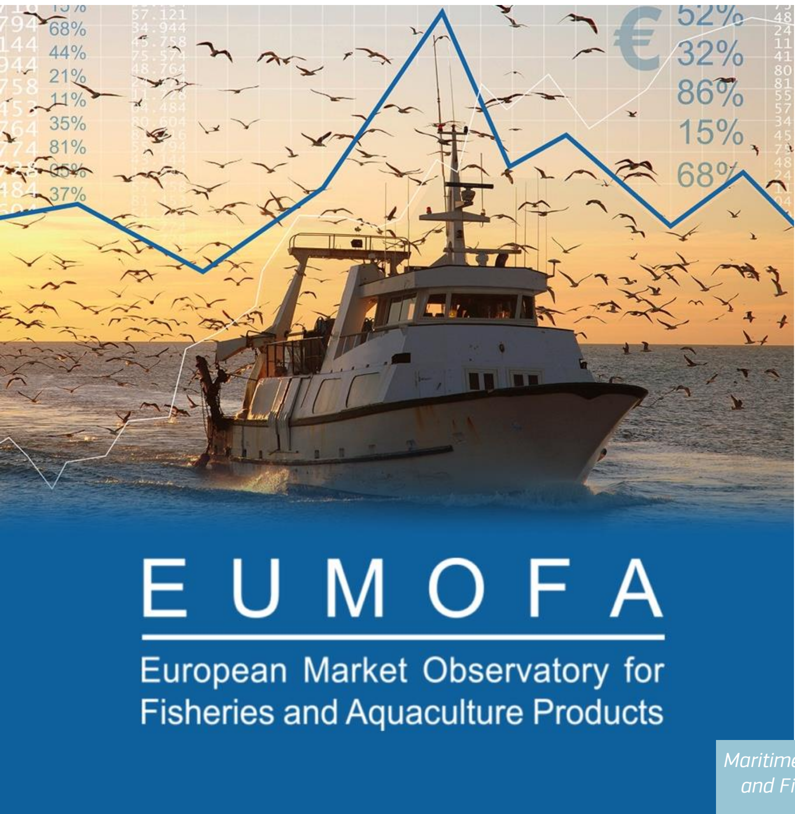
European Commission

CASE STUDY

PORTION TROUT IN THE EU



Maritimes Affairs and Fisheries

PRICE STRUCTURE IN THE SUPPLY CHAIN

FOCUS ON GERMANY, ITALY AND POLAND

OCTOBER 2021

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Summary

- In 2019 the world trout production was 939.878 tonnes (FAO) and has been increasing since 2015 (+21% in volume between 2015 and 2019). Main species farmed is the rainbow trout which accounted for 97% of the total volume in 2019. The EU 27 is the second largest producer in the world (183.819 tonnes in 2019: 20% of world production), just after the Islamic Republic of Iran (206.050 tonnes: 22% of world production). The production has highly increased in the Islamic Republic of Iran over the last decade and was two times higher in 2019 compared to 2010. Other large producers of trout are Turkey, Norway, Chile and Peru. At EU 27 level, the main producers are France, Italy and Denmark with over 30.000 tonnes of production each in 2019. Following Member States (MS) are Spain, Poland and Finland with 14.000 to 17.000 tonnes of production. The production is below 10.000 tonnes in each other producing MS.
- "Portion trout" is generally a whole trout, below 500 g (or even below 450 g), with white or pink flesh. In some MS, portion trout may also be filleted or even smoked. "Medium-sized trout" is between 500 g and 1,2 kg, generally intended for filleting; "large-sized trout" is above 1,2 kg and generally intended for smoking. "Portion" and "medium" trouts are merged in several statistics (both in trade statistics and professional statistics from the Federation of European Aquaculture Producers (FEAP))[1].
- About two-thirds of the EU production is portion and medium-sized trout (64% in 2019, based on FEAP data) and about one-third is large trout (36%). The share of portion trout tends to decrease, as it accounted for 72% in 2014. Main producers of portion trout in the EU are Italy, France, Denmark, Poland and Spain, with production above 13.000 tonnes each (2019).
- Regarding intra-EU flows, in 2020 half of the trout flow concerns smoked trout (in value), while portion trout accounted for 15%. Main intra-EU sellers of portion trout were Denmark (EUR 21 million sold in 2020), Spain (EUR 16 million) and Poland (EUR 9 million). Main intra-EU destinations for portion trout were Germany (EUR 23 million), Poland (EUR 20 million) and France (EUR 10 million).
- Apparent consumption of trout at EU 27 level was 208.657 tonnes[2] in 2019. The total supply relied for 83% on EU production and for 17% on imports (mainly from Turkey and Norway). A limited share of the EU supply was exported (6%) and most of the volumes were intended for EU consumption (94%).
- Germany, France, Italy, Spain, Poland and Finland are the main EU markets for trout (from 14.000 to 73.000 tonnes of apparent consumption in each MS in 2019). Apparent consumption was below 10.000 tonnes in other MS. In Germany, most of the apparent consumption is for smoked trout while this is mainly portion trout in Italy and Poland.

[1] In the present report, we refer to "portion trout" when we cover trade and FEAP statistics merging "portion trout" and "medium-sized trout".
[2] Apparent consumption is calculated in live weight equivalent (LWE)

- Focus on Germany, France and Poland:
  - In Germany, the ex-farm prices for portion trout ranged from 4,37 EUR/kg to 7,79 EUR/kg in 2019 depending on the sales channels (higher with direct sales and lower toward wholesalers). The price transmission analysis focuses on the sales in a small retail shop, which is common on the German market, with a final price of 10,41 EUR/kg. Large-scale retailers mainly market imported portion trout, which price is lower than German one.
  - In Italy, the ex-farm price for fresh portion trout was 3,30 EUR/kg in March 2021 and the retail price considered in the analysis is 9,90 EUR/kg in large-scale retail (from 7,90 to 9,90 EUR/kg at retail stage based on a store check, without discount). Portion trout in Italy is marketed in HoReCa, large-scale retail, angling (live trout) and exported (fresh, frozen or live).
  - In Poland, the ex-farm price considered is 2,62 EUR/kg (based on interview, price in the 4th quarter of 2020). Two price transmission analyses are provided in this study: large-scale retail (packed) with a final price at 5,79 EUR/kg and traditional shop (unpacked) at 5,82 EUR/kg. The main market for trout in Poland is discount shop (59% of the sales, compared to 16% in fish shops, 14% in hypermarkets and supermarkets and 10% in other channels).

List of acronyms

API	Associazione Piscicoltori Italiani
CN	Combined Nomenclature
DCF	Data Collection Framework
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
FEAP	Federation of European Aquaculture Producers
HoReCa	Hotel, Restaurant, Café
JRC	Joint Research Center
LWE	Live Weight Equivalent
MS	Member States
PTBA	Polish Trout Breeders Association
VAT	Value Added Tax

1 Scope and content

1.1 Case study scope

Key elements for the analysis of portion trout's price structure and distribution of value in the supply chains are:

Product	Origin	Characteristics	Market and price drivers	Focus MS
Portion trout (below 500 g / fish)	Aquaculture	Mainly fresh product, whole and gutted Some portion trout may be filleted and smoked	Type of product: white or pink trout Packaging Sales channel	Germany, Italy and Poland

EUMOFA provides other relevant publications on the topics covered by this study:

- Study on Freshwater aquaculture in the EU (March 2021)

https://www.eumofa.eu/documents/20178/442176/Freshwater+aquaculture+in+the+EU.pdf

- Study on Recirculating aquaculture systems (December 2020)

https://www.eumofa.eu/documents/20178/84590/RAS+in+the+EU.pdf

- Rainbow trout – species profile

https://www.eumofa.eu/documents/20178/137160/Rainbow+trout_31-1.pdf

- Country profiles:
  - Germany – https://www.eumofa.eu/germany
  - Italy – https://www.eumofa.eu/italy
  - Poland – https://www.eumofa.eu/poland

1.2 Content of the document

In conformity with the methodology developed within EUMOFA and available on its website (http://www.eumofa.eu/price-structure), this document includes:

- A description of the product
- An analysis of production and market trends at EU level
- An analysis of the price structure along the supply chain in Italy, Germany and Poland.

2 DESCRIPTION OF THE PRODUCT AND MARKETS

2.1 Biological and commercial characteristics

Case study product

Name: Rainbow trout (*Onchorynchus mykiss*)

FAO 3-alpha code: TRR

Presentation: Whole or fillet, for whole fish: mostly gutted, fresh or chilled, loose or pre-packed in Modified Atmosphere Package (MAP)

Commercial size: Portion-sized trout generally ranges from 350 g up to 600 g. These are mostly gutted fish, sometimes fillets.

Other main species:

Other most significant trout and related salmonids species farmed at EU level and sold for human consumption are:

- Oncorhynchus apache: Apache trout
- Oncorhynchus chrysogaster: Mexican golden trout
- *Oncorhynchus clarkia*: Cutthroat trout
- Oncorhynchus aguabonita: Golden trout
- *Salmo trutta*: Sea trout
- Oncorhynchus gilae: Gila trout

Related codes in the product nomenclature (COMEXT/EUROSTAT)

Codes have been modified in 2012. The table below details the codes before and after 2012.

Table 1: Trade codes for trout products (CN-8 nomenclature)

CN8	Species	Preservation	Presentation	Description	Conversion factor to live weight equivalent (LWE)
03 01 91 10	Apache trout and Mexican golden trout	Live	/	Portion trout and large trout	1
03 01 91 90	Sea trout, Rainbow trout, Cutthroat trout, Golden trout and Gila trout	Live	/	Portion trout and large trout	1
03 02 11 10	Apache trout and Mexican golden trout	Fresh	Whole	Portion trout and large trout	1
03 02 11 20	Rainbow trout	Fresh	Whole	Large trout (over 1 kg or 1,2 kg)	1,15
03 02 11 80	Sea trout, Cutthroat trout, Golden trout, Gila trout and Rainbow trout	Fresh	Whole	Portion trout and large trout Excl. large rainbow trout (over 1 or 1,2 kg)	1,05
03 03 14 10	Apache trout and Mexican golden trout	Frozen	Whole	Portion trout and large trout	1,20
03 03 14 20	Rainbow trout	Frozen	Whole	Large trout (over 1 or 1,2 kg)	1,13
03 03 14 90	Sea trout, Rainbow trout, Cutthroat trout, Golden trout and Gila trout	Frozen	Whole	Portion trout and large trout Excl. large rainbow trout (over 1 or 1,2 kg)	1,13
03 04 42 10	Rainbow trout	Fresh	Fillet	large trout	1,80
03 04 42 50	Apache trout and Mexican golden trout	Fresh	Fillet	Portion trout and large trout	2,48
03 04 42 90	Sea trout, Rainbow trout, Cutthroat trout, Golden trout and Gila trout	Fresh	Fillet	Portion trout and large trout (except large trout for Rainbow trout)	1,80
03 04 82 10	Rainbow trout	Frozen	Fillet	Large trout	1,80
03 04 82 50	Apache trout and Mexican golden trout	Frozen	Fillet	Portion trout and large trout	2,22

CN8	Species	Preservation	Presentation	Description	Conversion factor to live weight equivalent (LWE)
03 04 82 90	Sea trout, Rainbow trout, Cutthroat trout, Golden trout and Gila trout	Frozen	Fillet	Portion trout and large trout (except large trout for Rainbow trout)	1,80
03 05 43 00	Sea trout, Rainbow trout, cutthroat trout, Golden trout, Gila trout, Apache trout and Mexican golden trout	Smoked	Whole and fillet	Portion trout and large trout	2,11

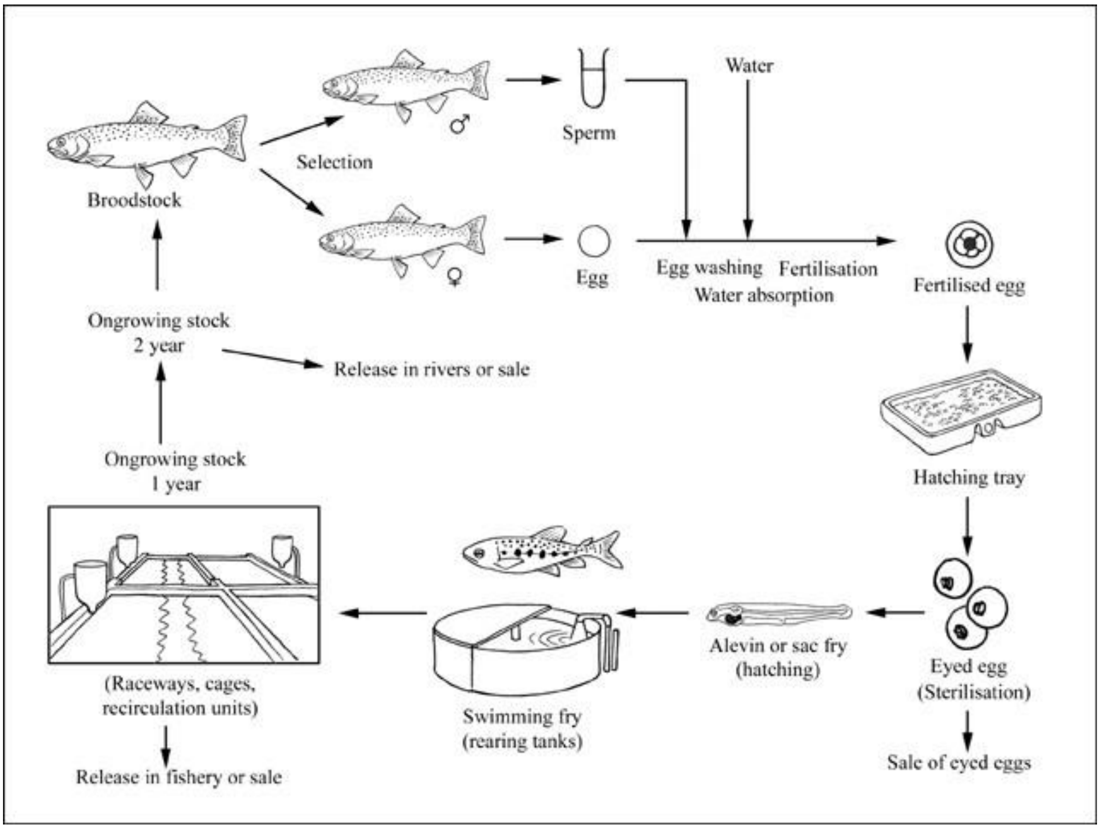
Biological parameters

Parameter	Characteristics
Production cycle in the wild	Capable of occupying many different habitats, ranging from an **anadromous life history** (living in the ocean but spawning in rivers and streams) to **permanently inhabiting lakes**. Males mature generally at 2 years and females at 3. Spawning happens from November until May in the Northern hemisphere and from August to November on the Southern hemisphere. Anadromous forms may migrate long distances to spawning streams. The female finds a spot and digs a pit. As soon as the pit is completed, the female goes into the pit and is immediately followed by the male where they release egg and sperm. Young fish move downstream at night, shortly after emergence.
Temperature	The species can withstand vast ranges of temperature variation (0-27 °C) but spawning and growth occurs in a narrower range (9-14 °C). **The optimum water temperature for rainbow trout culture is below 21°C**. As a result, temperature and food availability influence growth and maturation, causing age at maturity to vary; though it is usually 3-4 years.
Diet	In the wild, rainbow trout feeds on a variety of aquatic and terrestrial invertebrates and small fishes but the most important food is freshwater shrimp, containing the carotenoid pigments responsible for the orange-pink colour in the flesh.
Distribution in the wild	The rainbow trout is native to the cold-water rivers and lakes of the Pacific coasts of North America and Asia. It has been introduced to about 82 countries, practically **everywhere the conditions are favorable for its culture**, because rainbow trout tolerates a wide range of environmental and production conditions better than other trout species.
Catches	Rainbow trout catches represent negligible share in global catches. They also represent only 0,3% of the global rainbow trout production in 2018, as the species is mainly farmed. The main fishing gears used are driftnets, gillnets and similar nets, including hooks and lines.
Aquaculture production	Rainbow trout can be farmed in both fresh and saltwater. The European production of farmed rainbow trout is influenced mainly by portion-size fish (portion sizes of 200-300 g), in freshwater (mainly in tanks and raceways and more recently in recirculating aquaculture system (RAS), mainly in Denmark). The larger-sized trout is produced in marine areas, farmed in cages. The main production steps are as follows: <u>Seed supply</u>: Trout will not spawn naturally in culture systems, hence eggs are artificially spawned from high quality brood fish when fully mature (usually 3 or 4 years old females are used). The reproduction of rainbow trout is well understood and the techniques are well developed.

Parameter	Characteristics
	Hatchery production: Eggs are incubated and undisturbed until the eyed-stage is reached, in hatching troughs, vertical flow incubators or hatching jars. Time taken for hatching varies depending on water temperature, e.g. 100 days at 3.9 °C and 21 days at 14.4 °C. Rearing fry: Fry are traditionally reared in fiberglass or concrete tanks, preferably circular in shape, to maintain a regular current and uniform distribution of the fry, but square tanks are also used. Fry are fed with specially prepared starter feeds using automatic feeders, starting from when approximately 50 percent have reached the swim-up stage. When most fish are actively feeding, 10 percent of the fish weight should be introduced daily for 2-3 weeks, preferably on a continuous basis using clockwork belt feeders. The feed pellets are made of fish meal (80 percent), fish oils and grains. Ongrowing: When the fry reach 8-10 cm in length (~250 fish/kg) they are moved to outdoor grow-out facilities. These can comprise concrete raceways, flow-through ponds or cages. Fish are grown to marketable size (30-40 cm), usually within 9 months, although some fish are grown to larger sizes over 20 months. The stock is graded, usually four times (at 2-5 g, 10-20 g, 50-60 g and >100 g) in a production cycle (first year), then the density needs to be reduced, thus ensuring fast growth, improving feeding management and creating product uniformity. Fish transferred to marine cages have faster growth rates, reaching larger market size. Fry of about 70 g weight can attain 3 kg in less than 18 months.

Source: FAO, EUMOFA species profile for Rainbow trout[3]

Figure 1: Production cycle of Rainbow trout



Source: FAO

[3] https://www.eumofa.eu/documents/20178/137160/Rainbow+trout_31-1.pdf

2.2 World production

2.2.1 Overview

World trout production was 939.878 tonnes in 2019 (FAO), with a 21% increase since 2010. This is the highest level of production since 2010.

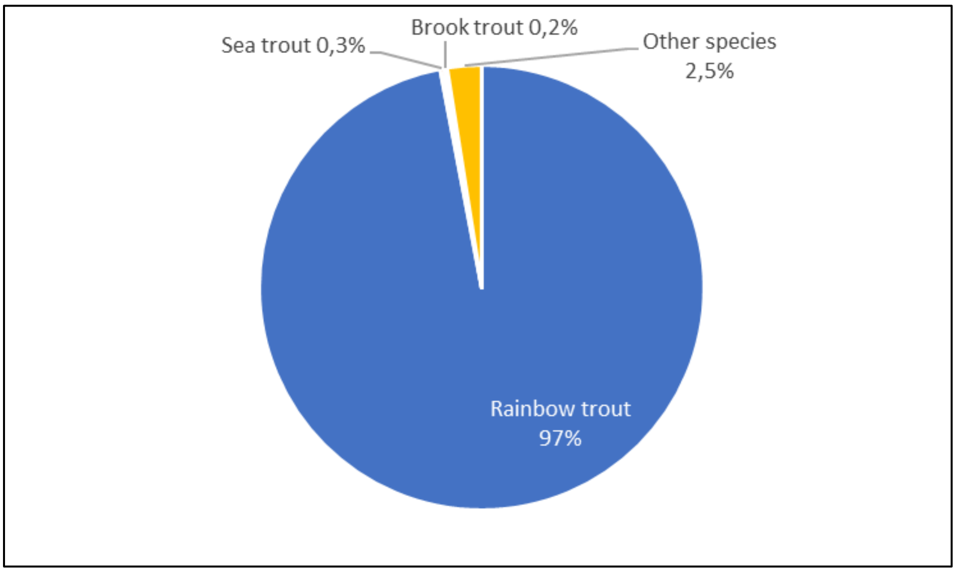
Table 2: Evolution of world farmed trout production between 2009 and 2019 (tonnes)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	% total 2019	Evol. 2019 / 2010
Rainbow trout	752.462	792.118	882.064	814.522	794.610	751.605	841.716	840.184	853.412	916.365	97%	+22%
Other trout species	22.219	19.253	20.800	23.008	25.594	26.628	21.393	23.914	22.253	23.513	3%	+6%
Total	**774.681**	**811.371**	**902.864**	**837.530**	**820.204**	**778.233**	**863.109**	**864.098**	**875.665**	**939.878**	**100%**	**+21%**

Source: FAO - Global Aquaculture Production

The world production mainly includes rainbow trout (accounting to 97%-98% of world trout production each year over the period 2010-2019) with 916.365 tonnes in 2019. Among the other trout species, sea trout accounted for 0,3% with 3.252 tonnes and brook trout for 0,2% with 1.702 tonnes.

Figure 2: Breakdown of trout production by aquaculture in volume (2019)



Source: FAO - Global Aquaculture Production

2.2.2 Trout production over time by the main producing countries

The main trout producers are the Islamic Republic of Iran (206.050 tonnes in 2019) and the EU 27 with 183.819 tonnes; together, they account for 42% of world production. Following producers are Turkey, Norway, Chile and Peru.

