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care

The Georgian Trout Sector: A Regional Value Chain Study

ISET
International School of Economics at TSU
Policy Institute

Agricultural Policy Research Center
at ISET Policy Institute

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A Regional Value Chain Study

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ENPARD: Support to Agriculture and Rural Development

The European Union is supporting rural development in Georgia through its European Union under European Neighbourhood Programme for Agriculture and Rural Development (ENPARD). Implemented since 2013, with a total budget of EUR 102 million in 2013-2019, the main goal of ENPARD is to reduce rural poverty in Georgia. The first phase of ENPARD in Georgia focused on developing the potential of agriculture. The second phase focuses on creating economic opportunities for rural population that go beyond agricultural activities. More information on ENPARD is available at: www.enpard.ge

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All errors remaining in this text are the responsibility of the authors.

ABBREVIATIONS AND ACRONYMS

B&B	Bed and Breakfast
CARE	Cooperative for Assistance and Relief Everywhere
CIS	Commonwealth of Independent States
DCFTA	Deep and Comprehensive Free Trade Area
ENPARD	European Neighborhood Programme for Agriculture and Rural Development
EU	European Union
FAOSTAT	FAO Corporate Statistical Database
GEL	Georgian Lari
Geostat	National Statistics Office of Georgia
GSP	Generalised Scheme of Preferences
ISET	International School of Economics at Tbilisi State University
ITC	International Trade Center
Ltd.	Limited Liability Company
MoF	Ministry of Finance
MPIS	Market Price Information System
NGO	Non-Governmental Organization
SWOT	Strengths, Weaknesses, Opportunities and Threats
UNDP	United Nations Development Programme
US	United States
WTO	World Trade Organization

1. EXECUTIVE SUMMARY

As a freshwater resource-rich Caucasian country, Georgia is well-positioned to produce high quality trout in its mountains. However, the Georgian trout sector is struggling and faces a number of constraints to further development.

In this study, we conducted both desk and field research, including an analysis of official data from the National Statistics Office of Georgia and interviews with various stakeholders in the trout value chain. We also put forth a case study of the trout cooperative Samegobro 2014 in which we discuss in detail the challenges many trout farmers face on an everyday basis.

According to our analysis, the most pressing constraints the Georgian trout sector faces are an absence of local trout feed production and high prices of imported feed products, which negatively impact the competitiveness of local firms; the absence of professional farming skills; the absence of disease control and prevention mechanisms; and the absence of infrastructure and logistical facilities necessary for product differentiation.

Given these constraints, we considered the perspectives of trout farmers, representatives from the Ministry of Agriculture and its Agricultural Cooperatives Development Agency, and professional associations to propose a set of recommendations that, we believe, most closely align to the interests of all trout value chain stakeholders and are realistic to implement at the same time.

In particular, we advocate local trout feed production, the creation of professional veterinary care and water quality management services, the formation of professional education centers and the formation of second level trout farmer cooperatives.

It is our belief that the degree to which these recommendations are met will determine the future of the trout sector development in Georgia.

2. THE TROUT SECTOR IN GEORGIA AND AROUND THE WORLD

Trout is the common name for a number of fish species belonging to the Salmonidae family. In Georgia, the most prevalent species is the rainbow trout (Oncorbynchus mykiss) which itself includes two subspecies of common and golden rainbow trout. The rainbow trout is a high value fish, which survives in a cold and highly oxygenized water environment. Their natural habitat, with some exceptions, is upstream mountain rivers. A combination of genes, living conditions (physical and chemical composition of the environment – mainly related to oxygen levels in the water and water temperature) and food are the key determinants of the visual appearance of the fish (color and shape). A normal adult rainbow trout weighs about 2-3 kg and lives for a maximum of 11 years[1].

Rainbow trout is native to the Pacific coasts of North America and Asia. It is thus also known as American trout among farmers. During the period 1936-1940, it was exported to around 82 countries, including Georgia[2].

In Georgia, the river trout species is also popular, especially in terms of sport fishing. The river trout has the peculiar physical characteristic of red spots on its body. During the past several years, the amount of Georgian river trout has decreased significantly in Georgia's rivers. It has received endangered species status and was included in the so-called "Red List of Threatened Species".[3] The rainbow trout discussed in this study is currently used for mass production and consumption in Georgia.

In general, trout farmers keep their fish in artificial ponds, lakes or tanks. Mountain rivers or ground water are used as a source of water. For normal trout growth, it is essential that the water is clear, clean, cold and oxygenized. Water temperature, ideally of 7-18 degrees Celsius, plays an important role in the trout's metabolism (Gross, 2014). At temperatures outside the normal range, trout will eat less and grow slowly. In addition, less oxygen at higher temperatures can increase the risk of disease (Gross, 2014). The amount of water and the strength and velocity of water flow are also important factors. These parameters should be adjusted according to the physical size of the trout.

Growing trout is intensive farming (as opposed to extensive farming) and, as with other types of intensive farms (such as converting feed into meat), the feed used is a very important component in the process of producing high quality trout (Gross, 2014). As a rainbow trout requires different types of feed at different stages of its lifetime, trout feed producing firms produce a number of types of feed. In some cases, farmers use homemade feed (comprised of corn and anchovy) as a substitute for commercial trout feed products. However, this practice is not recommended as it is associated with a high risk of disease and loss of fish. Moreover, using homemade feed is not efficient as it slows down the growth of fish compared to commercially produced feed. Experience shows that using commercially produced feed is more successful and profitable (Woynarovich et al., 2011).

Photo: Common and golden rainbow trout species

[1] For more information, see: http://www.fishbase.org/Summary/speciesSummary.php?ID=239&AT=rainbow+trout
[2] For more information, see: http://www.promote.ge/2/fauna/tevzebi.html
[3] For more information, see: http://moe.gov.ge/index.php?lang_id=GEO&sec_id=49&album_id=10&info_id=#seegal

"The rainbow trout is unique carnivorous fish which can survive only in cold running water. It requires high protein feeds and well oxygenated water. It contains an element called "omega-3" which is very good for health. It is tasty and highly nutritious food, has no intra-muscular 'Y' bones and is easy and safe to eat" (Karki, 2013)

Trout is produced around the world, including in the South Caucasus. In Georgia, almost all trout farms are oriented on producing plate-size trout (weighing 200-300 g) in response to prevailing market demand. In Georgia, it takes between 6 and 12 months to reach the salable size of trout, depending on feed and water conditions. Trout dishes (especially those that use processed trout) are rare in Georgian cuisine and mostly fried or boiled trout is consumed. According to our field research, as of 2015 trout consumption in Georgia is estimated to be between 2,000 and 2,500 tons a year. According to an FAO report from 2010, annual trout consumption in Georgia was estimated as being between 450 and 600 tons (Khavtasi et al., 2010). It is fair to say that the culture of trout consumption has room for growth in the country.

The main rainbow trout producers are the EU, Chile, Norway, Turkey and Iran. According to 2014 ITC data, the top trout exporter countries are Norway, Sweden, Denmark, Italy and Spain. According to the same data, the main importer countries are the Russian Federation, Belarus, Finland, and Poland.

3. SCOPE OF THE STUDY

The main goal of this study is to identify policy options through which the competitiveness of the Georgian trout sector might be improved. We analyze and describe the complete trout sector value chain in Georgia (focusing on western Georgia) and propose different policy approaches aimed at improving overall productivity in the sector.

In particular, this study aims to

- Analyze the existing forms of the trout value chain in target municipalities.
- Calculate the cost of production, associated costs, and value additions across the entire value chain, from production functions to end market dynamics.
- Examine the strengths, weaknesses, opportunities and threats (SWOT analysis) of the current trout sector.
- Suggest options for improving the efficiency of the value chain in terms of increasing margins for farmers, considering associated costs and value additions.
- Analyze the current trout supply and demand system, including market volumes, market shares and seasonality trends.
- Briefly examine and assess existing infrastructure at trout farms and identify measures to improve it, leading to sustainable management.
- Include consideration of how different stakeholders (government, private sector, donors etc.) may be involved.
- Assess the concerns and quality of relationships among actors along vertical and horizontal linkages of the trout value chain, including dynamics among various interest groups (e.g. input suppliers, service providers, producers, traders, exporters-importers, government, donor organizations etc.).
- Identify potential enterprises (e.g. cooperatives) of the trout value chain in vertical and horizontal linkages where smallholders can have a decisive role and a fair stake across linkages of the trout value chain.
- Suggest strategies for attracting farmer groups to increase investments in trout value chain enterprises.

Given the study objectives, we performed the following:

- Developed a SWOT analysis of the current trout market in western Georgia based on secondary data and insights from stakeholder interviews.
- Mapped the trout value chain (via flow chart and grid maps) based on literature, secondary data and interviews with stakeholders.
- Identified the main trout farms in the region.
- Described the vertical and horizontal relationships among the trout value chain actors.
- Developed average trout farm costs and benefits.
- Assessed the added value at each link of the trout value chain.
- Conducted a market analysis for trout (including market prices), based on statistics, a consumer survey and semi-guided stakeholder interviews.
- Elaborated some recommendations based on the results of the study.

3.1 Methods and Approaches

This report is based on both desk and field research. This study also benefited from the Stakeholders' Forum on the Trout Sector that was organized by the Care consortium (Care, ISET Policy Institute, RDA and GFA) and held in Kutaisi in December 2015. The forum was attended by representatives from the Georgian government, private enterprises (e.g. trout cooperatives and farmers), the Georgian Fishermen Association, the Georgian Farmers Association, veterinary and input suppliers, and donors.

In this study, the structure and competitiveness of the

sector's value chain are analyzed visually (relying on flow charts and grid maps) and by using descriptive techniques such as SWOT analysis, context analysis and estimation of the share of value added at each link in the chain. Data sources include literature studies, statistical files (Geostat, ITC, MPIS), and direct observations and interviews, as well as the discussions held at the forum mentioned above.

3.2 Desk Research

The desk research involved collecting statistics and information from sources such as the Ministry of Agriculture of Georgia (MPIS data), Geostat, FAOSTAT and ITC data; studies on the Georgian trout sector, as well as international practices and information from the Trout Association in Georgia. Some local trout sector stakeholders (farmers and trout feed importers) were also very helpful in providing information about this sector and its development over the years.

