Safety and Quality Investment in Livestock – Georgia (SQIL)

Food Security Systems in Pandemic: Beef and Dairy Value Chains

May 2020

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Executive Summary

“Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (World Food Summit).

Although food availability has increased along with the growing human population over the last 30 years, there are still more than 800 million people suffering from malnutrition. This problem is not only the result of insufficient food production and inadequate distribution, but also of the financial inability of the poor to purchase food of reasonable quality in adequate quantities to satisfy their needs (FAO).

Livestock production constitutes a very important component of the agricultural economy in developing countries. Furthermore, livestock industry is closely linked to the social and cultural lives of several million resource-poor farmers for whom animal ownership ensures varying degrees of sustainable farming and economic stability.

Although Global Food Security Index is not calculated for Georgia, the country depends on food-imports: Self-sufficiency ratios are low for many necessary agri-food products. According to National Statistics Office of Georgia, in 2018, self-sufficiency ratio for beef was 77%, and for milk and milk products – 81%. This means that livestock sector has a potential to improve, contribute to achieve higher level of self-sufficiency ratios and ensure food security.

Baseline Assessment of Dairy Sector in Georgia conducted by Georgian Farmers’ Association (GFA) in 2018, includes a separate section on Food Loss and Waste (FLW) and linkages with Sustainable Development Goals (SDGs). FLW plays a significant role in achieving food security. Given that many smallholders live on the margins of food insecurity, a reduction in food losses could have an immediate and significant positive impact on their livelihoods. For poor consumers, the priority is clearly to have access to food products that are nutritious, safe and affordable (GFA).

Livestock industry in Georgia is currently supported through different programmes initiated by the Government of Georgia (GoG) and international and donor organizations. Therefore, it is expected that existing challenges will be gradually transformed into opportunities and, as a result, dairy and beef value chains will be strengthened.

In the beginning of 2020, COVID-19 has been declared a global fast spreading pandemic. In Georgia, the first confirmed case was announced by the end of February 2020. The government of Georgia declared a national emergency on March 21st and quite strict measures were taken to hinder further spreading of COVID-19. “Border closures, quarantines, and market, supply chain and trade disruptions could restrict people’s access to sufficient/diverse and nutritious sources of food, especially in countries hit hard by the virus or already affected by high levels of food insecurity” (FAO).

It is anticipated that both the effect of the pandemic and prevention measures aiming to prevent the spread as well as the adjoined negative effects on the overall economic performance and development will affect the vulnerable communities. “Vulnerable groups also include small-scale farmers, pastoralists, and fishers who might be hindered from working their land, caring for their livestock, or fishing. They will also face challenges accessing markets to sell their products or buy essential inputs, or struggle due to higher food prices and limited purchasing power. Informal labourers will be hard hit by job and income losses in harvesting and processing" (FAO).

The main goal of this report is to analyze the impact of COVID-19 on dairy and beef value chains incorporating food security concerns such as availability, access and utilization. The report is based on results of telephone survey and presents qualitative and quantitative information.

According to the survey results, the main problem is the restrictions imposed on transportation and movement in response to COVID-19 related reasons. Particulary, existing restrictions make it difficult to access agricultural inputs and services, to supply raw milk and live animal to the processors, to supply processed dairy and beef products to the whole and retail chains, and finally to deliver the product to final consumers.

The survey results show that COVID-19 and imposed measures cause changes in distribution behaviour. Particularly, farms and businesses have to take care of the distribution themselves. Some of them already have identified new channels of distribution such as online sales. While some of them created own website and facebook pages, others contacted existing online platforms.

At the same time, dairy and beef value chain actors are experiencing changes in sales in response to COVID-19 related reasons. Specifically, the survey revealed that demand for beef is decreased but demand for dairy products increased from consumers. This can be explained by the fact that many Georgian doctors are currenlty more intensively recommending eating dairy products during outbreak of COVID-19.

As for the safety issues in response to COVID-19 outbreak, majority of dairy and beef value chain representatives and their employees attended training on personal safety issues, and employees were provided by equipment that is necessary for their safety. However, this issue is challenging on farm's level since more than half of surveyed cattle farms were not able to respond to the questions related to safety in response to COVID-19.

1. Introduction

In the beginning of May, 2020 Georgian Farmers' Association has conducted a research of beef and dairy value chain players in the framework of the project Safety and Quality Investment in Livestock (SQIL).

1.1 Project Description

Land O'Lakes Venture37 is leading an innovative, demand-driven Safety and Quality Investment in Livestock (SQIL) project to improve food safety and quality within Georgia's dairy and beef value chains. The project is funded by the U.S. Department of Agriculture (through Food for Progress) and aims to reduce losses, improve food safety and quality from farm to fork, and to boost competitiveness, productivity, and trade within the Georgian dairy and beef market systems.

Partnered with Georgian Farmers' Association and Michigan State University, Land O'Lakes will implement interventions to support entrepreneurs and competitiveness within the dairy and beef market systems. SQIL initiatives also reflect a commitment to increasing opportunities for women and young people, and an improved resilience to climate change. SQIL will employ an integrated approach that has six interlinked components:

- Expand Market Access;
- Improve Sanitary and Phytosanitary Standards;
- Improve Post-Harvest Handling and Storage;
- Improve Productivity;
- Improve Access to Financial Services;
- Capacity Building to Inform on Food Safety Policy Development.

1.2 Objective and Methodology

The objective of the research was to get a better insight about the challenges in food security during pandemic and supply with animal sourced food, in this case milk and beef. The survey also aimed to analyze the current situation in terms of food security and develop an assessment and monitoring process to understand when and where gaps begin to develop. In total, 83 respondents were interviewed.

The report provides survey analysis based on collected responses of dairy and beef industry representatives. Telephone interviews were conducted through GFA's Call Center and survey responses were analyzed by GFA's Research and Analytics Team.

Call Center Operators were given specific instructions for open questions and questions that could have more than one answer (e.g. checkbox type questions). For example, for some questions it was recommended to give some ideas and list the several options to the respondent before he/she answered that particular question, and for other open questions, recommendation was not to give the ideas in advance, so that the respondent stated his/her responses individually without any indication and guidance from the interviewer. This indication was included after each question of the survey in order to make sure that the operators remembered the instructions when to list the options to the respondent and when not.

In addition, respondents were splitted among operators so that one operator interviewed only farms and processors (because these two groups had more similar questions), and the other one - businesses, so that it helped them to focus only on specific questionnaires. At the same time, when operators started interviews, they maintained regular communication with Research and Analytics Team to clarify some cases to make sure that they were obtaining correct information. Moreover, since the survey was administered by Google Forms, it was able to follow and monitor the progress.

The sample was selected from databases of GFA, National Food Agency (NFA), Georgian Dairy, Dairy Georgia and SQIL project.

Telephone survey was conducted based on a pre-compiled questionnaire. Questionnaires were done jointly by Land O'Lakes Venture37 SQIL project and GFA. In total, five different types of questionnaires were developed for each value chain actor. The survey covered the following dairy and beef value chain players:

1. Cattle Farms
2. Milk and beef processors
3. Slaughterhouses
4. Livestock inputs suppliers and service providers
5. Wholesalers, retailers and importers of dairy and beef products

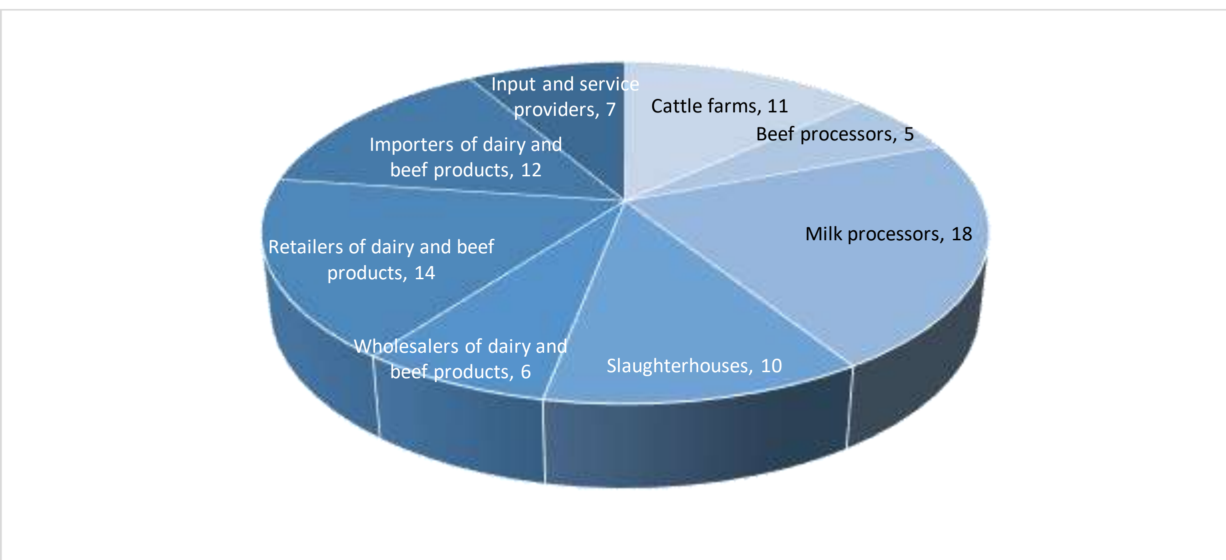
Each questionnaire consisted of several parts such as general questions about the respondent, questions about workforce, agricultural inputs, production, processing, sales, transportation and logistics, government policies during pandemic and access to information, as well as preparedness of respondents during COVID-19.