The world production has increased by 21% between 2010 and 2019, due to a strong increase of production in the Islamic Republic of Iran (+125%, +114.531 tonnes), Turkey (+48%, +40.511 tonnes), Peru (+256%, +36.543 tonnes). Other relevant producers experienced decreases in the same period: -63% in Chile (-138.068 tonnes) and -3% in the EU 27 (-6.135 tonnes).

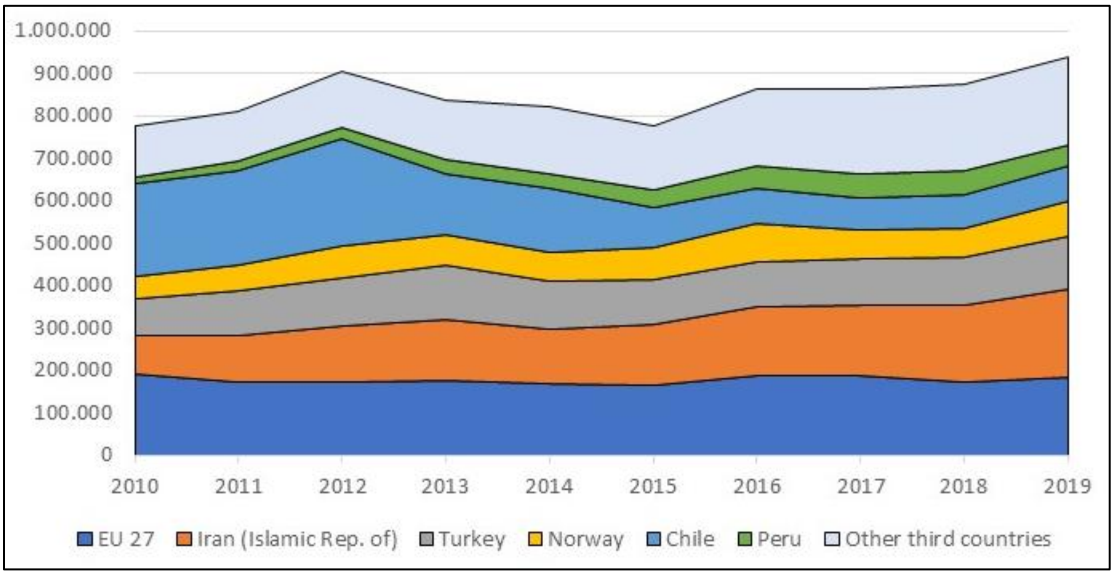
Table 3: Evolution of farmed trout production in the main producing countries (tonnes)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	% total 2019	Evol. 2019 / 2010
Iran (Islamic Rep. of)	91.519	106.409	131.000	143.917	126.515	140.632	163.325	167.830	179.684	206.050	22%	+125%
EU 27	189.954	173.954	171.706	175.726	169.757	165.984	186.347	185.988	173.563	183.819	20%	-3%
Turkey	85.244	107.936	114.569	128.059	113.593	108.038	107.013	109.657	114.497	125.745	13%	+48%
Norway	54.667	58.545	74.668	71.552	68.986	73.007	87.852	66.999	68.345	83.489	9%	+53%
Chile	220.244	224.448	254.353	142.681	151.773	94.717	84.607	76.971	78.446	82.176	9%	-63%
Peru	14.250	19.962	24.762	34.993	32.923	40.947	52.246	54.878	55.030	50.793	5%	+256%
Other non-EU countries	118.745	120.496	131.813	141.172	156.968	153.922	181.663	202.138	205.887	207.981	22%	+75%
Total	774.624	811.750	902.871	838.099	820.516	777.247	863.052	864.462	875.452	940.053	100%	+21%

Note: totals may differ from sum of data in column due to rounding

Source: FAO - Global Aquaculture Production

Figure 3: Evolution of farmed trout production in the main producing countries (tonnes)



Source: FAO - Global Aquaculture Production

2.3 EU production

2.3.1 EU production by the main producing Member States

The EU 27 production of trout was 183.819 tonnes in 2019. **As indicated in the report "Freshwater aquaculture in the EU" published by EUMOFA in 2021[4], rainbow trout is the main freshwater species farmed at EU level, both in terms of volume and value.**

The main EU Member States producing trout are France, Italy and Denmark accounting for 56% of EU production (from 17% to 20% of the EU production in each MS). The following MS are Spain, Poland and Finland (with 8% to 9% of the EU production each).

The EU 27 production decreased by 3% between 2010 and 2019. The production has decreased in two of the main producing MS: -5% in Italy (-1.986 tonnes) and -5% in Denmark (-1.836 tonnes), while it has increased in France (+4%, +1.461 tonnes). Significant decreases are observed in Germany (-57%, -11.715 tonnes) while significant increases are observed in Poland and Finland (respectively +26% and +29%, accounting for +3.345 tonnes and +3.213 tonnes).

Table 4: Evolution of farmed trout production in the main producing Member States (tonnes)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	% total 2019	Evol. 2019 / 2010
FR	35.432	31.950	31.843	31.789	30.605	24.596	36.267	35.608	34.147	36.893	20,1%	+4%
IT	36.446	36.274	36.783	36.850	32.793	32.810	36.800	36.800	34.286	34.460	18,7%	-5%
DK	32.740	32.914	31.632	33.978	30.961	32.616	31.295	33.196	29.824	30.904	16,8%	-6%
ES	17.384	16.562	16.307	15.869	15.112	16.183	17.360	16.908	10.539	16.978	9,2%	-2%
PL	12.940	11.200	10.900	11.554	14.263	13.161	14.415	14.481	15.945	16.285	8,9%	+26%
FI	10.991	9.981	11.332	12.355	12.452	13.954	13.482	13.660	13.180	14.204	7,7%	+29%
DE	20.522	9.817	10.052	10.302	10.633	9.149	9.272	9.114	8.431	8.807	4,8%	-57%
SE	7.859	10.752	10.505	9.757	9.436	8.971	11.551	11.363	9.586	8.310	4,5%	+6%
BG	2.928	1.552	2.202	3.078	3.328	3.371	4.694	3.257	4.836	4.196	2,3%	+43%
RO	1.400	1.710	1.074	1.106	1.155	1.542	1.595	2.079	2.474	2.618	1,4%	+87%
AT	1.552	1.900	2.030	2.066	2.043	2.146	2.241	2.248	2.330	2.450	1,3%	+58%
EL	2.712	1.912	1.968	2.017	1.611	1.759	1.644	1.989	2.127	1.898	1,0%	-30%
SK	554	585	773	774	934	939	1.145	1.030	1.020	999	0,5%	+80%
SI	482	611	557	582	747	656	833	737	964	937	0,5%	+94%
CZ	738	815	751	682	693	611	668	777	1.106	936	0,5%	+27%
EE	488	334	455	465	570	559	680	702	804	927	0,5%	+90%
PT	952	1.115	479	775	752	890	676	655	655	665	0,4%	-30%
IE	1.102	1.201	781	908	808	803	705	647	557	608	0,3%	-45%
HR	2.482	2.481	1.000	349	391	679	467	396	370	335	0,2%	-87%
LT	34	41	115	115	109	278	332	106	111	182	0,1%	+435%
HU	48	44	45	52	61	42	58	54	72	76	0,0%	+59%
LV	16	11	23	29	38	134	82	92	114	50	0,0%	+219%
NL	45	45	45	45	45	45	45	45	45	50	0,0%	+11%
CY	69	66	55	55	42	41	40	44	41	50	0,0%	-28%
BE	39	81	0	173	175	50	0	0	0	0	0,0%	-100%
EU27	**189.954**	**173.954**	**171.706**	**175.726**	**169.757**	**165.984**	**186.347**	**185.988**	**173.563**	**183.819**	**100%**	**-3%**

Note: totals may differ from sum of data in column due to rounding
Source: FAO - Global Aquaculture Production

[4] https://www.eumofa.eu/documents/20178/442176/Freshwater+aquaculture+in+the+EU.pdf

Methodological note on "portion-sized trout ", "medium-sized trout" and "large trout" in FEAP and trade data

In the different MS, portion-sized trout is generally considered to be below 500 g (even below 450 g). Trout between 500 g and 1,2 kg is considered as "medium-sized trout" and is notably used for filleting. Large trout, above 1,2 kg is generally intended for the smoking industry.

FEAP[5] provides details on "portion-sized rainbow trout" and "large rainbow trout" in the main MS (data on 15 MS)[6] between 2014 and 2019. The FEAP definition for "portion trout" is trout below 1,2 kg. Thus, this covers both "portion trout" and "medium-sized trout".

The same applies in trade data. There are codes for trout below 1-1,2 kg (aggregating "portion" and "medium-sized trout") and codes for trout over 1-1,2 kg (large trout). The different codes also cover different species; however, rainbow trout accounts for 97% to 98% of both EU and world production (which means that other species are negligible).

In the present report, when we will use "portion trout" from FEAP and trade data, this will cover both "portion trout" and "medium-sized trout".

The details on the terms used in the report for each trade code are provided in the following table.

Table 5: Details on the term used in the report for "portion trout" and "large trout"

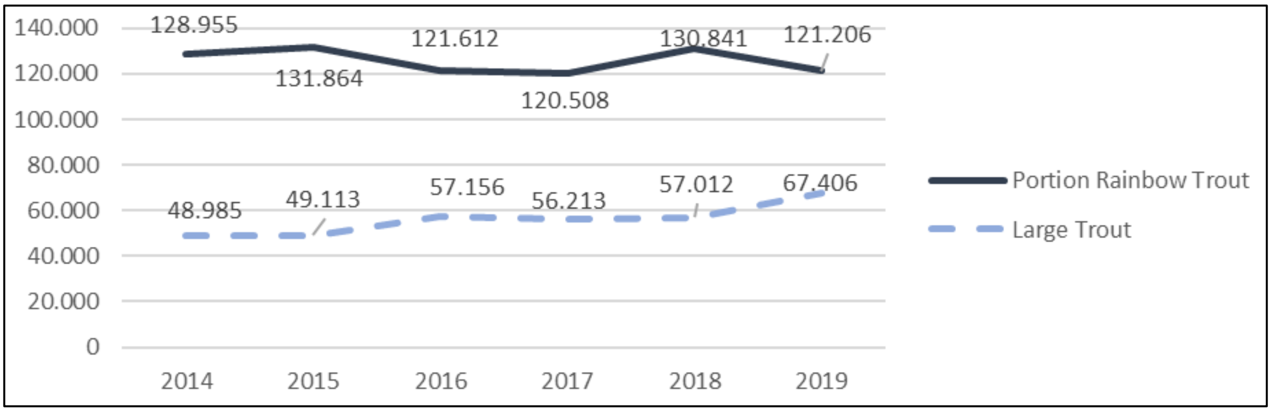
Term used in this report	Trade code (CN8)	Preservation	Presentation	Species	Description
Fresh whole - portion	03 02 11 80	Fresh	Whole	Sea trout, cutthroat trout, Golden trout, Gila trout and portion/medium Rainbow trout	Portion trout: All species Medium-sized trout: All species Large trout: All species except rainbow trout
	03 02 11 10	Fresh	Whole	Apache trout and Mexican golden trout	All sizes for these two species
Frozen whole -portion	03 03 14 90	Frozen	Whole	Sea trout, Rainbow trout, Cutthroat trout, Golden trout and Gila trout	Portion trout: All species Medium-sized trout: All species Large trout: All species except Rainbow trout
	03 03 14 10	Frozen	Whole	Apache trout and Mexican golden trout	All sizes for these two species
Fresh whole large	03 02 11 20	Fresh	Whole	Rainbow trout	Large rainbow trout
Frozen whole large	03 03 14 20	Frozen	Whole	Rainbow trout	Large rainbow trout

5 http://feap.info/wp-content/uploads/2020/12/20201218_feap-production-report-2020.pdf

6 No data available from FEAP on Bulgaria, Romania, Austria, Slovakia, Slovenia, Estonia, Latvia, Lituania, Cyprus and Belgium.

The total volume provided by FEAP is 188.612 tonnes in 2019 from the 15 main MS of production. This is a bit higher than the volume indicated by FAO (183.819 tonnes in 2019)[7]. Based on FEAP data, portion trout accounted for 64% of the volume of production of trout in the 16 MS covered by the data in 2019, with 121.206 tonnes (compared to 67.406 tonnes for large trout), the share of portion trout has decreased over the last years, it was 72% in 2014. The production of portion trout has ranged from 121.000 tonnes to 132.000 tonnes between 2014 and 2019 (the lowest points being in 2016 and 2019). Production of large trout is on an increasing trend, with 27% increase between 2015 and 2019, while portion trout decreased by 6%.

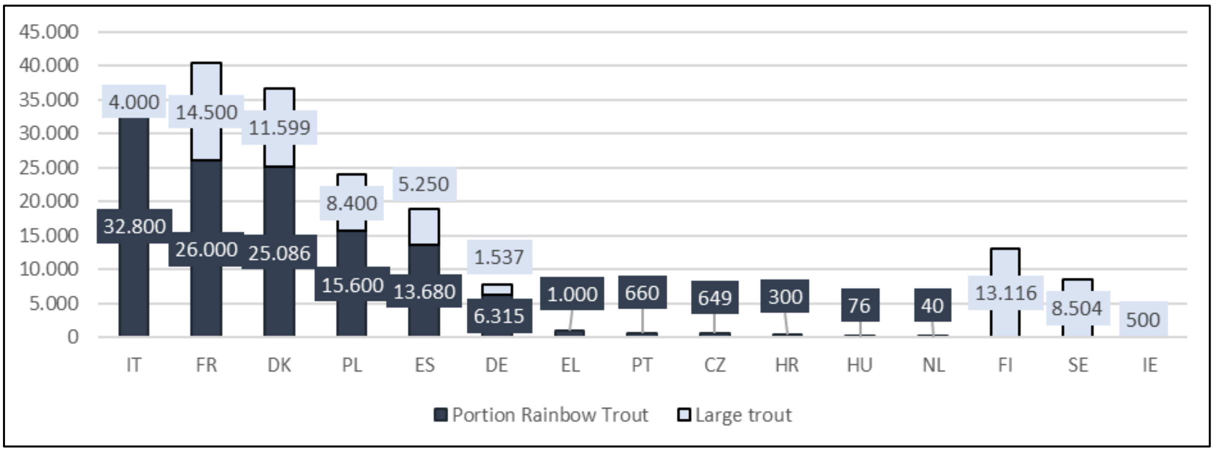
Figure 4: Development of the volume of production of portion trout and large trout in 15 MS between 2014 and 2019 (tonnes)



Source: FEAP

The share of portion trout is higher than 60% in each of the main MS of production for trout: 89% in Italy, 72% in Spain, 68% in Denmark, 65% in Poland and 64% in France. The main EU producers of portion trout are Italy, France and Denmark with productions above 20.000 tonnes, followed by Poland, Spain and Germany with production between 6.000 tonnes and 16.000 tonnes.

Figure 5: Volume of production for portion trout and large trout in the main MS in 2019 (tonnes)



EL: 2018 data / Source FEAP

[7] No detailed information is available on the reason for the differences between these two statistical sources. These differences may be related to different methods for data collection and elaboration of the statistics.

Table 6: Development of portion and large trout production in the main producing MS (tonnes)

		2014	2015	2016	2017	2018	2019	% tot 2019
FR	Portion trout	22.000	23.947	24.200	24.506	26.814	26.000	64%
FR	Large trout	12.000	12.766	13.000	13.064	14.295	14.500	36%
FR	**Total**	**34.000**	**36.713**	**37.200**	**37.570**	**41.109**	**40.500**	**100%**
IT	Portion trout	36.800	37.000	33.800	33.300	35.000	32.800	89%
IT	Large trout	2.000	1.000	2.500	1.800	2.500	4.000	11%
IT	**Total**	**38.800**	**38.000**	**36.300**	**35.100**	**37.500**	**36.800**	**100%**
DK	Portion trout	26.925	26.925	21.022	19.404	25.086	25.086	68%
DK	Large Trout	11.115	11.115	13.500	13.500	11.599	11.599	32%
DK	**Total**	**38.040**	**38.040**	**34.522**	**32.904**	**36.685**	**36.685**	**100%**
PL	Portion trout	17.500	19.000	18.000	19.000	20.500	15.600	65%
PL	Large trout						8.400	35%
PL	**Total**	**17.500**	**19.000**	**18.000**	**19.000**	**20.500**	**24.000**	**100%**
ES	Portion trout	13.000	13.260	13.260	12.922	13.671	13.680	72%
ES	Large trout	2.600	2.678	3.900	5.025	5.185	5.250	28%
ES	**Total**	**15.600**	**15.938**	**17.160**	**17.947**	**18.856**	**18.930**	**100%**
FI	Portion trout	0	0	0	0	0	0	0%
FI	Large Trout	12.448	12.500	13.127	12.314	12.835	13.116	100%
FI	**Total**	**12.448**	**12.500**	**13.127**	**12.314**	**12.835**	**13.116**	**100%**
SE	Portion trout	0	0	0	0	0	0	0%
SE	Large Trout	6.951	7.048	9.123	8.504	8.504	8.504	100%
SE	**Total**	**6.951**	**7.048**	**9.123**	**8.504**	**8.504**	**8.504**	**100%**
DE	Portion trout	8.466	7.642	7.642	7.642	6.315	6.315	80%
DE	Large trout	1.471	1.506	1.506	1.506	1.537	1.537	20%
DE	**Total**	**9.937**	**9.148**	**9.148**	**9.148**	**7.852**	**7.852**	**100%**
PT	Portion trout	788	890	676	665	662	660	100%
PT	Large Trout	0	0	0	0	0	0	0%
PT	**Total**	**788**	**890**	**676**	**665**	**662**	**660**	**100%**
CZ	Portion trout	426	368	367	509	784	649	100%
CZ	Large trout	0	0	0	0	0	0	0%
CZ	**Total**	**426**	**368**	**367**	**509**	**784**	**649**	**100%**
IE	Portion trout	1.000	500	500	500	500	0	0%
IE	Large Trout	400	500	500	500	557	500	100%
IE	**Total**	**1.400**	**1.000**	**1.000**	**1.000**	**1.057**	**500**	**100%**
HR	Portion trout	378	679	467	395	370	300	100%
HR	Large Trout	0	0	0	0	0	0	0%
HR	**Total**	**378**	**679**	**467**	**395**	**370**	**300**	**100%**
HU	Portion trout	61	42	67	54	99	76	100%
HU	Large Trout	0	0	0	0	0	0	0%
HU	**Total**	**61**	**42**	**67**	**54**	**99**	**76**	**100%**
NL	Portion trout	0	0	0	0	40	40	100%
NL	Large Trout	0	0	0	0	0	0	0%
NL	**Total**	**0**	**0**	**0**	**0**	**40**	**40**	**100%**
EL	Portion trout	1.611	1.611	1.611	1.611	1.000	0	100%
EL	Large Trout	0	0	0	0	0	0	0%
EL	**Total**	**1.611**	**1.611**	**1.611**	**1.611**	**1.000**	**0**	**100%**
Total main MS	Portion trout	128.955	131.864	121.612	120.508	130.841	121.206	64%
Total main MS	Large Trout	48.985	49.113	57.156	56.213	57.012	67.406	36%
Total main MS	**Total**	**177.940**	**180.977**	**178.768**	**176.721**	**187.853**	**188.612**	**100%**

Source: FEAP

2.3.2 Import – Export

Extra-EU imports

EU imports of trout from third countries were EUR 168 million and 34.871 tonnes in 2019. Three types of products account for almost three-quarters of the imports: fresh whole rainbow trout - large (41% of total value), smoked trout (18% of total value) and frozen portion trout (14% of total value).

Portion trout account for 20% of imported value (14% for frozen and 6% for fresh). In terms of value, Turkey and Norway accounted for 87% of the EU imports for trout. Turkey even reached 83% of imports for frozen portion trout and 31% for fresh portion trout fillet; Norway reached more than 90% of large rainbow trout (both fresh and frozen) and 65% of fresh fillet. Main EU importers from third countries are Sweden, Germany, Austria and Denmark (72% of EU imports in value).

