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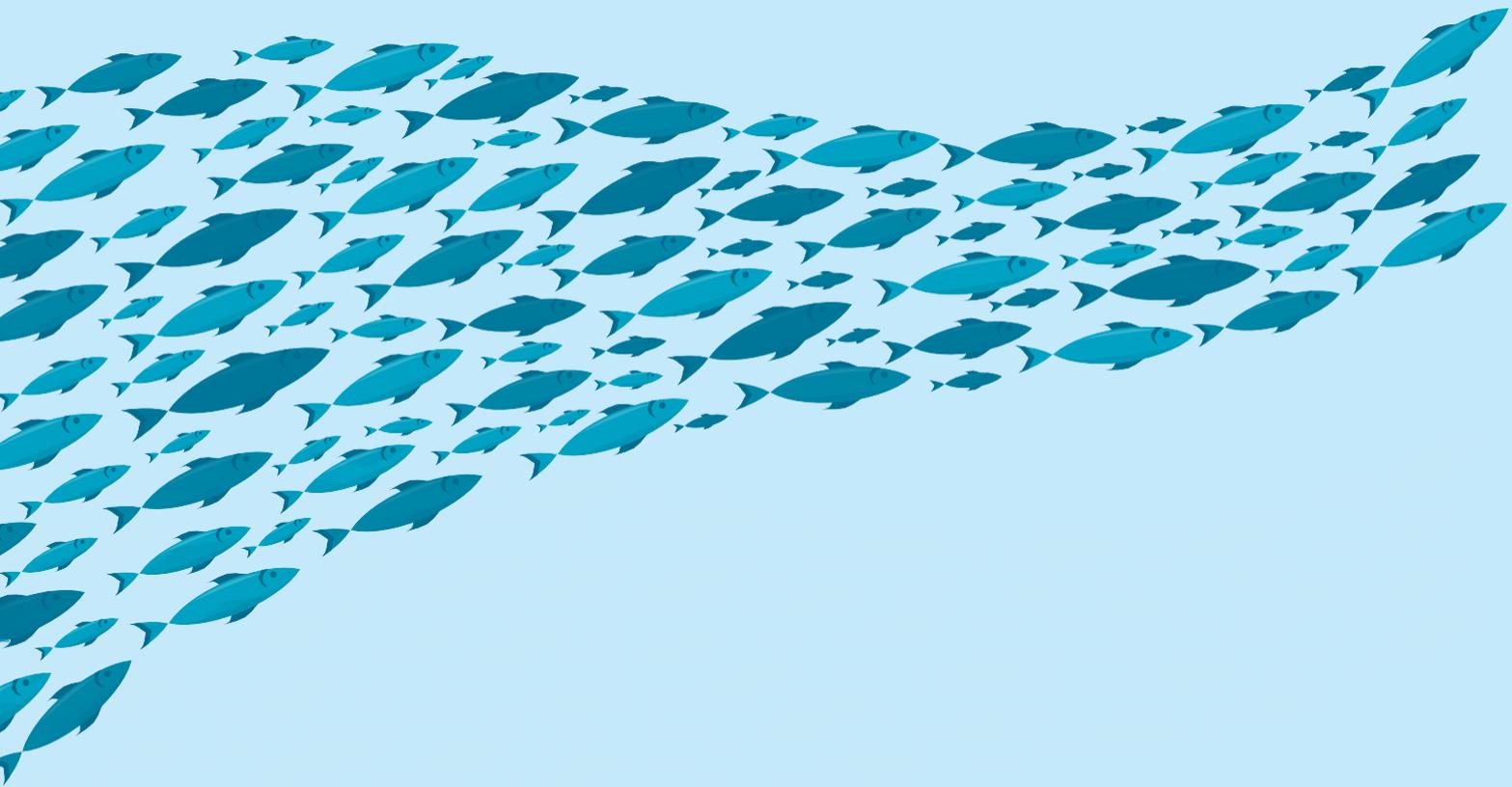


UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

MARINE FISHING CLUSTER

Diagnostic Study

in Samegrelo-Zemo Svaneti Region



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

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1 | INTRODUCTION

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

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

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

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

This study has been prepared according to the UNIDO cluster development approach by team of the researchers from PMC Research Center: Mr. Mikheil Skhiereli, Team Leader, Mr. George Abashidze, Mr. Giorgi Khishtovani, Ms. Sopho Basilidze, and Mr. Nika Kapanadze, Research Assistant. This study has been prepared under the supervision of the UNIDO Project team: Ms. Ebe Muschialli, Associate Industrial Development Expert, Mr. Vedat Kunt, International Cluster Expert, Mr. Giorgi Todua, National Project Coordinator, and overall guidance of Mr. Fabio Russo, UNIDO Senior Industrial Development Officer.

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

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

2 | METHODOLOGY

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

In total, 15 in-depth interviews and 1 focus group meeting were conducted. The distribution of interviews is given in the table below:

Table 1: Number of in-depth interviews conducted

CORE ENTERPRISES AND SUPPORT INSTITUTIONS	NUMBER OF INTERVIEWS
Core Enterprises	11
Associations	2
Government Agency	2
Total Number	15

3 | DEFINITION OF THE MARINE FISHING CLUSTER

The marine fishing industrial cluster in Samegrelo-Zemo Svaneti Region comprises from the following interrelated principal activities: fish capturing, primary production, processing and sales.

The primary activity of the process is fish capturing in the Black Sea. Main actors are Small-Scale Marine Fishing Companies (SMFCs) possessing up to 30-35 vessels, local fish processing License Holder Companies (LHCs) with their own vessels, and Turkish fishing seiners that are firstly authorized and also hired by Georgian processing facilities to capture fish in the Black Sea coastal strip.

Part of SMFCs brings small quantities of captured fish to their facilities for primary production. The business operations include fish salting, curing in smoke, vacuum packing, and freezing. Some of them use refrigerators to freeze part of captured fish for a longer period and sell the product as animal and fish feed. Products are mostly sold on the local market.

The vast majority of captured fish is being processed through complex production processes carried out by 5 LHCs in plants located in Poti. LHCs process fish captured by Georgian SMFCs, their own and Turkish vessels. During fish processing, raw fish is being transformed into fish meal and oil traded at export markets. An absolute majority of processed fish sales comes on the Turkish export market; only a minor share on the EU market and other neighbouring countries. According to the interviewed respondents, Turkish seiners, being hired by LHCs for fish capturing, send part of raw captured fish to Turkey through transporter vessels.

Local market actors are local bazaar fish markets, as well as a middleman who purchases fish from Georgian Fishermen and resells it to local fish markets. The diagram below depicts core actors of the cluster and their interrelation starting from fish capturing to final market sales.

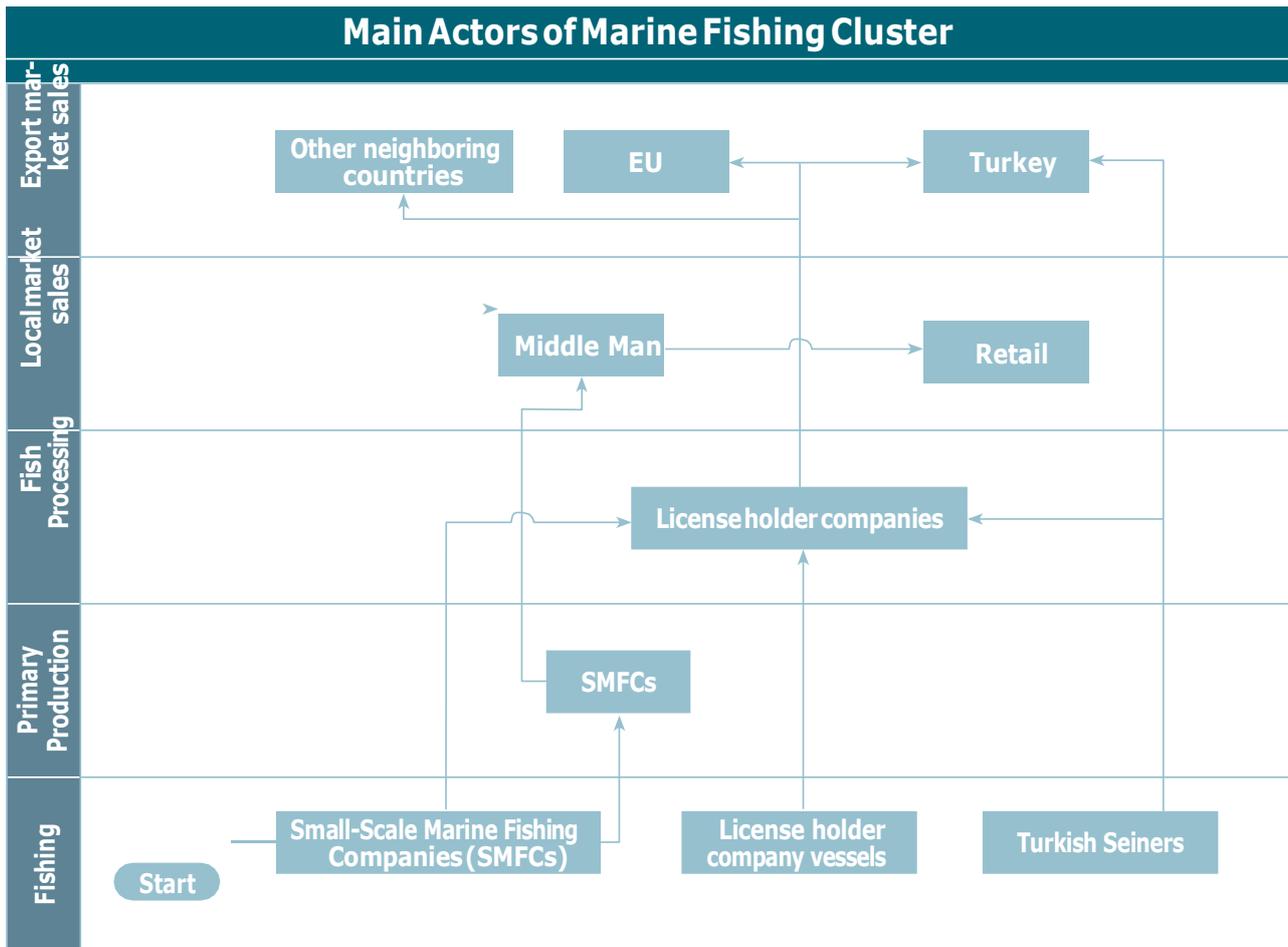


Diagram 1: Main actors of marine fishing cluster

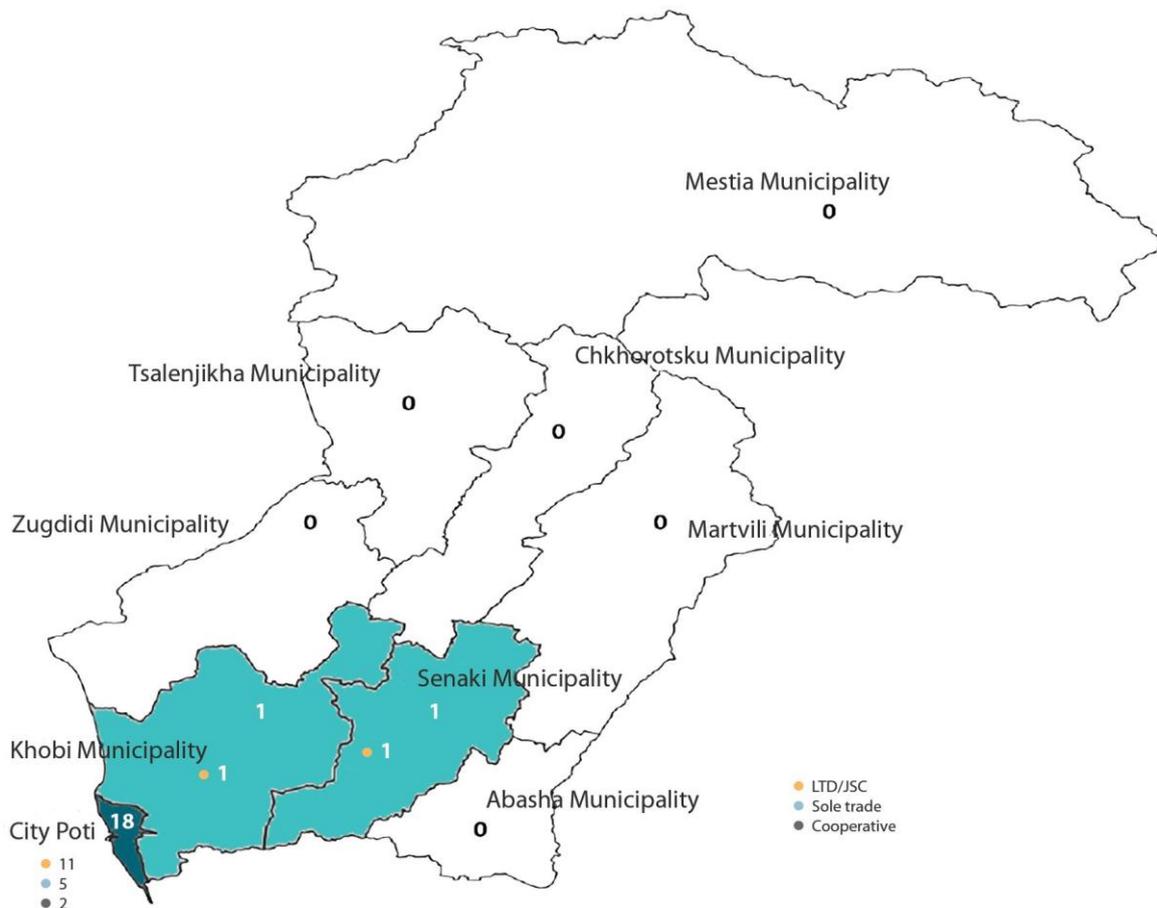
The main target fish variety for the Georgian marine capture fisheries fleet is European anchovy (scientific name: *Engraulis encrasicolus*). On average, almost 95% of total fish captured by SMFCs, LHCs and Turkish vessels is European anchovy. Remaining 5% are different fish varieties, namely: *Trachurus*, *Mullus Barbatus*, whiting and *Pelamis platurus*, caught by SMFCs during off-season, at summer time and mostly sold at local market.

