



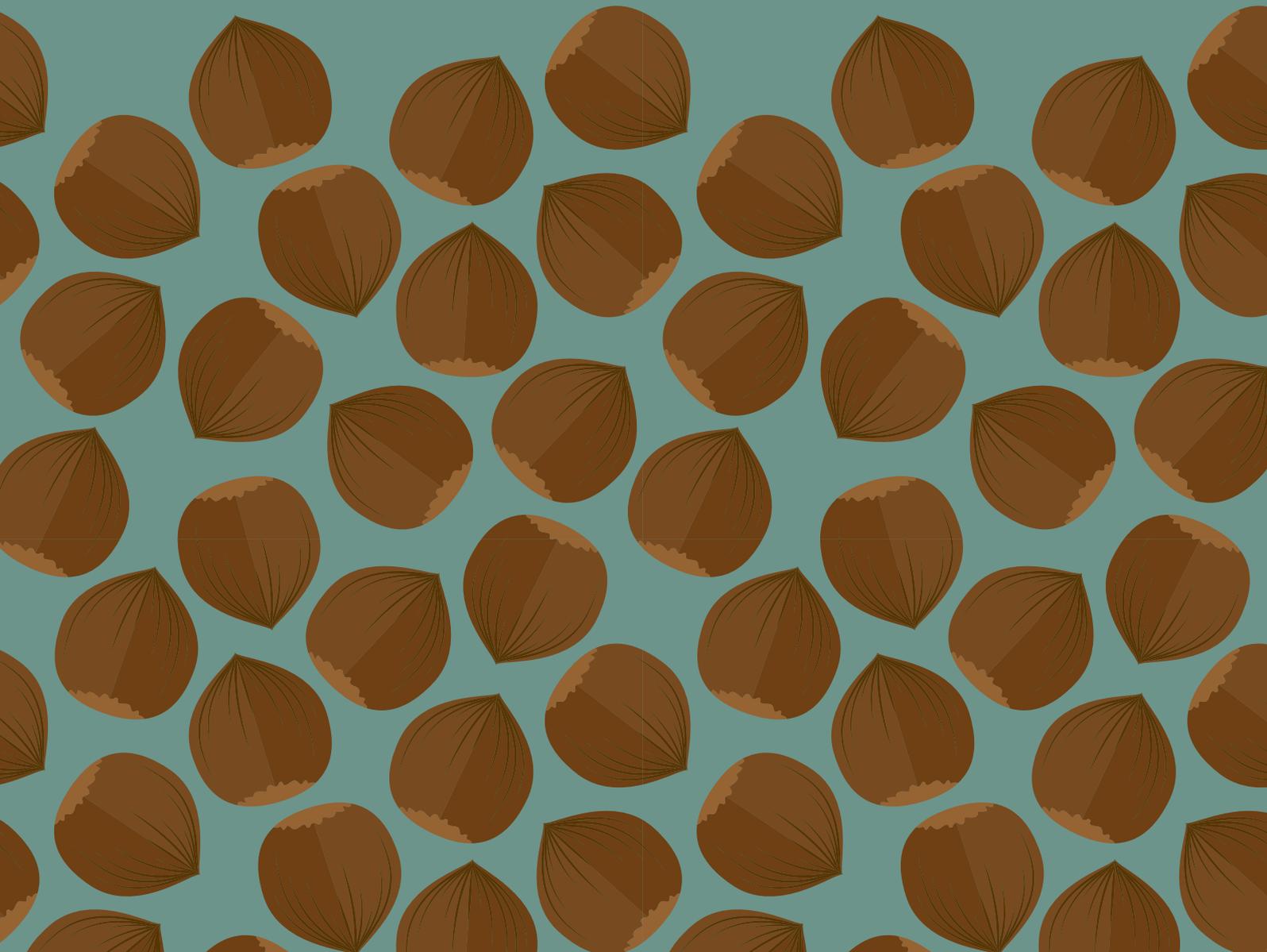
The European Union
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UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

FRUIT AND VEGETABLE PROCESSING CLUSTER, HAZELNUT PROCESSING

Diagnostic Study in Guria Region



FRUIT AND VEGETABLE PROCESSING CLUSTER, HAZELNUT PROCESSING

DIAGNOSTIC STUDY IN GURIA REGION

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

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1 INTRODUCTION

The Cluster Diagnostic Study 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 Unions and four UN Agencies – United Nation 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; support companies directly with strategic investments and connect them better to diaspora groups, while also demonstrating the effectiveness of these strategies in 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 as well as agribusiness clusters in Georgia. The study identified 57 clusters in Tbilisi and 9 in 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, and Mr. Giorgi Todua, National Project Coordinator, and the overall guidance of Mr. Fabio Russo, UNIDO Senior Industrial Development Officer.

This diagnostic study is prepared for the fruit and vegetable processing cluster located in Guria Region.

The study is structured as follows:

At the first stage, the cluster was defined by specifying the product and location; cluster location map and production process were identified, and the history of the cluster was reviewed.

At the second stage, the international and national scenario, as well as the features of the benchmark cluster(s) were examined, and vital statistics of the hazelnut processing cluster was analyzed. Moreover, comparative value chain analysis of representative products was done and the nature of cooperation in the cluster was analyzed.

At the final stage, business operation and cluster analysis were done, the vision of the cluster was developed, the current pressure points and objectives of the cluster were defined.

2 METHODOLOGY

To undertake cluster diagnostic study, a combination of approaches including the review of the relevant documents, secondary data sources, individual in-depth interviews and focus group meeting with key stakeholders were conducted.

In total, 19 in-depth interviews and 1 focus group meeting were conducted. The distribution of interviews is given in the table below¹:

Table 1: Number of in-depth interviews conducted

Core Enterprises and Support Institutions	Number of Interviews
Core Enterprises	10
Associations	3
Government Agency	1
Higher education institution	1
VET Institution	1
Laboratory	1
Donor	1
Cooperative	1
Total Number	19

¹ For detailed information see Annex 1.

3 DEFINITION OF THE CLUSTER

3.1 HISTORY OF THE CLUSTER

Fruit and vegetable processing industry in Georgia

Processing and preserving fruits and vegetables represent a strategic sector for Georgia's economy. It has historical roots and visibility shaped by location and climatic advantages, agriculture traditions and industrialization path of the Soviet period when Georgia's industry was one of the advanced in the Union. The current trend of the sector development is shaped by the intensive state support programs for primary agriculture and processing industries, enlargement of FTAs and enhanced access to international markets such as the EU, China and EFTA. Also, the growing tourism industry (before the COVID-19 crisis), where one of the main motivations of visitors was to taste Georgian food and drinks, created possibilities for hidden export of processed fruit & vegetables among others.

However, the challenges remain prevalent and there is a need for urgent actions for the elimination of hindrances for further development of the sector. The recent report of OECD (2020) underlines the following impediments for agribusiness SME companies in Georgia:

- Difficulties in access to finance caused by stringent regulations and collateral requirements; also, the lack of specialized financing instruments.
- Underdeveloped value chain and infrastructure deficiencies, constraining access to market and productivity.
- Highly fragmented agriculture land.
- Difficulties in establishing supply-chain linkages between farmers and large food processing enterprises and retail chains.
- Lack of skills and resources to comply with the EU and other international regulations.

Fruit and vegetable cluster in Guria Region

Guria is one of the smallest regions in Georgia, with a population of 108.1 thousand. In 2018, agriculture accounted for 11% of the region's GDP, while manufacturing accounted for 6.6%. The main agricultural products of the region are corn, hazelnuts, citrus fruits, tea and other fruits.

Hazelnut processing

The spread of nuts cultivation in Georgia began in the 6th century BC (Chavleishvili, 2019). Historically, this was an important agricultural product, source of income and employment for Georgia's population and it remains so currently. According to ISET (2018), up to 107 000 households are involved in hazelnut production. Georgia had export tradition until 1917 but since then, in the period of Sovietization, the export of nuts stopped, and it was re-launched only in the 1990s when international demand created opportunities for the expansion of the production (Chavleishvili, 2019). As of 2014, around 80-90 % of hazelnuts growers were located in Western Georgia – 50-55% in Samegrelo and 30-35% in Guria (USAID, 2014). Around 90% of the product is exported and the destination of 80% of them is the EU.

The turning point for Georgia's hazelnut industry development was the launch of operations by AgriGeorgia – a subsidiary of Ferrero in 2007.² Since then, in six years, the company's investments reached EUR 40 million. In the 1st half of the 2010s, Georgia was on the list of the world's top five

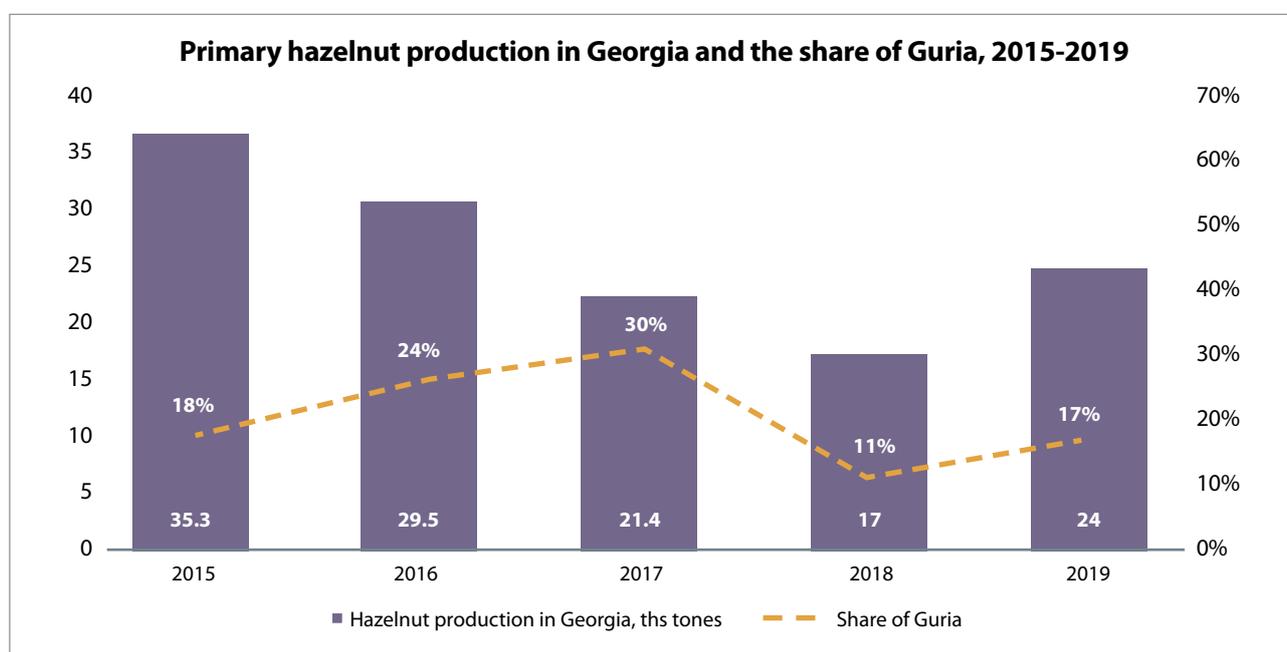
² LTD AgriGeorgia operates under NACE rev 2 code 01.25, which implies "Growing of other tree and bush fruits and nuts".

producers of hazelnuts. The area was harvested and in 2013, the production peaked 39700 tonnes with 22 127 hectares subsequently. In 2013, Georgian Hazelnut Grower Association was established that currently unites 8200 members. The Phiarosana attack and various fungal diseases since 2016 have significantly affected the sector and reduced the number of crops, processing activities and export. Consequently, the harvest area and production figures dropped dramatically to 9484 hectares and 17000 tonnes in 2018.³

In Guria Region, the active development of the hazelnut sector is observable in the period of 2008-2013. The production of hazelnuts more than doubled from 4.2 thousand tonnes in 2008 to 9 thousand tonnes in 2013 (Geostat). In the period of 2014-2017, the average annual production was 6.5 thousand tonnes. Afterwards, the industry faced a sharp decline and recorded only 1.9 thousand tonnes of production in 2018 and a moderate increase to 4 thousand tonnes in 2019 (Geostat).

Guria is the runner-up region in hazelnut production in Georgia following Samegrelo-Zemo-Svaneti:

Graph 1: Hazelnut production in Georgia and the share of Guria



Source: Agriculture of Georgia reports by Geostat

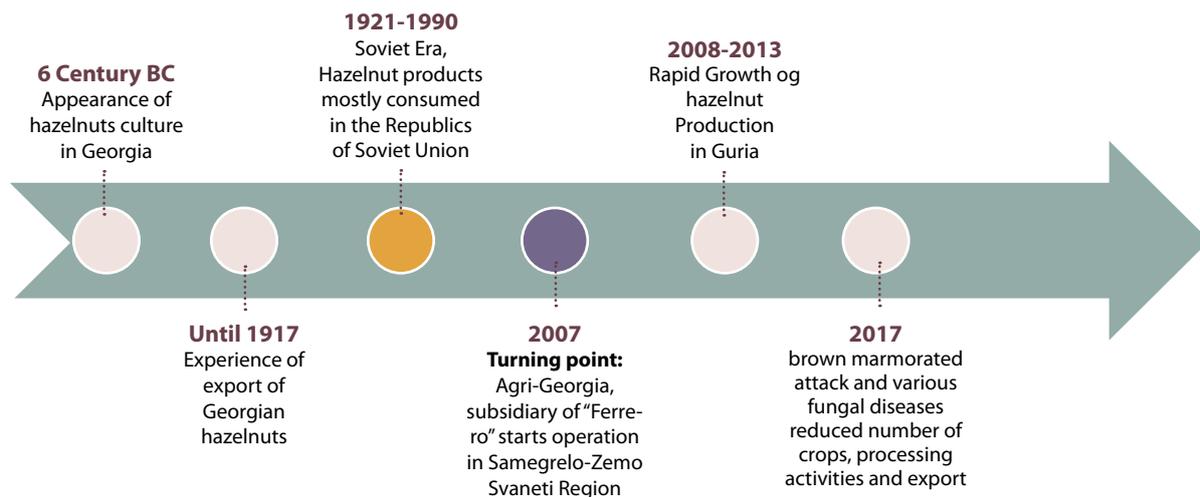
The majority of hazelnut processing enterprises in the region are located in Ozurgeti Municipality. For 2018, hazelnut orchards occupied 9891 hectares of agricultural land and the realization of primary hazelnuts was an important source of local population income.⁴ In recent years, the majority of the investments in agriculture processing industries were directed to hazelnut production. According to the municipality, 16 small and medium hazelnut processing enterprises were active in Ozurgeti. The majority of them have not acquired certification that hinders their potential to become exporters. In recent years, hazelnut cultivation also became the main activity in Lanchkhuti Municipality, where the realization of primary hazelnuts represents the main source of income for approximately 80% of the population.⁵