2. Survey Analysis

2.1 Survey results: General Questions

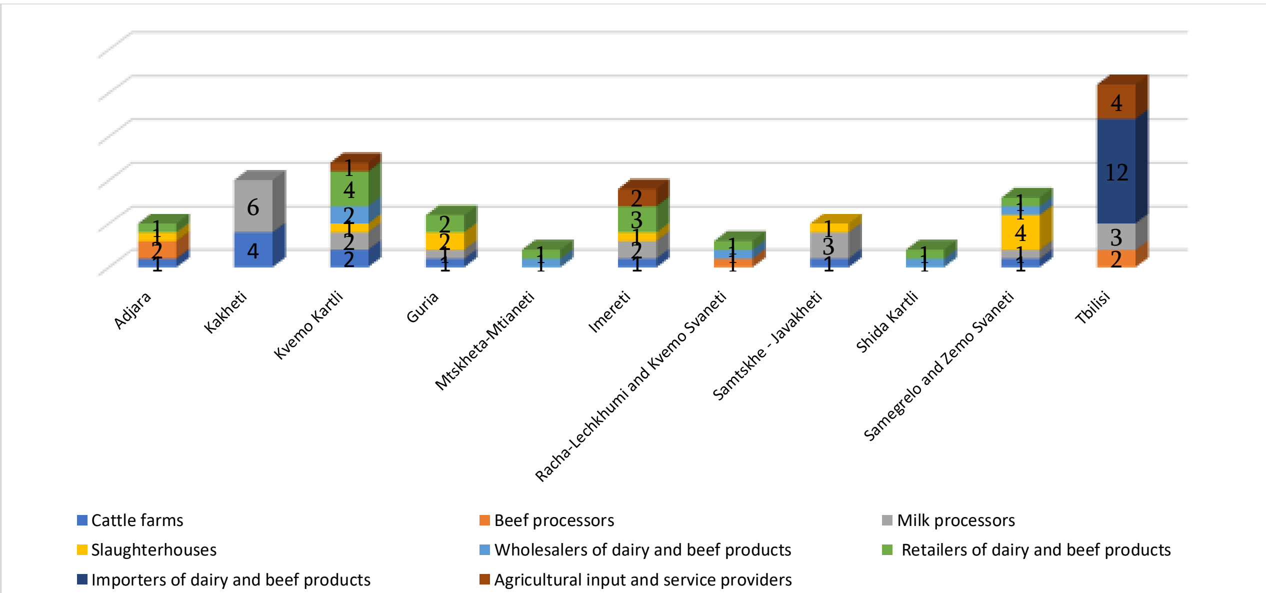
Majority of respondents are processors and traders of finished livestock products such as dairy and beef products. The survey also included cattle farms as primary source of raw material, in this case milk and live animal. At the same time, agricultural input suppliers and service providers were also interviewed to identify the challenges they might face during pandemic situation.

Figure 1. Distribution of dairy and beef value chain players according to the activity



The survey covered all regions of Georgia. As shown from Figure 2, majority of surveyed businesses operate in the capital city. Cattle farms, milk and beef processors are mainly representing Kakheti. It is also observed that the following three regions - Kvemo Kartli, Imereti, Samegrelo and Zemo Svaneti are the most diversified regions since five different levels of value chain are presented in these regions. Surveyed wholesalers, retailers and importers of dairy and beef products operate in all parts of Georgia, except Kakheti and Samtkhe-Javakheti.

Figure 2. Distribution of respondents by activity and region



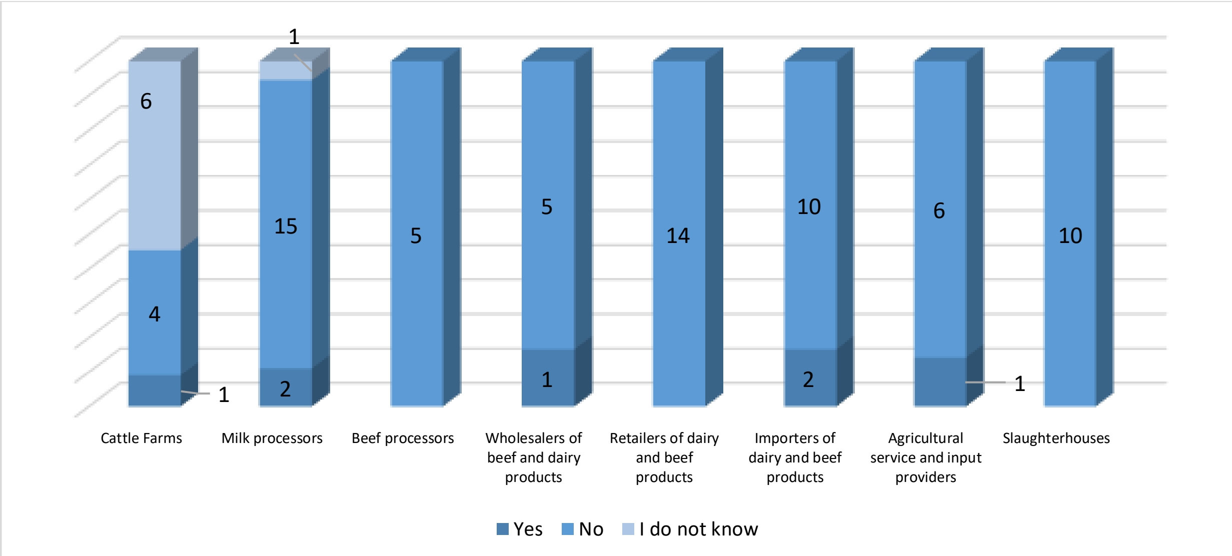
Breakdown of respondents by gender shows that 73% are men and 27% are women. Surveyed women respondents are engaged in the trade of dairy and beef products, while men traditionally are more presented on farm and processing level.

2.2 Survey results: Availability

Availability of workforce

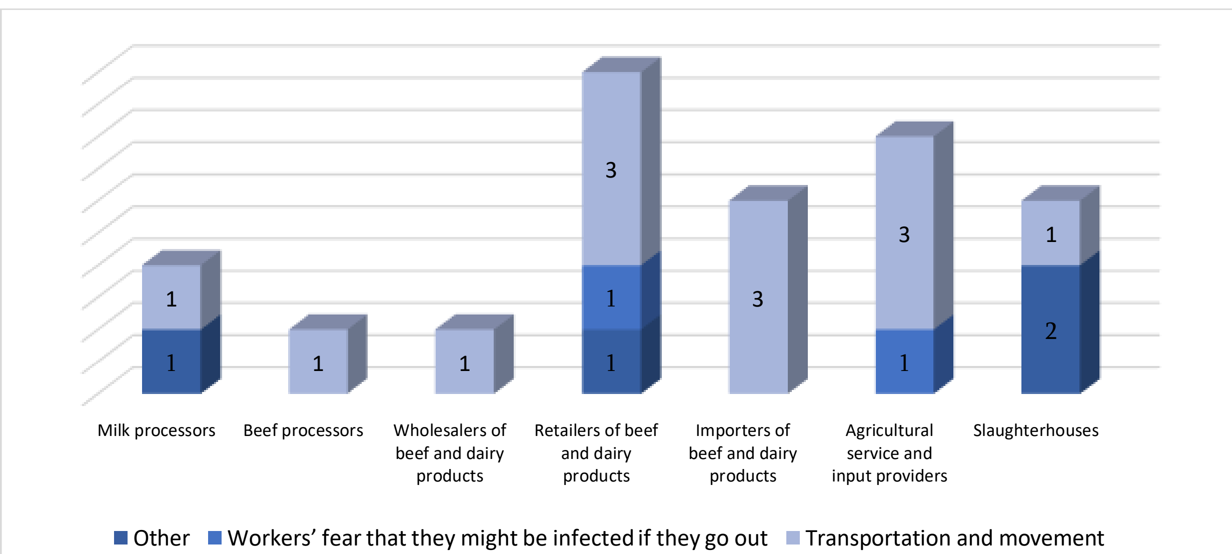
In the survey, respondents were asked if their workers are getting sick or unable to perform their jobs due to the COVID-19. Majority of respondents (83%) stated that workers are not getting sick and are able to perform their jobs in this challenging time. At the same time, 19 out of 83 respondents noted that there is labor shortage due to COVID-19 related reasons. Labor shortage is mainly developing for businesses such as input and service providers, milk and beef processors, wholesalers, retailers and importers, slaughterhouses. Shortage of labor was not observed on the farm level.

Figure 3. Are workers getting sick or unable to perform their jobs due to the COVID-19?



As shown from Figure 4, transportation and movement is the main cause of labor shortage development during COVID-19. Surveyed respondents who stated other reasons, specified that labor shortage was caused by high labor costs.

Figure 4. Distribution of respondnets by reasons of labor shortage



The survey included a question about labor costs. 31 out of 83 respondents stated that labor costs increased due to the fact that workers require higher wages and also employers have to take care of workers’ transportation. Based on the survey results, labor costs increased especially for wholesalers, retailers and importers of beef and daity products.

Availability of agricultural inputs and services

6 out of 11 surveyed cattle farmers noted that livestock inputs (feed, veterinary products, disinfectants, and other supplies) and key services (animal health, artificial insemination) are still available and accessible in this challenging time. However, they also stated that prices of livestock inputs are increased.

Restrictions on movement and transportation are the main reason which hinders farmers access to livestock inputs.

On the supply side, all surveyed agricultural input suppliers and service providers stated that they still offer livestock inputs (feed, veterinary products, disinfectants and other supplies) and key services (animal health, artificial insemination) to farmers. More than half of interviewed input suppliers and service providers noted that sales of inputs and services decreased due to COVID-19. As for prices, 4 out of 7 input suppliers and service providers stated that the price of livestock inputs did not change and the remaining 3 think that price increased due to GEL depreciation.

