E-yearbook of Food and Natural Resource Statistics for 2020

Statistical facts on agriculture, forestry, fisheries and hunting in Finland

https://stat.luke.fi/en/

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Luke
NATURAL RESOURCES INSTITUTE FINLAND

Dear reader

The Natural Resources Institute Finland (Luke) produces the majority of statistics concerning the Finnish agriculture and food processing industry, the forest sector, and the fisheries industry. The E-yearbook of Food and Natural Resource Statistics presents key figures for the 2019 statistical year.

This and previous e-yearbooks are available on Luke's statistics portal at stat.luke.fi/en/. The online service and the statistical database provide users with access to up-to-date background data and statistics. A printed version can be ordered via Luke's online shop.

Without the reporting enterprises and their data, it would not be possible to compile the statistics. The statistics and data used in the e-yearbook are produced as a joint effort of the entire staff of Luke's statistical services, and a large number of other experts from different fields have also participated in the compilation of this publication.

I would like to thank everyone who reported data to Luke or otherwise contributed to this publication. We happily welcome feedback and ideas for developing the statistics and the e-yearbook.

Helsinki, December 2020

Elina Tamminen, Acting Director of Statistics, Luke

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Agricultural statistics

Photo: Tiina Sauvula-Seppälä

Agricultural statistics for 2019

The number of agricultural and horticultural enterprises is decreasing steadily

There was a total of 46,800 agricultural and horticultural enterprises in Finland in 2019. The number of farms decreased by approximately 800 farms compared with the previous year. The average arable area on farms was 49 hectares. The number of large farms of more than 100 hectares increased, while that of farms of less than 100 hectares either decreased or remained unchanged. Just under 70% of farms have crop production as their primary production line, and 26% of farms are classified as livestock farms.

This was the fourth year in a row when the milk production volume decreased.

Milk production amounted to 2,305 million litres, 1% less than in the previous year. This was the fourth year in a row when the production volume decreased. In 2019, the number of milk producers decreased by 470 farms. Egg production amounted to just under 76 million kg, the highest amount since 1990.

Meat production increased from the previous year

Meat production amounted to approximately 400 million kg, almost 2% more than in 2018. Both the production of beef and pork increased by 1% from the previous year, while the production of poultry meat increased by 3%. Beef production totalled 88 million kg and pork production 177 million kg. Sheep meat production decreased slightly from the previous year. Poultry meat production, which has increased for ten years in a row, totalled 139 million kg.

Cereals accounted for just under half the total utilised agricultural area

In 2019, the total utilised agricultural area in Finland amounted to 2,273,800 hectares. Of this, cereals accounted for nearly half (more than a million hectares) and feed grass more than a third. Of special crops, the cultivated area for caraway was 24,000 hectares, while the cultivated area for potatoes amounted to 22,000 hectares, and 17,700 hectares for broad beans. The cultivation area of turnip rape and rape decreased significantly, by more than 20,000 hectares.

Cereal harvest improved after two poor years

In autumn 2019, cereal harvest increased by as much as 46% from the previous year. Of the total cereal harvest of 4 billion kg, barley accounted for 1.7 billion kg, oats 1.2 billion kg, wheat 900 million kg, and rye 180 million kg. The rye harvest was the highest in 30 years, and at the current rye consumption level, the harvest covers demand for nearly two years. The pea harvest was a record high, 34 million kg.

Warm summer accelerated outdoor horticultural production

Outdoor vegetable production was higher than in the previous year at 189 million kg. Carrots were the biggest crop, totalling 77 million kg. The outdoor berry harvest increased to 21 million kg. Of this, strawberries accounted for 18 million kg, which was around 3 million kg more than in 2018. The apple harvest was the highest ever recorded, at 8 million kg. Greenhouse vegetable production totalled 95 million kg, of which cucumbers accounted for 48 million kg and tomatoes 40 million kg.

Use of oats in the food industry increasing

Finnish industry consumed a total of 1.3 billion kg of domestic and imported cereals. The feed industry consumed 40% of all cereals, and the food industry a third. The rest of the cereal was consumed by other industrial sectors (e.g., for malting and the production of ethanol and starch). Barley consumption was the highest, at 555 million kg. The industrial use of barley and oats increased from the previous year.

No significant changes in producer prices

The average producer prices of all types of cereals decreased at the end of 2019 as the autumn harvest became available on the market. The price paid by slaughterhouses to producers for meat from bulls and for lamb meat was roughly the same as in the previous year. The price for pork increased by 4%, while the producer price for broiler meat increased by 3%. Producer prices for milk increased slightly from the previous year. The average producer price for class A eggs increased by 2% from the previous year. The production method of eggs has a significant impact on the producer price.

Exports picked up for a number of product groups

EU Member States account for 75% of imports of agri-food products and 70% of exports. In terms of value, the largest exported product groups in 2019 were milk and dairy, other processed food, and alcohol, non-alcoholic beverages, sugar confectionery, and tobacco. Exports picked up for a number of product groups, and the total value of exports increased by around 13%. The value of exports increased especially for cereals and cereal products, milk and dairy products, and processed foods.

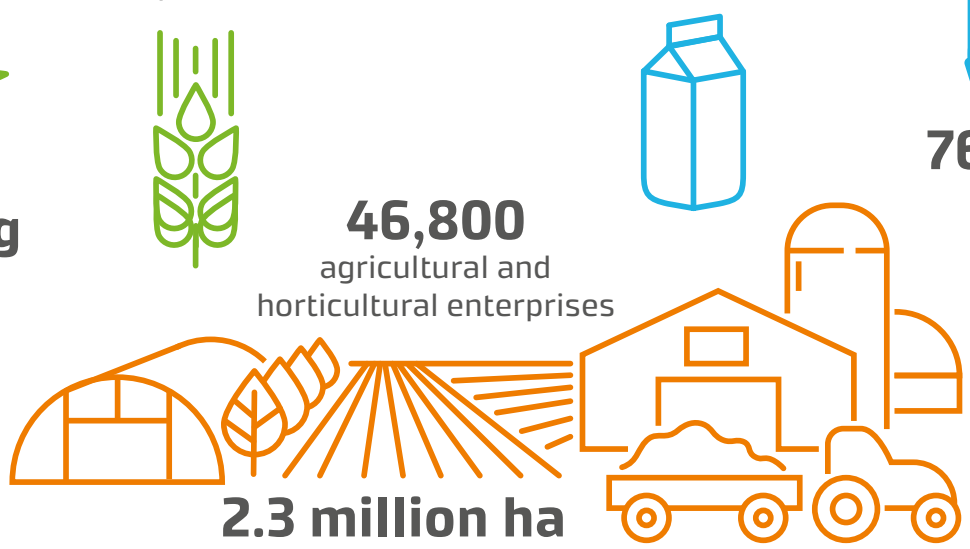
Profitability of agriculture and horticulture improved slightly

The profitability of agriculture and horticulture improved slightly in 2018. The average profitability ratio for agricultural and horticultural farms was 0.42. The return on assets was negative by around 2%. There are significant differences between production lines. In 2018, greenhouse enterprises were the best performers and other crop production farms the weakest. The poor profitability of cereal farms clearly improved from the previous year.

Oats consumption increased from the previous year

In 2019, Finns consumed on average 81 kg of cereals, 80 kg of meat, 15 kg of fish and 148 kg of liquid milk products per capita. Compared with the previous year, the consumption of oats increased, and with it the consumption of cereals, but the consumption of meat and milk decreased. The consumption of liquid milk products decreased by around 4%.

Key figures of Finnish agricultural production in 2019



3.9 billion kg
cereal production

2.3 billion l
milk production

76 billion kg
egg production

308 million. kg
vegetable, berry and fruit production

46,800
agricultural and horticultural enterprises

3.9 million
laying hens

2.3 million ha
of utilised agricultural area

102 million
potted vegetables

400 million kg
meat production

1.1 million
pigs

0.9 million
bovine animals

9.0 million
broiler chikens

Structure of agriculture

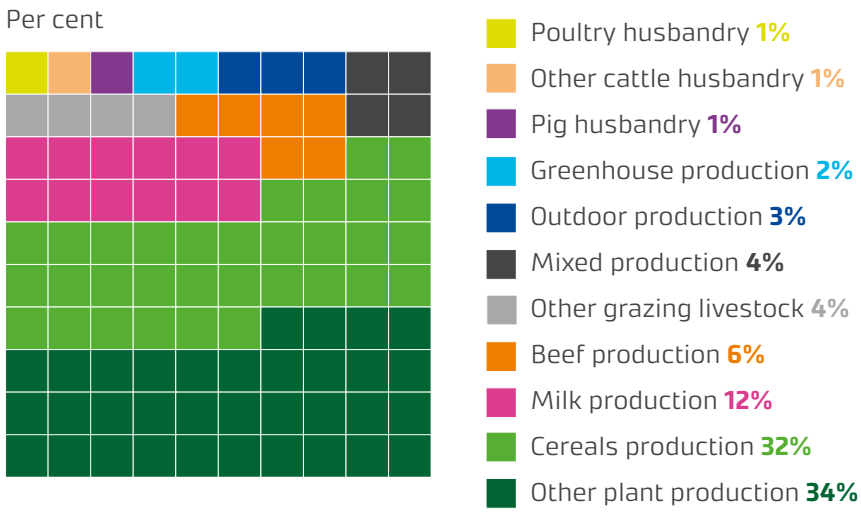
In 2019, there were just under 47,000 agricultural and horticultural enterprises in Finland. This means that the number of farms has decreased while the average size of the remaining farms has increased. The number of large farms of more than 100 hectares increased, while that of farms of less than 100 hectares either decreased or remained unchanged in all field size categories. Just under 70% of farms have crop production as their primary production line, and 26% of farms are classified as livestock farms. The other Finnish farms are mixed farms with no clear primary production line.

The number of dairy farms decreasing

In 2019, there was a total of 46,827 agricultural and horticultural enterprises. The number of farms decreased by approximately 800 compared with the previous year. The fields of farmers ceasing their operations are being sold to the remaining farms, increasing their size. In 2019, the average farm size was 49 hectares.

Other plant production was the most common production line, followed by cereal production. The third most common production sector was milk production. In 2019, it was the primary production line on some 5,700 farms. Compared to the previous year, the number of dairy farms decreased by approximately 500. Livestock production was the primary production line on 12,000 farms in 2019.

Number of agricultural and horticultural enterprises by production sector, 2019



Half of all farms have less than 31 hectares of arable land

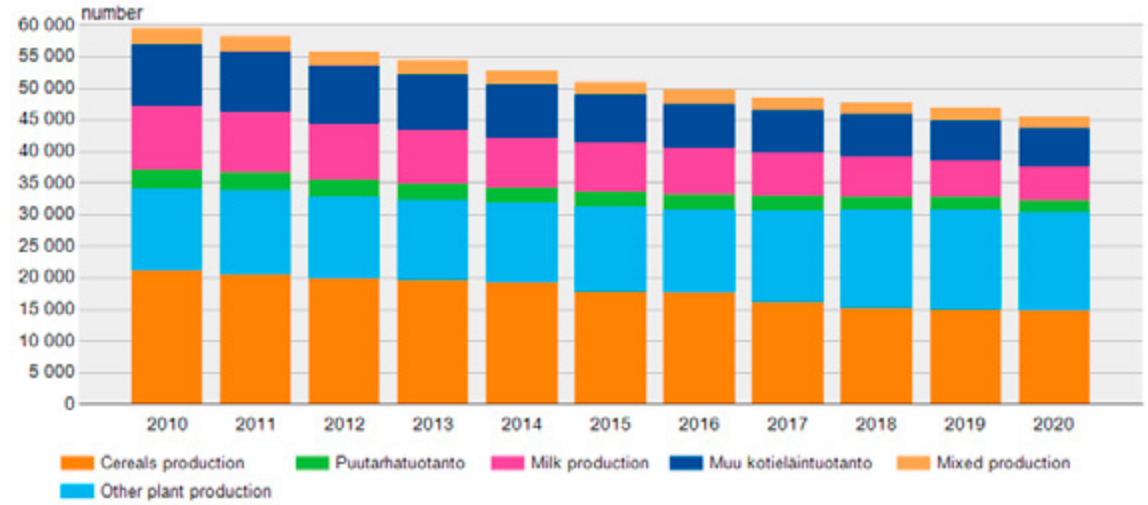
In 2019, agricultural and horticultural enterprises had an average of 49 hectares of arable land. The farm size increases by around one hectare each year. Most farms are in the size class of 25-50 hectares. The median size of arable land was 31 hectares in the whole of Finland, which means that half of all farms had less than 31 hectares of arable land and half had more than 31 hectares. Regional variation was also high in terms of the median size. The median was the highest in the regions of Southwest Finland and North Ostrobothnia ELY Centres at 39 hectares, while it was the lowest (18 hectares) in the South Savo ELY Centre region.

Farmers on poultry and pig farms are the youngest

The average age of farmers was 53 in 2019. Poultry farmers were the youngest, at an average age of 47. On pig farms, the average age of farmers was 48. The average age was the highest (55 years) among farmers whose primary production line was other crop production. Around 30% of farmers were over 60 years old, and only 16% of farmers were under 40.

Number of agricultural and horticultural enterprises by production sector 2010–2020

Background data as a table



Number of agricultural and horticultural enterprises by utilized agricultural area 2019

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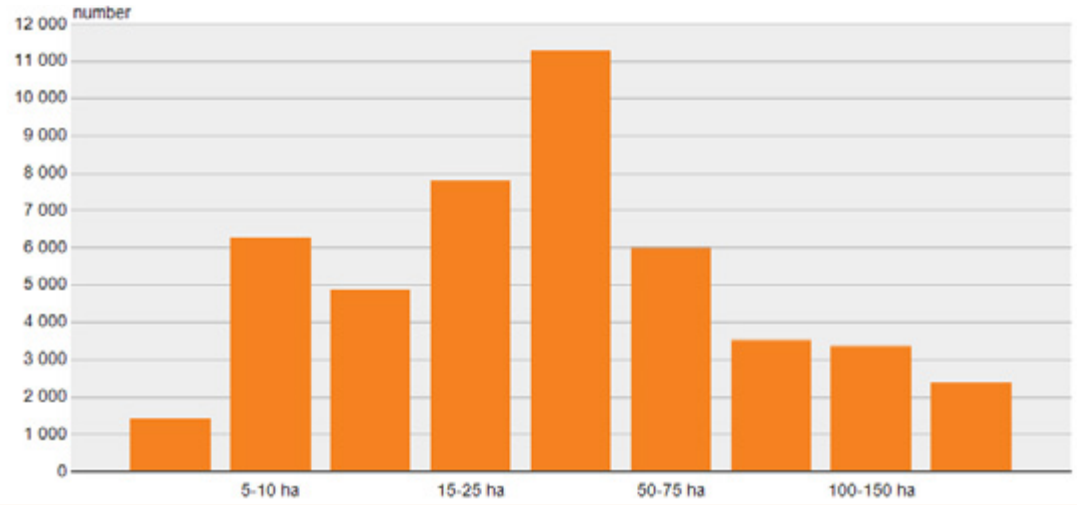


Structure of agricultural and horticultural enterprises

Agricultural and horticultural labour force

The latest statistics for the agricultural and horticultural labour force were compiled in 2016. This data will next be collected in connection with the 2020 agricultural survey.