³ <http://www.fao.org/faostat/en/#data/QC/visualize>

⁴ http://oz.gov.ge/pictures/adgilobrivi_ekonomikuri_ganvitarebis_gegma1.pdf

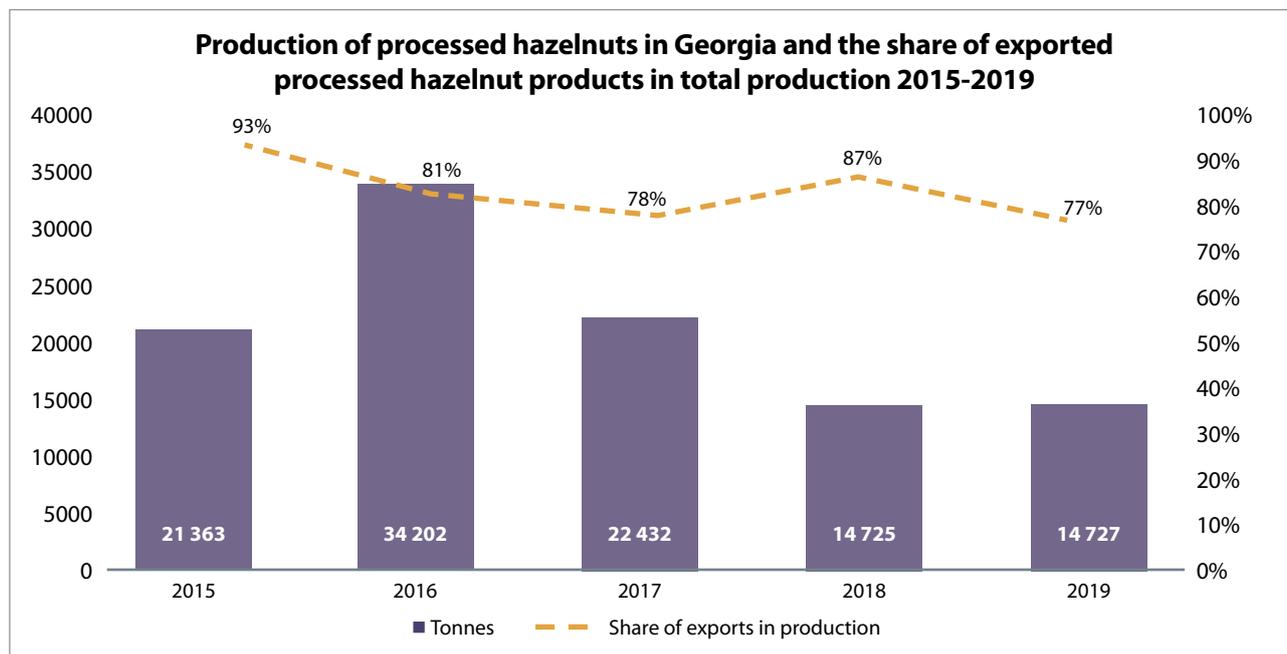
⁵ http://lanchkhuti.gov.ge/?page_id=714

Scheme 1: History of hazelnuts cluster



When the production of processed hazelnuts (including hazelnut kernel and more sophisticated hazelnut products) is considered, it is evident that in 2017, the Pharosana bug problem had a significant impact, with the production of processed hazelnut decreasing by 34.4%, having further decreased in 2018 and 2019. It is worth noting that the hazelnut processing industry is export-oriented, with an average of 83% of produced hazelnuts exported over the period of 2015-2019. The share of exports was the highest in 2015 (93%) and the lowest in 2019 (77%).

Graph 2: Production of processed hazelnuts in Georgia and the share of exported processed hazelnut goods in total production



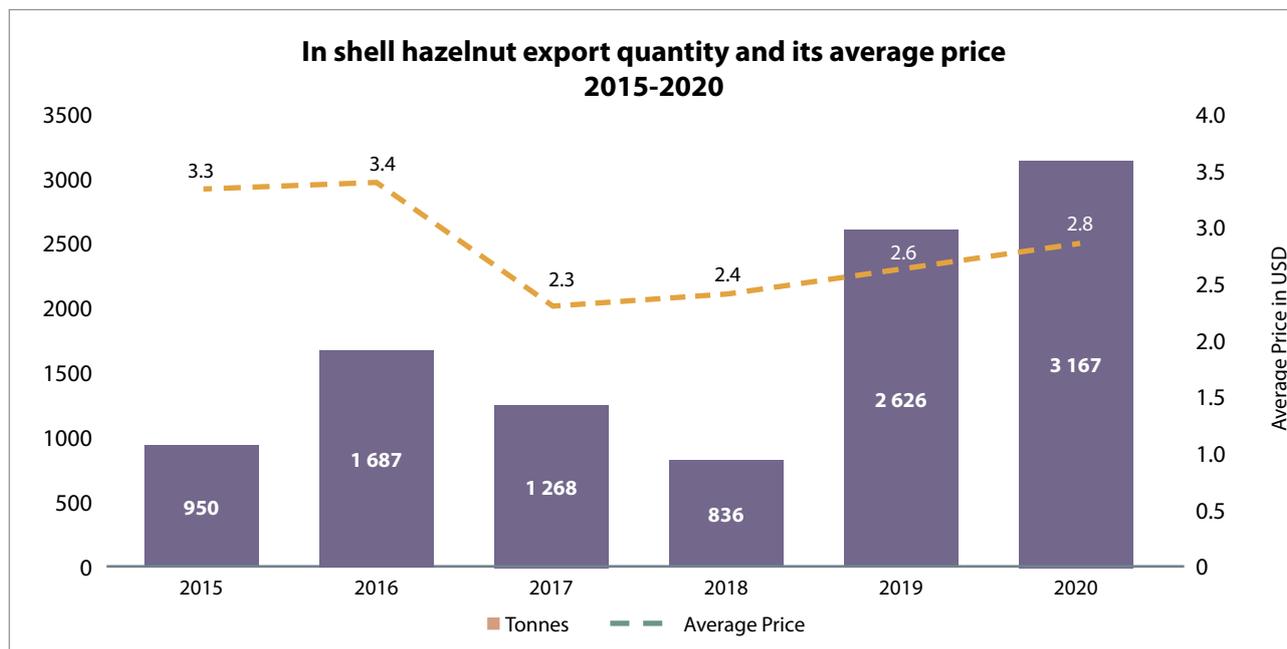
Source: National Statistics Office of Georgia

External trade in hazelnuts

As mentioned, the crisis was also reflected in export volumes of both, in-shell hazelnuts and hazelnut kernels. In 2017-2018, the quantity of exported in-shell hazelnuts was limited, which could be explained by the problem of Pharosana bug in Georgia. The latter destroyed a huge part of the harvest in 2017 and has remained a problem for the following years. In 2019 however, in-shell hazelnut exports registered a strong recovery with more than a threefold increase compared to the previous year,

and by far surpassing the 2016 level. In 2020, despite the COVID-19 pandemic, the growth continued (20.6% increase in 2020 compared to 2019). The average price of exported in-shell hazelnuts have also been recovering, although the price has not yet returned to the 2016 level.

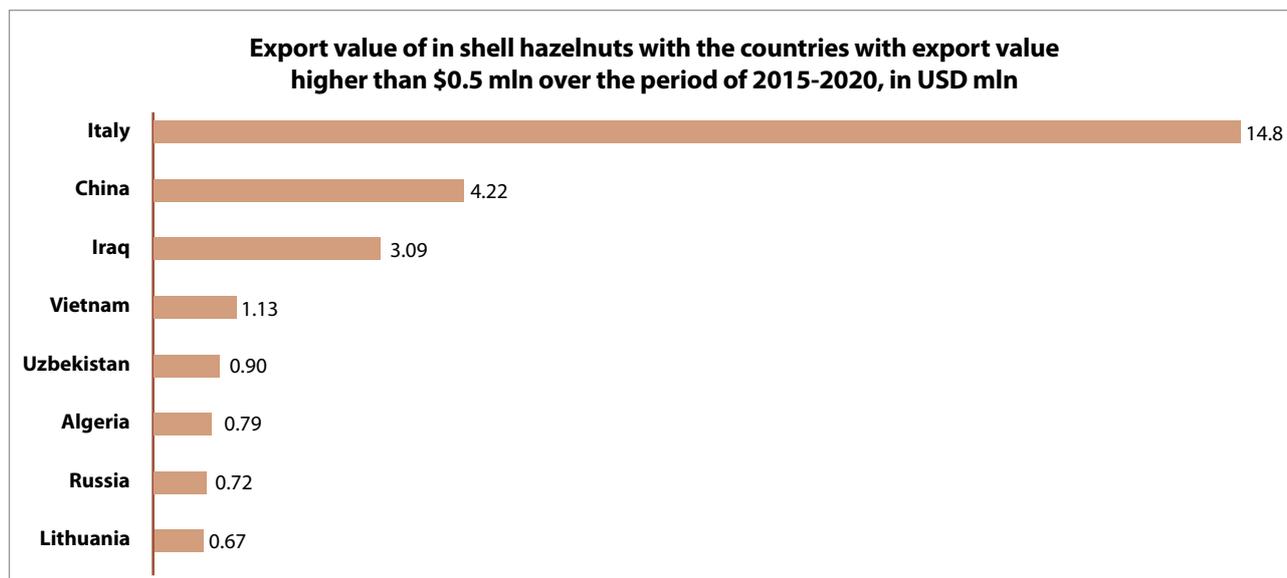
Graph 3: Quantities and average prices of in-shell hazelnut exports from Georgia, 2015-2020



Source: External trade portal of National Statistics Office of Georgia

The main target destination for Georgian in-shell hazelnuts was Italy, accounting for 50% of total exports over the period 2015-2020. This could partly be explained by the presence of a large Italian producer Ferrero in Georgia.

Graph 4: Export value of in-shell hazelnuts with top countries over the period 2015-2020



Source: External trade portal of National Statistics Office of Georgia

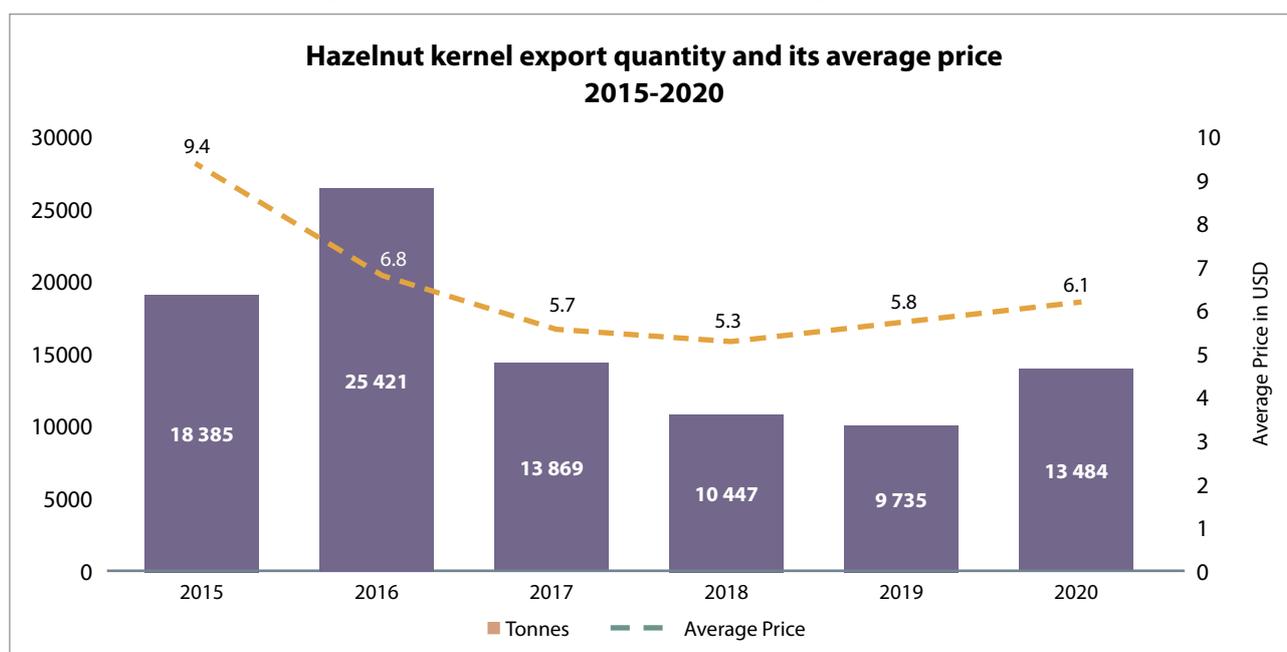
The quantity of exports of hazelnut kernel (processed hazelnut) from Georgia has been much more significant than in-shell hazelnut exports. The export volume has been on a downward trend since 2016, a peak year with 25.4 thousand tonnes of export. 2020 was the year of significant recovery for hazelnut kernel exports, with its quantity increasing by 38.5% compared to the previous year. The ex-

port price of Georgian hazelnut decreased gradually from \$9.4 per kg of hazelnut kernel in 2015 to the lowest \$5.3 per kg in 2018, having recovered to \$5.8 in 2019 and \$6.1 in 2020.

It is worth noting that the ratio of export price of in-shell hazelnuts to the export price of hazelnut kernels was on average 0.3 during 2015-2020. In other words, hazelnut kernels had approximately 3.3 times higher price per kg than in-shell hazelnuts. This is consistent with some of our respondents' observations that 1 kg of in-shell hazelnut produces around 400 grams (40%) of hazelnut kernel. To illustrate with an example, suppose that the price of 1kg of hazelnut kernel is \$10. Thus, taking into account the price ratio of 0.3, the price of in-shell hazelnut would be \$3. To make 1kg of hazelnut kernel, 2.5kg of in-shell hazelnut is needed (taking into account the yield rate of 40%). Thus, in order for the hazelnut kernel producer to break even, it has to price its hazelnut kernel at \$7.5 per kg (calculated by multiplying the price of in-shell hazelnuts (\$3) and the amount needed for producing 1kg of hazelnut kernel (2.5kg)). So, in this specific example, the difference between the actual hazelnut kernel price (10\$) and the break-even price (\$7.5) is the reward that the producers gain for engaging in more sophisticated production. In conclusion, the analysis of export price data and yield rate shows that it is worthwhile to engage in hazelnut processing for Georgian enterprises.

The respondents also noted that Pharosana bug affected the yield, which can be observed in the price ratio as well: In 2016, the ratio was the highest and equal to 0.36, while in 2017, the year where Pharosana bug was the biggest issue, it dropped to the lowest in the analyzed period – 0.24.