European anchovy fishery season starts in mid-November and ends by early May across the Black sea coastal strip, where Poti is the most important harbour.

4 | CLUSTER LOCATION MAP

The core companies of the marine fishing cluster comprise of 20 entities: 5 individual entrepreneurs, 12 limited liability companies, 1 joint stock company and 2 cooperatives: 18 of them are located in Poti, 1 in Senaki and 1 in Khobi. The companies mainly catch and process Black Sea anchovy, historically representing the main product of the sector in Georgia.

The cluster map below demonstrates the distribution of enterprises in the municipalities of Samegrelo-Zemo Svaneti Region:



5 | PRODUCTION PROCESS OF THE CLUSTER

5.1 RAW MATERIALS AND INTERMEDIATE GOODS OF THE MARINE FISHING CLUSTER

Raw materials and intermediate goods used by SMFCs can be divided in two main subgroups: materials for operation of fishing vessels, and inputs for fish processing and storage activities. Companies use following inputs and services for fishing vessels:

- Ship parts
- Parts of vessel engine
- Nets
- Cables
- Rope
- Metal for repairing vessels
- Life Jacket
- Paint and painting tools
- Repairing services

Primary production and storage inputs used by SMFCs are:

- Boxes for transportation of catch
- Cardboard boxes for frozen fish
- Vacuum plastic bag
- Styrofoam (Thermal Containers – for transporting fish during summer)
- Plastic cases/containers

Inputs supporting the operation of fishing vessels are imported, mainly from Turkey and Ukraine. Fish processing and storage inputs such as cardboard and plastic boxes are produced in Georgia. In general, the industry is mostly dependent on imported raw materials representing around 80%-90% of inputs. The cluster companies do not have any problems in business relations with foreign and local companies supplying raw materials to the industry and positively assess cooperation experience with such business partners.

The list of such raw materials/inputs and intermediate goods of the LHCs is short. Despite the fish itself, being the main raw material for the production, the primary inputs for production are technical parts for the machinery they use periodically as a necessary attribute for factory production maintenance. 100% of such parts are imported either from Turkey or Italy.

5.2. PRODUCTION PLAN

Production plans of SMFCs and LHCs are entirely dependent on the annual fish capturing quota set by the state. 12% out of total quota/license is shared to SMFCs and they basically supply LHCs with the catch. Some of them have refrigerators and freeze certain quantity of fish. The fulfilment of the remaining quota is made by LHCs using both their own ships, and mainly through hiring Turkish ships that are much better equipped and represent higher technology vessels.

5.3. UTILIZATION OF CAPACITY

SMFCs and LHCs fully utilize their capacities, based on their current capabilities. The amount of fish captured by SMFCs is almost completely sold out to LHCs that sell nearly all fish-derived products on export each year.

The abovementioned five LHCs are nearly with equal production scales. 88% of total annual fish quota set by National Environmental Agency (NEA) is allocated to the following companies: Geofish Company; Iceberg; MBM; Paliastomi 2004, and Zgvis Produqtebi.



Picture 1: Production Facilities of „Geofish“ Company



Picture 2: Production Facilities of „Zgvis Produqtebi“ company

5.4. SEASONALITY

Fish capturing and processing are characterized by seasonality. The principal period of marine fishing season in Samegrelo-Zemo Svaneti Region lasts for 6 to 7 months, from November to May. There are some fishing activities in summer as well, but not all cluster members go for fishing during this period.

The season period is very busy for LHCs. Starting from November, they have non-stop production until the last batch of captured fish enters the facility. Off-season period is used for essential renovation and preparatory processes, such as ship repairing and processing machinery maintenance for getting ready for the next season.

5.5. FOOD AND LABOR SAFETY STANDARDS

Production processes of SMFCs are not carried out in compliance with international food or safety standards. Labour safety and related practices are mostly inherited as traditional techniques and behaviour of fishermen. However, according to the companies, Poti port and border police are very strict in controlling the outfit of ship crew, which obliges them to wear fishing jackets, for instance.

Fish processing factories of LHCs have implemented labour safety standards, as well as food safety and management systems, mostly ISO 22000 which incorporates HACCP (Hazard Analysis Critical Control Point). Implemented standards require regular trainings for staff and such workshops and tuition lessons are carried out periodically.

Neither SMFCs, nor LHCs have implemented any kind of recycling, renewable energy and sustainability systems. Though, with regards to recycling, one of the fish processing facilities reported that the production waste (polluted water) after fish processing can be recycled. However, this requires additional machinery and know-how that the company plans to adopt them in the future.

6 | HISTORY OF THE CLUSTER

As a sea bounded country from the west, Georgia has a historical experience in the marine fishing industry. However, as noted earlier, Georgia’s Black Sea waters are not rich in fish varieties. In the period of 1996-2003, there were only 4 varieties: anchovy represented 89.49% of the average catch, followed by sprats (7.62%), whiting (2.31%), and spiny dogfish (0.39%) (FAO, 2006).

In the 19th century the average annual marine fishing catch was 5700 tonnes. In Soviet times active development of the marine fishing industry was launched only at the end of the 1970s (GIRDC, 2018). The peak of catch was fixed in 1980 with 212 000 tonnes¹. Due to intensive fishing, increased predation and feeding competition anchovy stocks collapsed at the Black Sea in the 1980s². As in many other sectors of the economy, Georgia’s marine fishing industry faced a decline after the collapse of Soviet Union. The industry has shown slow recovery tendency in the 2000s, with varying volume of catch (20,000-50,000) tones during 2001-2009.

In 2017, the EU included Georgia in the list of 3rd countries that can export fish products to the EU market. Georgian marine fishing companies started preparation for this process well in advance and invested GEL 25 million for the modernization of infrastructure, adoption of international hygiene and management standards (HACCP, ISO)³. In 2019, the Government of Georgia (GoG) added marine fishing to the priority sectors of the state program “Produce in Georgia“, making the sector eligible to receive state support stipulated by the program⁴.

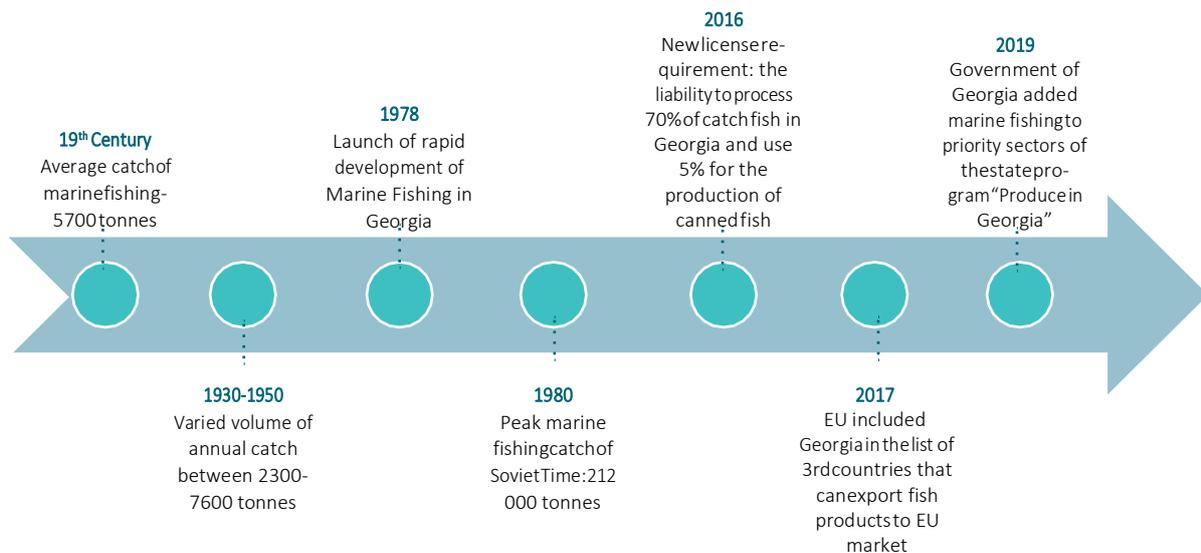


Diagram 2: History of marine fishing cluster

During 2017-2018, Georgia ranked 2nd after Turkey among the Black Sea States in terms of European anchovy catch. For a wider vision of international marine fishing capture history and experience for European anchovy, figures on total catch by selected countries, for the period 2013-2018, are illustrated in the table below. The countries are sorted chronologically by the total catch of European anchovy for six years.

¹ <https://batumelebi.netgazeti.ge/news/22185/>

² <http://firms.fao.org/firms/resource/10533/en>

³ <http://eugeorgia.info/ka/article/681/2018-wels-qartuli-qafshias-eqsporti-germaniasa-da-belgiashi-igegmeba/>

⁴ <http://www.economy.ge/?page=news&nw=1373&lang=en>

Table 2: Total catch of European anchovy by country (1000 kg)

	COUNTRY	[2013]	[2014]	[2015]	[2016]	[2017]	[2018]
	WORLD CATCH	411 199	282 066	443 678	356 305	529 175	488 532
1	Turkey	179 615	96 440	193 492	102 595	158 094	96 452
2	Georgia	14 500	18 000	21 500	25 921	99 288	99 290
3	Russian Federation	26 224	21 725	45 673	48 676	50 194	36 679
4	Greece	8 752	9 847	13 515	11 562	13 033	13 208
5	Ukraine	35 371	389	1 290	2 246	2 034	773
6	Bulgaria	10	370	12	53	4	5
7	Romania	111	59	112	102	27	32

Source: FAO- FishStat data

As the figures depict, although declining in volumes of total catch over the period, Turkey has been a world leader in capturing this variety of fish, on average amounting to 33.3% of total world catch for the period of 2013-2018. Georgia represents the second largest country in captures of European anchovy, especially being strong in the years of 2017 and 2018, when the total captures increased rapidly, nearly 4 times compared to the previous year and share of the country's average catch in the world total catch for the two years reached 20%.

7 | REGULATIONS FOR THE MARINE FISHING SECTOR

In 2016, the marine fishing licenses on the Black Sea were extended for 10 years until September, 2026. Further amendments in Governmental Decree were made in 2018 and the term was extended until 2036. The license terms define the following obligations for license holders:

- To allocate 12% of total annual defined quota to the owners of fishing vessels (SMFCs)
- Process 80% of fish catch as a final product in the territory of Georgia. The final products might be canned fish products, fish meal, fish oil, combined food, smoking, salting and freezing
- Possess one fishing vessel and one transporter from 31 December, 2021
- Develop wharf until 2023 individually or in cooperation with other licensees serving at least 3 vessels simultaneously
- From January 2018 to January 2019, 30% of LHCs' total fishery workforce is required to be Georgian citizens holding corresponding diploma/certificate issued by accredited/authorized education institutions. From January 2019 to January 2023, the share of such employees should be at least 50%, and after January 2023 - 80%

The licensees may choose between three alternatives until 1st October, 2023:

- Develop aquaculture or mariculture that will ensure breeding of at least 300 tonnes of fish annually
- Invest in the development of combined food factory individually or in partnership with other licensees
- Invest in the development of fish canning factory individually or in partnership with other licensees

From November 2017, LHCs were required to install electronic monitoring systems at vessels that allow them to control and account for captured fish in real time.

LHCs are subject to three types of license fees:

- 10-year-license fee: GEL 20mln in total
- Natural resource tax: GEL 25/tonne of quota
- Regulation tax: GEL 15/tonne of quota

Most of the interviewed companies complained that the taxes and fees should be paid on actual captures and not on full quota, as it is practised currently.

8.1 NUMBER OF FIRMS ACCORDING TO THEIR SIZE

Up to 20 active core companies operate in the marine fishing cluster, out of which 5 are licensed companies operating in fish capturing and processing with different shares of total annual allowed quota:

Table 3: Shares of total annual allowed quota

	LHCS	SHARE OF ANNUAL QUOTA
1	MBM LLC	25%
2	Zgvis Produktebi	21.8%
3	Iceberg2 LLC	20%
4	Geofish Company LLC	19.1%
5	Paliastomi 2004 LLC	14.1%

The remaining 15 companies comprise of small-size marine fishing entities possessing up to 30-35 ships that are allowed to capture 12% of total annual quota.

8.2 ESTIMATED TURNOVER

Tables below summarize estimated turnover for LHCs and SMFCs. Estimation is based on Georgia's total annual fish captures, as well as available export volume and value data since 2013.

