A fall in the average price of eggs in 2020 compared to the past 3 years is noteworthy. However, as in the case of poultry, the eggs produced in Georgia are mostly destined for meeting the needs of the local market.

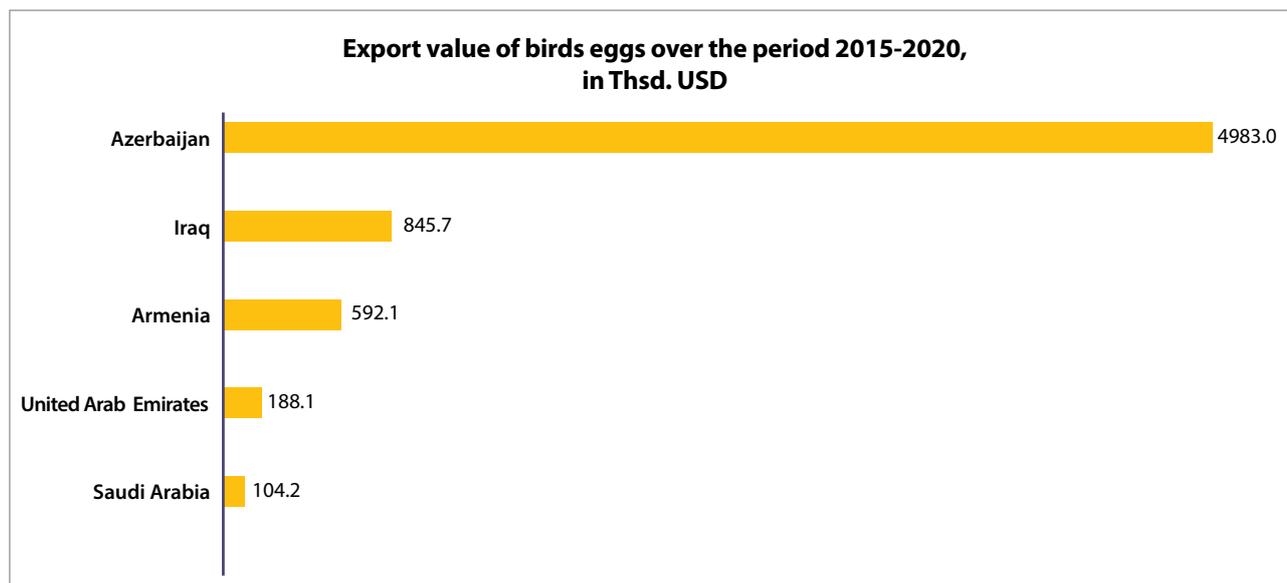
Graph 13: Poultry eggs export quantity and its average price



Source: External trade portal of National Statistics Office of Georgia

The main destination countries for Georgian egg export in the period of 2015-2020 were Azerbaijan, Iraq and Armenia, with exports to Azerbaijan accounting for 74.2% of the total.

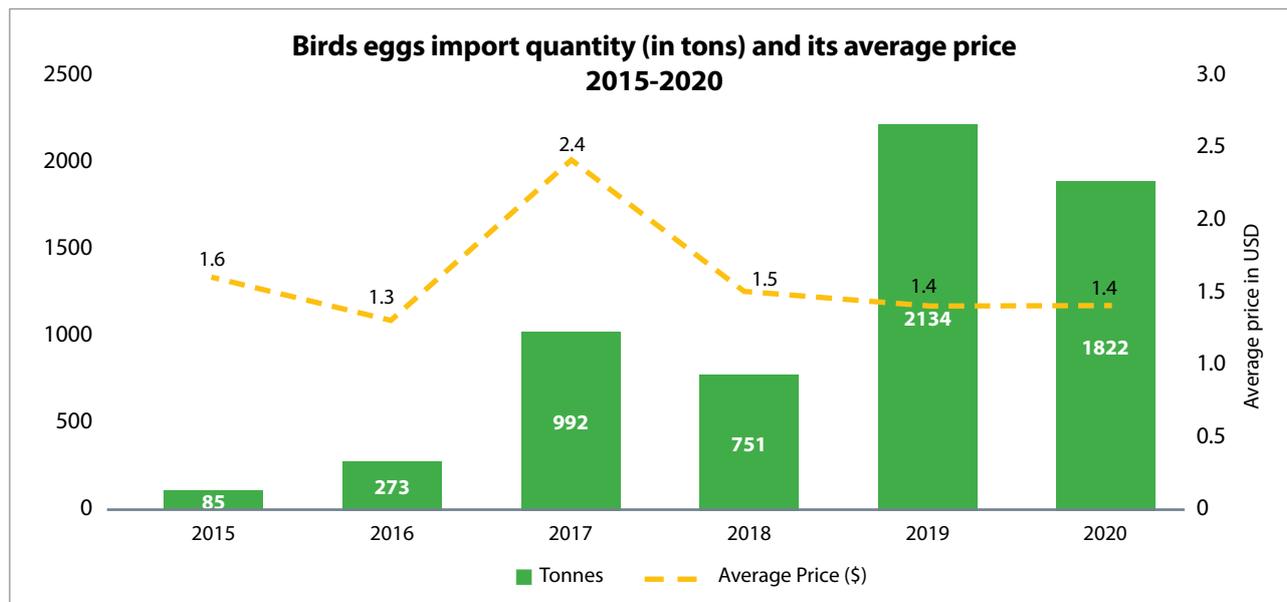
Graph 14: Poultry egg export with top poultry egg importer countries from Georgia



Source: External trade portal of National Statistics Office of Georgia

The volume of egg imports increased significantly in 2019 and amounted to 2134 tonnes, and it remained at an elevated level in 2020 (1822 tonnes). It is worth noting that the export price of eggs is on average \$1.7 higher per ton, compared to the import price of eggs.

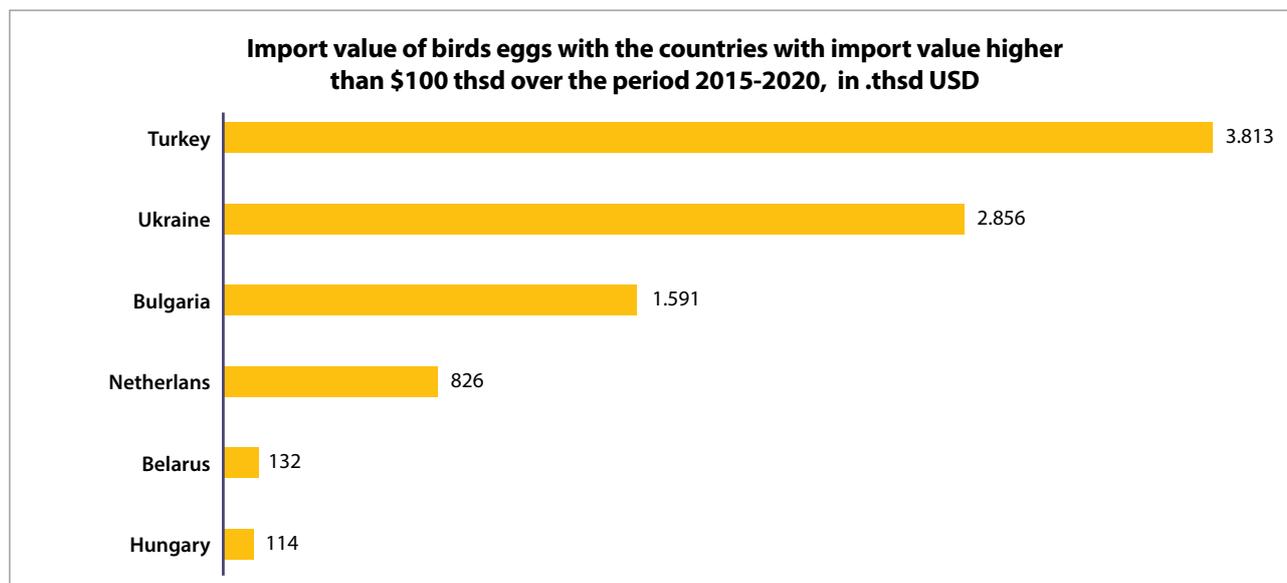
Graph 15: Poultry eggs import quantity and its average price



Source: External trade portal of National Statistics Office of Georgia

The main source markets for poultry egg imports in Georgia are Turkey, Ukraine, and Bulgaria, the three accounting for 87.3% of total imports over the period of 2015-2020.

Graph 16: Poultry egg import with top poultry egg exporter countries to Georgia



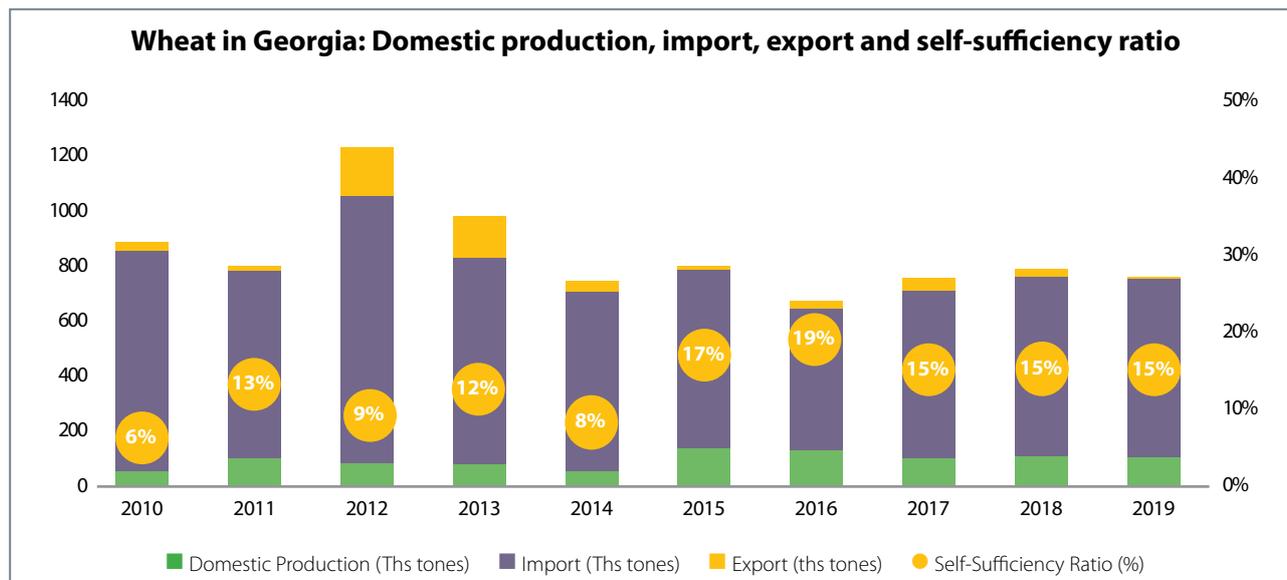
Source: External trade portal of National Statistics Office of Georgia

Key raw materials

While there are many ingredients for poultry feed, such as barley, bran, soybean meal, sunflower meal, and others, wheat and corn are two major ingredients and are worth analyzing separately.

Georgia is heavily dependent on the import of wheat and barely exports it. The self-sufficiency ratio for wheat stood at 15% in 2019, and the average ratio over the 10-year period was 13%. The high dependence on one country, namely Russia is also noteworthy, with imports from Russia accounting for 99.4% of total imports in 2020, and 93.6% in the period of 2015-2020. Another source country for wheat is Kazakhstan, accounting for 15.8% and 12.1% of total imports in 2018 and 2019, respectively.

Graph 17: Domestic production, trade and self-sufficiency ratio of wheat



Source: Agriculture of Georgia reports by Geostat

Corn is another major ingredient for poultry feed, and a large part of corn demand is satisfied by the domestic market, with the self-sufficiency ratio standing at 70% in 2020. Still, exports are negligible and imports have a major role in satisfying domestic needs. It is noteworthy that the average self-sufficiency ratio over the past decade was 86%, and that there was a downward trend from 2012 to 2017, with the ratio falling from 100% to 64% over this period. Among source countries of corn, Ukraine, Turkey, Austria and Italy stand out.

According to some respondents, domestic corn production has the potential to satisfy domestic needs fully.