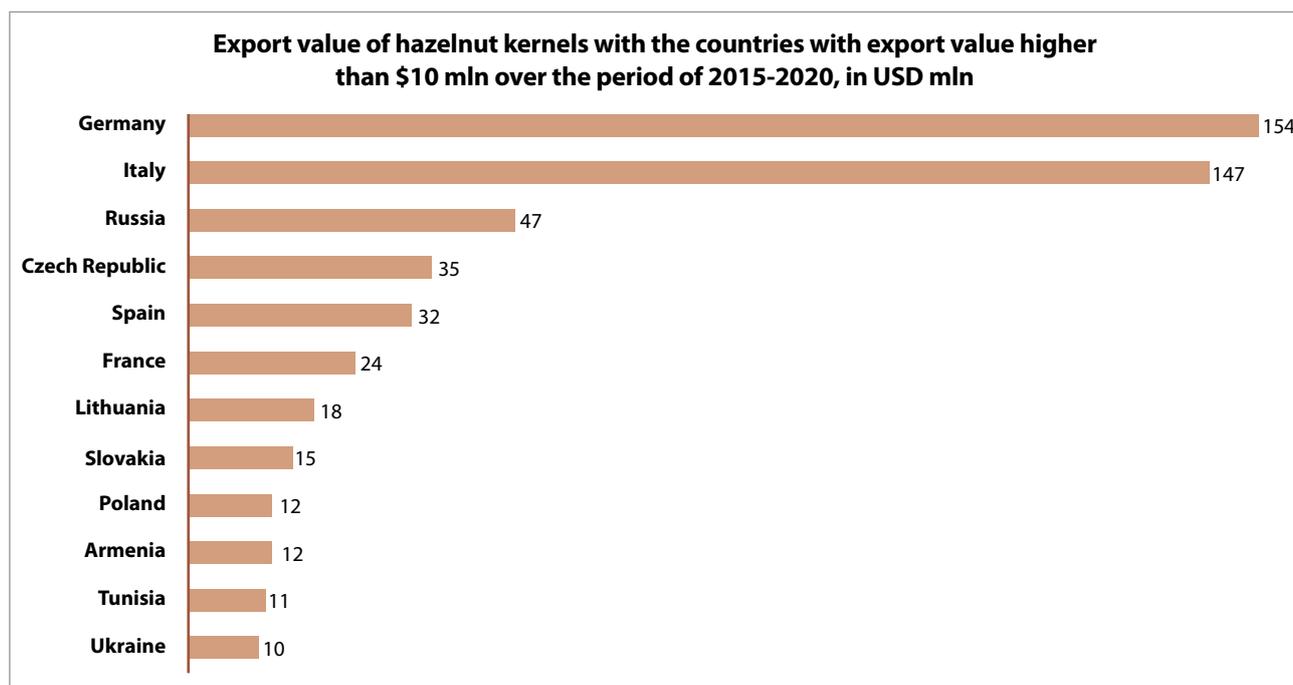
Graph 5: Quantities and average prices of hazelnut kernel exports from Georgia, 2015-2020



Source: External trade portal of National Statistics Office of Georgia

The graph below depicts the main trade partners of Georgia in hazelnut kernel trade over the period of 2015-2020. Overall, even though exports are quite diversified, Italy and Germany stand out as the most prominent importers of Georgian hazelnut kernel, having accounted for 48.4% of the total trade over the period of 2015-2020.

Graph 6: Export value of hazelnut kernels with top countries over the period 2015-2020



Source: External trade portal of National Statistics Office of Georgia

It is worth observing that after the Phiarosana bug issue was relatively fixed, exports of in-shell hazelnuts had a strong recovery, surpassing the pre-crisis levels. While hazelnut kernel exports also saw some recovery, especially in 2019 and 2020, the numbers are still far from the 2016 level. One possible explanation to this was provided by one of the respondents, suggesting that as the quality of hazelnut was lower, it was not worthwhile to engage in the processing of hazelnuts. Thus, the share of hazelnuts sold in its raw form increased. It should be expected that this trend will be reversed again after the quality of hazelnut recovers fully to the pre-crisis level.

3.2 GEOGRAPHICAL LOCATION OF THE CLUSTER

The cluster consists of 21 food and vegetable processing companies.⁶ Most of the enterprises are LLCs.

Table 2: Number of enterprises in processing and preserving fruits and vegetables in Guria by form of ownership

Form of ownership	Total number
LLCs	18
Individual entrepreneurs	3

Source: The National Statistics Office of Georgia, Business Register

The majority of companies are located in Ozurgeti Municipality. The distribution of companies by municipalities of Guria Region are given in Table 3 below.

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

Table 3: Number of enterprises in processing and preserving fruits and vegetables in Guria by municipality

Municipality	Total number
Ozurgeti	19
Lanchkhuti	1
Chokhatauri	1
Total	21

Source: The National Statistics Office of Georgia, Business Register

Out of 21 firms in Guria, 1 is classified as medium and 19 as small (size of 1 company is unidentified).

Product

According to the Business Register of the National Statistics Office of Georgia, most enterprises in the fruit and vegetable processing sub-sector in Guria Region are operating in hazelnut field. 13 out of 21 enterprises produce hazelnut, 2 enterprises produce dried fruit from mandarin, kiwi, feijoa; 1 company produces canned goods, fruit juices, jams, compotes; 1 enterprise indicates purchasing, processing and selling agricultural products as the main activity in its business activity declaration and 1 company – processing of fruit and vegetables as the primary activity and tea processing as the secondary activity.

Hazelnut processing

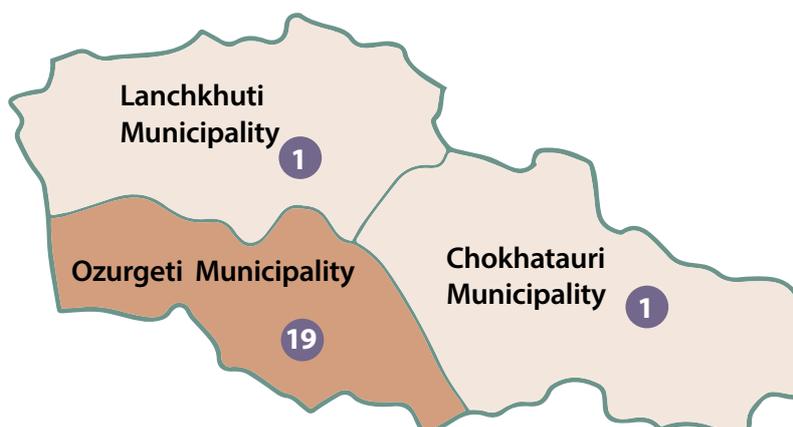
The interviewed enterprises differed with the variety of products offered. Each of the interviewed enterprises offers hazelnuts in-shell and hazelnut kernels (natural products from hazelnuts), while only a few of them also produce more sophisticated products, such as roasted hazelnut kernels, blanched hazelnut kernels, hazelnut meal, roasted chopped hazelnuts. Moreover, each enterprise sells the hazelnut shells that remain after the cracking process, mostly to the general public who use them as firewood.

Fruit and vegetable processing

One firm is engaged in producing fruit jams, marmalades, juices, compotes, sauces and bottled vegetables from various fruits and vegetables, while another firm produces 4 varieties of dried fruits (Kiwi, tangerine, feijoa, persimmon) and 4 types of fruit tea (Black tea, black tea with orange, black tea with feijoa, black tea with lemon).

3.3 CLUSTER LOCATION MAP

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



4 VITAL STATISTICS OF THE HAZELNUT CLUSTER

The chapter summarizes the vital statistics of the hazelnut processing sector in Guria Region by reviewing the dynamics of the main economic indicators and the number of support institutions.

4.1 DYNAMICS OF THE MAIN INDICATORS

During the interviews, the target enterprises were asked about the dynamics of some important indicators over the period of the past 3 years. Provided options included “falling”, “increasing” or “no change” for given indicators. The responses are summarized in this section.

The number of enterprises

The number of companies according to their size and locations are given in the table below:

Table 4: Number of enterprises in processing and preserving fruits and vegetables in Guria by municipality, size, and share of municipalities

Fruit and Vegetable Processing and Preserving					
	Total number	Small	Medium	Not identified	Share of municipality
Ozurgeti	19	17	1	1	90%
Chokhatauri	1	1			5%
Lanchkhuti	1	1			5%
Total	21				

Source: The National Statistics Office of Georgia, Business Register

Estimated employment

Table 5: Employment per size of interviewed enterprises

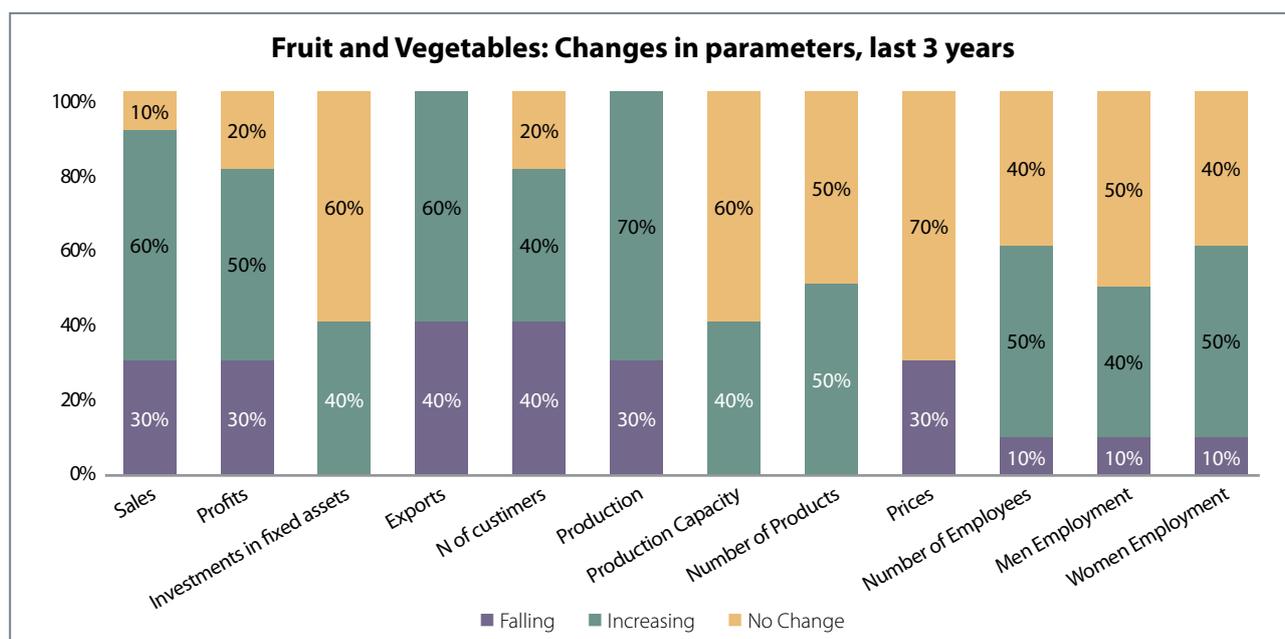
Size ⁷	Number	Average employment per size	Total
Large	0	0	0
Medium	1	100	100
Small	20	27.7	554
Total Estimated Employment			654

⁷ 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.

Summary of changes in all indicators are presented in the graph below:

Graph 7: Dynamics of the main indicators for fruit and vegetable processing enterprises



Source: Field Research

4.2 SUPPORT INSTITUTIONS IN GURIA REGION

The hazelnut cluster value chain in Guria Region comprises of seedling producers, suppliers of inputs, primary hazelnuts growers, laboratories, husking service providers, pruning service providers, processing companies, insurance providers, financial services, VET establishments, extension services and international traders.⁹ 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 value chain development.

Suppliers of seeds

According to Rural Development Agency's (RDA) database, as of October 2020, there are 63 nurseries in Georgia, out of these 2 nurseries are located in Guria Region, specifically, in Lanchkhuti Municipality. The nurseries supply seedlings for hazelnut, as well as walnut, blackberry, plum, raspberry, pomegranate.

Suppliers of fertilizers and pesticides

According to the Business Register of the National Statistics Office of Georgia, as of October 2020, there are no manufacturers of pesticides or fertilizers operating in Guria. However, there are some firms trading with fertilizers and pesticides: 2 entities in the region are engaged in wholesale trade and 13 companies in retail trade.

Suppliers of machinery

According to the Business Register of the National Statistics Office of Georgia, as of October 2020, there are no manufacturers or wholesale traders of agricultural machinery registered in Guria. However, there are 3 firms operating in the leasing of agricultural machinery in Guria, specifically in Ozurgeti.

⁹ The exact value chain members will be identified and mapped on a subsequent stage of the diagnosis study.

Transportation and storage

According to the Business Register of the National Statistics Office of Georgia, as of October 2020, there are 68 companies operating in transportation in Guria Region, out of which 34 are located in Ozurgeti Municipality, 20 in Lanchkhuti Municipality and 14 in Chokhatauri. There are no companies in Guria that are engaged in warehousing and storage.

Laboratories

The laboratories providing services to processing and preserving fruits and vegetables in Georgia are Multitest, Laboratory of Agricultural University, Quality Lab, etc. Currently, in Guria, only one laboratory is located - soil and food diagnostic centre Anaseuli.

Financial institutions

Currently, in Georgia, there are 978 branches/service centers of commercial banks. Out of these branches, only 20 are located in Guria. The majority of them are located in Ozurgeti Municipality.

Table 7: Number of commercial bank branches/service centers by municipalities

Municipality	Number of commercial bank branches/service centers
Lanchkhuti	5
Ozurgeti	9
Chokhatauri	6

Table 8: Number of commercial bank branches/service centers by name

Commercial Bank's name	Number of commercial bank branches/service centers
Liberty Bank	12
Bank of Georgia	2
TBC	2
VTB	1
Credo	3

As for microfinance organizations, currently, in Guria, there are 6 microfinance organizations, the majority of which are located in Ozurgeti Municipality.

Table 9: Number of microfinance organizations' branches by municipalities

Municipality	Number of commercial bank branches/service centers
Lanchkhuti	2
Ozurgeti	4

Apart from commercial banks and microfinance organizations, there are 5 exchange bureaus and 6 loan issuing entities in Guria.

Vocational Educational Institutions (VET Institutions)

According to the vet.ge, as of October 2020, in Georgia, there are in total 66 public and 54 private VET institutions. Only one of them is located in Guria.¹⁰

¹⁰ <http://vet.ge/en/>

Table 10: Public VET Institutions in Guria region

	Name	Municipality	Public/Private
1	Horizon	Ozurgeti	Public

Source: vet.ge

Donor organizations

The donor programs implemented in Guria that supporting fruit and vegetable processing as well as preserving the sector are given in the table below.

Table 11: Donor programs in Guria Region

Donor	Program	Fruit and vegetable processing and preserving
USAID	ZRDA Activity ¹¹	Fruit and vegetable processing and preserving
USAID	The Agricultural Program ¹²	Fruit and vegetable processing and preserving
USAID	Georgia Hazelnut Improvement Project ¹³	Fruit processing and preserving

Source: Desk Research

Business associations

There are a number of associations on regional and national level dealing with the fruits and vegetable sector development in Georgia.

Table 12: Respective associations in Guria region and in Georgia

Regional/ National	Association	Mandate
Guria	Georgian Hazelnut Growers Association ¹⁴	The main goal of the association is to improve the knowledge of farmers in hazelnut orchard management, help them increase their production and improve the quality of hazelnuts. One of the five Farmer Service Centers of the Association is located in Guria, Ozurgeti Municipality.
	Guria Development Union	The main goal of the association is to promote agricultural development in the region of Guria by improving the knowledge of farmers and offering a variety of voluntary programs to locals.

¹¹ <http://zrda.georgiano.ge/index.php/en/>

¹² <https://www.cnfa.org/program/usaaid-agriculture-program/>

¹³ <https://www.cnfa.org/program/georgia-hazelnut-improvement-project/>

¹⁴ <http://www.ghga.ge/>

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.
	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.
	Georgian Farmers Association	The main goal of the association is to strengthen the agricultural sector in Georgia and improve the 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, promote the creation of healthy competitive conditions in the country, as well as establish active communications between SMEs and public agencies, financial institutions and international organizations.

Source: Desk Research

State authorities

State authorities supporting the food and vegetable processing industry are the Ministry of Environment Protection and Agriculture of Georgia¹⁵, Rural Development Agency (RDA)¹⁶, Information-Consultation Centers¹⁷, the Ministry of Economy and Sustainable Development¹⁸ and Enterprise Georgia¹⁹.