In 2016, around 120,000 people worked in agriculture and horticulture, of whom roughly 33,000 were employed in short-term employment relationships. The number of family farmers and shareholders of group holdings accounted for around 47,000 of the total labour force.

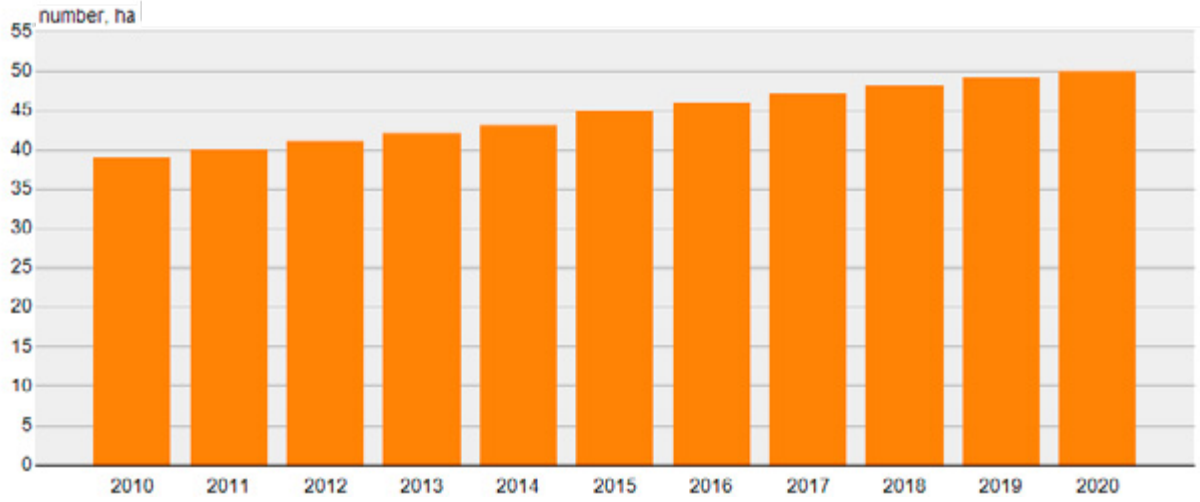
Most work was carried out by farmers

More than 60,000 person-years were recorded in agriculture and horticulture in 2016. Significantly more than half of this work was carried out by family farmers and shareholders of group holdings, who recorded a total of 34,000 person-years. Family members comprised the second-largest group in the entire agriculture and horticulture labour force. They worked for roughly 14,000 person-years. Hired labour accounted for approximately 8,500 person-years. The workload of the short-term temporary labour force amounted to 5,000 person-years - higher than that of permanent employees. Horticultural farms in particular employ a lot of short-term seasonal labour. The annual workload in agriculture and horticulture has decreased by 16% since 2013. Data on agricultural and horticultural labour force will next be collected in connection with the 2020 agricultural survey.

Agricultural and horticultural labour force

Average utilised agricultural area of agricultural and horticultural enterprises 2010–2020

Background data as a table



Number of farmers by age groups on privately owned farms 2019

Background data as a table

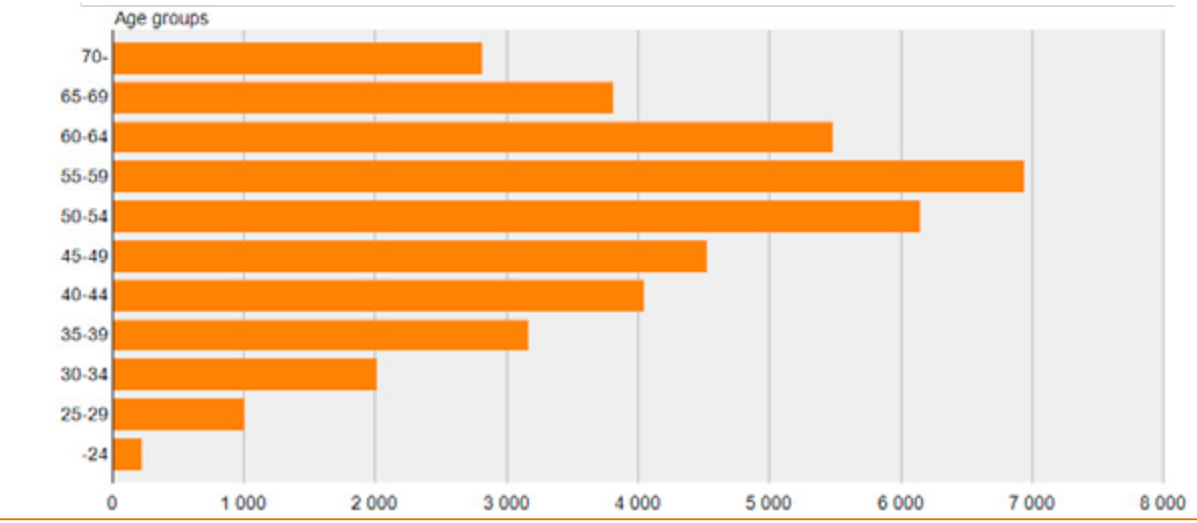
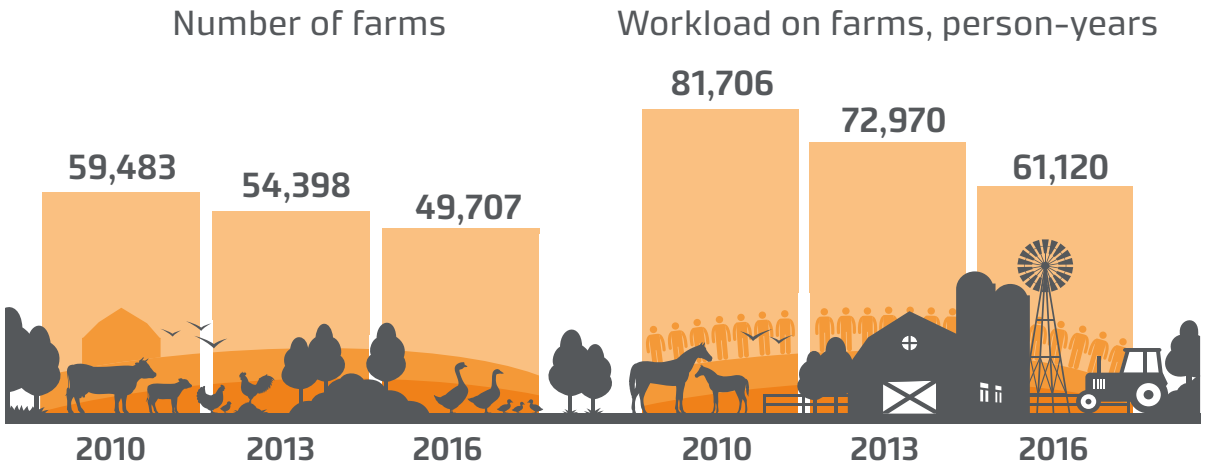


Photo: Erkki Oksanen / Luke

Agriculture and horticulture work carried out on farms



Number of diversified agricultural and horticultural enterprises 2010–2016

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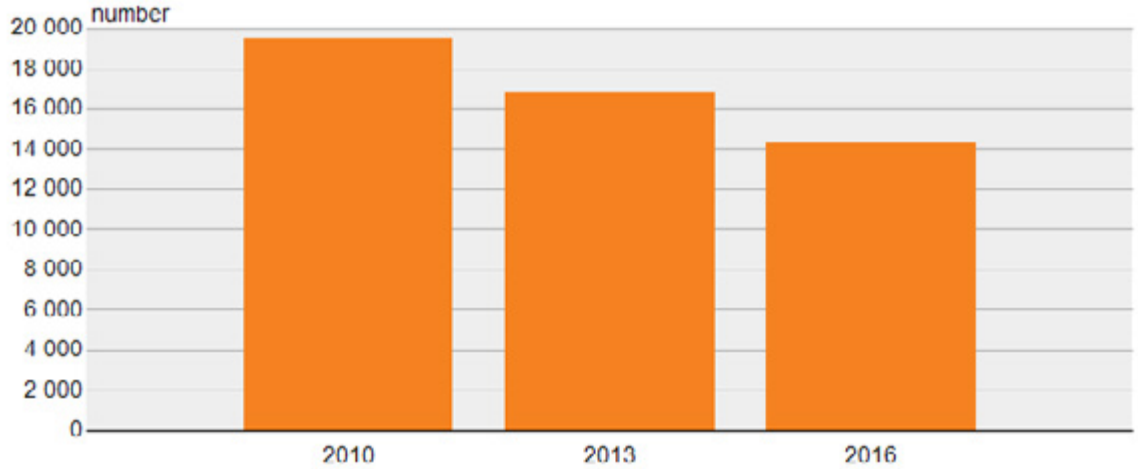

Other entrepreneurship

Approximately 14,300 farms (30% of all farms) were engaged in other business activities in addition to agriculture and horticulture in 2016. Contracting was the most common form of other business activities, with roughly 7,100 farms engaged in contracting. Other business activities employed approximately 23,000 people. Fresh information about other business activities will next be collected in connection with the 2020 agricultural survey.

Other entrepreneurship in agriculture and horticulture

Photo: Anna-Kaisa Jaakkonen

Livestock production

In 2019, meat production amounted to approximately 400 million kg, almost 2% more than in the previous year. Production of beef, pork and poultry meat increased, while production of sheep meat decreased. Overall milk production continued to fall, but organic milk production continued to grow. Egg production also increased for the seventh year in succession.

This was the fourth year in a row when the milk production volume decreased.

In 2019, milk production totalled 2,305 million litres, 1% less than in the previous year. This was the fourth year in a row when the production volume decreased. The volume of milk supplied to dairies was 2,262 million litres.

Organic milk production continued to grow. Organic milk production amounted to 74 million litres, 7% more than in the previous year. The proportion of organic milk was just over 3% of total milk production.

In 2019, the number of dairy farms decreased by roughly 470 farms, with the total number of farms being 5,780 at the end of the year. The number of organic dairy farms was 142.

Similarly, the number of dairy cows decreased to less than 259,000 in December, down by 2% from the previous year. The average yield continued to grow, and the average cow produced around 8,800 litres of milk in a year.

The largest milk-producing municipality was Kuopio

Milk production decreased in the regions of nearly all ELY Centres. However, production increased slightly in South Ostrobothnia, Ostrobothnia, and Kainuu. A total of 55% of the milk was produced in North Savo and in the regions of the three ELY Centres in Ostrobothnia.

As in the previous year, the largest milk producing municipality was Kuopio (73 million litres). The next biggest milk producers were Kiuruvesi, Kurikka, and Kokkola.

Production of fresh dairy products and cheeses fell, while butter production increased

The total volume of milk supplied to dairies in 2019 amounted to 2,262 million litres. Milk was used to make fresh dairy products, cheeses, butter and powders, for example. Some of the milk produced is consumed by manufacturers outside the dairy industry, such as ice cream and chocolate manufacturers.

Production of fresh dairy products has decreased, partly as a result of the decrease in milk consumption in recent years. In 2019, production of milk, cream, sour milk and

Milk production 1960–2020

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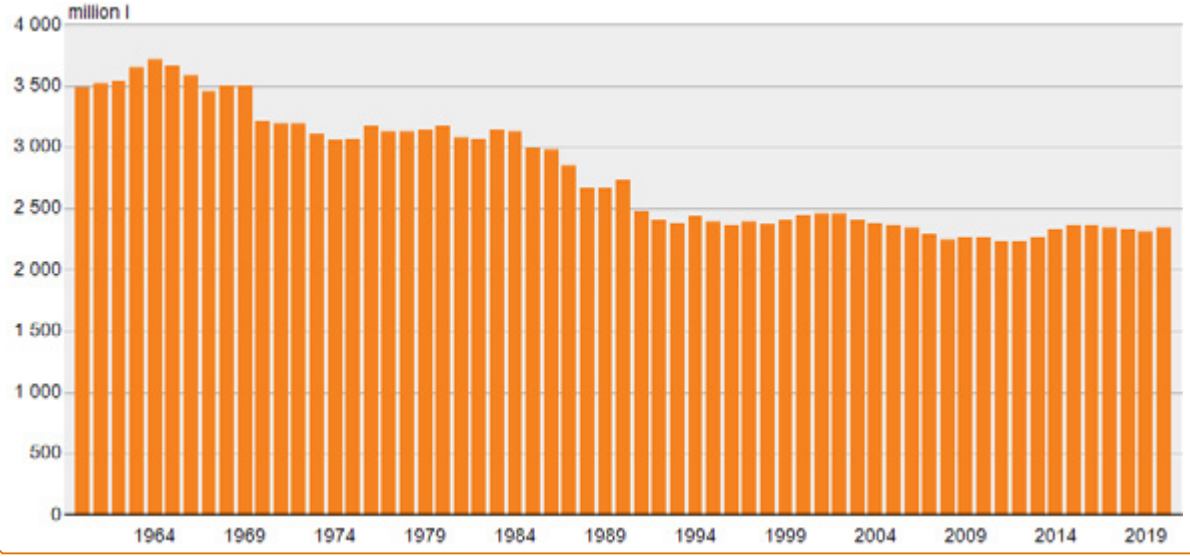