Table 4: Estimated turnover of LHCs in Samegrelo-Zemo Svaneti (USD 1000)

COMPANIES	2013	2014	2015	2016	2017
MBM	4 884	5 780	4 980	5 957	4 709
Zgvis Produktebi	4 253	5 034	4 336	5 188	4 100
Iceberg 2	3 907	4 624	3 984	4 766	3 767
Geofish Company	3 746	4 433	3 819	4 569	3 611
Paliastomi 2004	2 745	3 249	2 798	3 348	2 646
TOTAL	19 537	23 121	19 918	23 829	18 834

Source: Own estimation based on FAO-FishStat data

According to the interviews and focus group analysis, 99.99% of processed marine fish products are sold at export markets. Thus, the methodology for LHCs turnover estimation is derived from this very fact with quantitative and qualitative analyses of export value and volume figures of marine fish-derived products⁵.

⁵ According to the interviewed respondents, in cases when certain LHCs haven't been able to fulfill allowed quota by the end of the season, while another already exhausted their own, the latter one was allowed to use unspent share of quota by other LHCs. Thus, considering such cooperation practice, turnover estimations might not be exact for each company. Although, this is not a common practice, one can consider such act as already established cluster connection within LHCs.

The estimations presented in the table below are based on 12% share of total annual landings allocated to SMFCs operating at mostly stable market price of USD 88.5 per tonne⁶ of captured European anchovy. The value of captures of the other fish varieties is not significant, thus being neglected in calculation.

Table 5: Estimated total fish capture and turnover and of SMFCs

	[2013]	[2014]	[2015]	[2016]	[2017]	[2018]
Estimated total capture volume (tonnes)	1 740	2 160	2 580	3 111	11 915	11 915
Estimated Total Turnover (USD 1000)	154	191	228	275	1 054	1 054

Source: Own estimation based on FAO- FishStat data

8.3 ESTIMATED EMPLOYMENT

The data presented in the table below has been provided by Geostat, however, it does not distinguish between marine fishing and aquaculture sector employment, rather it shows summed up figures for these two directions. Nevertheless, as the table depicts, fishery is male workforce driven and dominated sector.

Table 6: Total employment in capture fisheries and aquaculture

YEAR	EMPLOYED		
	WOMEN	MEN	TOTAL
2014	56	377	433
2015	63	391	455
2016	37	427	464
2017	60	514	574
2018	56	450	506

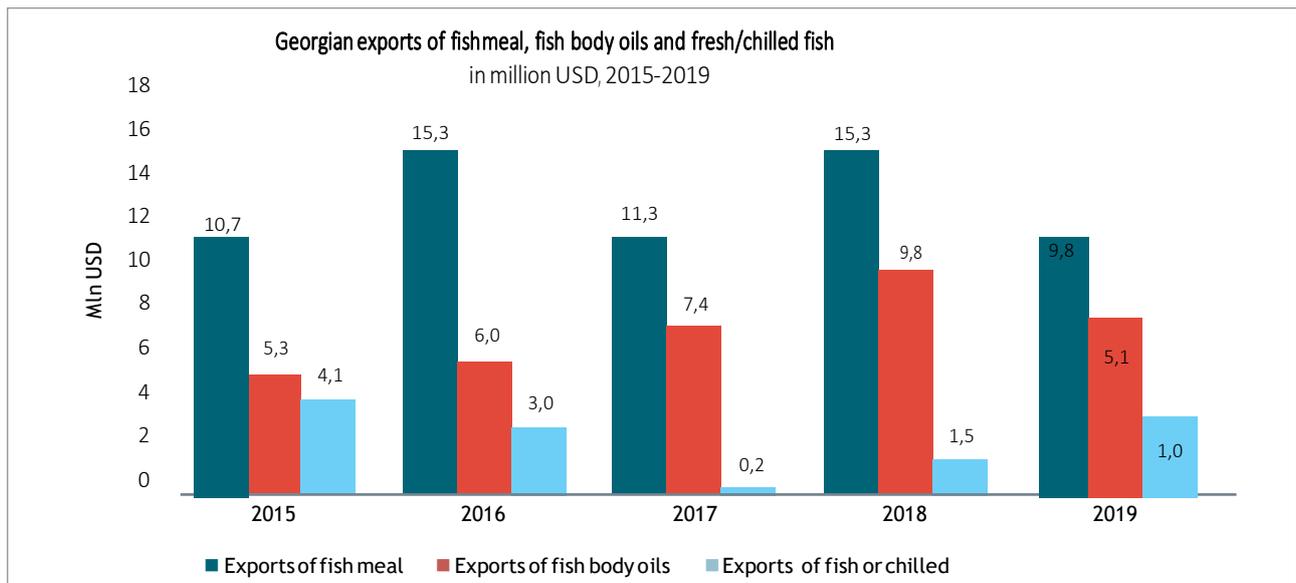
Source: Geostat

8.4 EXPORT INFORMATION IN VOLUME, VALUE, AND MARKETS

The table below summarizes export data of the main products derived from European anchovy caught in Georgian waters by national and foreign fleet. Such core products represent: fishmeal, oil, fresh and chilled anchovies.

⁶ Confirmed by most of the interviewed respondent companies.

Graph 1: Georgian exports of fish meal, fish body oils and fresh/chilled fish

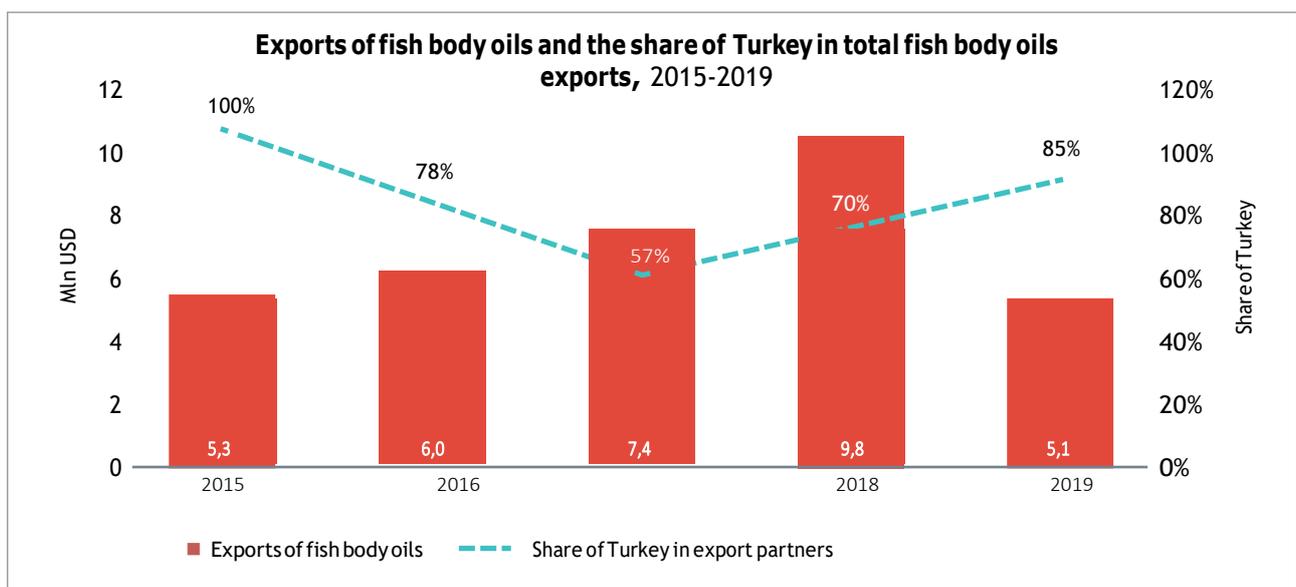


Source: External trade portal of Geostat

The figures in the graph demonstrate that among European anchovy fish-derived products, fishmeal is the highest in value of exports, followed by fish oils and fresh or chilled fish. In the period of 2015-2018, export trend for fish oil demonstrated increasing trend, before recording a decline by 48% in 2019. The export peak of fresh or chilled anchovy was in 2015 equalling to nearly USD 4mln in export value, while in 2019, the same figure was only USD 1mln. The export value of fish meal was fluctuating during the 2015-2019 period. According to the interviews, the major share of exported fresh anchovies is of Turkish vessels that send fresh fish captured in Georgian waters to Turkey through transporter vessels. This is also depicted in Diagram 1 of cluster actors above.

The main export market for Georgian marine fishes and derived products is Turkey. Only a small share of total export goes to the EU and other neighbouring countries' markets, such as Ukraine, Armenia and Azerbaijan. The graph below illustrates Georgia's total exports of fish body oils and the share of Turkish market for over 5 years, in the period of 2015-2019.

Graph 2: Export of fish body oils and share of Turkey in total exports, 2015-2019

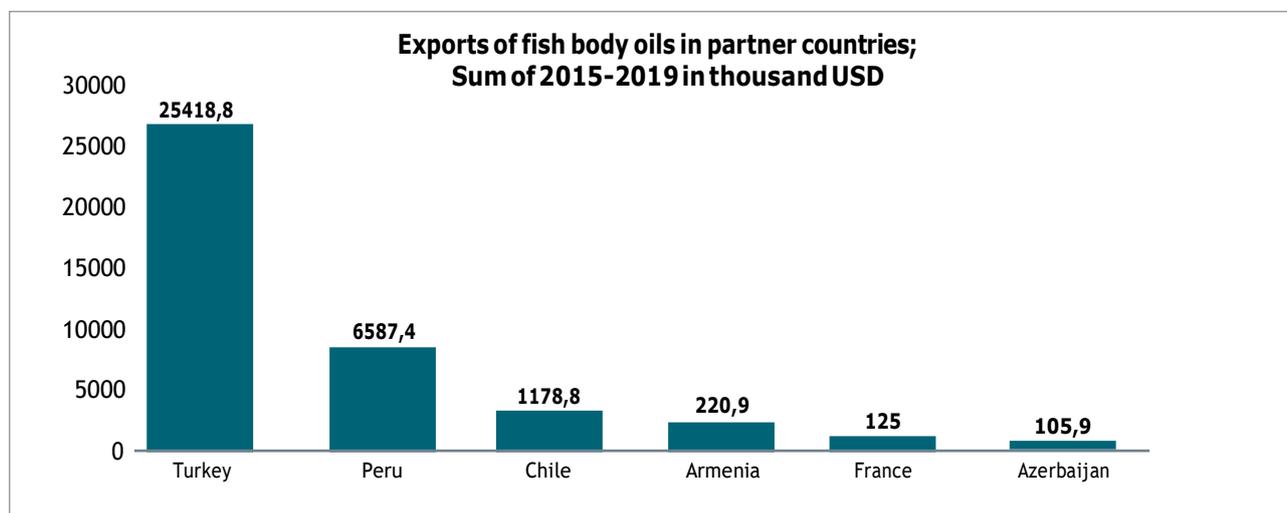


Source: External trade portal of Geostat

As the graph above illustrates, an average share of Turkey in total fish body oil exports from Georgia for the last 5 years reaches 80%.

The graph below outlines Georgia’s top 6 export countries of fish body oils, with summed up values for the last 5 years:

Graph 3: Top export countries of Georgia for fish body oils, 2015-2019

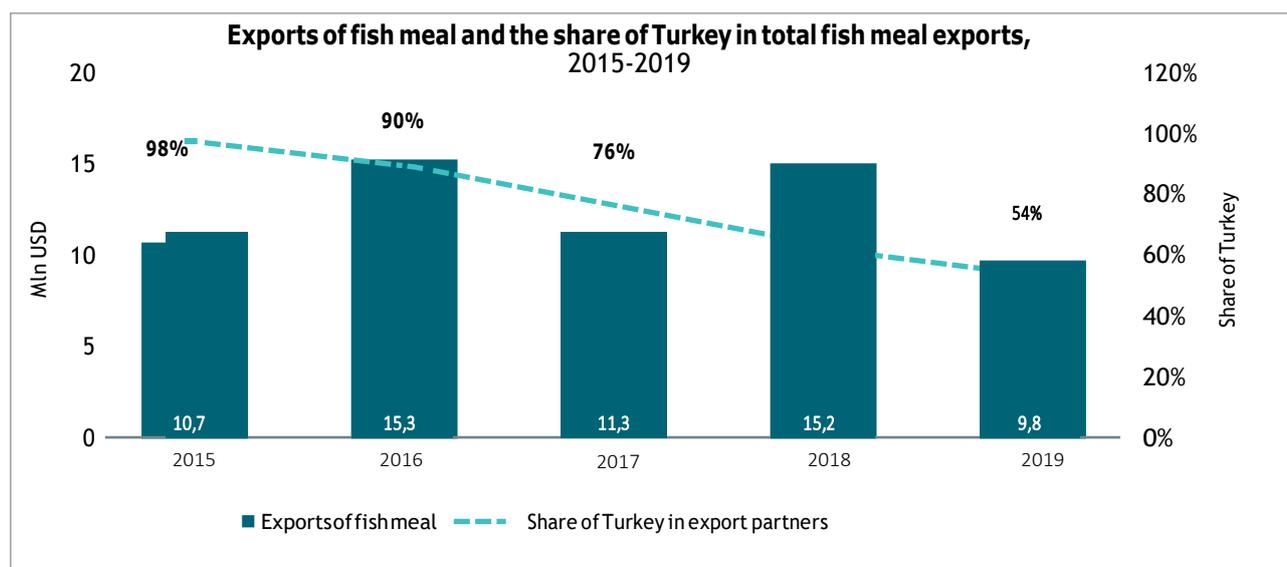


Source: External trade portal of Geostat

As the graph shows, Turkey has been predominant (amounting to 76% of all exports) among other countries for Georgia in exports of fish body oils for the five years (2015-2019).