Production at farm level

Regarding the effect of COVID-19, 7 out of 11 cattle farmers decreased production of milk and live animals, while remaining 4 farmers produce the same amount of milk as before. 3 out of 7 cattle farmers considered low demand, 2 farmers - not enough feed for animals, and remaining 2 stated lack of workers as main reason for decrease in production.

All slaughterhouses agreed that quantities of slaughtered animals have changed and decreased mainly because demand is less and shops and agrarian markets are closed because of COVID-19.

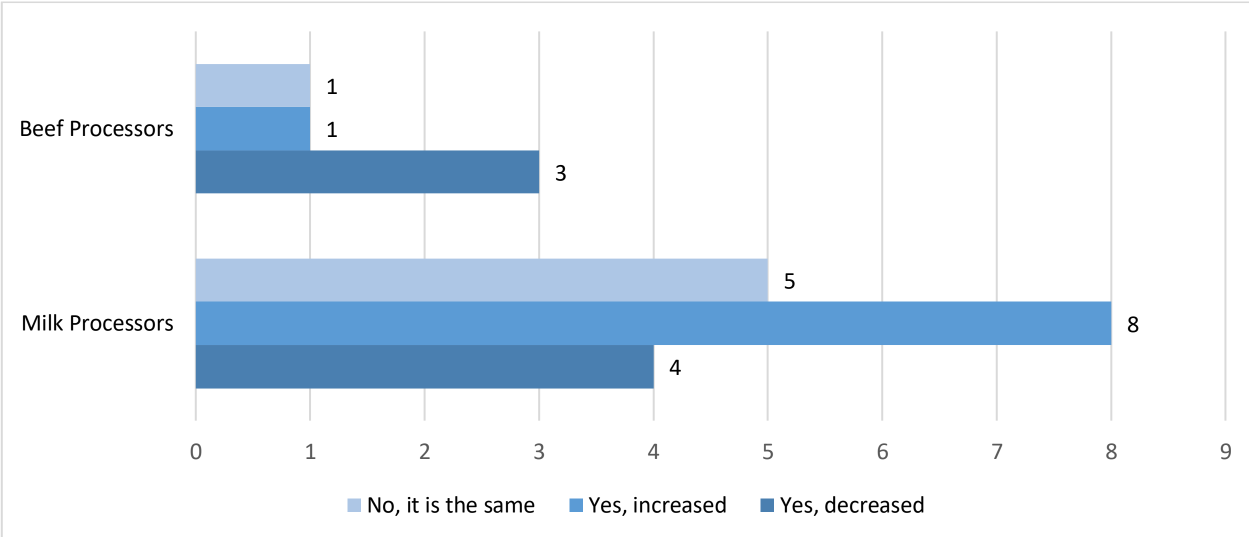
2.3 Survey results: Access

Access of beef, milk and milk powder

Survey results show that beef, milk and milk powder are still available for processors. Only one milk processor stated that it has not access to enough milk to meet increased demand from consumers. As for prices of beef, milk and milk powder, 9 processors stated that prices increased mainly besause of GEL depreciation; 9 processors noted that prices did not change.

8 milk processors and 1 beef processor stated that their production increased because of increased demand from consumers. 4 milk processors and 3 beef processors produce less because demand is decreased. Remaining 6 processors stated that their production is the same and it did not change because of COVID-19.

Figure 5. Is there a change in the quantities of produced value-added milk and meat products?



Access to dairy and beef products

38% of wholesalers, retailers and importers of dairy and beef products stated that due to COVID-19 they receive less quantities of dairy and beef products because some of their suppliers stopped working and others have problems with transportation and delivering finished livestock products to the wholesale and retail chains.

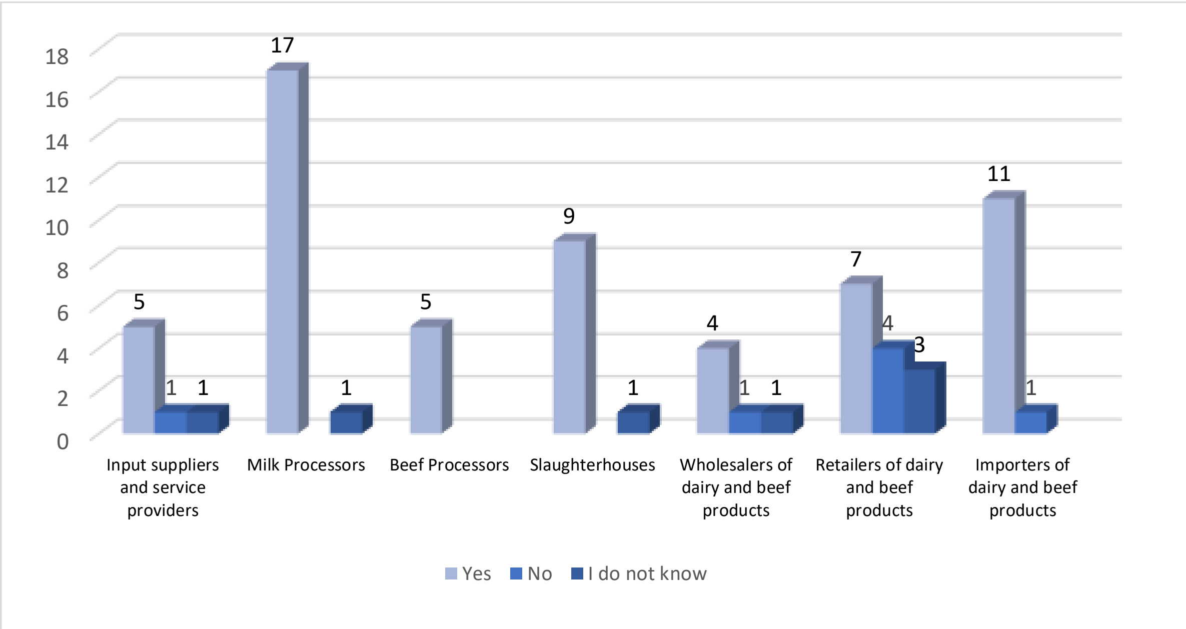
Importers also noted that due to COVID-19, demand for their products decreased and, therefore, they purchase less quantities of dairy and beef products. At the same time, 56% of wholesalers, retailers and importers of dairy and beef products stated that there is no change in quantities of products received and number of suppliers is the same.

The survey also included question about delayes from suppliers of finished livestock products. More than half (18) of wholesalers, retailers and importers of dairy and beef products responded that they do not have any delays from their suppliers. Remaining 14 confirmed that there are delays because of imposed restrictions on movement and transportation.

Access to transportation (distribution channels)

Majority of respondents stated that change in distribution behaviour is observed and they have to take care of the distribution. Some of them already have identified new channels of distribution such as online sales. While some of them created own website and facebook pages, others contacted existing online platforms.
At the same time, respondents think that transportation routes and truck drivers are open and moving food items to the customers. Only a few respondents, mainly on trade level, stated that this is the issue due to COVID-19.

Figure 6. Are transportation routes and truck drivers open and moving food items to the customers?



Access to services (packaging, cleaning etc.)

Problems for value-added support such as packaging, cleaning agents, preservatives, spices(additives) was mainly observed on the level of processors which are operating in regions and due to imposed restrictions on movement and transportation, the access is limited. Overall, one third of respondents stated that price of packiging, cleaning agents, preservatives, spices (additives) increased. Remaining two third noted that price change was not observed.

In terms of waste disposal, access to water or electricity, 86% stated that there is no change.

2.4 Survey results: Utilization

The survey revealed that as a result of COVID-19 related reasons, sales of dairy and beef value chain representatives decreased. 43% of respondents stated that sales decreased and main reasons for this change are restrictions on movement and decreased demand. Particularly, restrictions on movement and transportation is problem mainly for retailers and input suppliers. Importers of dairy and beef products and, also slaughterhouses, mentioned decreased demand as main reason for decreased sales. As for the processors, half of them stated that sales increased because of increased demand for dairy products unlike to beef processor who are facing decrease in sales due to decreased demand. Other important reason which also caused change in sales is closing HoReCa, agrarian markets, supermarkets, also schools and kindergartens. The fact that agrarian markets are closed is mainly issue for slaughterhouses since it is the main sales channel for them.

Figure 7. Is there any change in sales as a result of COVID-19 related reasons?