3.3 Field Research

We visited trout farms in target municipalities across western Georgia[4] and interviewed trout farmers in May and June 2015. Other stakeholders were interviewed in the fall of 2015 (e.g. input and service providers, representatives of associations, etc.). Semi-structured interviews were conducted face-to-face with local trout growers, workers, cooperative members and directors, representatives of the trout growers' association, trout input suppliers, including feed importers and veterinary service providers, experts and local government authorities.

3.4 Limitations

It should be noted that the available statistical data about trout farms, trout production and consumption in Georgia are often of limited quality. While our field research helped clarify a number of issues, there is still limited evidence regarding macro level (national level) data on the trout sector, and micro level (farm level) accounting data for producers, importers and exporters. These actors (particularly trout growers) seldom maintain precise accounting records.

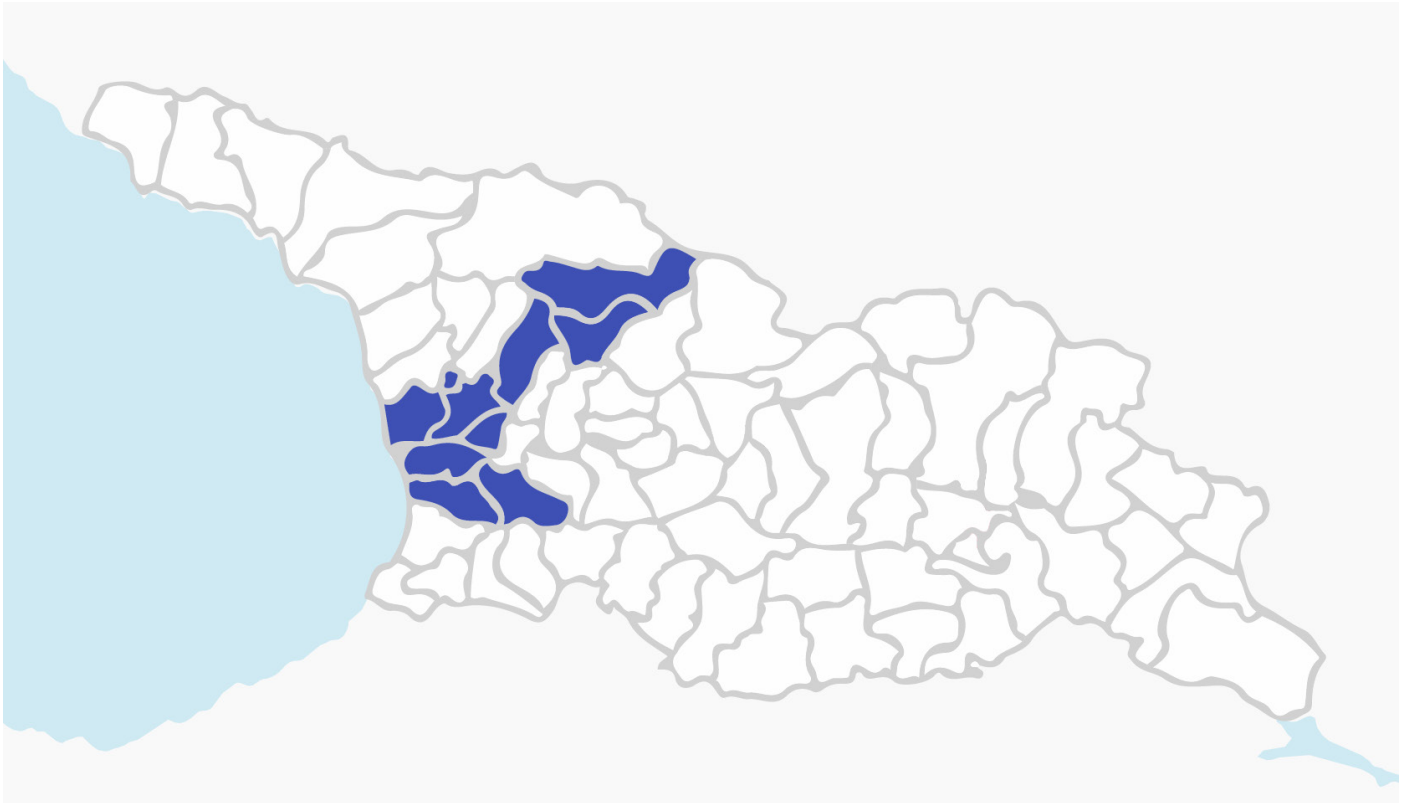
Nevertheless, this study is a rare attempt to analyze the trout value chain in Georgia and it aims at improving readers' understanding of the challenges and opportunities facing the trout sector in western Georgia.

3.5 Study Area

As Georgia is a mountainous country with plenty of cold water sources (rivers, springs and underground water) one can find trout farms in various parts of the country. The desk research for this study covered the whole of Georgia, while the field research was focused on the target municipalities of the CARE consortium (where the ENPARD project supports the formation of agricultural cooperatives). These municipalities are all three municipalities of Guria – Ozurgeti, Lanchkhuti and Chokhatauri; four municipalities from Samegrelo-Zemo Svaneti – Abasha, Khobi, Senaki and Martvili; and two from Racha-Lechkhumi and Kvemo Svaneti – Tsageri and Lentekhi. We visited all the farms involved in trout production, including trout cooperatives and Ltds., operating in those areas.

[4] A complete list of the municipalities covered can be found in Figure 1 below.

Figure 1: Map of CARE Consortium Target Municipalities (Highlighted)



The trout farms are mostly located in mountainous parts of the regions.

Photo: The natural beauty surrounding the trout farm in Kulbaki village in the Tsageri municipality of the Racha-Lechkhumi and Kvemo Svaneti region.

4. TROUT SECTOR ANALYSIS IN GEORGIA

4.1 Trout Production in Georgia

There are no official statistics regarding trout production in Georgia. However, from our field research we learned that there is a nearly one-to-one correspondence between the amount of trout feed imported and the amount of trout produced. From field interviews with various trout feed importers, we also learned that Georgia imports between 2,000 to 2,500 tons of trout feed a year. Therefore, our rough estimate is that trout production in Georgia amounted to 2,000-2,500 tons in 2015.

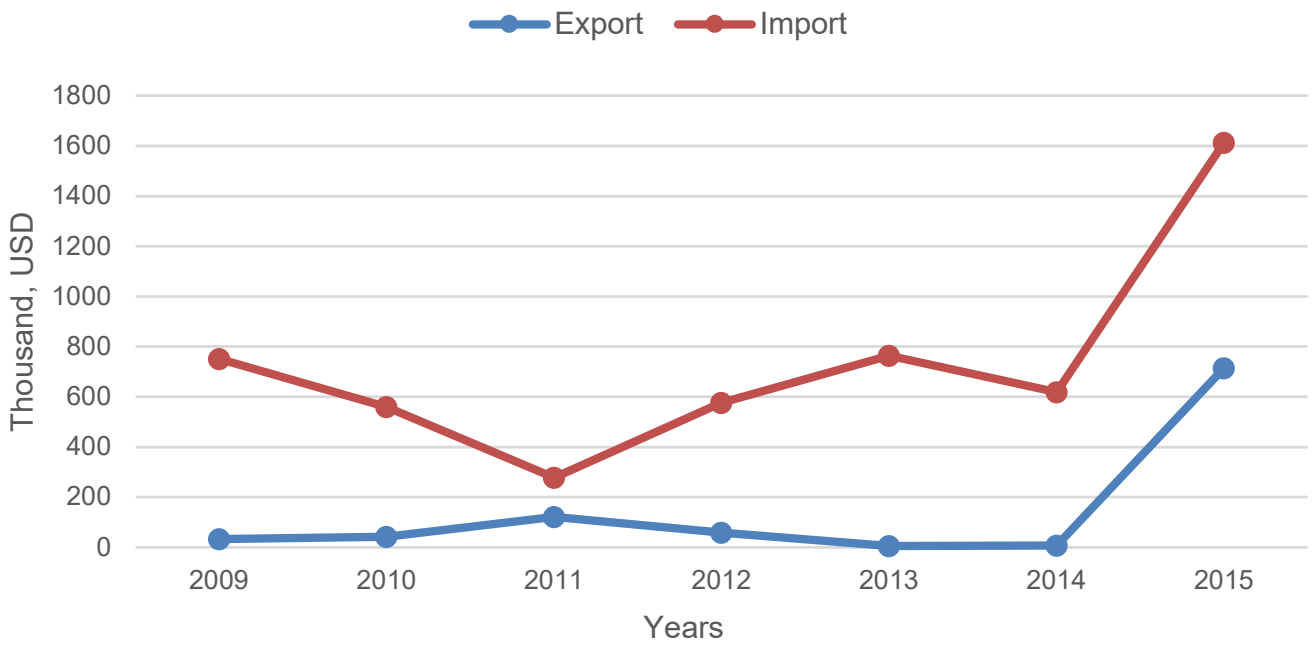
Our target municipalities produced roughly about 300 tons of trout in 2015. In western Georgia, Adjara is one of the main trout producing regions, while Shida Kartli and Samtskhe-Javakheti dominate the trout producing regions in the east.

4.2 Exports and Imports of Trout

Figure 2 depicts the evolution of trout exports and imports from 2009 to 2015. Notably, Georgia was a net trout importing country throughout this period. Another important aspect to note is that until 2014 Georgia registered virtually zero exports, while starting from 2015 we see a spike in both exports and imports.