Turkey is also the primary market for fishmeal exports from Georgia. However, the share of Turkey in total fishmeal export had been constantly declining, from 98% in 2015 to 54% in 2019. The graph below summarizes this information.

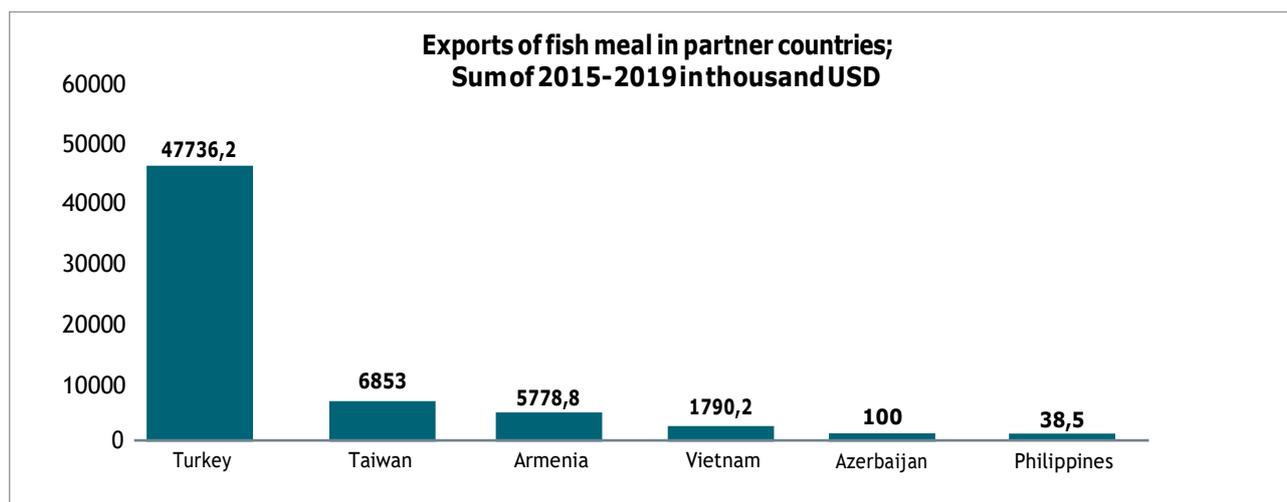
Graph 4: Export of fishmeal and share of Turkey in total exports, 2015-2019



Source: External trade portal of Geostat

Similar to fish body oils, the graph below depicts top export countries of Georgia for fishmeal. Like-wise, Turkey was dominant for the same period count, however, its share had been decreasing over time, from 98% in 2015 to 54% in 2019.

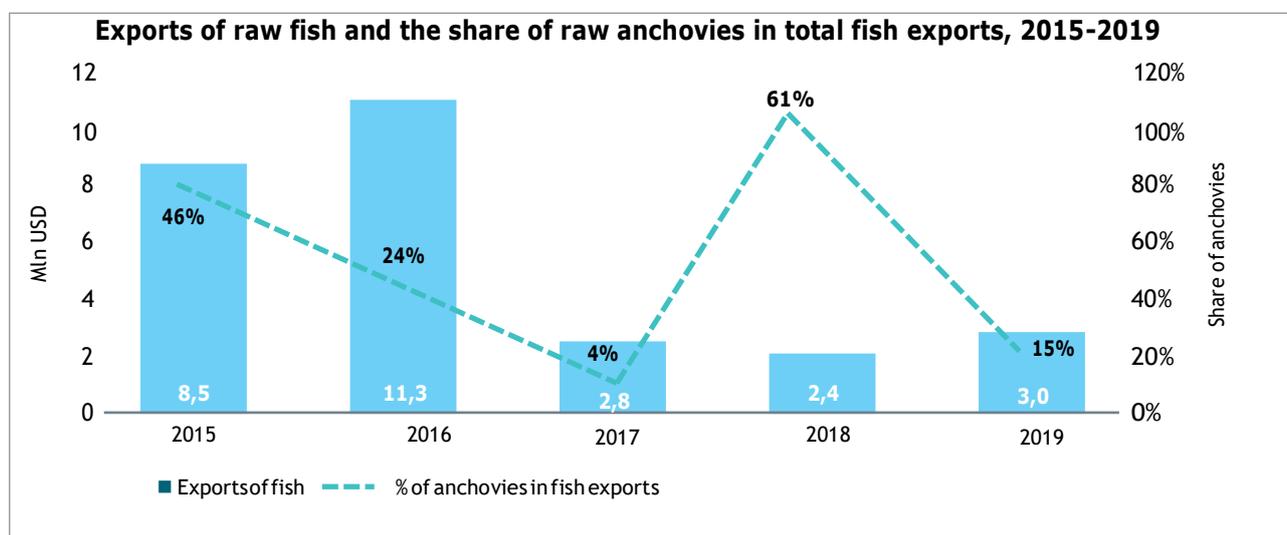
Graph 5: Exports of fish meal in partner countries



Source: External trade portal of Geostat

The role of anchovies⁷ in the total raw fish exports has been volatile over the years and depended on the sole partner country in terms of raw anchovies' exports: Turkey. Still, with the exception of 2017, anchovies took a sizable share of total raw fish exports, with the peak in 2018, when its share in total raw fish exports was 61%. However, Georgia's total exports of raw fish in 2018 rapidly decreased compared to that of 2016, when this value was nearly 5 times more. This can be explained with the fact that according to the state ordinance issued in 2016, since January 2018 LHCs were committed to process at least 70% of captured fish in the territory of Georgia. This encouraged fish processing industry and thus affected the export of raw fish from Georgia.

Graph 6: Value of exports of raw fish and the share of raw anchovies in total fish exports, 2015-2019



Source: External trade portal of National Statistics Office of Georgia

As marked earlier, in 2017 the European Union included Georgia in the list of 3rd countries that can export fish products to the EU market. However, EU market for anchovies is totally unexploited as of 2019: There were 3 partner countries from EU: Germany in 2015, and Lithuania and Latvia in 2019. The combined share of these 3 countries in total exports of raw fish in the period amounts to just 1.53%.

⁷ HS6 code: 030242

8.5 PRICES

As claimed by the interviewed respondent companies, being one of the global leaders in fishery and fish processing industry, Turkey sets market prices for European anchovy and derived products in the region. Most of the interviewed SMFCs reported increasing dynamics in prices of captured fish, while most LHCs mention no change in prices at international markets for the fish-derived products.

However, the real figures indicate the opposite. The study showed that off-vessel price of fresh European anchovy has been mostly stable for the last 3-4 years and amounting to USD 88.5 per tonne on average.

As for the prices of fresh and chilled anchovy and derived products, they have been fluctuating with no specific trend for the last 5 years. The table below summarizes export price information of raw European anchovy, fishmeal and fish body oils during 2013-2019:

Table 7: Export prices for raw European anchovy and derived products

	[2013]	[2014]	[2015]	[2016]	[2017]	[2018]	[2019]
Fishmeals, nei (USD/tonnes)	1 660	1 347	1 617	1 446	1 340	1 580	1 430
Fish body oils, nei (USD/tonnes)	1 835	1 506	1 486	1 525	1 741	1 800	2 700
Anchovies, fresh or chilled (USD/kg)	0.374	0.394	0.379	0.379	0.429	0.42	0.4

Source: FAO- FishStat data

The average export price of Georgian fresh anchovies has been quite stable, averaging \$0.4 per kg over the five-year period with a narrow range of 0.05 cents. According to UN trade platform Comtrade, the total average export price⁸ of fresh anchovies was \$2.2 per kg in 2019, which is about 5.5 times more than the Georgian price.

⁸ The average was calculated as the total sum of export value of 28 available countries divided by total sum of export quantity.

8.6 DYNAMICS OF MAIN INDICATORS

Two tables below summarize the results from the interviews conducted in July-August 2020. During the in-depth interviews, the target enterprises were asked about the dynamics of some important indicators over the period of past 3 years. Provided options included “falling”, “increasing” or “no change” for given indicators.

Table 8: Small-Scale Marine Fishing Companies (SMFCs)⁹

	FALLING	INCREASING	NO CHANGE
Sales	29%	57%	14%
Profits	29%	57%	14%
Number of Customers	29%	14%	57%
Production Capacity	14%	29%	57%
Number of Products	0%	14%	86%
Prices	14%	57%	29%
Number of Employees	0%	14%	86%
Men Employment	0%	14%	86%
Women Employment	29%	57%	14%

As the above table shows, based on the majority of the interviewed SMFCs’ respondents, sales, profits, prices, and women employment have been increasing for the last 3 years, while the number of customers, production capacity, number of products and employees have shown no change for the same period.

Table 9: Licensed Fish Processing Companies (LHCs)

	FALLING	INCREASING	NO CHANGE
Sales	0%	67%	33%
Profits	0%	67%	33%
Exports	0%	100%	0%
Number of Customers	0%	100%	0%
Production Capacity	0%	33%	67%
Number of Products	0%	0%	100%
Prices	0%	0%	100%
Number of Employees	0%	0%	100%
Men Employment	0%	0%	100%
Women Employment	0%	0%	100%

As for LHCs sales, profits, exports and number of customers, the figures have been increasing for the last 3 years. There has been no change in the production capacity, number of products, prices and number of employees in the same period.

⁹ Percentage figures from the table shows percentage of the interviewed companies for responding to particular indicator. For instance, the figure 57% shown in sales row on the above table indicates that more than half (57%) of the interviewed companies confirmed increase in sales for the last 3 years.

9 | COMPARATIVE VALUE CHAIN ANALYSIS OF REPRESENTATIVE PRODUCTS

This section presents the main product value chain analysis of the Georgian marine fishing cluster - European anchovy. The average price and value of currently available commercial products in Georgia, derived from 1,000 tonnes of fresh European anchovy are observed.

Table 10: Average price and value of products for the Last 3 Years

	FRESH ANCHOVY OFF - VESSEL	FRESH ANCHOVY EXPORT	FISHMEALS	FISH BODY OIL
Av. price per tonne (USD)	88,5	396	1,444	2,200
Value (USD)	88,500	396,000	391,385	

Source: Own estimations based on interviews

The first column depicts the average off-vessel price for the last 3 years and respective values generated from 1000 tonnes of fresh anchovies. This shows revenues received by small-scale marine fishing companies for selling 1,000 tonnes of captured anchovy to licensed fish processing facilities, which is USD 88,500. Meanwhile, export statistics show that for fresh anchovies exported mainly to the Turkish market (mainly by Turkish vessels), the average price per kg is USD 0.396, resulting in total export value of nearly USD 400,000.

The next two columns of the table show figures after European anchovy is being processed in two main products: fish meal and fish body oil. Based on the information obtained from the respondents, depending on the type and season period, on average around 6.5 tonnes of fresh fish is used for producing 1 tonne of fishmeal and 0.5 tonne of fish body oil. Consequently, on average, the productivity rate of fishmeal and fish oil is around 15,4% and 7,7%, respectively. As a result, based on average export prices of fishmeal and oil, in total a product value derived from processed anchovy amounts to USD 391,385.

Table 11 below depicts average export prices for fresh and processed European anchovy by selected countries for the period of 2015-2018.

Table 11: Average Export price per 1 tonne of fresh and processed anchovies for selected countries in the 2015-2018 period (1000 USD)

	FRESH ANCHOVY	FISHMEAL	FISH BODY OIL
Turkey	1,92	1,64	1,92
Greece	1,67	1,28	1,68
Georgia	0,395	1,44	2,2

Source: Own estimations based on FAO-Fish stat

As the above figures show, fresh anchovies from Turkey have the highest export price, followed by Greece (being among the leading countries in exporting fresh anchovies) and Georgia, where export price for fresh anchovy is nearly 5 times less than that of Turkey. Turkey has the highest export price for fishmeal as well, followed by Georgia and Greece with up to USD 1300 per tonne of fishmeal. As the figures show, Georgian fish body oil has been highly priced amounting USD2,200 per tonne and this fact can be explained by the nutrient-rich and good quality fish available in Georgian waters. This has been highlighted several times by most of the interviewed companies.

10 | OTHER ACTORS OF MARINE FISHING VALUE | CHAIN AND SUPPORT INSTITUTIONS

Suppliers of machinery

According to the Business Register of the National Statistics Office of Georgia, there are no producers of fishing nets or ship-building firms operating in Samegrelo-Zemo Svaneti Region. There are 5 firms operating a retail store of specialized sports equipment, which includes sales of fishing equipment. 3 of them are located in Poti and 2 in Zugdidi.

Transportation and storage

According to the Business Register of the National Statistics Office of Georgia, as of June 2020, apart from 341 companies operating in transportation and storage in Samegrelo Zemo-Svaneti Region (10 companies are engaged in warehousing and storage, 214 in freight transport by road and 117 in other transportation support activities), there is only one sea and coastal freight water transport firm operating in Poti.

Financial Institutions

According to the National Bank of Georgia, as of June 2020, there are 80 commercial banks, 41 micro-finance organizations, 37 lending organizations and 18 currency institutions operating in the region.

Vocational Educational Institutions (VET Institutions)

According to vet.ge, as of June 2020, in Georgia, there are 38 public and 54 private VET institutions. 6 of them are located in Samegrelo-Zemo Svaneti Region¹⁰.