Graph 18: Domestic production, trade and self-sufficiency ratio of corn



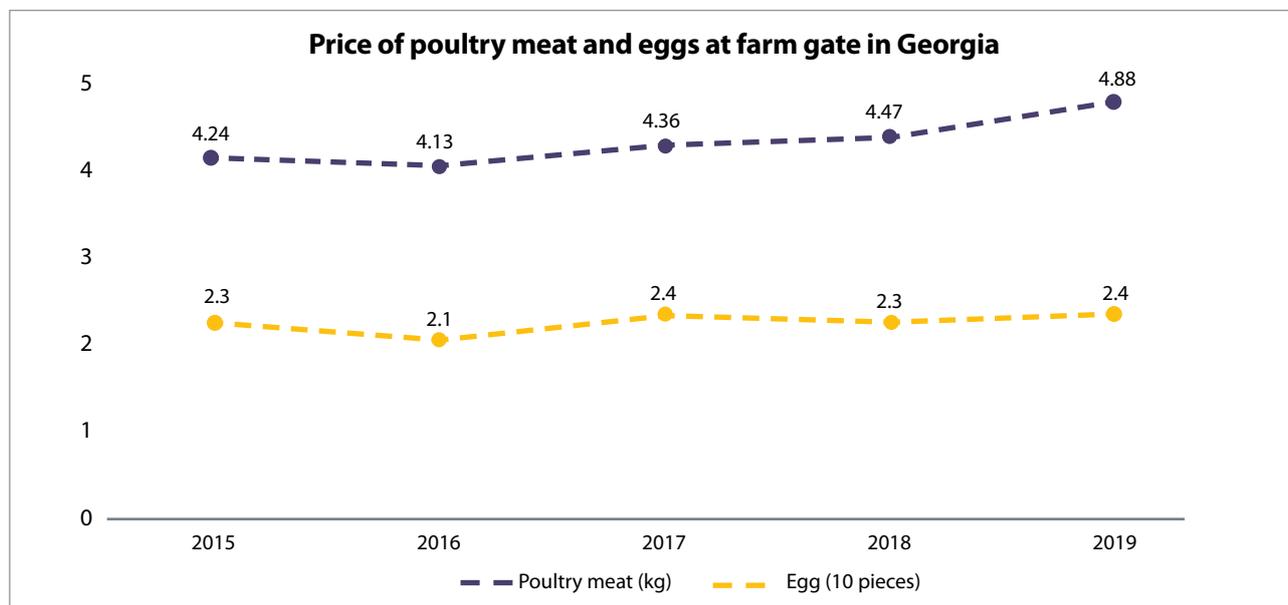
Source: Agriculture of Georgia reports by Geostat

5.6 PRICES

Prices of poultry meat at the farm gate in Georgia¹¹ have been stable in the period of 2015-2018, averaging 4.3 GEL/kg, however, in 2019 they increased to 4.88 GEL/kg.

Prices of eggs at the farm gate in Georgia do not experience a pronounced pattern over the analyzed period.

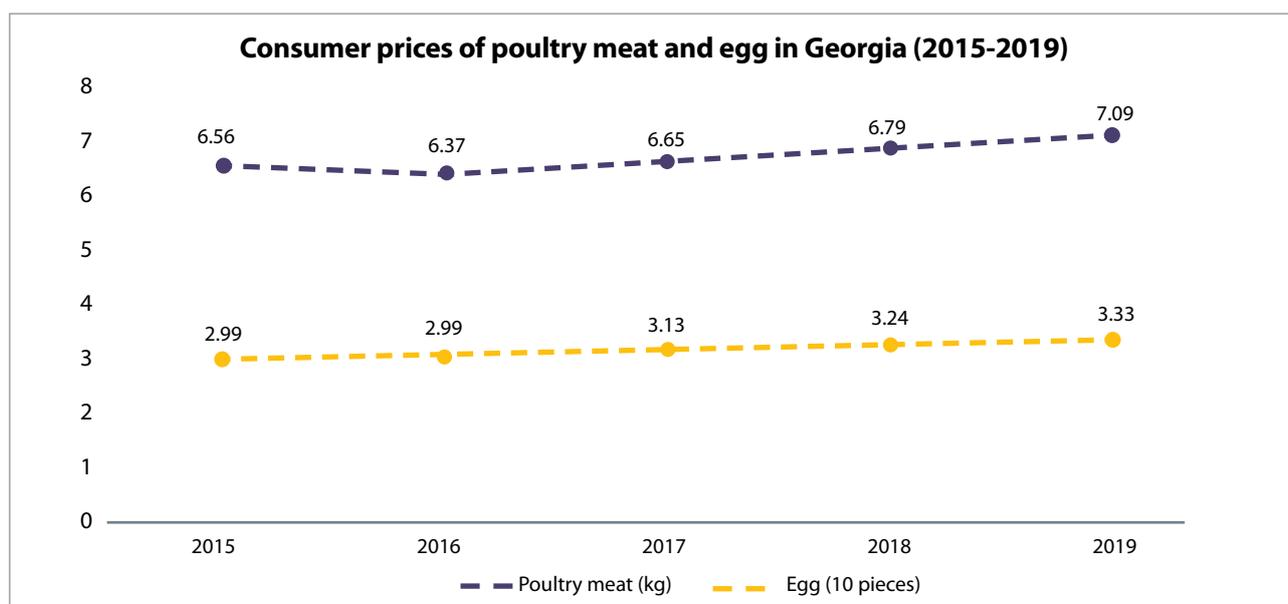
Graph 19: Price of poultry meat and eggs at farm gate



Source: Geostat

Consumer prices of poultry meat and eggs have been stable over the period of 2015-2019, having just a slight upward sloping trend, which could be explained by the overall inflation of product prices.

Graph 20: Consumer prices of poultry meat and eggs

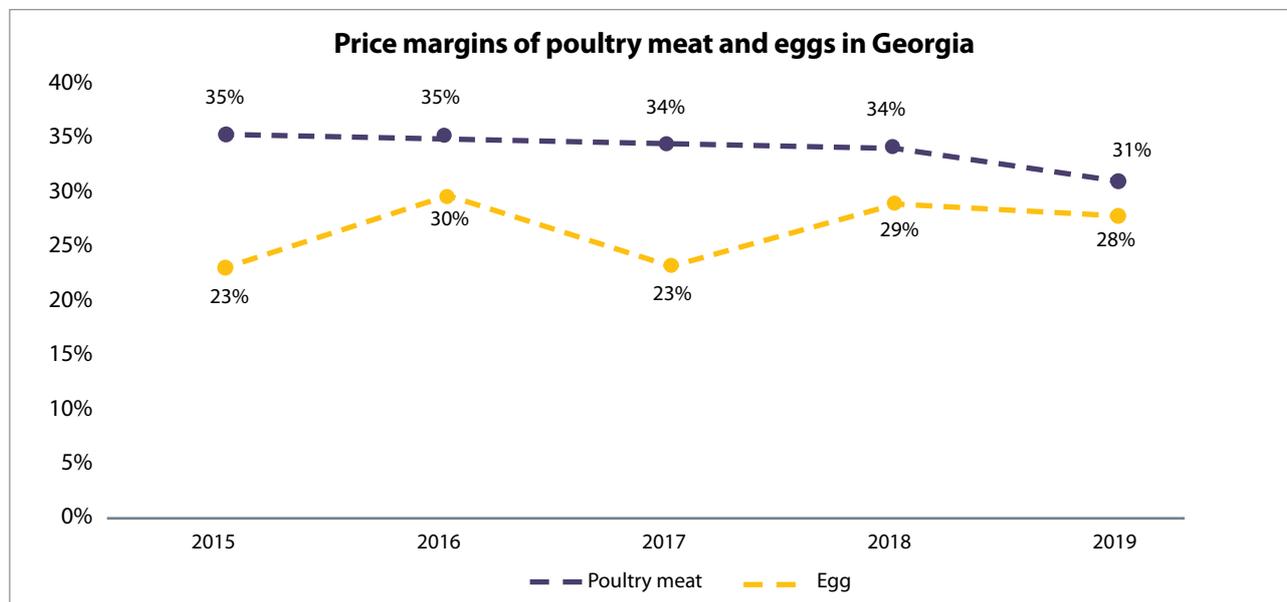


Source: Agriculture of Georgia reports by Geostat

¹¹ Regional data is unavailable

In 2019, the margin between farm gate prices and consumer prices amounted to 31.2% for poultry meat, and 28% for eggs, while the average price margins for the 5-year period were 33.8% for poultry meat and 26.6% for eggs. It is worth noting that for poultry meat, margins have been decreasing over the period, while for eggs there is no significant pattern. One interesting observation is that higher price margins for eggs in 2016 and 2018 coincided with low farm gate prices for eggs in these years.

Graph 21: Price margins of poultry meat and eggs

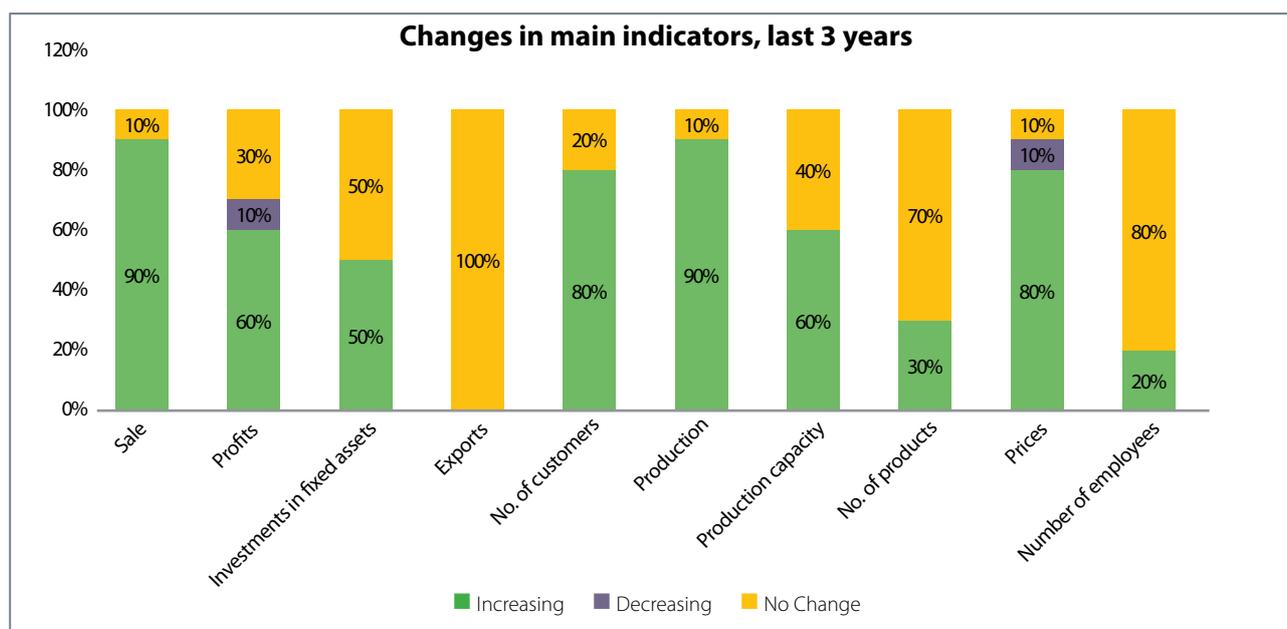


Source: Agriculture of Georgia reports by Geostat

5.7 DYNAMICS OF MAIN INDICATORS

The interviewed enterprises fixed the following trends in terms of main economic indicators:

Graph 22. Main indicator trends



The percentage indication in the above table shows a particular segment of interviewed companies responding to certain indicator dynamics for the last 3 years. For instance, 100% in the export column shows that every respondent answered “no change” in export value or volume during this period. The reason for such immobility is that exports of poultry products for most producers are minor, or medium and large companies having exports to few neighboring clients, have not been changed. An increase in sales for the majority of companies implies that the domestic market is growing (which is backed by an increase in a number of customers and production). However, as noted by the respondents, in order to preserve the existing prices against competitors’ imported products, domestic producers decreased profits. In some cases, especially for egg producers, they were obliged to work on zero-profit, in order to keep price-quality strategy and competitiveness on the local market. Half of the interviewed respondents increased investments in fixed assets as some of them built new sections for their facility or invested in renewed machinery, as a result, most of them increased capacity in production. Finally, most of the interviewed enterprises had no change in the number of employees.

6 COMPARATIVE VALUE CHAIN ANALYSIS OF REPRESENTATIVE PRODUCTS

In this section, targeted enterprises' value additions and changes during three main operations of value chain are evaluated and analyzed: upstream- each step the intermediate goods go through until being used by the actors at production plants; mainstream – value additions during production process before they are ready for sale products; and finally, downstream operation- sales and distribution part, value additions at each step until reached to the final consumer.

Initially, an important concept for measuring poultry feed efficiency applied widely in the poultry production sector is introduced. This is Feed Conversion Ratio (FCR), used both in poultry meat and egg productions. Generally, this ratio measures live bird's ability to convert feed and nutrients into a certain amount of poultry meat and egg yield. In other words, kg of poultry meat/egg produced per kg of feed consumed:

$$FCR = \frac{\text{kg feed consumed}}{\text{kg meat(egg) produced}}$$

For instance, 2kg live broiler with FCR value of 1.5 means that it consumed 3kgs of combined feed. Definitely, the less the FCR, the more efficient the poultry farm is. FCR differs between countries based on poultry breed and mixed feed ratio. The ratio was higher in the 80-90s, but with recent innovations in mixed feed and diet rations, FCR has been declining. Based on the in-depth interviews, on average, Kvemo Kartli poultry farms get the following results for poultry meat and egg production:

Table 9: FCR in Kvemo Kartli poultry farming

	Eggs	Poultry meat
Feed Conversion Ratio (FCR)	2,1-2,2	1,7-1,8

As mentioned in the above sections, the core ingredient poultry sector players use is a mixed feed which incorporates generally grain group (corn, wheat, barley, etc.), protein sources and minerals, vitamins and medication. As reported by most of the interviewed respondents and confirmed through desk research, the set of such intermediate goods amounts to 60-62% of the total direct cost of production. Given that the average annual (2019) cost for 1kg raised Ross 308 live broiler is between GEL 2.8-3¹², its component cost for feed ingredients amounts to GEL1.77-1.83. General composition of the mixed feed is wheat and/or corn (60%); soybean meal (20%); sunflower meal (15%); vitamins, minerals and medication (5%). Besides, the second large ingredient in variable cost calculation is the live bird itself, or day-old chicks the average cost of which per head amounts to GEL 1- 1.2

Furthermore, during chicken evisceration, poultry plants carry out various processing operations: removing organs (liver, gizzards, heart), also head, neck paws and leftovers (feather, guts, blood). Finally, yielding fresh broiler carcass dry weight 79% of live bird weight, or without offal (liver, gizzard, heart) 74.5%.