Production of milk products 1990–2020

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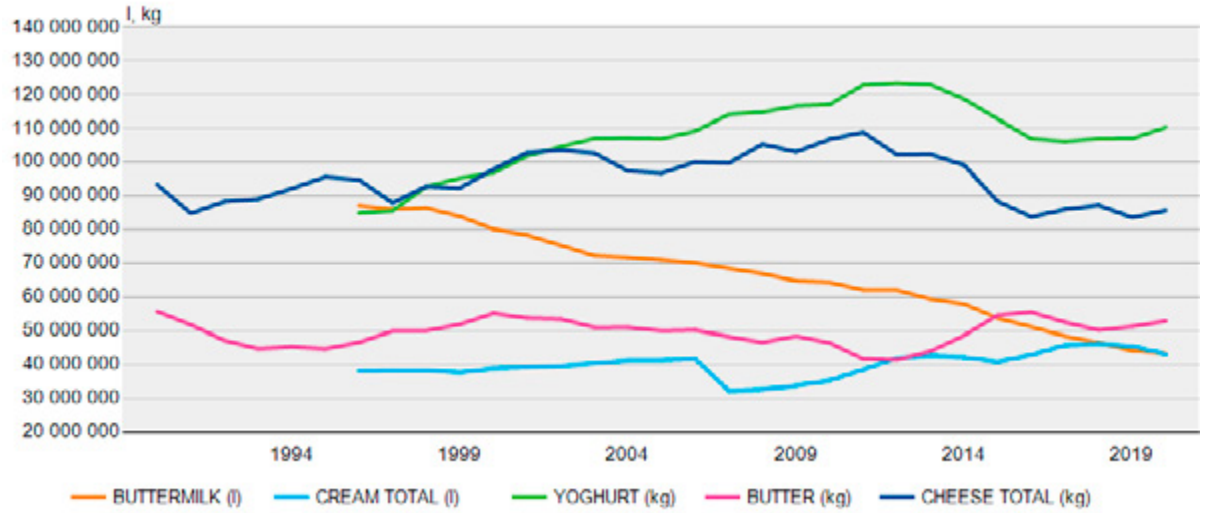

Total beef, pork and poultrymeat production 1960–2020

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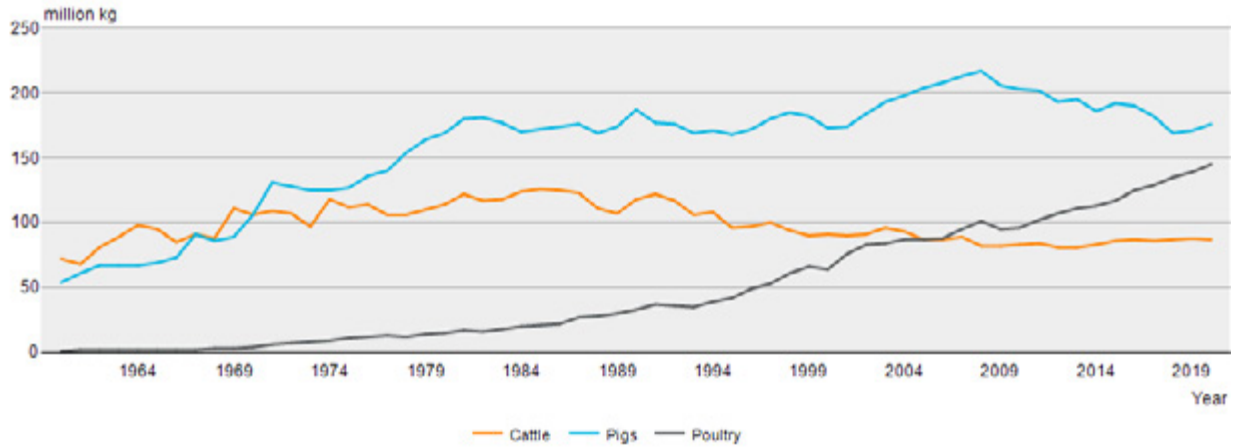

viili (a type of curdled milk) decreased, while the production volume of yoghurts remained almost unchanged.

Cheese production increased by 4% compared with the previous year and was around 84 million kg. Butter production grew by 2%, amounting to just over 51 million kg.

Milk and milk product statistics

Meat production increased

In 2019, meat production amounted to 400 million kg, just under 2% more than in 2018. Both the production of beef and pork increased by 1% from the previous year, while the production of poultry meat increased by 3%. However, sheep meat production decreased from the previous year.

Beef production slightly increased from the previous year

Beef production increased by 1% to just under 88 million kg. The production volume of beef last exceeded the 2019 figure in 2007. The average slaughter weight of bulls increased by 8 kg and that of heifers by 9 kg from the previous year. However, the slaughter volume of cows decreased from the previous year apart from the slaughter volume of heifers which increased slightly.

Domestic beef production is largely based on dairy cows, which means that the decline in the number of dairy cows has also decreased the volume of beef production. An increase in the number of suckler cows and in slaughter weights has slowed down the decline in beef production volumes.

Beef production by ELY centre 2018 and 2019

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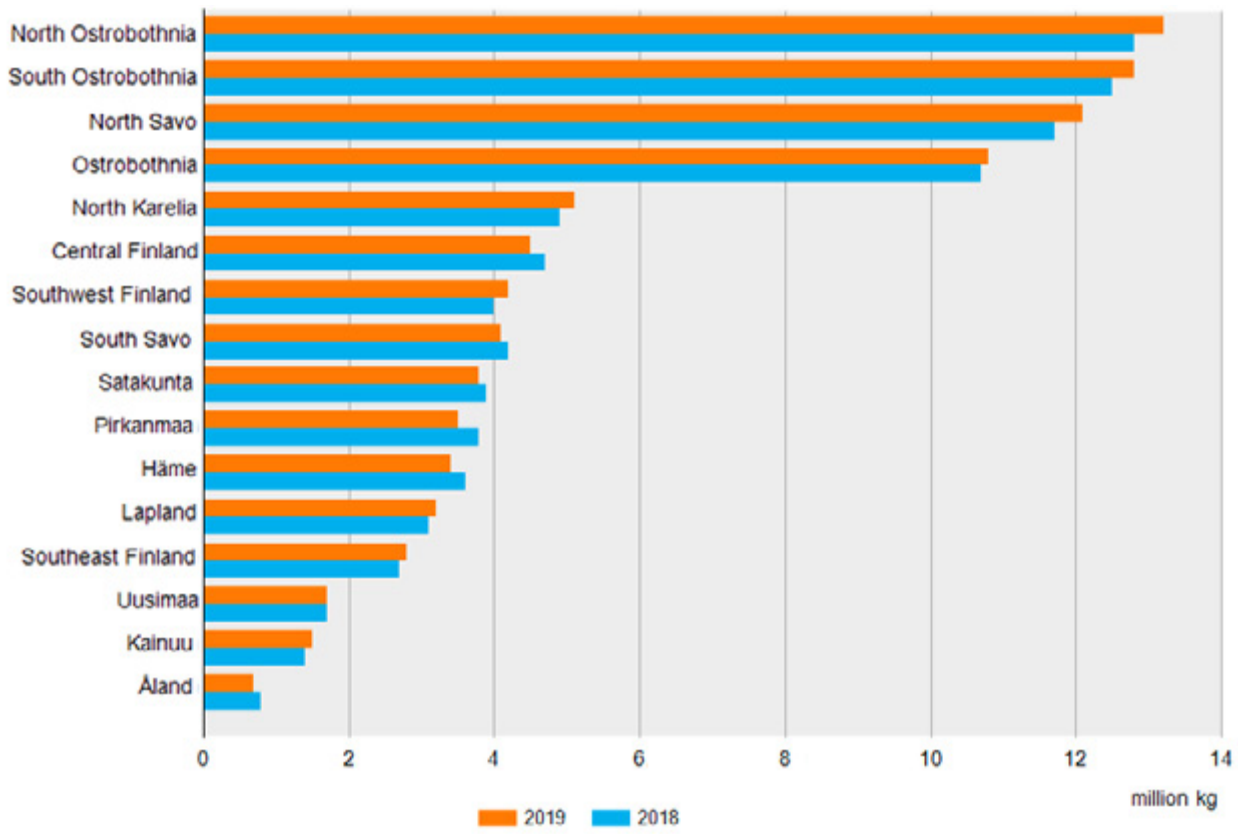


Beef production increased slightly in the regions of several ELY Centres. The biggest beef producers were North Ostrobothnia (13.2 million kg), South Ostrobothnia (12.8 million kg), and North Savo (12.1 million kg). As in the previous year, the largest beef production municipalities were Kiuruvesi, Kuopio, and Kurikka.

Pork production was the highest in Southwest Finland and Ostrobothnia

Pork production amounted to just over 171 million kg, 1% more than in 2018. More pigs were slaughtered than in the previous year, and the average carcass weight of pigs increased to just over 91 kg.

In 2019, there were around 950 pig farms. The number of farms decreased by 6% over the course of the year.

Pork production is the highest in the regions of the ELY Centres for Southwest Finland, South Ostrobothnia, and Ostrobothnia. Combined, these regions account for some 60% of the total production. The biggest pork producers were the municipalities of Huittinen, Loimaa, and Uusikaarlepyy, which all had more than 10 million kg of production.

Poultry meat production continued to grow

Production of poultry meat continued to increase in 2019 and was just over 139 million kg. The production volume of both broiler meat and turkey meat increased by 3% from the previous year. Production of poultry meat has been increasing constantly for the last decade, and last year the production volume was over 45% bigger than ten years ago.

Sheep meat production decreased from the previous year

Sheep meat production took a slight downward turn last year. Approximately 1.5 million kg of sheep meat was produced, which was just under 2% less than in 2018.

In 2019, the biggest sheep meat producers were South-west Finland (0.23 million kg), Ostrobothnia (0.15 million kg), and North Ostrobothnia (0.13 million kg).

Organic meat accounted for 1% of total meat production

In 2019, organic meat production amounted to 3.8 million kg, of which beef accounted for 70%. Production increased slightly, and organic meat accounted for around 1% of total meat production. The production volume includes the organic slaughter of cows, pigs, and sheep.

▶ Meat production

Egg production continued to grow

In 2019, egg production increased from the previous year to nearly 76 million kg. Production increased for the seventh year in succession. This includes eggs processed by packing plants.

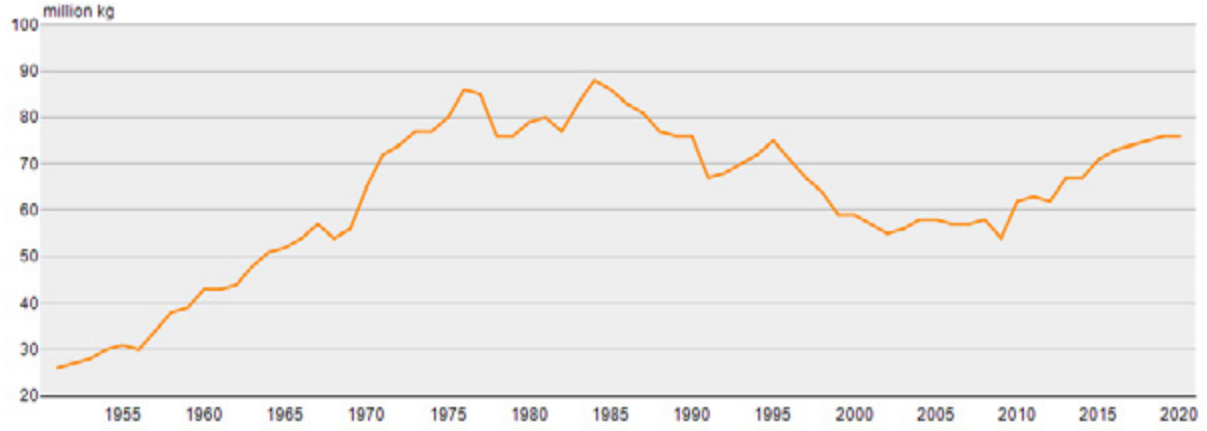
The volume of eggs produced in enriched cages and barn hen houses decreased, while that of eggs produced in free-range hen houses or organic poultry farms increased.

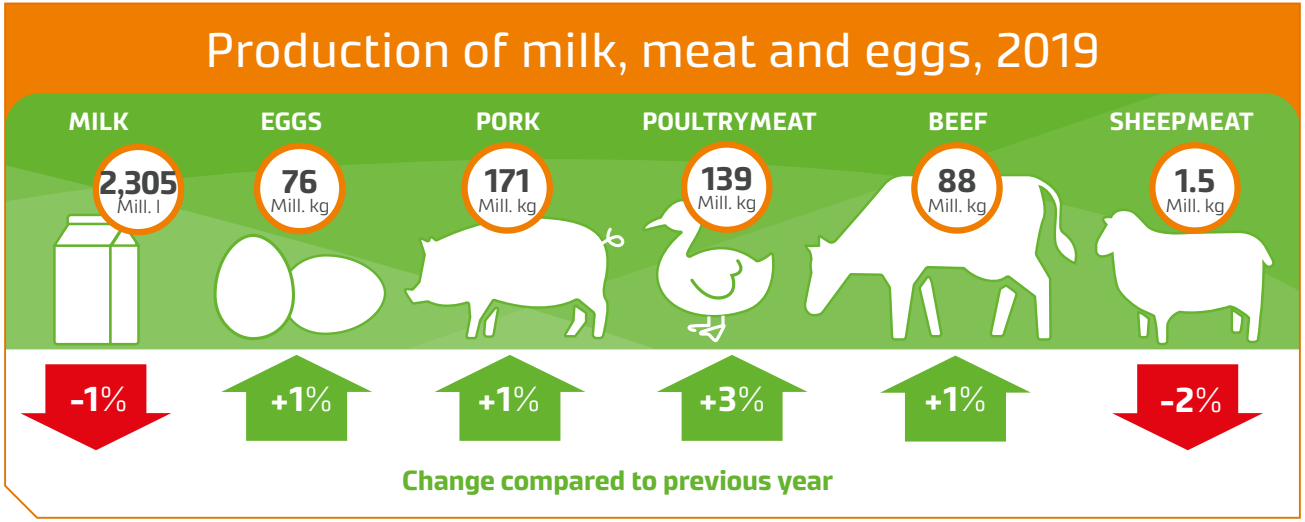
A total of 58% of eggs were produced in enriched cages, 32% in barn hen houses and 2% in free-range hen houses, while 8% came from organic poultry farms.