¹⁵ <https://mepa.gov.ge/En/>

¹⁶ arda.gov.ge/

¹⁷ <https://mepa.gov.ge/En/Page/RegionalInformationConsultationCenters>

¹⁸ <http://www.economy.ge/?lang=en>

¹⁹ <http://www.enterprisegeorgia.gov.ge/ka>

5 INTERNATIONAL AND NATIONAL SCENARIO AND FEATURES OF BENCHMARK CLUSTER

Giresun hazelnut cluster in Turkey

Turkey is the world's leading producer and exporter of hazelnuts. The Turkish hazelnut industry has active support of the state. In the years of 1964-2008, the Government utilized a price support scheme that resulted in the rapid expansion of hazelnut orchards in the Eastern and Western Black Sea regions of the country, in some years having reported a hazelnut oversupply. There is an established practice that the Turkish Grain Board stores oversupplied hazelnuts and sells stocks to processing plants, wholesalers and Integrated Hazelnuts Processing Facility.

In the period of 2001-2008, the area of hazelnut orchards increased from 555 thousand to 709 thousand hectares, with the production varying between 350 thousand to 801 thousand tonnes in the same period. This variance mostly results from the variance in weather conditions. The yield per hectare in the period fluctuated between 540 kg and 1210 kg with the average yield standing at 846 kg. There are several factors that contribute to the decrease of the yield in Turkey, including climate change, aging hazelnut orchards, lack of cultivation practices and insufficient input use by producers. As of 2017, there were 180 hazelnut cracking plants with an annual capacity of 1.8 million tonnes and 40 hazelnut processing plants with an annual capacity of 350 thousand tonnes in Turkey. The value of exported hazelnut at the beginning of the 2000s was USD 600 mln, having increased to 2.8 bln USD in 2015 and, stagnating at USD 1.6 bln in 2018. Over the above-mentioned period, the share of hazelnut kernels in total hazelnut products' exports was 56.7%, while processed hazelnut accounted for 16.8%, advanced processed hazelnut accounted for 26.5% and hazelnut shell for 0.04%.

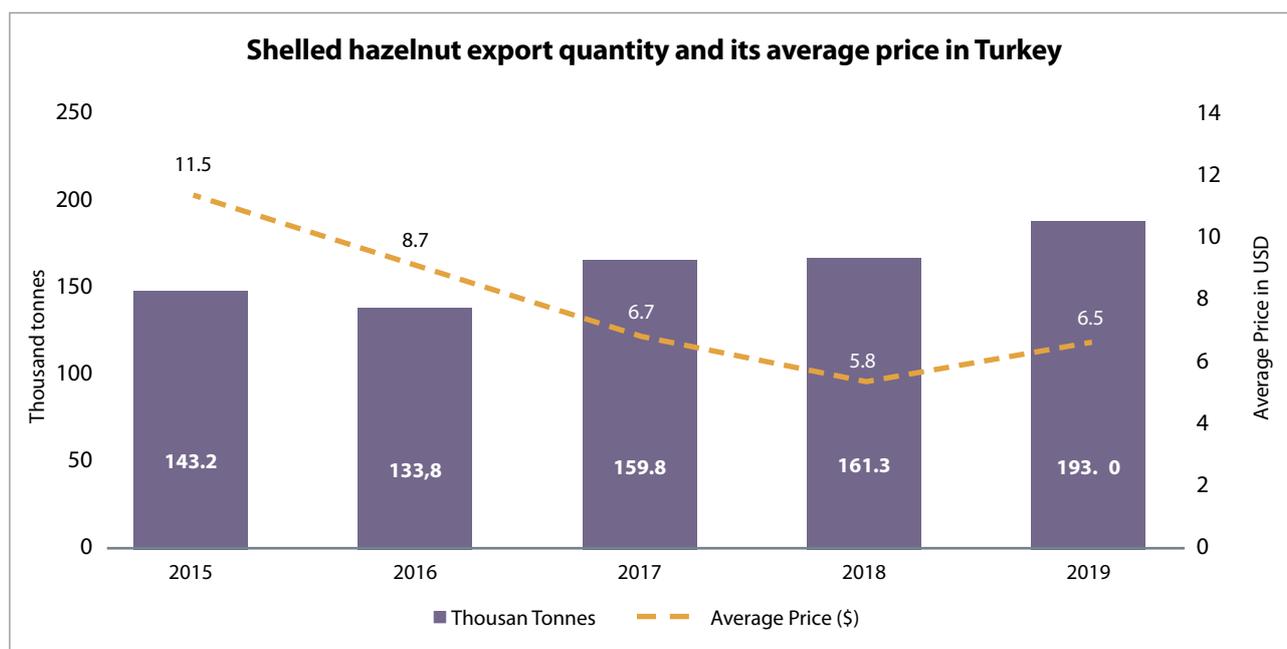
Data for Turkey's hazelnut sector is presented in the table below:

Table 13: Hazelnut production figures in Turkey

Year	Area Sown (Ha)	Production (ton)	Yield (kg/ha)
2002	560,000	600,000	1070
2003	600,000	480,000	800
2011	696,964	430,000	620
2012	701,407	660,000	940
2013	702,144	549,000	780
2014	701,141	450,000	640
2015	702,628	646,000	920
2016	705,445	420,000	600
2017	706,667	675,000	960
2018		515,000	
2019		776,046	

Source: Ministry of Agriculture and Forestry of Turkey (2019)

Graph 8: Export quantity and price of shelled hazelnuts²⁰



Source: UN Comtrade

The production and market risks are relatively high particularly in Giresun and Ordu provinces where the share of hazelnut in total crop production value is more than 50%.

Giresun is a province of Turkey on the Black Sea coast, and it is the second highest hazelnut production province in Turkey, after Ordu. Based on a report by the US Department of Labor in 2015²¹, Giresun accounted for 16.8% of Turkey's hazelnut area sown, ranking second after Ordu (32%) and chased by Samsun (13%).²²

However, Giresun is a region which is the most dependent on hazelnut production compared to the other Turkish regions: The share of hazelnut production value in total provincial crop production value is 60.3% in Giresun, compared to 57.8% in Ordu, 32.1% in Trabzon and lower in other provinces.²³ Moreover, it is widely claimed that hazelnut in Giresun is of superior quality to any hazelnut in the world.

The graph below shows the exact indicators for the sector in 2019. In terms of sown area of hazelnuts and the number of bearing hazelnut trees, Giresun is the second largest region, long behind Ordu and followed closely by Samsun. In terms of production quantity, however, in 2019 the region was the fifth in the country, overtaken by Samsun, Sakarya and Duzce, which is reflected in a lower share of 11% in Turkish production, compared by share in sown area and the number of trees. This indicates a relatively lower productivity of the Giresun region.

When compared to Guria on scale, Giresun's hazelnut production in 2019 amounted to 85 thousand tonnes, in comparison with 24 thousand tonnes in Guria.

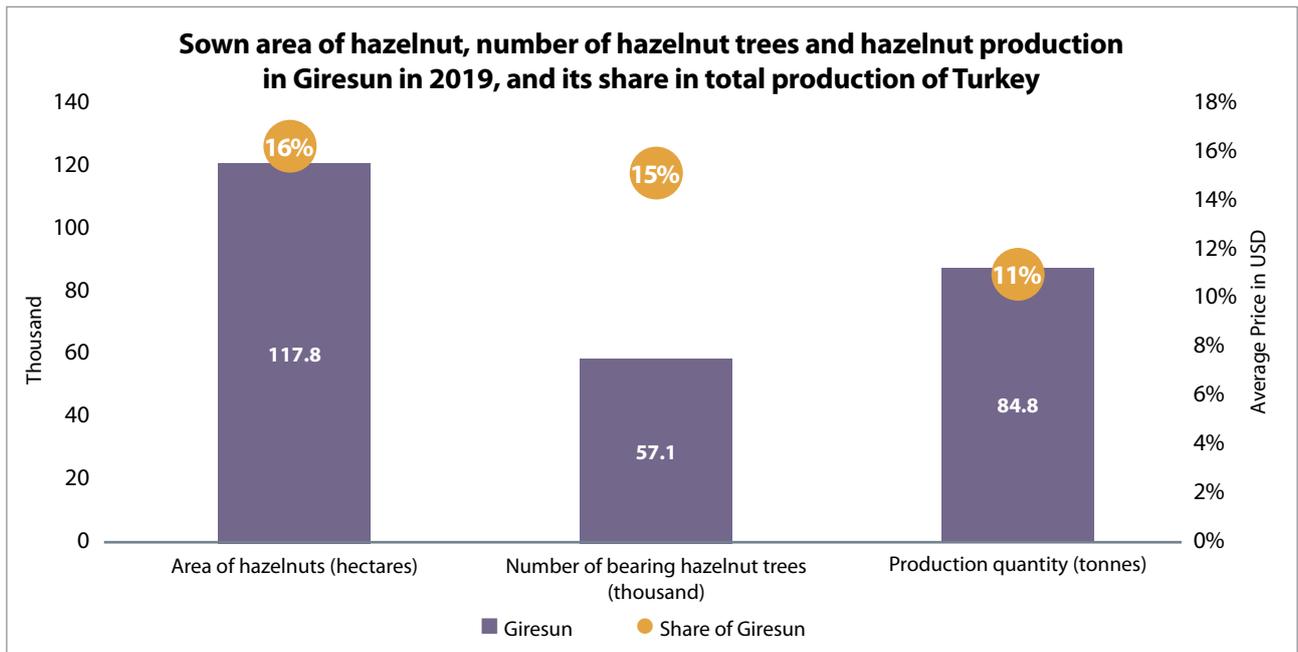
²⁰ Will be updated for 2020 in the final report.

²¹ Partnership to prevent child and forced labor in imported agricultural products: Piloting the USDA guidelines in Turkey's hazelnut supply chain.

²² This data will be updated after receiving relevant information from Turkstat.

²³ Economic Assessment of Hazelnut Production and the Importance of Supply Management Approaches in Turkey.

Graph 9: Hazelnut production in Giresun in 2019, and the share in total Turkish production



Source: Turkish Statistical Institute

6 PRODUCTION PROCESS

Hazelnut processing

The production process of hazelnut kernels has five main phases, and five processing line machines are involved:

1. Initially, In-shell hazelnuts go into a hazelnut dryer machine, where it is kept until it reaches a certain humidity level and conditions for the hazelnuts to be cracked.
2. In the next phase, hazelnut is moved by the processing conveyor to the gauging machine, where in-shell hazelnuts are calibrated and categorized according to their sizes.
3. Once the gauging process is done, the third machine cracks hazelnuts and separates shells from kernels.
4. Hazelnut kernels go to another gauging machine, this time categorising the sizes of hazelnut kernels.
5. The 5th phase of the processing line is sorting, the most labor-intensive process: workers (and mostly female workforce) hand sort and pick rotten or damaged hazelnuts off the conveyor belt.
6. Finally, the hazelnut kernels are packed, labelled and warehoused.

Picture 1: Hazelnut drying machine (1); Picture 2: Conveyer belt for picking out rotten hazelnuts



Picture 3: Hazelnut gauging and cracking machines (2), (3) and (4)²⁴



²⁴ <https://www.tondefoodmachine.com/nut-processing-machine/hazelnut-shelling-machine.html>

Fruit and vegetable processing

We can divide fruits into two main subgroups: stone fruits (peach, plum, sour cherry, sweet cherry, apricot etc.) and stoneless (apple, citrus, berries, kiwi, feijoa, grapes, pomegranate etc.). The processing of these fruits differs and requires specific machinery and production know-how for each type of fruit and vegetable. However, for demonstration, we describe fruit and vegetable mash (puree) processing phases subsequently:

1. Sorting: normally, all types of fruit and vegetable processing cycle starts with sorting. Fruits and vegetables are placed on a sorting conveyor; a human workforce picks off spoiled and damaged fruit off the line before it enters the washing machine.
2. Washing/rinsing: this phase is common for all types of fruits and vegetables, though washing and rinsing machines may differ between soft and solid/dense fruits and vegetables.
3. Destoning, pulping: In the next phase, either stone fruits go to a destoning machine which pits the stones off the fruit and then, go to a pulper, or the stoneless fruit (and vegetable) are directly transported to the pulper or fruit and vegetable mash machine.
4. Deaeration: After the fruit and vegetable mash is made, it is being pumped to the deaerator, which removes air bubbles from the puree, before pasteurization. Air removing is an important process that assures the product long-term proper appearance and shelf-life.
5. Pasteurization: this is the last phase of fruit and vegetable processing, which is a guarantee that the potential pathogenic bacteria in the fruit mash are eliminated. Normally, the pasteurization process implies heating up the mash to 84-86°C for 1-2 minutes and then, filling in the container.
6. Filling: this process requires a complex 3-in-1 filling monoblock, which allows to wash, then fill (with the final product) and finally, cap the glass container. It is important that the pasteurization is attached to the filling process, since, using a hot filling method, the heated-up fruit and vegetable mash should be filled in the container. After 20-25 seconds, the capped glass container should be turned upside down to make sure the whole glass container is sterilized. In best cases, afterwards, the glass containers are transported to the cooling down tunnels, which results in a good quality of the product.
7. Finally, the products are labeled, packed and moved to the final product warehouse.



Raw materials and inputs

Hazelnut processing

The main raw materials for hazelnut processing companies in Guria Region are primary hazelnut, packaging materials and machinery.

Primary hazelnuts, used by processing enterprises during the production process, are mainly grown in Guria Region. However, some companies also use hazelnuts grown in Samegrelo-Zemo Svaneti and Kakheti Regions of Georgia. Companies purchase primary hazelnut directly from farmers or collectors.

Packaging materials, which include jute bags, vacuum packaging, cardboard boxes, are mainly imported from Turkey, however, there are some 'simple' packaging materials like plastics and bags purchased from local manufacturers.

The interviewed companies mainly use machinery assembled and produced in Turkey. When some parts of machinery are broken, these parts are also imported from Turkey.

The main challenges hazelnut processing companies face with suppliers of raw materials are linked to quality and price. The low quality of primary hazelnut was recorded to be one of the main challenges with suppliers of inputs for hazelnut processing companies. The low quality of primary hazelnut was caused by the Pharosana attack during the years 2016-2018. Today, the Pharosana problem is at a minimum, but it still represents one of the main threats in terms of the quality and productivity for farmers. Also, the farmers do not have enough knowledge to take care of their hazelnut farming and production. One of the processing companies stated that the pesticides and fertilizers used by farmers are of bad quality. However, most interviewed processing companies mentioned the problem related to Pharosana has partially been solved.

The interviewed companies state that often the prices farmers demand is very high and are not in compliance with the quality.

Fruit and vegetable processing

For fruit and vegetable processing companies, the main raw materials are primary fruit and vegetables: feijoa, kiwi, tangerines, persimmon, lemon, orange, apple, peach, tomato, blackberry, raspberry, etc. Companies collect primary fruit and vegetable from different regions of Georgia, while one of the F&V processing companies mainly sources raw materials from Guria Region.

Moreover, companies use packaging materials like large cellophane (for storage) imported from Turkey and other boxes which are bought in Georgia.

One of the interviewed companies face the shortage of primary fruit and vegetables in Guria region.

Production plan

According to most of the respondents, they plan production based on the existing demand, while also take into account the quantity of raw materials. After they have contracts with their buyers, they start planning the quantity of materials to be purchased.

One of the respondents stated: "The planning of the production depends on the harvest and production capacities; production equipment plays a decisive role in this process".

Utilization of capacity

In Guria Region, almost all interviewed processing enterprises do not utilize their full capacity (only two companies work at full capacity). The utilization of capacity depends on the quantity together with the quality of raw materials. The respondents indicated difficulties related to the quality of raw materials resulting in low outputs, as the main reason for not utilizing their full capacity. On average, the enterprises utilize 40%-50% of their full capacity.