Photo: Trout farm in Vakijvari village in the Ozurgeti municipality of the Guria region

Figure 2: Evolution of Trout Export and Import by Trade Value in Georgia



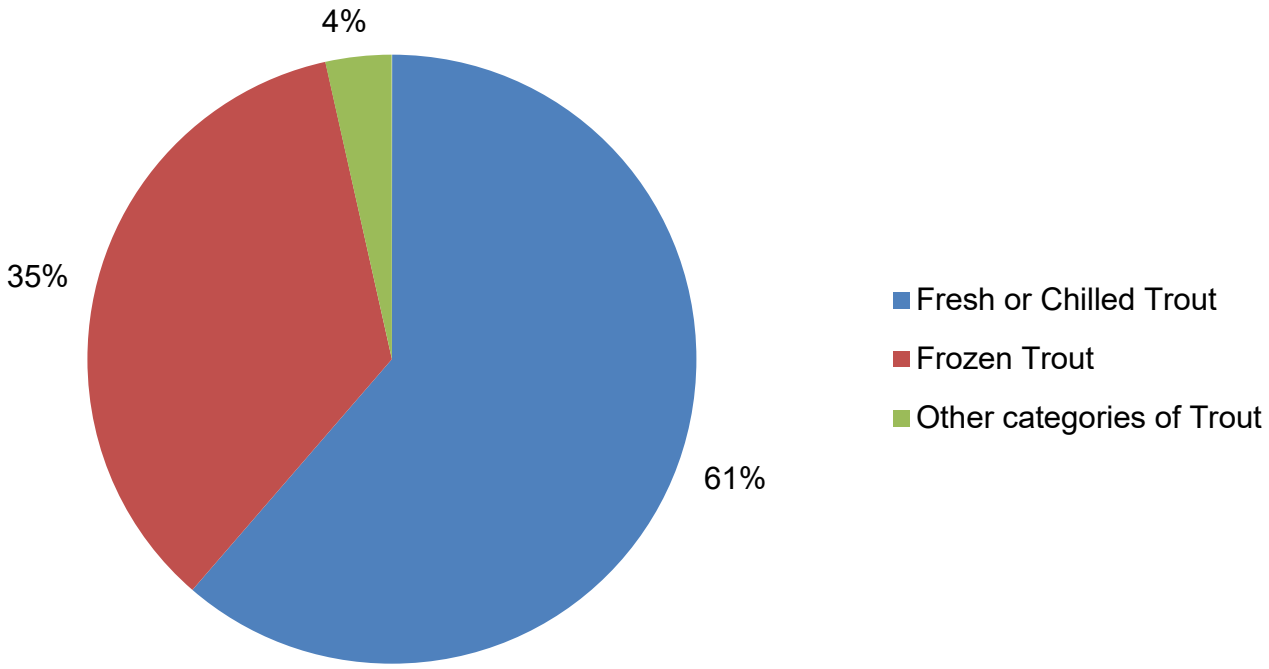
Source: Geostat

Georgian farmers lack financial and logistical capacities to produce en masse. So what lies behind the change in 2015?

To better understand the puzzle of 2015 we need to look at the categories of exported and imported trout. Georgia exclusively exported frozen trout in 2015 (123 tons with a value of 714 thousand USD). Georgian farmers have limited logistical capabilities, like refrigeration facilities, necessary for deep freezing used in trout export business – hence the puzzle.

If we look at Figure 3 below, we see that frozen trout had a significant share in imports in 2015, amounting to 35% (214 tons with a value of 567 thousand USD) of total trout imports

Figure 3: Share of Each Category of Trout Imports in Georgia in 2015

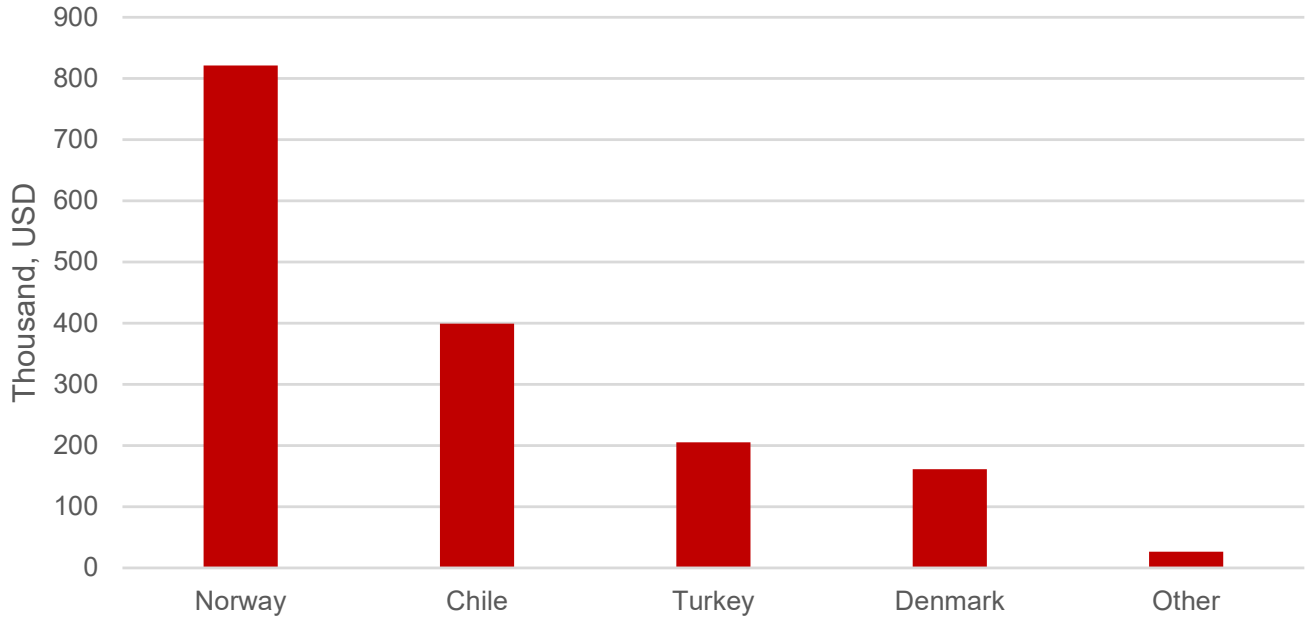


Source: Geostat

Looking at the top countries importing trout to Georgia and the top trout export destination countries we can start shedding light on the apparent puzzle.

According to Figure 4, the top trout importing countries in 2015 by trade value for Georgia were Norway, Chile, Turkey and Denmark.

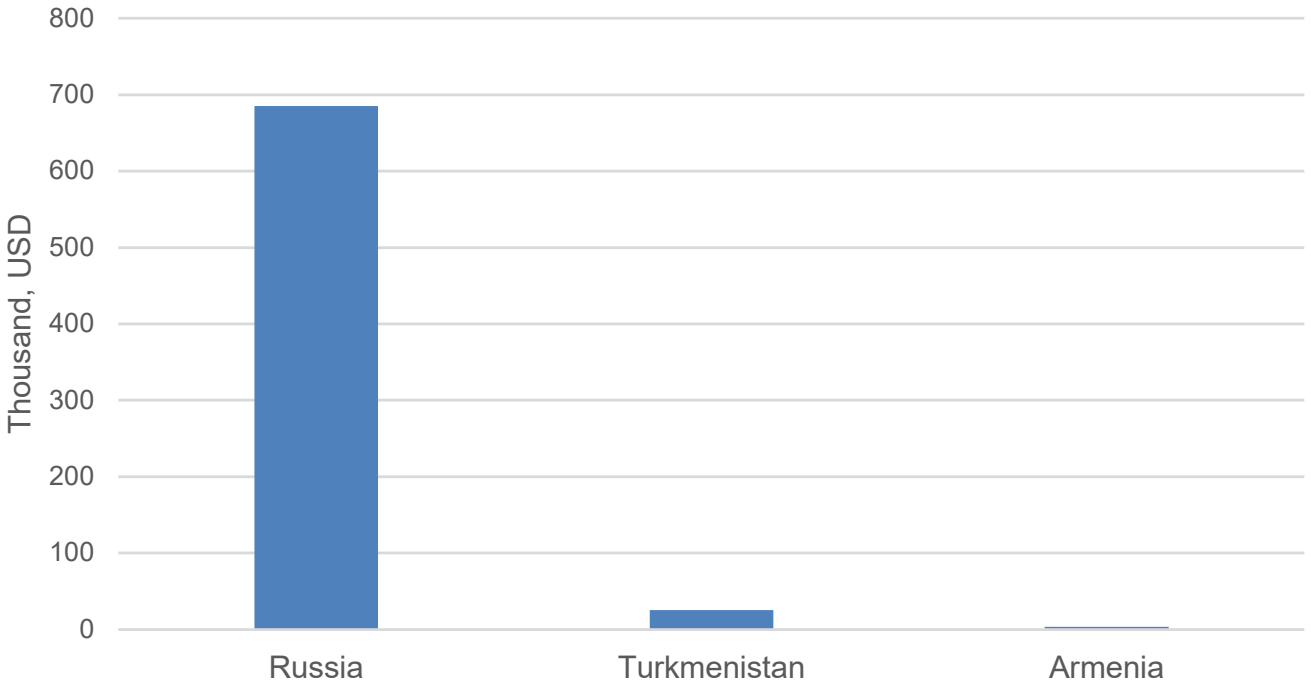
Figure 4: Trout Import Countries by Trade Value in Georgia in 2015



Source: Geostat

According to Figure 5, the top trout export destination country for Georgia was Russia in 2015 year.