▶ Egg production

Total egg production 1951–2020

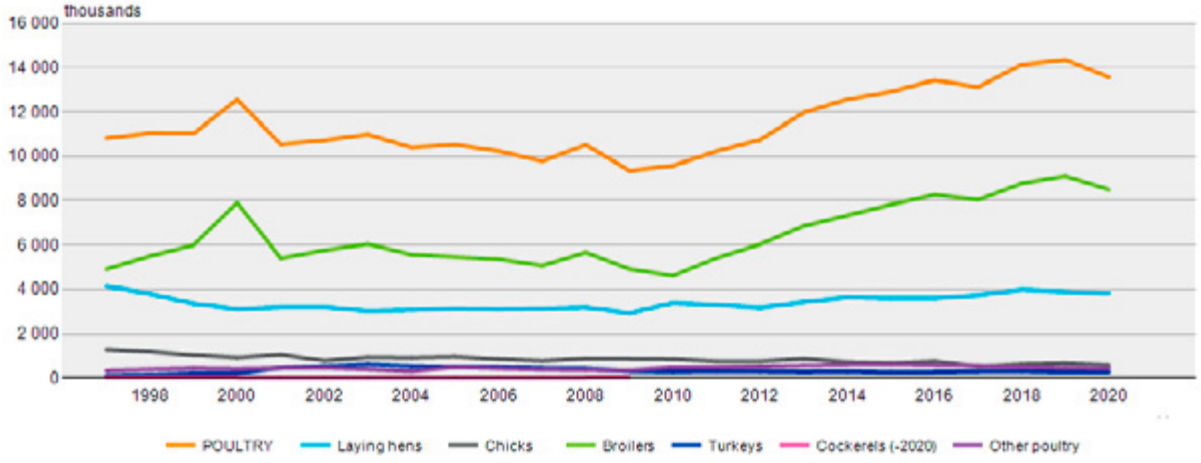
▶ Background data as a table





Number of poultry 1997–2020

Background data as a table



The number of suckler cows continued to increase

In the spring of 2019, the number of cattle on farms totalled 857,600, which was 3% less than a year earlier.

Dairy cows numbered 262,300, 3% less than in 2018. The number of cattle decreased in the regions of all ELY Centres. The average number of cows per farm was 41. A total of 457 farms had more than a hundred cows, while 14 farms had more than 300.

The number of suckler cows has increased almost throughout the 2000s. In 2019, the number of suckler cows grew slightly from the previous year to roughly 60,300. The highest growth rates were recorded in Ostrobothnia and Pirkanmaa.

The highest numbers of suckler cows were found in North Ostrobothnia, Pirkanmaa, and South Ostrobothnia.

The number of pigs decreased

In the spring of 2019, approximately 1.07 million pigs were kept on just under a thousand farms, which is slightly less than in the previous year. The number of sows was slightly under 82,000, 1% less than in the previous year. The number of pig farms has more than halved in ten years. Over the same period, the number of pigs has dropped by a fifth, and the number of sows by considerably more.

Nearly a third of all pigs (305,700 pigs) were kept on farms located in the region of the Southwest Finland ELY Centre. The next highest pig numbers were recorded in South Ostrobothnia (192,800 pigs) and Ostrobothnia (183,400 pigs).

The highest pig numbers were recorded in the municipalities of Huittinen, Loimaa, and Uusikaarlepyy.

Poultry numbers were the highest in Southwest Finland, South Ostrobothnia, and Satakunta

At the beginning of April, there were just over 14 million poultry on farms. Broilers accounted for just over 63%, chickens for 27%, and turkeys, broiler breeder hens, and other poultry for some 10% of the total. Poultry were kept on around 1,170 farms. The number includes all farms that have at least a few chickens. In other words, the total number also includes a large number of farms with only a few birds. Poultry production was the main production line on some 400 farms.

At the beginning of April, there were around nine million broilers on 145 farms. Overall, the number of broiler farms totalled around 190. The highest broiler numbers were recorded in South Ostrobothnia and Satakunta.

The number of chickens on farms totalled 3.9 million, of which more than 60% were in Southwest Finland. There were 130 farms with more than 10,000 chickens, and 13 farms with more than 50,000 chickens.

Sheep numbers in decline

The number of sheep decreased by 7% from the previous year, and at the beginning of May 2019, the number of sheep totalled 145,000. The number of ewes decreased by 3%. Sheep were kept on just over 1,300 farms.

There are sheep farms all over the country. The highest sheep numbers are found in Southwest Finland, Ostrobothnia and Lapland. The biggest sheep municipalities were Salo and Somero.

Number of livestock

Number of cattle, pigs and sheep 1920–2020

Background data as a table

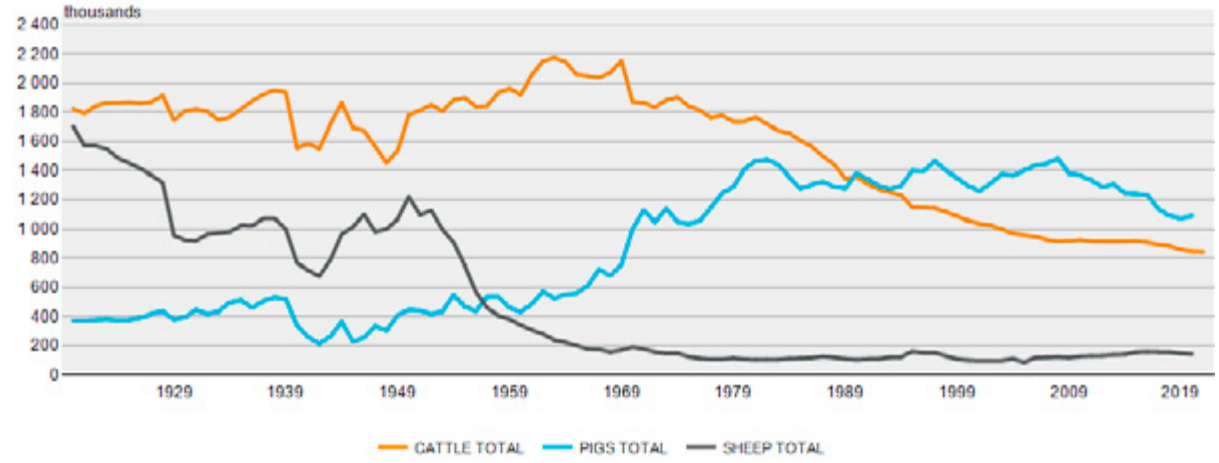


Photo: Anneli Nuoranne

Photo: Anne-Mari Velin

Arable crops

In 2019, the total utilised agricultural area in Finland amounted to around 2,273,800 hectares. There have been no major changes in the total area in recent decades. In the last 100 years, the biggest changes in the use of fields were mainly caused by changes in livestock production. The most visible change may be the five-fold increase in the cultivation area of barley over a period of five decades spanning from the 1940s to the 1990s.

Feed grass area has started to increase

The feed grass area has increased in four years by more than 100,000 hectares, and in 2019, a total of 720,000 hectares was accounted for by feed grass. While the feed grass area has grown, the barley, wheat and fallow areas have decreased.

After two poor years, the cereal harvest returned to the average level

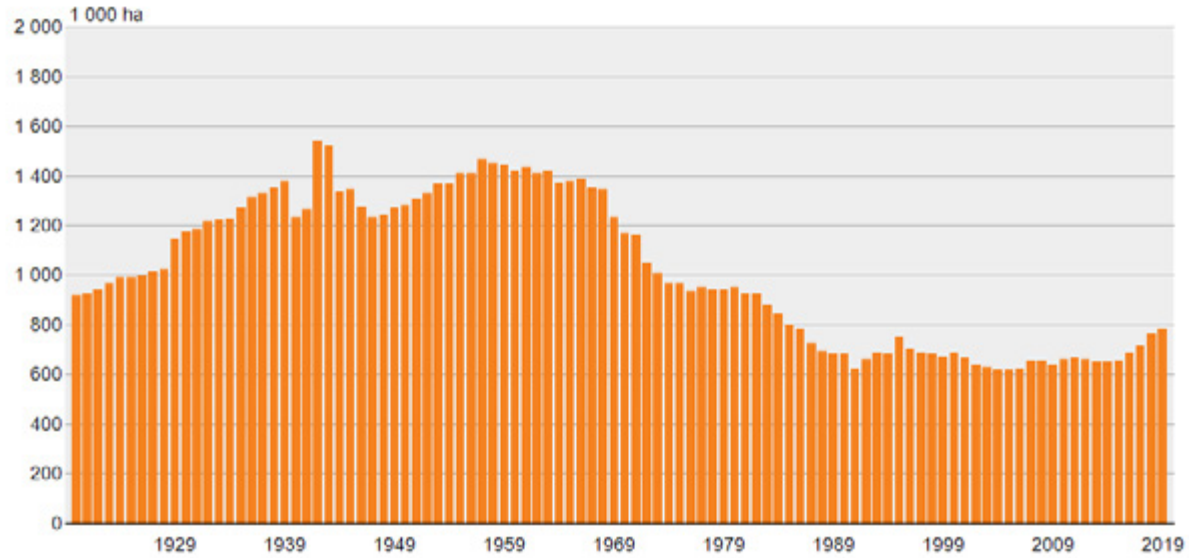
In 2019, the cereal harvest amounted to nearly 4 billion kg, of which barley accounted for 17 billion kg, oats for 1.2 billion kg, wheat for 900 million kg, and rye for 180 million kg. The cereal harvest increased by as much as 46% from 2018.

Rye harvest the highest in 30 years

Even though the rye harvest was the highest in three decades, it was less than half the record-high level in the 100-year history of statistics. The record year was 1937, when the rye harvest totalled 431 million kilogrammes. However, considering the current rye consumption level, the 2019 rye harvest can be considered large, as it covers demand for nearly two years.

Area of grasslands in Finland 1920–2019

Background data as a table



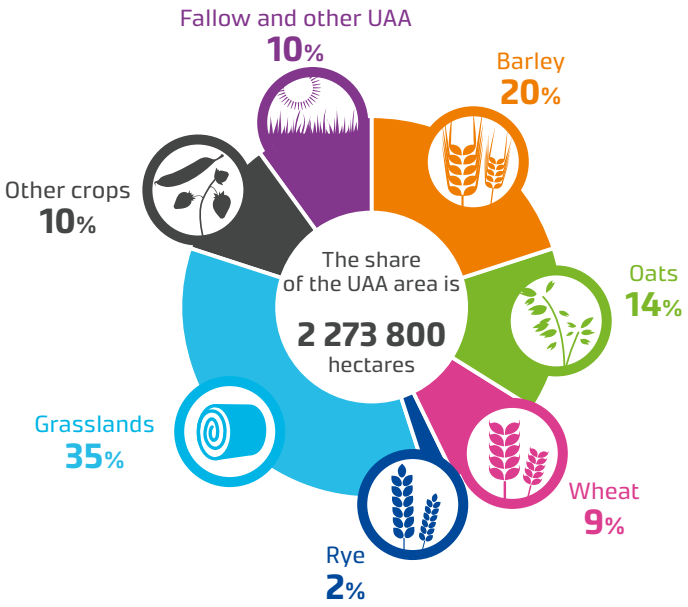
Pea harvest surpassed that of turnip rape

Major changes have taken place in the cultivation of special crops in recent years. The 2019 turnip rape and rape harvest was the smallest in more than 40 years. This resulted from a low yield per hectare in addition to the decrease in the cultivated area. Instead, the pea harvest was the highest ever recorded.

Of the total oat harvest, 6.5% were organically produced

The production of organic cereals increased by 66% from 2018. Of the total 2019 cereal harvest, 3.6%, or just under 150 million kg, was organic. Oats account for half of the organic cereal.

Utilized agricultural area in 2019



Grain harvest, 2019

mill. tons

Photo: Erkki Oksanen / Luke

Area under rye and barley in Finland 1920–2019

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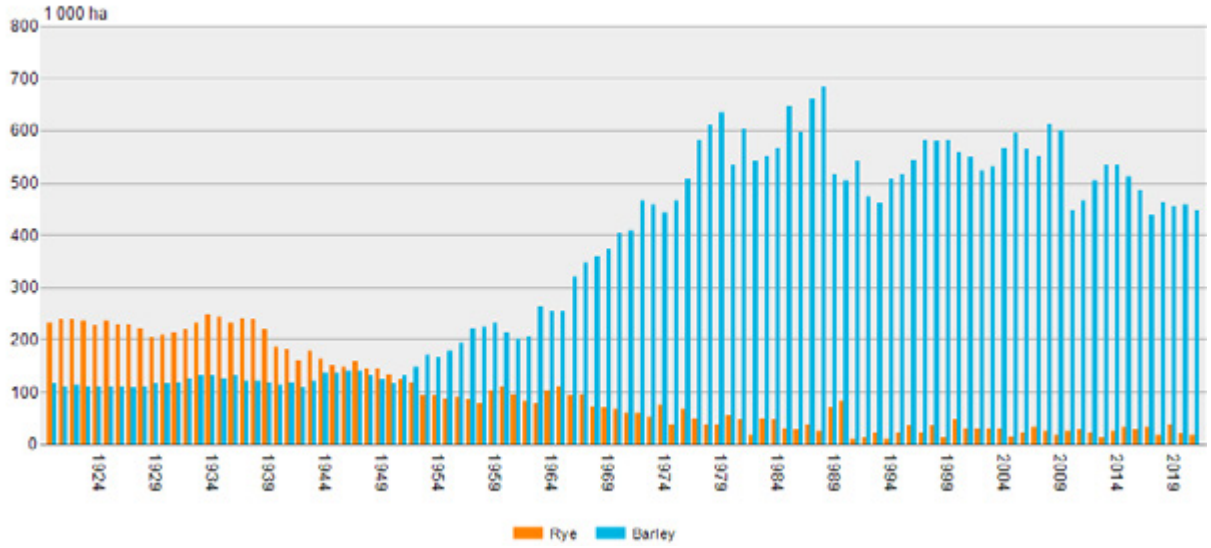


Crop yields for arable crops (million kg) approximately every 25 years

	Wheat	Rye	Barley	Oats	Potato	Turnip rape	Peas	Dry hay	Silage feed
1920	9	250	116	396	558		9	1,511	
1945	165	156	151	331	780		12	2,335	227
1970	409	131	933	1,330	1,136	10	3	3,120	928
1995	380	58	1,764	1,097	798	126	11	1,086	5,633
2019	902	183	1,682	1,170	619	18	34	413	9,293

Photo: Erkki Oksanen / Luke

Crop production statistics

Utilised agricultural area

Horticultural production

In 2019, there were 3,348 horticultural enterprises in Finland. Of these, 2,705 farms were engaged in outdoor production and 887 farms in greenhouse production. Some farms were engaged in both outdoor and greenhouse production. The distribution of horticultural farms between outdoor and greenhouse production is unclear, because horticultural farms often have other production alongside their main production line.