Table 12: Public VET institutions in Samegrelo-Zemo Svaneti Region

	NAME	MUNICIPALITY	PUBLIC/PRIVATE
1	Lakada	Tsalenjikha	Public
2	Fazisi	Poti	Public
3	Tetnuldi	Mestia	Public
4	Shota Meskhia Zugdidi State University	Zugdidi	Public
5	Tskhum-Egrisi	Zugdidi	Private
6	Zugdidi's Academy	Zugdidi	Private

Source: vet.ge

In 2020, the opening of the Batumi Marine Academy branch is anticipated in Poti. The educational establishment will deliver tailored courses for the individuals interested to pursue career in marine fishing industry and provide professional development opportunities for the existing employees of the sector.

Business Associations

There are number of regional and national associations directly or indirectly dealing with marine fishing sector development in Georgia.

¹⁰ <http://vet.ge/en/>

Table 13: Respective associations in Samegrelo-Zemo Svaneti Region and in Georgia

REGIONAL/ NATIONAL	ASSOCIATION	MANDATE
Samegrelo-Zemo Svaneti	Georgia's Fisher- men Union 2015	The Union unites 22 small marine fishing companies. It basically deals with the advocacy of marine fishing industry challenges to the central and local government
	Association of Fishing Licensees	Association was established in 2006 and unites four marine fishing companies holding the licence. It actively supports the industry development by conducting research and analysis of Georgian fish re- sources with the assistance of international experts and comparing its quality to the products of competitors.
	The club of hunters and fishermen Ochopintre ¹¹	The main goal of the club is to gather together hunter and fisher- men of the region, and develop hunting and fishing in accordance to Georgian law. Moreover, the club is known for preventing illegal activities associated with fishing and hunting.
	Samegrelo-Zemo Svaneti regional hub association "Atinati" ¹²	Association ATINATI is a regional hub for CSSIGE (Civil Society Sustainability Initiative Georgia) in Samegrelo-Zemo Svaneti. As all hubs CSSIGE, ATINATI's main goal is to support CSSIGE with efficient outreach and sustainability, contribute to the experience sharing and networking on regional as well as national levels. One of the goals of Atinati is to increase women's entrepreneurship and increase interaction between government, private sector, and civil society organizations.
Georgia	Biological Farming Association Elkana	The main goal of the association is to improve the socio-economic conditions of the Georgian population and environmental protection through the fostering the development of sustainable organic farming and increasing self-reliance of the rural population.
	Georgian Farmers Association	The main goal of the association is to strengthen the agricultural sector in Georgia and improve quality of life of Georgian farmers through bringing the farmers together and promoting their visibility.
	Georgian Employ- ers' Association	The main goal of the association is to create fair and competitive economic policies based on free market principles and free from government interference. Moreover, GEA represents its members as large, medium and small companies working in different sectors of the economy, come out on their behalf and promote entrepreneurship in the country to achieve more stability, social-economic development, new jobs and dignified conditions of labour.
	Georgian Small and Medium Enter- prises Association	The main goal of the association is to protect the interests of small and medium businesses, promote the creation of healthy competitive conditions in the country, as well as establish active communications between SMEs and public agencies, financial institutions and international organizations.

Source: Desk Research

State authorities

The most important state authorities supporting marine fishing industry are Ministry of Economy and Sustainable Development¹³, Enterprise Georgia¹⁴, Ministry of Environment Protection and Agriculture of Georgia¹⁵ and National Environment Agency¹⁶.

¹¹ <http://www.ochopintre.ge/forum/>

¹² http://atinati.org/?page_id=76

¹³ <http://www.economy.ge/?lang=en>

¹⁴ <http://www.enterprisegeorgia.gov.ge/ka>

¹⁵ <https://mepa.gov.ge/En/>

¹⁶ <http://nea.gov.ge/ge/>

11 | INTERNATIONAL AND NATIONAL SCENARIO AND FEATURES OF BENCHMARK CLUSTER(S)

11.1. LATVIA'S MARINE FISHING CLUSTER

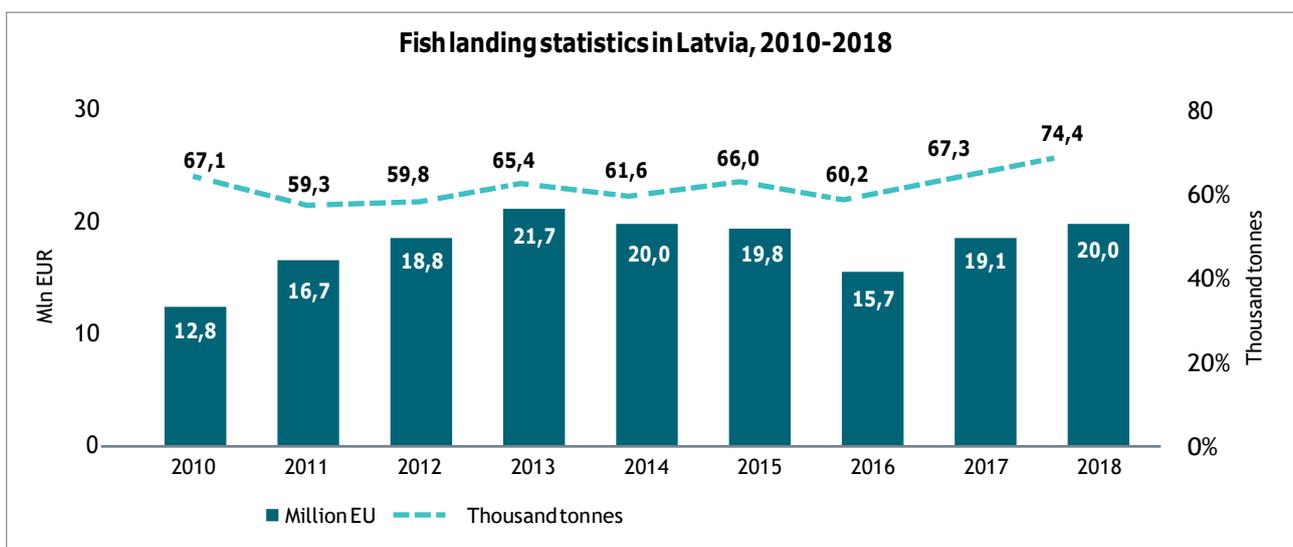
Latvia's marine fishing industry comprises of three main fields of activities: fishing, fish processing and aquaculture. Since 2005, following Latvia's accession to the European Union, European Commission became the main actor in regulating fishing and setting catch quotas in the Baltic Sea. The allocation of quotas to the EU member states is decided by the EU council of ministers of Agriculture and Fisheries, while the allocation of quotas to individual fishing companies remains to be the competence of the member states. In addition, it is allowed to exchange and transfer catch quotas between the fishing companies. Inside the country, the State Environment Service (SES) of Latvia controls the fishing activities.

As for 2015, Latvia's fishing fleet consisted of more than 700 fishing vessels – 628 were deployed for coastal fishing, 68 for Baltic Sea offshore fishing and 7 for long-distance ocean fishing. Notably, the largest fleet of coastal fishing contributes only to approximately 3% in Latvia's total catch¹⁷. Nevertheless, coastal fishing plays an important role in the subsistence and employment of small coastal villages.

In the Baltic Sea and Gulf of Riga two species – Sprats and Baltic herring play a major role in total catch volume.

The fish landing figures have been relatively stable over time for Latvia, with no apparent long-term trend. In 4-year period of 2010-2013, the value of landed fish was steadily growing, and it stabilized over the following 6-year period, with the exception of 2016 when the value of landed fish plunged by 20%, but quickly recovered. In terms of value, fish landings increased by 56% from 2010 to 2018, while in terms of tonnage, it increased by just 10.8%. This could be an indication of either a shift to more valuable fish or increased quality (hence, price) of the fish.

Graph 7: Fish landing statistics in Latvia, 2010-2018

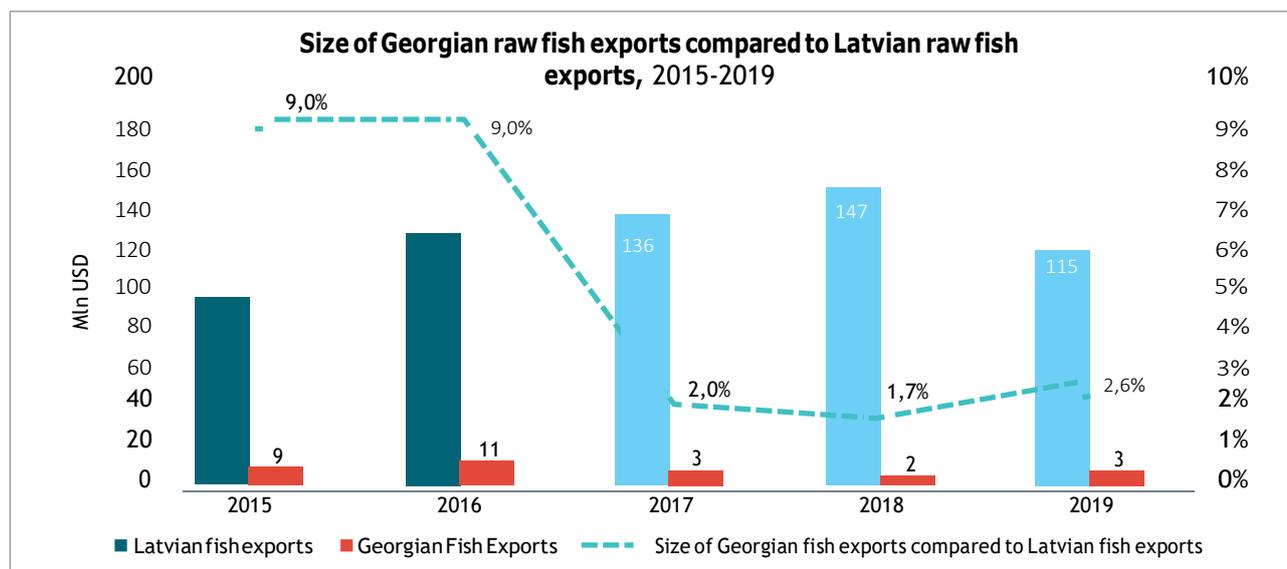


Source: Eurostat

¹⁷ <https://www.eurofish.dk/latvia>

Latvian fish export value in USD was growing over the period of 2015-2018, while it peaked in 2018 at \$146.9 Mln and plunged to \$114.9 in 2019. In 2018, 24% of exported fish in terms of values in Euros were salmon, followed by cod (14%) and small pelagics (13%). The main destination of its fish exports was Lithuania (21%), followed by Denmark (13%) and Estonia (10%). It is noteworthy that Georgian fish exports are minuscule compared to Latvian fish exports, amounting to 9% of Latvian fish exports in 2015 and 2016 and just 2.1% on average over the period of past 3 years.

Graph 8: Size of Georgian raw fish exports compared to Latvian raw fish exports, 2015-2019



Source: UN Comtrade

11.2 LATVIA'S FISHING ENTERPRISES

In 2016, only four out of ten top Latvian fishing enterprises made profit, while six accounted losses. The average net turnover of top ten fishing enterprises in 2016 was 5.8 million EUR: the highest net turnover close to 18.9 million EUR was recorded by the Baltreids Ltd, while the lowest 1.3 million EUR by JSC Kursa (Proskina et al., 2018).

On average, top ten enterprises employ 52 individuals. The largest employer was the Vergi Ltd with 153 employees, while Baltjura Serviss Ltd had only 4 employees (Proskina et al., 2018). Currently the average age of fishermen in Latvia is about 54, young people mostly are not willing to work in fishing and fish processing sectors due to the required hard work, low salaries and lack of prospect. According to sector experts, the long-term outlook of the industry is bleak without young labour force joining the marine fishing sector¹⁸.

¹⁸ https://issuu.com/eurofish/docs/eurofish_magazine_5_2018/30

Turnover, profit and employment data of the top ten fishing enterprises of Latvia were following in 2016:

Table 14: Turnover, profit and employment of top 10 Latvian fishing enterprises

ENTERPRISE	NETTURNOVER (THOUSAND EUR)	PROFIT (THOUSAND EUR)	# OF EMPLOYEES
BALTREIDS Ltd	18845	1 246	27
BALTJURA SERVISS Ltd	8083	26	4
VERGI Ltd	7887	-152	153
NORTH STAR LTD	6992	-1 171	36
BraDava Ltd	5204	603	110
Fish farm IRBE Ltd	3879	-51	85
5 B Ltd	3159	-418	12
VARITA Ltd	1450	-75	34
A.I. un KO Ltd	1443	611	13
JSC KURSA, Liepaja Special Economic Zone	1320	-325	42

Source: Proskina et al., 2018

11.3 LATVIA'S FISH PROCESSING INDUSTRY

Latvia has a well-developed fish processing industry. It is one of the largest food production sub-sectors with 100 processing plants that employed 5800 people in 2015 (Global Agricultural Information Network, 2017). Processing companies are mainly located along the coastline and their products include frozen fish, salted and smoked fish, unsterilized preserves, ready to serve products and sterilized canned fish. In 2015 Latvia's fish processing companies output equalled to USD 153 million.