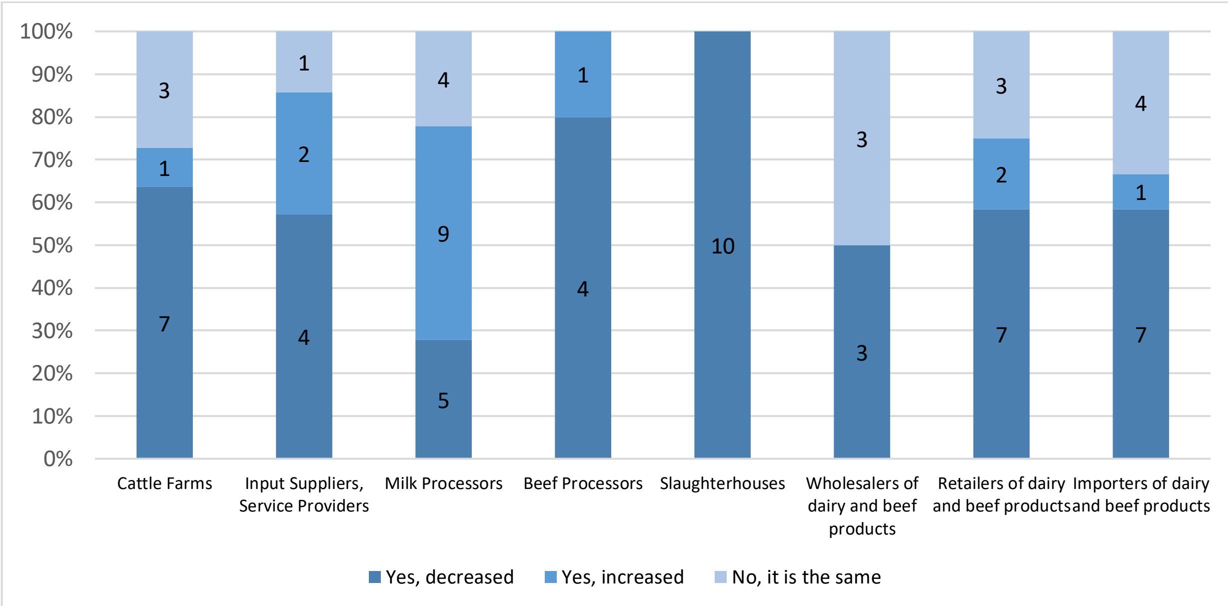
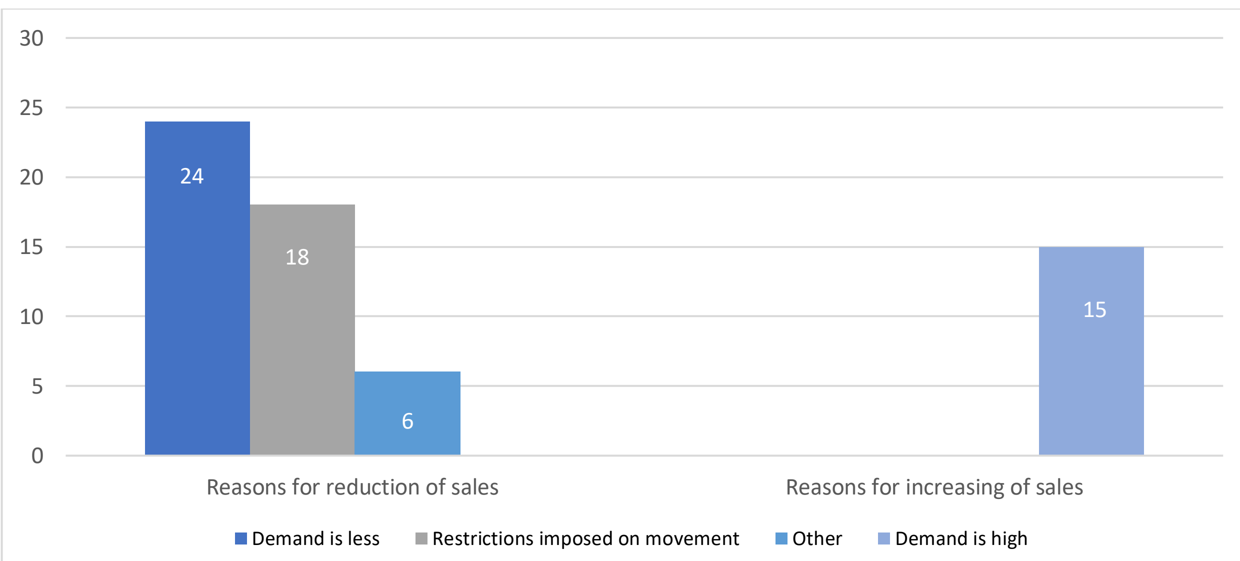
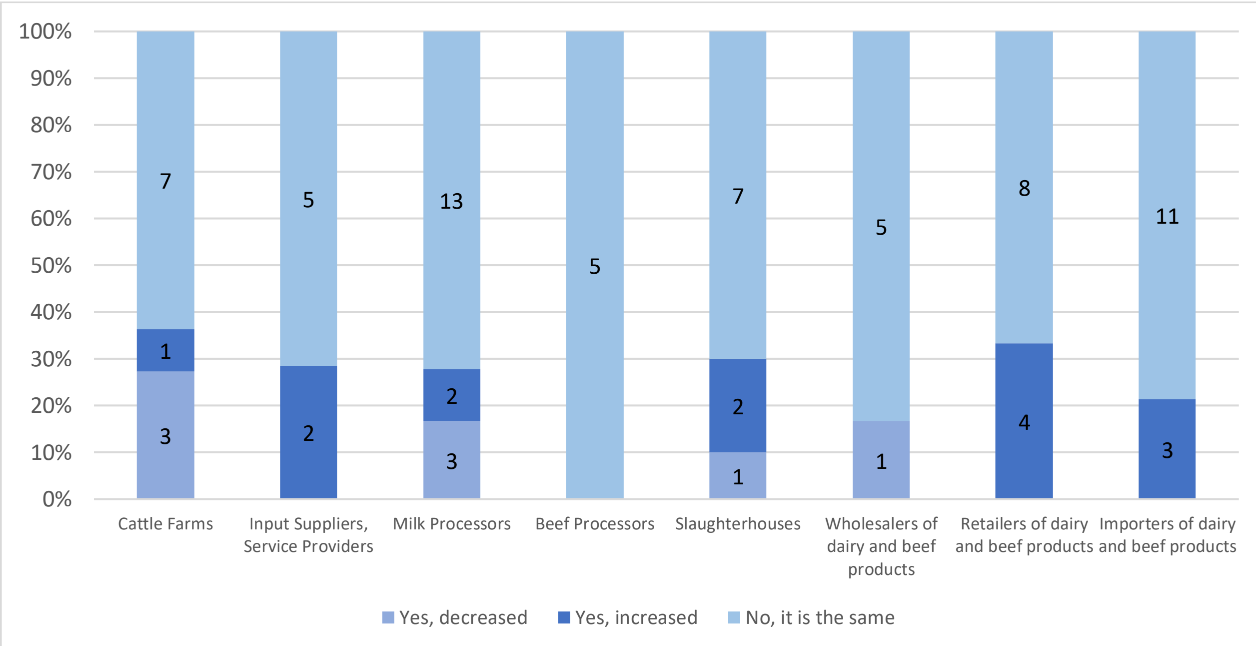


Figure 8. If there is a change in sales, what are the main reasons for reduction/increasing of sales?



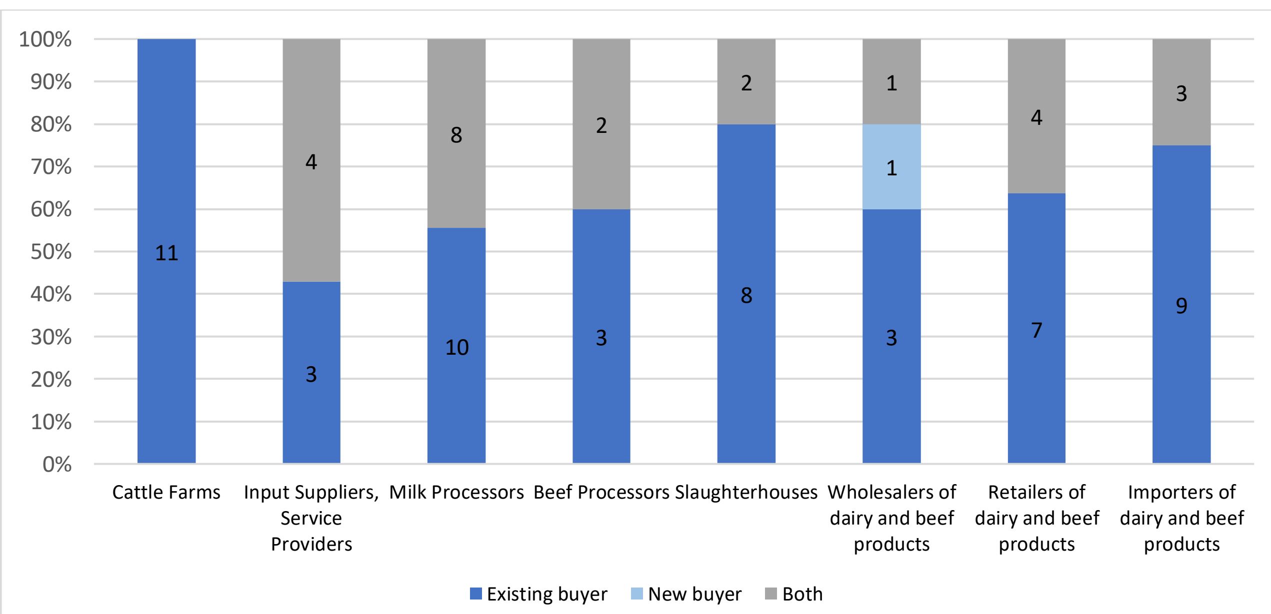
As for the prices of products sold by dairy and beef value chain players, 73% stated that price of product did not change due to COVID-19 and it is the same. Those respondents which mentioned that price increased, consider GEL depreciation as main reason.

Figure 9. Is there any change in the price of products sold?



In terms of sales behaviour of the diary and beef value chain players, majority of surveyed respondents sell their products to the existing buyers. At the same time, all value chain actors, besides cattle farms, managed to find new buyers and increased the number of consumers of their products.