In 2019, the area of outdoor vegetable, berry and fruit production was around 19,000 hectares. Compared with the previous year, the total area grew by around 480 hectares. The production area of outdoor vegetables increased by 150 hectares and that of berries to 331 hectares. In 2019, the area of greenhouse production decreased by 30 hectares from the previous year and was 360 hectares.

Horticultural production is centralised

The production of horticultural crops is the highest in Southern Finland, especially the production of apples, most of which are produced in the Åland Islands. The favourable climate conditions in Åland enable the growth of a larger number of apple varieties than in Mainland Finland, and the commercial production of pears is also increasing.

Outdoor vegetables are cultivated particularly in Southwest Finland and Satakunta. In Satakunta, there are also large vegetable processing plants, and the majority of garden peas, the most important outdoor vegetable in Finland, is cultivated for frozen pea products.

Strawberry is the number one berry

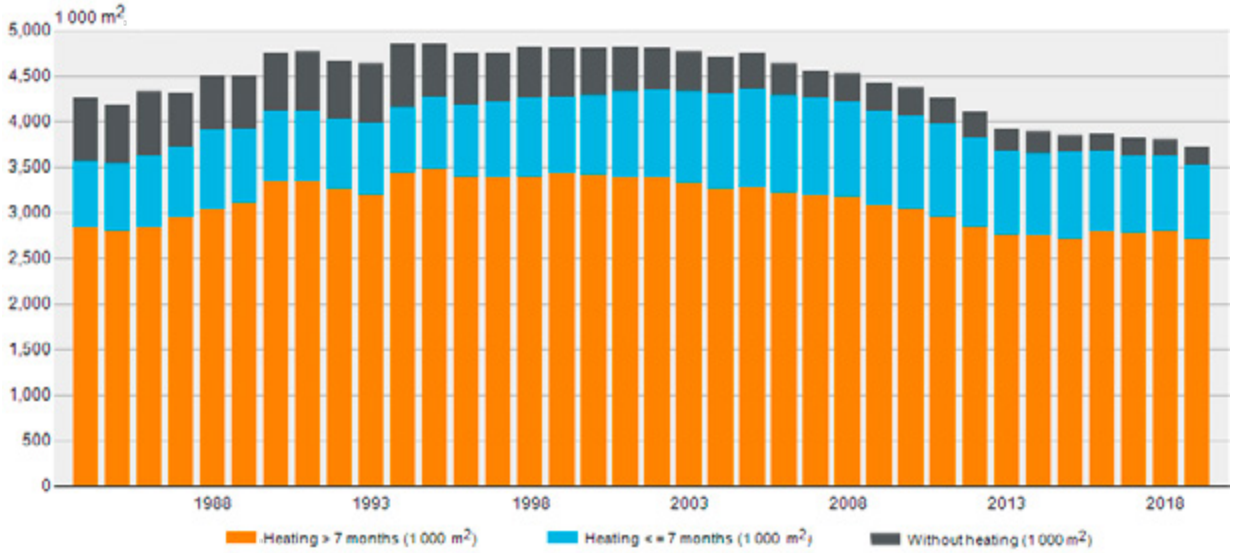
Strawberry is the most important berry in terms of both the cultivation area and the yield. In 2019, the strawberry area was roughly 4,300 hectares, and the yield totalled 18 million kg. Around 3 million kg of strawberries were imported into Finland, and the estimated consumption was approximately 20 million kg in 2019. Domestic production accounted for roughly 90% of the consumption.

Tunnel production is gaining popularity

In recent years, the biggest change in berry production has been the increase in tunnel production. In 2019, the total tunnel production area was already 61 hectares, of which strawberries accounted for 38 hectares and raspberries 22 hectares. Tunnel production improves the availability of berries at the beginning and the end of the

Greenhouse production area by heating 1984–2019

▶ Background data as a table



harvest season. On the other hand, weather conditions may sometimes cause outdoor strawberries to ripen at the same time as berries cultivated in a tunnel. In terms of the tunnel berry market, it would be best if the harvests of tunnel and outdoor berries did not coincide. Tunnel production also requires a new type of expertise from farmers, because tunnel production has different plant protection issues than in outdoor production.

Apples grow in Åland

The optimal weather conditions in the summer increased the total apple harvest to a new record, to more than 8 million kg. Most apples come from Åland. The availability of domestic apples has improved due to an increase in the cultivation area and the development of storage methods.

Minor changes in the greenhouse production area

The area of greenhouse production has remained fairly stable in recent years. However, production has become more efficient, because greenhouses reaching the end of their service life are modest in terms of technology compared with new greenhouses.

The majority of the total greenhouse area of 372 hectares (270 hectares) is in cultivation for more than seven months per year. Over the years, the area of unheated greenhouses has decreased to just under 20 hectares, of which nearly 60% is in Southwest Finland. Unheated greenhouses have been used in the cultivation of outdoor vegetable seedlings, for example. The cultivation of seedlings for own use or for sale has decreased, and outdoor vegetable seedlings are now imported into Finland.

Top 3 producers of certain horticultural products and their share (%) from the product-specific total production in 2019

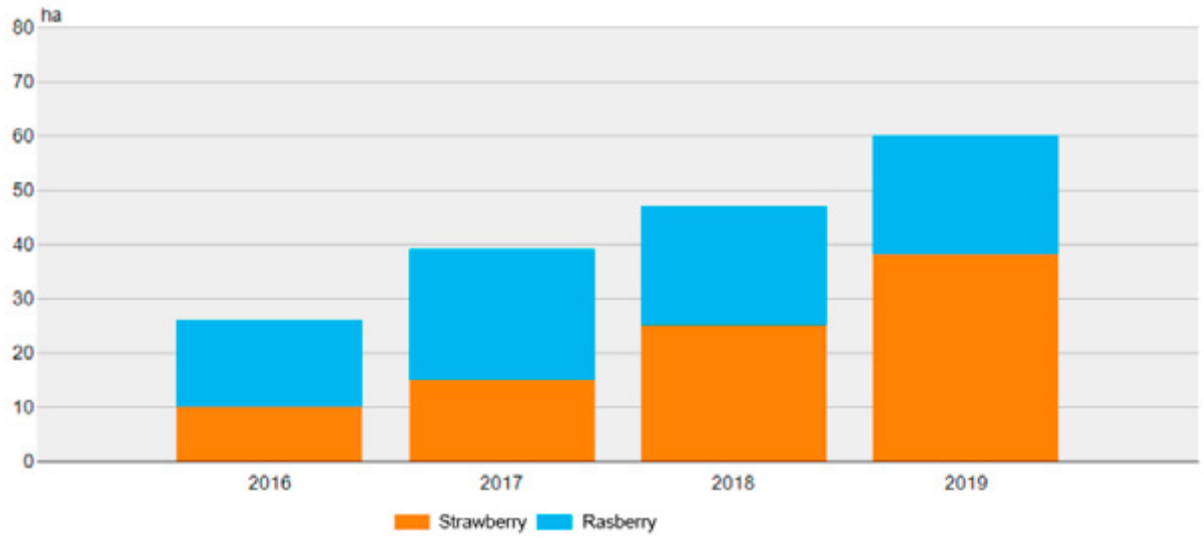
Tomatoes 71%	Greenhouse cucumber 75%	Potted vegetables 42%	Strawberries 22%	Carrots 38%	Apples 78%	Summer flowers 14%
Närpiö	Närpiö	Joroinen	Suonenjoki	Forssa	Finström	Turku
Karvia	Seinäjoki	Turku	Kitee	Laitila	Parainen	Kokkola
Korsnäs	Maalahti	Lapinjärvi	Leppävirta	Uusikaupunki	Vårdö	Närpiö

Distribution of outdoor production in 2019

	Number of enterprises	Hectares	Production, 1,000 kg
Outdoor vegetables	1,403	11,466	188,855
Berries	1,651	7,032	21,306
Fruit	355	739	8,346
Seedlings	82	331	-
Cut flowers and ornamental plants	10	28	-
Total outdoor production	2,706	19,595	218,507

Tunnel production of berries 2016-2019

▶ Background data as a table



Distribution of greenhouse production in 2019

	Number of enterprises	Hectares	Production, 1,000 kg
Greenhouse vegetables	445	2,080	94,883
Potted vegetables	75	359	102,491
Berries	30	53	167
	Number of enterprises	Area, 1,000 m²	Production, 1,000 pcs
Ornamental plants, of which	453	1,169	120,422
- bulbous flowers	87	-	86,823
- flowering potted plants	198	-	6,223
- green plants	27	-	321
- summer flowers	391	-	35,810
Seedlings and cuttings	119	117	-
Total greenhouse production	941	3,778	-

The structural change in agriculture is particularly strong in greenhouse vegetable production

The structural change in agriculture has especially been strong in greenhouse vegetable production. Last year, only 256 enterprises grew tomatoes and 174 produced greenhouse cucumbers. The crop volumes have remained fairly stable, although an increase in the cultivation of special tomato varieties reduces the volume of tomatoes entering the market. While the production of tomatoes has expanded into special products, the challenge in the production of cucumber is the lack of special varieties. The best opportunities for expanding the product range are in the production of potted vegetables, where there are numerous varieties of different herbs in addition to lettuce varieties.

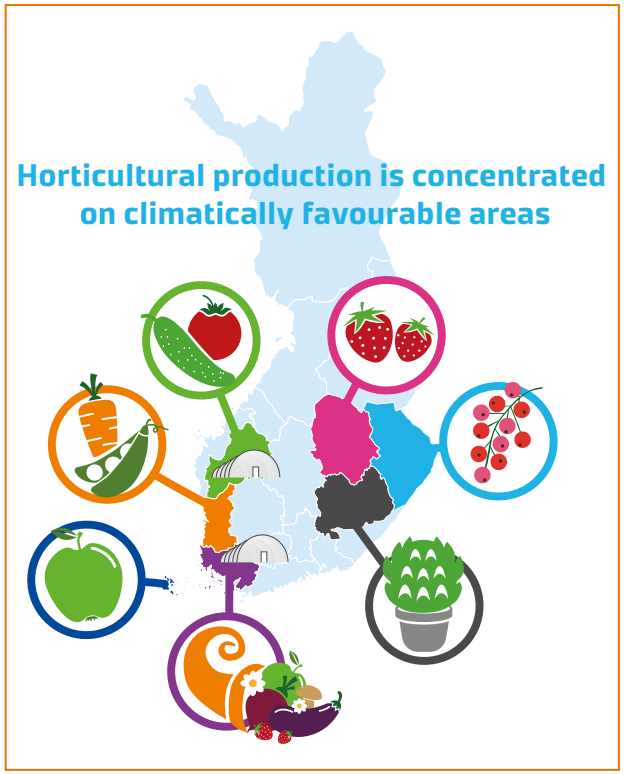
▶ Horticultural statistics

The garden pea area is increasing

In 2019, garden pea was by far the most common outdoor vegetable in Finland in terms of area. The pea area totalled 4,952 hectares. Some of the harvest was used in frozen pea products, the production of which has increased in recent years. Other important vegetables included onions (1,232 hectares), and regular and Savoy cabbages (583 hectares). Carrot was cultivated on 1,831 hectares. Carrot was also the most important vegetable in terms of yield, with just under 78 million kg of produced crop. In addition to domestic production, more than 9 million kg of carrots were imported into Finland.

Seedlings of useful plants popular alongside summer flowers

Overall, roughly a third of the total greenhouse area is accounted for by the production of ornamental plants, of which most are summer flowers. Even though large volumes of ornamental plants are imported to Finland, the production of summer flowers is particularly strong. Last year, 36 million pieces of summer flowers were produced. Summer flowers are produced throughout Finland, and the range of plants produced is broad. In addition to ornamental plants, seedlings of useful plants, such as herbs, vegetables, and strawberries and tomatoes in hanging pots, are sold to consumers. More than a million pieces of seedlings of useful plants were produced last year.



Use and stocks of agricultural products

Finnish farms produce approximately 4 billion kg of cereals each year. Two-fifths of the harvest is mainly used as livestock feed on farms. The rest ends up in industrial processes or is exported.

More domestic rye available than what is required by industries

Cereal wholesalers and those industries that use cereals purchased a total of 1.8 billion kg of cereals from farms in 2019.

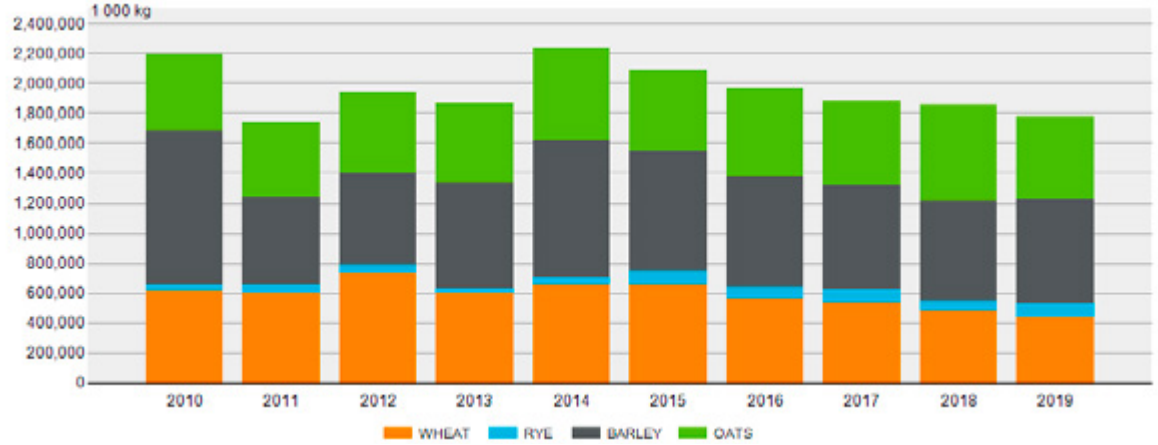
Of this amount, barley accounted for the highest proportion, i.e., more than a third. The volume of oats and wheat entering the market was lower than in the previous year (560 million kg of oats and 430 million kg of wheat). Rye purchases totalled 100 million kg, which is enough to cover its annual consumption.

Turnip rape and rape purchases directly from farms totalled 50 million kg, 16 million kg more than in the previous year.