Figure 5: Trout Export Countries by Trade Value in Georgia in 2015



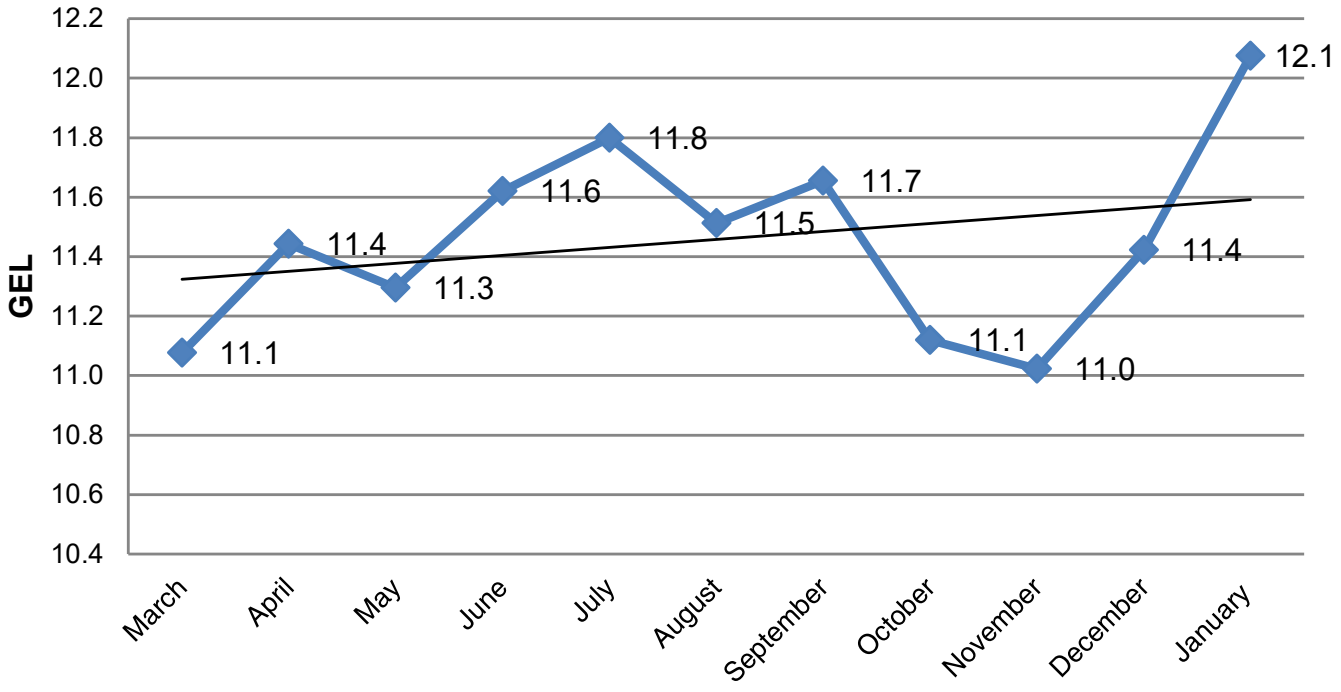
Source: Geostat

We postulate that it is a matter of simple coincidence that we see an unusual increase in trout export and import values. In particular, in early 2015 the Russian Federation banned food imports from Scandinavian countries like Norway and Denmark. As Norway and Denmark were among the top source countries for Georgian trout import in 2015, while the top trout export destination country was Russia, it is obvious that the apparent puzzle is simply reflecting an increase in re-exports. We should not suppose that the increase in trout exports was due to an increase in the productivity of Georgian trout farms.

4.3 Trout Price

Figure 6 below depicts the evolution of the price of trout from March 2015 to January 2016. We see that the retail price of trout on the Georgian market remained relatively stable during the year, ranging from between 11 and 12 GEL per kg. Average trout prices across the regions can be found in Figure A1 in the Annex. The highest average price for trout is observed in Racha-Lechkhumi, while trout is cheapest in Shida Kartli due to large production volumes in the region.

Figure 6: Average Monthly Price of 1 KG [Fresh] Trout in Georgia (March, 2015 - January, 2016)



Source: Ministry of Agriculture

Unlike the average retail price of trout, which remained more or less stable during the year, according to the information we received from trout farmers during interviews, the wholesale price varies according to the season. Most trout farmers have marketable trout in the beginning of the summer and the wholesale price drops to 6 GEL per kg at the farm gate, while during low seasons the wholesale price is around 8 GEL per kg.

The main market for trout in Georgia is Tbilisi. The retail price there varies from between 9 to 12 GEL (during summer and winter respectively).

5. DESCRIPTION OF THE MAIN STAGES OF TROUT FARMING

We identified four main stages of trout value chain in Georgia:

1. Production
2. Transporting / Processing
3. Marketing / Exporting
4. Consumption (mainly as whole, unseparated plate-size trout)

For a detailed description of the value chain stages, refer to the grid map in Figure 7 below.

Within the production stage we identified the following steps:

- Roe (eyed egg) production
- Fry production
- Fingerling production
- Table trout production

According to Woynarovich et al. (2011), it is not recommended that beginners start with roe production as it is a very delicate process and requires specific skills and exceptional farm management. A better strategy would be to purchase roe from farms already experienced in this task and specialized in roe production.

Small farmers usually produce only one type of product – table trout. They purchase roe, fry or fingerlings as they cannot operate a whole production line due to a lack of professional skills and appropriate logistics. Only a small number of farms are able to combine all or some production processes into a single process (vertically integrated value chain).

The feeding process itself is quite delicate. Farmers should take into account the behavior of the fish. For example, rainbow trout are notorious for their aggression, which can include them eating their own kind. Thus, the sorting of different sizes of trout into separate ponds is needed. The symmetric distribution of feed in the pond is also very important. Furthermore, feed needs to be stored safely, away from rodents, and in dry conditions to prevent damage caused by humidity.

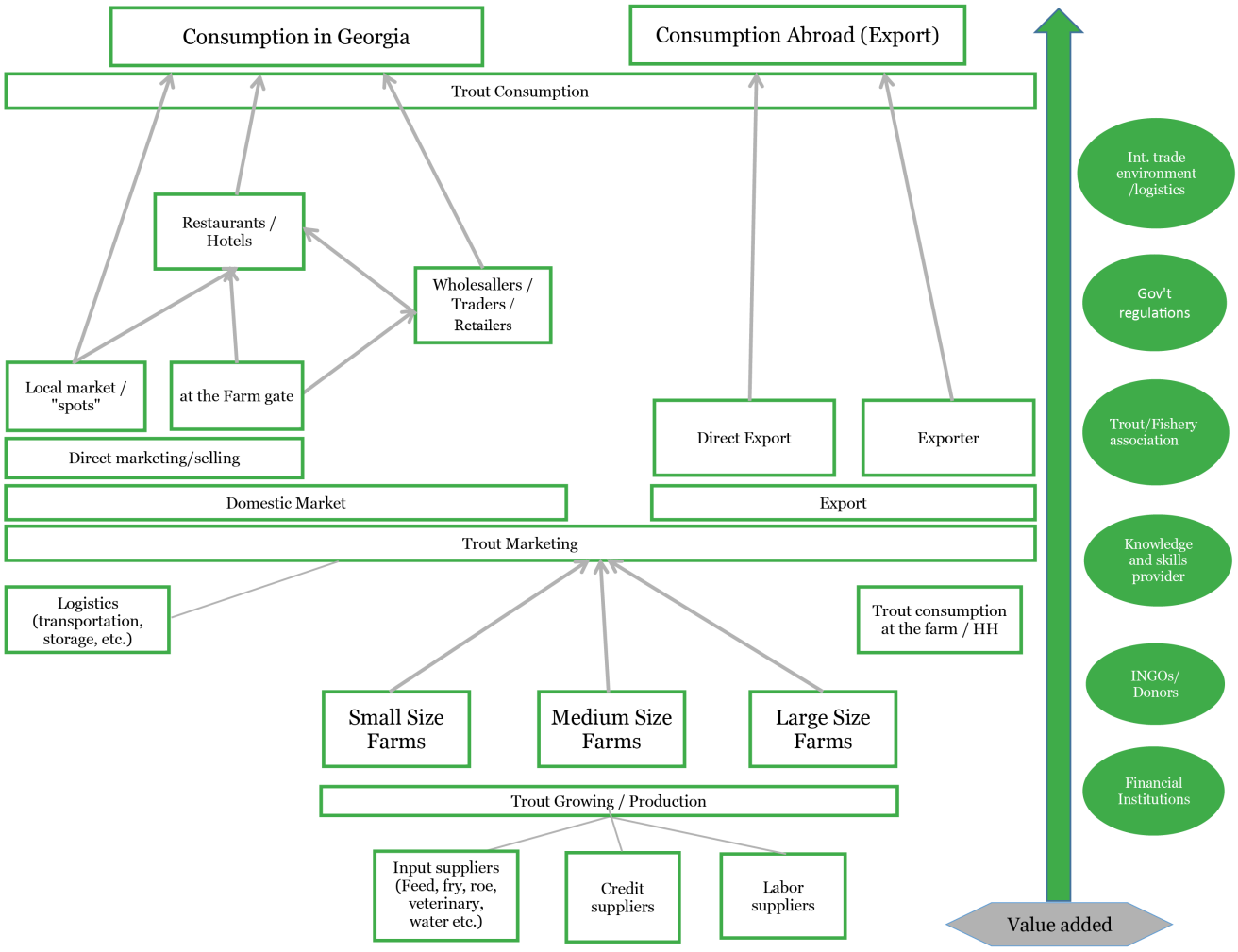
Having proper disease control mechanisms in place is another important aspect of trout farming. This requires constant supervision of a number of parameters to ensure that the environment is stable and the necessary conditions are met.

In most cases, farmers utilize locally produced fry. Others import fry (or roe) from abroad. After the production stage is complete, farmers engage in marketing. Some farmers sell their trout via their own distribution network across the country, while others sell in specifically designated locations in their own regions. It also happens that wholesalers and consumers purchase trout directly at the farm gate.

Almost no Georgian farms specialize in trout processing. As a result, only live (or fresh) trout is sold on local markets. Similarly, due to a lack of proper technology, facilities and processing capabilities, Georgian farmers only export live trout.

As we have already mentioned, there are no data regarding the consumption of trout in the domestic market. According to our research, Georgia consumed about 2,000-2,500 tons of trout in 2015. Most likely, people are consuming table trout either fried or boiled at home or in cafes and restaurants. According to trout sector experts, the trend of trout consumption (as well as production) has been increasing over the last decade in Georgia. However, there remain few trout dishes and a lack of diversified trout products produced in the country.

Figure 7: Grid Map Showing All Stakeholders and Stages of the Trout Value Chain in Georgia



6. THE EXTERNAL ENVIRONMENT

In this section, we identify the external factors that influence or have the potential to influence the development of the trout sector in Georgia.

6.1 Government Agencies

The government of Georgia declared 2016 as a year of aquaculture. They have plans to develop the fishery sector (including trout) in Georgia. In particular, they plan to provide Black Sea fishing licenses to those companies that will build trout feed producing factory in Georgia. In addition, the government plans to support the creation of refrigerator and processing facilities.

6.2 Development NGOs, Donors

In cooperation with the Georgian government, some donors and NGOs have already started supporting the trout sector. The lead project is ENPARD Georgia, which provides financial support and technical assistance for trout cooperatives. The ENPARD project is implemented by four consortia (and UNDP in the Adjara region). Among those, the CARE consortium is supporting three trout cooperatives.

6.3 Sectorial Associations

There is a trout association in this sector, but it needs to build its capacity to better advocate the sector's interests and help trout stakeholders in its development.

6.4 Financial Institutions

Microfinance organizations and banks are well developed in Georgia, yet interest rates on agricultural loans are very high. In addition, the required value of collateral is very high and unaffordable for most trout farmers. However, in rare cases (only one in our target municipalities) farmers receive preferential credits.