Based on the above judgment, the table below gives the total direct production cost allocation for producing 2kg of live bird and poultry meat:

¹² Based on information received from in-depth interviews and desk research.

Table 10: Cost calculation for producing 2 kg live bird and 1kg of poultry meat

	2kg live Broiler (5-6 weeks)	1kg poultry meat yield	%
Mixed feed	3,685	2,47	60,6%
Day-old Chicks (DOC)	1,2	0,81	19,7%
Veterinary costs	0,2	0,13	3,3%
Poultry care	0,5	0,34	8,2%
other costs	0,5	0,34	8,2%
Total Variable Cost	GEL 6,085	GEL 4,08	100,0%

With regards to egg production cost calculation, it is assumed that (based on respondents' feedback) egg layer hens are being slaughtered at 12 months of laying, and on average, each lay 300 pieces of eggs in total. Also, taking into consideration the FRC ratio of 2.2, production cost allocations are presented in the table below:

Table 11: Cost calculation for producing 10 pieces of eggs

	Cost of 12 months egg layer hen	%	Cost of 10 pieces of eggs
Mixed feed	45,738	79,7%	GEL 1,91
DOC	1,2	2,1%	
Veterinary costs	1,7	3,0%	
Poultry care	4,4	7,6%	
other costs	4,4	7,6%	
Total	GEL 57,378	100,0%	

Given that the average farm gate price for 1kg of poultry meat and 10 pieces of eggs in 2019 equals GEL 4.88 and GEL 2.4, as well as consumer price GEL 7.09 and GEL 3.33, respectively, the following value additions are obtained including downstream operation, till the product reaches to the final consumer:

Table 12: Value additions for producing 1 kg of poultry meat and 10 pieces of eggs

	Cost of Goods Sold (COGS)	Farm gate Price	Consumer Price
Poultry meat 1kg (GEL)	4,08	4,88	7,09
Eggs, 10 pieces (GEL)	1,91	2,4	3,3
Margin, Poultry meat		16,4%	31,2%
Margin, eggs		10,0%	12,7%

As marked earlier, the consumer price of poultry meat in the last column of the above table is an average annual price at retail markets. However, based on the interviewer respondents, it occurs that there is a high deviation from poultry meat average retail prices. For instance, if Chirina's current selling price for 1 kg of unfrozen poultry meat is GEL 5.6 at their branded groceries, Teleti Poultry sells at GEL 8.2, while Noste GEL 9.2.

The table below shows country base differences in efficiency, technical performance and price and cost.

Table 13. Comparison of selected data with EU states

Country	Mixed feed price (EUR/100kg)	FCR	Live weight
Georgia (Kvemo Kartli)	45.2-46,1*	1,75-1,8*	2-2.2*
Netherlands	37,8	1,67	2,2
Germany	38,8	1,68	2,2
UK	39,5	1,75	2,3
Denmark	37,7	1,65	2,1
France	36,8	1,75	1,9
Italy	41,2	1,85	2,5
Spain	38,8	1,95	2,7
Poland	36,7	1,76	2,3

*Source: Rabobank, LEI. 2015; *based on study and own estimations.*

The table shows that the most efficient farms are in Germany, the Netherlands and Denmark with FCR of 1.65 to 1.67, with chicken weighting 2.1-2.2kg. France is the country with the smallest birds of 1.9kg, while the biggest ready to process live birds are from Spain (2.7kg). Georgia has a middle position in this list of live bird weights. Mixed feed price seems to be the highest in Georgia, and the cheapest being in Poland EUR 36.7 per 100kgs.

7 OTHER ACTORS OF THE POULTRY SECTOR VALUE CHAIN AND SUPPORT INSTITUTIONS

The poultry sector value chain in Kvemo Kartli Region comprise of suppliers of inputs, laboratories, processing companies, insurance providers, financial services, VET establishments and international traders¹³. Governmental agencies implementing agriculture and agri-business support programs, business associations, and the regional chamber of commerce and industry, also play an important role in the value chain development.

Suppliers of raw materials

The main raw materials for the poultry industry are chicken feed like wheat and corn. In addition, LTD Nutrimax¹⁴ provides mixed feed, claiming that it allows poultry to get all the necessary nutrients.

Suppliers of machinery

According to the business register of the National Statistics Office of Georgia, as of October 2020, there are no manufacturers of agricultural machinery registered in Kvemo Kartli. However, there are 2 firms operating in the wholesale trade of agricultural machinery (1 in Bolnisi municipality, 1 in Rustavi). The companies import agricultural machinery and spare parts from China, India and other countries and provide respective services for the agricultural entities located in the region.

Transportation

According to the business register of the National Statistics Office of Georgia, as of October 2020, there are 114 companies operating in transportation and storage in Kvemo Kartli Region, out of which 37 are located in Rustavi, 34 in Gardabani, 12 in Marneuli and 11 in Bolnisi, 10 in Tsalka, 4 in Tetrtskaro and 1 in Dmanisi.

Suppliers of vaccines and veterinary drugs

Most of the interviewed enterprises import vaccines and veterinary drugs, including antibiotics, from Israel, the Netherlands and other European countries. However, there are several representation offices of European veterinary drug companies in Georgia and targeted companies purchase the products through them. When importing day-old-chicks, egg production companies receive special vaccination plan from the suppliers and typically they follow such plan.

However, usage of locally produced innovative feed additive, or as claimed, an alternative to antibiotics have been mentioned by a few of the interview respondents. Such additives are phages, or bacteriophages, which is believed to eliminate antibiotic-resistant pathogenic bacteria, including Salmonella, as well as increasing the overall rate of chicken production performance (FCR). There are a number of local production companies of phages, including BioChimPharm (BCP), based on the production facility of the Institute of Bacteriophages- being a supplier of phage preparations for over 50 years. Recently, BCP has been a supplier to a number of poultry production plants, however, such cooperation is yet at an early development stage.

¹³ The exact value chain will be identified and mapped on a subsequent stage of the diagnosis study

¹⁴ https://nutrimax.ge/products?cat_id=2

With regard to other veterinary drugs, in addition, there are several interesting locally based companies: Bioresci Ltd is specializing in the production of veterinary drugs, vitamins, mineral supplements, disinfectants, derivatives and various plant protection products for the agricultural industry. In recent years the company has renewed equipment in production sites, established bio rational Technology Research Center and acquired ISO 9001:2015 certification¹⁵. This is a rather interesting company as they have a strong R&D department and invest in producing innovative products. The company's drug assortment is wide-ranging.

Invet Ltd is one of the major importers of veterinary drugs. The company also collaborates with local manufacturers to produce their own product, and represents foreign brands such as CEVA (France), Interchemie (Netherlands), Biochek (Netherlands), Biomin (Austria) and Hipra (Spain).

Biovek Ltd, an Israeli company with representation in Georgia, is one of the major suppliers of vaccines and antibiotics for larger poultry companies.

Financial institutions

Currently, in Georgia, there are 978 branches/service centers of commercial banks. From these services, 82 are located in Kvemo Kartli. The majority of them are located in Rustavi Municipality.

Table 14: Number of commercial bank branches/service centers by municipalities

Municipality	Number of commercial bank branches/service centers
Bolnisi	6
Gardabani	9
Dmanisi	6
Tetritskharo	7
Marneuli	17
Rustavi	32
Tsalka	5

Table 15: Number of commercial bank branches/service centers by name

Commercial Bank's name	Number of commercial bank branches/service centers
Liberty Bank	36
Bank of Georgia	11
TBC	18
VTB	3
Credo	7
BasisBank	1
Ziraat Bank	1
Terabank	1
Finca Bank	4

As for microfinance organizations, currently, in Kvemo Kartli, there are 29 microfinance organizations, the majority of them are located in Rustavi municipality.

¹⁵ <https://biotecsi.ge/en/main/>

Table 16: Number of microfinance organizations' branches by municipalities

Municipality	Number of commercial bank branches/service centers
Rustavi	19
Marneuli	9
Gardabani	1

Apart from commercial banks and microfinance organizations, there are 65 exchange bureaus and 18 loan issuing entities in Kvemo Kartli.

Small, Medium and Large size Poultry companies have used fixed asset and working capital loans. The latter in tandem with state co-financing schemes for launching and expansion of entrepreneurial activities, including facility arrangements, machinery purchase etc.

As reported by the representative from the financial sector, typically the poultry sector business operators address banks for the two main bank products: loans for financing fixed assets and loans for working capital. In particular, two primary instruments of working capital loan are available: permanent financing of working capital and credit line. Both loans for operational expenses are repaid in 12 to 18 months, while for fixed assets the loan duration is between 48-72 months. Annual interest rates vary from 11-13% in national currency, while 6-8% in USD.

Once the Preferential Agro Credit support was launched (a joint program of Agriculture and Rural Development Agency (RDA) and commercial banks), it has been applied by most of the enterprises from Kvemo-Kartli poultry sector, including micro and small size, even the individual entrepreneurs. Initially, this program did not envisage loans for financing operational costs and was aimed mostly at supporting fixed asset loans. However, recently, based on individual reviews and scrutiny, there have been cases of supporting loans with shared purposes of 70%-80% for fixed assets and the rest for working capital.

Vocational Educational Institutions (VET Institutions)

According to the vet.ge, as of October 2020, in Georgia, there are 66 public and 54 private VET institutions in total. 4 of them are located in Kvemo Kartli¹⁶. According to the preliminary desk research, none of them have any programs in direction of poultry.

Table 17: Public VET Institutions in Kvemo Kartli Region

	Name	Municipality	Public/Private
1	Modusi	Rustavi	Public
2	Arsi	Rustavi	Private
3	College of Marneuli	Marneuli	Private
4	Marneuli Public College	Marneuli	Private

Source: vet.ge

¹⁶ <http://vet.ge/en/>

Donor Organizations

The donor programs implemented in Kvemo Kartli and supporting poultry sector, are given in the table below.

Table 16: Donor programs in Kvemo Kartli Region

Donor	Program
USAID	ZRDA Activity ¹⁷
USAID	The Agricultural Program ¹⁸

Source: Desk Research

Business Associations

There are various associations on the national and regional level that work on poultry sector development in Georgia.

Table 16. Respective associations in Kvemo Kartli Region and in Georgia

Regional/National	Association	Mandate
Kvemo Kartli	Association Lore ¹⁹	The main goal of the association is to support the development of the agricultural sector in Kvemo Kartli Region as well as to enhance civil society engagement in different processes in the region.
	Young Veterinarians Association ²⁰	The main goal of the association is to supply free services in order to decrease the health problems amongst animals.
Georgia	Georgia Association of Manufacturers	The main goal of the association is to enhance manufacturers' competitiveness in a global marketplace. The Association promotes and depends upon a culture of engagement, bringing the intelligence and strengths of its members to meet challenges through the power of its broad and diverse roster of companies.
	Poultry Development Association	The Association was established in 2016, by larger poultry companies (Chirina, Kumisi, Poultry Georgia, Savaneti, Dilis Produktebi) and currently unites 25 companies. It is managed by rotational principle and the chairman is elected for a three-year period. Association's financial resources are based on monthly membership fees covering office rent and some minor costs.
	Biological Farming Association Elkana	The main goal of the association is to improve the socio-economic conditions of the Georgian population and environmental protection through fostering the development of sustainable organic farming and increasing the self-reliance of the rural population.

¹⁷ <http://zrda.georgiano.ge/index.php/en/>

¹⁸ <https://www.cnfa.org/program/usaaid-agriculture-program/>

¹⁹ http://www.cso.ge/view_ngo.php?slug=asociacia-lore

²⁰ <https://ge.usembassy.gov/ka/new-private-veterinarian-associations-deliver-essential-services-improved-animal-health-production-georgia-ka/>

	Georgian Farmers Association	The main goal of the association is to strengthen the agricultural sector in Georgia and improve quality of life of Georgian farmers through bringing the farmers together and promoting their visibility.
	Georgian Employers' Association	The main goal of the association is to create fair and competitive economic policies based on free market principles and free from government interference. Moreover, GEA represents its members as large, medium and small companies working in different sectors of the economy, come out on their behalf and promote entrepreneurship in the country to achieve more stability, social-economic development, new jobs and dignified conditions of labor.
	Georgian Small and Medium Enterprises Association	The main goal of the association is to protect the interests of small and medium businesses, to promote the creation of healthy competitive conditions in the country, as well as to establish active communications between SMEs and public agencies, financial institutions and international organizations.

Source: Desk Research

State authorities

State authorities supporting poultry industry are the Ministry of Environment Protection and Agriculture of Georgia²¹, Rural Agency (RA)²², Information-Consultation Centers²³, the Ministry of Economy and Sustainable Development²⁴ and Enterprise Georgia²⁵.

²¹ <https://mepa.gov.ge/En/>

²² arda.gov.ge/

²³ <https://mepa.gov.ge/En/Page/RegionalInformationConsultationCenters>

²⁴ <http://www.economy.ge/?lang=en>

²⁵ <http://www.enterprisegeorgia.gov.ge/ka>

8 INTERNATIONAL AND NATIONAL SCENARIO AND FEATURES OF BENCHMARK CLUSTER(S)

8.1 POULTRY INDUSTRY IN UKRAINE

Despite the dramatic events associated with military conflicts in Ukraine, significantly affecting countries economic security and output, over the last decade Ukraine's overall agricultural sector has become one of the most self-sufficient among that of developed countries of Western Europe. In particular, poultry, egg and feed processing, as an important agricultural sub-sector, are believed to have become an important driver of Ukraine's economic prosperity.