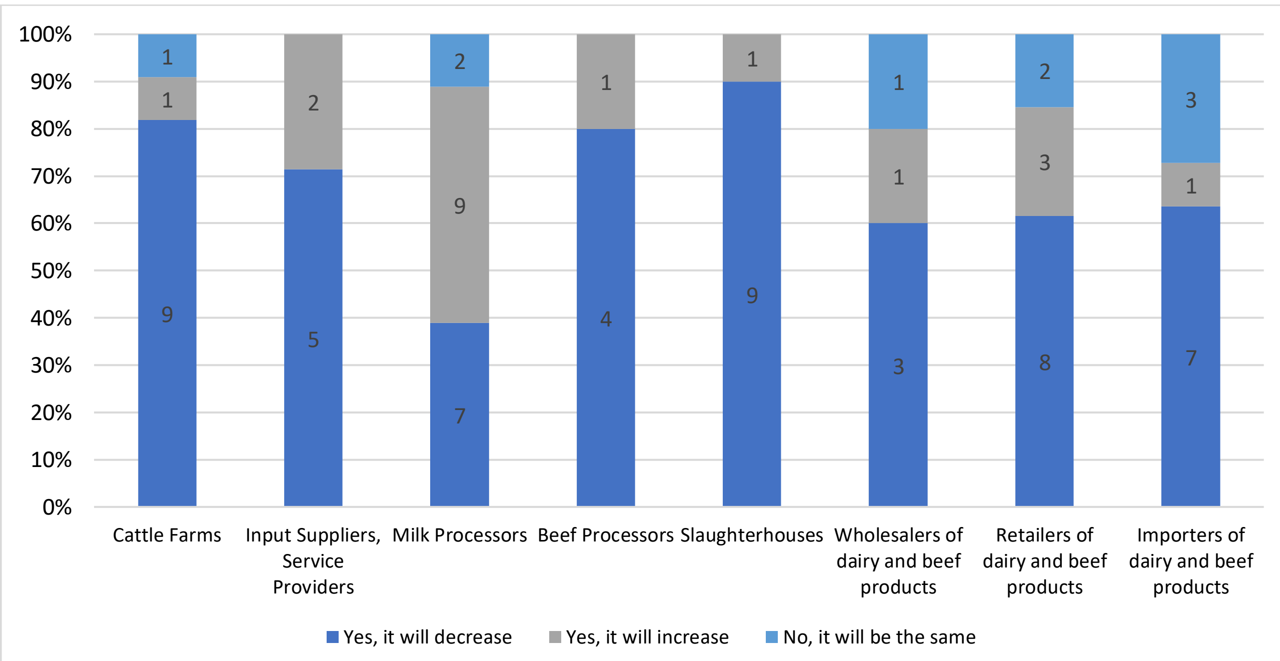
Figure 10. Do you sell your product to the existing buyer or you sell the product to a new buyer as a result of COVID-19 related reasons?



For those respondnents, who sell their products to new buyers, the survey asked to name challenges if any. Most of them stated that there are no challenges, but some of them stated unstable demand from new buyer and also the fact that they have to take care of delivery to the final consumer. In addition, service providers stated that, as usual, they have to provide more information to a new buyer compared to exisiting buyer, and this may be also seen as challenge timewise, in this challenging circumtances.

63% of respondents expect that sales for the identical season will decrease as a result of COVID-19 related reasons. At the same time, half of the surveyed milk porcessors expect that sales will not change and it will be the same.

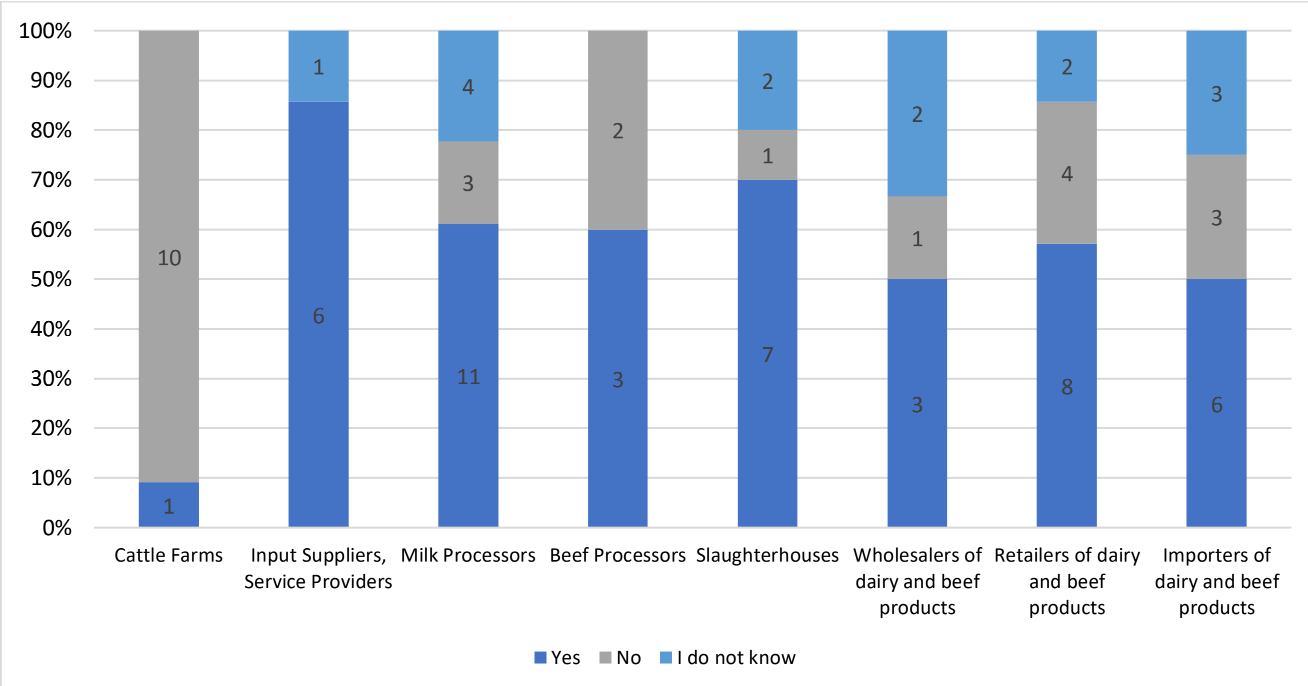
Figure 11. In comparision to expected sales for the identical season, do you see change in sales as a result of COVID-19 related reasons?



The survey also asked a question about the expected change of sales in percentage. Farmers stated that on average sales will decrease by 50%, processors think that sales will decrease on average by 40%. At the same time, 9 milk processors stated that sales will increase by 35%.
Wholesailers, retailers and importers expect that their sales will decrease on average by 35%; Input suppliers and service providers think that sales will decrease by 43% and slaughterhouses expect 64% less sales.

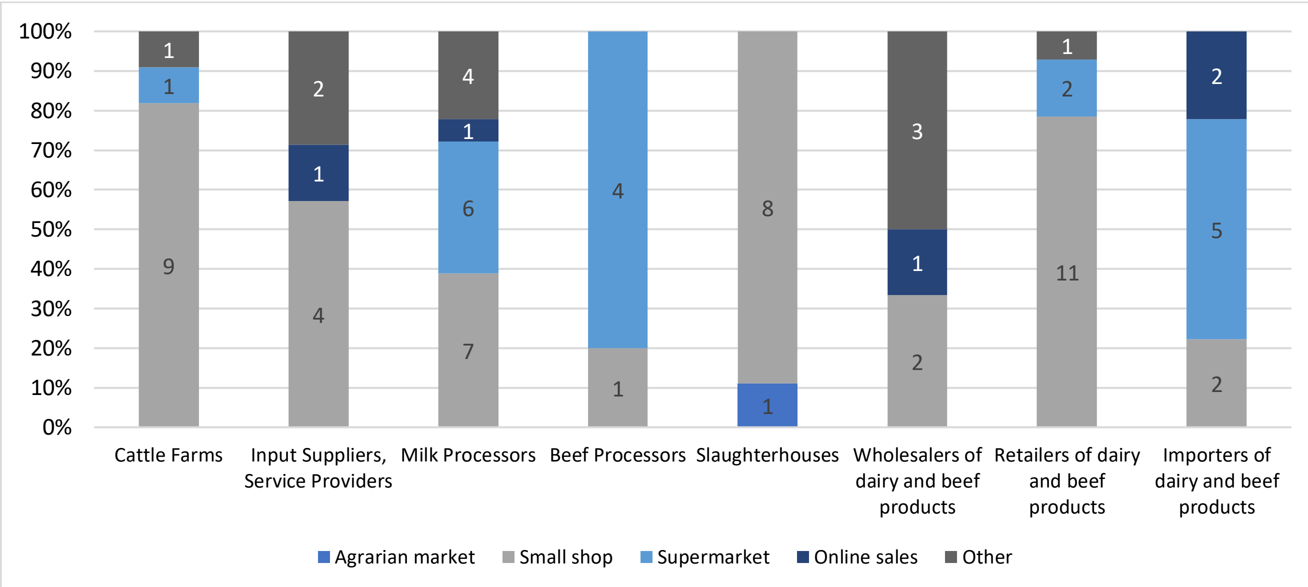
24 respondents, around one third of interviewed dairy and value chain actors, confirmed that agrarian markets and small shops are closed due to COVID-19 related reasons. As for supermarkets, respondnets stated that they are open and have nutritious foods available for the public.

Figure 12. Are retail markets, agrarian markets, supermarkets open and do they have nutritious foods available for the public as a result of COVID-19 related reasons?