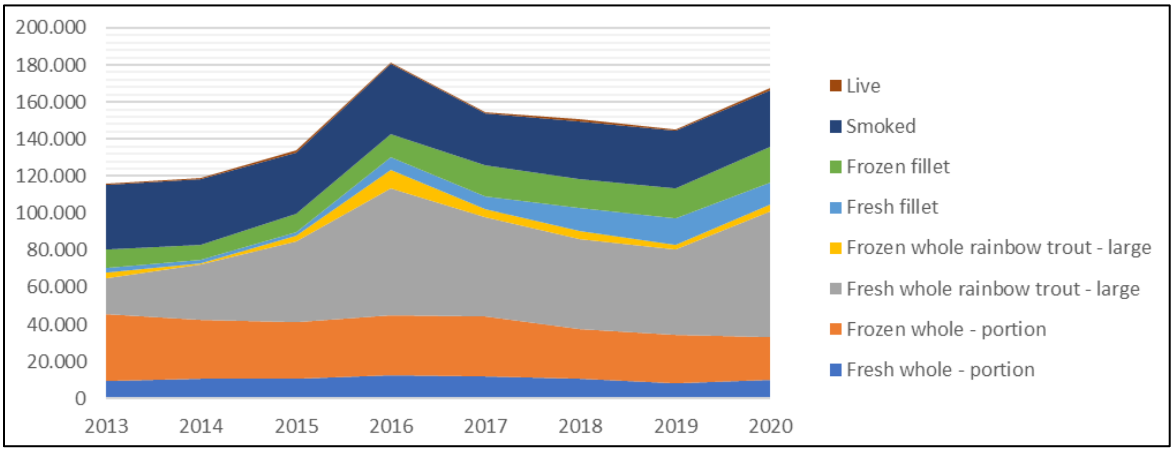
Table 7: Extra-EU imports of trout (2020)

	Nominal value (1.000 EUR)	Volume (tonne)	Price (EUR/kg)	% val. 2020
Fresh whole - portion	9.916	2.577	3,85	6%
Frozen whole - portion	23.010	7.078	3,25	14%
Fresh whole - large	68.046	15.614	4,36	41%
Frozen whole - large	3.926	934	4,20	2%
Fresh fillet	11.802	1.479	7,98	7%
Frozen fillet	18.962	3.146	6,03	11%
Smoked	30.597	3.943	7,76	18%
Live	1.428	101	14,14	1%
Total	**167.689**	**34.871**	**4,81**	**100%**

Source: EUMOFA elaboration of EUROSTAT-COMEXT data

Imports from third countries increased by 45% between 2013 and 2020 (+ 33% in real terms)[8] and peaked at EUR 181 million in 2016. This growth is mainly due to large fresh rainbow trout (+254%, + 225% in real terms). Import of fresh portion trout were stable (+0,3%, -8% in real terms) and imports of frozen rainbow trout decreased by 36% (-41% in real terms).

Figure 6: Extra-EU imports of trout in nominal value (1.000 EUR) from 2013 to 2020



Source: EUMOFA elaboration of EUROSTAT-COMEXT data

[8] In the report, values are calculated into real terms by using the GDP deflator (base=2015). Real terms are only used when making comments on values and prices' developments in periods longer than 5 years, otherwise nominal values (and prices) are used.

Extra-EU exports

Extra-EU exports reached EUR 80 million and 11.114 tonnes in 2020. Smoked trout accounted for 29% of the total exported value, fresh fillet for 19% large fresh rainbow trout for 16%.

Denmark is the main extra-EU exporter, with 20% of total exported value from the EU 27.

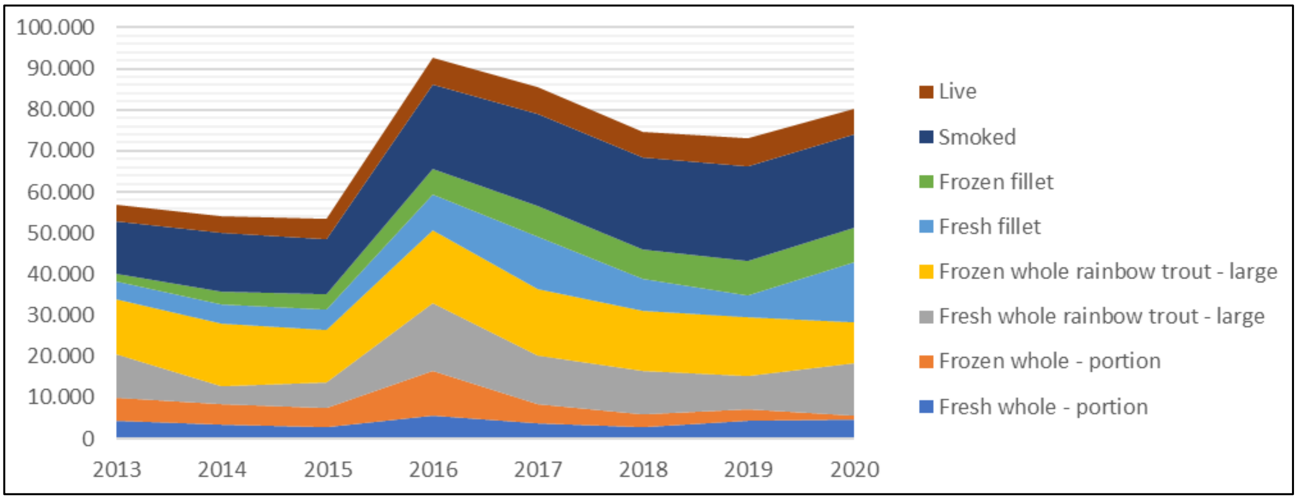
Table 8: Extra-EU exports of trout (2020)

	Nominal value (1.000 EUR)	Volume (tonne)	Price (EUR/kg)	% val. 2020
Fresh whole - portion	4.718	1.091	4,33	6%
Frozen whole - portion	872	228	3,82	1%
Fresh whole - large	12.645	2.763	4,58	16%
Frozen whole - large	9.920	2.351	4,22	12%
Fresh fillet	14.871	1.571	9,47	19%
Frozen fillet	8.148	983	8,29	10%
Smoked	22.944	1.541	14,89	29%
Live	5.992	586	10,22	7%
Total	**80.110**	**11.114**	**7,21**	**100%**

Source: EUMOFA elaboration of EUROSTAT-COMEXT data

Extra-EU exports increased by 41% in value between 2013 and 2020 (+ 29% in real terms). Exports peaked in 2016 with EUR 92 million (+73% higher in 2016 compared to 2015, EUR 39 million increase). This increase mainly came from Denmark (EUR 14 million), Finland (EUR 8 million) and Ireland (EUR 6 million).

Figure 7: Extra-EU exports of trout in nominal value (1.000 EUR) from 2013 to 2020



Source: EUMOFA elaboration of EUROSTAT-COMEXT data

Intra-EU trade flows

Intra-EU sales accounted for EUR 590 million in 2020 (+85% since 2013, + 70% in real terms)[9]. Almost half of this value (48%) was related to smoked trout, intra-EU market of smoked trout highly increased between 2013 and 2020 (+261%, EUR 22 million increase, + 232% in real terms).

In 2020, portion trout accounted for 15% of intra-EU trade (EUR 89 million), mainly fresh whole portion.

Table 9: Value of intra-EU trade of trout (imports, 2020)

	Nominal value (1.000 EUR)	% total value 2020	Evol 2020/2013
Fresh whole - portion	55.105	9%	+41%
Frozen whole - portion	34.010	6%	+35%
Fresh whole - large	69.369	12%	-7%
Frozen whole - large	4.548	1%	-52%
Fresh fillet	30.318	5%	+47%
Frozen fillet	17.500	3%	+3%
Smoked	307.512	52%	+261%
Live	72.014	12%	+49%
Total	**590.375**	**100%**	**+85%**

Source: EUMOFA elaboration based on EUROSTAT-COMEXT data

Intra-EU exports

Main exporters of trout on intra-EU market are Denmark and Poland (respectively EUR 113 million and EUR 89 million exported on intra-EU market in 2020), smoked trout being the main product sold.

Considering portion trout, the main MS are Denmark, Spain and Poland with exports ranging from EUR 9 million to EUR 21 million in 2020. Following MS are Italy (EUR 5 million) and France (EUR 4 million).

Table 10: Value of intra-EU exports of trout from the main MS of origin (1.000 EUR, nominal value, 2020)

	DK	ES	PL	IT	FR	GR	NL	DE	AT
Fresh whole - portion	9.772	15.271	9.186	5.129	1.364	3.791	852	899	85
Frozen whole - portion	11.092	950	188	264	3.134	5	1.590	957	1.304
Fresh whole - large	8.852	18.347	567	9.032	20	146	518	1.345	2
Frozen whole - large	14.571	0	41	0	71	0	1	75	10
Fresh fillet	4.317	322	9.161	4.164	1.165	4.348	911	1.089	215
Frozen fillet	2.827	262	446	985	173	18	4.120	1.712	565
Smoked	31.195	71	65.294	13	485	20	1.857	20.265	22.623
Live	30.029	14.612	2.664	13.746	17.635	563	20	392	0
Total	112.655	49.834	87.547	33.334	24.046	8.891	9.869	26.734	24.804

Source: EUMOFA elaboration based on EUROSTAT-COMEXT data

[9] We consider in this paragraph intra-EU flow of imports. Comparisons of intra-EU flows (imports compared to exports) reveal major and persistent discrepancies. Thus comparisons dealing with intra-EU trade statistics and related results must be taken into account cautiously and should consider the existence of these discrepancies.

Intra-EU imports

Main importer of trout from other MS are Germany (EUR 308 million imported in 2020), mainly with smoked trout (81%), followed by France (EUR 56 million imported in 2019) and Poland (EUR 52 million).

The main importers of portion trout (fresh and frozen) are Germany (EUR 23 million imported in 2019), Poland (EUR 20 million), France (EUR 10 million) and Spain (EUR 11 million).

Table 11: Value of intra-EU imports in the main MS of destination (1.000 EUR, nominal value, 2020)

	DE	PL	FR	ES	RO	IT	NL	AT	BE
Fresh whole - portion	8.831	14.887	7.639	1.730	5.522	4.194	1.845	1.207	1.038
Frozen whole - portion	13.999	4.900	2.291	7.367	633	369	1.805	402	313
Fresh whole - large	2.812	25.382	8.531	414	5.103	8	1.584	96	900
Frozen whole - large	457	478	349	1	233	26	0	16	8
Fresh fillet	5.045	2.409	2.993	485	53	869	681	2.897	168
Frozen fillet	7.169	293	398	119	514	1.365	131	1.170	598
Smoked	248.605	925	14.091	10	739	2.349	4.705	7.018	12.794
Live	21.506	2.407	19.595	6.762	485	94	547	15.549	3.506
Total	**308.424**	**51.681**	**55.888**	**16.888**	**13.280**	**9.273**	**11.297**	**28.355**	**19.326**

Source: EUMOFA elaboration based on EUROSTAT-COMEXT data

2.3.3 Apparent consumption by Member State

The apparent consumption of trout at EU level was 208.657 tonnes in 2019. The EU production accounts for 83% of the total supply (17% of the supply by extra-EU imports). Apparent consumption accounts for 94% of the total supply (6% of the total supply is exported to third countries). Main markets are Germany, France, Italy, Spain, Poland and Finland (from 14.000 to 73.000 tonnes of apparent consumption in each MS). Apparent consumption is below 10.000 tonnes in other MS.

Table 12: Apparent consumption of trout in the main MS (2019, in tonnes of live weight equivalent, LWE)

	Production (Catches + Aquaculture)	Import	Total supply (production + import)	Export	Apparent consumption (total supply – export)
DE	**8.807**	**68.331**	**77.138**	**4.514**	**72.624**
FR	36.893	11.422	48.315	2.742	45.573
IT	**34.460**	**4.365**	**38.825**	**11.789**	**27.037**
ES	16.978	2.808	19.786	2.167	17.619
PL	**16.285**	**16.416**	**32.701**	**15.506**	**17.195**
FI	14.204	9.208	23.412	8.485	14.926
AT	2.450	13.093	15.543	7.396	8.148
RO	2.618	4.904	7.522	66	7.456
SE	8.310	11.290	19.600	13.792	5.808
DK	30.904	3.631	34.535	30.085	4.450
BG	4.196	771	4.967	1.020	3.948
CZ	936	2.874	3.810	252	3.558
BE	0	3.263	3.263	728	2.535
SI	937	865	1.802	80	1.722
EE	927	2.620	3.547	1.854	1.693
SK	999	933	1.932	550	1.382
IE	608	1.207	1.815	541	1.274
LT	182	2.764	2.947	1.683	1.264
HR	335	951	1.286	139	1.147
NL	50	5.184	5.234	4.205	1.030
HU	76	792	868	51	817
LV	50	1.119	1.169	414	756
PT	665	80	744	50	694
CY	50	288	338	0	338
LU	0	410	410	170	240
MT	0	7	7	0	7
EL*	1.898	152	2.050	11.399	Not available
EU 27	**183.819**	**38.536**	**222.355**	**13.699**	**208.657**

* The calculation of the apparent consumption was below 0 in EL. This result may be due to the estimate of live weight equivalent (LWE).
Source: EUMOFA elaboration of EUROSTAT-COMEXT and FAO[10] data

[10] FAO data are used here for the production volume as there are some gaps in EUROSTAT and FEAP data for some MS.

3 The German market

3.1 Structure of the supply chain

3.1.1 Production

The German production differs among the different sources:

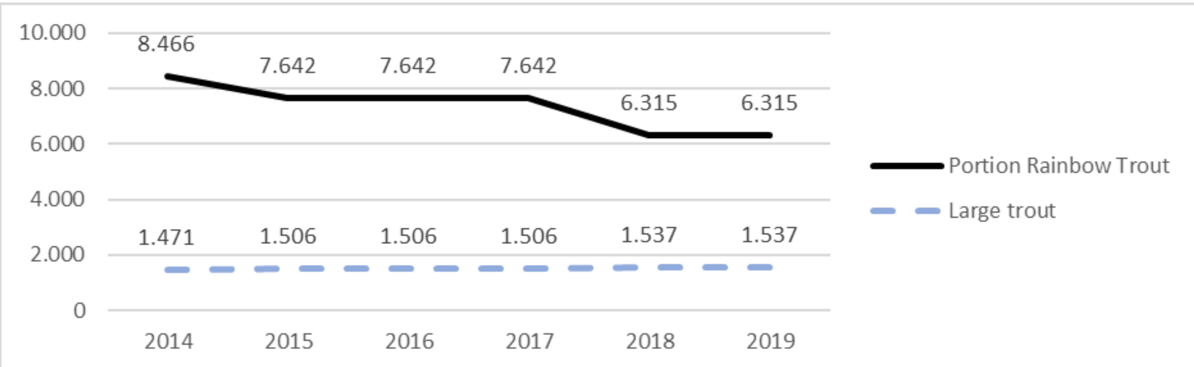
- 7.852 tonnes in 2019 based on FEAP,
- 8.807 tonnes in 2019 based on FAO, and;
- Slightly above 6.000 tonnes based on German statistics.

Eurostat does not provide production data in Germany for trout.

Stakeholders consider that the official level of production as stated by the German Statistical Office is underestimated, as not all trout farmers deliver their data. If referring to the data of feed suppliers, the production figures should be increased by almost 50% - thus, the German production of portion trout could be estimated to be around 9.000 tonnes.

According to FEAP data, German production has decreased by 21% between 2014 and 2019. Most of the production is trout under 1,2 kg ("portion trout"), which accounted for 80% of the total trout production. Large trout (over 1,2 kg) accounted for 20% of the total volume in 2019. Portion trout production decreased by 25% between 2014 and 2019 and large trout increased by 4% over the same period.

Figure 8: Development of the volume of production of portion trout and large trout in Germany between 2014 and 2019 (tonnes)



Source: FEAP

German statistics (Destatis) distinguish "*Regenbogenforelle*"[11] and "*Lachsforelle*"[12], which they translate by "rainbow trout" (also called white trout in other MS) and "salmon-colour rainbow trout" (or pink trout in other MS), respectively. It is considered that white trout corresponds to "portion trout" and "pink trout" to "large trout" (even if small quantities of pink trout are below 1 kg).

The portion trout generally weighs between 300 and 450 g. The weight varies a little bit according to regions: the portion trout is larger in the South and in the East.

[11] https://fish-commercial-names.ec.europa.eu/fish-names/aquatic-resources_en?page=1&q=Regenbogenforelle&s=1&em=n
[12] https://fish-commercial-names.ec.europa.eu/fish-names/aquatic-resources_en?page=1&q=Lachsforelle&s=1&em=n

The number of farms producing portion trout has been more than halved in the period observed, falling from 2.038 tonnes in 2011 to 926 tonnes in 2019; by contrast, the number of farms dedicated to large trout increased, rising from 207 tonnes in 2011 to 249 tonnes in 2019.

The majority of farms are very small farms, often side-business farms or even hobby farms, especially in Bavaria, where the average production of trout producing farms is 3,2 tonnes/year, compared to 32,1 tonnes in Saxony-Anhalt or 20,9 tonnes in Baden-Württemberg. Nevertheless, most of the production is provided by the larger farms: In 2019, 20% of the farms supplied 90% of the total production of portion trout.

Table 13: Distribution of the German production of portion trout by farm size in 2019

State	Number of companies					Production				
	Yearly production level					Yearly production level				
	< 1 t	1-3 t	3-5 t	> 5 t	Total	< 1 t	1-3 t	3-5 t	> 5 t	Total
Baden-Württemberg	26	21	6	32	85	12	33	23	1.709	1.777
North Rhine-Westphalia	52	15	4	23	94	8	31	14	687	740
Bavaria	338	63	32	62	495	69	106	118	1.270	1.563
Other states	120	40	23	69	252	33	66	81	1.898	2.078
Germany	**536**	**139**	**65**	**186**	**926**	**122**	**236**	**236**	**5.564**	**6.158**

Source: Statistisches Bundesamt (Destatis)

Based on EU-MAP[13] data (JRC/STECF, 2020)[14], there are 1.029 farms involved in trout production in Germany in 2018: 869 with ponds and 160 with tanks. There are five employees or less in 88% of these companies.

Costs of production and financial analysis

Costs of production can vary a lot according to the region and the type of operation (i.e. main activity, side business, hobby). Below two examples of farms from Thünen-Institute of Sea Fisheries: it ranges from 3,75 EUR/kg for specialised farm (specialised in trout production) in Baden-Württemberg to 5,08 EUR/kg for mixed farm in Bavaria (not specialised in trout production).

Table 14: Production cost of portion trout in 2019 (EUR/kg live weight)

Costs - per kg live weight	Example 1	Example 2
	25 t mixed farm - Bavaria	Specialised farm - Baden-Württemberg
	(7 t portion trout)	(50 t portion trout)
Feed cost	1,70	1,19
Stocking	0,89	0,51
Labour	1,66	0,76
Energy	0,11	0,23
Maintenance	0,05	0,14
Operational cost	0,67	0,92
Total cost	**5,08**	**3,75**

Source: Thünen-Institute of Sea Fisheries

[13] EU-MAP: Multiannual Union programme for the collection, management and use of data in the fisheries and aquaculture sectors

[14] STECF – Economic Report of the EU Aquaculture sector, 2020

Overall, the German trout farming sector is profitable, as reflected from the Economic Report of the EU Aquaculture Sector (JRC/STECF, 2020) based on EUMAP data. But a distinction has to be made based on the technology used: the segment of farms using trout tanks and race ways is profitable (positive net profit at EUR 19,8 million), whereas a negative picture emerges from farms using trout ponds (negative net profit at EUR -12,7 million). Main costs are labour (employed and imputed value of unpaid labour), as this accounted for 70% of costs in pond farming and 43% for tanks and raceways. The share of feed costs is higher for tanks and raceways (29% of costs), compared to 8% for ponds.

Table 15: Economic performance of the German trout farming segment in 2018 (1.000 EUR)

		Trout Ponds	Trout Tanks and raceways	Total
Income	Total income	**32.478**	**52.426**	**84.904**
Expenditure	Wages and salaries	1.941	5.744	7.685
	Imputed value of unpaid labour	27.981	7.136	35.117
	Energy costs	1.043	2.435	3.478
	Repair and maintenance	589	767	1.356
	Raw material costs: Livestock costs	5.951	1.271	7.222
	Raw material costs: Feed costs	3.281	8.872	12.153
	Other operational costs	2.346	3.928	6.274
	Total	**43.132**	**30.153**	**73.285**
Capital Costs	Consumption of fixed capital	1.748	2.031	3.779
	Financial costs, net	252	401	653
	Financial expenditures	252	401	653
Capital Value	Debt	9.398	2.430	11.828
	Net Investments	2.168	5.279	7.447
	Total value of assets	9.937	14.174	24.111
Performance indicators	Gross Value Added	19.268	35.153	54.421
	Operating cash flow	-10.654	22.273	11.619
	Earnings before interest and tax	-12.402	20.242	7.840
	Net profit	-12.654	19.841	7.187

Source: JRC/STECF – Economic Report of the EU Aquaculture sector, 2020

3.1.2 Imports - Exports

Imports

Imports of trout to Germany reached EUR 332 million (42.471 tonnes) in 2020. Smoked trout accounted for 78% of the imported value and 54% of the imported volume.

Portion trout accounted for 11% of the value and 20% of the volume, this is mainly frozen portion trout: 6.624 tonnes (compared to 1.679 tonnes for fresh portion trout). The import of frozen portion trout is on an increasing trend since 2018 (+29% in volume between 2018 and 2020). The import price was 5,34 EUR/kg for fresh portion trout and 3,79 EUR/kg for frozen portion trout in 2020.

Based on German imports of freshwater fish by species, we can see that the rainbow trout has dominated for several decades, far ahead of pangasius and tilapia (which are important farmed freshwater species imported to Germany).