The poultry industry in Ukraine, which has recently become the world's seventh largest exporter of chicken meat, is dominated by 1 large and 6 medium-sized producers. Myronivsky HleboProduct (MHP) – being the lead player, through large investments in 2019, expanded production capacity by 13% in 2019, reaching up to 70% of total industrial chicken production in Ukraine, with total exports exceeding 53% of overall production. With regards to the remaining six midsize producers, although most of them have invested in the expansion of their productions, their overall influence on countries total production has been marginal. They mostly are aimed at niche markets, environmental and health-cautious consumer segments.

As reported by USDA foreign agriculture service, although Sars2 COVID 19 had a negative impact on Ukrainian production and trade, the overall impact (outbreak in Ukraine in March 2020) will not be significant on the Ukrainian poultry industry's general performance and it will remain efficient. However, it resulted in market uncertainties, in particular ruin of chicken meat sales at HORECA (hotels, restaurants, bars) market and fall in chicken meat price both at local and international markets.

Table 18: Ukraine's Chicken meat, (Tonnes)

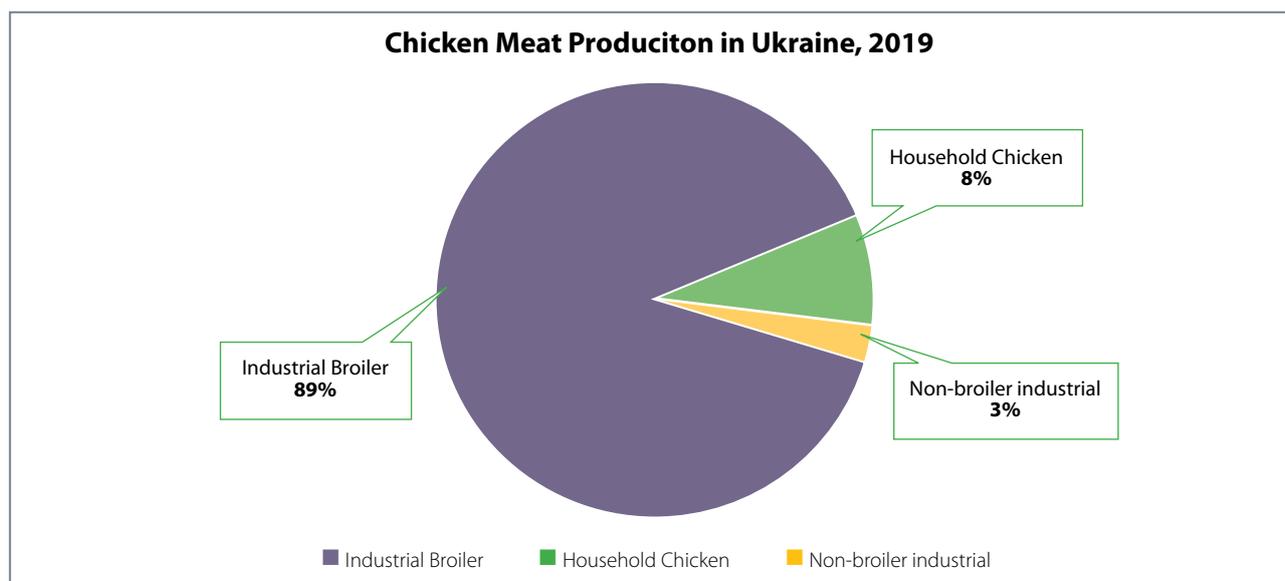
	2018	2019	2020 ²⁶
Production	1235	1335	1365
Total Imports	124	125	90
Total Supply	1359	1460	1455
Total Exports	317	409	400
Domestic Consumption	1042	1051	1055
Other Use, losses	0	0	0
SSR- Self Sufficiency ratio (%)	119	127	129

Source: USDA, Foreign Agriculture Service

In general, large industrial broiler chicken products dominate Ukraine's poultry industry. With respect to household chicken meat production, it remains stable and limited. Most of such grown chickens are consumed locally at farms, without penetrating to retail or wholesale market.

²⁶ Projected as of September 2020.

Graph 23: Chicken meat production in Ukraine



Source: USDA, Foreign Agriculture Service

In November 2019, the European Parliament supported the decision to a new import tariff rate quota (TRQ) for Ukrainian poultry meat, increasing by 50 TMT to 70 TMT. If earlier, only four broiler producers, owning five facilities, have been approved for exporting to the EU market, only MHP was restored for access to the EU market in 2019. This facility utilizes nearly the entire quota allocated to Ukraine under DCFTA.

Exports of Chicken have been increasing both in volumes and value over the last 5 years. Among other export countries, by 2019, the Netherlands has been the biggest EU export market for Ukrainian chicken, with an increased trend of volumes with a compound annual growth rate (CAGR) of 40%. Iraq is the lead export trading country for Ukraine, in terms of total chicken export volumes (2015-2019), totally exporting up to 200K tonnes of chicken, however with decreasing trend.

Table 19: Ukraine's chicken exports (Thsd. Tonnes)

	2015	2016	2017	2018	2019
World	162,8	242,3	272,4	329,8	415,5
Netherlands	15,7	18,1	39,2	49,1	60,1
Saudi Arabia	0,03	2,5	7,6	32,0	47,9
Slovakia	0,02	0,5	10,0	31,4	40,7
Iraq	40,8	64,7	29,0	36,5	28,3
Azerbaijan	0,1	4,9	16,9	20,8	26,6
UAE	4,9	4,4	13,9	13,6	21,7
Armenia	3,1	3,8	3,8	6,4	17,0
Other	98,2	143,3	151,9	140,1	173,3

Source: USDA, Foreign Agriculture Service

Upon introducing a new TRQ in 2019, the EU continued losing its role as a major chicken meat export market for Ukraine, while middle eastern countries trend to increase export destination significance for Ukrainian whole chicken (mostly) products.

Besides, Ukraine still remains a large importer of cheap chicken offal, mostly from the EU countries. Such domestic substitution of expensive chicken cuts with low-priced imported offal is regarded to be one of the dominant reasons for Ukraine's success in exporting high-quality chicken parts.

Table 20: Ukraine's chicken suppliers (Thsd. Tonnes)

	2015	2016	2017	2018	2019
World	57,0	75,8	108,6	123,5	125,4
Poland	31,4	46,8	74,3	78,8	76,2
Germany	18,4	16,8	13,5	18,9	19,7
Hungary	1,0	1,8	6,2	13,4	19,3
France	1,0	1,9	2,8	2,0	2,8
UK	2,0	2,4	3,6	3,0	2,2
Netherlands	1,5	3,2	3,3	2,2	1,5
Other	1,7	2,9	4,9	5,2	3,6

Source: USDA, Foreign Agriculture Service

Recently increased interest of Ukrainian chicken producers in the country's lower market segment, resulted in the growth of offal production and processing, which in turn resulted in drops in imports from a number of supplier countries. Imports are expected to decrease in 2020 and 2021 years.

8.2 POULTRY INDUSTRY IN HUNGARY

8.2.1. Overview of Hungary's poultry industry

Poultry breeding was an important sector of the Hungarian economy throughout the 20th century. The breeding traditions and local breeds were reasons for an appreciation of Hungarian poultry products in the European market. Intensive poultry production in the country was launched in the 1960s and shortly afterwards Hungary became an important poultry exporter in the world. By the end of the 1980s, the country was among the top chicken meat exporters, followed by the export of goose products (Szalay, Xuan, 2007).

Currently, Hungary is one of the leading countries in poultry production in the EU. In 2017 the country was among the top ten EU producers and its share in total EU production was 3.8%.

Table 21: Top ten EU countries in poultry meat production (1000 tonnes)

Country	Broilers	Turkeys	Ducks	Other poultry	Total	% of EU total
Poland	2,560	428	57	65	3,110	19.5
France	1,163	369	204	119	1,855	11.7
UK	1,586	164	29	10	1,789	11.2
Germany	1,250	377	41	49	1,717	10.8
Spain	1,237	201	4	69	1,511	9.5
Italy	975	325	6	66	1,372	8.6
Netherlands	1,081	28	16	0	1,125	7.1

Hungary	402	101	62	34	599	3.8
Belgium	435	3	0	27	465	2.9
Romania	405	12	0	0	417	2.6
Portugal	281	39	10	16	346	2.2

Source: Wageningen Economic Research (2018)

In comparison to Georgia, Hungary's poultry industry is quite diversified, accounting for the production of 402 thousand tonnes of broilers, 101 thousand tonnes of turkeys, 62 thousand tonnes of ducks and 34 thousand tonnes of other poultry. Compared to global trends, the product range of processing industry in Hungary is broad and most of the poultry processing plants produce two or more types of poultry (NHRDP, 2014).

Hungary has high export and self-sufficiency rates of poultry meat:

Table 22. Import, export and self-sufficiency rate of poultry meat in Hungary

	2013	2014	2015	2016	2017	2018
Import of Poultry meat (1000 tonnes)	52	50	36	40	54	51
Export of Poultry Meat (1000 tonnes)	195	204	202	229	183	198
Self-Sufficiency (%)	137	139	143	140	127	130

Source: AVEC (2019)

In 2018, the poultry industry led the food industry sector in terms of share in production value:

Table 23: Share of food industry sub-sectors in production value

Food Industry Sectors	Share in Production Value (%)
Processing and Preserving Poultry Meat	10.4%
Manufacture of Dairy Products	9.1%
Processing and Preserving of Meat	8.8%
Production of Soft Drinks and Mineral Water	7.6%
Other Processing of Fruits and Vegetables	7.0%
Manufacture of Prepared Feeds for Farm Animals	6.2%
Manufacture of Meat and Poultry Meat Products	5.9%
Manufacture of Prepared pet Food	5.9%
Oil Production	5.9%
Manufacture of Bread	3.4%
Other	29.6%

Source: Ministry of Agriculture, Chamber of Agriculture (2019)

In the period of 2010-2018, the poultry also led in the production of slaughter animals:

Table 24: Production of Slaughter Animals (Thousand Tonnes)

Slaughter Animals	2010	2012	2014	2016	2018
Poultry	650	702	724	830	885
Sheep	19	18	19	19	21
Pigs	553	530	557	596	588
Cattle	81	75	80	92	98

Source: Ministry of Agriculture, Chamber of Agriculture (2019)

In Hungary, as in the other EU Member States, the poultry sector is mainly governed by the EU legislation. The EU attempts to regulate poultry industry activities in the fields of environmental protection, food safety and animal welfare. In the area of environmental protection, the EU regulations and directives aim to control pollution, protect water quality, set rules for holding environmental permits and conduct Environmental Impact Assessment, also disposal of poultry that die on the farm. In the food safety area, EU regulations affect the security of feedstuff for human and animal health and environment, rules of hygiene, traceability and labelling, sampling, monitoring and control measures. In the area of animal welfare, the main direction is to secure animals from unnecessary suffering in farming, transport and slaughter (Wageningen Economic Research, 2018). Implementation of EU directives is associated with extra costs for the poultry industry in the EU. According to the estimation, 6.1% of total production costs in the poultry sector were related to EU legislation.

Box 1: EU Legislation on Poultry Sector

The food production in the EU is subject to general EC Regulation N° 178/2002, that covers all food production, processing and distribution stages. Regulation N° 882/2004 defines obligation of the EU member states to monitor and visit food production sites. Protection of animals kept for farming purposes is regulated by the council directive 98/58/EC, while the Regulation 2016/429 concerns transmissible animal diseases and defines the rules and principles for prevention and control.

In the field of broiler production, Directive 2007/43/EC defines rules for chicken protection kept for meat production. Production of organic broilers is governed by the Regulation 834/2007.

Council Directive 1999/74/EC defines minimum standards for the protection of laying hens. Animal health requirements for live-poultry and hatching eggs intra-community trade are regulated by the Council Directive 2009/158/EC.

In the field of pollution, the Nitrates Directive aims to control the pollution of water by preventing agricultural nitrates from polluting ground and surface waters. EU also regulates intensive rearing of poultry and pigs and aims the improvement overall environmental performance of farms by reducing ammonia emissions, dust emissions, noise and odour (European Parliament, 2019)

The table below presents the above-mentioned costs and their percentage share in total production costs:

Table 25: The costs of EU regulations in poultry production

Area	Associated Costs	% Share
Environmental Protection	Manure disposal costs, due to the Nitrate directive	0.4
	Reduction of ammonia emission in manure application, during manure storage and in the poultry house.	0.4
Food Safety	Salmonella control. Costs of hygiene measures, sample collection, testing and vaccination.	1.5
	Meat-and-bone meal (MBM). The ban on a meat-and-bone meal in the EU results in higher feed costs.	1.0
	Antibiotic growth promoters. The ban on the use of antibiotic growth promoters results in higher feed costs.	1.0
	Genetically Modified Organisms (GMO). The strict rules in the EU on the use of GMO crops result in higher feed costs.	1.6
Animal Welfare	Stocking density. Additional housing costs to regulate the maximum live weight per square meter poultry house.	0.2

Source: Wageningen Economic Research, 2018

As it is demonstrated by the table, the highest impact on the costs of poultry is generated by the rules on GMO and salmonella control.

8.2.2. Poultry business associations in Hungary

As a diversified sector, the poultry industry has several business associations representing the interests of respective subsectors.