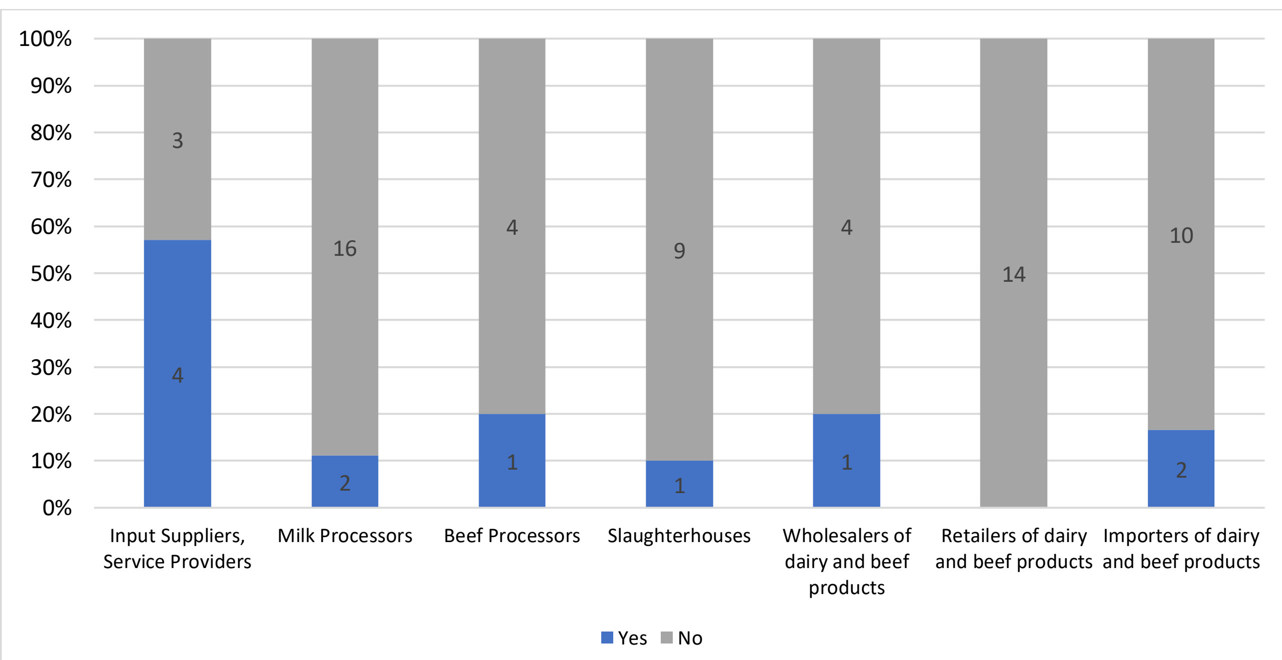
Since agrarian markets and small shops are closed, the survey asked respondents to name the place or sales channel that they use during COVID-19. More than half of them stated small shops located in neighbourhood, or the shops that they own as main places for selling their products. 5 respondents use online sales and work with existing platforms or sell the products through its own webpage and facebook. Category "Other" includes cases when respondents have stopped selling of their products because of COVID-19. They used to sell in agrarian markets or in own shops, but at the moment they are closed and do not sell the products.

Figure 13. Where do you sell your product at the moment?



The survey also included a question about online sales. As shown from Figure 14, only 11 respondents have used onlines at least once. Input suppliers seem to be more experienced in online sales rather then other dairy and beef businesses.

Figure 14. Have you ever used online sales?



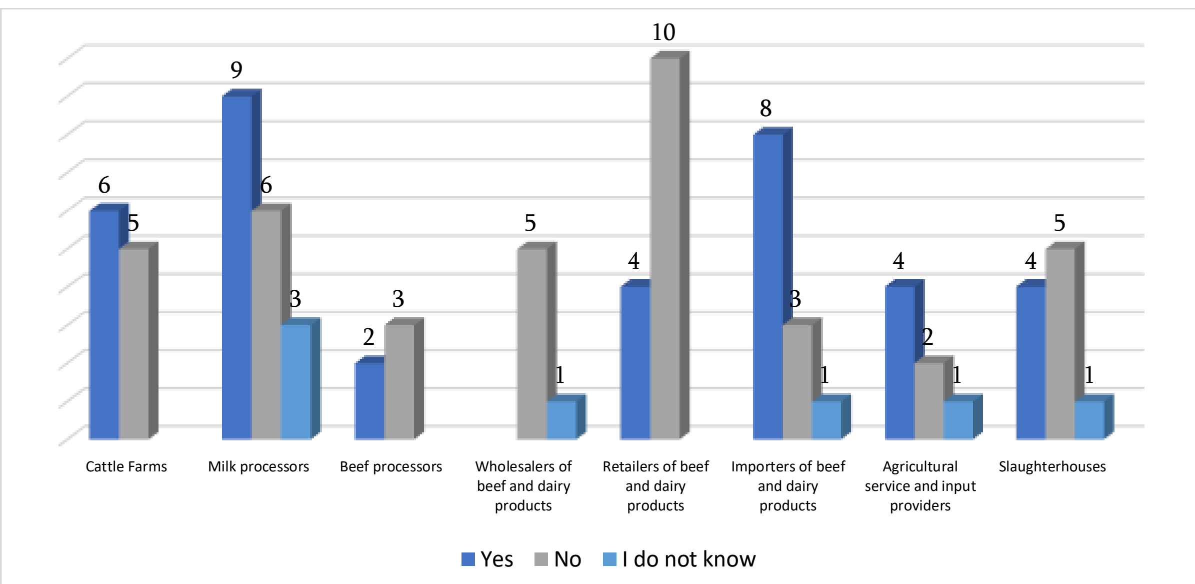
Those respondents which use or have used online sales at least once, were asked to share their experience and give specific examples. As a result, two processors have own website, one processor works with soplidan.ge; one wholesaler created facebook page and two importers work with Glovo and Wolt; Two input providers created facebook pages, one has its own online sales and the other one works with kalo.ge ; Slaughterhouse from Kvemo Kartli has its own website lasharela.net.

As shown, experience in online sales is not very much presented among respondents. Therefore, question about frequency of online sales usage did not turned out to be relevant for majority. In total, 6 respondents who have own online sales stated that at the moment they fully rely on this particular channel and thus use it very frequently.

2.5 Survey results: Government Policies and Access to Information

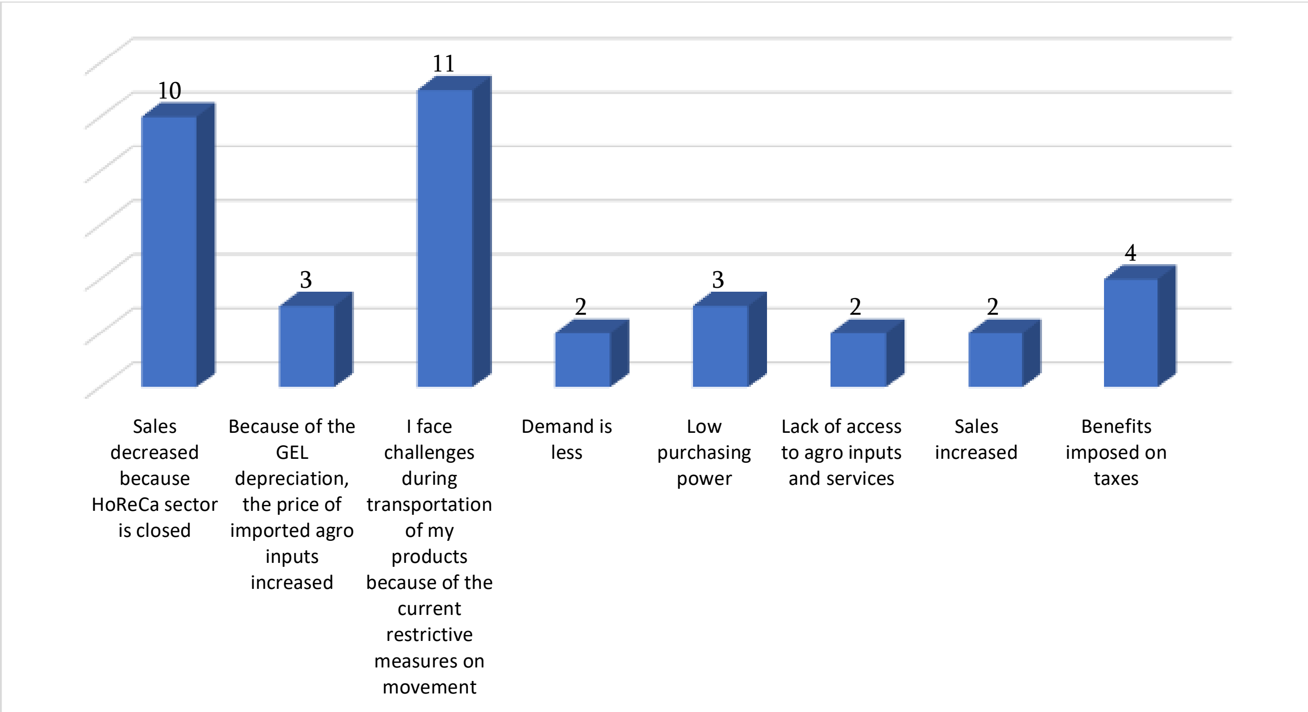
The survey also included questions about government policy and access to information during COVID-19. As shown from Figure 15, 37 respondents confirmed that government policies have changed as a result of COVID-19 related reasons. 31 out of these 37 respondents, think that changes in the government policies had negative effect on their businesses. Breakdown of these 31 respondents show that dairy and beef value chain representatives expect negative effects on all levels of value chain.

Figure 15. Has there been any change in the government policies as a result of COVID-19 related reasons that influence your business (operations, sales, raw materials and input supplies)?