Table 16: Imports of trout to Germany in 2020

	Val. (1.000 EUR)	Vol. (tonnes)	Price (EUR/kg)
Fresh whole - portion	8.964	1.679	5,34
Frozen whole - portion	25.074	6.624	3,79
Fresh whole - large	3.666	703	5,21
Frozen whole - large	513	118	4,35
Fresh fillet	5.295	627	8,44
Frozen fillet	9.012	3.110	2,90
Smoked	257.682	22.963	11,22
Live	21.517	6.647	3,24
Total	**331.722**	**42.471**	**7,81**

Source: EUMOFA elaboration of EUROSTAT-COMEXT data

Exports

Imports of trout to Germany reached EUR 36 million (3.479 tonnes) in 2020. Smoked trout accounted for 69% of the imported value and 49% of the imported volume. Exports of portion trout is limited: 478 tonnes (EUR 2,2 million) in 2020 (5,10 EUR/kg for fresh and 4,15 EUR/kg for frozen portion trout). The exported volume constantly decreased over the last seven years; 1.418 tonnes were exported in 2013.

Table 17: Exports of trout from Germany in 2020

	Val. (1.000 EUR)	Vol. (tonnes)	Price (EUR/kg)
Fresh whole - portion	1.180	231	5,10
Frozen whole - portion	1.024	247	4,15
Fresh whole - large	1.978	431	4,59
Frozen whole - large	422	75	5,62
Fresh fillet	2.081	201	10,37
Frozen fillet	3.412	387	8,81
Smoked	24.850	1.689	14,71
Live	1.159	218	5,30
Total	**36.106**	**3.479**	**10,38**

Source: EUMOFA elaboration of EUROSTAT-COMEXT data

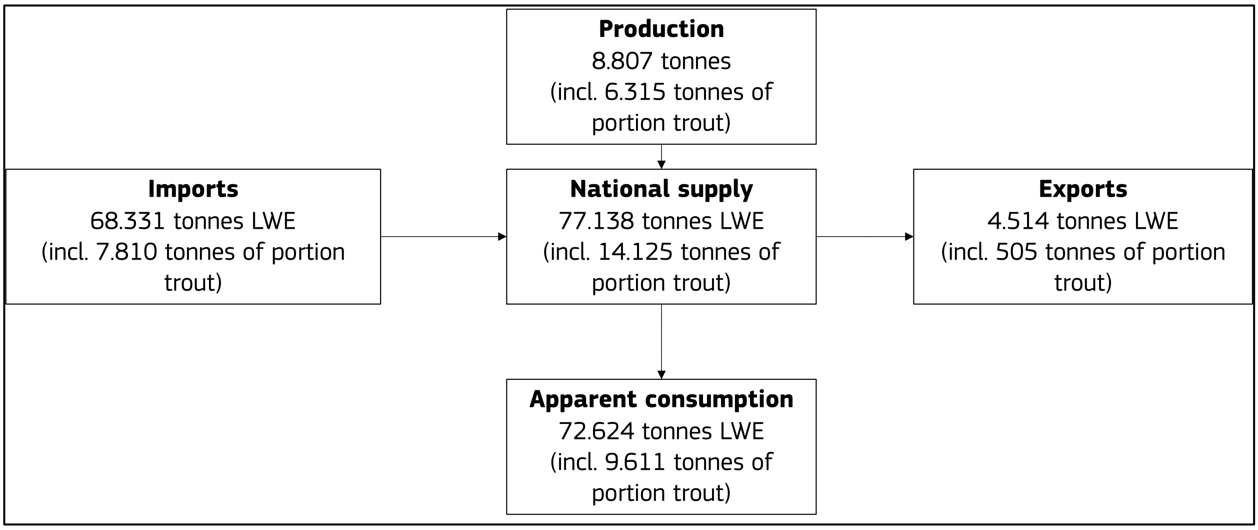
3.1.3 Apparent consumption

National production of trout was 8.807 tonnes in 2019 (FAO), including 6.315 tonnes of portion trout (FEAP). Imports were eight times higher than national production in 2019 with 68.331 tonnes live weight equivalent (LWE) imported. Imports are mainly smoked trout; portion trout accounted for 11% of the imported volume in 2019 with 7.810 tonnes LWE (higher than domestic production of portion trout).

National supply of trout was 77.138 tonnes LWE in 2019, 94% were for national consumption with 72.624 tonnes LWE.

Portion trout accounts for a large share of the national production (72%) but is limited in the national supply (18% of the volume) and apparent consumption (19% of the volume) due to the importance of smoked trout imports.

Figure 9: Supply balance for trout in Germany (2019, tonnes of live weight equivalent)



Source: EUMOFA elaboration of EUROSTAT-COMEXT, FAO and FEAP data

3.2 Characteristics of the German market and consumption

3.2.1 Characteristics of the market

The distribution channels for trout differ quite markedly regionally and locally, depending on size, structure and location of the farms. Direct sales to end-customers, as well as sales to restaurant and retail sectors are advantageous for producers, as this is where the highest prices can be achieved. In most Länder, trouts are primarily sold directly and through retailers.

With the exception of a few regional peculiarities, local producers market the majority of the freshwater fish farmed directly or through retailers. In these sales channels, price comparisons with imported products are only of secondary importance; the most important factors for the purchase decision are freshness and local/regional origin: at 70% and 85% respectively, this proportion is very high in the two major producing states, Baden-Württemberg and Bavaria. Differing to carp pond farming, trout producers are indeed able to sell their portion trout in other ways than through wholesalers, even in the main producing regions. In contrast, the situation is different in Thuringia and Lower Saxony where in 2019 a significant part of the production was sold through wholesalers (around 70% and 30% respectively). Sale of trout to fishing clubs is also profitable and this channel can be significant in some federal states, exceeding 20% of total sales as this is the case in North Rhine-Westphalia; it can even be the main marketing channel, as this is the case in Rhineland-Palatinate with 65% to 70% of total sales.

When the portion trout is marketed through wholesalers, especially in the main producing regions, imports represent a direct price competitor. In the past, the import prices for live trout (e.g. 3,15 EUR/kg in 2019) were significantly below the prices received by German producers when they sell to wholesalers (4,37 EUR/kg in 2019).

A protected geographical indication (PGI) is registered in Germany in the trout sector since 1997, this is “Schwarzwaldforelle” from the Black Forest. The PGI covers, among other trout products, portion trout. Based on a stakeholder interview, the volume of production under PGI is about 400 tonnes per year (accounting for about 5% of the national production).

3.2.2 Consumption

Rainbow trout is the most popular freshwater fish for German consumers and with a market share of 7,1%, ranks sixth in the list of fish species sold on the German market in 2019, ahead of cod and saithe.

Table 18: Ranking of the top-10 fish species consumed in Germany (% of consumption in volume)

Alaska pollock	19,3
Salmon	17,3
Tuna	12,4
Herring	8,9
Shrimps	7,7
Rainbow trout	**7,1**
Cephalopods	2,5
Cod	2,3
Saithe	2,2
Pangasius	1,7
Other	18,6
Total	**100,0**

Source: Fischinformationszentrum

3.3 Price transmission in the supply chain

3.3.1 Ex-farm prices

Regional prices differences are quite high in Germany with ex-farm prices much lower in the North, in relation to farm size, the proximity of Danish farms and the competition situation (in the North, consumers have more products to choose from, because of the sea fisheries offer).

The aquaculture statistics provide some information on the average prices for portion trout achieved by German producers according to the marketing channel used. Great differences between direct marketing and sale via wholesalers can be observed.

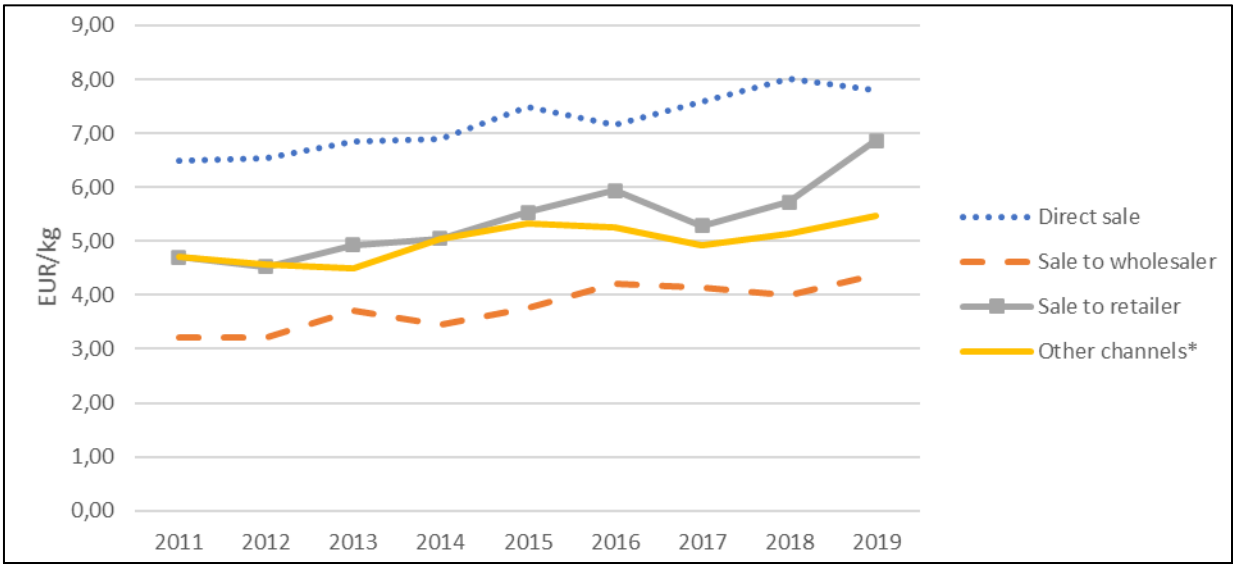
Table 19: Ex-farm nominal prices for live or fresh slaughtered portion trouts according to the marketing channel (EUR/kg)

Marketing channel	2011	2012	2013	2014	2015	2016	2017	2018	2019
Direct sale	6,49	6,54	6,85	6,89	7,50	7,15	7,58	8,01	7,79
Sale to wholesaler	3,21	3,21	3,71	3,44	3,75	4,21	4,14	4,00	4,37
Sale to retailer	4,70	4,53	4,93	5,05	5,54	5,94	5,28	5,72	6,86
Other channels*	4,72	4,57	4,49	5,05	5,32	5,25	4,93	5,13	5,46

*sales to restaurants, fishing ponds, other fish farms, processors.

Source: Statistisches Bundesamt (Destatis)

Figure 10: Ex-farm prices (nominal) for live or fresh slaughtered portion trouts according to the marketing channel



Source: Statistisches Bundesamt (Destatis)

For the same farm, the prices also vary a lot according to the quantity sold. E.g., a large farm equipped with transport means for live fish (and able to transport up to 4.800 kg of live trout at one time), the price ranges in March 2021 from 3,90 EUR/kg for a sale of 4.800 kg to 5,40 EUR/kg for a sale of 50 kg.

3.3.2 Import and export prices

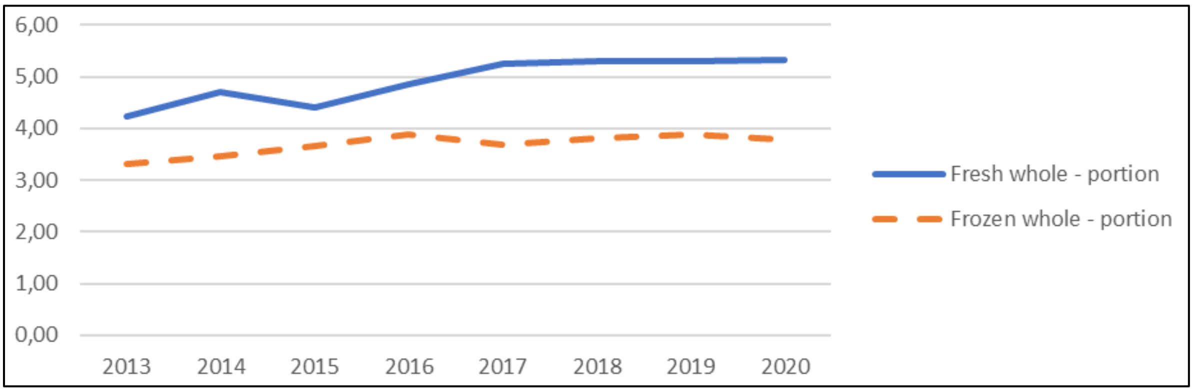
Import

In 2020, imported prices were 5,34 EUR/kg for fresh portion trout and 3,79 EUR/kg for frozen (1,55 EUR/kg higher for fresh than frozen). Between 2013 and 2020, import prices have increased by 26% for fresh portion trout (+ 8% in real terms) and by 15% for frozen portion (-2% in real terms).

Table 20: Import prices (nominal) of portion trout to Germany between 2013 and 2020

	2013	2014	2015	2016	2017	2018	2019	2020	Evol 2020 / 2013
Fresh whole - portion	4,23	4,70	4,40	4,86	5,24	5,31	5,29	5,34	+26%
Frozen whole - portion	3,30	3,46	3,67	3,89	3,70	3,82	3,89	3,79	+15%

Figure 11: Import prices (nominal) of portion trout to Germany between 2013 and 2020



Source: EUMOFA elaboration of EUROSTAT-COMEXT data

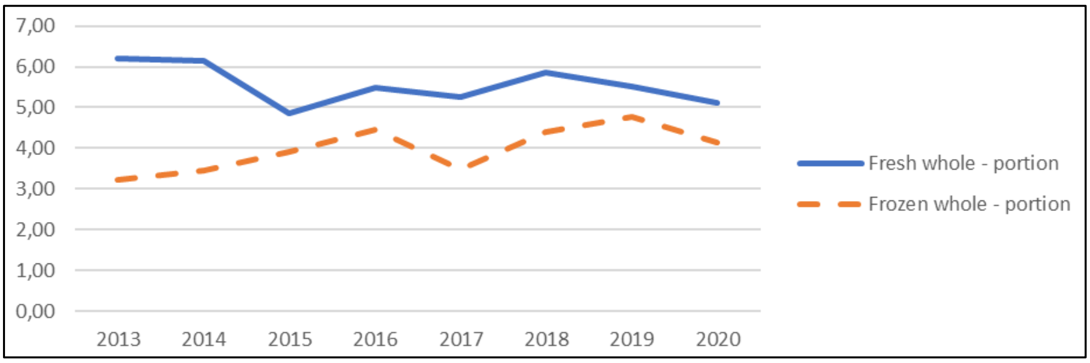
Export

Export prices for fresh portion trout decreased by 18% between 2013 and 2020, to reach 5,10 EUR/kg in 2020 (lowest point in 2015 at 4,85 EUR/kg). Price for frozen portion trout is on an upward trend at 4,15 EUR/kg in 2020 (+29% since 2013, + 10% in real terms).

Table 21: Export prices (nominal) of trout from Germany between 2013 and 2020

	2013	2014	2015	2016	2017	2018	2019	2020	Evol 2020/ 2013
Fresh whole - portion	6,20	6,14	4,85	5,49	5,25	5,84	5,51	5,10	-18%
Frozen whole - portion	3,23	3,45	3,91	4,47	3,49	4,40	4,78	4,15	29%

Figure 12: Export prices (nominal) of trout from Germany between 2013 and 2020



Source: EUMOFA elaboration of EUROSTAT-COMEXT data

3.3.3 Wholesale prices

METRO[15] offers fresh portion trouts (gutted, with head) at a price slightly below 10,00 EUR/kg in March 2021. Frozen trout also presented gutted with head, are sold around 7 EUR/kg.

Table 22: Range of portion trouts in METRO markets in Germany (March 2021)

Presentation	Preservation	Comments	Brand	Origin	Size	Packaging	Unit price (EUR)		Price per kg (EUR/kg)	
							excl. VAT	incl. VAT	excl. VAT	incl. VAT
Gutted, with head	Fresh	/	-	Europe	300-400 g/piece	bulk	-	-	9,19	9,83
Gutted, with head	Frozen	/	LASCHORI	/	350-400 g/piece	Carton 5 kg	33,99	36,37	6,80	7,27
Gutted, with head	Frozen	/	LASCHORI	/	300-350 g/piece	Carton 5 kg	33,99	36,37	6,80	7,27
Gutted, with head	Frozen	/	LASCHORI	/	260-280 g/piece	Carton 5 kg	36,99	39,58	7,40	7,92
Fillets	Smoked	MAP, skinless	WECHSLER	Poland	250 g	Pack 250 g	7,35	7,86	29,40	31,44
Fillets	Smoked	MAP, skinless	WECHSLER	Poland	1 kg	Pack 1 kg	26,79	28,67	26,79	28,67
Fillets	Smoked	MAP, skinless	WECHSLER	Poland	1 kg	Pack 5x1 kg	99,10	106,04	19,82	21,21
Fillets	Smoked	MAP, skinless	WECHSLER	Poland	125 g/pack	Pack 125 g	3,65	3,91	29,20	31,28
Fillets	Smoked	MAP, skinless	WECHSLER	Poland	500 g	Pack 500 g	11,99	12,83	23,98	25,66
Fillets	Smoked	MAP, skinless	ARO	/	125 g/pack	10 x 125 g	15,80	16,91	12,64	13,53

Source: METRO

In March 2021 the HAMBERGER[16] Wholesale Market in Berlin offers fresh portion trout (gutted, with head, 350-400 g/piece) imported from Italy at a price of 5,50 EUR/kg excl. VAT (i.e. 5,89 EUR/Kg incl. VAT) for the purchase of a 5 kg box.

[15] METRO is a German wholesale group. In 2019/2020, its net sales amounted to EUR 25,6 billion worldwide, of which EUR 4,7 billion in Germany, where METRO owns 103 cash-&-carry (METRO Markets). METRO is the leading food wholesaler in Germany.

[16] HAMBERGER Grossmarkt GmbH is a German wholesale company, which owns 4 wholesale markets (cash-&-carry) in Munich, Berlin, Wittenberg and Bitterfeld.

3.3.4 Retail prices

According to a major producer, the retail price of the portion trout in a farmer's retail shop is around 10,00-11,00 EUR/kg but can reach 14,00 EUR/kg. Some farmers also sell portion directly at lower prices: e.g., 6,50 EUR/kg for live trout and 8,50 EUR/kg for fresh slaughtered trout (March 2021).

Large-scale retailers usually do not sell German portion trout but imported trout, more often in a frozen form than fresh. The main sources of supply of large-scale retailers are Denmark for the fresh portion trout and Turkey for the frozen one.

EDEKA, the German leading large-scale retailer offers frozen portion trout at 6,98 EUR/kg in 500 g packs containing 2 pieces and fresh portion trout at 9,90 EUR/kg (March 2021).

3.3.5 Price transmission

Price structure can vary a lot, depending on:

- Size and status of the farm (hobby, side-business, main activity),
- Degree of specialisation of the producer,
- Competitive environment (supply of sea products),
- Marketing channel used (direct sale, sale to wholesalers, sale to restaurants).

The example below with regards to portion trout farmed in a large specialised farm with no direct sale to consumer and sold live to a smaller farm which sells the trout in its own retail shop, after slaughtering and gutting. This is a classic distribution circuit for portion trout in Germany.

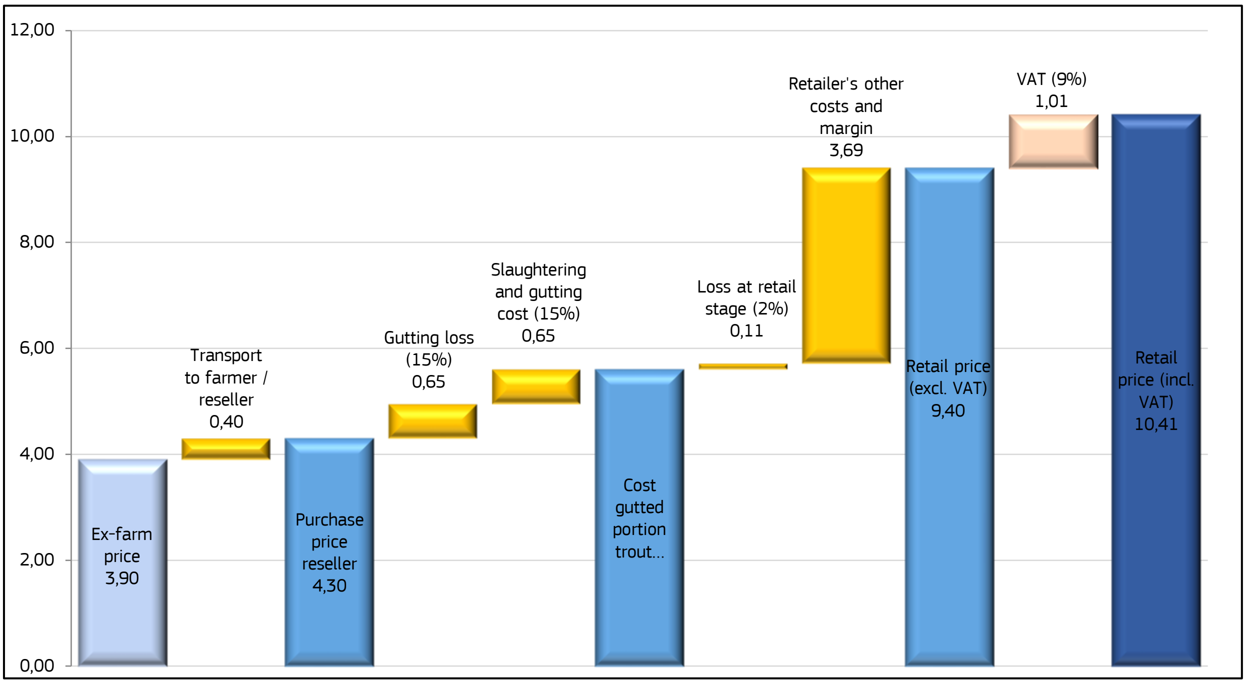
Table 23: Costs and margins for fresh portion trout, retailed in a farmer's retail shop in Germany (EUR/kg, March 2021)

	Average	% final price	Range	Source
Ex-farm price	**3,90**	**37%**	**3,90-5,40**	Interview
Transport to farmer / reseller	0,40	4%	0,30-0,50	
Purchase price reseller	**4,30**	**41%**	**4,20-5,90**	
Gutting loss (15%)	0,65	6%	0,63-0,89	
Slaughtering and gutting cost (15%)	0,65	6%	0,63-0,89	
Cost gutted portion trout	**5,60**	**54%**	**5,46-7,68**	
Loss at retail stage (2%)	0,11	1%	0,11-0,15	
Retailer's other costs and margin	3,69	35%	3,46-4,82	
Retail price (excl. VAT)	**9,40**	**90%**	**9,03-12,65**	
VAT (9%)	1,01	10%	0,97-1,35	Calculated
Retail price (incl. VAT)	**10,41**	**100%**	**10,00-14,00**	Interview

* Example of portion trout sold and delivered live (in full truck) to a farmer/reseller who processes it before selling it in his retail shop.