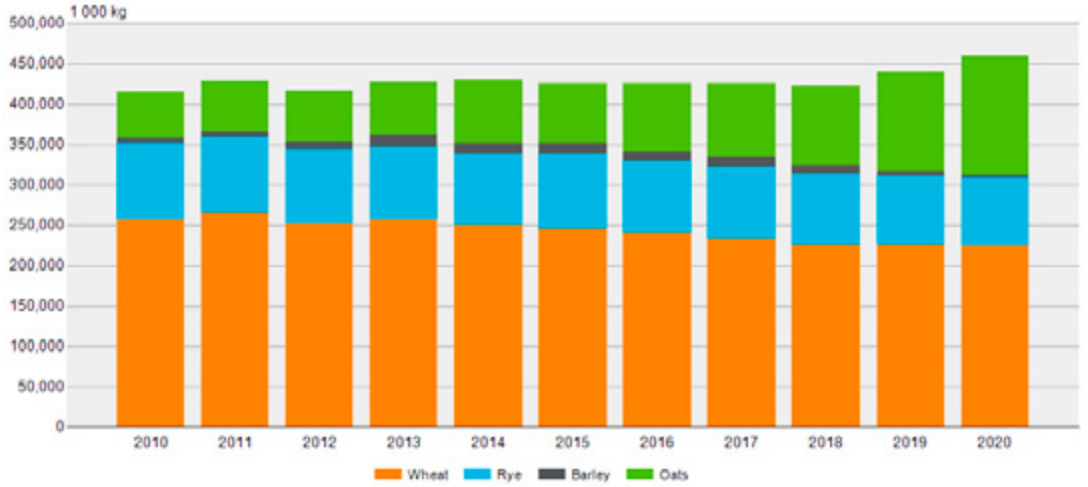
Use of oats in domestic food industry increasing

Finnish industry consumed more than 1.3 billion kg of domestic and imported cereals in 2019. The food industry consumed a third of the total cereal volume, the feed industry nearly half, while other industries accounted for the rest.

Cereals purchased from farms by industry and trade 2010–2019 ▶ Background data as a table



Cereals used by food industry 2010–2019 ▶ Background data as a table



The use of cereals in the feed industry decreased by 2% from the previous year. The most significant change took place in the use of barley, up by 25%. Correspondingly, the use of wheat and oats as feed decreased.

The food industry consumed 4% more cereals than in the previous year, but the situation varied by the type of cereal. The processing of unhulled oats increased to 123 million kg from the previous year's 98 million kg. The use of rye in food production totalled 85 million kg, showing a slight decrease from the year before. Wheat had the highest volume (225 million kg), remaining at the previous year's level.

Commercial cereal stockpiles at the lowest level in a decade

At the end of 2019, industrial and commercial stocks of cereals amounted to 500 million kg of domestic and imported cereals. This amount was a quarter lower than in the previous year and the lowest in the past 12 years.

Oats had the highest stockpiles (185 million kg), down by a quarter from the corresponding period in the previous year. Correspondingly, barley stockpiles totalled 136 million kg, also down by a quarter from the year before. Wheat stocks were the lowest in a decade at 89 million kg, showing a decrease of 50 million kg. Instead, rye stocks were the highest in a decade (88 million kg), nearly covering the annual consumption of the domestic food industry.

Cereals purchased, used and stockpiled by industry and trade

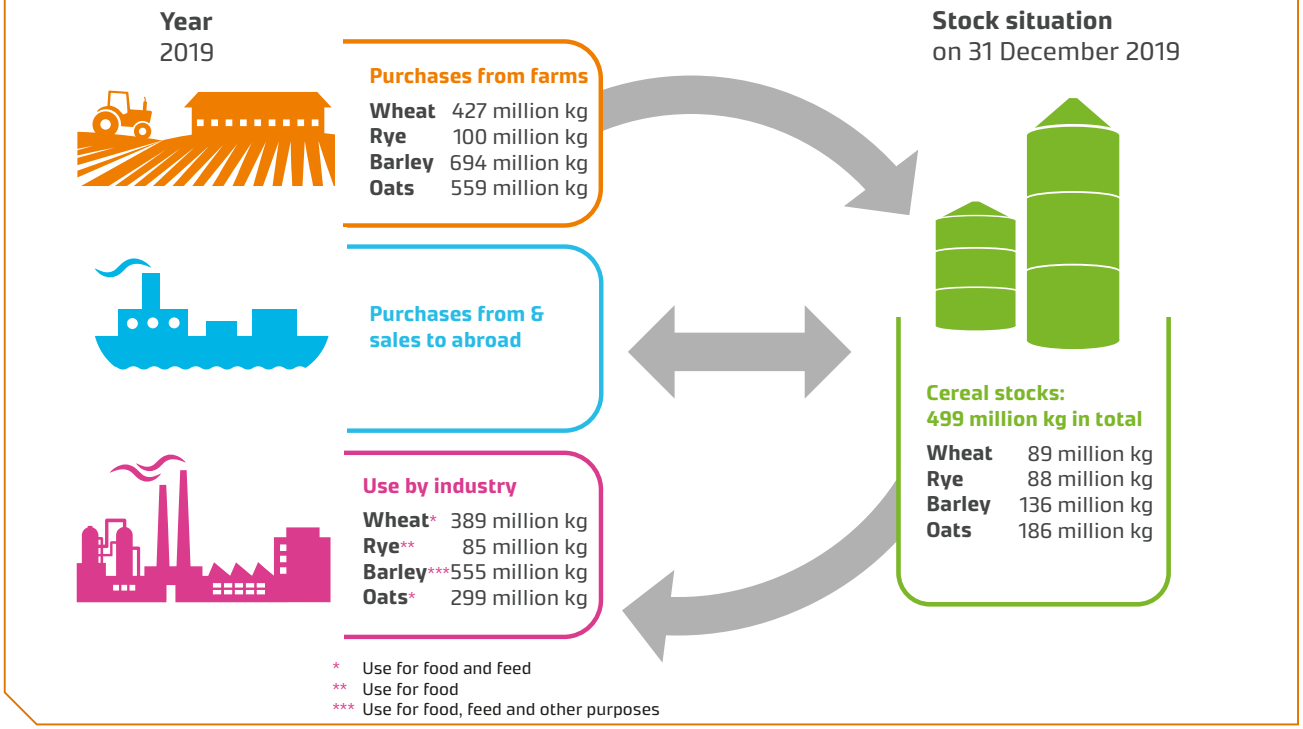
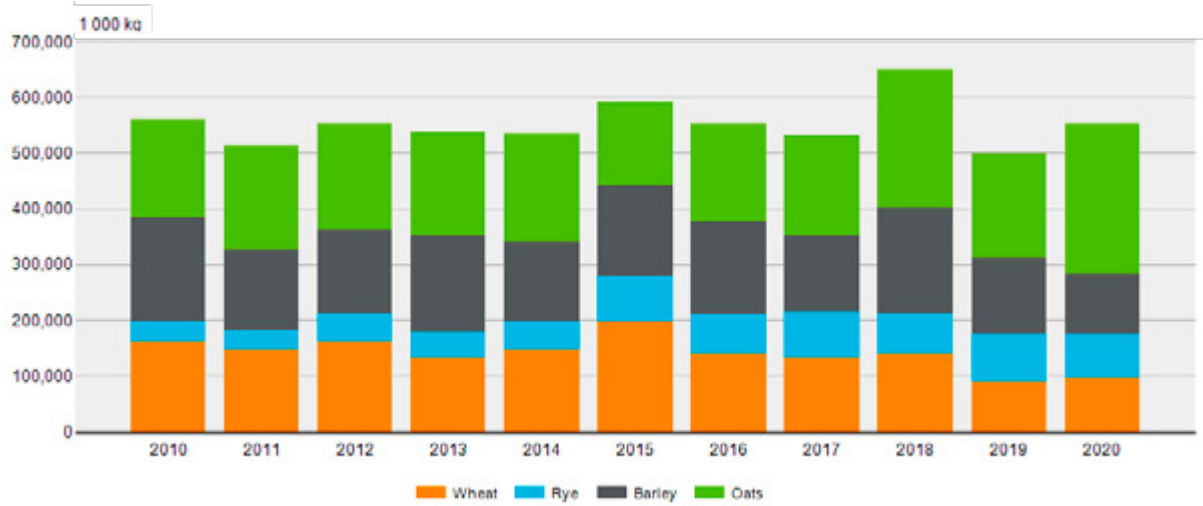


Photo: Erkki Oksanen / Luke

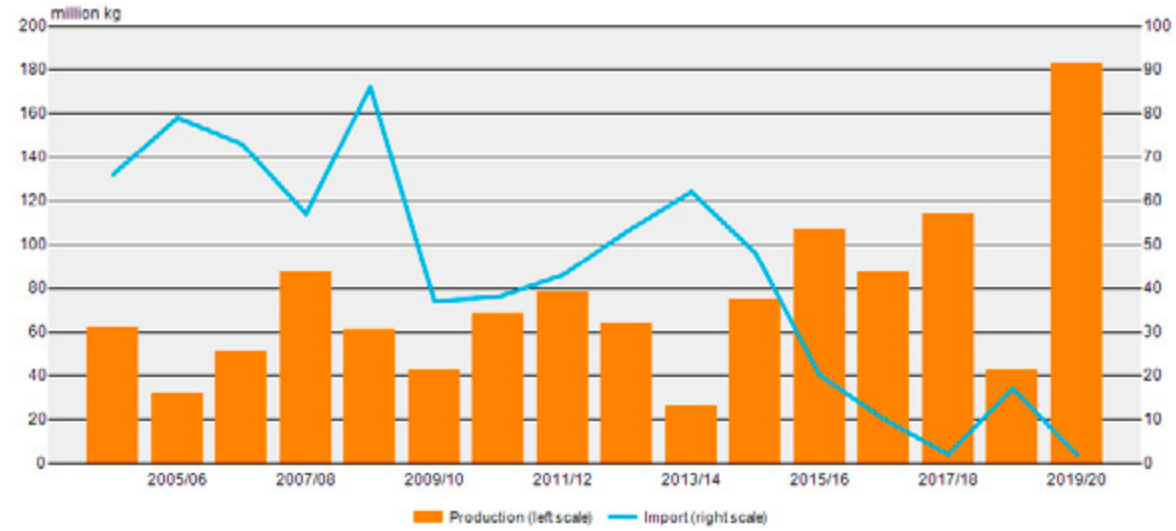
Cereals stockpiled by industry and trade 2010–2019

Background data as a table



Production and import of rye in crop year 2010–2019

Background data as a table



A fifth of the total cereal harvest exported

The domestic consumption of cereals is around 3 billion kg annually. Of the total cereal harvest of around 3.9 billion kg in 2019, 800 million kg were exported. Oats accounted for more than half of total exports with its export volume of more than 400 million kg. This marks the largest oat export volume in 17 years. More barley and wheat were also exported than in the past three harvest years.

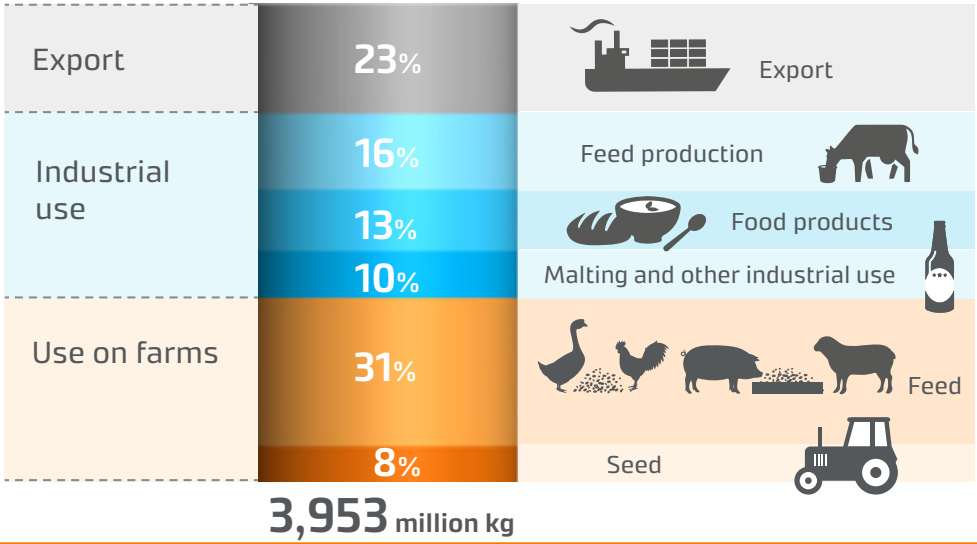
Foreign trade depends on the production volume

The domestic use of cereals, particularly in the industrial sector, has been fairly stable in recent years. Instead, cereal production has fluctuated, mainly due to variation in growing conditions. Foreign trade has acted as a buffer for fluctuations in yields. For rye, the bumper phenomenon means increased imports, while for other cereals, it means increased exports. However, exports of oats are fairly stable, and oats account for the majority of the cereal export volume (approximately 300-400 million kg each harvest year).

Farms keep nearly half of the total cereal harvest for their own use

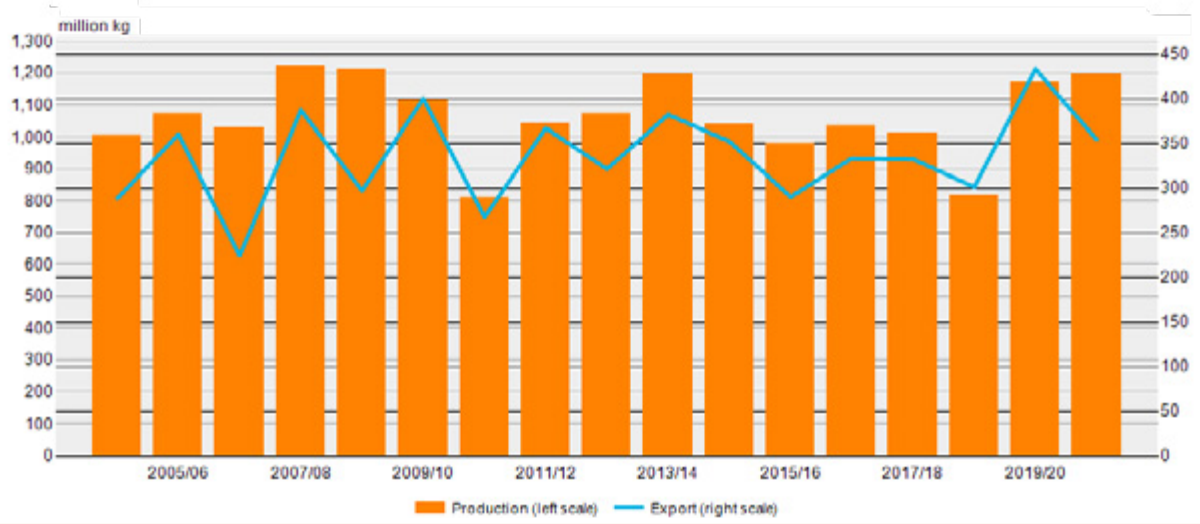
Farms kept roughly 45% of the 2019 cereal harvest for their own use. Sales totalled 55%, or more than 2 billion kg. Own use mainly concerns the use of cereals for production animal feed (more than 1 billion kg). Part of the volume produced is also used in cultivation; the calculated volume of seeds used in cultivation was 274 million kg. After two poor harvest years, cereal stocks on farms re-

Domestic use of the 2019 cereal harvest in Finland (mill. kg)



Production and export of oats in crop year 2010–2019

Background data as a table



turned to the average level. On 1 July 2019, the volume of cereals in stockpiles was 400 million kg higher than in the previous year.