6.5 Research Institutions / Knowledge Providers

No aquaculture research institute or center exists in the country. GeoVet is the only service provider in this regard. They have professional veterinarians and the medicaments necessary for disease treatment. However, according to a GeoVet representative, a lot is missing that would be necessary to facilitate the sector's development. First of all, there is no proper laboratory in place where one can investigate trout disease and issue relevant recommendations to farmers about how to fight it. There is also a shortage of professional ichthyologists. In general, research centers and knowledge providers have major shortcomings when it comes to keeping pace with the modern requirements of the trout industry worldwide.

6.6 International Trade Environment / Logistics

Georgia is a member of the WTO. It also has some preferential trade relationships with the EU (DCFTA), bilateral free trade agreements with CIS countries and Turkey. Georgia has a Generalised Scheme of Preference (GSP) tariff arrangement with the US, Norway, Switzerland, Canada and Japan. Additionally, negotiations over a free trade agreement with European Free Trade Association countries (Iceland, Liechtenstein, Norway and Switzerland) are expected to be finalized this year. Moreover, free trade negotiations with China started last year. Despite these developments, some local trout producers worry that bilateral free trade agreements may lead to more competition and a loss of traditional markets.

The infrastructure for sea, ground, and air transportation is generally well developed in Georgia, but in order to deliver trout over long distances, special refrigerators (e.g. shock refrigerators) are required, which are currently barely available.

6.7 Certification Agencies

There is a local organization (Caucassert Ltd.) that conducts organic certification, but not yet for trout. In addition, some governmental agencies are issuing export certificates at a low price for farmers/traders in a very short time period.

7. KEY BENEFITS AND VALUE ADDED ACTIVITIES

Figure 8 below depicts the sequence of value chain stages from production to consumption.

Figure 8: Flow Chart of Trout Value Chain

7.1 Added Value by Actors at Each Link

7.1.1 Farmer:

The price received by farmers for 1 kilogram of trout at the farm gate may vary from 6 to 8 GEL, depending on the season and region. The cost of production per kilogram is difficult to estimate, due to a lack of bookkeeping at the farm level. However, according to our estimates, costs are up to 5 GEL per kg of trout.

Trout feed holds the highest share in production costs. In order to produce 1 kg of trout, 1 kg of trout feed is required, amounting to 70% of total production costs (for big farms it is less, about 60-65%). Other production costs include costs for purchasing fry (or roe in some cases), water license and property tax, veterinary medicines and treatment, labor costs, transportation costs (for inputs or outputs) and maintenance. Table 2 in section 8 below, shows the costs and benefits for a farmer with 10 tons of trout production, assuming an average price of 7 GEL per kg of trout.[5]

7.1.2 Wholesaler:

The wholesaler buys trout for 7 GEL per kg on average at the farm gate and takes it to wholesale markets or to special ponds where the trout is kept for a short-period and delivered according to demand. The price the wholesaler receives is about 9 GEL per kg. Transportation and labor costs amount to about 0.5 GEL per kg.

7.1.3 Retailer:

There are several retailers of trout in Georgia including open markets, supermarkets, hypermarkets, cafes and restaurants (which serve ready prepared trout dishes, either fried or boiled) and hotels. The price consumers pay for 1 kilogram of trout is different, depending on whether one buys a fresh trout (to cook later) or a trout dish as served in restaurants. For the latter, the price can be between 30-35 GEL per kg of trout.[6] This study, however, focuses only on fresh trout sold in the market.

We acknowledge that the referred numbers are rough estimates and in practice one would observe quite a lot of heterogeneity in the prices being charged at various stages of the value chain (also, some farms sell fry and roe and have diversified income portfolios). Table 1 and Figure 9 provide a summary of the value added activities throughout the entire value chain.

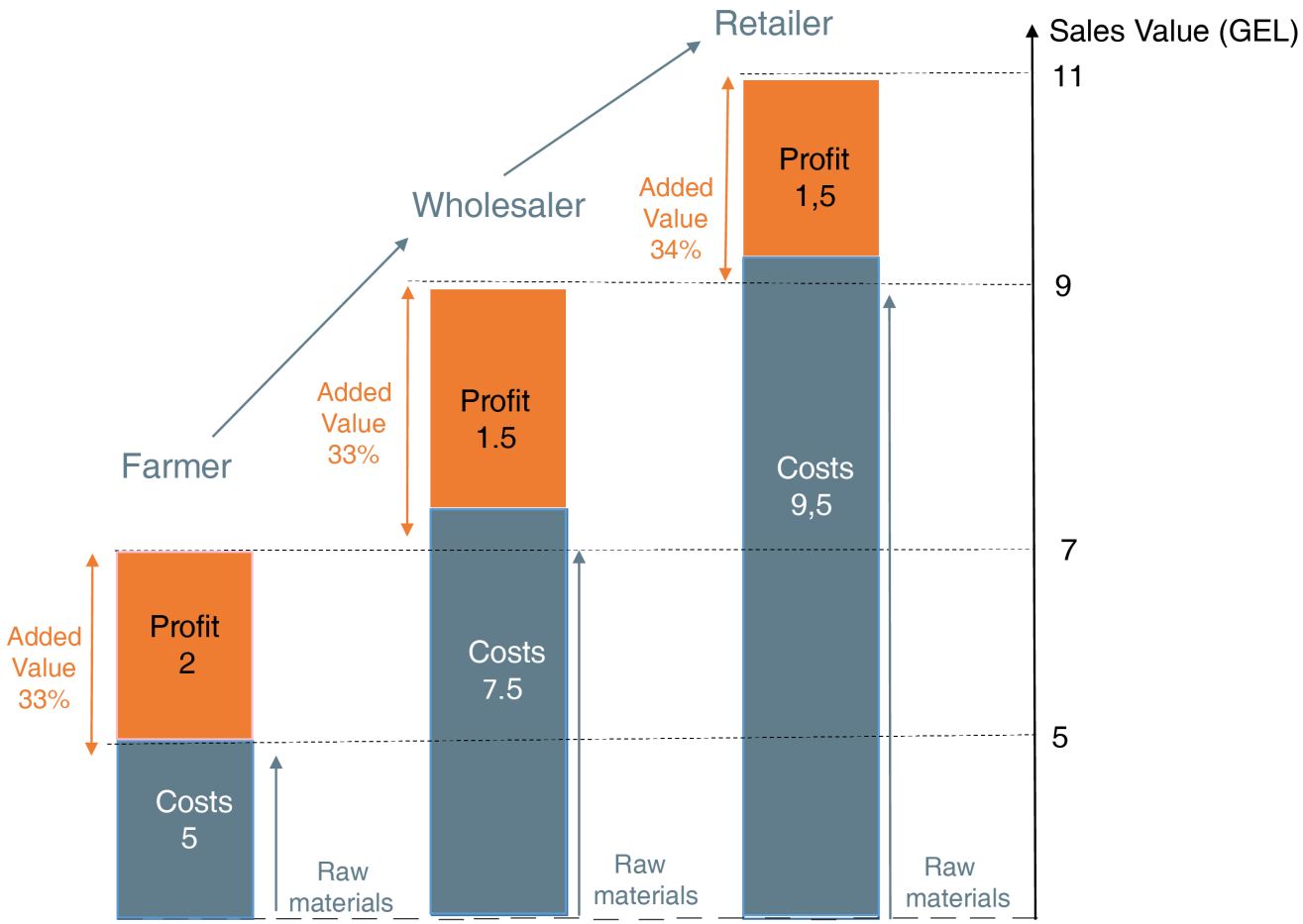
[5] Price fluctuations (across regions and seasons) are given in Figure A1 in the Annex,

[6] As we already mentioned, one table trout commonly served at the Georgian trout market weighs about 200-300 grams and the price of one cooked trout varies between 6-7 GEL on average.

Table 1: Added Value by Actors at Each Link (per 1 kg of Fresh Trout)

Stage of the Value Chain	Sale Value of the Product (GEL)	Costs (GEL)	Profit (GEL)	Value Added (GEL)
	5			
Farmer	7	5	2	2
Wholesaler	9	7.5	1.5	2
Retailer	11	9.5	1.5	2
Total Value Added				6

Figure 9: Key Benefits and Value Added Activities



The profit margins in the trout value chain are seemingly quite attractive. For example, the profit margin for farmers is about 28%. Field research data suggest that the profit margins for wholesalers and retailers are 17% and 14% respectively. When it comes to added value, retailers claim 34% of value added in the trout value chain, while wholesalers and farmers both add up to 33% of the value.

The profit margin and value added in the cooked trout business (e.g. in cafes and restaurants) is even higher (see Annex Table A1).

8. COSTS AND BENEFITS FOR THE TROUT FARM

8.1 Costs and Benefits of a Trout Farm Producing 10 Tons of Salable Trout per Year

In order to produce 1 kilogram of trout[7], roughly 1 kilogram trout feed is required. The price of feed varies from 3.5 to 4 GEL[8] per kilogram, depending on exchange rate fluctuations. As was mentioned above, feed has the largest share in trout production costs. Other costs are presented in Table 2 below.