The mega association of the industry is the Poultry Product Council that unites different sub-sectoral associations, such as Hungarian free-range poultry farmers' association, egg producers' association, turkey, duck and goose associations. The council promotes self-regulation and coordination of the production and market behavior of the actors engaged in the production chain, supports members in obtaining respective authorizations and enhances joint measures for achieving efficient production in the sector. The council collects data on production and market developments, processes and analyzes it, makes respective proposals and decisions. The council promotes inter-industrial cooperation by liaising with other food industry product councils, like slaughter and meat product council, the association of grain processors, feed manufacturers and traders, the national association of food processors, milk product board, fruit and vegetable product council. The council communicates with consumer organizations, like National Consumer Protection Association and cooperates with public sector institutions.

The council pursues active cooperation with international professional organizations. Its international partners are World Organization for Animal Health, International Commission for Eggs, World Poultry Science Federation, United States Poultry and Egg Export Council, European Egg Packers and Traders Association, International Poultry Council, European Union Poultry Organization and FAO.

The council publishes sectoral articles on poultry sector development, EU statistics on the poultry industry, educational materials, information on sectoral innovation.

8.2.3. Hungary's poultry enterprises

Mastergood Group is one of the oldest poultry companies in Hungary. It is a family-owned business and has been active in the Hungarian and international markets for over a century. The company's expansion took place at the end of the 1990s, when investments in several poultry producing and broiler farms new fodder mixing plant were made. At the beginning of the 2000s, the company introduced free-range poultry raising system based on the experience of Western European States.

Currently, the company product line is based on the following system:



The company grows fodder raw materials on 5 500 hectares and has a storage capacity of 52 000 tonnes. The raw material branch of the company also deals with purchasing other important raw materials, such as soy, sunflower, vitamins, minerals. In this process, the quality and traceability of raw materials are of the highest importance.

The company owns three fodder mixing plants producing 100 000 tonnes. 85% of the product is used internally, while 15% is sold through the company's brand shops. In the manufacturing process, the microfilters clean the air and special equipment ensures the mitigation of salmonella risks.

The company's raising business unit deals with the parent couple raising and keeping. On average, 225 000 parent couples' hens are kept in pre-raising and laying plants. The main task of the branch is to produce high-quality breeding eggs, that determines the quality of the chicklings. The produced breeding eggs are transferred to the incubators with special closed vehicles.

The hatching activity is done in the specially designed plant that started operation in 2002. It has fully automated and computer-controlled incubators, tracing data and information of the hatching. Monitoring systems and respective laboratories support the hatching activities and vaccinations are also applied.

The broiler raising process is undergone in automatized and technologically advanced premises. The high-quality and guaranteed quantity of products are provided for the group and external consumers. The broiler processing plant was bought in 2004 and reconstructed in 2005. Since then, investments are made for further modernization and supplying high-quality products. In 2003, the decision for expanding business was made and a new processing plant was constructed. Moreover, production of various products and ready-made meals was launched in 2004. The pickled and marinated products are manufactured for domestic market, and ready-made meals for export markets. The plant qualified with the EU's quality control systems in force.

Farm Tojas was founded in 1987 and is specializing in egg production. The company prioritized animal-friendly technologies and increasing share of eggs is produced in modern voliere housing systems. The eggs are processed by automatic egg grading and packing equipment ensuring a supply of fresh and high-quality products to the market. The company holds an IFS certificate and its quality management system is based on HACCP standards. Among other production practices, the company has adopted organic farming where hens move freely in buildings and green pastures, fed with fodder free from pesticides, GMO, additives, coloring agents and proteins of animal origin.

The company offers a diversified range of products: standard, premium and animal-friendly including organic eggs. It also supplies pasta, high agronomic value organic manure and farm briquettes.

Saga Foods is also one of the oldest and largest poultry processing companies in Hungary with an annual turnover of EUR 30 million. The company produces poultry and turkey meat and its brand awareness in Hungary reaches 95%. The company is committed to high-quality, innovations and the development of new products. The main production facilities of the company specializing in cooked products are located in Western Hungary, while the breaded meat products are manufactured in the middle part of the country. The company has a sales office in the Capital City Budapest.

In the frozen breaded segment, the company offers meatballs, sliced meat and filled products. Cooked products' segments offer pre-packed frankfurters, Bolognese, hams and other cold cuts.

The company complies with HACCP, BRC and IFS quality standards.

9 NATURE OF COOPERATION IN THE CLUSTER

9.1 GEORGIA'S POULTRY DEVELOPMENT ASSOCIATION

Poultry Development Association represents an important player of the cluster. Established in 2016, by larger poultry companies (Chirina, Kumisi, Poultry Georgia, Savaneti, Dilis Produktebi) the Association unites 25 companies. It is managed by rotational principle and the chairman is elected for a three-year period. Association's financial resources are based on monthly membership fees covering office rent and some minor costs.

- The association is basically concentrated on the following activities:
- Relationship and communication with Governmental Institutions (NFA, ARDA) on the issues of veterinary, epidemiology, waste management

Mediation and policy advocacy with regard to new legislation and regulations

Association serves as a platform for member companies to discuss important topics for the industry, such as poultry feed, veterinary issues, production technologies and ISO certification. In this sector, most problems are common and need collective responsive activities, the bird flu spread being an example. It also supplies information on available literature and shares important information via-email to its members. Association also informs poultry companies on the availability of relevant trainings. It may advice interested companies on selecting land areas for expansion or launching new business activities, also in obtaining laboratory services. The chairman of the Association stressed, that the problem with laboratories were solved in the previous 4-5 years and currently, there are 4-5 good laboratories in the country.

The recent case of policy advocacy is related to the waste management, where the introduction of new regulations is foreseen in the near future. They will concern the dissolution of bird waste, their burning and transformation to manure. It will also require the identification of artesian water at the company's territory and the prohibition of waste placement in the nearby area. The Association and its members would advocate for the gradual implementation of regulations, as far as there is a lack of financial and personnel resources in the companies. In the field of taxation, in 2019, the Association prepared a lawsuit towards constitutional court on the issue of VAT taxation and plans to submit it for launching court proceedings.

According to the chairman of the Association, the export of poultry products is challenging, mainly due to the fact, that the vast majority of the production inputs (around 80%-90%) are imported. However, there was a case of successful collective effort, when export of Turkish eggs to the middle east was temporarily prohibited. The large producers united their resources and exported eggs to the middle east market. The Association and main companies regularly participate in international fairs organized in Dubai, Utrecht, Hanover, Kyiv, Istanbul. They receive useful information, knowledge and are establishing viable contacts. On a joint stand, the appearance is under the Poultry Association, while companies are negotiating business deals individually.

In the field of professional education, the Association had an active cooperation with VET institutions, but it was not successful. The poultry companies were short of specialists such as electricians and mechanics and were ready to support in the development of curricula. The effort was not successful and it stopped. Some companies hired VET graduates, but their knowledge and qualification were not satisfactory.

The Association planned to conduct research on the quantity of poultry in family farms, but the project was not implemented. The small-scale research was undertaken by own resources.

Currently, in the framework of the Association, there is an ongoing cooperation in the area of cereals. The Association members think that it would be beneficial to have one storage facility and organize joint procurement. Financial resources might be accumulated in one specified LLC and companies may organize procurement via it.

The chairman of the Association thinks that the creation of the web-portal on export and the internal market process would be beneficial.

At this stage, the Association does not have a defined plan for the expansion of services.

The chairman of the Association stressed the following problems for poultry enterprises:

- With regard to quality, there is a problem with checking and inspecting products on the Agrarian markets. According to him, approximately 25%-30% of eggs on the local market are not regulated.
- The industry faces the problem of qualified personnel. The curricula of educational institutions and the supply of graduates do not meet the demand of the industry.
- The quality of raw materials is not satisfactory. This especially concerns the Russian and local products. The exchange rate volatility is a problem.
- The lack of international production standards is a problem as far as only large poultry enterprises have adopted respective standards.
- In the field of transportation, there are problems with parking spaces at retail markets. The possible solution to the problems might be the delivery at night, but the retail shops are not ready for this.

9.2 NATIONAL FOOD AGENCY

The National Food Agency represents a key institution in executing veterinary and food safety control of the poultry industry. Consequently, two structural units of the NFA – Veterinary and Food Safety Departments constantly monitor the poultry sector companies according to the scope of their responsibilities.

The Veterinary Department oversees two main diseases - Bird Flu and Newcastle, that are most dangerous for poultry and human beings. Overall, there are approximately 160 other diseases, but they are not overseen by NFA and monitoring is the responsibility of farmers and enterprises. The oversight activities are conducted by NFA's Regional Offices deploying passive and active inspection tools. The NFA Laboratory conducts research of the diseases upon the request of the farmers. The frequency of the farmers' request is not very high. The highest disease risks arise from migrating birds. On their side, farmers and enterprises are obliged to conduct poultry vaccination once or twice in a year.

Large companies have their own laboratories and professional veterinaries. These laboratories also provide services to local farmers. Large companies (Chirina, Koda, Savaneti, etc) comply with biosecurity standards, having elaborated their own rules and SOPs, supplying feed and water automatically that decreases the disease risks. Small companies and farmers have difficulties in preserving biosecurity, sanitary norms and conducting control. The main reason is the lack of human and financial resources needed for these operations and the inability to spend additional resources. However, small enterprises regularly conduct vaccinations, otherwise, they risk facing serious damage.

The NFA provides informational services to the private sector on new diseases, distributes booklets, collects samples for the prevention of the disease, conducts inspection of selected enterprises. According to NFA, from a veterinary perspective, the main priorities in the poultry sector shall be monitoring of live poultry, accounting/registration of all poultry businesses, generate quantitative data of poultry and placement on the electronic database that will support traceability.

The Food Safety Department of the NFA conducts state control of the enterprises by the following means:

- Inspection, oversight
- Destruction of food
- Cameral/documentary inspection
- Taking samples
- Monitoring

The inspection of food production enterprises is based on the risk system and experience of Baltic States was deployed during the elaboration. The following risk assessment criteria are used:

- Turnover
- Type of the food produced
- Type of the enterprise
- History of the enterprise

High-risk establishments, such as slaughterhouses are inspected 4 times a year. Family farms, having 300 or less poultry, do not fall under the food safety control. They are controlled under the veterinary measures.

In the case of fraud detection, sanctions in the form of fines/penalties and confiscation are applied.

There are also established rules of self-control of critical points regulated by the Food Safety Code, Governmental Decrees № 173 and №90.

The food safety department actively cooperates with the poultry sector, mostly via the Poultry Development Association. Meetings on problematic issues are regularly conducted. The recent issue concerned the labelling of eggs. The validity period of eggs is counted from the moment of labelling of eggs (30 days), which indicates date and country code (Decree № 301 on informing consumers).

Box 2: Governmental Decrees

The Governmental Decree №173 adopts hygiene rules for animal feed. It stipulates general hygiene requirements for animal feed, conditions and mechanisms for ensuring traceability of animal feed and conditions for registration and recognition of enterprise. The rules apply to the activities of animal feed business operators, feed for animal products designed for human consumption and import and export of animal feed.

The Governmental Decree №90 adopts hygiene rules of the food of animal origin. Chapter III of the Decree sets special hygiene rules for poultry, including rules for transportation of live poultry to the slaughterhouses, hygiene norms for the slaughter process, hygiene norms for cutting meat and removing bones, packaging and labelling of frozen meat.

The Governmental Decree №301 adopts technical regulation for informing customers on the food products. It aims to protect consumers interests in the area of information on food products, sets general principles and requirements on the placement of information on food labels.

The most urgent issue with regard to EU Regulations would be the adoption of measures for salmonella control, that would be regulated by the Decree № 323. According to the decree, each meat-producing enterprise shall have a salmonella control plan elaborated and implemented in close cooperation with the NFA. The enterprises are informed of the measures necessary for the implementation of a salmonella control plan. The small enterprises and family poultry businesses will face difficulties in the adoption of these measures.

From the food safety perspective, the main challenge is the inability of family farms and small enterprises to pursue organized production process, compliance with existing regulations and lack of information.

From 2021, the adoption of HACCP standards will be obligatory.

9.3 AGRICULTURE AND RURAL DEVELOPMENT AGENCY

The Agency's priorities are in response to that of Georgia's regions, and consequently, the poultry sector is a priority direction for ARDA. The main projects of ARDA are "Preferential Agro-credit" and facility for "Processing and Preserving Enterprises". However, the latter is paused at the moment due to the expiry of the budget and MEPA actively works on the re-launch of the project. In this component, there was an active demand from wheat and burley storage enterprises – products that represent an important input for poultry industry.

9.4 GEORGIA'S AGRARIAN UNIVERSITY

Agrarian University offers several degrees that are relevant to the poultry sector. Most importantly, students have an opportunity to choose poultry as their minor (secondary specialization). Those students getting a minor in poultry will have to complete the following subjects:

- Poultry breeding and selection, Biological basis of poultry nutrition
- Classification and cost of poultry feed
- Normalized bird feeding
- Incubation of poultry eggs
- Innovative technology of poultry meat production
- Innovative technology of poultry egg production
- Bird slaughter and primary processing.

However, as stated by the dean of Agrarian and Natural Sciences, the minor and the respective subjects are not very popular among the students. She suggested that one possible reason for the lack of popularity of the poultry sector among the students is that the sector is too specific, and does not offer a big range of opportunities in terms of employment, such as for instance agronomists have.

In addition, veterinary degree and food processing technology degree, are the two programs provided by the university that are closely related to the poultry sector.