The interviewed companies mentioned that in the case of the good quality of raw materials, they can reach the full capacity goal. They also stated that the quality of hazelnut in 2020 was improved, and the utilization will increase in the case the trend continues.

Seasonality in production

Hazelnut processing

The production of hazelnut in Guria Region is affected by seasonality. Companies mainly produce during the August – April period. August-September is a more active period, December – April low season, and in May – July, almost no production activities take place.

The seasonality of production is related to the limited quantity of raw materials and increased prices of raw materials during the winter season. One of the respondents claimed: “The middleman makes the product more expensive. Currently, 40% of the harvest is still not delivered. Farmers demand GEL 8, that is an unrealistic price”. Such ‘middleman’ is one of the main challenges of the industry as most of the respondents confirm, and thus, their role and functioning will be elaborated later below.

Fruit and vegetable processing

For fruit and vegetable processing companies the production is also affected by seasonality. During the summer season, they use blackberries, raspberry and wild cranberries for their products, while in winter, tangerine, feijoa, kiwi and persimmon are main production inputs.

In order to have a better idea about the seasonality in production, the harvest period for the most demanding fruits is summarized in the table below:

Table 14: Harvest period for most demanding fruits

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sour Cherry												
Berries												
Peach												
Apricot												
Plum												
Tomato												
Apple												
Pomegranate												
Grape												
Tangerine												
Orange												

Food and labor safety and waste disposal and recycling

Seven interviewed companies in the fruit and vegetable processing sector have implemented food and labor safety systems within production, while three respondents have not implemented any food and labor safety systems yet, despite it is already required for all types of entities by the law of Georgia on labor safety. The has been enforced since March 2018. None of the respondents implemented recycling, renewable energy and sustainability systems.

According to the hazelnut processing companies, the implementation of recycling systems is not necessary, as they use hazelnut shells themselves. The hazelnut shell is also sold to the population, as they use hazelnut for heating. In August, enterprises may also use shells for drying.

For other fruit and vegetable processing companies, according to one of them, fruit residuals are used by the enterprise as biological fertilizer. Another company has an agreement with the municipality and waste removal is done by the municipality's cleaning service.

7 COMPARATIVE VALUE CHAIN ANALYSIS OF REPRESENTATIVE PRODUCTS

Overview of hazelnut processing value chain

The food and vegetable processing sector in Guria Region is mostly comprised of medium and small-scale hazelnut processing firms. Apart from hazelnut processing, some companies are engaged in processing other fruits and vegetables.

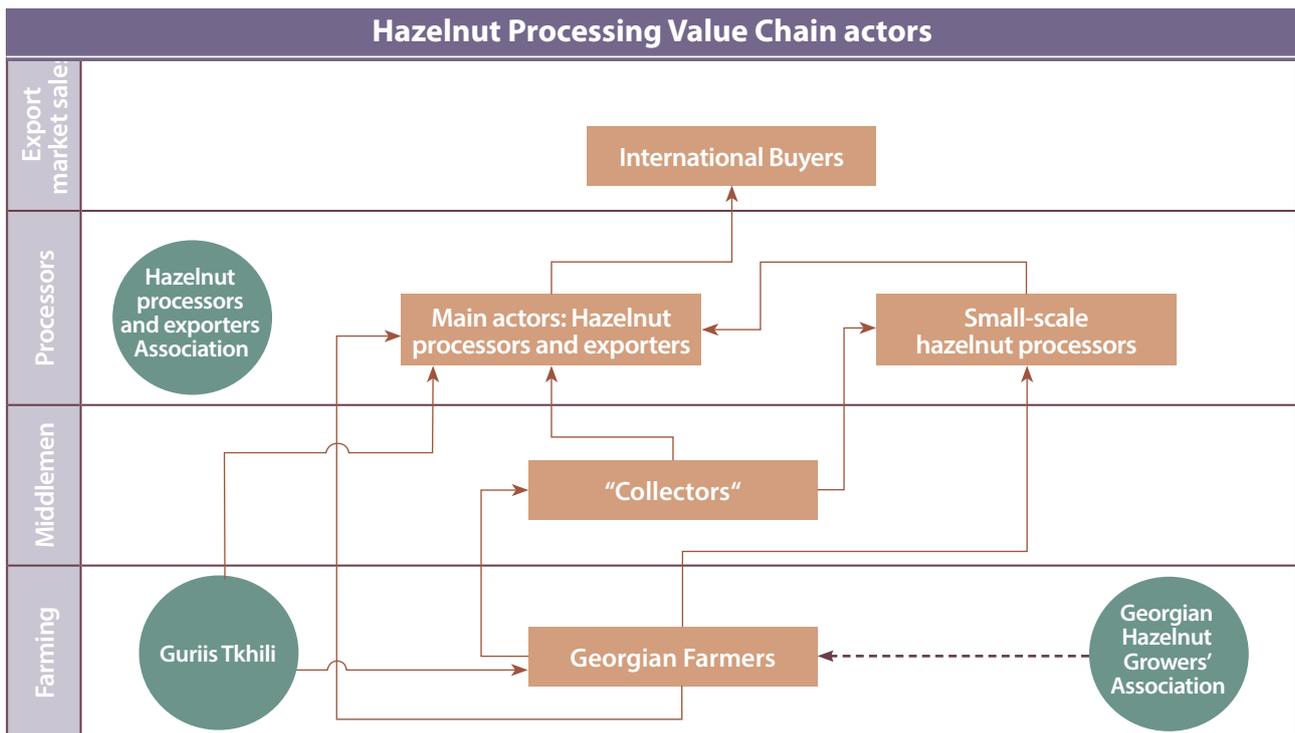
Overview of hazelnut processing value chain

The hazelnut processing value chain in Guria consists of various actors. The upstream of the chain are Georgian farmers, who supply the main raw material - hazelnuts to other actors. Farmers are actively supported by Georgian Hazelnut Growers' Association (GHGA), which can be considered as a separate actor of the value chain as well. In addition, a significant number of farmers are a part of the cooperative Guriis Tkhili, which can also be considered as an actor in the value chain. From the farmers "hazelnuts in-shell" go to:

- 1) Collectors who collect hazelnut from various farmers and sell them to processors in bigger bulks. Mostly, these individuals operate by having signs "collecting hazelnuts" on the streets and are not registered as individual enterprises. It is most common for farmers to sell their product to this group of the value chain.
- 2) Small-scale hazelnut processors, who are using machinery to dry and crack hazelnuts.
- 3) Hazelnut processors and exporters, who process hazelnuts like small-scaled processors and export them to international buyers.

The collectors sell in-shell hazelnuts to small-scale processors, or directly to processors and exporters, while small-scale processors sell hazelnut kernels to processors and exporters. Processors and exporters either export hazelnut kernel or engage in further processing and export more sophisticated products.

Diagram 1: Hazelnut processing value chain in Guria Region



According to one of the interviewed companies, apart from raw hazelnuts, electricity and labor force account for a large part of the variable costs of production inputs for the company (approximately 50-60%). Collectors add a sizable amount to the price of hazelnut kernels, which are the main raw materials for hazelnut processing firms. As a result, they are bought by approximately 8 GEL per kg. The factory price for processed hazelnut kernels is around 18.5-19.5 GEL per kg. Local retailers add approximately an additional 20% to the price of the kernels. As for the export price, it mostly ranges between 5.5-6.5\$.

HEPA suggests the price addition process along the value chain in Georgia as follows:

- Collectors add at least GEL 0.1 per kg of in-shell hazelnuts (GEL 0.15 at most).
- Small-scale processors add at least GEL 0.5 per kg of hazelnut kernels (GEL1 at most).
- Processors and exporters add at least EU 0.3 per kg of hazelnut kernel (about GEL 1). The margin is higher for more sophisticated products.

Overview of other fruit processing value chain

Apart from hazelnut processing, there are a few companies engaged in processing other fruits and vegetables.

One of the companies described their value-addition process on an example of one of their products - tangerine dried fruit. 60% of production inputs are fresh tangerines, costing about 1.2-1.4 Gel per kilogram. The rest of the costs are labor, electricity, gas, transportation, and packaging costs. 22 kilograms of tangerine are required to get 1 kg of dried tangerine. The firm reports having a profit ranging from 30-40% on this product. The factory price for 1 kg is 70 GEL, and it goes up to 78 GEL if the product is packed in polypropylene packaging. However, for retail sales, the product is packed in 50-gram boxes. The distribution price for this box is 4.5 GEL, and the average retail price is 6.5 GEL per box.

8 NATURE OF COOPERATION IN THE CLUSTER

8.1 CLUSTER CONNECTION

8.1.1 Connection between support institutions and principal firms

Hazelnut processing

The connections between enterprises and support institutions are very weak in the hazelnut processing sector of Guria Region. There is only one VET institution in Guria that does not have a connection with enterprises. According to the respondents, they do not have the necessity to communicate with the VET institution.

There is no association for hazelnut processing enterprises specifically in Guria Region. The companies are not the members of any business association.

When asking about the products and services support institutions provide to enterprises, most of the respondents were not able to remember any of such services. Some companies have been provided y the preferential loans by RDA.

Fruit and vegetable processing

The connections between enterprises and support institutions are very weak in the fruit and vegetable processing sector of Guria Region. There is no association in this direction. There are no active connections with VET institution. According to one respondent, in the past, there were some discussions with VET institution to establish some kind of cooperation, however, afterwards, this process was stopped for unknown reasons. One company received Horizont VET college students in the enterprise and delivered a lecture on the ongoing production process and the prospect of dried fruit production.

VET institution

Only one VET college - Horizonti is functioning in Guria Region. The college is located in Ozurgeti and has a branch in Chokatauri. The college plans to open another branch in Lanchkhuti in 2021.

Currently, the college has programs in 18 directions. However, none of the programs covers fruit and vegetable processing. During the last year, the college intended to establish a dual program in fruit and vegetable processing in Chokatauri and had communication with one of the companies operating in fruit and vegetable processing in Guria. However, communication between the company and VET college was cut off, as during 2019, the company had only fruit processing direction and it was not producing vegetables, while the VET college required the enterprise to have both directions. Moreover, as the company mentioned, during communication with the VET, it had a high indicator of staff turnover. This factor represents a challenge for VET college, as it needs permanent staff in enterprise to teach students.

During the interview, conducted under the given research, the company mentioned that they had recently added vegetable processing. Vet college is going to update communication with them.

Regarding the hazelnut processing, as the representative of VET college mentioned they haven't received any initiatives from the private sector recently.

Rural Development Agency (RDA)

Rural Development Agency (RDA) operates under the Ministry of Environment Protection and Agriculture of Georgia. Its key functions include planning and management of projects initiated by the Ministry of Environment Protection and Agriculture.

Currently, RDA does not have any specific program only for hazelnut processing or other fruit and vegetable processing sectors, however, hazelnut and fruit and vegetable processing enterprises in Guria can apply to the following programs: Preferential Agrocredit Project, The Program Supporting Young Entrepreneurs and Co-financing of Agro-Processing and Storage Enterprises.

Donor – USAID_G-HIP

Activities in Guria²⁵

The G-HIP confirmed that the project's activities are conducted all over the country and are also relevant for Guria, except for the training program of students in AgriGeorgia's facilities (exclusive for 5 educational institutions, none of which are in Guria). The training program helps students from universities who seek a career in the agronomy field take the trainings each year and have hands-on experience in AgriGeorgia's plantations. The program has been implemented for 5 years already, however, it was halted due to COVID-19 in 2020. The groups usually consist of 20-25 people and include students from Tbilisi (Agrarian University), Kutaisi, Batumi and Zugdidi (Shota Meskhia University). Even though these students do not specialize in hazelnut cultivation exclusively, most of them continue to work in this direction. 2 of the graduates of the training program are currently employed at AgriGeorgia as agronomists. As stated by the dean of Agrarian and Natural Sciences at Agrarian University, the program has been one of the most successful and prestigious internship programs implemented in the history of the university.

Georgian Hazelnut Growers' Association (GHGA)

Activities in Guria²⁶

Even though Gurian companies acknowledge that farmers are starting to take more care of the hazelnut and that the Phiarosana problem is mostly solved already, the GHGA has not been mentioned by the respondents during the interviews.

The GHGA is comprised of 25 000 farmers, out of which approximately 25% are Gurian farmers. As the GHGA is a country-wide association, all services that were relevant for Samegrelo-Zemo Svaneti Region are relevant and in place for Gurian farmers as well. However, the GHGA noted that in Guria the processes started later, and thus, the region is approximately one year behind in all aspects (including fight against Phiarosana bug and access to technologies). One important aspect in which Guria is also lagging behind is the development of drying and storage facilities. Currently, there is no such facility in the region, however, two facilities are planned to be developed before the start of the next season, in Lanchkhuti and Ozurgeti. The facility in Lanchkhuti was set to start operation in 2020, however, the optimal construction period coincided with heavy restrictions imposed due to the COVID-19 pandemic during March-May²⁷. As stated by the GHGA, the facility in Lanchkhuti will certainly start operation in 2021 while the facility in Ozurgeti is also likely to be ready for the next season, albeit there is a probability that it will not be ready in time. Overall, the construction of 5 such facilities is planned in Guria Region for the next 3 years. However, the drying facilities of the GHGA have not been mentioned by our interviewees.

²⁵ Activities of GHGA described in the "Hazelnut Processing Cluster Diagnostic Study in Samegrelo-Zemo Svaneti Region" reflected their activities in Georgia, including both Samegrelo-Zemo Svaneti and Guria Region.

²⁶ Activities of GHGA described in the "Hazelnut Processing Cluster Diagnostic Study in Samegrelo-Zemo Svaneti Region" reflected their activities in Georgia, including both Samegrelo-Zemo Svaneti and Guria Region.

²⁷ According to the GHGA, this was the only disruption caused by the COVID-19 pandemic, and other activities were conducted as planned, without major delays.

Hazelnut Processors & Exporters Association (HEPA)

Activities in Guria²⁸

The linkages between the HEPA and the hazelnut processing cluster are lacking. None of the respondents mentioned the HEPA during the interviews. The HEPA also mentioned that they have almost no members in Guria, and that their members are mostly concentrated in Samegrelo and Kakheti Region. However, the association remains a major player in the country, and in the future could also become a key player in Guria as well.

Laboratory - Multitest

Laboratory Multitest was mentioned frequently during the interview process. It was founded in 2004 and provides testing services for various cultures, including hazelnuts. The company is based in Tbilisi and has 23 employees.

The most demanding tests on hazelnut made in the laboratory are the following:

1. Aflatoxin
2. FFA – Free Fatty Acid level
3. Moisture content
4. Peroxide value
5. Heavy metal level

As the laboratory owns just one Chromatograph, and due to the long preparation process, the duration for Aflatoxin and FFA tests is 3-5 days (hazelnut respondents stated that it is up to 5 days). Also, a particular number of tests can be conducted in a single day.

The laboratory highlights the importance of regulating the currently unregulated laboratory market, and also the problem of the nonexistence of regional offices.

Laboratory – Anaseuli LTD Adam Beridze Soil and Food Diagnostic Center

Soil and food diagnostic center located in village Anaseuli, Ozurgeti Municipality, is one of the research centers under Scientific-Research Center of Agriculture, a state agency.

The center offers its diagnostic services to farmers and enterprises from all over the country. It mainly provides soil diagnostic service.