Table 2: Costs and Benefits of a Trout Farm Producing 10 Tons of Stable Trout per Year

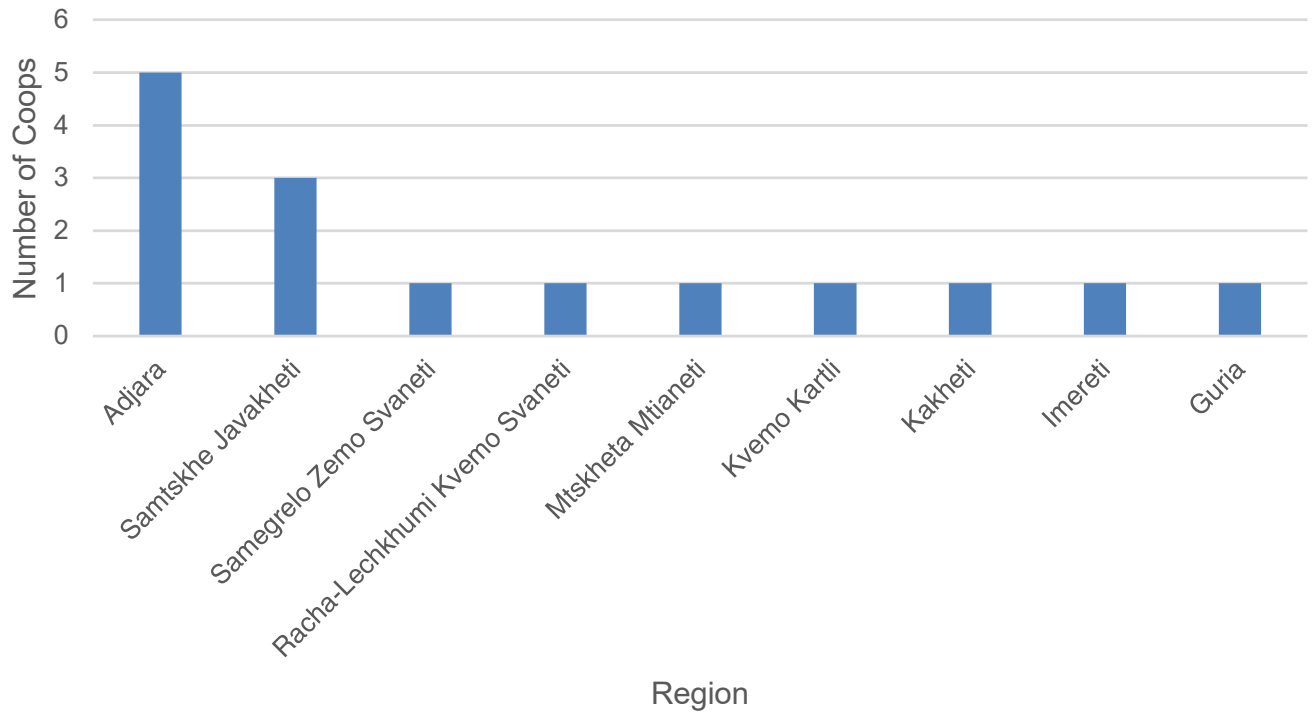
Expenses	**Costs per kg trout (GEL)**	**Total costs (average) (GEL)**	**Percentage Share in Total Production Costs for 1 kg of trout**
Fry (or roe)	0.25	2,500	5%
Trout feed	3.5	35,000	70%
Water license & property tax	0.10	1,000	2%
Vet medicines / treatment	0.15	1,500	3%
Labor cost / Salaries	0.25	2,500	5%
Input Transportation & Trout Distribution	0.50	5,000	10%
Other costs (e.g. repairing of ponds, etc.)	0.25	2,500	5%
Total	**5**	**50,000**	**100%**
Revenues	**Price per kg (GEL)**	**Total sold (KG)**	**Total revenues (GEL)**
Average price at the farm gate	7	10,000	70,000
Profit	Total in GEL		
Total profit	20,000		
Tax (20%)	0[9]		
Net Profit	20,000		
Net Profit Margin	28%		

[7] Trout is mainly sold at a weight of 200-300 g per head (a so-called table trout).
[8] December 2015, USD/GEL exchange rate of 2.40.
[9] Primary production of trout is exempted by the tax code.

9. TROUT COOPERATIVES

As of October 2015, there are nineteen registered fishery cooperatives in Georgia. Of these, fifteen are trout-producing cooperatives. Detailed information about the distribution of these cooperatives across regions is provided in Figure 10 below.

Figure 10: Trout Cooperatives across Georgia



Source: Agricultural Cooperatives Development Agency. Data as of October, 2015.

CASE STUDY[10]
SAMEGOBRO 2014

Chkhakaura village is located in a beautiful gorge between Nabeghlavi and Bakhmaro. As much as it is beautiful, it is inaccessible. The last 1.5 km of the road is ridiculously bumpy and filled with mud and it takes about thirty minutes to cover the distance even with the latest 4WD. At the end of the road, the tired passenger would discover what might be least expected in this seemingly desolate area.

What immediately strikes the visitor entering the village are the numerous ponds where five men, aged between 21 to 46, busy themselves with running a formidable trout farm in tandem. "Samegobro 2014" is an agricultural cooperative specializing in rainbow trout production that was formed in 2014 under the leadership of Otar Giorgadze. However, the road towards forming a farmer cooperative was as bumpy and as full of surprises as the road leading to the village.

It all began in 2005, when Otar, with his partner Bakur, started up a trout business. Otar owned the farm, while Bakur mainly provided a financial contribution to the business. In 2010, Bakur decided to move the business to a new and more accessible location and scale up the production. Bakur suggested that Otar work for him at the new premises. However, Otar wanted to have his own farm and was hesitant to leave the village. The decision to turn his partner down was not easy as it meant giving up all the machinery and facilities that Bakur helped purchase. The resilience, as Otar correctly understood, would cost him starting a business from scratch.

However, Otar persevered. With bare hands and

[10] A previous version of the study appeared on the ISET Economist and is available here: http://iset-pi.tsu.ge/index.php/en/publications/iset- economist-blog2/entry/agricultural-cooperatives-fishing-for-competitiveness

old fashioned technology and the full-hearted support of his hardworking friends, Otar worked day and night to ensure continuity of his small farm. He sought advice from experienced trout farmers in Adjara and thereby learned many intricacies involved in the trout business. His dedication, hard work and team spirit finally paid off and after a year Otar's farm was already producing 1.5 tons of trout. They would not have been able to survive, let alone be so successful, without helping each other in every aspect of their difficult business – growing fish in the middle of nowhere and bringing it to the market. For them, cooperation is a way of life.

Acknowledgment of the value of team work and the serendipity of changes in Georgia's legislation in 2013 prompted Otar and his team to formally register as a farmer cooperative, which they called "Samegobro 2014", in the following year. Moreover, they applied – and were selected – for funding and technical support from the European Neighborhood Programme for Agriculture and Rural Development (ENPARD). A recoverable grant of about 70,000 GEL allowed the group to renovate and expand their facilities, and to buy a pick-up truck to distribute trout and deliver feed and other supplies to the farm.

With the new technology the farm was able to expand its production to up to 6 tons of trout a year in 2014 and 11 tons in 2015. With the vehicle they bought thanks to the ENPARD contribution they are better poised to execute delivery of their product. The ENPARD grant was also vital for enabling Otar's farm to purchase roe, incubate fry and sell it to the market as a different product.

The cooperative sells trout in Tbilisi and Batumi markets through wholesalers. According to Otar, the price they get for 1 kg of trout is quite stable across year and amounts to 7-8 GEL. In 2015, they were able to secure contracts with several restaurants and hotels in Kutaisi.

During the summer time, the cooperative sells trout in Bakhmaro - a nearby tourist resort. They own two selling spots there. The demand for trout peaks in July-August and at that time the cooperative registers a sale of 50 kg of trout per day. According to Otar, they were able to sell 100 kg of trout on August 19 – a day which falls on a famous religious and public festival that attracts a lot of tourists and that culminates in a notorious feast in the evening. Otar's farm also owns a selling spot in Nabeghlavi village where they are able to sell 10 to 15 kg of trout a day on average.

It also happens that individual consumers visit the farms themselves to buy trout, sometimes in large quantities for the purpose of weddings and funerals.
According to Otar, demand starts to decline in November, but picks up during New Year.

The main input for the trout farm operation is the feed. Samegobro uses Italian or Turkish feed, of which the Italian they consider better.

Another main input, roe, is bought in Keda, Kokhi or in Ozurgeti. However, the cooperative plans to purchase a roe incubator and start producing its own roe.

As for the future, the cooperative plans to scale up production to 20 tons a year and secure contracts with large supermarkets in Tbilisi.

Finally, the cooperative has plans in the direction of agritourism – they plan the construction of a small B&B for visitors interested in healthy water, trout fishing and breathtaking mountain scenery.

Photo: Trout farm in Chkhakaura village in the Chokhatauri municipality of the Guria region

10. SWOT

Table 3: SWOT Analysis Showing the Strengths, Weaknesses, Opportunities and Threats of the Trout Sector in Georgia

STRENGTHS	WEAKNESSES
• Abundant high-quality water for trout production. • Trout produced in natural spring waters has a specific taste. • Main feed ingredient (anchovy fish) is locally available. • Trout is a tasty, highly nutritious food (good for health) that is easy and safe to eat (because of the simple structure of bones). • The trout sector generates employment for rural people.	• Absence of good quality locally produced feed. • High price of feed and price fluctuations due to changes in the exchange rate. • No experience in and knowledge of disease control; lacking a research and disease prevention laboratory. • Pond facilities are primitive, without concrete in some cases. There is a general lack of modern facilities/equipment. • Absence of protection against wild animals. • Absence of a specialized insurance package for fish farmers. • Lack of an experienced and qualified labor force; management skills in short supply. • Inability of trout farms to guarantee a stable and long-term supply. • Absence of product diversification. • Poor infrastructure (roads, bridges, etc.). • Limited access to bank credits/loans. • Lack of institutional development in the sector (no associations or a lack of visibility).
OPPORTUNITIES	**THREATS**
• Product diversification (roe, fry, and different trout products: frozen, smoked, canned, etc.). • Increasing demand on the domestic trout market and developing a culture of trout consumption in the country. • The spectacular mountain environment around the trout farms enabling agritourism at farms. • The possibility to produce organic trout and supply the EU market under the DCFTA and other premium markets. • The government's initiative to develop aquaculture might be a good possibility for the trout sector to benefit.	• Animal attacks. • Price fluctuations on inputs and outputs. • Vulnerability to changes in water temperature and quality. • Changes in legislation – land taxes, water license, etc.. • Natural disasters, e.g. flooding. • Low prices due to competition from neighboring countries.

11. KEY ACTORS AND THEIR RELATIONSHIPS[11]

11.1 Horizontal Value Chain Relationships

During the interviews, the following horizontal value chain linkages in the trout sector were identified. The results are presented in Table 4 below.