9.5 COOPERATION BETWEEN CLUSTER COMPANIES AND STAKEHOLDERS

The links and cooperation between poultry cluster companies and support institutions are described as satisfactory. However, one company stated that there are no links and enterprises have not received any support from respective support institutions. The majority of small companies have not stated any problems in cooperation. However, the representatives of one of the small company fixed, that there is

a need for more support from private sector support institutions. The financial mechanisms available are not sufficient, sector players need more knowledge on the sector and modern standards, and a comprehensive strategy for sector development shall be elaborated.

Companies cooperate with diverse actors of the value chain:

- Suppliers of production inputs
- Veterinary pharmacies
- Larger poultry enterprises throughout the country
- Veterinary laboratory owned by a large producer
- Packaging companies

Small companies already cooperate with poultry enterprises located in the region and express readiness to continue and intensify cooperation. Only one small company is united in the SME Association. Medium and large companies also have cooperation experience. They are members of Poultry Development Association that provides necessary trainings on a management level and supports information exchange on poultry feed technologies, virus and diseases. In general, rapid information exchange is critical especially in the field of disease and viruses considering the specificity of the sector.

The small, medium and large enterprises mostly prefer the following areas for joint collaborative actions:

Table 26: Areas defined for collaborative actions

Area of Cooperation	Number of enterprises preferring particular type of cooperation
Buying of raw material/inputs	5
Logistics	3
Joint sales	4
Marketing/branding	3
Export	4
Policy Advocacy	6
Hiring skilled specialists	3
Joint negotiations	4

In addition, one small entrepreneur mentioned that joint storage and realization of the product in summer would be useful.

Cooperation Matrix

A cooperation matrix ranks the current status of linkages between the core firms and support institutions. In cooperation matrix 0 means no cooperation, while 5 means strong cooperation.

Table 27: Cooperation matrix

Cooperation Matrix											
Name	Small Poultry Companies	Medium Poultry Companies	Large Company - Chirina	GPDA	RDA	Agrarian University	Financial Institutions	VETs	NFA	Laboratories	Total
Small Poultry Companies	X	3	1	1	2	1	2	1	2	3	16
Medium Poultry Companies	3	X	3	4	3	2	3	1	4	4	27
Large Company - Chirina	1	3	X	3	3	2	3	1	4	2	22
GPDA	1	4	3	X	1	1	2	2	4	3	22
RDA	2	3	3	1	X	0	3	1	1	0	13
Agrarian University	1	2	2	1	0	X	0	0	0	0	6
Financial Institutions	2	3	3	2	3	0	X	1	0	0	14
VETs	1	1	1	2	0	0	1	X	0	0	6
NFA	2	4	4	4	1	0	0	0	X	3	18
Laboratories	3	4	2	3	0	0	0	0	3		15
Total	16	27	22	22	13	6	14	6	18	15	X

The cooperation matrix demonstrates the level of linkages and cooperation between cluster companies and support institutions. There is room for improvement of cooperation between the cluster companies. The GPDA is well embedded in the sector and has room for improvement by uniting small poultry companies in the Association and supplying diversified services to the member companies. The cooperation with the main regulator – the NFA is at a good working level. The weakest point is the low level of participation of educational and VET institutions in the modernization and development of the poultry sector. The solution to this problem will require targeted and orchestrated actions from the public sector, poultry companies and GPDA.

10 ANALYSIS OF BUSINESS OPERATION AND CLUSTER ANALYSIS

10.1 PRODUCTION PLAN

Small poultry enterprises do not have production plans and fully depend on demand volume. The egg producers state that generally, they sell what is produced. The majority of the companies state that they have capacities to produce more, while only one stated that the full capacity is utilized. The medium and large companies have production plans, at least at the managerial level. However, some of them still depend on the demand on local and export markets.

It is worth noting that any shifts in production volumes in the poultry sector are subject to 3-4 months prior to planning. In other words, if an operator decides to increase production because they face a rise in demand for certain poultry product, the result of such increase is attained only in few months, not in a short-run. Such principle and concept apply both to egg and broiler production sectors.

10.2 SEASONALITY

In the eggs production sector, the demand, prices and sales fall in summer, while the September-April period is characterized by relatively high demand. Besides, demand for poultry products shrinks during the fasting period before religious celebrations - mostly two times a year, up to 40 days before Easter and Christmas. On the other hand, the Easter and New Year periods are considered as a peak season for both chicken meat and eggs. For small poultry enterprises, the high demand period is spring (March-April), when farmers from villages buy a live chicken for their family farms.

10.3 PRODUCTION STANDARDS

Small poultry companies do not have adopted international standards and have not revealed immediate plans in this direction. Only one company stated that an attempt to adopt the ISO standard is underway. One of the interviewees stressed that the company complies with requirements defined by local legislation.

Although the implementation of labor safety system in production is required and regulated by the state law of labor safety (in force since April 2019), small poultry companies still do not comply with such labor safety norms, nor they operate any waste management systems in productions. Recycling, renewable energy and sustainability standards are also absent. The representative of one company stated that there is a need for a waste processing plant. He has knowledge in the area but lacks financial resources for the implementation of the project. He was also sceptical on the possibility of joint investments of the poultry companies in this area.

Medium and large companies have adopted standards, such as ISO 22000 and HACCP. With regard to waste management, they also have problems, fix regulatory provisions and the high price on respective aggregates as a challenge. Full compliance with waste management regulations requires substantial investments and companies need a transition period for adaptation. The representative of medium sized company stated that the agreement shall be reached to adopt waste processing standards during 2023-2024. State assistance is also needed in bringing production waste processing companies to the country, as it is the case in the EU.

In reality, the waste management process is the most complex and expensive part of the poultry production. Such a system can be divided into three main components:

- Firstly, when slaughtering a chicken, 25-30% of its weight is waste: intestines, blood, feathers and other by-products. Thus, for entities with 100 tonnes per month capacity, for instance, the waste equals 30 tonnes -which is a large amount and needs to be utilized.
- Secondly, slaughtering a single chicken requires around 14 liters of water - eventually resulting in polluted and bloody water, which needs filtration using chemical and biological processes to remove contaminants before released into sewage.
- Finally, the utilization of chicken droppings (feces) is a complex process. It requires an additional processing plant and in the best possible case be turned into chicken manure as an organic fertilizer - compost.

Therefore, a complete waste management system requires additional investments and know-how as a separate activity, where none of the small or medium-sized poultry companies are involved in.

The exception is Chirina LLC – a large enterprise, which owns the so-called vertically integrated production cycle and completes waste management, recycling and partially sustainable processes. The company owns a rendering plant, equipped with modern European technology machinery, which processes all residues of slaughtering processes, recycles and produces bone, feather and blood meal – actively used for animal feed production. Besides, the actor, with its processing plant, processes chicken manure into organic fertilizer – compost, used for enhancing soil productivity. Chirina uses part of such fertilizers for wheat and corn farming. Finally, Chirina has implemented biological water treatment systems, which filters and removes contamination from polluted water, eventually resulting in clean water - harmless for the environment.

10.4 PRODUCTION TECHNOLOGY

The production technologies of the small companies are considered adequate. One of them recently renewed Russian broiler cages by secondary ones produced in Turkey. The other firm, practicing cage system also deploys cages of Turkish production and plans to adopt the non-cage system, so-called “Free Range Farming” (FRF). According to the interviewee, international experience suggests that the FRF system produces better quality eggs. For the implementation of FRF, the enterprise needs to construct a separate building that will allow the simultaneous operation of cage and FRF systems. As it was mentioned by one of the representatives of a small company, in the poultry industry new technologies do not significantly differ from the older ones.

Technologies and production processes of medium and large enterprises are high standard and advanced. Such production cycles are in compliance with international standards HACCP and ISO, and in addition, HALAL certificate is also present in a large-size entity. One of the cluster companies deploys modern conveyor system German technologies with minimum involvement of manual work. It also deploys pasteurization aggregate, that passes eggs in steam and eliminates microbes. The other enterprise has recently invested in new henhouses and added additional aggregates. It also purchased a sorting machine for warehouse with the support from EBRD. The company constantly undertakes the renewal of old henhouses.

Only two interviewed small enterprises from four employ production technology specialists. In addition, one individual entrepreneur stated, that he practices individual cooperation with poultry specialist – professor, who regularly supports with respective advice on various issues. The medium and large companies have in-house technology specialists, some of them even dedicated unit staffed with electricians and technicians. However, all of them complain about a lack of skilled production technology specialists in the sector.



Picture 1: Incubator of Chirina LLC



Picture 2: Meat Processing Plant of Chirina LLC

10.5 LABORATORY ANALYSIS

Laboratory application of the poultry industry can be divided into two main parts: veterinary laboratories and that of human consumption testing. The latter direction is standard microbiological and chemical testing undertaken by locally accredited state and private laboratories: Multitest, Expertiza +, Etalon and others. On the other hand, a modern and advanced veterinary laboratory plays a crucial role in the proper development of the poultry sector. Such laboratory is a guarantee for correct diagnoses of poultry and proper treatment afterwards. There are several veterinary laboratories, but the main points in the country are the State laboratory of Agriculture and Veterinary laboratory Sana which is founded and owned by Chirina since 2014. Sana undertakes not only microbiological tests on meat products, water, swabs and feed, but also conducts different veterinary test methodologies including serology testing on Elisa, mycotoxins and tests on various diseases. This laboratory is already accredited under ISO 17025 and closely partners with poultry production facilities in Georgia. In addition to addressing the State Laboratory of Agriculture, most of the small and medium size companies conduct veterinary tests in Sana laboratory which is acquainted with modern trends in veterinary diagnosis. This is definitely an important fact in terms of openness and cooperation between industry actors.

The egg and poultry producers regularly cooperate with such Laboratories. They normally check the quality of their products in the laboratories located in Tbilisi or the premises of larger poultry companies, also deploy laboratory services for the detection of poultry diseases. Medium and large companies are regularly conducting PCR tests on diseases, a blood test to check if the disease was previously present and poultry feed analysis in the laboratory of the Ministry of Environment and Agriculture. In addition, the NFA requires certificates on packaging materials and local laboratories do not have the capacities to conduct laboratory analysis of cardboard and polyethylene.

The information on new technologies is obtained via international exhibitions, mostly held in Europe annually (Euro Tier, Anuga, etc), also internet and subscription services of relevant organizations.

10.6 INNOVATION AND R&D

With regard to innovation, the small and medium enterprises do not reveal any substantial cooperation with scientific and research centers, high and professional education establishments. Representatives of small companies stated renewal of packaging and poultry cages as the most recent innovations. For one medium-size enterprise such innovations are modern hatchery machinery they have recently installed in the facility, as well as the latest rinsing machines. The access to global innovation and inventions is secured via international food exhibitions, internet and subscription services from respective organizations. One of the interviewees stated that acquiring modern knowledge on the growth and preservation of poultry would support the competitiveness of the enterprises.

10.7 MARKETING AND MARKET ANALYSIS

Small poultry companies are oriented towards local, regional or national markets and do not have export plans. Some of them are also engaged in the distribution of their products, supplying retail markets and HORECA sector companies. Most of them do not have marketing plans.

The medium and large companies' sell to retail and HORECA sectors. Before the pandemic, they supplied brands like Marriott and Radisson. When the pandemic hit the tourism sector, they mainly switched to retail markets that somehow compensated for the losses from HORECA sector. Some of them have sales units and own distribution vehicles supplying the product throughout Georgia.

It is worth noting that the largest producer in the poultry industry – Chirina outsources its sales and marketing service to one Georgian distribution company, that in turn has an exclusive agreement with the producer and distributes poultry production to wholesale, retail and HORECA sector. Even the small booths that exclusively sell Chirina's fresh poultry products are being supplied by this distribution company. Only in rare cases, Chirina supplies fresh meat to a few supermarket chains that have their own food production and processing component integrated. All the rest sales go through the distribution company.

The sources of market information are market forces such as supply and demand, also colleagues engaged in the poultry industry. Companies also used specific poultry websites and own sources of information in Turkey and Ukraine.

10.8 EXPORT CHALLENGES

The export operations of medium and large poultry companies are not stable. Two of them mentioned the export to Iraq three years ago.

Medium and large companies listed the following challenges hampering the export competitiveness of the sector:

- Dependency on raw material import. They see import substitution potential, especially in corn
- Exchange rate fluctuations
- Export price fluctuations
- The lack of scale effect
- The "closed door" policy in some of the neighboring countries, such as Azerbaijan and Armenia
- The leading role of Turkey in the regional market, reflected in the scale of production and setting the price. Turkey is the main supplier to the Middle East and Georgian producers are not able to compete
- High-quality standards on the EU market: Although Georgia has a DCFTA agreement signed with the EU, the country still doesn't satisfy EU veterinary regulation, thus export of poultry products to the EU is not yet allowed. This is a state-level challenge and not of a particular business operator.
- FTA with China doesn't yet guarantee poultry product export to this destination. According to our respondents, who have been trying to penetrate to Chinese market for months already, they faced barriers from the state food safety institutions, as they try to protect their market from hazards that the poultry products may cause.

10.9 BUSINESS RESOURCES

Financial sources

Small poultry enterprises in Kvemo Kartli were initially funded by owners' savings. In the process of expansion and business development, some of them benefited from the state private-sector support programs, such as preferential agrocredit. Some of them have plans for expansion, but their implementation is on-hold either by the reason of pandemic or lack of financial resources. The surpluses of the enterprises are mainly invested in the expansion, modernization, or the development of infrastructure necessary for growing and preserving the poultry.