When asked specifically about the hazelnut processing sector, the representative reported low demand from the enterprises operating in the sector (just 3 firms in 2020). The low demand for the laboratory's services could be explained by the fact that it does not have aflatoxin testing as a service, which is crucial for export-oriented hazelnut firms.

However, Anaseuli laboratory has strong ties with GHGA. In fact, Anaseuli has been providing soil diagnostic service to GHGA farmers for 4 years in a row. GHGA reported that the partnership is based on a yearly tender for service, which has been consistently won by with a big advantage by Anaseuli laboratory, due to its combination of a low price and high quality.

In addition, one of the F&V processing firms has collaborated with the laboratory, providing them with the services of soil diagnosis.

²⁸ Activities of HEPA described in the "Hazelnut Processing Cluster Diagnostic Study in Samegrelo-Zemo Svaneti Region" reflected their activities in Georgia, including both Samegrelo-Zemo Svaneti and Guria region.

Guria Development Union

Guria Development Union is a non-governmental organization based in Ozurgeti and established in 2018. Their current projects include Agrotourism Festival; Development of Farm Enterprises; VET in Agriculture (UNDP). Implemented projects include “DCFTA Opportunities and Economic Empowerment of Women”. Also, the head of the union is involved in Save the Hazelnut Project that implies the improvement of knowledge in fighting against Phiarosana and the improvement of harvest in hazelnut orchards.

In the project entitled “DCFTA Opportunities”, hazelnut farmers represented the beneficiary segment. The project delivered trainings for the implementation of hazelnut regulation with the engagement of experts from the NFA and the Ministry of Environment and Agriculture.

The project “Economic Empowerment of Women” encompassed various agriculture subsectors (including hazelnuts). The beneficiaries received trainings in planning and management of resources, production of ecologically clean products and bio-farming.

The project “VET in Agriculture (UNDP)” is delivering trainings for the institutional development of Farmers Consultative Councils on the topics of organizational management, writing project proposals and advocacy.

Supplier of raw materials - Cooperative Guriis Tkhili

Cooperative Guriis Tkhili began operation in 2014 with 5 members and it currently unites 98 members. The annual membership fee is GEL 300. Cooperative built a processing facility with the support of a preferential agro-credit program and installed production technologies with the assistance of the EU. Enterprise is specialized in the production of roasted nuts targeting the local market. Cooperative members also pursue cattle breeding and beekeeping.

The cooperative provides consultations on the topics of the Phiarosana attack, distributes respective information materials, conducts information campaign and provides knowledge in the maintenance of orchards. Also, cooperative constantly spreads and shares information on various standards. It provides farmers with price information on the local market, supports them in selling the products and arranging brand packaging. Moreover, cooperative supports members in filling Enterprise Georgia applications.

Cooperative has problems in acquiring commercial loans from commercial banks as collateral requirements are too high. As the representative mentioned the refundable fund created in the framework of CARE, the project is a relief in this direction. The support from the state shall be on a larger scale. There is a problem in granting and eliminating cooperative status. In fact, the cooperative status does not give any benefits nowadays. At the initial stage, mini tractors were purchased with 75% financing from the state, but the quantity of tractors was limited. The mechanization services are expensive, and access is limited.

The cooperative members are determined to re-invest profit in new orchards. The basic problem in Lanchkhuti Municipality is the dominance of specific shrubbery, that occupies 130 000 hectares of land. These areas shall be processed that will give free land for new orchards, but the cooperative lacks technologies and resources to undertake this work.

The adoption of the HACCP standards in the enterprise is planned with the assistance of the government. Moreover, cooperative has an agreement with Kardli to secure wholesale price access to fertilizer and absorption means.

According to the cooperative, there is no cooperation with VET institution. For them, cooperation with VETs would be interesting as far as there are difficulties in finding agronomists and veterinarians. It turned out that youth have difficulties commuting to Ozurgeti, where VET institution resides.

According to the cooperative, Guria Region is not a target for donor organizations, and there is a lack of donor programs.

8.1.2 Links between principal firms

Competition and competitors

Hazelnut processing

According to the respondents in Guria, the number of hazelnut processing companies is very small and mainly, the level of competition is low. The competition between the companies mainly exists during the process of purchasing raw materials and this is caused by the low amount of primary hazelnut. The only medium-sized enterprise respondent considers Ferrero to be the main competitor for hazelnut processing companies in Guria Region, as it has resources to purchase primary hazelnut at higher prices from farmers. Moreover, one respondent also mentioned that they try to hide their trade partners from other hazelnut processing companies in Guria. As for some companies, there were cases, when competitors start communication with their trade partners, offering them provision of hazelnut at low prices.

Fruit and vegetable processing

For fruit and vegetable processing companies in Guria Region, the main competitors are fruit and vegetable processing companies in Georgia. However, companies are not afraid of competition. One of the respondents recorded: "as far as the quantity of dried fruit is not large, the current quantity would be sold".

Links between enterprises and potential for collaborative action

Hazelnut processing

Based on the conducted interviews, the links between hazelnut processing enterprises are not strong. Enterprises do not cooperate to collectively purchase raw materials. Also, other possible collaborative actions like logistics, joint sales, export or policy advocacy are not done together.

According to the respondents, they always try to help each other and there are always cases when some companies require additional raw materials (hazelnut or packaging materials) or working force. In this case, companies are always ready to support competitors. One respondent mentioned that they support other hazelnut processing enterprises when some trainings are needed, and their staff members can provide such trainings.

When asked if they would recommend hazelnut enterprises in close proximity to the client in case of insufficient production, part of the companies mentioned they do so, however, some of them mentioned they are not able to do so because in this case, they will probably lose the client in the future. Moreover, according to the companies, there are trust issues regarding the quality of competitors' production.

Most respondents consider collaborative actions to be hardly achievable. Policy advocacy and joint negotiations are mostly mentioned by the companies as directions for joint actions. However, companies think they do not have substantial problems requiring advocacy. The second direction for collaborative action is purchasing raw materials together, as it can lower the price of raw materials. One of the respondents indicated that companies could unite and set prices for raw materials together.

Most of the interviewed companies do not consider collaborative action in joint sales and export, as all of them have their clients, and they hide this information from each other.

However, one smaller-scale enterprise reports that they have combined resources with 2 other enterprises because of the low-scale of single production and engage in joint sales. More specifically, it is required to have 22 tonnes of hazelnut kernel in order to fill one truck, which is mostly a big quantity for one of the companies at a given moment. In addition, the same company reported having linkages with a more advanced company in Samegrelo. They use advanced machinery of the partner in Samegrelo for making more advanced products from hazelnut kernels, such as blanched hazelnuts.

Currently, the respondents do not cooperate with the association HEPA located in Samegrelo-Zemo Svaneti. It was mentioned by the respondents that association establishment in Guria might be beneficial for hazelnut processing companies, however, the activities of the association shall not be limited only to the provision of information. One of the services of the association, mentioned by the respondents, might be a support for companies to attend the international exhibitions.

Fruit and vegetable processing

Based on the conducted research, the links between fruit and vegetable processing enterprises in Guria Region are not strong. Enterprises do not cooperate at all. However, they would consider collaborative actions if there is such a possibility.

When asked, if they recommend other enterprises in close proximity to clients in case of insufficient production, the companies mentioned they do so.

8.2 COOPERATION MATRIX

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

Table 15: Cooperation matrix

Cooperation Matrix												
Name	Core firms	RDA	VET	USAID	GHGA	HEPA	Guria Development Union	Multitest	Anaseuli Laboratory	Financial Institutions	Suppliers of raw materials	Total
Core firms	X	3	1	0	2	0	1	4	1	3	3	18
RDA	3	X	1	3	1	1	1	0	4	4	3	21
VET	1	1	X	0	0	0	0	0	0	0	0	2
USAID	0	3	0	X	5	4	2	0	3	0	2	19
GHGA	2	1	0	5	X	3	0	0	5	4	5	25
HEPA	0	1	0	4	3	X	0	1	0	4	0	13
Guria Development Union	1	1	0	2	0	0	X	0	1	0	4	9
Multitest	4	0	0	0	0	1	0	X	0	1	0	6
Anaseuli Laboratory	1	4	0	3	5	0	1	0	X	0	4	18
Financial Institutions	3	4	0	0	4	4	0	1	0	X	1	17
Suppliers of raw materials	3	3	0	2	5	0	4	0	4	1	X	22
Total	18	21	2	19	25	13	9	6	18	17	22	X

According to the cooperation matrix, the associations GHGA has the strongest linkages with stakeholders of the hazelnut processing cluster in Guria Region, while VET college has the least linkages with different stakeholders.

Financial institutions also have strong linkages with stakeholders, as core firms apply to them to finance their activities. RDA also works with financial institutions through their programs when financing enterprises. Moreover, associations work with them actively.

9.1 TECHNOLOGY

International standards, certification

In four interviewed companies, the production processes are being implemented in compliance with international standards such as HACCP. Only two companies have obtained ISO22000, while in 4 companies that do not yet have HACCP in place, the process is underway or planned.

Cooperation with laboratories

Enterprises exporting hazelnuts collaborate with laboratories, while those who sell on the local market (typically to larger-scale processing enterprises or to local distributors) generally do not. The laboratory companies cooperate with Multitest and the Laboratory of Agrarian University (TestLab). One of the respondents noted that TestLab has the advantage to give the results quickly, in just 3 hours, compared to 48 hours at Multitest. The two are located in Tbilisi. Some companies also mentioned small-scale laboratories in closer vicinity, such as Ozurgeti, where the humidity of the nuts can be measured, and Batumi, where samples can be tested on aflatoxin. However, some respondents claim that the services of laboratories are too expensive. One of the companies in other fruit and vegetable processing cooperates with laboratories Multitest and Expertise +, both located in Tbilisi. Moreover, they have their own laboratory, where the primary testing is done. Another F&V processing enterprise cooperates with an accredited laboratory in Tbilisi, while it opts for German laboratories when exporting their products.

Adequacy of current technology and access to technology specialist

Hazelnut processing

The respondents from the smaller enterprises think that the existing production technology is not adequate to support business growth and is obsolete, while larger enterprises mostly characterize their equipment to be modern and in good condition.

In general, the equipment deployed by companies is imported from Turkey, as in Georgia, the equipment for hazelnut enterprises is not fully available. Recently, some of the equipment, like hazelnut crushing machine, dryer, machine for hazelnut calibration have been assembled in Georgia. One of the firms stated that parts of their machinery have been purchased in Turkey and assembled in Ozurgeti.

Some of the interviewed companies experienced breakdowns during production processes. Depending on the scale of such failures, they are fixed either by companies' specialized staff or invited technicians. Half of the respondents have technicians themselves (mostly larger enterprises), while another half are outsourcing this service. However, there is a lack of qualified technicians and electricians on the market.

The main source of information relating to new technologies for hazelnut producers is the internet and international partners.

Fruit and vegetable processing

One F&V processing enterprise states that the current technology is adequate for supporting business growth, as the production capacity is not yet fully utilized. The company employs fruit drying technology from Ukraine and has an in-house production technologist who has the experience in working in Ukraine and Poland. The technologist is also the main source for information about the new tech-

nologies through contacts in Ukraine and Poland. The enterprise has not experienced a breakdown in production technology yet, however, they have access to a technician if it happens. The enterprise deems their drying technologies to be comparable to those of their competitors.

Another F&V processing enterprise states that their current technology is modern and adequate enough for supporting business growth. The enterprise is planning to add vegetable-bottling equipment in the nearest future. The company employs production technology specialist in-house as well. It rarely experiences breakdowns in equipment but has own technicians to deal with such case. However, if some parts are not fixable, they have to order them from abroad, as parts are not available in Georgia. The enterprise deems their drying technologies to be comparable to those of their competitors.

9.2 INNOVATION AND R&D

Sources of information about innovative developments in the field

The majority of the interviewed enterprises in fruit and vegetable processing sector in Guria Region does not have R&D collaborations with scientific research centers, universities/VET colleges, BDS providers, etc. Only one enterprise has active cooperation with Anaseuli Research Center on soil analysis.

The main source for companies to get information about innovations are their trade partners, international exhibitions and the internet.

There is a lack of recently implemented innovations by the interviewed processing companies in Guria Region. One of the respondents reported the recent novelty to be the adoption of cleaning aggregate, that saves labor force costs, purchase of better packaging materials and establishment of direct partnership with Germans. Another company is planning to start producing pasta in the near future, and currently, is searching for the equipment to purchase. While two companies mentioned launching the production of fruit tea and canned vegetables were the most recent innovations for them.

9.3 MARKETING AND SALES

Main markets and sales channels

Hazelnut processing

Smaller processing firms that do not have exports sell shelled hazelnuts to bigger processing and exporter firms. Thus, after moving between various actors in the value chain, the final destination of hazelnuts are typically foreign markets and for the most part, they are being marketed as a wholesale product to other businesses in target markets. Each interviewed exporter firm stated that they export 81-100% of their product, while one of them also mentioned having sales to the domestic HORECA sector.

The main target markets for most exporters are the EU countries, mainly Italy, Germany and Czech Republic. Other less pronounced groups of target countries include Russia, Ukraine and the Arab States. One of the respondents has a partner in Turkey, in cooperation with whom the company exports to different EU countries. Many of the firms plan to expand their presence in already established target markets, while some of them want to infiltrate new markets (such as China and other Asian countries) in the medium-term.

Some exporters actively cooperate with middlemen, the so-called traders in the process of export, who are mostly Turkish. Most of the exporters stated that they communicate with prospective clients directly. One respondent mentioned attending international fairs as a method for attracting new clients.

Fruit and vegetable processing

One F&V enterprise is mostly oriented on the local market, with the share of exports within 0-20% range. They have had an experience of exporting to Germany and collaborated with the middlemen. On the local market, they sell the product on retail market networks such as Goodwill, Smart and Nikora. The firm has its distribution channel in Georgia. In the medium-term, the firm is targeting at EU market for export, and obtaining HACCP certificate will be crucial for that.

Another F&V enterprise is also mostly concentrated on the local market, however, their share of export is approximately 30-40%. The main target countries are the USA, Canada and Israel. On the local market, the enterprise has wholesale sales directly to the large supermarket chains in Georgia, and the firm uses its own distribution channels.

Challenges during the export process

A number of interviewed hazelnut processing enterprises stated that they have not experienced any problems during their export process. However, others stated that they face several problems in the field of trade procedures. More specifically, one enterprise stated that on the border of the EU (Poland and Bulgaria), the product goes through a mandatory phytosanitary check that costs EUR 600-700 per vehicle.

In rare cases, when the container with hazelnut products is not permitted by the customs to enter the border (for instance Aflatoxin level is higher than allowed by the food and safety regulations of consignee country), the goods are returned and transported back to the producers, cost of which is much higher than export shipping.

Sources of information about market developments

Most interviewed enterprises report having full information about market developments via the internet and their own research. Moreover, for one company information is provided by the donor organization, like USAID, while for another one attending international fairs is one of the sources to gain market information.

Expectations about the development of the sector

Although most of the interviewed enterprises acknowledge the fact that the sector is in a crisis right now, mainly due to quality issues originated since the Phorosana problem and more recent demand problems associated with the COVID-19 pandemic, they still remain optimistic about the long-term growth of the sector. This optimism can be mainly attributed to the growing global demand for hazelnuts and improved cultivation practices from farmers. One enterprise thinks that the adoption of HACCP on a larger scale in the region will be a major factor contributing to the growth of the sector, while others highlight the importance of further improving hazelnut quality.