- Statistics on cereals purchased, used and stockpiled by industry and trade
- Use of crops on farms
- Cereal balance sheet

Photo: Erkki Oksanen / Luke

Producer prices for agricultural products

The producer price is the price paid to a farmer for an agricultural product excluding value-added tax. Information on producer prices is based on surveys conducted among first-hand buyers, such as dairies, slaughterhouses, agricultural trade, industries that use cereals, and egg and potato packaging plants. The information is collected monthly, and it is available on the statistics home page.

Cereal producers were paid a lower price per kilo

Producer prices for cereals decreased at the end of the summer of 2019. The average price paid to farmers for basic-quality wheat in 2019 was EUR 175 per tonne, which is slightly lower than in the previous year. The average producer price for rye was EUR 168 per tonne, down by 7% from the year before.

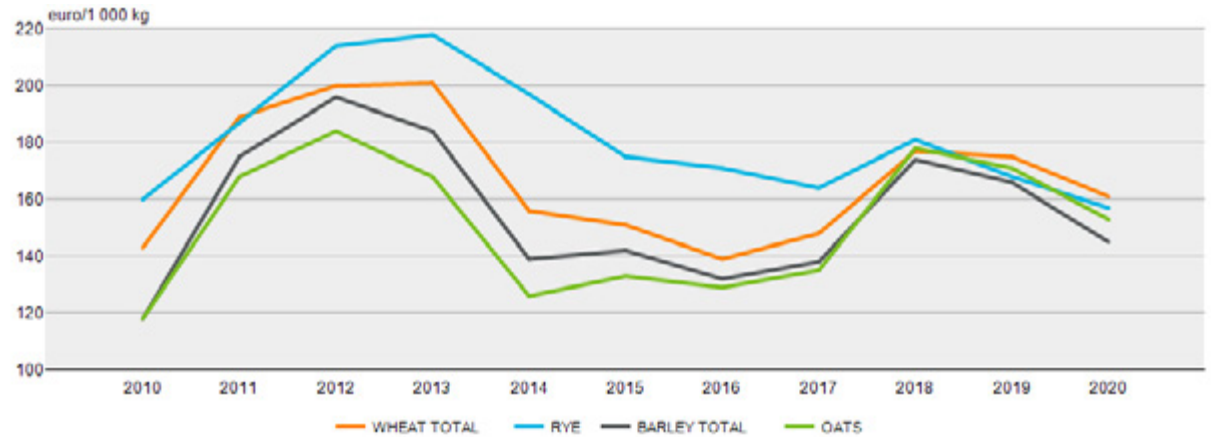
The average basic price for barley in 2019 was EUR 166 per tonne. The corresponding basic price for oats was EUR 171 per tonne. Both figures increased by around 4% from the previous year.

Producer prices for pork and broiler meat increased, prices of beef and lamb remained stable

In 2019, the average producer price paid by slaughterhouses for meat from bulls was EUR 3.52 per kg and EUR 3.77 per kg for lamb. Both figures remained roughly the same as in the previous year. The producer price for

Average producer prices of cereals 2010–2020

▶ Background data as a table



Average producer prices of meat 2010–2020

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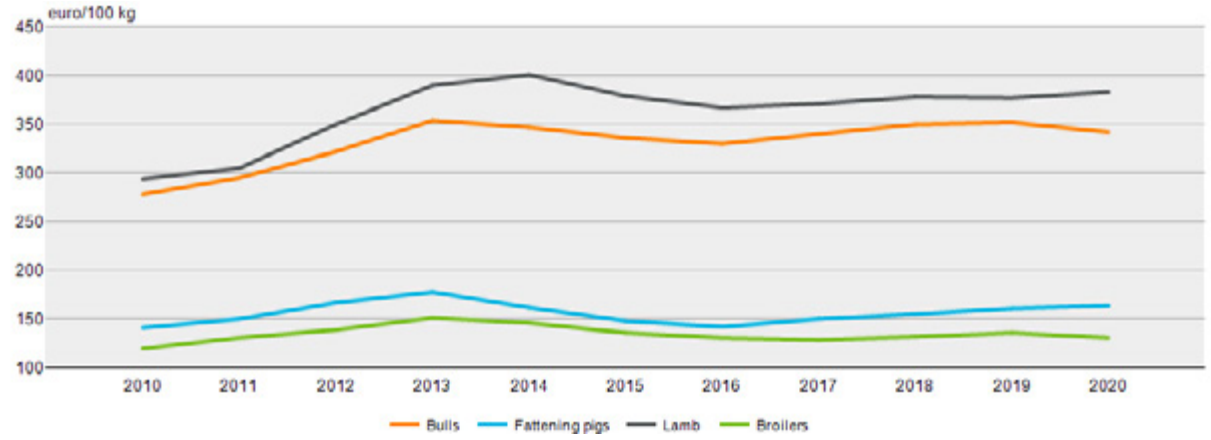


pork was EUR 1.61 per kg, 4% more than in the previous year. The producer price for broiler meat increased by 2% to EUR 1.36 per kg.

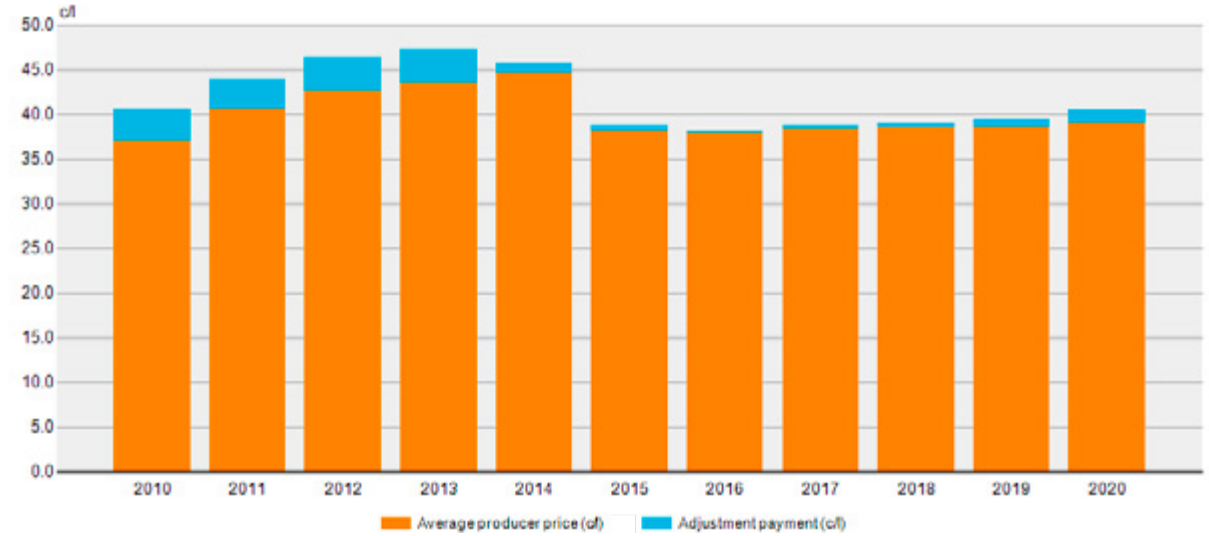
The price for milk producers increased slightly from the previous year

In 2019, the average producer price paid by dairies to milk producers was 39.5 cents per litre for milk, slightly more than in the previous year. The figure factors in not just the milk account price but also the annual adjustment payment.

Photo: Erkki Oksanen / Luke

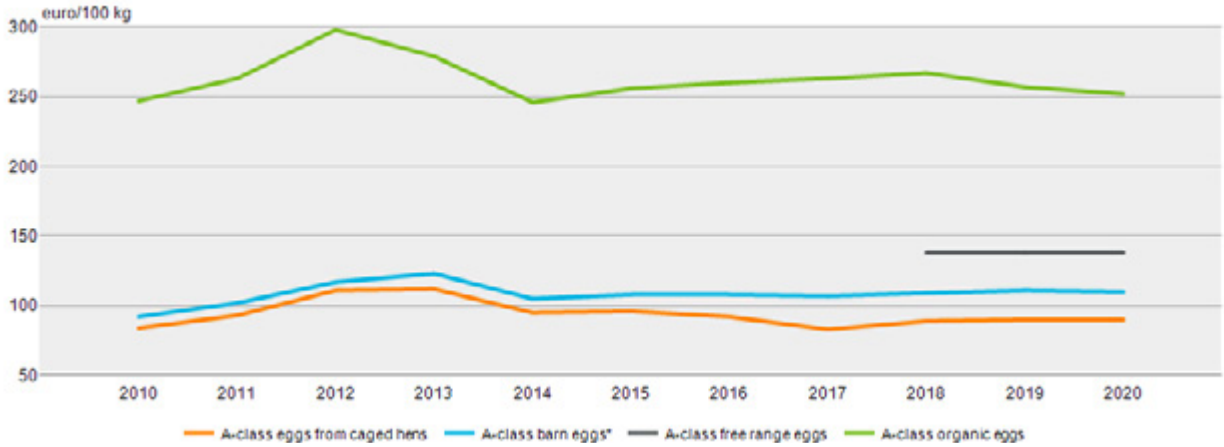
Average producer prices of milk 2010–2020

Background data as a table



Average producer prices of eggs 2010–2020

Background data as a table



The production method of eggs affects the producer price

The average price paid to producers for class A eggs in 2019 was EUR 1.11 per kg, up by 2% from the previous year.

When examined according to production method, in 2019 producers were paid on average EUR 1.38 per kg for free-range eggs, EUR 1.11 for barn eggs, and EUR 0.90 for enriched cage eggs. Organic eggs fetched EUR 2.57 per kg.

Producer prices for food potatoes

The average price paid to producers for food potatoes in 2019 was EUR 0.20 per kg, slightly more than in the previous year. The average producer price for early potatoes varies greatly depending on the year. In 2019, it was EUR 0.68 per kg.

- Producer prices for food potatoes
- Producer prices for agricultural products

Photo: Minna Pajunen

Foreign trade in agri-food products

In 2019, the value of imported agri-food products was EUR 5.3 billion, while the value of exports remained at EUR 1.7 billion. The value of exports relative to the value of imports was 32%, which was approximately 3% more than in 2018. This means that exports picked up slightly from the previous year.

The value of milk and dairy exports was the highest

In terms of value, the largest product groups in 2019 were milk and dairy, other processed food, alcohol, confectionery, and tobacco. 'Other processed food' accounts for bakery products, ice cream, sugar, processed vegetables, meat products and spices, for example. These products have a high processing rate, which explains their high export value. In terms of volume, the largest product group was cereals.

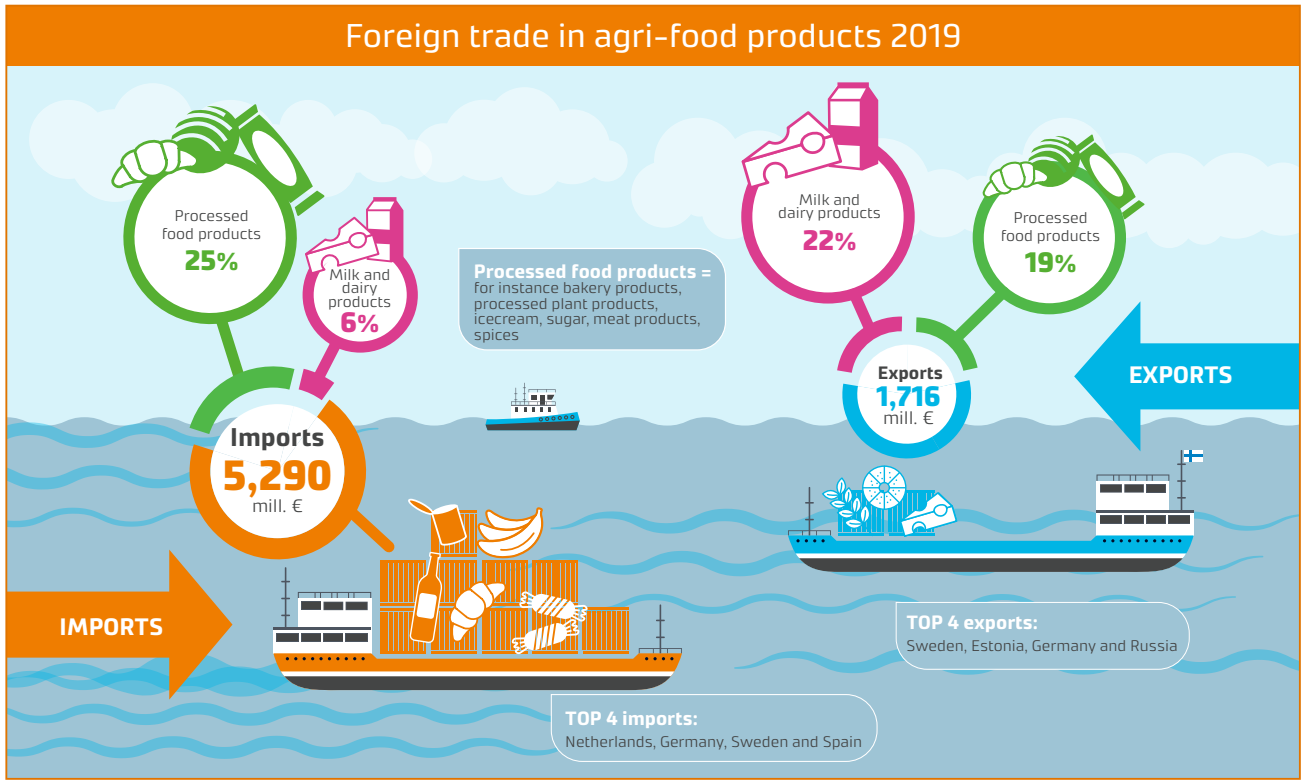
Other processed food products and alcohol were the most significant product groups in imports, followed by fruit, berries and vegetables, the import value of which totalled around EUR 732 million in 2019. In comparison, the value of cereal imports remained at EUR 102 million. Foreign trade in feed was also significant, and the value of imported feed totalled EUR 345 million last year.