Table 4: Horizontal Value Chain Relationships

RELATIONSHIP	DESCRIPTION
Among input and service providers (including workers)	The situation is quite competitive among input suppliers (feed, roe, fry, veterinary services, water etc.). The quality of inputs is low and the prices are high (responding to GEL depreciation as the feed and veterinary medicines are imported. Roe and fry are also imported in some cases). All credit suppliers (banks or micro-finance organizations) are quite competitive, but they keep interest rates very high for farmers, and require high value collateral (e.g. a house/flat in the city). There is no insurance package for trout farms. There is a shortage of good ichthyologists with modern knowledge.
Farmers to farmers	There are three types of trout farms in Georgia: small, medium and large. Most of the farms are small (household level) or medium size (at the co-operative level). There is only large trout farm in the Guria region, which is a sister company of the Nikora supermarket chain. It is worth mentioning that although different farmer groups maintain close relationships and cooperate in exchanging knowledge about trout production, they barely cooperative at the marketing level.
Wholesalers to wholesalers	The relationships among them are quite competitive as all try very hard to purchase high-quality trout at a lower price.
Retailers to retailers	Retailers include traders who sell their products at open markets or in mini/super and hypermarkets. The situation is very competitive at this level.
Among consumers	The domestic market is dominated by domestic live trout (200-gram table trout). Trout from mountainous regions are most appreciated because of its taste, but there is no label that can be used to identify mountain trout. The market for other types of trout (frozen, fillets, chilled and smoked) are dominated by imported products.

[11] These relationship tables are adapted from the Georgian sheep value chain study of Kochlamazashvili et al. (2014) and Sorg's study of the Georgian hazelnut value chain (2012).

11.2 Vertical Value Chain Relationships

During the interviews, vertical value chain linkages in the trout sector were identified and are presented below (Table 5).

Table 5: Vertical Value Chain Relationships

RELATIONSHIP	DESCRIPTION OF RELATIONSHIP
Input suppliers, service providers and farmers	Small farms belong to households, and rarely hire agricultural workers. Medium and large size farms employ additional labor. The quality of the workforce is low. There is limited use of formal contracts and payments are made on a monthly (or daily) basis. Inputs (feed, roe, fry, veterinary services etc.) are provided by many different entities, but are frequently unaffordable for farmers. The main constraint for trout farmers today is the increasing price of imported trout feed (because of the GEL depreciation). Agricultural loans are very expensive and require high value collateral. Although, the government has some cheap agricultural loans, these go through the banks and trout farmers still have difficulties in getting them for the abovementioned reasons.
Farmers and wholesalers	The relationships among farmers and wholesalers are quite good. However, establishing long-term partnerships might be problematic. Buying with credit and paying these back on time is not a problem. The challenge might be the low price offered to farmers. The price and supply schedule are sometimes informally discussed beforehand and agreed among the parties.
Wholesalers and retailers	The relationships among wholesalers and retailers are good and business-oriented.
Trout retailers and consumers	Selling fresh trout (and fish in general) often takes place in open markets, where hygienic requirements are not properly met. These problems do not exist in retail markets, such as supermarkets.

12. TROUT SECTOR CONSTRAINTS

In this section, we will identify the most pressing issues constraining further development of the trout sector in Georgia.

One of the most problematic constraints facing the trout sector is the absence of local trout feed production. As a result, farmers are forced to import feed from abroad and incur a significant cost in doing so. According to our calculations stated above, feed constitutes up to 70% of total production costs. The high prices of imported trout feed – exacerbated by the recent devaluation of the national currency – diminish the competitiveness of the Georgian trout sector and serve as a major impediment to producing trout.

Another major problem facing the sector is the absence of professionalism and experience from the side of producers. The lack of proper knowledge of trout farming causes a number of problems. First of all, standards of fry or roe production are very low, as evidenced by very high fry mortality rates, which come as an additional cost burden for the farmers. Moreover, the absence of professional veterinary care and disease prevention services leaves farmers exposed to substantial losses. Finally, farmers' lack capabilities to constantly monitor water quality and meet the physical and chemical requirements of water essential for the normal development of trout.

Moreover, farmers do not possess sufficient knowledge to smooth production over the entire year. Instead, everybody supplies the market with their produce at the same time and that drives the price of trout down. Lack of knowledge, together with poor finances, also affects farmers' ability to brand and market their product. Moreover, farmers are unable to secure long-term contracts with large retail businesses due to their inability to continuously supply trout.

Another major constraint facing the sector, which we identified during our field interviews, is the lack of modern technology and processing facilities that limit farmers' ability to differentiate their produce. Lack of product differentiation itself creates another problem: the low bargaining power of trout producers. Georgian farmers mostly produce live trout weighting 200-300 grams and, due to the absence of demand for bigger trout and limits on processing practices, they are forced to quickly get rid of it at a low price. Lack of product differentiation also limits local producers' ability to export trout abroad and to substitute imported trout products and increase their share on the domestic market.

Finally, almost all farmers complain about access to capital and loans. Due to the high risk involved in trout production (e.g. diseases, floods destroying assets, etc.), banks usually require high value collateral and charge high interest on loans that most farmers are unable to afford.

13. RECOMMENDATIONS FOR TROUT SECTOR DEVELOPMENT

Based on the challenging issues we identified in the previous section, we propose a set of recommendations aimed at resolving those constraints.

According to our research, Georgia has large resources of high quality Black Sea anchovy that would make it possible to locally produce high quality trout feed at a much lower price. Doing so would ultimately reduce production costs for farmers and increase the competitiveness of the trout sector in general. To encourage local trout feed production, it is recommended that the government makes high quality feed production one of the key requirements for receiving a license to catch fish in the Black Sea. Doing so would force fish catcher companies to invest in feed production, including in trout feed.

According to our knowledge, the Scientific Research Center of the Ministry of Agriculture plans to create a well-equipped modern laboratory that would enable the selection processes essential for producing high quality fry that can be supplied to certified firms for further production on a larger scale. There is also a need to equip the laboratory with the technology and professional personnel responsible for water quality control as well as for the timely identification and prevention of diseases. This would require raising a new generation of local professionals, which can be achieved through specifically tailored educational programs (training initiatives and vocational education systems). Moreover, other agricultural extension programs would be helpful, including creating information brochures and posters to provide farmers with basic knowledge. These educational programs also need to help eliminate the lack of managerial and marketing skills.

To overcome technology and liquidity constraints, the government could create a preferential loan program for trout farmers that would enable them to invest in shock refrigerators (necessary for freezing trout for long distance transportation) and trout processing machinery and to ultimately engage in product diversification (that would include the production of frozen trout, trout filets, smoked trout products, canned trout, etc.). It is worth mentioning that the Minister of Agriculture declared 2016 to be the year of aquaculture development in Georgia and the trout sector may benefit from the proposed initiatives.

Moreover, trout producers themselves could take steps necessary to eradicate some of the constraints they face by establishing second level cooperatives to engage in securing input supplies, trout processing, product diversification and marketing. Also, while trout importing countries require a substantial amount of trout and the supply of such quantities cannot be provided by single trout farms, formal cooperation may solve the problem of limited supply.

Georgian trout farms are mostly located in mountainous regions of the country. The picturesque environment that surrounds them creates an ideal environment for agritourism development. As many best international practices suggest, this would be another way for trout farmers to expand their businesses.

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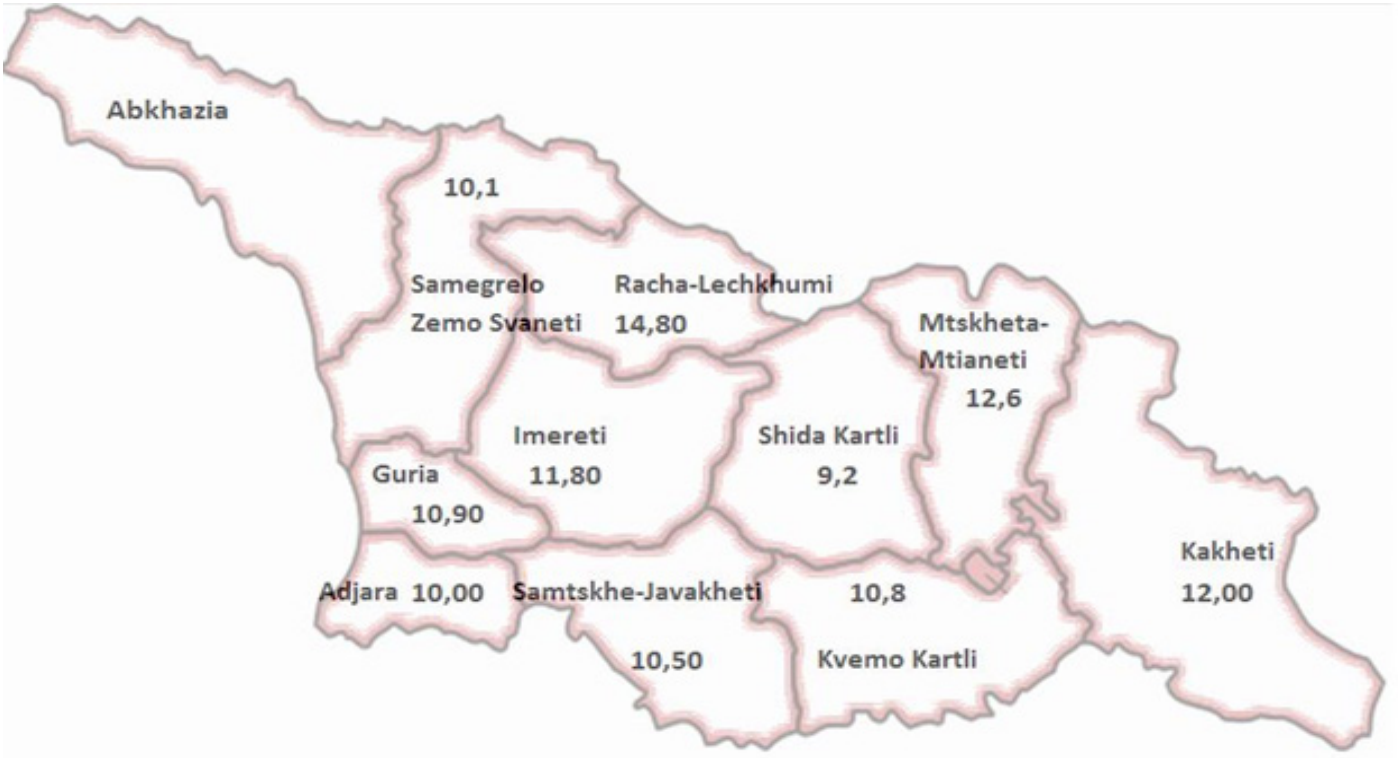
"Oncorhynchus mykiss (Walbaum, 1792), Rainbow trout", accessed by November 14, 2015, http://www.fishbase.org/Summary/speciesSummary.php?ID=239&AT=rainbow+trout

ANNEX

Figure A 1: Average Prices Across Regions (from March, 2015 to January, 2016)