9.4 BUSINESS RESOURCES

Sources of finance

The majority of interviewed companies in the hazelnut processing sector have not received any grants, loan or incentives from government or donor organizations yet. Only three of them have used the Preferential Agrocredit Loans provided by RDA together with commercial banks. One of the companies in the fruit and vegetable processing sector has received a grant from Enterprise Georgia.

For the majority of respondents, initially, enterprises were funded by owners' savings. Only in one case, the enterprise was funded with the profits of the owners' other enterprises.

For the majority of the interviewed companies, access to finance remains a challenge. High interest rates on working capital loans and high collateral requirements on loans in commercial banks represent the main challenge. One of the interviewed companies reported: "13%-15% interest rates on working capital loans in national currency from commercial banks are very high for us".

Future investment plans

The vast majority of the interviewed enterprises have some strategic plans for expansion for the next two or three years. Only one company mentioned they do not have such plan. One of the respondents claimed they also planned to expand in previous years, however, due to the low quality of raw materials the plan was not realized.

One of the respondents plans to add new machinery. Another one plans to start producing paste and for this, new equipment will be needed. Also, one company plans to start processing blackberries, raspberry, wild cranberries. Some companies plan to start exporting to new markets, like Germany, China, Asian countries.

9.5 HUMAN RESOURCES

Hazelnut processing

The number of employed people among interviewed small enterprises ranges between 15 to 35. LLC Global Export, the only medium-sized enterprise in the region, employs 100 people during the high season. Most of the employees in all enterprises (more than 80%) are women, who are mostly engaged in picking the hazelnuts.

Most of the companies offer fixed wages to their employees, however, some also employ performance-based compensations. None of the enterprises mentioned having implemented motivation programs for their employees.

According to the respondents, the skills and knowledge of their employees are satisfactory. However, many of them mentioned that, in general, the level of knowledge of employees is still a challenge for the hazelnut sector in Guria and there is a need for improvement.

Enterprises provide their staff with relevant trainings in sorting, safety, hygiene norms, usage of technology. None of the interviewed companies has any cooperation experience with Universities, VET institutions or other educational establishments. Moreover, most of them also stated that they do not need it, as they can train personnel themselves. However, some enterprises highlight the lack of qualified staff as a problem, mainly in the field of hazelnut-specific specialists, management and foreign languages.

Fruit and vegetable processing

One enterprise in F&V processing employs 18 employees in total, 9 on a permanent basis, and 9 seasonally. The remuneration is based on performance, and employees are motivated through a bonus scheme based on their productivity. The staff has been provided by on-the-job trainings in the fields of technologies and safety. The enterprise has collaborated with VET institution in Ozurgeti, Horizonti. The students from the college visited the enterprise and a lecture on the ongoing production process and the prospect of dried fruit production was delivered to them.

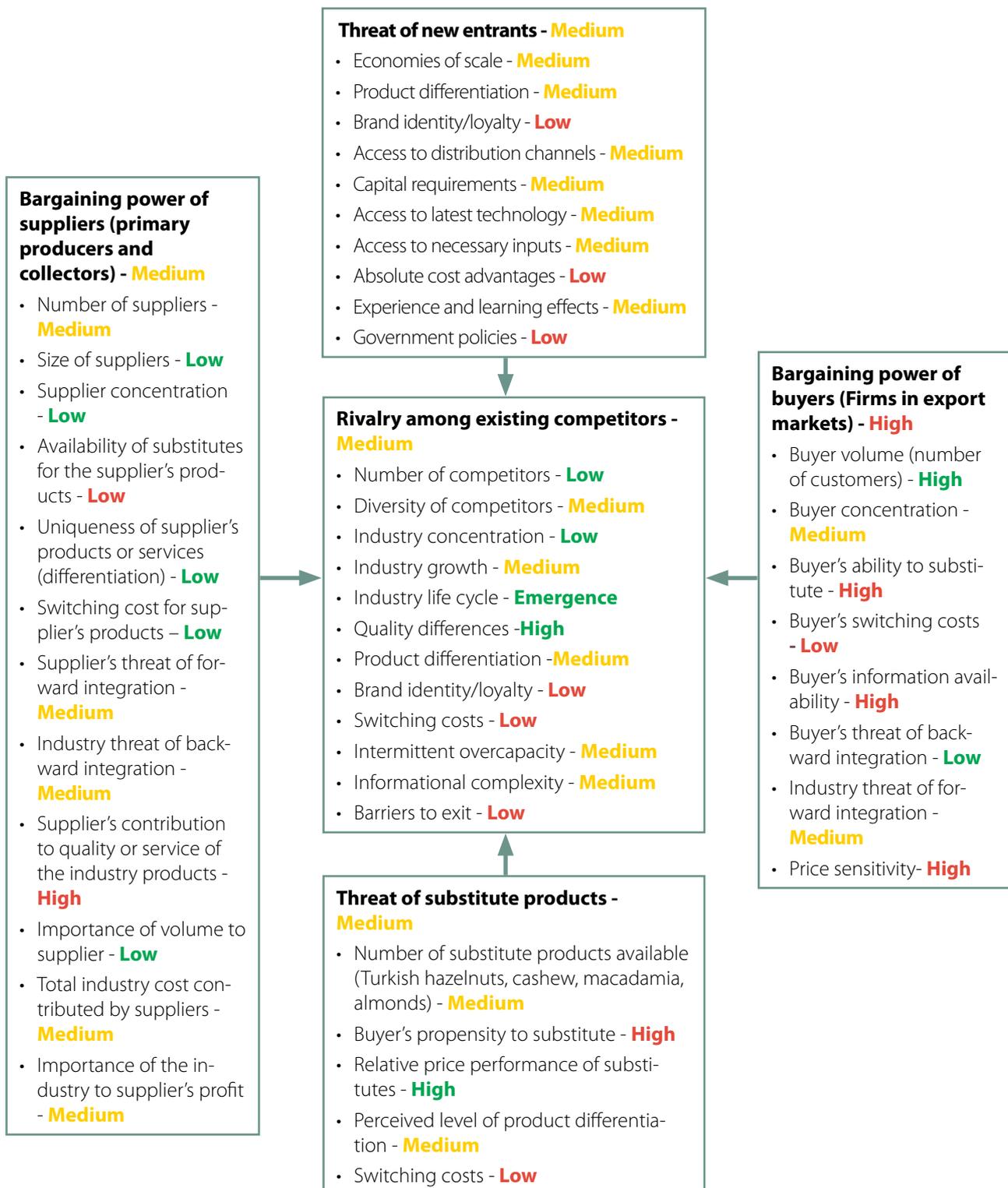
Another F&V processing enterprise employs 50 people, and most of them have fixed wages, while some of them have performance-based remuneration. The enterprise delivers training to its employees regularly on the topics of safety, sanitation and hygiene. The respondent stated that there is a lack of food technologists, chemists and microbiologists on the job market. The enterprise has collaborated with VET institution in Ozurgeti, Horizonti, and the students have visited the firm's facilities several times, however, due to unknown reasons to the respondent, the cooperation stopped.

9.6 SWOT ANALYSIS

<p>Strengths</p> <ul style="list-style-type: none"> - Suitable climate conditions for fruit and vegetable processing - Favorable location for hazelnut processing (abundance of raw materials) - Government programs financing fruit and vegetable processing - High demand at global markets on hazelnut - Improvement of quality standards of raw materials by farmers 	<p>Weaknesses</p> <ul style="list-style-type: none"> - Chaotic Hazelnut market - Low productivity of raw material - Lack of quality and quantity of raw material - Seasonality of the raw material - Non-utilization of full capacity due to lack of quality and quantity of raw material - Obsolete part of the hazelnut value chain – the collectors - Lack of collaboration among principal firms - Lack of collaboration between principal firms and support institutions - Lack of trust among principal firms - Non-existence of local association in fruit and vegetable processing - Lack of learning programs in direction of fruit and vegetable processing - Unfavorable conditions for enterprises in local laboratory - Scarcity of utilization of recycling, renewable energy and sustainable systems - Lack of access to finance <ul style="list-style-type: none"> • High interest rates on loans • High collateral requirements • Lack of access to working capital financing
<p>Opportunities</p> <ul style="list-style-type: none"> - Access to the EU market - Increasing demand for higher value organic products - Possibility to develop short-term educational programs in direction of fruit and vegetable processing in Guria Region - Government and donor support programs for the fruit and vegetable processing sector - Increasing demand for hazelnut and other fruit and vegetable in global markets - Innovative hazelnut derived products reaching global niche markets 	<p>Threats</p> <ul style="list-style-type: none"> - Pharosana and fungal diseases - A single country (Turkey) dominance at international hazelnut market, resulting in increasing dependency on hazelnut prices and market attributes. - Possible less engagement of donor and government agencies supporting fruit and vegetable processing sector - Strong control and barriers to export market customs (consignee countries, mostly EU)

9.7 PORTER'S 5 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, colours were assigned to each statement, red implies a fiercer competition, orange implying moderate competition and green implying low competition. For instance, if a number of suppliers is high, green is assigned to the statement, as the higher number of suppliers contributes to the lower bargaining power of suppliers and ultimately contributing to the lower competition. The detailed analysis of the sector using the Porter's model of five forces for hazelnut cluster in Guria is given below:



10 CLUSTER MAP

The chapter provides information about the existing linkages of the cluster.

- The linkages between cluster member core enterprises and support institutions are very weak in Guria region.
- The linkage between cluster member core enterprises and VET institution does not exist.
- The linkage between core enterprises and RDA exists, however, it is not strong enough.
- The linkage between HEPA and core firms does not exist.
- The direct linkage between principal firms and GHGA is non-existent, however, activities implemented by GHGA has the indirect impact on principal firms, as GHGA works in direction of raw material.
- The linkage between principal firms and financial institutions exists, however, cluster members' experience in this direction is not good enough, as conditions of financing offered by financial institutions are not suitable for them.
- The linkage between cluster members and donor organization, like USAID, does not exist.
- The linkage between cluster members and laboratories exists, they mainly cooperate with Multitest.
- The linkages between principal firms and suppliers of raw materials are not weak. Principal firms cooperate with farmers, purchase primary hazelnut from them.
- The linkages among the cluster principal firms are very weak and need to be strengthened. Enterprises need to develop mutual trust to carry out joint initiatives and to develop a common vision.

The cluster map is given in the diagram below:

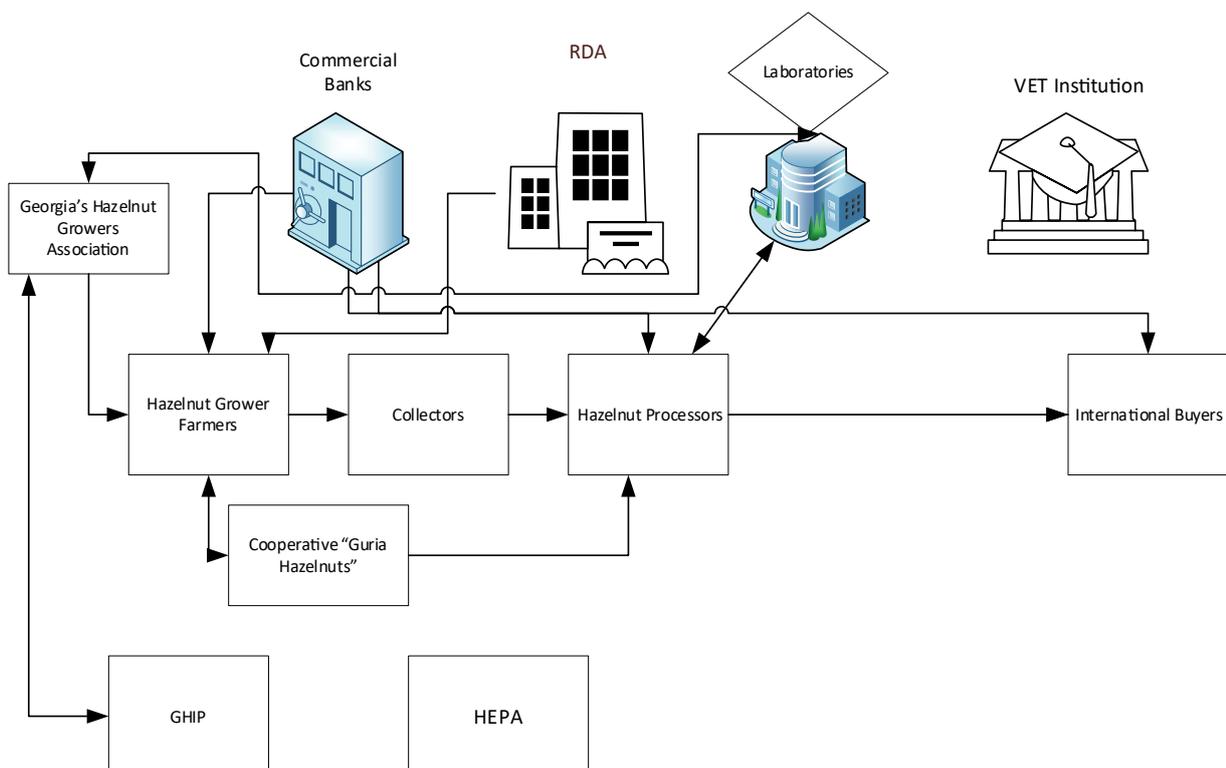


Diagram 3: Hazelnut processing cluster map in Guria Region

11 VISION FOR THE CLUSTER

The vision of the fruit and vegetable processing cluster in Guria Region is to increase the efficiency of the cluster by working together to increase access to good quality raw materials, solve the problem related to insufficient quantity of raw materials, have access to finance and information and increase the efficiency of human resources. Also, to increase access to global markets via participation in international marketing events, resulting in increased export competitiveness of Georgian fruits and vegetables.

12 CURRENT PRESSURE POINTS AND SHORT-RUN OBJECTIVES OF THE CLUSTER

12.1 SUMMARY OF CHALLENGES OF THE CORE FIRMS

12.1.1 Problems for hazelnut processing enterprises

Lack of variety

Most enterprises engaged in the sector only produce hazelnut kernels. Many respondents stated that they would like to acquire equipment in order to produce more sophisticated hazelnut products, such as roasted hazelnuts for instance.

Quality of raw materials

Due to the problems caused by Phiarosana and fungal diseases, the quality of hazelnut is insufficient for processing companies in Guria. Although the situation is improving, this problem still represents a huge external factor, prevention of which is crucial for the development of stable hazelnut sector .

Access to inputs

For the interviewed enterprises, access to inputs represents a challenge. In general, collectors purchase hazelnut from farmers and then, sell the production to processing enterprises. According to the respondents, typically collectors do not consider market prices and sell products at a very high markup.

Insufficient quantity

According to the interviewed enterprises, they do not utilize the full capacity of their enterprises due to the insufficient quantity of hazelnut. According to them, the demand is higher compared to supply. Insufficient quantity is strongly linked with the quality of raw materials, affected by Phiarosana and fungal diseases.

Volatile prices

Volatile prices represent a major problem for hazelnut processing enterprises. That applies to both raw material prices and global market hazelnut production prices. Global market hazelnut production prices are highly dependent on Turkish prices that is unpredictable. As mentioned during the focus group meeting, Georgian hazelnut is priced 50 cents lower than the Turkish one. The price differences arise from the long-term ties that Turkish companies have established with their clients, and their ability to make consignment sales.

The main source of raw materials for hazelnut processing enterprises are collectors, who purchase hazelnut from farmers. The prices of raw materials are very volatile in Guria and there is an overall dissatisfaction with the pricing strategy of collectors.