Products and value of Latvia's fish processing industry are presented in the table below:

Table 15: Products of Latvia's fish processing industry

PRODUCTS	2013 (VALUE, THOUSAND USD)	2014 (VALUE, THOUSAND USD)	2015 (VALUE, THOUSAND USD)
Frozen whole salt water fish	14,537	11,327	10,814
Dried fish and salted fish	4,729	4,606	3,435
Smoked pacific, Atlantic and Danube salmon	1,276	14,171	16,825
Smoked herrings	559	980	1,337
Smoked fish (excluding herrings, salmon)	17,111	4,606	4,565
Prepared or preserved salmon	4,724	3,774	3,427
Prepared of preserved herrings	9,440	10,193	9,970
Prepared or preserved sardines, sardinella, brislings and sprat	135,062	121,509	62,822
Prepared and preserved mackerel	14,511	16,837	18,417
Other prepared and preserved fish	1,429	1,568	1,413
Prepared or preserved fish	9,939	9,038	3,694
Flours, meals and pellets of fish	0	15,342	16,115
Inedible fish products	599	674	461
TOTAL	213,916	214,624	153,295

Source: Global Agricultural Information Network, 2017

The fish processing industry of Latvia is export oriented. The main destination market is the EU where the value of exports in 2017 was EUR 206 million. Main destination countries in the EU are Denmark, Lithuania, Poland and Estonia. Major export destination countries outside the EU are Ukraine, USA, Norway and Israel. Some fish processing companies, like Gamma-A Ltd have diversified export markets. It exports smoked sprat and herring in different oils, also other species to 40 countries of North and South America, EU, Africa, Middle East and Asia. Karavela Ltd producing canned fish, marinated fish and smoked fish in cans exports to Germany, UK, Sweden, Denmark, Russia and Japan (Eurofish Magazine, 2018).

11.4 LATVIA'S MARINE FISHING INDUSTRY ASSOCIATIONS

Three Fishery Producer Organizations (FPO) operate in Latvia. They unite fishery companies fishing in the Baltic Sea and Riga Gulf. The Fishery POs have the following main goals:

- Use marine resources rationally and sustainably; promotion of sustainable fishing
- Improve trade conditions
- Plan and forecast production, economic processes and respective activities; improve economic return
- Improve conditions for placing fishery products on the market
- Comply with food quality and safety standards
- Improve the collaboration between the members
- Represent common interests of the members

On average, 15% of companies operating in the fishery sector of Latvia are united in the FPOs. For fishery and fish processing companies, the main factor hampering the strong cooperation between the enterprises is difficulty to agree on common objective and strategy. Other factors include lack of mutual confidence, disinclination to share production resources and information, absence of explicit leader to organize and manage mutual work, and lack of funding to maintain cooperation.

One of the POs - Latvian Fishermen's Producers Organization (LFPO) with the aim to access new markets applied for the Marine Stewardship Council (MSC) fisheries standard certification for Central Baltic Sea sprat fishery. LFPOs invested time and resources to get all fishermen on board and demonstrate advantages of MSC certification. The certificate would open new markets for the industry and claim new responsibilities from the fishermen. The 3rd party assessment of the fishery was conducted. According to the assessment, the Baltic sprat is subject to the best practice analytical fish stock assessment, the status of the stock is good, there is little bycatch and control, enforcement of fishery is also well managed. The sprat catch is landed in Latvia, processed into sprat in brine and oil for human consumption. 10-15% of the product is consumed in the local market and the rest is exported.

Based on the positive results of the assessment, in 2017 the sprat fishery received MSC standard. The certificate will open new possibilities to the fishing industry in terms of quality improvement, export expansion and sustainable exploitation of marine fishing resources.

In 2018, National Fisheries Producer Organization built a refrigerated storage facility for herring and sprat. The total investment of the project was 3 million EUR and 50% of this amount was the support from European Maritime and Fisheries Fund (EMFF). Each member of the organization has the right to store and freeze fish in one location, that is more convenient than to rent commercial storages in different locations. It contributes to cost savings (Eurofish Magazine, 2018).

11.5 GLOBAL OUTLOOK

The table below presents a comparison data of export volumes of the same fresh and chilled fish and fish-derived products for selected countries.

Table 16: Export value of European anchovies, fresh or chilled, by selected countries (USD 1000)

	COUNTRY	[2013]	[2014]	[2015]	[2016]	[2017]
1	Greece	2 707	1 971	2 786	2 190	1 276
2	Georgia	34	1 328	3 940	2 705	109
3	Turkey	211	463	253	248	235
4	Bulgaria	13	25	-	-	-
5	Russian Federation	-	-	-	-	27

Source: FAO- FishStat data

As the figures show, among these 5 countries Greece has been dominant in exporting fresh or chilled anchovies, followed by Georgia with a peak totalling USD 2.8 mln in 2015.

Although mostly demonstrating volatile trend in fish body oil exports, Turkey was a lead exporter among the above seven countries during 2013 and 2017 period, followed by Georgia and Latvia.

Table 17: Export value of fish body oils by selected countries (USD 1000)

	COUNTRY (NAME)	[2013]	[2014]	[2015]	[2016]	[2017]
1	Turkey	11 349	23 919	12 309	18 210	7 804
2	Georgia	6 047	6 113	5 275	5 944	7 401
3	Latvia	3 593	4 514	4 507	5 162	5 010
4	Greece	493	-	1	212	452
5	Romania	333	92	192	155	83
6	Russian Federation	125	60	56	340	187
7	Ukraine	23	-	-	-	-

Source: FAO- FishStat data

Among 8 exporting countries, Russian Federation was dominant in values of fishmeal exports averaging USD 76 mln per year for given 5 years. The second biggest exporter of fishmeal amongst the countries is Georgia, with peak amounting to USD 15.6 mln and showing no principal upturn or downturn trend during this period.

Table 18: Export value of fishmeal by selected countries (USD 1000)

	COUNTRY (NAME)	[2013]	[2014]	[2015]	[2016]	[2017]
1	Russian Federation	73 196	72 305	94 451	79 861	74 014
2	Georgia	13 456	15 680	10 703	15 180	11 324
3	Latvia	8 177	13 238	10 454	10 778	9 527
4	Turkey	527	1 664	264	1 976	4 084
5	Greece	28	3353	172	13	20
6	Bulgaria	813	1196	290	38	650
7	Ukraine	0	0	0	271	307
8	Romania	8	0	37	0	0

Source: FAO- FishStat data.

12 | NATURE OF COOPERATION IN THE CLUSTER

12.1. SERVICE PROVIDERS

National Environmental Agency (NEA)

NEA implements state policy in marine fishing sector. It defines license conditions, obligations for the license holders and monitors the implementation of established rules and procedures. The Agency defines annual quota of fishing based on conducted research by local and international experts. It can also modify defined quantity in case of necessity.

The agency mainly cooperates with Association of Fishing Licensees and communicates with licensee companies in case of necessity.

From NEA perspective, tariffs and fees for the marine fishing industry are minimal and need revision. Despite the availability of high-quality raw material, Georgia exports low value-added products, that is processed in Turkey and exported to the EU. It is desirable to add value locally and produce competitive products of aquaculture.

Association of fishing licensees

Association was established in 2006 after the issuance of marine fishing license by the state. It unites four marine fishing companies holding the license. Association actively supports the industry development by conducting research and analysis of Georgian fish resources with the assistance of international experts. It also compares its quality to the products of competitors. This was done via laboratory analysis and was a pre-requisite for launching negotiations with the EU for granting access of Georgia's marine fishing products to the Union's market. It advocates problematic issues associated with regulations by conducting meetings with respective state institutions, strengthening positions of the industry with expert opinions and international experience. Association also actively supports development of crucial infrastructure for the marine fishing sector. It played an active role in introducing HACCP and ISO standards to the member companies, and actively supported the opening of the EU market for Georgia's marine fishing products.

Georgia's Fishermen Union 2015

The union unites 22 members – mainly small marine fishing companies. It basically deals with the advocacy of marine fishing industry challenges to the central and local government. To a minimal extent, the Union supports the members with selling their products, provides information on local market conditions, communicates the rules and procedures of "Produce in Georgia" program, cooperates with VET institutions and EEP Poti Port in conducting security trainings. The union does not have membership fee, office and personnel for conducting comprehensive support and providing more complex services to the members such as export market analysis.

Enterprise Georgia

The agency represents the main private sector support state institution in the country. Due to the high interest towards the marine fishing industry and its potential, in December 2019, the sector was added to the list of priority directions of the program "Produce in Georgia". In spring 2020, the marine aquaculture was also added to the list of priority sectors. Since then, the marine fishing companies are eligible to apply for:

- loan subsidization component
- credit guarantee scheme
- grant component

In addition, the marine fishing companies are eligible to simultaneously use loan co-financing and credit guarantee schemes.

As of September 2020, the EG has a first beneficiary marine fishing company.

12.2. COOPERATION BETWEEN CLUSTER COMPANIES AND STAKEHOLDERS

Marine fishing cluster companies have established cooperation culture to support each other. Most of the small fishing companies are members of the business association “Georgia’s Fishermen Union”. At the beginning of marine fishing season, companies have a joint meeting and discuss various issues relevant for the successful operation. The majority of companies fix readiness to cooperate on collective actions in the future. However, two of the interviewed enterprises think that there are as many opinions as the number of fishermen, therefore, it will be really hard to achieve consensus and collaboration on collective actions.

Fish processing facilities underline that there is already well-built cooperation and relationships between the five licensed companies. For even better cooperation and joint solution of the sector problems, they have formed the association, members of which are four out of five fish processing facilities. The companies acknowledge that results can be achieved only with joint efforts. Therefore, every respondent confirmed readiness for further collaboration and openness for joint actions.

Marine fishing cluster companies express readiness to collaborate with each other in all fields, including buying raw materials, logistics and selling products, policy advocacy, marketing and export, joint negotiations. Cooperation has traditional roots in the operation of companies and has the potential for further development for addressing common challenges and improving competitiveness.

A co-operation matrix ranks the current status of linkages between core firms and support institutions¹⁹:

¹⁹ In cooperation matrix 0 means no cooperation, while 5 means strong cooperation

Table 19: Cooperation matrix

Cooperation Matrix										
Name	SMFCs	LHCs	Fishing Licensee Association	Suppliers of raw materials	NEA	Fishermen Union	Enterprise Georgia	Financial Institutions	Educational Institutions	Total
SMFCs	X	4	1	4	1	3	3	2	3	21
LHCs	4	X	4	4	3	1	3	3	3	25
Fishing Licensee Association	1	4	X	0	3	1	1	0	2	12
Suppliers of raw materials	4	4	0	X	0	1	0	0	0	9
NEA	1	3	3	0	X	0	0	0	0	7
Fishermen Union	3	1	1	1	0	X	1	1	1	8
Enterprise Georgia	3	3	1	0	0	1	X	4	0	12
Financial Institutions	2	3	0	0	0	1	4	X	0	10
Educational Institutions	3	3	2	0	0	1	0	0	X	9
TOTAL										X

According to the cooperation matrix, linkages between cluster members are developed to a certain level. Adding the marine fishing sector to priority areas of the state program “Produce in Georgia” will intensify cluster members’ linkages with financial institutions as far as commercial banks will evaluate applications of potential beneficiaries and make decision for financing. Cooperation with Enterprise Georgia will become more active. The opening of the Batumi Marine Academy branch in Poti will intensify cooperation between marine fishing companies and educational institutions. Capacity development and financing of Fishermen Union would contribute to more active and efficient lobbying of the small marine fishing companies and development of results-oriented cooperation between the companies.

13.1. TECHNOLOGY

Adequacy of current technology

Pursuance of technological advances in harvesting of aquatic resources and more generally in fishery industry is critically important. Constant technological development in capture fisheries and use of, for example, proper fibres, so-called sonar electric equipment for finding fish, satellite-based navigation and communication, represents a significant contribution to fishermen success. However, current technologies of marine fishing industry are mostly based on traditional methods and can be regarded to be obsolete. The companies mainly deploy old, Soviet-era vessels in their operations, most of which are outdated and are in need of upgrading. As an example of comparing Georgian and Turkish ships and fishery technologies, the respondents mention that the amount captured by Georgian Seiners, in total, throughout the season, can be captured by Turkish Seiners in some 16 days. Most of the interviewed respondents strive for Turkish technologies, while one interviewed company has adopted secondary Dutch technologies and in case of purchasing new vessel, plans to install them on it.

All fish processing factories reported on having modern technologies within the facilities. Production equipment was mentioned to be in good or very good condition. For some facilities, such technological advances were made possible through preferential loans of state agricultural programs, while for others technological rearrangements have been made possible through reinvestments.

Access to technology specialist

The majority of the respondents, both SMFCs and LHCs, employ fishing and fish processing technology specialists, responsible for the quality of the final product. Such specialist is employed only within the entity and does not normally serve different companies. However, every respondent pointed out the significance of regular training by such specialists in line with the technological developments within the industry. Neither of them named such cutting-edge technology in educational or VET institutions in Georgia. Most of them noted Turkey as the best destination for such education and technological advances.

An interesting approach was described by one of the small-scale marine fishing respondents. This company bought an old Seiner from Georgian individual entrepreneur, dismantled and sent the parts to Turkey, where, together with his Turkish partner, has founded a joint company; the company is now building a new and modern Seiner. The vessel will have a crew of 18 members, out of which initially 10 will be Turkish and 8 Georgian ones. However, the key point of the strategy is to learn the best practices, techniques and new technologies from Turkish specialists on the board, as a kind of practical on-the-job training, and gradually substitute Turkish crew with Georgians.

13.2. LABORATORIES

Almost none of the interviewed SMFCs cooperate with local or international laboratories. The reason is that they are not required to check the quality of captured fish, as this is done by the LHCs receiving fish from them. LHCs cooperate with some local laboratories, such as the Laboratory of the Ministry of Environment and Agriculture, Laboratory of Poti and Batumi. Internationally, they have cooperation experience with Turkish, Chinese, Greek and some European laboratories. According to the LHCs respondents, intensive, batch to batch laboratory checking is not required from the client companies. However, they do such testing regularly to control the quality of the fish products, which, as they report, is of high quality and always respected by Turkish and European traders.