Investment of own resources is also prevalent in initial funding of medium and large companies. However, for the expansion, they actively used state support schemes, such as preferential agrocredit, Enterprise Georgia facilities and donor support such as EBRD. With regard to strategic expansion, one medium company specializing in eggs plans to launch poultry meat production, while other plans to launch the production of inputs and waste processing.

Human Resources

Small enterprises use various types of remuneration systems, such as fixed salaries, hybrid system with a mix of fixed and performance-based remunerations. The employees of the companies are not engaged in the professional education programs and the job trainings are practised when necessary. Novelties of the sector are basically obtained through the internet or from colleagues.

One medium enterprise, that deploys mostly automated production technologies employ 150 persons. Due to automated processes, these employees are engaged in technical maintenance and operation of production lines, maintenance of hygiene and distribution. The administration staff has fixed remuneration, while the production staff salaries are based on performance and output. Distributors are also remunerated on a performance-based model. The trainings are conducted in the framework of ISO by invited specialists, labor safety, customs procedures and finance and accounting.

Cooperation with Educational and VET institutions is scarce. One medium company has received students from Agrarian University who wrote a master's thesis on the sector.

10.10 EXPECTATIONS ON FUTURE TRENDS OF THE INDUSTRY

The expectations on the future trends of the industry differ. Interviewees stated that it is hard to predict due to the pandemic. One respondent underlined that there are not prospects for expansion: The local eggs industry meets 100% of the demand and there are minor shortages during Easter, while the export volume is small and non-stable. The production costs are high, mainly associated with the imported cereals for poultry feed that has recently increased (according to one respondent two times) and are reflected in the production costs. Realization price is not tied to the production costs. The other representative foresees growth of the industry due to the availability of various support programs and increased interest of the population in agrobusiness. One of the medium enterprises foresees expansion in the case of increased demand of the population and decrease of the quantity of small farm businesses.

At the global level, poultry will remain the driver meat industry for the period of 2020-2029. According to the OECD and FAO, the poultry industry will be the primary driver of global meat production growth and will account for 50% of all additional meat produced over the 2020-2029 period (OECD/FAO, 2020). In the leading countries, the expansion of production will be driven by two main factors:

- Productivity gains will drive production expansion in China, Brazil and the USA
- Investments made in Hungary, Poland and Romania will cause expansion and allow these producers to take advantage of the lower production costs

- Expansion in Asia will be mainly caused by a shift away from pig meat consumption that will increase the demand for poultry in the medium term

The beneficial factors for the poultry industry are differences in relative prices, a gradual decrease in the consumption of red meat due to health and environmental concerns that ultimately leads to the growth of poultry meat consumption. In addition, the short production cycle of the poultry industry allows producers to quickly respond to market signals, rapidly improve genetics, animal health and feed practices (OECD/FAO, 2020).

11 POSSIBLE LINKAGES WITH OTHER BUSINESS CLUSTERS

11.1 PHAGES - POSSIBLE ALTERNATIVE TO ANTIBIOTICS IN POULTRY FARMING

(Sectors: Poultry, Pharmaceutical)

Based on the conducted study, an interesting niche product has emerged in live-poultry farming medication. These are phages, which are believed to be a natural alternative to antibiotics. As being in an early development stage, there are no specific market trends and figures available for observing this product, however, as claimed by the respondents, the phages could become an effective eliminator of even antibiotic-resistant bacteria. Although antibiotics are widely used against bacterial infections, such resistance occurs to be a vital problem in poultry farming and production as, primarily, excessive use of antimicrobials in animal farms has provoked some pathogenic bacteria immune to antibiotics.

For this reason, a number of poultry farming and production companies have already launched incorporating phages as an ingredient in a medical ration. However, the implementation of this alternative method is yet at a very early stage, as all such attempts have been trial. Those targeted companies which haven't yet tried using phages (either not yet being aware of or being skeptic), expressed interest to be involved in further studies on this matter.

Considering the above, potential further linkage between poultry and pharmaceutical business clusters shall be observed. Such linkages and further steps have to be based on a comprehensive study on usage and possible benefits of phages for poultry farming, incorporating the stakeholders from both sectors.

11.2 FISHMEAL - POSSIBLE ALTERNATIVE TO PROTEIN SOURCE INGREDIENTS IN POULTRY MIXED FEED

(Sectors: Poultry, Fishery)

Following the studies about poultry feed rations and diets which are being improved over time, as well as have already kept in mind the significance of fish-derived products (fishmeal and fish oil) for combined animal feed, from fishery diagnostic study, potentially interesting linkage has been observed between the two. In other words, fishmeal, being a high protein source, could be a valuable ingredient in poultry feed and diets.

In general, the crude protein content of fish meal varies from 60-80% depending on varieties of fish. Besides, fishmeal differs substantially in quality, depending on processing methods and warehousing conditions. However, based on the earlier diagnostic study in the fishery sector, conducted in Samegrelo Zemo-Svaneti Region, the fishmeal produced by the main fish processing plants contains as high as 75% of crude protein, which is considered to be of high-quality.

On the other hand, studies claim that fishmeal comprises an adequate quantity of all essential amino acids required by chickens and is a great source of methionine and lysine²⁷. This leads to the conclusion that fishmeal might possibly be a valuable protein source ingredient in poultry feed. In addition to nutritional benefits, it could also be a partial import substitution opportunity of protein ingredients, the majority of which are imported. However, as mentioned above, an in-depth study is essential for approving such linkage between the sectors.

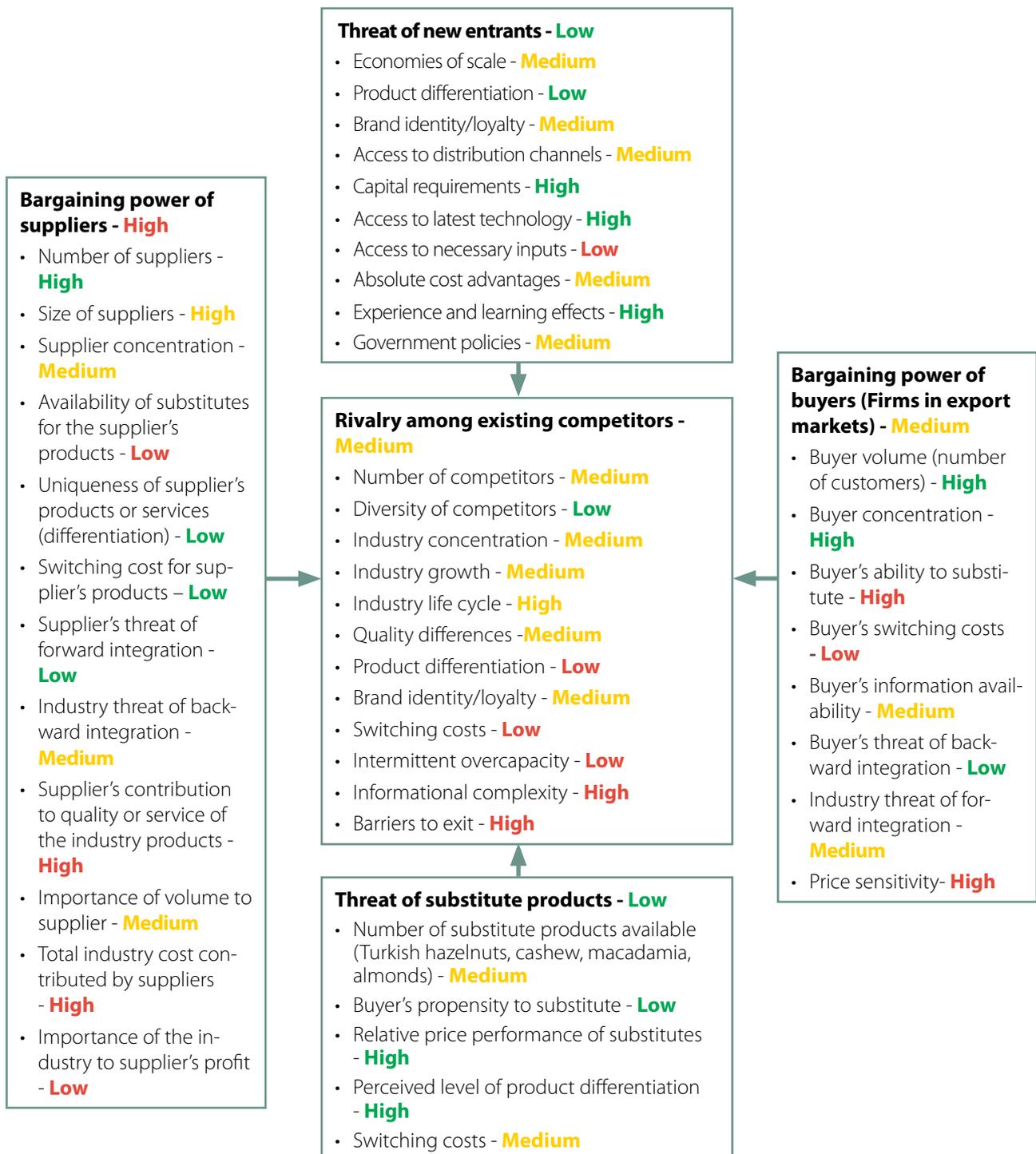
²⁷ Richard D. Miles and Jacqueline P. Jacob. Animal Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida.

12 SWOT ANALYSIS

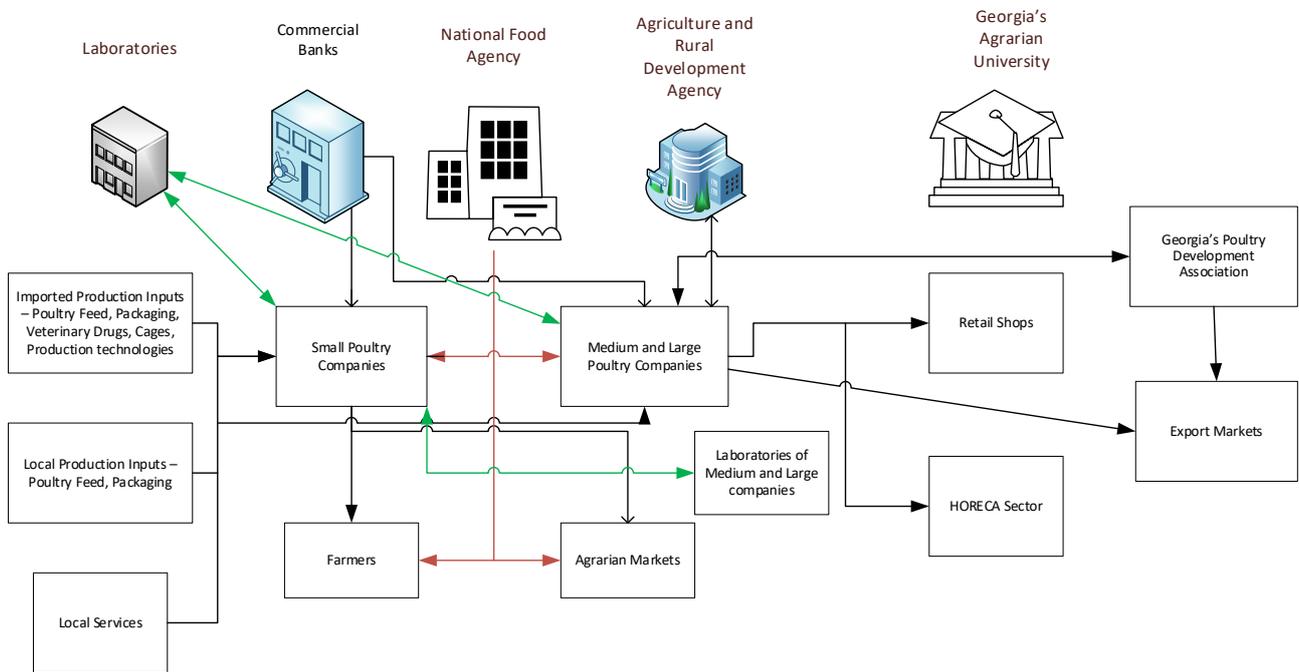
<p>Strengths</p> <ul style="list-style-type: none"> Dynamically developing industry supplying the local market Technologically capable medium and large enterprises Adopted international quality and safety standards in medium and large enterprises Established cooperation between the cluster companies and public sector institutions regulating the sector High self-sufficiency ratio for domestic production of eggs. 	<p>Weaknesses</p> <ul style="list-style-type: none"> Lack of variety of products Constrained access to finance Lack of proper safety and quality measures in small enterprises Weak linkages of the industry with high and professional education institutions High dependency on imported intermediate goods Low self-sufficiency ratio for domestic production of poultry meat; Not regulated and low level of quality control at agrarian markets Weak readiness and inability of small-scale actors to meet new regulations of food safety and waste management; Poultry products not being exempt from VAT with the right of deduction, alike all other agriculture products in Georgia.
<p>Opportunities</p> <ul style="list-style-type: none"> Export opportunities through FTA with EU and Chinese markets Import substitution potential for grain group and poultry meat products Anticipated growth of global demand on poultry products Increased local production of cereals to meet the demand of the poultry industry Increased demand for eggs due to the decreased purchasing power caused by COVID 19 pandemic economic downturn Production of organic eggs and poultry meat Utilization of by-products for the production of organic manure and heating means Technical regulation (to be soon approved) setting 5% water content limit on poultry meat products, which brings up an opportunity for local producers to compete better with imported goods in price/quality ratio. Phages – possible alternative to antibiotics in poultry farming. Fishmeal – potential protein source ingredient in poultry feed. Possible nutritional benefits and import substitution opportunity. 	<p>Threats</p> <ul style="list-style-type: none"> Continuation of COVID-19 crisis and constrained demand from HORECA sector Purchasing power of end consumers decreasing due to COVID 19 pandemic that will negatively affect demand for poultry meat Exchange rate fluctuations Barriers at export market borders Georgian not yet been listed among EU veterinary regulation eligible countries Spreading of bird flu