On the focus group interview, it was noted that prices could range from 2-3 GEL to 13 GEL per kg, and that the changes are highly unpredictable, which makes it harder to make plans.

Access to finance

One of the most widely mentioned challenges faced by hazelnut processing enterprises is access to finance. Most interviewed companies have commercial bank loans and find it difficult to make payments.

Financing working capital represents a major challenge for respondents. According to them, interest rates of commercial bank loans are too high, as they fall in the high-risk category because of the Pharosana problem.

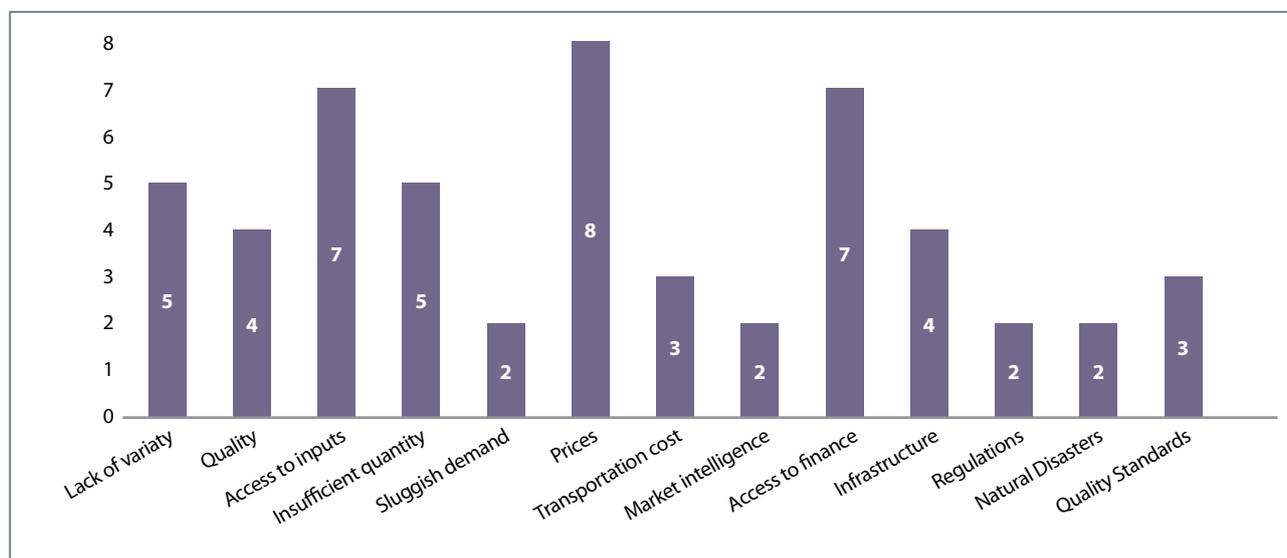
In addition, the focus group interview revealed that most government programs have harsh requirements for liquidity of the enterprises, and it is very costly for them to check all the boxes to enter the contest.

In order to tackle the problem, cooperative Guriis Tkhili is engaged in a project administered by CARE. Under the project, a special grant mechanism was established in 2017. The mechanism assigns grants to the beneficiaries, however, with an obligation of repaying it within 5 years' time. The repaid money does not return to CARE but instead goes into a fund, which is responsible for making additional loans to the beneficiaries. The decisions about granting loans are based on a rigorous review of applicants made by a special board. As of 2020, 36 cooperatives were involved in the fund project from all over the country. As stated by Guriis Tkhili, the mechanism has been a success so far, however, it does not have an analog in governmental or donor programs.

Moreover, some concerns were made about the current privatization practice of the government. It has been noted that in order to receive a land for 1 GEL, there is an obligation for the company to make an investment in the land which is worth 4 times the market value of the land and facility. While this obligation by itself is not a problem, the evaluation of the land has been criticized, as assigned market value by Samkharauli National Forensics Bureau. The latter is the only authorized body to make such assessments, reportedly, mostly overestimates the market value by a large amount. This is a huge obstacle for potential investors for making investments.

In graph 10, a summary of the general problems mentioned by the 8 interviewed enterprises in the hazelnut processing is provided. Volatile prices, access to finance (working capital), insufficient quantity (related to the Pharosana problem) and lack of variety are the most stressing challenges for the enterprises.

Graph 10: Hazelnut processing: Main problems underlined by the respondents



Source: Field Research

Specific Challenges of the hazelnut sector

Nonexistence of relevant laboratory

Currently, there is no large-scale laboratory available in Guria Region that represents a challenge for hazelnut processing enterprises. They need to wait for the results of the analysis for several days, which hinders their production process. Anaseuli State Laboratory provides an analysis that is more relevant for farmers (Land Analysis), and does not have a service for testing Aflatoxin. This is crucial for firms exporting hazelnuts.

Technical problems – Procurement Act

Some companies mentioned the procurement act represents problems for hazelnut processing enterprises. When companies purchase the product from farmers, they create procurement acts, which is a time-consuming procedure as companies have to buy products from hundreds of farmers and create hundreds of such documents.

Obsolete part of the value chain – the collectors

According to the respondents, the collectors contribute to two of the main challenges for the target enterprises: 1) Low quality - as they mix hazelnuts produced by many different farmers, and do not track them, the overall quality of the product falls significantly 2) Price volatility - they make uninformed decisions about pricing, which often disrupts the market prices.

Other challenges

- Chaotic hazelnut market in Guria, especially during hazelnut harvest when the region is supplied with low quality hazelnuts of uncertain origin. Such acts have a negative impact on the quantity of the product and supply chain.
- According to several respondents, besides the benefits Georgia can get from EU regulations in the long-term period, strict standards complicate the whole production process in the short and medium-term. Nevertheless, the barriers at the EU export market borders are present.
- As reported during interviews, Georgia has to learn and pursue better international experience on hazelnut sector operation, models and structure of successful hazelnut value chain.

12.1.2 Problems for other fruit and vegetable processing enterprises

For one F&V processing enterprise, the main problem is the insufficient quantity of fruits and vegetables. The respondent also highlighted the importance of creating a sector-specific, dried fruit producer's association. Sluggish demand, access to finance, transportation costs, natural disasters, and business climate (non-favorable conditions of supermarkets for accepting domestically produced products in their stores) were also named as the main problems for the enterprise.

The enterprise also highlighted that access to finance is a problem, and that the existing programs have harsh requirements. It was also noted that the lack of information about different programs could also be contributing to the problem.

In addition, they mentioned that the scale of their production is mostly not enough to interest European clients.

The representative of another F&V processing enterprise also named the insufficient quantity of fruits and vegetables in the region as a key challenge. Also, the high cost of transportation from regions located relatively further away was mentioned.

The focus group discussion suggested that the problem of insufficient quantity has two main reasons: the non-existence of storage facilities where farmers can deliver their products, and also the lack of culture in Gurian farmers to take care after orchards. Also, this problem is different for different cultures,

for instance, tangerine production is well-developed, and this problem is less evident, however, getting enough amount of other cultures, such as pear, for instance, was quite problematic for one of the F&V processing enterprise.

12.1.3 Challenges related to COVID-19

Apart from general and sector-specific challenges, the F&V processing enterprises also had some challenges related to the COVID-19 pandemic.

Those enterprises that are also selling their products on the local market, stated that demand from HORECA sector decreased due to the decline in tourism, which affected the companies' sales adversely. Other enterprises have indicated that regulations that were related to COVID-19, such as providing masks and disinfection facilities, contributed to higher costs. In addition to this, one of the enterprises stated that they could not renew their ISO 22000 certificate due to the restrictions. Moreover, hampered export processes and negotiations were also named as one of the consequences of the pandemic. However, some enterprises also noted that external demand for the processed goods has not declined and the sector has not stalled and continued operating.

12.2 OBJECTIVES OF THE HAZELNUT PROCESSING CLUSTER

The objectives of the fruit and vegetable processing cluster in Guria Region are the following:

- Strengthening cooperation and building trust among cluster members
- Improving access to good quality raw materials
- Improving capacity of human resources
- Increasing access to finance
- Increasing capacity of support institutions
- Increasing access to global markets
- Increasing links with companies and support institutions in a relatively more developed neighbouring cluster of Samegrelo Zemo-Svaneti²⁹

For each objective, the respective activities, outputs, and outcomes are defined in the table below. Moreover, for each objective, the problems solved under this objective are specified.

²⁹ this is especially relevant for hazelnut processing firms)

Table 16: Objectives, activities, outputs, and outcomes of the hazelnut processing cluster

Objective	Activities	Outputs (Indicators)	Outcomes	The challenges solved under this objective
Strengthening cooperation and building trust among cluster members	<p>Development of trust-building activities among cluster members:</p> <ul style="list-style-type: none"> • Increase awareness of cluster members about the importance and benefits of joint actions and encourage cluster members to work together • Developing dialogue platforms for cluster members • Support cluster members to establish joint activities, like purchasing of raw materials, selling together, or advocating policy issues, etc 	<ul style="list-style-type: none"> • Number of meetings/ events/discussions for awareness-raising about the importance and benefits of cooperation • Number of cluster members attend the meetings/events/discussions • Number of cluster members willing to cooperate • Number of joint actions 	<ul style="list-style-type: none"> • The trust among the cluster members is improved • The level of cooperation among the cluster members is increased • Cluster members undertake joint initiatives together 	Lack of cooperation among cluster members and lack of trust between the actors
Improving access to good quality raw materials	<p>Supporting cluster member core enterprises to increase cooperation with suppliers of raw materials</p> <ul style="list-style-type: none"> • Increase the level of communication among cluster member core enterprises and suppliers of raw materials discussing the importance of quality issues • Creation of more cooperatives • Support creation of mutual storage facilities where farmers can deliver their products (mostly for cultures other than hazelnut) 	<ul style="list-style-type: none"> • Number of meetings of cluster core firms with the suppliers of raw materials 	<ul style="list-style-type: none"> • Quality of raw materials is improved in Guria Region 	<p>Low quality of raw materials</p> <p>Lack of access to inputs</p> <p>Insufficient quantity</p> <p>Volatile Prices</p> <p>Obsolete part of the value chain – the “collectors”</p>

<p>Improving capacity of human resources</p>	<p>Cooperating with VET college</p> <ul style="list-style-type: none"> • Developing short-term dual educational programs by VET college in Guria meeting the requirements of core enterprises • Developing joint training programs for staff • Increasing cooperation of cluster core firms to provide staff with relevant knowledge 	<ul style="list-style-type: none"> • Number of meetings of cluster members with VET college • Number of developed short-term dual educational programs in fruit and vegetable processing • Number of joint trainings 	<ul style="list-style-type: none"> • Short-term dual programs in fruit and vegetable processing are established in VET college 	<p>Shortage of skills</p> <p>Low quality of raw materials</p>
<p>Increasing access to finance</p>	<p>Developing cooperation with financial institutions (FI)</p> <ul style="list-style-type: none"> • Collaborating with FIs to develop financial products adjusted to sectoral needs <p>Developing cooperation with government agencies</p> <ul style="list-style-type: none"> • Encouraging RDA and Enterprise Georgia to include hazelnut processing in the priority sectors and develop special programs tailored to sectoral needs 	<ul style="list-style-type: none"> • Number of meetings among cluster members, FIs and government agencies (RDA and Enterprise Georgia) • Number of financial products developed by FIs adjusted to the needs of core enterprises • Number of programs developed by RDA and Enterprise Georgia in direction of hazelnut processing 	<ul style="list-style-type: none"> • Access to finance of cluster member core enterprises is increased 	<p>Lack of access to finance</p>

<p>Strengthening capacity of support institutions</p>	<ul style="list-style-type: none"> • Support creation of the association in fruit and vegetable processing sector • Support associations to implement consultancy services for core enterprises • Support the association to conduct advocacy campaigns with FIs for developing financial products adjusted to the needs of core firms • Support the association to conduct advocacy campaigns with RDA and Enterprise Georgia to create programs meeting hazelnut processing enterprises 	<ul style="list-style-type: none"> • Number of associations in fruit and vegetable processing • Number of advocacy campaigns of association with government bodies • Number of advocacy campaigns of association with FIs • Number of consultancy services developed by the association 	<ul style="list-style-type: none"> • Association is created and able to provide core enterprises with necessary services • The challenges faced by core enterprises are solved • The efficiency of enterprises is increased due to the consultancy services provided by the association • Financial products by FIs meeting the needs of principal enterprises are developed 	<p>Lack of access to information</p> <p>Technical problems – Procurement Act</p> <p>Lack of access to finance</p>
<p>Increasing access to global markets</p>	<ul style="list-style-type: none"> • Participation in international marketing events • Develop new, more value-added products 	<ul style="list-style-type: none"> • Number of international marketing events companies take participation • Number of new products developed 	<ul style="list-style-type: none"> • Companies take participation in international marketing events • New products are developed 	

<p>Increasing linkages to Samegrelo Zemo-Svaneti F&V cluster (hazelnut specific)</p>	<ul style="list-style-type: none"> • Become members of support institutions active in Samegrelo Zemo-Svaneti (like HEPA) • Negotiate with Agri-Georgia and GHGA to include students from Guria in their training program for students. • Increase direct collaboration with firms in the nearby cluster that have better equipment 	<ul style="list-style-type: none"> • Number of member companies in sector-specific associations • Number of students from Guria attending the training program • Number of collaborative efforts between enterprises 	<ul style="list-style-type: none"> • Companies are engaged and linked with various sector-specific associations • Companies have access to locals with adequate education in hazelnut harvesting • New products are produced due to the collaborative efforts of firms 	
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Annex 1: List of interviews

Organization	Municipality	Type of an organization	Respondent
LLC Gurian Nut	Ozurgeti	Target enterprise	Nikoloz Mekvabishvili
LLC Global Export	Ozurgeti	Target enterprise	Natia Koridze
LLC Turalfood	Ozurgeti	Target enterprise	Elkhan Guluzade
LLC Elmarli and company	Ozurgeti	Target enterprise	Paata Tavdishvili
LLC Alioni	Ozurgeti	Target enterprise	Paata Tavdishvili
LLC Samkutkhedi	Ozurgeti	Target enterprise	Mamuka Samsonia
LLC Egzofruit	Ozurgeti	Target enterprise	David Bezhuashvili
I.E. Gocha Kandelaki	Ozurgeti	Target enterprise	Gocha Kandelaki
LLC Georgian Hazelnut Corporation	Lanchkhuti	Target enterprise	Teimuraz Gogia
LLC Kakhetian Traditional Winemaking - AgroChokhatauri	Chokhatauri	Target enterprise	Lia Jerenashvili/Lead technologist
Agrarian University	Tbilisi	Support Institution	Teo Urushadze/Dean of Agrarian and Natural Science Faculty
Rural Development Agency	Tbilisi	State Agency	Mariam Gelashvili/Head of Project Development Department
Cooperative Guriis Tkhili	Lanchkhuti	Support Enterprise	Lia Mukhashavria
Guria Development Union	Ozurgeti	Support Institution	Tamuna Kupradze
USAID G-HIP	Tbilisi	Support Institution	Giorgi Managadze
GHGA	Tsalenjikha	Support Institution	Giorgi Todua
HEPA	Zugdidi	Support Institution	Levan Kardava
VET College	Ozurgeti	Support Institution	Nana Jolia
Laboratory – LTD Adam Beridze Soil and Food Diagnostic Center	Ozurgeti	Support Institution	Soso Basilia