13.3. INNOVATION AND R&D

Marine fishing companies do not have established collaboration with scientific, research or respective institutions in the direction of R&D and innovation. The main source of information about advanced tendencies and innovation trends are obtained via Turkish Marine Fishing companies and through the internet. One of the companies mentioned that the installation of truck engine on the vessel was a recent innovation implemented by the company. Another company also mentioned the plan to install Volvo or Man truck engine on the vessel. For becoming more competitive the companies require financial support in acquiring new vessels, purse seine nets ('Kisa bade' term used in Georgian), refrigerator and fish drying technologies.

One of the interviewed SMFCs, having also small processing facility with a refrigerator, fish calibration unit, small smoking and vacuum packing machines, have cooperation with Italian specialists. The idea of such collaboration is that Italians, with their techniques and technological know-how, process captured fish and modify them so that they become visually more attractive, with better shelf life and ready to be used in cannery production. Thus, the aim of the cooperation is receiving higher value-added products eligible for exporting to European retail markets. However, as the respondent stressed, Italians never share such know-how to Georgians, and during the process, Georgians are asked to leave the facility. The research team met such Italian representatives on-site.

13.4. MARKETING AND MARKET ANALYSIS

Main markets

As mentioned, SMFCs almost never sell products on export and supply their catch to the larger LHCs located in Poti. Only a small portion of the product may be sold at a local market (either fresh or simply processed) or to a middleman who purchases fresh fish from them and sells at local fish markets in Poti, Batumi, Kutaisi and Tbilisi. Interviewed SMFCs do not have marketing plans, however, their medium-term export strategies are mainly targeted at neighbouring countries, while one of them also plans to export the product to the EU market due to the popularity of European anchovy in the European countries.

Business partners in Turkey are mainly large animal food processing facilities with whom Georgians cooperate directly without any middleman or trader companies. One of the processing companies had a success case of exporting fish-derived products (meal and oil) to the European Union. According to them, traded amount was not minor, however, due to the COVID-19 pandemic, this cooperation has been suspended. Nevertheless, the quality of the fish products was much respected by the partners and this cooperation has a long-term perspective.

Challenges during the export process

The main factors hindering export competitiveness of small-scale fishermen are outdated technologies and respectively lack of knowledge of producing high-value added products that would have made them qualified for exporting to the EU market.

Fish processing facilities have not stated specific factors hampering their export process and competitiveness, rather underline the importance of pursuing new technologies and main market trends.

13.5. BUSINESS RESOURCES

Sources of finance

Creation of small marine fishing companies was mostly funded by owners' savings. Sometimes commercial loans were also acquired. One of the companies has approved support from the state program "Produce in Georgia", but due to the pandemic, the implementation of the refrigerator technology installation project was postponed. One of them has received donor assistance in the form of procuring a metal sheet for vessel repairment. In general, most of them address commercial banks for getting leasing and loans for small production machinery as well as ship maintenance, which are very expensive services.

SMFCs plan to expand their enterprises. All of them plan to add refrigeration farms to their activities. Some of them have plans to expand in the field of aquaculture and invest in fish farms in the inland waters of Georgia. A potential linkage of marine fishing and aquaculture activities is the use of marine fish meal as an ingredient for feeding fish at farms.

Last but not least, all of the marine fishing actors are looking forward to receiving support from new initiative of the Government of Georgia - a program "Produce in Georgia" that will particularly address the SMFCs and their needs. The program will provide financial support to beneficiaries, either by subsidizing interest rates on the loans in commercial banks, or offering credit guarantee mechanisms.

The majority of LHCs were founded in 2006 and all of them took a commercial loan initially to cover the license fees. Besides, currently, most of them intend to apply for preferential programs of the Government of Georgia including that of Enterprise of Georgia.

Human resources

Both the SMFCs and LHCs respondents reported flat-wage as well as performance-based salaries for their employees. Some of them have also implemented employee motivation programmes and plans. The vast majority of the employed people both in fishing and processing are men.

Small marine fishing, as well as licensed processing companies, think that the level of knowledge and skills are still one of the core challenges for the industry. They state that employees need improvement of competencies and adaptation in utilizing new vessel technologies, such as communication. This includes connection with port and border police, distance indicator, computer systems generating data catch. The employees also need capacity building in work security and utilizing fish processing technologies. Professional trainings are mainly provided by Batumi Marine Academy, Poti port (security trainings) and international donor organizations. The branch of Batumi Marine Academy will soon be opened in Poti and contribute to the capacity building of employees. The companies receive new knowledge in the marine fishing field via the internet and visits to Turkey.

13.6. EXPECTATIONS ABOUT SECTOR DEVELOPMENT

First and foremost, every single marine fishing respondent foresees development in the marine fishing industry only in the case of renewal of the Georgian vessel fleet, which represents the most significant hindering factor for expansion. Some of them also think that such development should be launched by reducing the influence of Turkish side during fishing and thus giving opportunities for Georgian vessels to increase the volumes of captured fish in the Black Sea. Besides, marine fishing actors named several main problems hampering the industry and its development: outdated technologies, import of raw materials, and absence of dry dock in Poti.

The fish processing facilities see sectoral expansion not in the direction of increasing fish volumes, as

such quotas are annually set and permitted by the state authorities, but rather founding animal food processing factory in Georgia. This would enable them to receive higher value-added fish-derived products, which would eventually result in significantly higher export volumes. Besides, the licensed companies report a problem of obsolete ship dock existing in Poti, which is a significant constraint in industry's development.

In solving market related problems, marine fishing companies have communication with local and national authorities as well as associations. Through such communication and discussions, they have achieved a number of important agreements with state authorities, for example, decreasing the amount of penalties charged during fishing process, as well as adding the marine fishing as a priority sector in the government program "Produce in Georgia".

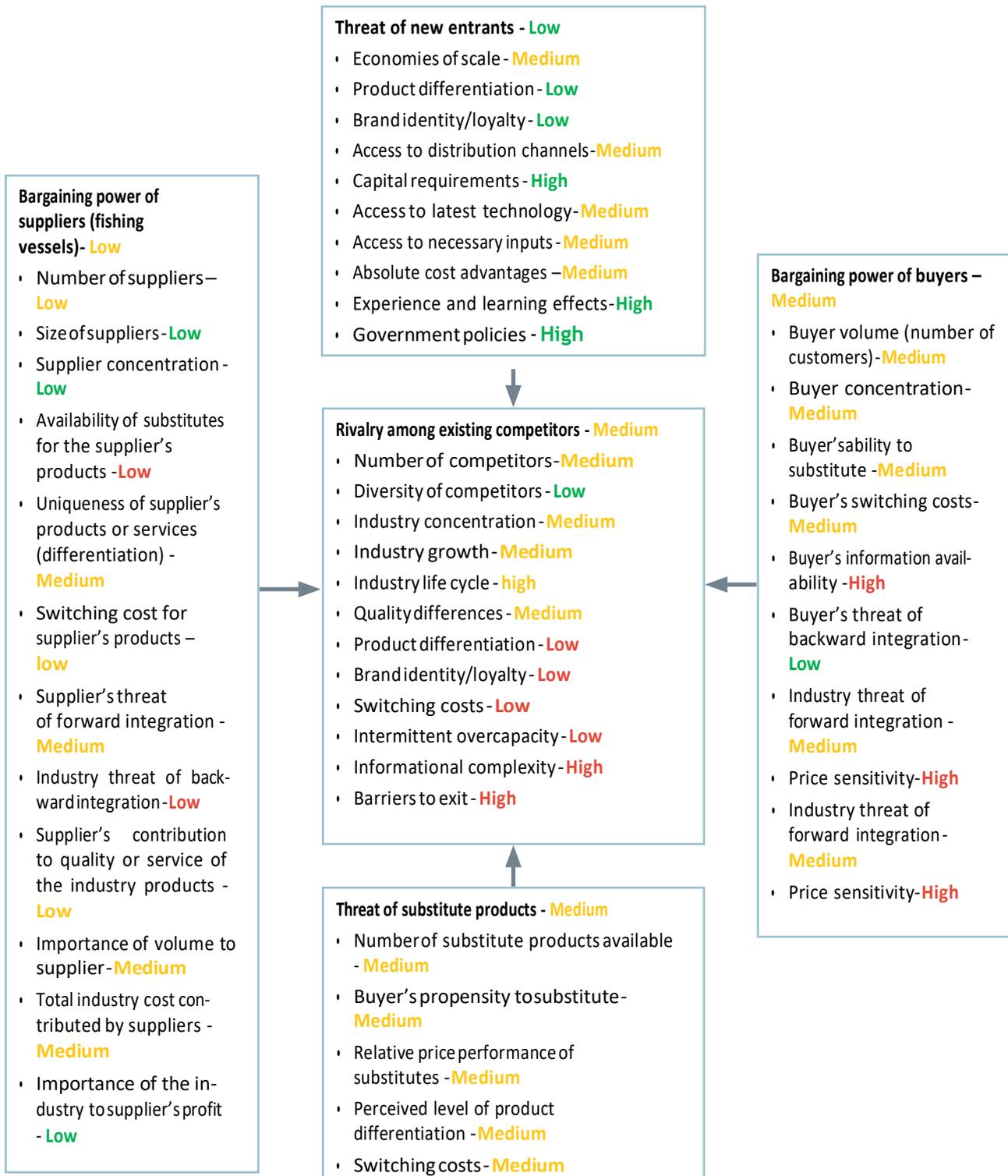
As claimed by one of the interviewed fish processing facilities, proper communication problem exists with respective state authorities and there is a lack of will to consider their recommendations on defining annual quotas, significantly hampering the overall business development process.

14 | SWOT ANALYSIS

<p>STRENGTHS</p> <ul style="list-style-type: none"> - Traditional industry with historical roots - High quality of captured fish in Black Sea waters - Export competitiveness in anchovy fishmeal and oil - Technologically modernized fish processing industry complying with international quality standards - Established cooperation between the cluster companies and suppliers of raw materials 	<p>WEAKNESSES</p> <ul style="list-style-type: none"> - Lack of variety of products - Old and amortised fishing fleet and fish landing facilities - Lack of proper safety and quality measures on Georgian Seiners - Lack of access to modern fishing technologies - Undeveloped fishing infrastructure (dock, port) - Lack of technical and technological knowledge of fishermen - Lack of access to professional training in the region - Lack of resources in small marine fishing companies to absorb the support of governmental program “Produce in Georgia” - Access to finance - Non-existence of laboratory infrastructure for controlling the quality of products - Small share of anchovy with specificities demanded on EU ‘human consumption’ market in total anchovy catch - Non-existence of marine fish processing industry for human consumption - Non-existence of marine fish processing industry for animal feed
<p>OPPORTUNITIES</p> <ul style="list-style-type: none"> - Strong political support for the development of marine fishing sector - Inclusion of the marine fishing sector in the list of priority directions of the program “Produce in Georgia” - Opening of the branch of Batumi Marine Academy in Poti - Application of abundant European anchovy in marine waters of Georgia for fish and animal feed production as well as in human consumption. - Offshore/open sea aquaculture known in Georgia as Black salmon farming. - Access to the EU market. 	<p>THREATS</p> <ul style="list-style-type: none"> - Seasonality of the fishing industry and instability of catch volume - Not properly developing educational/VET and other capacity building institutions addressing essential needs of the sector, will result in hampering marine fishing development in Georgia.

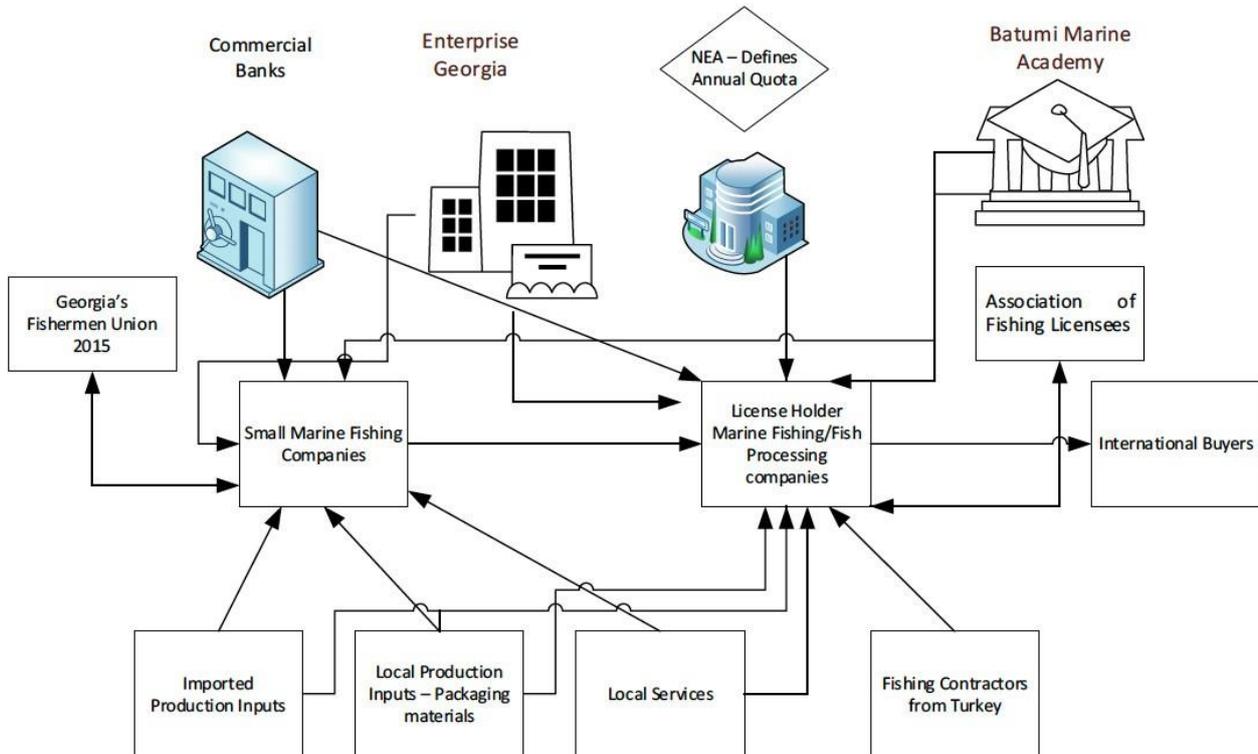
15 | PORTER'S FIVE FORCES

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



16 | CLUSTER MAP

The cluster map illustrates the interrelationship between main cluster actors, suppliers of goods and services, support institutions, regulators, financial and educational establishments.