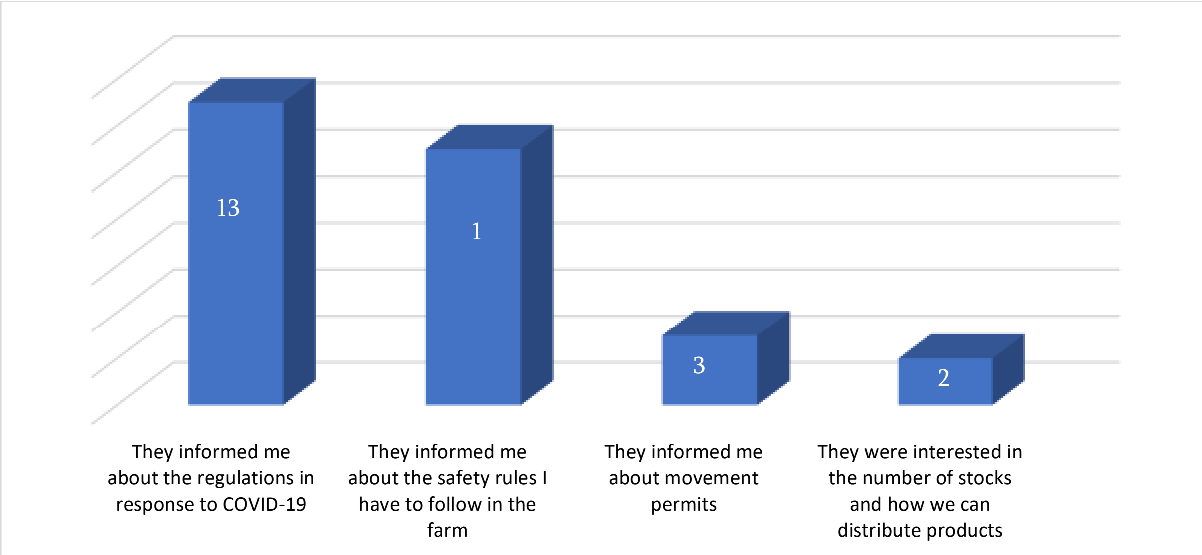
Majority of surveyed dairy and beef value chain actors stated that restrictions imposed on movement by GoG affected their businesses, also because of HoReCa is closed, their sales decreased. Other effects of the GoG measures are presented by Figure 16.

Figure 16. Please specify the effect of the GoG economic measures in response to COVID-19 that influences your business



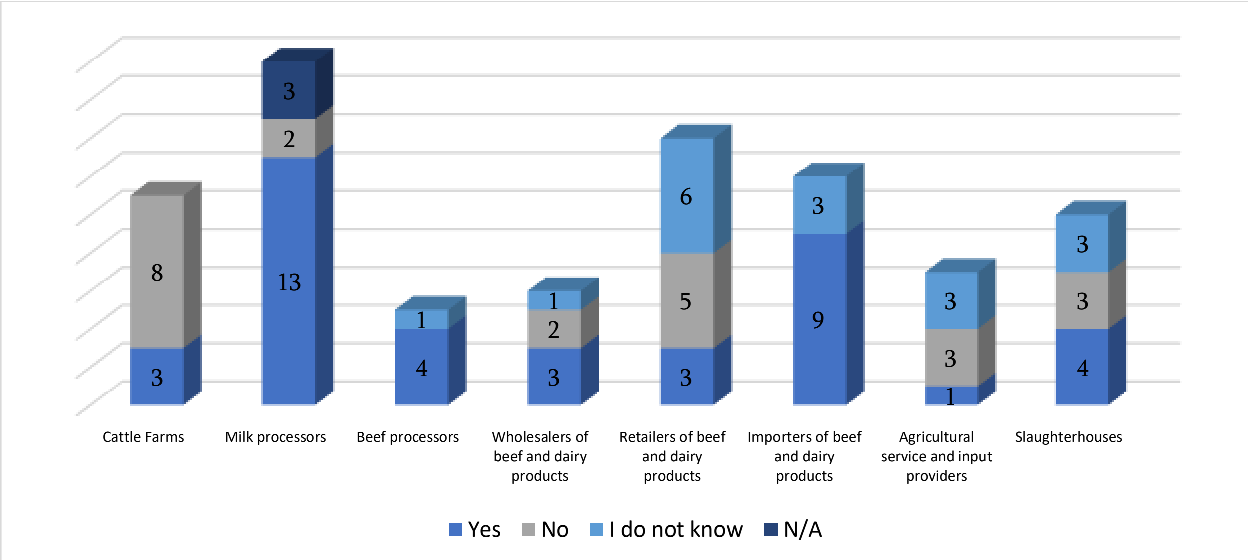
More than half of respondents stated that government on any level have not contacted yet. Remaining respondents noted that representatives of government contacted them and Figure 17 presents the experience and topics of conversation. 13 out of 83 surveyed value chain players noted that representatives of GoG informed them about regulations imposed under state of emergency. Only 3 respondents stated that conversation between them and GoG was about movement permits and these respondents are retailers of beef and dairy products. Another 2 out of 14 surveyed retailers of beef and dairy products said that representatives of GoG asked them about number of stocks and distribution channels they are going to use for their products realization.

Figure 17. Conversation and guidance received from GoG in response to COVID-19



40 out of 83 surveyed value chain players are aware of informational campaigns conducted by national or local government. They said that representatives of government are actively involved in campaigns to raise awareness about food safety and food availability. Also, it was mentioned that GoG started to implement different projects and activities to ensure food safety. At the same time, respondents, mainly processors, were visited by NFA representatives several time, implying NFA is able to perform its checks of business operators to ensure food safety even during COVID-19 pandemic. Most of surveyed cattle farmers do not have information about campaigns related to food safety and food availability, access and utilization conducted by GoG.

Figure 18. Have government or local entities started information campaigns for the public associated with food safety, food availability, access and utilization?



As for the main sources of information, 52% of respondents receive information on changes in government policies through TV programmes. Social media is main source of information for 36% of surveyed value chain actors. In addition, webpages were also named among informational channels by respondents.

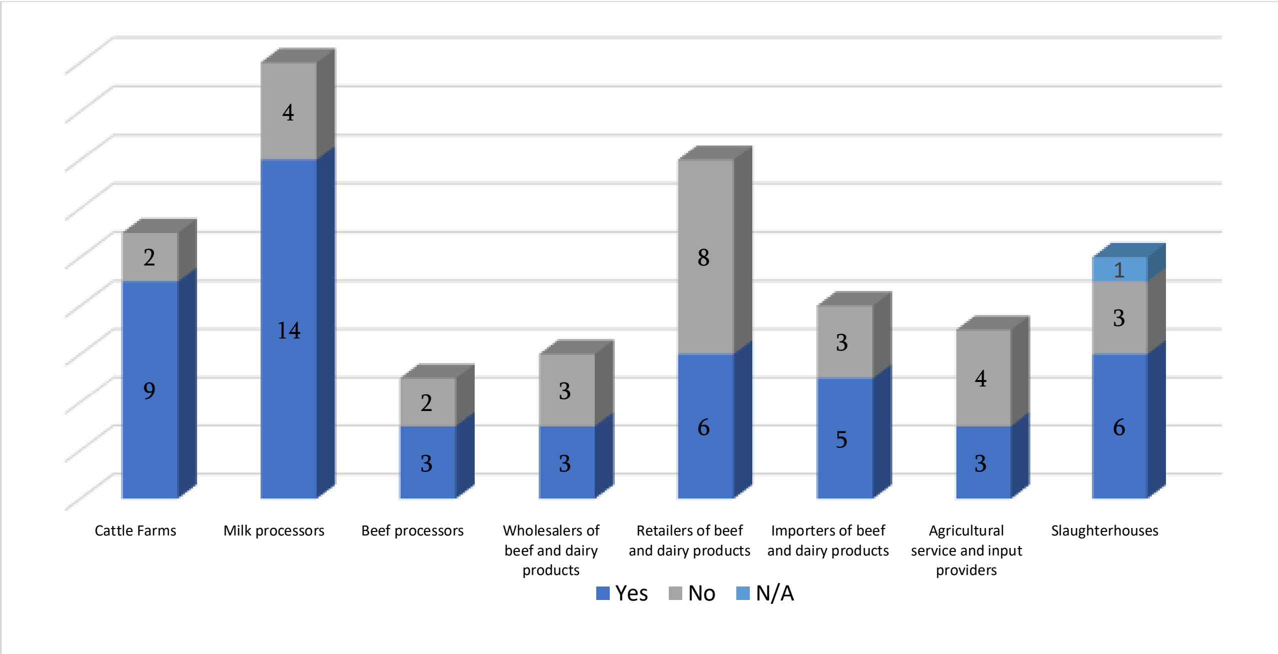
The survey asked to list and prioritize the three most important issues that are main challenges for their businesses during COVID-19 pandemic. Majority of respondents considered **"high price of imported agro inputs"** and **"access to finance is more complicated"** as main challenges for their business. At the same time, 25% of surveyed value chain players stated **"unclear forecast complicates to plan their business activities,"** especially this problem is important for importers of beef and dairy products.

Only 1 surveyed cattle farm considered lack of storage facilities as main challenge for its business. 10 out of 83 surveyed value chain actors found it difficult to answer that question and mentioned that they are not facing any important challenge at the moment. Based on the survey results, cattle farms, processors and importers of dairy and beef products are facing almost all of the challenges that might be caused by COVID-19.