Source: EUMOFA

Figure 13: Costs and margins for fresh portion trout in Germany (EUR/kg, March 2021)



Source: EUMOFA

4 The Italian market

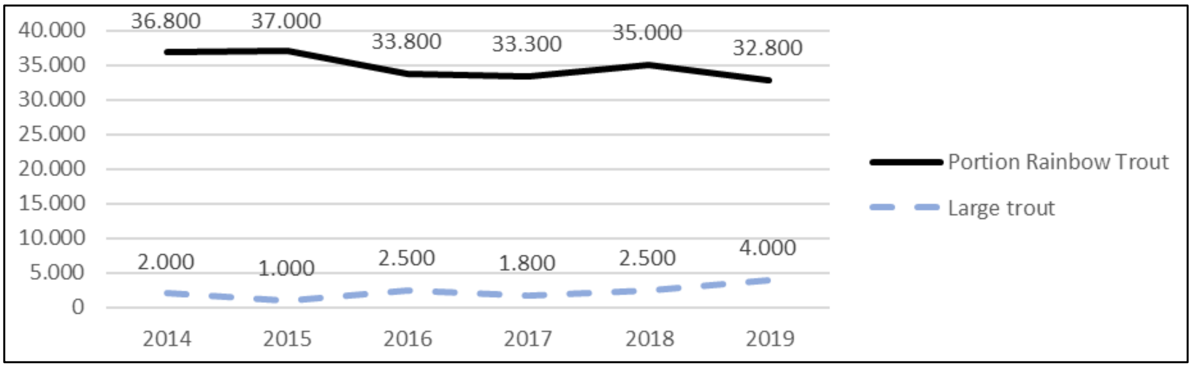
4.1 Structure of the supply chain

4.1.1 Production

Based on FEAP data, the Italian production of trout was 36.800 tonnes in 2019 (this is consistent with other sources: 34.460 tonnes in 2019 based on FAO and 32.826 in 2018 according to Eurostat). From FEAP data, production decreased by 5% between 2014 and 2019. Most of the production is trout under 1,2 kg ("portion trout"); this accounted for 89% of total trout production. Large trout (over 1,2 kg) accounted for 11% of the total volume in 2019.

Based on the national organisation Associazione Piscicoltori Italiani (API) [17], the value of the production was EUR 120,25 million for trout and EUR 2,64 million for rainbow trout fries (stage of the life cycle before juvenile). The main region for trout production is Friuli Venezia Giulia, which accounts for about one-third of the national production[18].

Figure 14: Development of the volume of production of portion trout and large trout in Italy between 2014 and 2019 (tonnes)



Source: FEAP

Based on EUMAP data[19], there are 146 farms involved in trout production with tanks and raceways in Italy. There are five employees or less in 88% of them.

[17] https://www.acquacoltura.org/produzione-acquacoltura-italiana-2019/

[18] http://www.farmwithscience.org/it/programma-2014-2017/acquacoltura/innovazione-della-filiera-della-trota-iridea-regionale/acquacoltura-in-italia-e-lallevamento-di-specie-di-acqua-dolce

[19] JRC/STECF – Economic Report of the EU Aquaculture sector, 2020

Financial analysis

EUMAP (JRC/STECF, 2020) provides economic data on the Italian trout production in tanks and raceways. The sector was profitable with EUR 33,5 million in net profit (18% increase between 2016 and 2018). The main costs of production are feed costs which account for almost half of the cost of production (49% in 2018), with an upward trend (+4% between 2016 and 2018). Labour costs accounts for 18% of the total costs of production in 2018 and energy 15%.

Table 24: Economic performance of the Italian trout farming in tanks and raceways from 2016 to 2018 (1.000 EUR)

		2016	2017	2018	Evol. 2018/2016
Income	Total income	123.794	105.131	129.748	+5%
Expenditures	Wages and salaries	15.630	10.941	16.567	+6%
	Imputed value of unpaid labour	460	414	437	-5%
	Energy costs	13.713	14.810	13.576	-1%
	Repair and maintenance	4.497	4.587	3.507	-22%
	Raw material costs: Livestock costs	10.692	7.912	10.478	-2%
	Raw material costs: Feed costs	42.011	29.408	43.692	+4%
	Other operational costs	2.505	1.428	1.753	-30%
	Total	89.507	69.499	90.011	+1%
Capital Costs	Consumption of fixed capital	4.553	3.369	4.781	+5%
	Financial costs, net	1.496	1.184	1.501	0%
	Financial expenditures	1.882	1.431	1.899	+1%
Capital Value	Debt	137.011	101.388	150.712	+10%
	Net Investments	65.138	42.340	58.624	-10%
	Total value of assets	179.782	131.241	197.760	+10%
Performance indicators	Gross Value Added	50.377	46.987	56.742	+13%
	Operating cash flow	34.287	35.632	39.737	+16%
	Earnings before interest and tax	29.734	32.263	34.956	+18%
	Net profit	28.238	31.078	33.455	+18%

Source: JRC/STECF – Economic Report of the EU Aquaculture sector, 2020

4.1.2 Imports – Exports

Imports

Imports to Italy accounted for EUR 11 million (1.518 tonnes) in 2020. Portion trout accounted for 44% of the value and 53% of the volume (mainly fresh portion trout). Fillet and smoked trout were also important products imported to Italy (respectively 33% and 22% of the value).

Imports of fresh portion trout ranged from 717 tonnes to 2.693 tonnes over the period 2013-2020, with peaks in 2014 and 2019. The imports of frozen portion trout are on a decreasing trend, from 957 tonnes in 2015 to 65 tonnes in 2020.

Table 25: Imports of trout to Italy in 2020

	Val. (1.000 EUR)	Vol. (tonnes)	Price (EUR/kg)
Fresh whole - portion	4.490	739	6,08
Frozen whole - portion	392	65	5,99
Fresh whole - large	8	3	3,16
Frozen whole - large	30	6	4,84
Fresh fillet	1.058	139	7,60
Frozen fillet	2.557	415	6,15
Smoked	2.434	147	16,54
Live	94	3	31,15
Total	**11.062**	**1.518**	**7,29**

Source: EUMOFA elaboration of EUROSTAT-COMEXT data

Exports

Main products exported are live trout (37% of the value exported, this may cover some portion trout), followed by fresh large trout (26%), fresh fillet (18%) and fresh portion trout (15%). Fresh portion trout exports peaked in 2016 with 1.740 tonnes and have decreased to 1.201 tonnes in 2020. Exports of live trout have remained relatively stable over the last years, around 4.400 tonnes since 2018.

Frozen portion trout only accounted for 1% of the exports in 2020, at 76 tonnes. It peaked in 2016 at 190 tonnes.

Table 26: Exports of trout from Italy in 2019

	Val. (1.000 EUR)	Vol. (tonnes)	Price (EUR/kg)
Fresh whole - portion	5.434	1.201	4,52
Frozen whole - portion	299	76	3,92
Fresh whole - large	9.613	2.878	3,34
Frozen whole - large	0	0	/
Fresh fillet	6.828	789	8,66
Frozen fillet	1.006	130	7,74
Smoked	13	1	19,77
Live	13.757	4.407	3,12
Total	**36.951**	**9.483**	**3,90**

Source: EUMOFA elaboration of EUROSTAT-COMEXT data

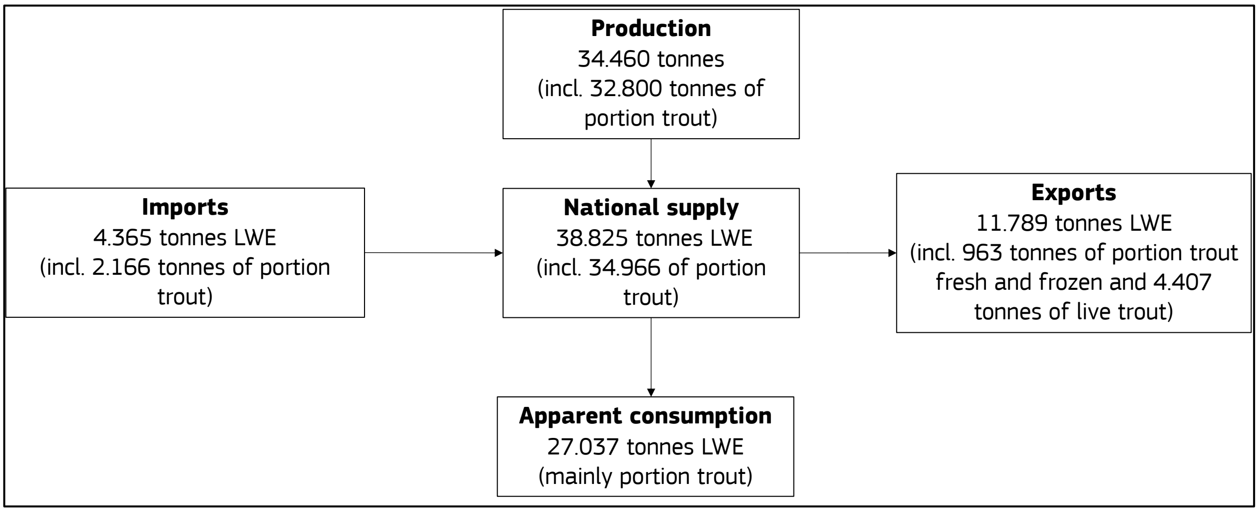
4.1.3 Apparent consumption

National production was 34.460 tonnes in 2019, mainly portion trout (32.800 tonnes). Imports were quite limited compared to national production (4.365 tonnes live weight equivalent (LWE)) and accounted for 11% of the national supply.

National supply was 38.825 tonnes in 2019; we assess that 90% of the national supply was portion and medium-sized trout (there is significant production of medium-sized trout in Italy, between 0,5 and 1,2 kg/fish which is considered in the "portion trout" category in the statistics). Exports were 11.789 tonnes LWE, including 963 tonnes LWE of whole portion trout and 4.407 tonnes of live trout. A total of 4.407 tonnes of live trout were exported in 2019 (Austria, Germany in particular), this includes a significant share of portion trout (no detailed data available).

Apparent consumption was 27.037 tonnes LWE in 2019, this was mainly portion trout.

Figure 15: Supply balance for trout in Italy (2019, tonnes of live weight equivalent, (LWE))



Source: EUMOFA elaboration of EUROSTAT-COMEXT, FAO and FEAP data

The value chain is composed of several types of stakeholders:

- Farmers,
- Slaughterhouses: slaughterhouses may be on-farm and may also be out of the farm, established by a group of farmers. In the latter case, they generally are at a maximum of 20 km from the farm.
- Wholesalers,
- Retailers.

4.2 Characteristics of the Italian market and consumption

4.2.1 Characteristics of the market

The distinction of trout is based on its weight, with the following categories in Italy:

- Below 0,5 kg/fish: portion trout,
- From 0,5 kg to 1-1,2 kg/fish: trout intended for filleting,
- Over 1-1,2 kg/fish: trout intended for smoking.

Based on Associazione Piscicoltori Italiani (API) and FEAP data, the production of trout under 1,2 kg ranges from 30.000 to 35.000 tonnes each year between 2016 and 2019. Based on qualitative interview with API about 40% is portion trout (under 0,5 kg/fish) and 60% is medium-sized trout intended for filleting (over 0,5 kg/fish).

There are two types of portion trout in Italy:

- White portion trout, for HoReCa, retail, export and angling. This is the largest share of portion trout (based on qualitative interview, no detailed data are available),
- Pink portion trout.

White and pink trout are the same species, the only differences is the colour of the flesh (changes depending of the fish feed).

Portion trout may be exported fresh, frozen or live.

A protected geographical indication (PGI) has been registered in Italy in the trout sector since 2013: "Trote del Trentino". The PGI covers, among other trout products, portion trout. Based on ISMEA Mercati data[20], the volume certified under PGI was 229 tonnes in 2019 (less than 1% of the national production) with price at production stage at 5,78 EUR/kg and 14,50 EUR/kg at retail stage. The total sales value was at production stage EUR 1,3 million.

4.2.2 Consumption

Based on qualitative interview with API, the market for the portion trout produced in Italy is as follows:

- 25-30% for HoReCa,
- 20-25% for large-scale retail,
- 25% for angling,
- 25% for export, mainly to Austria, Poland, Germany and Romania.

20 http://www.ismeamercati.it/flex/FixedPages/IT/QualidoScheda.php/L/IT/ID/739/BL/aHR0cDovL3d3dy5pc21lYW1lcmNhdGkuaXQvZmxleC9GaXhlZFBhZ2VzL0lUL1F1YWxpZG9WZXRyaW5hLnBocD9wPTE0JmM9JmNhdD0tMSZ0PS0xJnJnbj0tMQ%3D%3D

4.3 Price transmission in the supply chain

4.3.1 Ex-farm prices

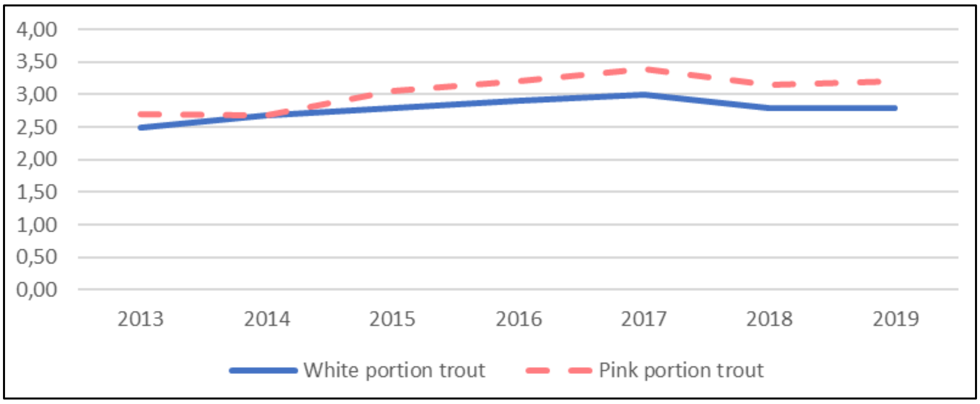
The ex-farm price of portion trout was 2,98 EUR/kg in 2019 (+14% since 2013 in nominal price, + 8% in real terms); it is much higher for pink trout which is 3,20 EUR/kg (+19% since 2013 in nominal price, + 12% in real terms) than for white trout (2,80 EUR/kg). The prices increased over the last years with a peak in 2017 at 3,40 EUR/kg for pink trout (nominal value). The price for large trout is higher than for portion trout, from 0,39 EUR/kg higher in 2013 to 1,12 EUR/kg higher in 2017.

Table 27: Ex-farm price (nominal) of trout in Italy (2013-2019) – Live or fresh whole

	2013	2014	2015	2016	2017	2018	2019
White portion trout	2,50	2,68	2,80	2,90	3,00	2,80	2,80
Pink portion trout	2,70	2,68	3,05	3,20	3,40	3,15	3,20
Total Portion	**2,61**	**2,68**	**2,91**	**3,04**	**3,18**	**2,95**	**2,98**
Large trout (> 1,2 kg)	3,00	3,20	3,80	4,00	4,30	3,80	3,50
Total trout	**2,63**	**2,71**	**2,93**	**3,19**	**3,24**	**3,01**	**3,04**

Source: Associazione Piscicoltori Italiani

Figure 16: Ex-farm price (nominal) of portion trout in Italy (2013-2019) – Live or fresh whole



Source: Associazione Piscicoltori Italiani

ISMEA provides monthly prices for trout at ex-farm stage. Ex-price farms are relatively stable from one month to another:

- Live trout (white, 250-350 g): Price ranged from 3,10 to 3,30 EUR/kg between January 2019 to March 2021 (lowest period being March to May 2019 and highest period being May to October 2020).
- Fresh portion trout (white, 350-450 g): Price ranged from 2,70 EUR/kg in January 2019 to 3,30 EUR/kg in March 2021. Price increase occurred in September 2019 (+0,10 EUR/kg), March 2020 (+0,20 EUR/kg), April 2020 (+0,10 EUR/kg) and January 2021.
- Fresh trout (pink, 450-650 g): price ranged from 3,00 to 3,20 EUR/kg in 2019 and increased in 2020 up to 3,60 EUR/kg in December and the price was 3,70 EUR/kg in March 2021.

Based on API, ISMEA monitors prices in the wholesale channels and not the prices for large-scale retail and export. ISMEA data shows an increase in 2020 (just after COVID outbreak) while API reports a price decrease in 2020 in the context of COVID.

Table 28: Ex-farm price of trout in Italy from January 2019 to March 2021

		White trout		Pink trout
		Fresh	Live	Fresh
		350-450 g	250-350 g	450-650 g
2019	Jan.	2,7	3,2	3,1
	Feb.	2,7	3,2	3,1
	Mar.	2,7	3,1	3,0
	April	2,7	3,1	3,0
	May	2,7	3,1	3,0
	June	2,7	3,2	3,1
	July	2,7	3,2	3,1
	Aug.	2,7	3,2	3,1
	Sep.	2,8	3,2	3,2
	Oct.	2.8	3,2	3,2
	Nov.	2,8	3,2	3,2
	Dec	2,9	3,2	3,2
2020	Jan.	2,9	3,2	3,2
	Feb.	na	na	na
	Mar.	3,1	3,2	3,3
	April	3,2	3,2	3,4
	May	3,2	3,3	3,6
	June	3,2	3,3	3,6
	July	3,2	3,3	3,6
	Aug.	3,2	3,3	3,6
	Sep.	3,2	3,3	3,6
	Oct.	3,2	3,3	3,6
	Nov.	3,2	3,2	3,6
	Dec	3,2	3,2	3,6
2021	Jan	3,3	3,2	3,7
	Feb	3,3	3,2	3,7
	Mar	3,3	3,2	3,7

na : not available

Source: ISMEA - http://www.ismea.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/1488?YY=2021

4.3.2 Import and export prices

Import price

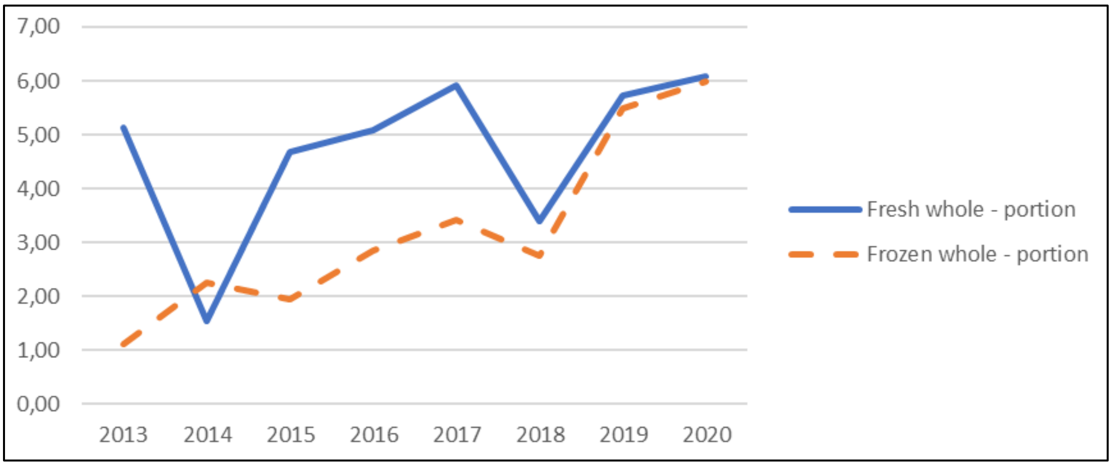
In 2020, the import price was almost similar for fresh and frozen portion trout, respectively 6,08 EUR/kg (+19% since 2013 in nominal price, + 15% in real terms) and 5,99 EUR/kg (with a very high increase since 2013: +439% in nominal price since 2013, + 423% in real terms). The trends for those two products are similar since 2018. Before 2018, the price for fresh trout was higher most of time, i.e. up to 4,01 EUR/kg higher in 2013 when frozen trout price was very low at 1,11 EUR/kg. Cf. section 4.1.2, the volume of frozen portion trout imported is very limited.