Source: Ministry of Agriculture

Table A 1: Added Value by Actors at the End of the Tout Value Chain

Stage of Value Chain	Sales Value of 1 kg Trout (GEL)	Costs (GEL)	Profit (GEL)	Value Added (GEL)
	5			
Farmer	7	5	2	2
Wholesaler	9	7.5	1.5	2
Retailer	11	9.5	1.5	2
Cooked trout served at restaurants/cafes	30	16	14	19
Total Value Added				25

Table A 2: List of Interviewed People

#	Interviewed Person	Organization	Location
Visits (Face to Face Interviews)			
1	Otar Giorgadze	Cooperative Samegobro 2014 - Producer	Chokhatauri, Chkhakaura
2	Bakur Sharashidze	Producer	Chokhatauri, Kvabgha
3	Otar Chkhartishvili	Ltd. Agia - Producer	Ozurgeti, Vakijvari
4	Jimsher Phruidze	Producer	Tsageri, Sairme
5	Aluda Kvirikashvili	Ltd. Oskari - Producer	Tsageri, Chkhutevi
6	Gia Gasviani	Cooperative Kulbaki - Producer	Tsageri, Kulbaki
7	Ivane Zuroshvili	Feed Importer	Tbilisi
8	Levan Gahechiladze	Feed Importer	Tbilisi
9	Manuchar Tsetskhladze	Ltd. Geovet - Veterinary	Tbilisi
10	Archil Partsvania	MoA, Trout Association	Tbilisi
Stakeholders' Forum on the Trout Sector			
1	About 70 participants	Stakeholders of the trout sector	Kutaisi

Box A 1: Communiqué about the Stakeholders' Forum on the Trout Sector

On 4 December 2015, the Stakeholders' Forum on the Trout Sector took place at the Bagrati Hotel in Kutaisi. This was the second event in a series of dialogues about agriculture and rural development in Georgia organized by the ISET Policy Institute in partnership with CARE International in the Caucasus, the Regional Development Association, and the Georgian Farmers Association within the framework of the EU-funded ENPARD project "Cooperation for Rural Prosperity in Georgia".

The main goal of this forum was to analyze the challenges and opportunities faced by the value chain actors involved in the trout sector, including input suppliers, farmers, cooperatives, market intermediaries and consumers, with the overall goals of improving productivity in the sector, informing farmers about new business opportunities, analyzing the recent geopolitical situation, searching for potential export markets, and developing and managing the Georgian trout sector.

The forum was attended by Gocha Tsopurashvili (Ministry of Agriculture of Georgia), Giorgi Misheladze (Agricultural Cooperative Development Agency), Nino Zambakhidze (Georgian Farmers Association), Lasha Lanchava (ISET Policy Institute), Archil Partsvania (Fishermen Associaton of Georgia and Ministry of Agriculture of Georgia), Manuchar Tsetskhladze (GeoVet), Silvia Sanjuan (CARE International in the Caucasus), Eric Livny (ISET Policy Institute), Giorgi Glonti (CARE International in the Caucasus) and representatives from trout producers' cooperatives (including Samegobro 2014, Kulbaki, Cisartkela, Kvacikhe 2015 among others). There were also representatives from the regional information and consultation centers of the Ministry of Agriculture, from regional and municipal governments and the private sector including: Zoreti Ltd., Sherge Ltd. and JSC MFO Crystal Georgia.

Nino Zambakhidze, the Head of the Georgian Farmers Association (GFA), opened the forum with a discussion regarding the sector's importance in Georgia. Lasha Lanchava from ISET-PI presented facts and figures about the sector and introduced the goals and structure of the forum. According to the latest data from the Market Price Information System – a data collection system developed under the ENPARD project by the Ministry of Agriculture of Georgia in cooperation with FAO and the ISET Policy Institute – the average retail price for trout was 11 GEL per kilogram in Georgia in 2015. Mr. Lanchava then summarized export and import statistics citing National Statistics Office of Georgia (Geostat) data. The top export destination country is the Russian Federation. The top countries importing trout to Georgia are Norway, Chile, Denmark and Turkey. Finally, Mr. Lanchava described the trout value chain. There are a number of actors involved in the sector, including trout feed suppliers/importers, suppliers of fry, roe and veterinary care, small, medium and large scale trout farmers, trout cooperatives, retail sellers and exporters.

At the beginning of the forum, Gocha Tsopurashvili, Deputy Minister of Agriculture, outlined the main challenges facing the Georgian trout sector. According to Mr. Tsopurashvili, lack of local trout feed production, proper veterinary care, proper water quality and disease control mechanisms, professional farmers and appropriate statistics about trout production are the main obstacles hindering the development of the sector. 'We will not be competitive if we will not have local trout feed production' – said Mr. Tsopurashvili. Then, the deputy minister outlined the working strategy. According to Mr. Tsopurashvili, the Ministry of Agriculture in cooperation with the Ministry of Environment Protection of Georgia is developing a working plan to support the fishing industry in Georgia. Hoping to encourage local trout feed production, the government plans to make feed production one of the key requirements for receiving a license to catch fish. Moreover, according to Mr. Tsopurashvili, the Georgian trout sector − lacking capabilities of large scale industrial production − must focus on creating a high quality

Georgian trout brand and serve high end export markets. At the end of his speech, Mr. Tsopurashvili mentioned that the farmer dialogue series, conducted within the framework of the ENPARD project, is essential for giving a voice to farmers and helping government shape agricultural policy.

George Misheladze, Chairman of Agricultural Cooperative Development Agency, talked about the advantages of cooperation in terms of trout feed and medicament acquisition. However, due to the nature of the sector, he suggested that it would be more natural for trout farmers to establish second level cooperatives that would engage in trout processing, product differentiation and marketing.

Archil Partsvania, deputy head of the Division of Sector Development at the Ministry of Agriculture and a member of the Fishermen Association of Georgia, provided in depth analysis of the Georgian trout sector. As Mr. Partsvania said, there are three categories of trout producing farms in Georgia: small scale farms, farms – mostly located in the Adjara region − that combine trout production and tourism and large scale firms with a well formulated development plan. These firms produce one product category: 250 g live trout. Mr. Partsvania echoed previous speakers in mentioning that the lack of product diversification is one of the most serious challenges the Georgian trout sector faces.

Next, Mr. Partsvania talked about the marketing potential of the sector. As he said, Georgia has massive fresh water resources that create a substantial opportunity for local production. Georgian producers have the potential to fully substitute imports and make a profit, he said. However, this will only be achieved if Georgian farmers learn how to diversify their product.

Mr. Partsvania then switched to outlining problematic issues prevalent in the sector and the ways to address them. Due to high prices on imported trout feed, he recommended the creation of a local trout feed production line. The availability of high quality Black Sea anchovy would make it possible to produce high quality trout feed locally at a much lower price, which would ultimately reduce the production cost for farmers and increase competitiveness of the trout sector in general. Another problem facing the sector is very low standards of fry production, as evidenced by the very high morbidity rate. On the one hand, this is caused by a lack of professionalism and experience from the side of fry producers and, on the other hand, is due to the absence of disease prevention mechanisms. In response to these problems, the Scientific Research Center of Agriculture plans to create a well-equipped modern laboratory that would enable a selection process essential for producing high quality fry that could be then supplied to certified firms for further production on a larger scale.

Manuchar Tsetskhladze, Senior Veterinarian from GeoVet, also talked about the need for producing trout feed locally. He highlighted the importance of having a system for raising a new generation of local professionals that would be essential for producing genetically strong fry tailored to the varying environmental conditions of Georgian trout farms. He also outlined the necessity for high quality mobile laboratories that would satisfy the specific needs of farmers.

Speaker presentations were followed by a Q&A session during which participants, including trout producing farmers and cooperatives, had a chance to pose particular problems they face and hear advice from the invited speakers.

The mostly discussed topics were high prices on imported trout feed and the lack of high quality locally produced feed. As one trout producer from Borjomi observed, importers charge a high price for low quality trout feed. In, response Mr. Tsopurashvili said that starting in 2016 the National Food Agency will start monitoring the quality of imported trout feed. A fry producer from Chiatura mentioned that the main obstacle his business faces is the lack of high quality locally produced roe, which forces him to import roe from the US

at the expense of giving up a big chunk of profit. Others mentioned river pollution as an obstacle to growing trout. Farmers also raised concerns regarding the unwillingness of banks to provide preferential loans to small scale businesses as well as the short-term grace period for government financed loans. As Mr. Tsopurashvili said, the government is looking for alternative ways to issue preferential loans, however, as he advised, for now banks should be viewed as a default when it comes to issuing loans and farmers should take more responsibility when negotiating with banks about the rate of the interest or the duration of the grace period. Addressing trout cooperatives, Mr. Misheladze said that cooperatives could attract necessary capital by giving investors the status of an associated member.

At the closing of the forum, Eric Livny, the President of ISET-PI, noted that while cooperation is beneficial when economies of scale occur, it cannot be an answer to all problems the Georgian trout sector is facing. What is needed is to embrace variety, support small and large scale businesses with preferential loans, professional veterinary care and other necessary services that would help local trout producers supply their own niche product to the market and ultimately contribute to the creation of a highly-diversified trout market sector in Georgia.

Silvia Sanjuan, director of the project organizing the forum, reminded participants about the importance of these forums in shaping Georgian policies and programs for supporting the sector. She also encouraged the participants to start private initiatives based on cooperation aiming at solving some of the challenges faced by trout producers and cooperatives, such as the access to food for trout. After thanking the participants for their active participation, they were reminded by George Glonti, the CARE Caucasus Mission Director, that the dialogue platform on trout would be kept open and that the project will follow up the main challenges and opportunities discussed during the forum, keeping the different stakeholders informed about the progress made, and organizing meetings for in-depth discussions on trout and trout farming issues.

Finally, Nino Zambakhidze, invited farmers to submit their questions regarding the problems in the trout sector to the GFA and promised to work with the ministry to ensure timely and accurate responses to their concerns.

ISET-PI is the leading independent economic policy think-tank in Georgia and the South Caucasus, a one-stop shop for policy research and consulting, training and public policy discussion. The organizational synergies between ISET-PI and the International School of Economics (ISET) at TSU ensure the intellectual and financial sustainability of both institutions, as well as their contribution to the strengthening of democratic governance, civil society, and economic development in Georgia and the region.

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