2.6 Survey results: COVID-19 Enterprise Preparedness

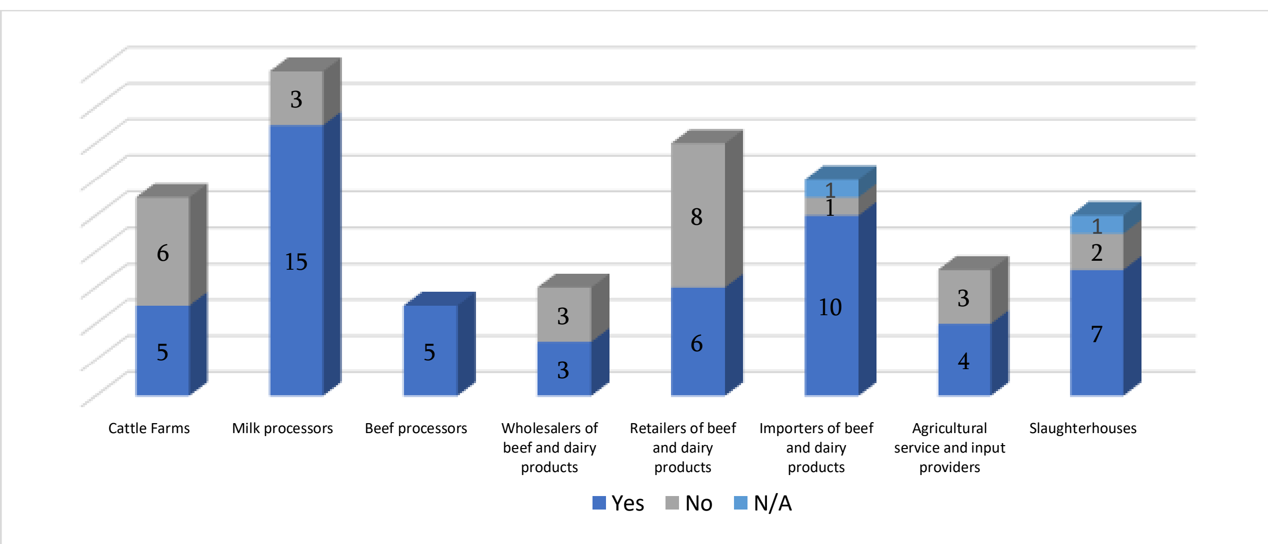
Most of beef and dairy value chain actors have a pandemic/emergency plan. Therefore, they try to follow regulations and produce products accordingly. More than one third of respondents do not have a pandemic/emergency plan and only 1 surveyed slaughterhouse did not answer to this question.

Figure 19. Do they have a pandemic/emergency plan?



During COVID 19 outbreak, majority of surveyed value chain actors managed to prepare a list of essential employees, raw materials and suppliers. Almost all beef and milk processors defined their needs and tried to arrange their business accordingly in order to reduce the influence of pandemic. The survey results showed that having a list of essential employees, raw materials and suppliers is less presented among cattle farms and retailers of dairy and beef products.

Figure 20. Have you prepared a list of essential employees, essential raw materials and suppliers?



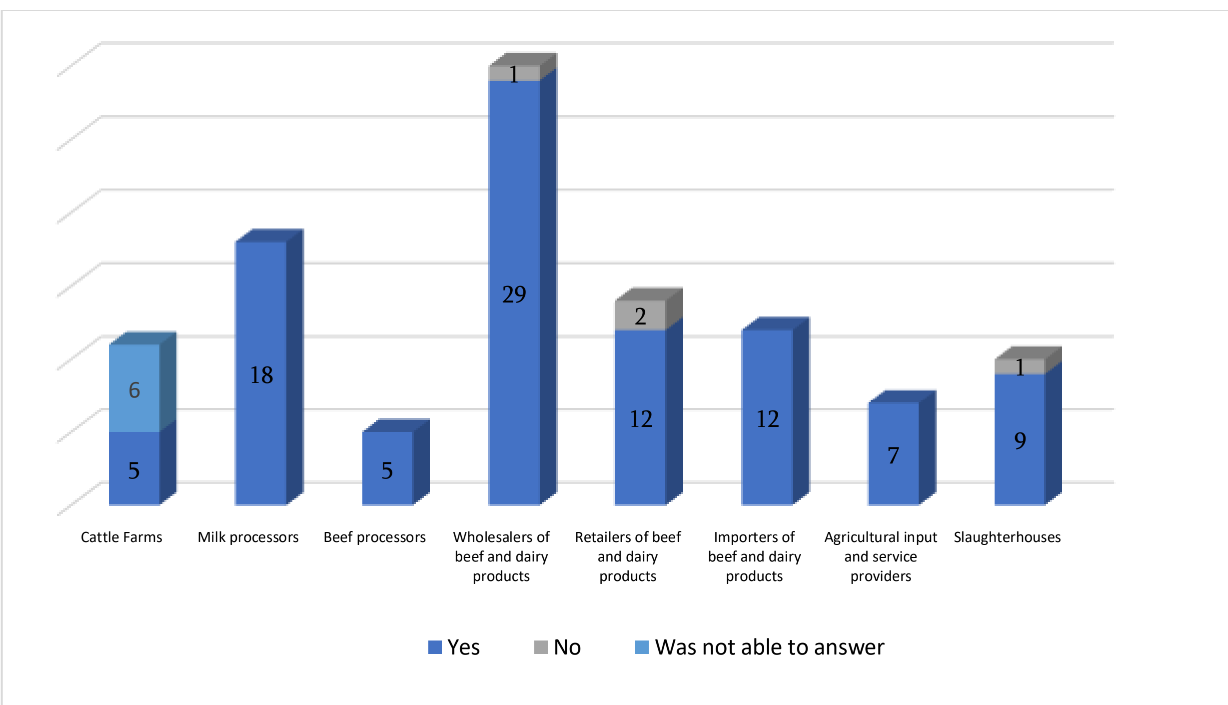
Majority of beef and dairy industry players noted that **revenue decreased**, **sales changed**, **number of workers decreased** due to COVID 19. Only 3 value chain actors had to change buyers and distribution channels. 2 cattle farmers and 1 agricultural inputs supplier had to change suppliers of raw materials due to the restrictions imposed during COVID 19. 8 out of 83 surveyed value chain actors stated that, they stopped production and closed business, because of different challenges currently facing.

75% of surveyed value chain players noted that they changed workplace procedures in order to decrease employees' contact with products. However, only less than half of cattle farmers answered to this question and for remaining cattle farms it was difficult to understand and give a specific answer. This might be explained by the fact that farmers are not aware of the procedures at the workplce during COVID-19 pandemic.

At the same time, 5 respondnets did not change workplace procedures. 3 out of these 5 respondents, did not explain the reasons and remaining 1 wholesaler stated that he does not know the procedures and another 1 beef and milk processor - does not have relevant equipment (e.g. face masks, gloves, etc.).

The survey results showed that majority of value chain actors and their employees attended training on personal safety issues, and employees were provided by equipment that is necessary for their safety. Especially almost all wholesalers of beef and dairy products ensure compliance with safety regulations. As shown by Figure 21, this issue is challenging on farm's level since more than half of surveyed cattle farms did not answer to this question.

Figure 21. Have you provided essential employees any additional personal safety training and /or supplies and equipment (masks, cleaning supplies, etc.)?



3. Conclusion and Recommendations

The survey conducted by GFA and Land O'Lakes Venture37 analyzed the impact of COVID-19 on dairy and beef value chains. The survey was administered by GFA's Call Center and, in total, 83 telephone interviews were conducted. The survey results showed that during COVID-19, dairy and beef value chain actors face challenges which impede their operations and create obsticles in all levels of the value chains.

In terms of availability, labor force and key agricultural inputs and services are still available, though it is difficult to access them because of imposed restrictions on transportation and movement in response to COVID-19. It is fortunate that workers are not infected by COVID-19 and they are still able to go to work. However, again because of transportation issues, cost of labor increased since business operators have to take care of transportation of their workforce. Based on the survey results, labor costs increased especially for wholesalers, retailers and importers of dairy and beef products. As for the prices of livestock inputs and services, the survey revealed that prices increased mainly due to GEL depreciation.

On the processing level, beef, milk and milk powder are still available for processors. At the same time, demand for dairy products increased, and half of the surveyed processors increased production of dairy products. On the trade level, more than one third of wholesalers, retailers and importers of dairy and beef products stated that due to COVID-19 they receive less quantities of dairy and beef products, because some of their suppliers stopped working and others have problems with transportation and delivering finished livestock products to the wholesale and retail chains.

The survey results show that COVID-19 and imposed measures cause changes in distribution behaviour. Particularly, farms and businesses have to take care of the distribution themselves. Some of them already have identified new channels of distribution such as online sales. While some of them created own website and facebook pages, others contacted existing online platforms.

As for the sales, dairy and beef value chain actors are experiencing changes in sales in response to COVID-19 related reasons. Specifically, the survey revealed that demand for beef is decreased but demand for dairy products increased from consumers. This can be explained by the fact that many Georgian doctors are currenlty more intensively recommending eating dairy products during outbreak of COVID-19.

Overall, the main problem that the survey results show is **the restrictions imposed on transportation and movement in response to COVID-19 related reasons.** Particulary, existing restrictions make it difficult to access agricultural inputs and services, to supply raw milk and live animal to the processors, to supply processed dairy and beef products to the whole and retail chains, and finally to deliver the product to final consumers.

Based on the survey results, the following recommendations could be developed:

- Increased regional representation of agricultural inputs and service providers in order to ensure easy access to their products and services during pandemics;
- Maintain certain stocks of packiging material and other supplies in order to be able to maintain operations for a certain period of time;
- Create diversified distribution channels such as agrarian markets, shops, supermarkets, and online sales;

- Maintain regular communication with government on national and local levels to be informed about imposed regulations and restrictions during pandemics;
- Develop emergency plans for farms and businesses: “how to manage the business during pandemics”;
- Recruit a back-up workforce in order not to experience labor shortage;
- Increase awareness of employers about safety rules and how to behave during pandemics.