Table 29: Import prices (nominal) of trout to Italy between 2013 and 2020

	2013	2014	2015	2016	2017	2018	2019	2020	Evol 2020/ 2013
Fresh whole - portion	5,12	1,53	4,67	5,09	5,91	3,40	5,72	6,08	+19%
Frozen whole - portion	1,11	2,25	1,95	2,84	3,42	2,76	5,49	5,99	+439%

Source: EUMOFA elaboration of EUROSTAT-COMEXT data

Figure 17: Import prices (nominal) of trout to Italy between 2013 and 2020



Source: EUMOFA elaboration of EUROSTAT-COMEXT data

Export price

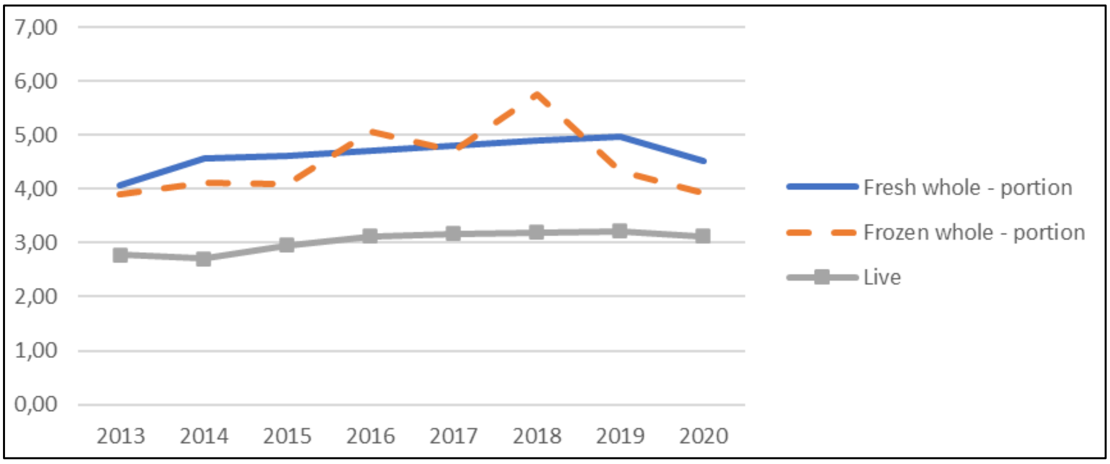
In 2020, the export price was 4,52 EUR/kg for fresh whole portion trout, 3,92 EUR/kg for frozen portion trout and 3,12 EUR/kg for live trout. Main volumes are for fresh portion trout and live trout (some of the live trout is portion trout), prices tend to increase between 2013 and 2020: +11% for fresh portion (+ 8% in real terms) and +12% for live trout (+ 9% in real terms), even with the decrease in 2020 (-9% compared to 2019).

Table 30: Export prices (nominal) of trout to Italy between 2013 and 2020

	2013	2014	2015	2016	2017	2018	2019	2020	Evol 2020/ 2013
Fresh whole - portion	4,07	4,57	4,60	4,70	4,81	4,90	4,97	4,52	+11%
Frozen whole - portion	3,89	4,13	4,08	5,06	4,70	5,75	4,33	3,92	+1%
Live	2,78	2,71	2,95	3,12	3,16	3,20	3,22	3,12	+12%

Source: EUMOFA elaboration of EUROSTAT-COMEXT data

Figure 18: Export prices (nominal) of trout to Italy between 2013 and 2020

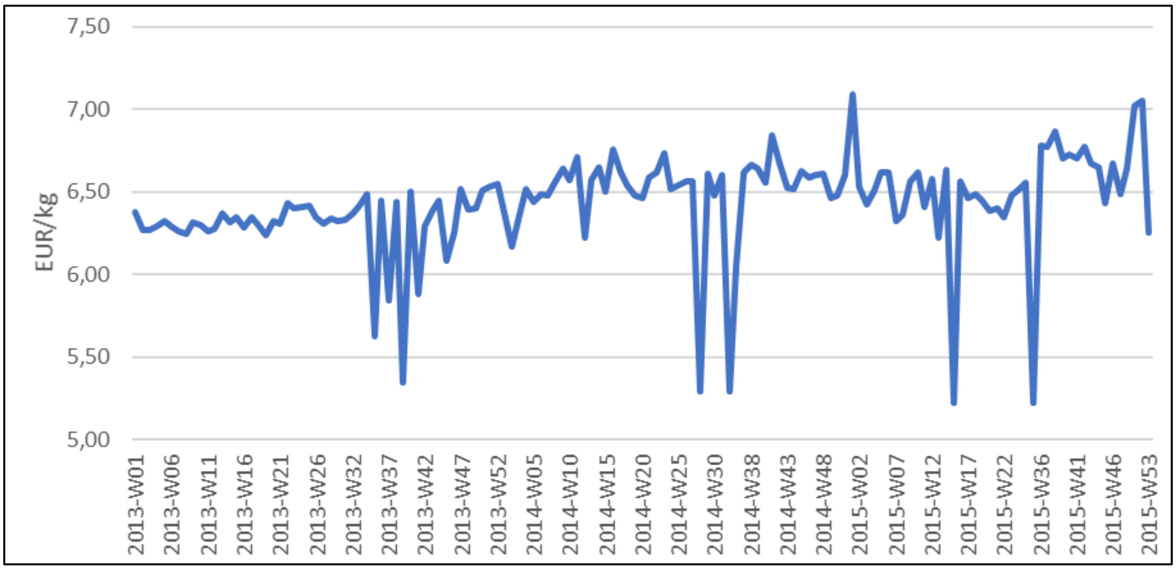


Source: EUMOFA elaboration of EUROSTAT-COMEXT data

4.3.3 Retail prices

EUMOFA provides weekly prices for trout at retail stage from 2013 to 2015. Prices generally ranged from 6,20 EUR/kg to 6,80 EUR/kg. Prices dropped below 6,00 EUR/kg several times, notably between June and October. The type of product is not displayed: i.e. if the product is whole, fillet or smoked.

Figure 19: Retail price for trout in Italy between 2013 and 2015 (EUR/kg)



Source: EUMOFA

The price at retail stage in large-scale retail ranges between 8,90 EUR/kg and 9,90 EUR/kg for white portion trout and from 6,30 EUR/kg (low price due to a discount) to 9,90 EUR/kg for pink portion trout.

Table 31: Store check (online shops) for portion trout in Italy (1st semester 2021)

White / pink trout	Product	EUR/kg
White portion trout	White portion trout – 350 g - Bennet	8,90
	White portion trout – 300 g – gutted - Bennet	9,90
	White portion trout – 450 g - gutted - TIGROS	9,90
Pink portion trout	Pink portion trout – 450 g – discount 40%- - TIGROS	6,30 (10,50 indicated without discount)
	Pink portion trout – 500 g – PAM PANORAMA	7,90
	Pink portion trout – 400 g - Bennet	8,90
	Pink portion trout – gutted - 300 g - Bennet	9,90
	Pink portion trout – gutted - 500 g - Bennet	9,90

Sources: https://www.tigros.it/shop/search?q=trota%20iridea

https://pamacasa.pampanorama.it/prodotto/pam-panorama-trota-iridea-salmonata-eviscerata-466087

https://www.bennet.com/search?q=trota%3Arelevance

4.3.4 Price transmission

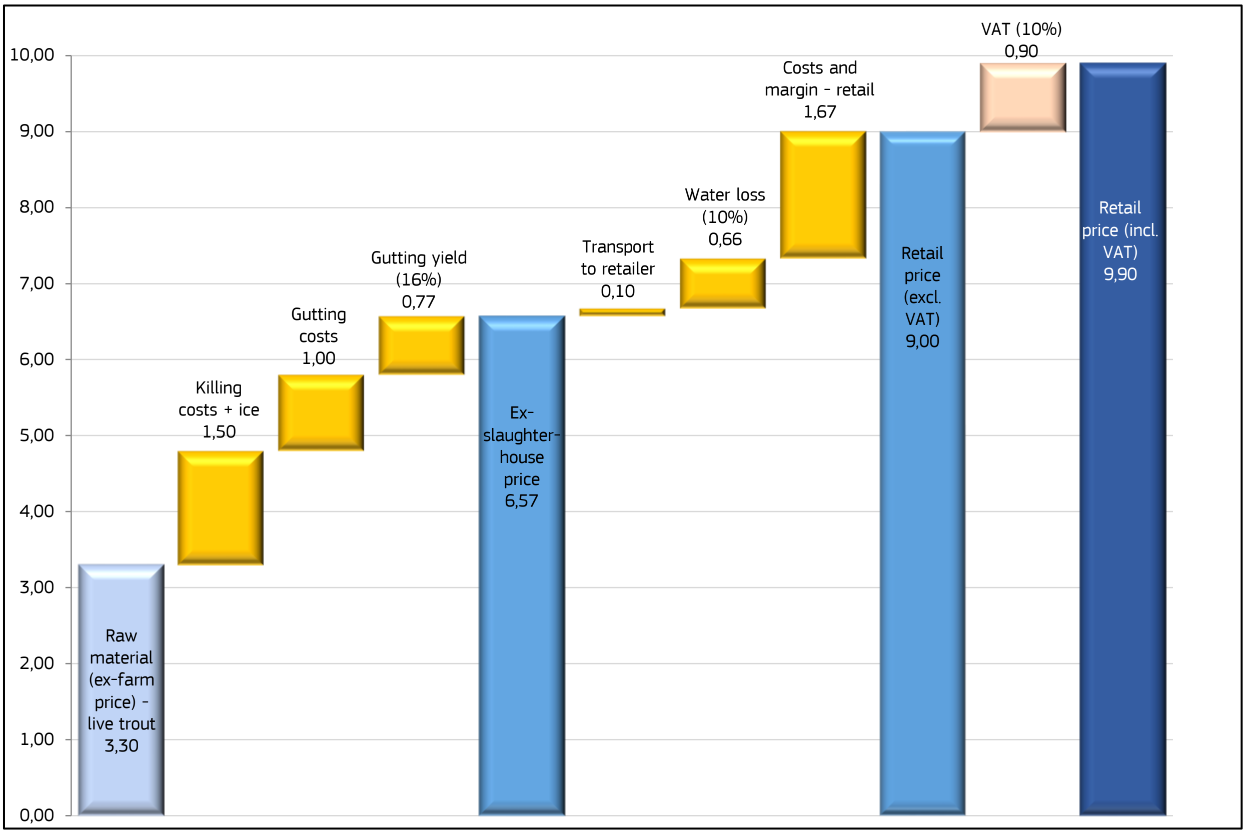
The price transmission covers white portion trout, marketed gutted in large-scale retail in Italy in March 2021. The ex-farm price is 3,30 EUR/kg; this accounts for 33% of the final price at retail stage (9,90 EUR/kg).

Table 32: Costs and margins for portion trout marketed in large-scale retail in Italy (2021)

	Average	% final price	Source
Raw material (ex-farm price)	**3,30**	**33%**	API data
Killing costs + ice	1,50	15%	Interview API
Gutting costs	1,00	10%	Interview API
Gutting yield (16%)	0,77	8%	Interview API
Ex-slaughter-house price	**6,57**	**66%**	Calculation
Transport to retailer	0,10	1%	Interview API
Water loss along the value chain (10%)	0,66	7%	Interview API
Costs and margin - retail	1,67	17%	Estimate
Retail price (excl. VAT)	**9,00**	**91%**	Calculation
VAT (10%)	0,90	9%	10% VAT on trout
Retail price (incl. VAT)	**9,90**	**100%**	Store check 2021

Source: EUMOFA

Figure 20: Costs and margins for portion trout marketed in large-scale retail in Italy (2021)



Source: EUMOFA

5 The Polish market

5.1 Structure of the supply chain

5.1.1 Production

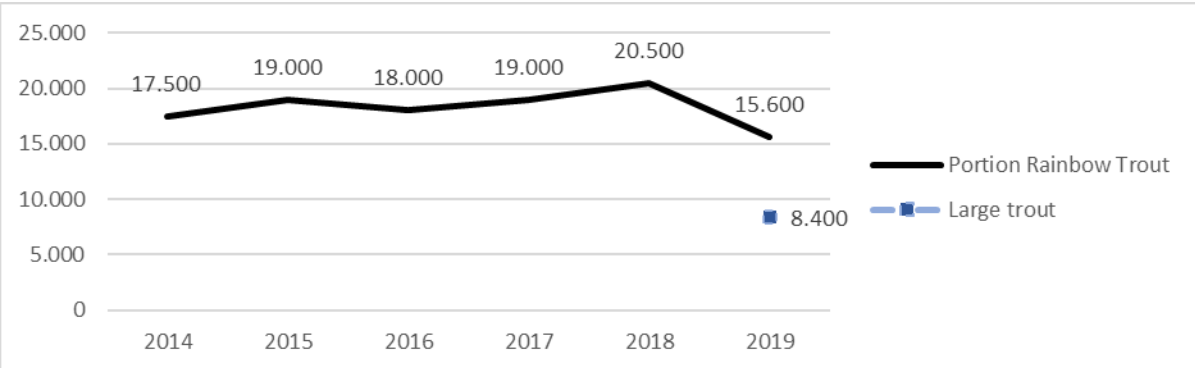
There are several sources of information on the volume of production of trout in Poland (2019 data):

- 15.395 tonnes for EUROSTAT (EUR 46 million sales value),
- 16.285 tonnes for FAO,
- 17.900 tonnes for State Statistics,
- 24.000 tonnes for FEAP:
    - 15.600 tonnes of portion and medium trout (below 1,2 kg),
    - 8.400 for large trout (above 1,2 kg),
- 22.400 tonnes for Polish Trout Breeders Association (PTBA) survey:
    - 14.700 tonnes for portion trout (below 500 g),
    - 7.700 tonnes for medium and large trout (above 500 g).

Thus, on the one hand, Eurostat, FAO and State Statistics assess that Polish trout production ranges between 15.000 and 18.000 tonnes. On the other hand, FEAP and PTBA assess the level of production between 22.000 and 24.000 tonnes, including about 15.000 tonnes of portion and medium-sized trout.

The development of production between 2014 and 2019 is detailed in the following figure with FEAP data. Note: Data for large trout is available for 2019 only.

Figure 21: Evolution of the volume of production of portion trout and large trout in Poland between 2014 and 2019 (tonnes)



Note: No distinction between large and portion trout before 2019. Source: FEAP

There are two national sources in Poland, they cover rainbow trout, sparctic char (cross between the Arctic char and brook trout), arctic char *(Salvelinus alpinus)* , brook trout *(Salvelinus fontinalis)* and spring trout *(Salmo trutta m. fario)* (rainbow trout accounted for 86% of total volume in 2019 in State Statistics):

- The State Statistics (collected and compiled by the Inland Fisheries Institute; in line with the Eurostat methodology);
- The "Trout Service" ("Serwis Pstrągowy" in Polish) - annual study based on surveys obtained by PTBA, where estimation of the production volume is based on the amount of feed consumed by fish. Trout Service started in 2013.

State Statistics seems to underestimate Polish production. Interestingly, for the entire period of 2012-2019, both sources identify the total increase in production in the same way.

Contrary to national statistics, the PBTA data allows (since 2018) differentiating between the production of portion trout (<=500 g) and large trout (>500g).

Table 33: Rainbow trout first sales - divided into portion and large trout (based on the PTBA survey) (1.000 tonnes)

Trout market size	2018	2019	Evol 2019/2018
Portion trout <=500 g	13,4	14,7	+10%
Large trout >500 g	5,5	7,7	+40%
Portion trout [%]	71%	66%	
Large trout [%]	29%	34%	

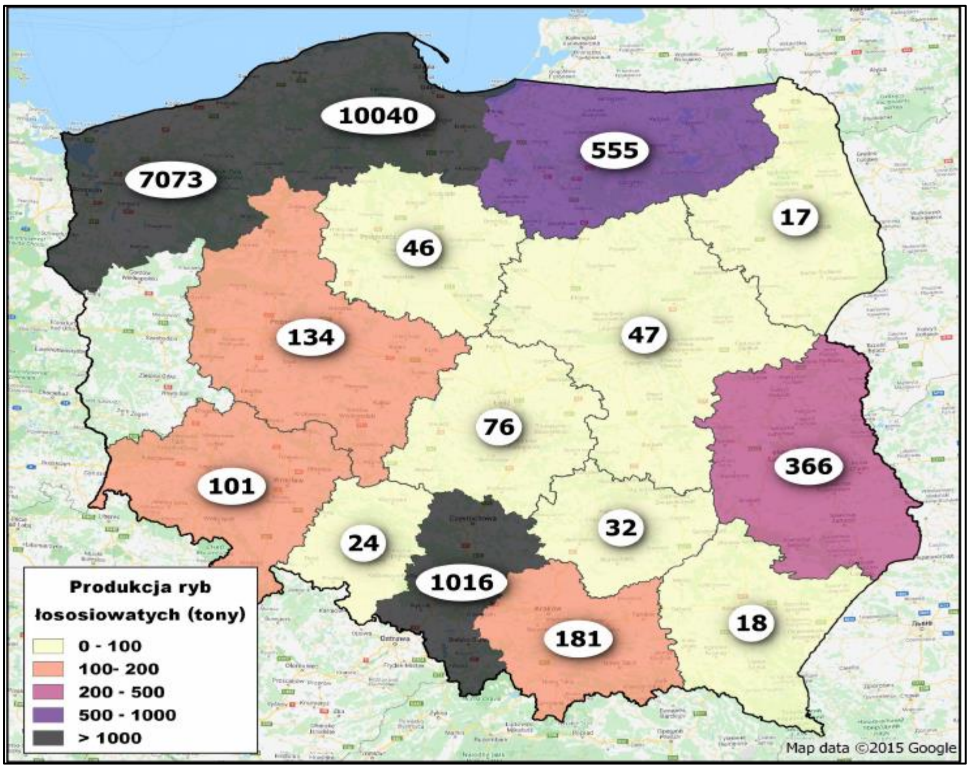
Source: based on Trout Service 2019-2020, provided by PTBA

Production is concentrated in the Northern parts of Poland (two regions: West Pomeranian and Pomeranian). In Poland 105 farms produce rainbow trout, 17 farms produce Arctic char, 13 produce brook trout, and five produce spring trout (Lirski, Myszkowski 2020)[21].

79% of the domestic trout production comes from farms with an individual production volume of approx. 200 tonnes per year; 16% of the production comes from farms with an annual production volume of 51 to 199 tonnes (Lirski, Myszkowski 2020). Most of the production is carried out in flow-through facilities. According to state statistics, 14% of the volume of sold production comes from facilities with water recirculation (RAS). In total, 1.533 people are employed in intensive aquaculture in Poland in 2019 (Lirski, Myszkowski 2020).

[21] Lirski A., Myszkowski L., Obraz polskiej akwakultury w 2019 roku na podstawie badań statystycznych przy zastosowaniu kwestionariusza RRW-22 *(The picture of Polish aquaculture in 2019 based on statistical research using the RRW-22 questionnaire)*, 45th Training-Conference of Salmonidae Breeders, Rumia 2000, availaible: http://sprl.pl/konferencje/konferencja-2020/materialy-konferencyjne

Figure 22: Trout production in Poland (by regions) in 2019 (tonnes)



Sources: Lirski, Myszkowski 2020

5.1.2 Import – Export

Imports

Trout imports reached EUR 60 million (15.363 tonnes) in 2020. The main imported products are fresh whole large trout (47% of imported value) followed by portion trout (fresh and frozen, for a total of 40% of the imported value). The imported volume of fresh portion trout highly increased over the last year (volume four times higher in 2020 compared to 2013) while the imports of frozen portion trout decreased by 31% in volume.

Table 34: imports of trout to Poland in 2020

	Val. (1.000 EUR)	Vol. (tonnes)	Price (EUR/kg)
Fresh whole - portion	15.867	4.780	3,32
Frozen whole - portion	8.283	2.231	3,71
Fresh whole - large	28.226	7.000	4,03
Frozen whole - large	552	131	4,22
Fresh fillet	2.409	438	5,50
Frozen fillet	566	101	5,62
Smoked	1.464	180	8,13
Live	2.407	502	4,79
Total	**59.775**	**15.363**	**3,89**

Source: EUMOFA elaboration of EUROSTAT-COMEXT data

Exports

Trout exports from Poland reached EUR 90 million in 2020 (8.952 tonnes), with the main product being smoked trout (73% of the exported value). Some of the smoked products are portion trout, but no detailed data are available.

Fresh portion trout accounted for EUR 9 million (1.687 tonnes), with a great increase over the last years, comparable to the growth trend of the imported volume of fresh portion trout (four times higher in 2020 compared to 2013). Export of frozen portion trout remains limited at EUR 0,2 million in 2020.