13 PORTER'S FIVE FORCES

Porter's five forces have been analyzed to determine the existing competition and possible change in competition. Low, Medium and High labels were assigned to each of the statement. Additionally, colors were assigned to each statement, red implies a fiercer competition, orange implying a moderate competition, and green implying low competition. For instance, if a number of suppliers are high, green is assigned to the statement, as the higher number of suppliers contribute to the lower bargaining power of suppliers and ultimately contribute to lower competition. The detailed analysis of the sector using the Porter's model of five forces is given below:



14 CLUSTER MAP



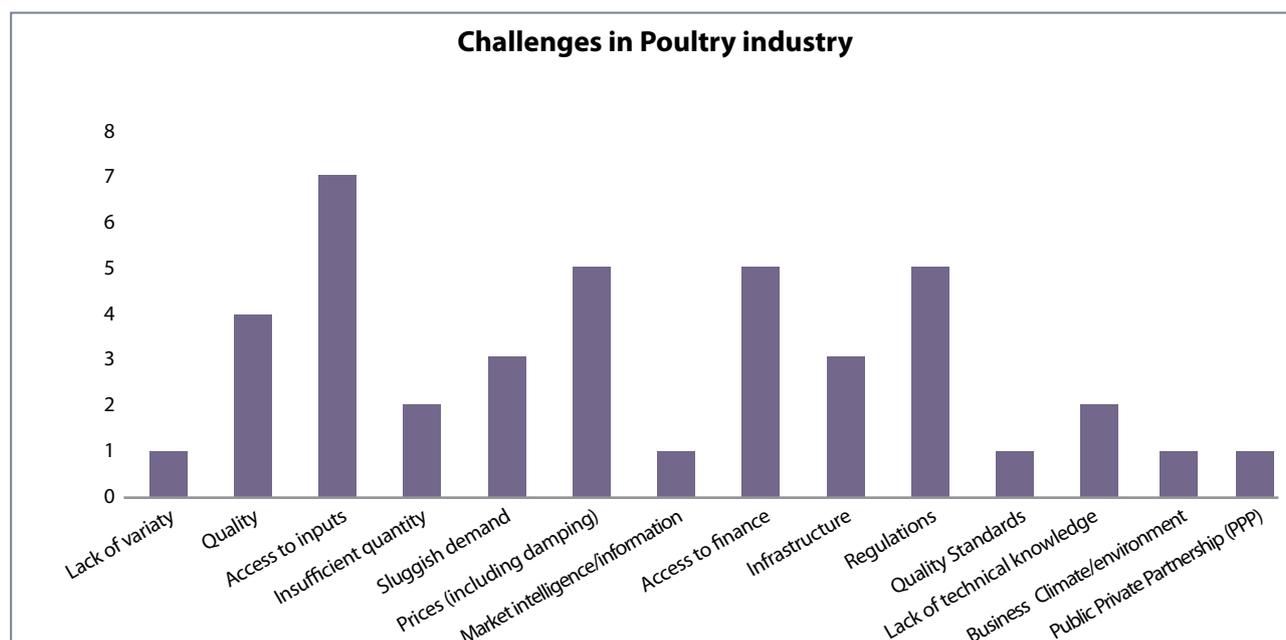
15 CURRENT PRESSURE POINTS AND SHORT RUN OBJECTIVES OF THE CLUSTER

The COVID-19 pandemic has created the following challenges for the poultry companies:

- Sales have decreased
- Delays in import of poultry feed and feed additives
- Rapid rise of prices for grain group products at global market due to the COVID-19 pandemic. Prices for poultry feed have been substantially increasing over the last 6 months, in some cases reaching 100% growth. As a result, the production prices increased, while the demand fell and small poultry enterprises are operating in a survival mode
- Demand from HORECA sector dramatically fell
- In the summer tourism season, the lack of local market demand was balanced by tourists. Pandemic has negatively affected this offset mechanism for the industry
- Ambiguity of making plans and defining strategy. Especially painful for the poultry sector where production and sales plans are being made 3-4 months in advance.

Despite the pandemic challenges, small poultry enterprises listed following major problems:

Graph 24: Challenges Identified by the Companies



In the above graph, the number indication for a specific challenge denotes the number of respondents confirming it as a challenge. For example, 7 interviewed respondents confirmed that access to input products is a problem for the business operation and the sector.

Besides the challenges marked by interviewees, below we list issues identified during interview discussions:

- The problems of improper storage conditions at agrarian markets are revealed. There was a case of selling the damaged product due to the storing in an inappropriate temperature regime, while the penalties of the regulator were incurred by the producer.

- With regard to infrastructure, the lack of parking places for the distribution vehicles next to retail and wholesale stores was mentioned.
- In the field of regulations, one small company mentioned the obligation of sealing the eggs and indicating dates. This is done manually and requires a considerable investment of time. One medium company stated the compliance with waste management regulations as a problem.
- As stated by most of the interviewees, purchasing power of Georgian consumers is decreasing over time, which results in the shrink of domestic demand. Besides, as the producers expect an increase in price for main production inputs - grain groups, the prices of poultry products will increase in the medium term.
- According to tax code of Georgia, the supply of agricultural products produced in Georgia, before their industrial processing (change of commodity code), are exempt from VAT with the right of deduction, except for eggs and chicken. Such exclusion amendment entered in force in 2008 and 2010, for eggs and chicken, respectively. According to respondents, this record in tax code creates barriers for Georgian farmers, grain farms and overall poultry sector development.
- According to most of the respondents, waste management represents a big challenge in the poultry industry and needs to be addressed either through joint efforts of the sector actors or via the support of state authorities.
- As medium and large exporter producers reported, besides the FTAs with EU and China, export barriers still exist for poultry products to these markets. In the EU case, Georgia still doesn't satisfy EU veterinary regulation and is not on the list of safe countries. As for China, Georgian producers face barriers from Chinese food safety state authorities when trying to penetrate the market.
- As claimed by one of the interviewed respondents, they analyze market information using official statistical data published by the National Statistics Office of Georgia. However, because of several mismatches between the data and their findings, they don't fully trust the state institution and think the methodology needs to be reviewed.
- There is a lack of availability of medium and large storage facilities for poultry feed. Such facilities would support the creation of a certain amount of reserves and decrease the sector's vulnerability to input price shocks.
- Delay of activation of technical regulation on poultry meat, that allows the marketing of the product in which water content does not exceed 5%. Before the activation of the regulation, low quality and relatively cheap poultry meat would be available on the Georgian market.

16 VISION OF THE CLUSTER

The medium-term vision of the poultry cluster is the following:

Georgia's poultry cluster strives to develop through modernization of production technologies, the introduction of innovations in poultry feed and care, and sustainable utilization of production waste based on internationally accepted standards.

The slogan of the poultry cluster is: "Innovation and knowledge-driven development".

Strategic cooperation of poultry cluster actors will aim:

- Perfection of Georgia's poultry products and improvement of their international competitiveness
- Support active transfer and adaptation of technologies, international scientific and practical knowledge, marketing and management innovations,
- Enhance investments in medium and large storage facilities to secure the industry from international price volatility on production inputs
- Active cooperation with scientific, education and VET institutions to advance the professional capacities of the employees and support improvement of competitiveness
- Diversification of production and supply of innovative products to local and international markets
- Transform poultry industry value chain as an attractive employer for respective professionals and newly graduated students
- Active cooperation with poultry clusters of EU member states for having access to advanced knowledge and innovations and support the development of technology and knowledge transfer channels

Objectives, activities, outputs, and outcomes of poultry cluster

Objective	Activities	Outputs (Indicators)	Outcomes	The challenges solved under this objective
<p>Secure stable supply of the poultry industry inputs-feed</p>	<p>Assess investment potential of medium and large storage facilities for poultry feed</p> <ul style="list-style-type: none"> • Secure financial support for conducting the study • Develop TOR of the study • Initiate respective study for the assessment of investment attractiveness <p>Assess current capacities and potential of the local poultry feed production</p> <ul style="list-style-type: none"> • Evaluate annual demand of the poultry industry on various poultry feed inputs • Conduct consultations with the MEPA, ADA, Agriculture business associations, medium and large agriculture enterprises <p>Support knowledge transfer on innovations in poultry feed practices</p> <ul style="list-style-type: none"> • Engage international expert with respective experience • Conduct series of workshops and focus group meetings with respective stakeholders • Develop report on the alternative poultry feed solutions adoptable in Georgia 	<ul style="list-style-type: none"> • Study on the investment attractiveness of medium and large poultry feed storage facilities • Number of consultations conducted with stakeholders on assessing the potential of local poultry feed production • Report on alternative poultry feed solutions implementable in Georgia 	<ul style="list-style-type: none"> • Decreased vulnerability of the poultry sector on international price fluctuations on basic production inputs • Improved linkages of the poultry industry with other sub-sectors of agriculture • Improved knowledge of poultry feed solutions 	<p>Access to inputs</p>

Intensify policy advocacy activities	<p>Pro-active communication with the public sector on existing and upcoming regulations</p> <ul style="list-style-type: none"> • Develop a document describing current regulatory problems of the poultry industry and number of solutions • Meet with respective public institutions for initiating dialogue for the solution of the problems • Track the progress of the discussions and focus on critical points for the next meetings 	<ul style="list-style-type: none"> • Document describing current regulatory challenges for the poultry industry • N of meetings conducted with public sector institutions • N of compromises and solutions achieved 	<ul style="list-style-type: none"> • More attractive business environment for the operation of poultry industry 	Regulations; Prices (including damping)
Launch cooperation with scientific, educational and VET institutions	<ul style="list-style-type: none"> • Create a list of Georgian scientists having the potential to support the development of the poultry industry • Organize a joint workshop with scientists and discuss current pressure points of the industry in the fields of technology, feed practices, diseases and their treatment, innovative methods • Attract Georgia's Agriculture University as an associated member of the GPDA and initiate dialogue on strategic cooperation • Attract Kvemo Kartli VET as an associated member of the GPDA and initiate dialogue on strategic cooperation 	<ul style="list-style-type: none"> • List of Georgian scientists • Joint workshop with scientists • Expressed interest from University and VET institutions to actively cooperate with the GPDA and become associated members 	<ul style="list-style-type: none"> • Implementation of knowledge-based solutions for the modernization of the poultry industry • Intensified linkages with the educational sector 	Production quality; Access to inputs; Lack of technical knowledge

<p>Strengthening capacity of GPDA</p>	<ul style="list-style-type: none"> • Develop capacities of GPDA in policy advocacy techniques and methods, mobilization of member companies for joint actions, presentation of the sector on international fairs and exhibitions • Support diversification and improvement of GPDA's services based on the needs of poultry enterprises • Encourage twinning projects with EU member states poultry associations/clusters • Enhance partnerships with local sectoral associations for the identification of mutually beneficial partnership possibilities 	<ul style="list-style-type: none"> • Number of capacity development activities • Number of new services • Number of twinning/partnerships with international poultry associations/clusters 	<ul style="list-style-type: none"> • Capable Association supporting the development of the poultry industry • Improved cooperation between poultry companies • Improved cooperation with other sectors 	<p>Regulations; infrastructure; access to finance</p>
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Annex 1: List of Interviews

Organization	Municipality	Type of an organization	Respondent
LLC Savaneti 99	Bolnisi	Target Enterprise	Vepkhvia Jachvadze
LLC Chirina	Gardabani	Target Enterprise	Ketevan Vashakidze
LLC Kumisi XXI	Gardabani	Target Enterprise	Gogita Maisuradze
LLC Sabudara	Gardabani	Target Enterprise	Tamaz Tsikarishvili
LLC Teleti Poultry	Gardabani	Target Enterprise	Zviadi Gogoladze
LLC GPS Georgian Poultry	Gardabani	Target Enterprise	Tamaz Tsikarishvili
I/E Besiki Natenadze	Gardabani	Target Enterprise	Besiki Natenadze
LLC Dila Products	Tetritskaro	Target Enterprise	Givi Lobjanidze
LLC Elma	Tetritskaro	Target Enterprise	Revaz Robakidze
LLC Sani +	Rustavi	Target Enterprise	Koba Tsopurashvili
LLC Perma	Marneuli	Target Enterprise	Davit Tskhadadze
Georgian Poultry Development Association	Tbilisi	Support Institution	Gogita Maisuradze
National Food Agency (Veterinary Department)	Tbilisi	State Agency	Lado Baratashvili
National Food Agency (Food Safety Department)	Tbilisi	State Agency	Ana Gemazashvili
Rural Development Agency	Tbilisi	State Agency	Mariam Gelashvili Head of Project Development Department
Agrarian University	Tbilisi	Support Institution	Teo Urushadze Dean of Agrarian and Natural Science Faculty
Expertise +	Tbilisi	Laboratory	Sopho Berishvili, deputy director
Etalon	Tbilisi	Laboratory	Temur Pilishvili, Director
VET Modus	Rustavi	Support Institution	Geno Imerlishvili Professional Orientation and Career Guidance Manager
TBC Bank	Tbilisi	Commercial bank	Vasil Tsiklauri Credit Administrator, Central Credit Administration Department