- The linkages between SMFCs and LHCs are intensive. There is a mutual interest in achieving technological modernisation, improving the quality of product and increasing production capacities;
- Cooperation experience with input suppliers is positive. Modernisation and development of the industry might create demand for diversifying supply base and search for new business partners on local and international level;
- Cooperation between sector associations and companies is active. Georgia's Fishermen Union serves small marine fishing companies, while the Association of Fishing Licensees deals with the larger fish processing plants. Georgia's Fishermen Union needs to identify and secure financial sources for supplying improved services to members. Inter-linkages between two associations for making the marine fishing industry more competitive shall be developed;
- Linkages between marine fishing companies and educational institutions (Batumi Marine Fishing Academy) exist, but further development is required. The opening of representation of the academy in Poti will be positive development for intensification of cooperation and participation of companies in designing educational modules matching with their demand and development needs of the sector;
- Linkages between marine fishing companies and financial institutions have further development potential due to the inclusion of the sector in priority areas of the state program, "Produce in Georgia". According to the program, partner commercial banks assess the applications of potential beneficiaries and based on their decision, Enterprise Georgia supports selected companies with

financial resources defined by the program;

- Communication and cooperation of LHCs and Association of Fishing Licensees with NEA is at a good working level. There is a room for further development of linkages with regard to solving the existing problems associated with the terms of the license and finding mutually acceptable solutions.
- Linkages of marine fishing companies with Enterprise Georgia are actively developing. Several meetings were held between the industry representatives and the EG, including at the level of Deputy Minister of Economy and Sustainable Development. As a result, the programs administered by the EG were adjusted for responding to the needs of the industry, marine fishing companies are eligible to simultaneously use loan co-financing and credit guarantee schemes. Further observation and analysis will be needed to evaluate sector representatives' participation in the program "Produce in Georgia" and the utilization of its resources.

17 | VISION FOR THE CLUSTER

The medium-term vision of the marine fishing cluster is following:

Georgia's marine fishing cluster envisions sustainable growth through modernization of fishing vessel fleet and fishing infrastructure, diversification of the sector towards the production of new processed fish products and development of the offshore aquaculture industry, increased number of the export products and value.

The slogan of the marine fishing cluster is: "Achieving growth through technological modernization and export diversification".

Strategic cooperation of marine fishing cluster actors will aim:

- Evolution of Georgia's marine fishing industry as a vital player in the region and constant improvement of its competitiveness vis-a-vis peer countries
- Equipment of Georgia's marine fishing sector with modern fishing vessels corresponding to the local industry environment and contributing to the full utilization of raw materials
- Insurance of access to modern fishing infrastructure corresponding to the needs of the industry and its growth ambitions
- Growth of export value of raw fish, processed fish and fish-derived products via modernisation of marine fishing fleet, diversification of processed products, acquiring modern skills for absorbing renewed technologies, as well as penetrating to the EU market
- Investments for the development of advanced and innovative human consumption fish processing facilities
- Development of the offshore/open sea aquaculture industry benefiting small and medium size marine fishing companies
- Transform marine fishing industry value chain as an attractive employer for respective professionals and newly graduated students
- Integration in peer cluster networks for having access to advanced knowledge and innovations in sector regulations, fish fleet technologies, processing technologies and products, professional development of employees and infrastructure.

18 | CURRENT PRESSURE POINTS AND SHORT RUN | OBJECTIVES OF THE CLUSTER

Main challenges of the marine fishing cluster Lack of variety of products

There are five main fish varieties available in Georgian waters: European anchovy (*Engraulis encrasicolus ponticus* Alexandrov), Black Sea sprat (*Sprattus sprattus phalericus*), Black Sea whiting (*Merlangius merlangus euxinus*), spiny dogfish (*Squalus acanthias*) and Black Sea red mullet (*Barabul, Mullus barbatus ponticus*). However, the vast majority, 95% of such varieties is European anchovy.

Besides, licensed fish processing plants produce only two, non-human consumption anchovy-derived products: fishmeal and oil.

Old fishing fleet and fish landing technologies

On average, small-size marine fishing fleet captures 3-4 tonnes per day. In comparison, hired Turkish seiners capacity is around 500-1000 tonnes per day. The significant difference is in vessels, as well as fish landing facilities and technologies.

Fishing infrastructure

Marine fishing industry actors reported a problem of obsolete ship dock and harbour existing in Poti, that represent a significant constraint for the industry's development. The existing dock being used for repairing small marine fishing vessels is underdeveloped and charges high fees for such maintenances.

Access to technical and technological knowledge

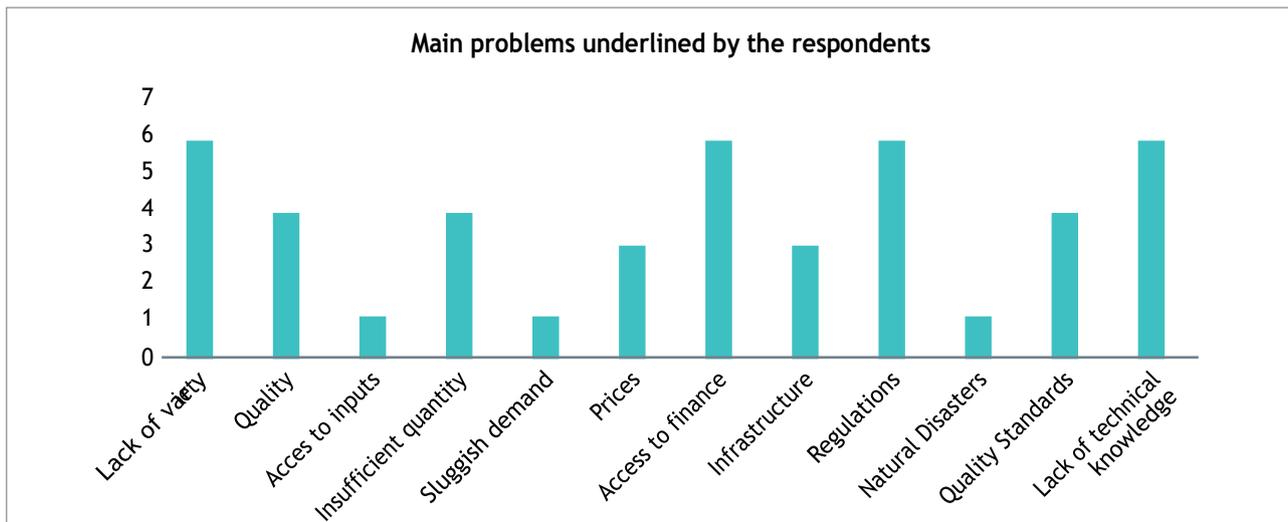
Limited access to professional education and training centres represents one of the core challenges hindering the technical and technological development in the marine fishing industry. The only reported professional education centre is in Batumi – Batumi Marine Fishing Academy and in fall this year, a representation will be opened in Poti.

Access to finance

The inclusion of marine fishing to priority sectors of the state program “Produce in Georgia” gives opportunities to marine fishing industry actors to get preferential loans or have support in loan collateral to renew existing or purchase new vessels. Despite the benefits of the program, access to finances have been reported as one of the most problematic challenges during the interviews and focus group meeting.

Besides these main challenges, marine fishing cluster companies consider other problems mainly relating to regulations, product quality, quantity, quality standards, and prices.

Diagram 3: Main problems underlined by the respondents



19 | OBJECTIVES OF THE MARINE FISHING CLUSTER

The main objectives of the marine fishing cluster are the following:

- Increased catch of Georgian fleet
- Increased variety and value of processed marine fish products
- Improved capacity of human resources in the sector
- Improved access to finance
- Strengthened capacities of support institutions

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

Table 20: Objectives, activities, outputs, and outcomes of marine fishing cluster

OBJECTIVE	ACTIVITIES	OUTPUTS (INDICATORS)	OUTCOMES	THE CHALLENGES SOLVED UNDER THIS OBJECTIVE
Increased catch of Georgian fleet	<p>Purchasing new or renewed Georgian vessels</p> <ul style="list-style-type: none"> • Help Georgian small-size marine fish companies in better coordination with representatives of the state program “Produce in Georgia” and financial institutions. • Advocating the existing problems related to loan re-payment with FIs. <p>Improving fish landing technologies</p> <ul style="list-style-type: none"> • Support marine fishing companies with better access to new technologies and innovations related to fish landings • Assist them with acquiring new landing technology facilities through cooperating with financial institutions for choosing proper financial products 	<ul style="list-style-type: none"> • Number of meetings of cluster members with financial institutions and respective government agencies (Enterprise Georgia). • Training sessions, study tours as well as webinars organized through internet platforms on new landing technologies. • Proper financial products by FIs in line with the needs of core actors of the industry. 	<ul style="list-style-type: none"> • Improved access to state programmes • Advanced landing technologies implemented • Improved marine fishing industry infrastructure 	Old and amortised fishing fleet and fish landing facilities

	<p>Improved access to infrastructure</p> <ul style="list-style-type: none"> Organize and coordinate meetings between marine fishing entities and respective state institutions to report problem of underdeveloped dry dock and harbour. 			
Increased variety and value of processed marine fish products;	<ul style="list-style-type: none"> Conduct feasibility study on black sea European anchovy marine fish human consumption processing. Organize meetings with respective investment supporting state institutions for encouraging investments in founding fish and animal feed processing plants. Support marine fishing entities in acquiring new offshore/open sea aquaculture technologies and know how. 	<ul style="list-style-type: none"> Feasibility study on human consumption anchovy processing. Number of meetings organized and information delivered to respective government agencies about fish and animal feed processing plants. Study tours, training session as well as webinars organized about open sea aquaculture. 	<ul style="list-style-type: none"> Human consumption anchovy production facilities launched. Fish and animal feed processing plants launched. Offshore/ open sea aquaculture sector developed. 	Lack of variety and value of products.
Improving capacity of human resources	<p>Cooperating with Batumi and Poti Marine Fishing Academy</p> <ul style="list-style-type: none"> Encourage short and medium term practical educational programs in Samegrelo-Zemo Svaneti adjusted to the needs of core enterprises Developing short-term programs in business management <p>Developing joint training programs for staff</p> <ul style="list-style-type: none"> Increasing cooperation of cluster companies to provide staff with relevant knowledge 	<ul style="list-style-type: none"> Number of meetings of cluster members with Batumi and Poti Marine Fishing Academy Number of developed short and medium term practical educational programs in direction of marine fishing, processing, and business management Number of joint trainings 	<ul style="list-style-type: none"> Short and medium-term educational programmes are delivered and the level of marine fishing skills processing and business management is increased 	Deficiency of skills in the sector

<p>Increasing access to finance</p>	<p>Developing cooperation with financial institutions (FI)</p> <ul style="list-style-type: none"> Cooperating with financial institutions to develop financial products adjusted to sectoral needs Advocating the existing problems related to loan repayment with FIs <p>Enhancing cooperation with government agencies</p> <ul style="list-style-type: none"> Assist Georgian small-size marine fish companies and respective government agencies, including Enterprise Georgia, in better coordination. 	<ul style="list-style-type: none"> Number of meetings of cluster members with FIs and government agencies (Enterprise Georgia) Number of financial products developed by FIs adjusted to the needs of core enterprises 	<ul style="list-style-type: none"> Access to finance of core enterprises is increased 	<p>Lack of access to finance</p>
<p>Strengthening capacity of support institutions</p>	<ul style="list-style-type: none"> Develop capacity of the Georgia's Fishermen Union serving small marine fishing companies Increasing capacity of Association of Fishing Licensees serving large licensed fish processing plants. Assist Inter-linkages between two associations for making the marine fishing industry more competitive Support the association to conduct advocacy campaigns with financial institutions to develop financial products adjusted to the needs of marine fishing cluster actors Encourage both associations to implement consultancy services for core enterprises 	<ul style="list-style-type: none"> Number of capacity development activities for Fishermen Union. Number of capacity development activities for the association of Fishing Licenses. Number of advocacy campaigns of both associations with government agencies. Variety of consultancy services developed by the associations. 	<ul style="list-style-type: none"> Associations are able to provide core enterprises with necessary services The problems faced by core enterprises are solved Enterprises increase quality of communication with state agencies Financial products adjusted to the needs of core enterprises are developed 	<p>Weak access to information. Lack of access to finance</p>