Table 35: exports of trout from Poland in 2020

	Val. (1.000 EUR)	Vol. (tonnes)	Price (EUR/kg)
Fresh whole - portion	9.196	1.687	5,45
Frozen whole - portion	220	43	5,17
Fresh whole - large	567	101	5,62
Frozen whole - large	62	18	3,45
Fresh fillet	9.814	1.304	7,53
Frozen fillet	1.445	282	5,12
Smoked	65.765	4.788	13,73
Live	2.664	729	3,66
Total	**89.734**	**8.952**	**10,02**

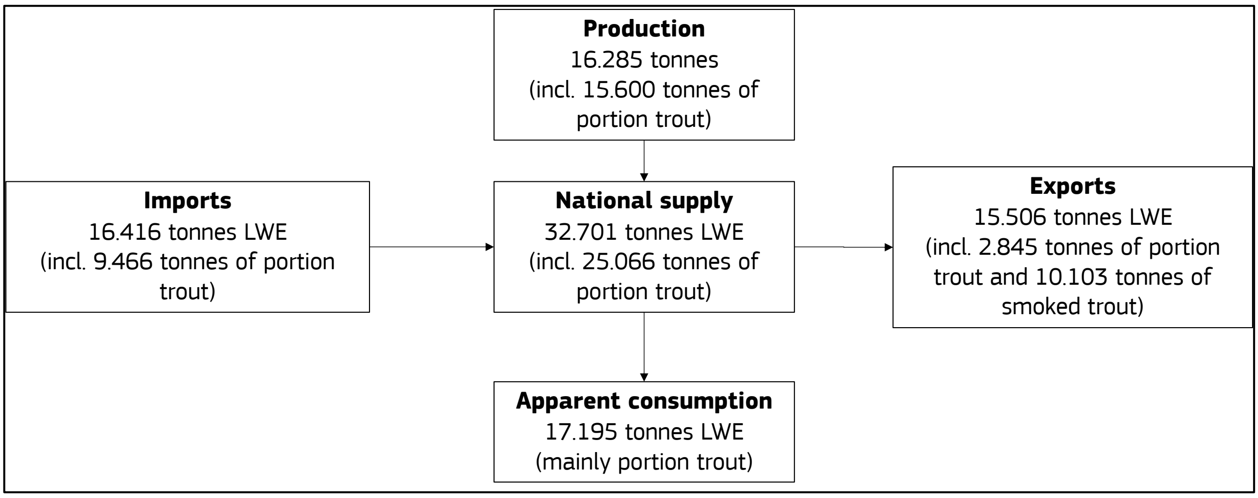
Source: EUMOFA elaboration of EUROSTAT-COMEXT data

5.1.3 Apparent consumption

In Poland, the national production of trout was 16.285 tonnes in 2019. A comparable volume was imported (16.416 tonnes LWE), mainly fresh large trout and portion trout – thus, the national supply was 32.701 tonnes. About half of the national supply was exported (mainly smoked trout, fresh fillet and fresh portion trout) and the other half is consumed at the national level. Apparent consumption of trout was 17.195 tonnes LWE in 2019; this was mainly portion trout.

The vast majority of trout from domestic production goes to the domestic consumption market, while most of the trout processed into smoked trout fillets in processing plants is imported. However, trout flows are partly mixed - some domestic trout is exported, and some imported trout (especially portion trout) is sold domestically. Portion trout is both produced at national level (15.600 tonnes based on FEAP) and imported (9.466 tonnes LWE based on EUROSTAT-COMEXT), a share of portion trout is also exported: 2.845 tonnes LWE of whole portion trout, as well as some volume of smoked or filleted trout.

Figure 23: Supply balance for trout in Poland (2019 - tonnes of live weight equivalent (LWE))



Source: EUMOFA elaboration of EUROSTAT-COMEXT, FAO and FEAP data

5.2 Characteristics of the Polish market and consumption

5.2.1 Characteristics of the market

5.2.1.1 Processing

In Poland, portion trout processing is carried out by several fish processing plants. The main products are:

- Fresh gutted fish (iced in boxes or packed in modified atmosphere, MAP),
- Fillets (iced or packed in modified atmosphere, MAP),
- Smoked gutted fish (loose or packed),
- Smoked fillets (packed).

It is assumed that more than 95% of domestic trout is processed (the only exception is direct sale from farms, or local delivery of whole fish to catering services) - in the retail market, whole chilled (untreated) trout is practically no longer offered.

Three processing plants serve most of the domestic retail market for fresh and smoked portion trout (their combined share is estimated to exceed 75%). One company has the leading position in the export of fresh and smoked portion trout. The difficult situation in terms of access to the raw material market and the low margin on processing are evidenced by the discontinuation of activity by another processor, who had a leading position in the production of smoked portion trout for export to Germany a decade ago.

The processing of large trout takes place in plants for which the main raw material is Atlantic salmon. The two main directions for large trout processing are:

- Production of cold-smoked fillets (packed, unpackaged),
- Production of fresh fillets (packed, unpackaged).

The vast majority (based on qualitative interviews, we estimate that it is over 90%) of these products (from large trout) are intended for export. One company is the clear leader with a majority share in the processing and export of large trout products.

5.2.1.2 Market structures

The domestic market has traditionally been based on portion trout, while both portion and large trout products have also been offered for processing and export. Currently, the situation is more complex and more and more large trout are entering the consumer market in Poland in the form of chilled fillets or smoked fillets. A clear analysis of the situation is not possible given that many statistics (on the level of first sale, wholesale, retail trade, partly foreign trade) do not distinguish between portion trout and large trout.

The dominant value chain of portion trout occurs in the following pattern:

(i) supply of live trout from a (domestic) fish farm to a fish processing plant
(ii) Usually, the transport of live fish is organised by a fish processing plant, that will deliver the fish from the region. In the case of imported fish, e.g. from Italy or Denmark - the delivery is carried out by a trading company, which also coordinates the transport to the processing plant.
(iii) Processing (gutting, chilling, sometimes also filleting (to 100-200 g fillets - usually also packing in modified atmosphere packages),
(iv) Delivery from processing company to central or regional logistic warehouse of a given commercial network,
(v) Internal distribution in the retail chain (from the central warehouse to the chain stores).

It is estimated that discount chains are the dominant retail sales channel for fresh and smoked trout with share estimated as 59% (no details available for portion and large trout, source: GfK / Europanel).

Table 36: Retail sale of trout in Poland by channels (Dec. 2018-Nov.2019)

Distribution channel	Share (value)
Hypermarkets	10%
Supermarkets	4%
Discounts	59%
Fish shops	16%
Food shops	4%
Other (e.g. traditional markets, doorstep and direct sales)	6%

The sum is not 100% due to roundings
Source: GfK/Europanel (Kulikowski T. 2020 A[22])

Wholesale trade plays a role in supply chains between processors and traditional fish stores and the HORECA sector.

[22] Kulikowski T. 2020, Raport z badań konsumenckich sporządzony przez MPR S.C. dla SPRŁ *(Consumer research report prepared by MPR S.C. for PTBA)*, Gdynia 2020 (internal report, unpublished)

5.2.2 Consumption

In the years 2015-2019, the consumption of trout per capita in Poland ranged from 0,48 to 0,52 kg in live weight equivalent (the latest available data are from 2019 when consumption amounted to 0,52 kg per capita[23]). It can be assumed (estimated based on local production structure and interviews with stakeholders) that 80% was portion trout, which represents an average portion trout consumption of around 0,42 kg per capita (giving a total market size of around 16 thousand tons per year).

According to research conducted in 2018-2019 (Kulikowski T. 2020 A), approximately 18% of Polish consumers consume trout relatively regularly (several times a year) and 20-24% consume trout at least once a year.

According to CAPI Pstrąg 2014[24], about 9% of the Polish consumers eat grilled trout at least once during the period from May to August. According to the IPSOS study for the Norwegian Seafood Council (Seafood Study 2015[25]), trout is the most popular grilled fish. Depending on the age group, 45% to 65% of consumers that prepare fish on the grill, the 'best' is trout. The perception of trout by Polish consumers was determined in quantitative research:

- In the CAPI 2014 Trout survey, 78% of consumers considered trout to be 'definitely tasty' (32%) or rather tasty (46%),
- In the CAPI 2014 Trout study, 65% of consumers considered trout to be an expensive food product which was indicated by consumers as a main barrier to increase the consumption of trout. 25% of consumers stated that trout is not an expensive product,
- In the CAPI 2018[26] survey, the percentage of consumers who strongly agreed that it is difficult to buy fresh trout was 27% and 26% from the survey somewhat agreed with this statement. Only 6% of consumers strongly disagreed with this statement. These data suggest that for consumers it is hard to find (fresh trout) in a place where they usually shop. Analysing these data further, it can be concluded that consumers understand only the ultra-fresh chilled unpacked product by the term "fresh trout" and that for a large group of consumers, packaged chilled trout does not fall within the scope of the term "fresh trout".

5.2.2.1 Consumption in HORECA

Although data on the HoReCa market is lacking, it is estimated in the reports for PTBA (Lirski, Hryszko, Kulikowski 2019) that HoReCa accounts for one-third of trout consumption in Poland. In 2015-2019, total revenues from HoReCa in Poland increased by nearly 54%, reaching PLN 50,9 billion (EUR 11,4

[23] Lirski A., Hryszki K., Kulikowski T., PSTRĄGI I TROCIE Plan obrotu i produkcji *(Trouts. PTBA Production and Sales Plan),* Lębork 2019 (internal report, not publicly available)

[24] CAPI 2014: A nationwide survey on a representative group of consumers, using the method of direct CAPI interviews, conducted by PBS at the request of PTBA (not available public), partially presented public as: T. Kulikowski, Umocnienie pozycji pstrąga na krajowym rynku rybnym w latach 2011-2014 *(Strengthening the position of trout on the domestic fish market in 2011-2014)*, 39th Annual Conference of Trout Producers in Poland, Gdynia, 9-10 October 2014 (http://sprl.pl/konferencje/konferencja-2014/materialy-szkoleniowe)

[25] Seafood Study 2015. Opinie i perspektywy. Konsumpcja ryb wśród Polaków *(Seafood Study 2015. Opinions and perspectives: consumption of fish among Poles*), Norwegian Seafood Council, Warsaw 2015 (printed report)

[26] CAPI 2018: A nationwide survey on a representative group of consumers, using the method of direct CAPI interviews, conducted by PBS at the request of PTBA (not available to public), partially presented as Kulikowski T., Wizerunek pstrąga tęczowego i palii w kontekście potencjału promocji tych ryb na rynku polskim *(The image of rainbow trout and palia in the context of its promotion potential on the Polish market),* 43rd Annual Conference of Trout Producers in Poland, Gdynia, 11-12 October 2018 (http://sprl.pl/konferencje/konferencja-2018/materialy-konferencyjne)

billion) (Statistics Poland data[27]). Restaurants accounted for nearly all this increase, while canteens and bars experienced stagnation or regression. In 2018, the growth was 5,8% (based on PMR market research company estimate[28]). The comparison of the 2018 Eurobarometer[29] and the 2016 Eurobarometer[30] data also confirms the increase in the frequency of purchasing fish dishes out-of-home. The percentage of people who eat fish in HoReCa at least once a month increased from 21% in 2016 to 23% in 2018. The percentage of people who never eat fish outside their home dropped from 45% in 2016 to 36% in 2018. According to a TNS Gallup research for Norwegian Seafood Council (Seafood Study 2015), 31% of Polish consumers are willing to order salmon when visiting a restaurant or similar premises outside their home, 17% - cod, 13% - trout (7% portion trout; 6% large trout (usually called in Poland "salmon trout"), 9% - shrimp, 5% - perch or pike. It is worth noting that portion trout is appreciated mainly by people over 30 (16% of indications), not being appreciated by people aged 20-29 (only 6% of indications). In the youngest age group, salmon and shrimp are preferred.

5.3 Price transmission in the supply chain

5.3.1 Ex-farm price

From 2012 to 2019, the price of trout was steadily increasing (from 10,92 PLN/kg in 2012 to 12,83 PLN/kg in 2019; 2,46 EUR/kg to 2,88 EUR/kg). The sales prices of rainbow trout in 2019 were 17% higher than in 2012 (+11% in real terms), while in comparison to 2018 they were higher by 2,1%. At the same time, the second important species of Polish aquaculture - carp - experienced both price increases and sharp drops.

According to representatives of producer organisation, the current price of rainbow trout allows for maintaining the farm, obtaining small profits, but is too low to finance future investments.

Table 37: Trout nominal prices ex farm (in local currency, PLN/kg and EUR/kg)

Species	Currency	2012	2013	2014	2015	2016	2017	2018	2019	Evol. 2019/ 2012
Rainbow trout	PLN	10,92	11,38	11,64	11,95	12,35	12,41	12,57	12,83	17%
Arctic char/Sparctic		13,01	13,35	12,92	12,76	14,16	14,49	14,84	14,83	14%
Rainbow trout	EUR	2,46	2,56	2,62	2,69	2,78	2,79	2,83	2,89	17%
Arctic char/Sparctic		2,93	3,00	2,91	2,87	3,19	3,26	3,34	3,34	14%

Source: Inland Fisheries Institute; constant EUR/PLN exchange rate - 4,4480 (Polish National Bank average for 2020)

[27] Rynek wewnętrzny w Polsce w 2019 r. *(Internal market in Poland in 2019)*, Statistics Poland, Warsaw 2020 https://stat.gov.pl/obszary-tematyczne/ceny-handel/handel/rynek-wewnetrzny-w-2019-roku,7,26.html

[28] Rynek HoReCa w Polsce 2018 (HoReCa market in Poland in 2018) (https://retailmarketexperts.com/dane-i-analizy/infografiki/rynek-horeca-w-polsce-2018-infografika/)

[29] https://data.europa.eu/euodp/en/data/dataset/S2206_89_3_475_ENG

[30] https://data.europa.eu/euodp/en/data/dataset/S2106_85_3_450_ENG

Table 38: Rainbow trout prices ex-farm (in local currency, PLN/kg and EUR/kg), divided into portion and large trout

Species	Currency	2018*	2019*	2020 **
Portion trout	PLN	12,59	13,27	11,80-12,50
Large trout		13,36	13,14	Not available
Portion trout	EUR	2,83	2,98	2,65-2,81
Large trout		3,00	2,95	Not available

Constant EUR/PLN exchange rate - 4,4480 (Polish National Bank average for 2020)

Source: * PTBA survey research; ** estimation (interview)

Monthly, Statistics Poland publishes "Trout sales prices" which correspond to ex-factory sale of fresh trout of fresh, gutted portion trout. In 2020 prices were stable (no change month-to-month: December 2019 to December 2020). During five years ex-factory prices increased by 17% (December 2015 to December 2020, +7% in real terms). The increase in prices at the ex-factory level is greater than the increase in ex-farm prices in the corresponding period.

Figure 24: Price (nominal) of fresh whole portion trout ex factory (EUR/kg)

Source: Statistics Poland

5.3.2 Import and export prices

Import

Import prices were relatively stable for fresh portion trout imported to Poland between 2013 and 2020: 3,17 to 3,68 EUR/kg. We observe a slight decline from a peak in 2017 to reach 3,32 EUR/kg in 2020.

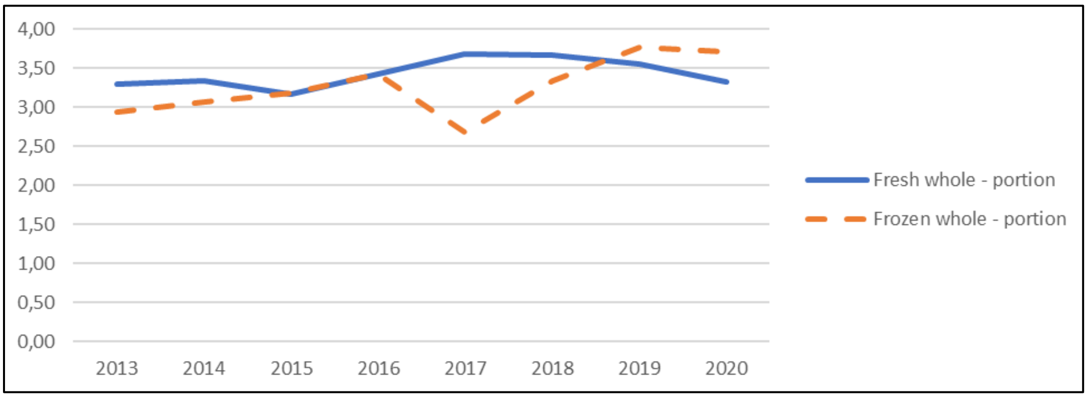
We observe larger variation for frozen portion trout: general increasing trend between 2013 and 2020 (+26%, +13% in real terms) with 3,71 EUR/kg in 2020 (even with a drop in 2017 at 2,68 EUR/kg in 2017).

Table 39: Import prices (nominal) of portion trout to Poland between 2013 and 2020

	2013	2014	2015	2016	2017	2018	2019	2020	Evol 2020/ 2013
Fresh whole - portion	3,29	3,33	3,17	3,42	3,68	3,66	3,55	3,32	+1%
Frozen whole - portion	2,94	3,06	3,18	3,42	2,68	3,34	3,77	3,71	+26%

Source: EUMOFA elaboration of EUROSTAT-COMEXT data

Figure 25: Import prices (nominal) of portion trout to Poland between 2013 and 2020



Source: EUMOFA elaboration of EUROSTAT-COMEXT data

Export

The main product exported is fresh portion trout, the price has been relatively stable between 2013 and 2020: from 5,00 to 5,50 EUR/kg almost every year. The price was 5,45 EUR/kg in 2020.

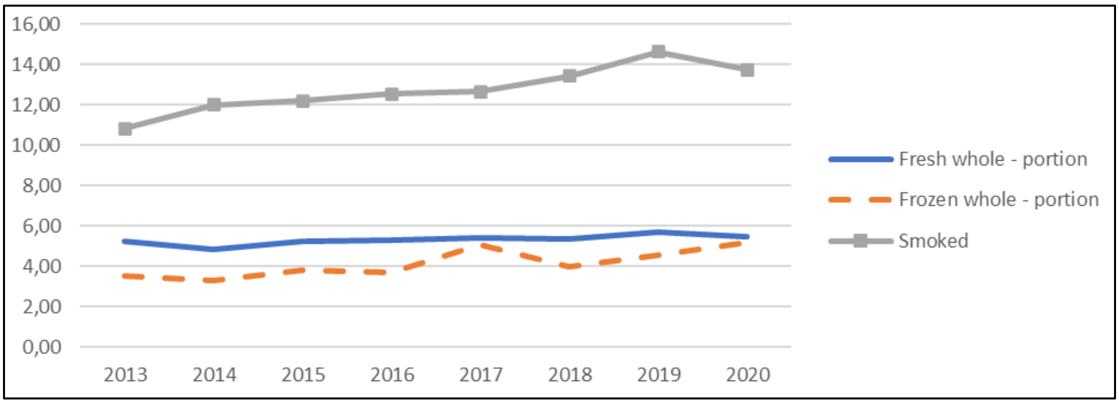
Exported volume of frozen portion trout is very limited (see section 5.1.2); the 2020 price was 5,17 EUR/kg. Some of the smoked trout exported is portion trout (the detailed percentage is not available); the export price has increased between 2013 and 2020 (+27%) and was 13,73 EUR/kg in 2020.

Table 40: Export prices (nominal) of trout from Poland between 2013 and 2020

	2013	2014	2015	2016	2017	2018	2019	2020	Evol 2020/ 2013
Fresh whole - portion	5,24	4,82	5,23	5,27	5,42	5,33	5,70	5,45	+4%
Frozen whole - portion	3,55	3,27	3,79	3,68	5,06	3,99	4,57	5,17	+45%
Smoked trout	10,84	11,99	12,19	12,54	12,67	13,42	14,61	13,73	+27%

Source: EUMOFA elaboration of EUROSTAT-COMEXT data

Figure 26: Export prices (nominal) of trout from Poland between 2013 and 2020

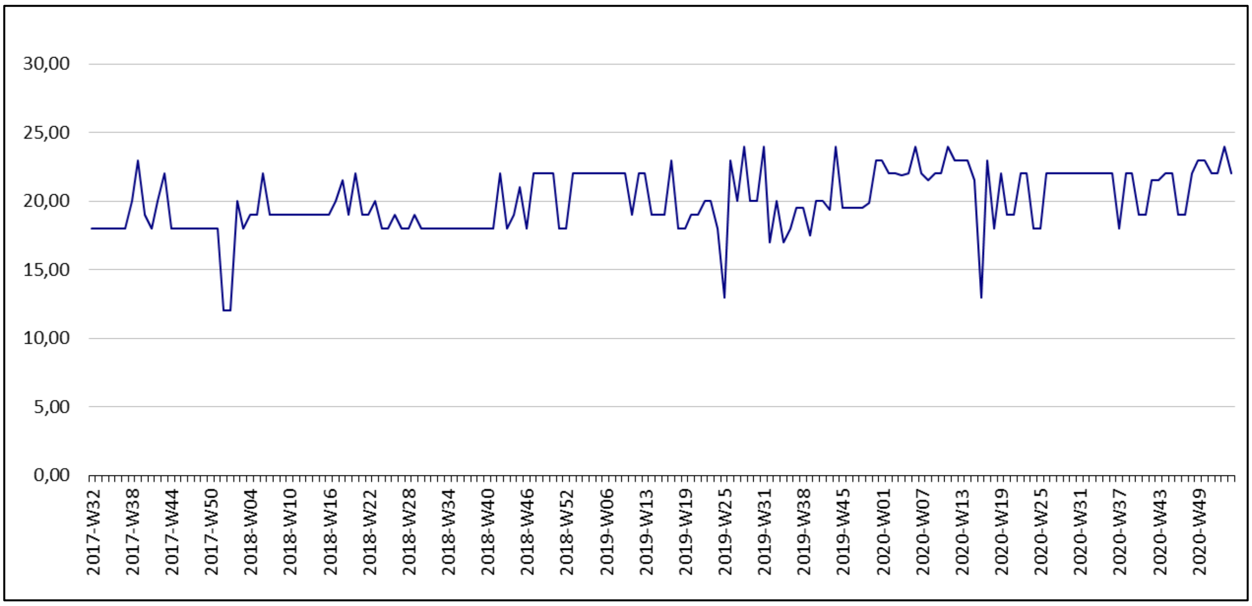


Source: EUMOFA elaboration of EUROSTAT-COMEXT data

5.3.3 Wholesale prices

Wholesale price from EUMOFA (EUMOFA wholesale prices in Makro, Gdynia, Poland) does not show a clear evolution of price, but it shows that prices at the wholesale level are subject to large fluctuations from weeks to weeks. These prices are given on a weekly basis. The specificity of sales in this type of unit (i.e. "Cash & carry") makes them *de facto* semi-wholesale sales. The fish buyers are HoReCa, shops and retail customers. These are usually orders of kilograms or at the most several boxes of fish.

Figure 27: Price (nominal) of fresh portion trout (head-on, Polish origin), wholesale – Makro (HORECA supplier) (PLN/kg)



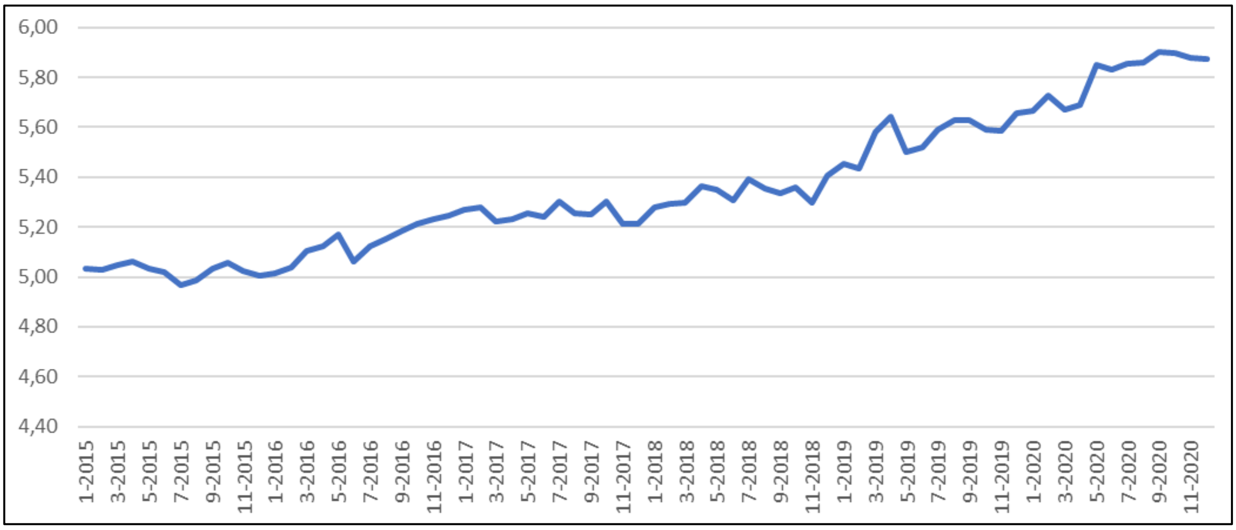
Source: EUMOFA

5.3.4 Retail prices

In the years 2013-2018, the prices of trout in retail increased by 7,8%, while in the first sale increased by a total of 10,5%. The increase in retail prices of trout (fresh or chilled) in 2013-2018 was lower than the increase in prices of fish and fish products in general, which amounted to 9,5%. In the five years analysed, trout prices increased significantly in relation to other popular animal protein sources in Poland, like pork and poultry (by 10% and 6%, respectively) (source: Statistics Poland).

The following figure details the development of fresh portion trout at retail stage from 2015 to 2020. The price reached a maximum of 5,90 EUR/kg in September and October 2020 (+19% from lowest price in 2015, +8% in real terms).

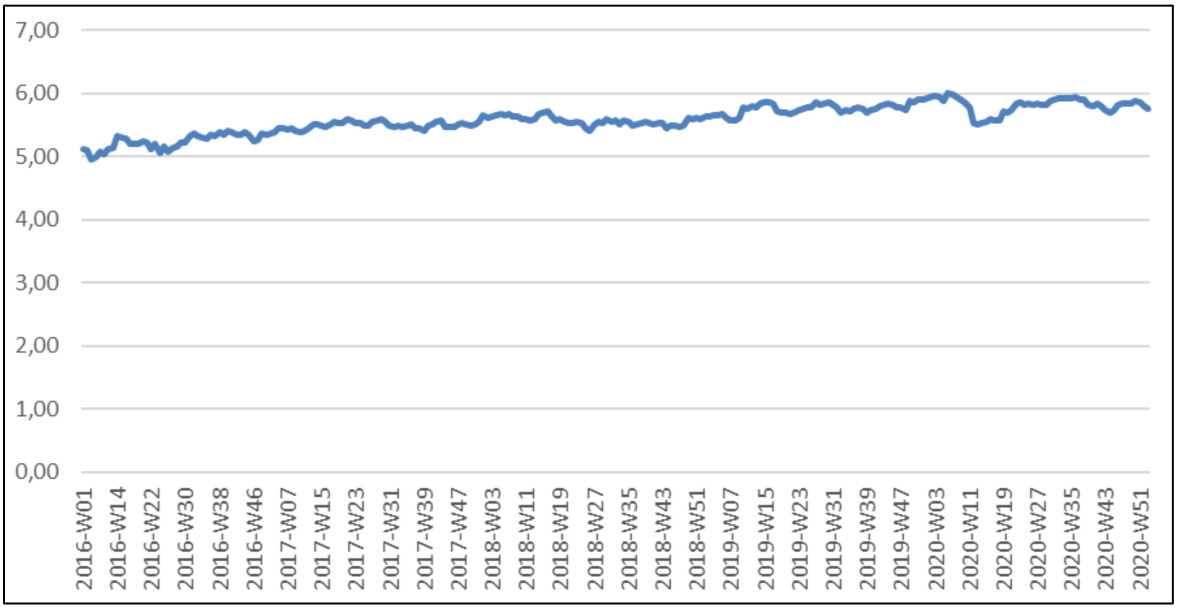
Figure 28: Retail prices (nominal) of fresh portion trout in Poland (2015-2020) (EUR/kg)



Source: Statistics Poland

Another source of data for retail prices of trout is EUMOFA. The data are based on a household survey and reflects the average price of the various fresh trout products purchased (not only portion trout), in various forms of processing.

Figure 29: Retail prices (nominal) of chilled trout in Poland (2016-2020), product mix (EUR/kg)



Source: EUMOFA (based on Europanel household purchases)

5.3.5 Price transmission

Two analyses were conducted:

- One focused on portion trout, gutted, chilled, packed (MAP) in the large-scale retailer,
- One focused on portion trout, gutted, chilled (on ice), loose, in traditional retail (fish shops).

Based on interviews with a farmers producer organisation, we estimate that at the end of Q4 2020 and in Jan. 2021[31], standard ex-farm price for portion trout amounted to 12,50 PLN/kg (2,77 EUR/kg) for processor with established contracts. Some interviewees indicated even lower prices such as 11,50-11,80 PLN/kg (2,55-2,62 EUR/kg), especially for farmers without contract with processors. The price in late 2020-early 2021 is significantly lower than average in 2019 (12,83 PLN/kg; 2,85 EUR/kg).

Based on interviews with supply chain players, we estimate that processing cost & margins amounted to minimum 3,50 PLN per 1 kg (0,78 EUR/kg) of product during gutting operation or 6,30 PLN per 1 kg (1,40 EUR/kg) of product during gutting & packaging operation. The main cost factors are labour and packing materials. Processor's margin is estimated between 2 and 5%. The cost of packaging materials amounts to between 1,80 and 2,20 PLN per 1 kg (0,40-0,49 EUR/kg) of final product, depending on package type. Logistic costs are estimated at 1,00 PLN per 1 kg (with the proviso that there are companies with a lower level for these costs) (0,22 EUR/kg); this covers transport between fish farm to processing site and from processing site to the final point of sale. Additionally, loss of material during gutting (16% of raw material) should be added.

Comparison of ex-factory prices and retail prices suggests that the margins in retail amounts to 17% for standard price (price with no extra-discount). However, some processors and farmers believe it may

[31] Exchange rate of 1 EUR = 4.5067 PLN has been applied (quarterly average rate, announced by the Polish National Bank for Q42020).

be up to 20% in some cases. For new suppliers and new product type (new species, ready-to-eat products) margins in retail may be even more than 20%.

Furthermore, according to the opinion of supply chain actors 90% of product sold in retail is at "normal" (standard) price, while only 10% is sold at "hard promotion" prices (0% retailer margin). According to the opinion of chain actors, the lowest levels of product clearance (largest promotions) indicate exactly the purchase price of the product by the retailer from the supplier (processor).

Portion trout, gutted, chilled, packed (MAP) in the large-scale retailer

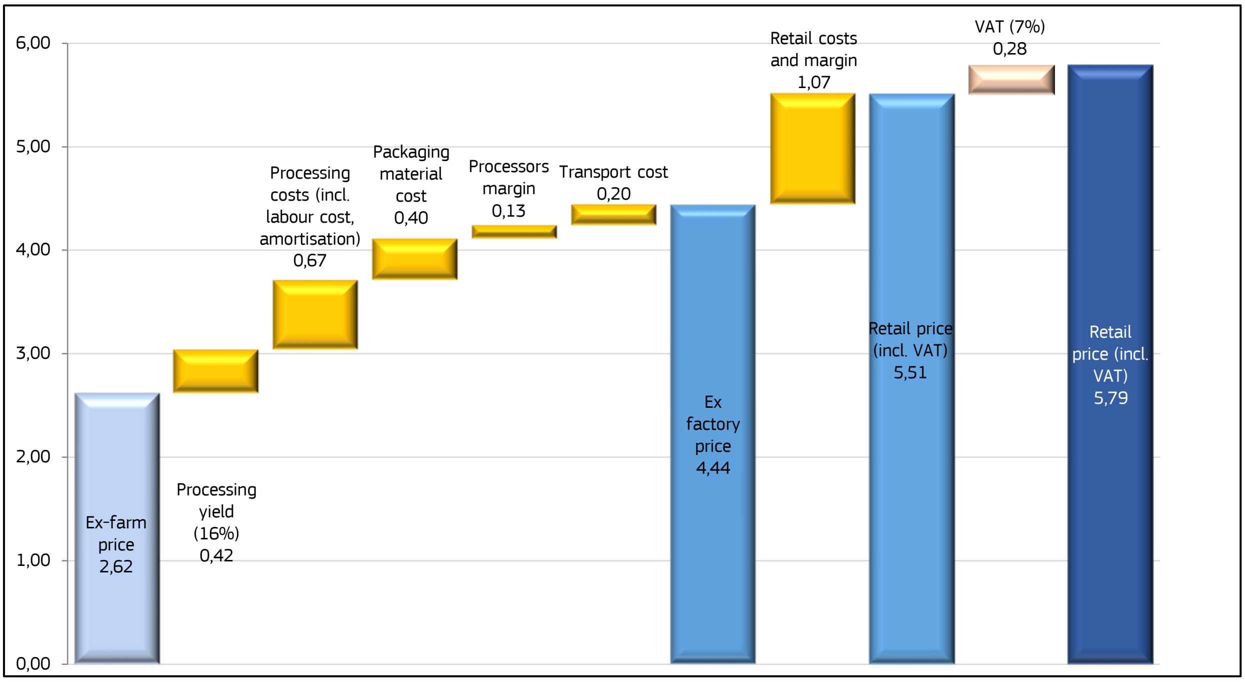
The ex-farm price is 2,62 EUR/kg, it accounts for 45% of the retail price (5,79 EUR/kg).

Table 41: Costs and margins for portion trout in Poland, gutted chilled packed, large-scale retail chain (EUR/kg, 2020)

	Average	% final price	Data sources
Ex-farm price	**2,62**	**45%**	Processors and producer organisations interview
Processing yield (16%)	0,42	7%	
Processing costs (incl. labour cost, amortisation)	0,67	12%	
Packaging material cost	0,40	7%	
Processors margin	0,13	2%	
Transport cost	0,20	3%	
Ex factory price	**4,44**	**77%**	Processors interview
Retail costs and margin	1,07	18%	Calculated
Retail price (incl. VAT)	**5,51**	**95%**	Calculated
VAT (7%)	0,28	5%	Calculated
Retail price (incl. VAT)	**5,79**	**100%**	Statistics

Source: EUMOFA own elaboration

Figure 30: Costs and margins for portion trout in Poland, gutted chilled packed, large-scale retail chain (EUR/kg, 2020)



Source: EUMOFA

Portion trout, gutted, chilled (on ice), loose, in traditional retail (fish shops)

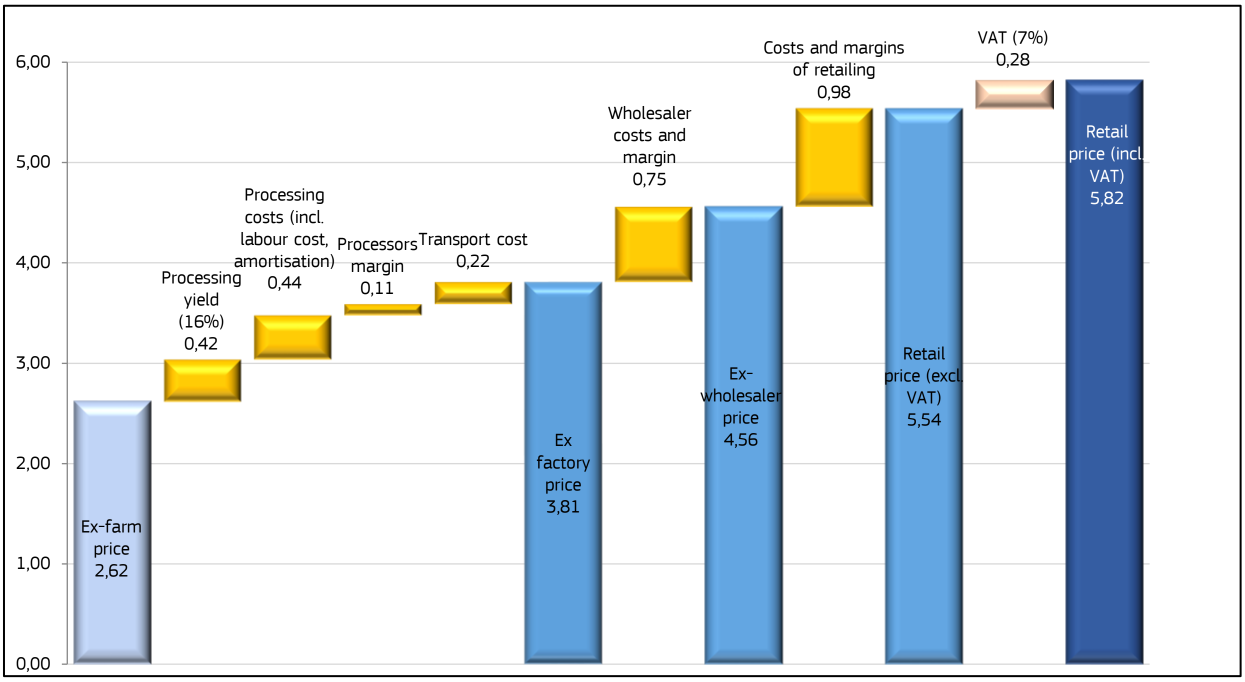
The ex-farm price is 2,62 EUR/kg, it accounts for 45% of the retail price (5,82 EUR/kg).

Table 42: Costs and margins for portion trout in Poland, gutted chilled unpacked, traditional trade (EUR/kg, 2020)

Portion rainbow trout gutted chilled, traditional trade (Poland 4Q2020)	EUR/kg	% retail price	Data sources
Raw material (ex-farm price)	**2,62**	**45%**	Processors and producer organisations interview
Processing losses on raw material (16% of live weight)	0,42	7%	
Processing costs, incl. labour cost, amortisation	0,44	8%	
Processors margin	0,11	2%	
Transport cost	0,22	4%	
Ex factory price	**3,81**	**66%**	Processors interview
Costs and margins of wholesaler	0,75	13%	Calculated
Wholesaler price, without VAT	**4,56**	**78%**	Statistics
Costs and margins of retailing	0,98	17%	Calculated
Retail price (excl. VAT)	**5,54**	**95%**	Calculated
VAT (7%)	0,28	5%	Calculated
Retail price (incl. VAT)	**5,82**	**100%**	Statistics

Source: EUMOFA own elaboration

Figure 31: Costs and margins for portion trout in Poland, gutted chilled unpacked, traditional trade (EUR/kg, 2020)



Source: EUMOFA

6 Comparison of the price transmission in the different MS

This section provides a comparison of the price structure for portion trout in Germany, Italy and Poland.

The ex-farm price differs depending on the MS and the type of product:

- White / pink trout,
- Size,
- Live or fresh,
- Gutted or not gutted.

In the examples considered in the price transmission analysis, the first sale price ranges from 2,62 EUR/kg in Poland to 3,90 EUR/kg in Germany.

The final price to consumer depends on the presentation (packed or loose) and the sales channels. In the present examples, the sales channel considered are large-scale retail (Poland and Italy), traditional shop (Poland) and farmer shop (Germany). The final price ranges from 5,72 EUR/kg (Poland) to 10,40 EUR/kg in Germany. The products are packed in large-scale retail in Poland and are loose in Germany, Italy and in traditional trade in Poland.

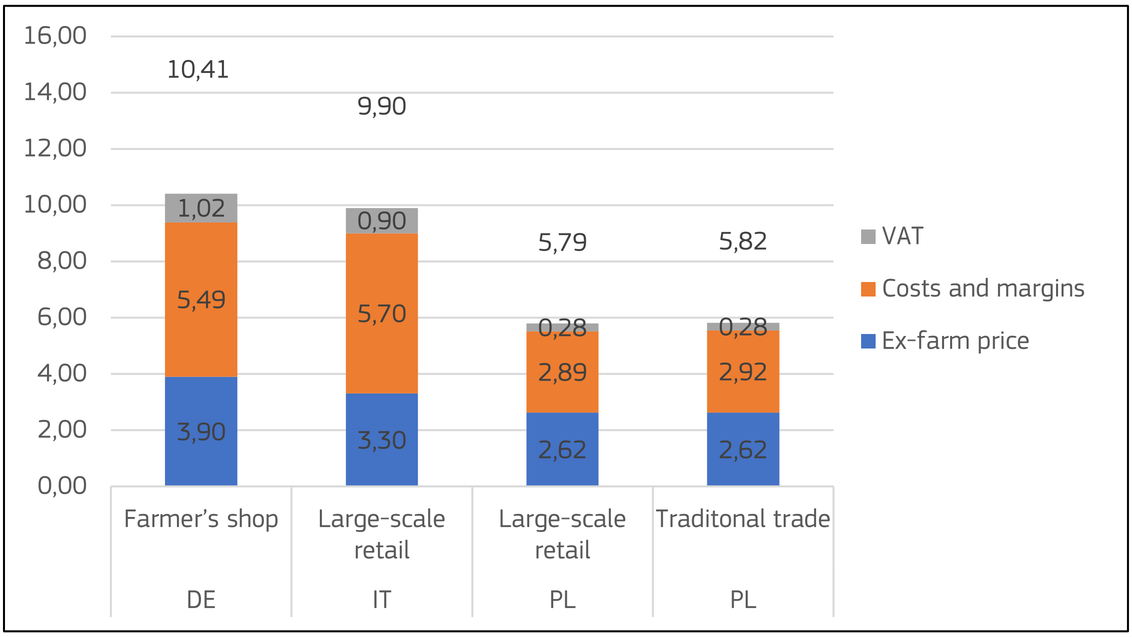
The share of fish price in the final price is the highest in Poland with 45% and the lowest in Italy with 33%, it is 38% in Germany.

Table 43: Comparison of the price transmission in Germany, Italy and Poland for portion trout

	DE Farmer's shop (loose)	IT Large-scale retail (loose)	PL Large-scale retail (packed)	PL Traditional trade (loose)
Ex-farm price	3,90	3,30	2,62	2,62
Costs and margins	5,49	5,70	2,89	2,92
Retailer (excl VAT)	9,39	9,00	5,51	5,54
Retailer (incl. VAT)	10,40	9,90	5,79	5,82

Source: EUMOFA

Figure 32 Comparison of the price transmission in Germany, Italy and Poland for portion trout (EUR/kg)



Source: EUMOFA

Stakeholders interviewed

- Germany
  - Trout farmers
  - VDBA – Verband der Deutschen Binnenfischerei und Aquakultur
  - Institut für Binnenfischerei e.V. Potsdam-Sacrow
- Italy
  - Associazione piscicoltori italiani (API)
- Poland
  - Processors
  - Polish Trout Breeders Association - Producer Organisation
  - Inland Fisheries Institute
  - Institute of Agricultural and Food Economics
  - Polish Carp Producer Organisation

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