In 2019, exports picked up for a number of product groups, and the total value of exports increased by around 13%. The value of exports increased especially for cereals and cereal products, milk and dairy products, and processed foods.

EU countries the most important trading partner

Some 75% of the imports of agri-food products to Finland come from other EU states. In addition, other EU states also account for the majority of exports, roughly 70%. Other European countries accounted for around 10% of exports and imports.

Until the economic sanctions imposed in 2014, Russia was the most important country to which Finland exported agri-food products, followed by Sweden.



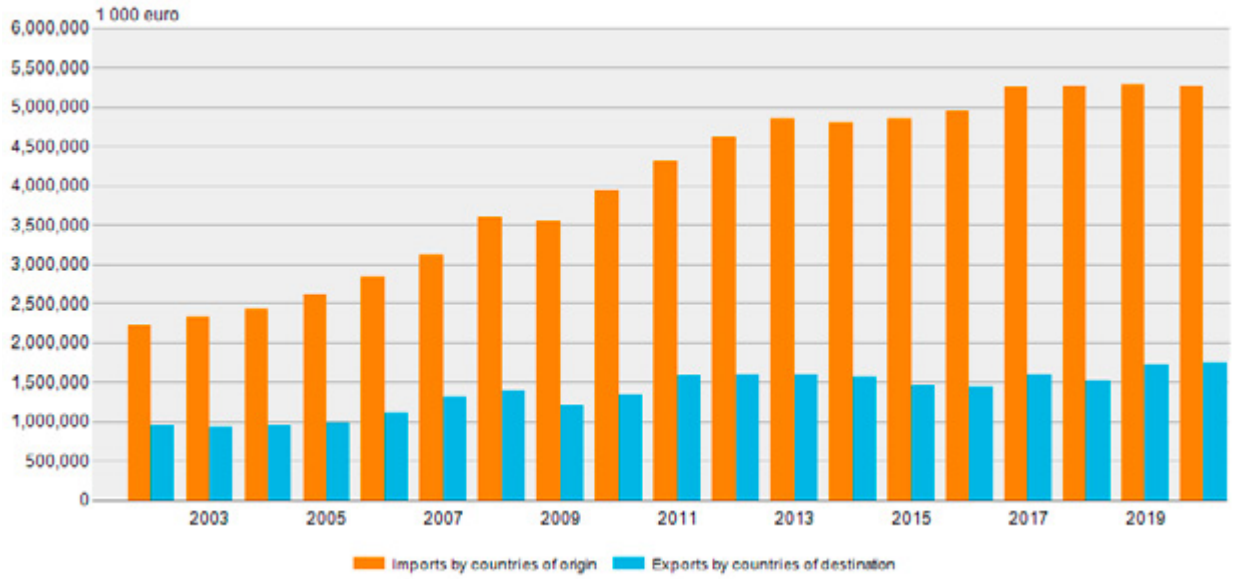
In 2019, the main import countries were the Netherlands, Germany, and Sweden. The largest product groups imported from the Netherlands were fats and oils, processed food products, vegetables, and horticultural crops. Imports from Germany mainly included meat and dairy products. A particularly high volume of processed fish products and dairy products was imported to Finland from Sweden. Norway and Spain were also important import countries: Norway in particular for salmon and Spain for vegetables, fruit, and spirits.

The most important export countries were Sweden, Estonia, Germany, and Russia. Milk and dairy products, fish and fish products, processed food products, and beef were among the main export articles to Sweden. Exports to Estonia mostly comprised beverages, confectionery and processed food products, while exports to Germany largely consisted of cereals. The largest product group exported to Russia was processed food products. China, the Netherlands, Denmark, and France were also important export countries for Finland. In addition to pork and dairy products, exports to China consisted of frozen berries, the value of which totalled EUR 3 million. The value of butter exported to France was also significant at EUR 48 million.

▶ Foreign trade in agri-food products

Imports and exports of agricultural products and food products 2002–2019
(deflated by the consumer price index)

▶ Background data as a table



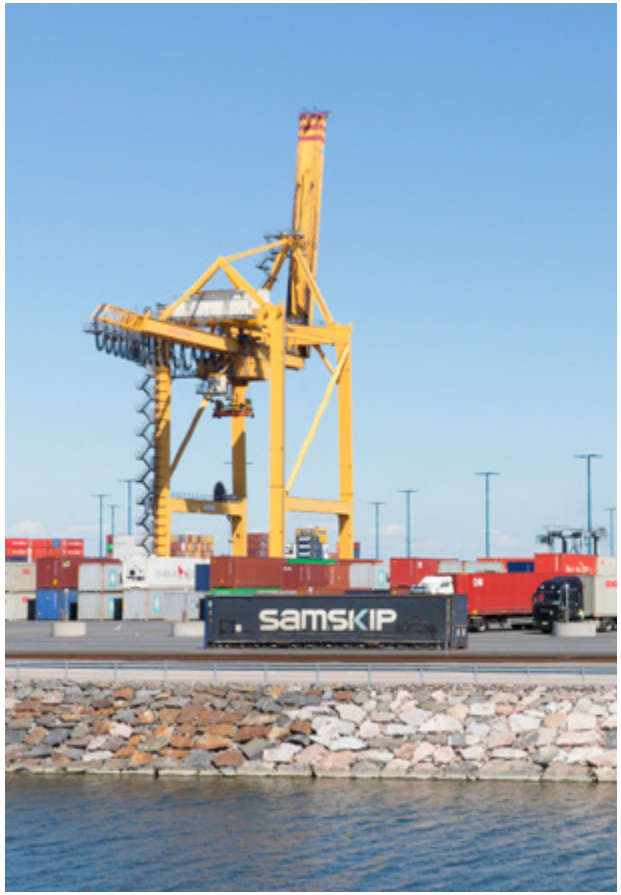


Photo: Erkki Oksanen / Luke

Profitability of agriculture

According to Luke's profitability accounting, the profitability ratio for agriculture and horticulture was on average 0.42 in 2018. Compared with the previous year, there was a slight improvement in profitability. In 2018, the return on total assets was negative by -1.6%, which means that no interest has been accrued on capital invested in the business.

The gross revenue increased but business operated at a loss

In 2018, the gross revenue of agriculture, i.e., the sum of agricultural production and subsidies, was EUR 184,300 per farm, an increase of around 3% compared with the previous year. Subsidies accounted for a third of gross revenue.

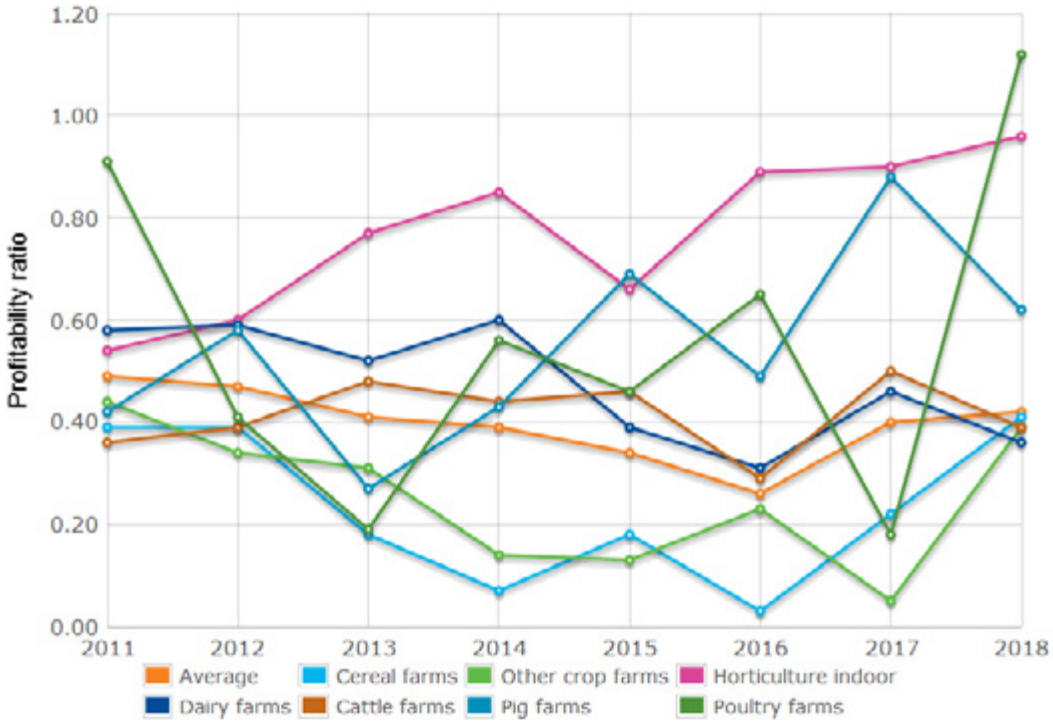
Agricultural production costs grew by 2% from the previous year and totalled on average EUR 160,800. Production costs were higher than gross revenue, resulting in an average loss of EUR 24,300 per farmer. The costs include family businesses' labour costs, which were calculated on the basis of an hourly rate of EUR 16.00, and interest on capital at 3.69%. Excluding these costs, farm net income in 2018 was EUR 17,400, around 7% more than in 2017.

Profitability remains weak

The profitability ratio is obtained by dividing farm net income by the sum of labour and capital costs. The profitability ratio reveals the remuneration that the farmer receives for their labour and capital invested in production.

Profitability ratio of agricultural and horticultural enterprises 2011–2018

▶ Background data as a table



In 2018, the average profitability ratio for agriculture was 0.42. Thus, farmers achieved 42% of the labour cost and interest targets, i.e., an hourly rate of EUR 6.7 for labour and 1.5% interest on capital.

The equity ratio describes the share of equity in total capital, including debts. In 2018, the equity ratio of agriculture and horticulture was on average 72%. The equity ratio varies greatly, depending on the type of production: on pig and cereal farms, the equity ratio is slightly higher

than on average, while greenhouse enterprises and sheep and goat farms have the lowest ratio.

Input decreasing

Total working hours are divided into two categories: the working hours of the entrepreneur family and the working hours of agricultural workers. The work input of an entrepreneur family has steadily decreased every year. In 2018, the entrepreneur family's work input totalled on average 1,810 hours in agriculture and horticulture (1,850 hours in 2017). The total input of the entrepreneur family has decreased by 460 hours in ten years, partly due to the shift from livestock production to crop production.

The working hours of agricultural workers fell for the first time in ten years. In 2018, the working hours of agricultural workers totalled 400 hours (460 hours in 2017). There are great differences between the production lines: greenhouse enterprises use a lot of external workforce, whereas on cereal farms the use of external workforce is the lowest.

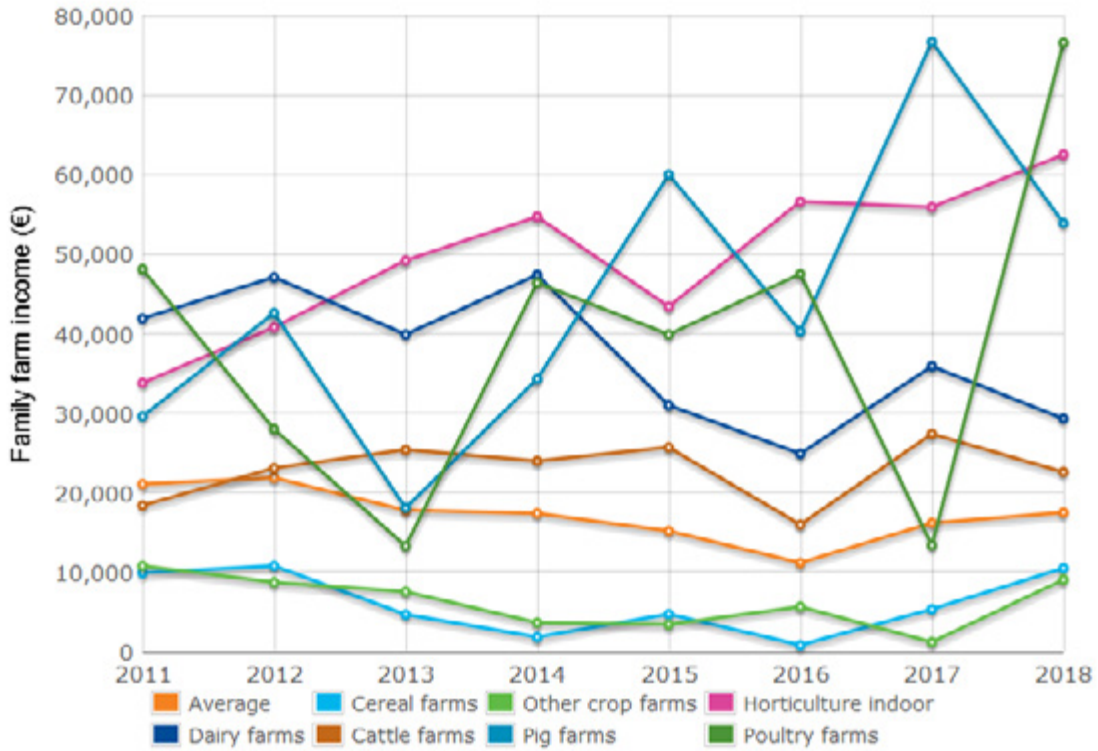
Major differences between production lines

Profitability varies greatly, depending on the type of production. In 2018, greenhouse enterprises were the best performers, with their profitability ratio increasing to 0.96. Greenhouse enterprises' entrepreneurial income amounted to EUR 62,500. The profitability of outdoor horticultural farms dropped from 0.93 to -0.03. The profitability ratio also decreased from the previous year on pig and dairy farms, albeit more moderately (to 0.57 and 0.36, respectively). The poor profitability of cereal farms improved clearly: the profitability ratio rose to 0.41 from 0.22 in the previous year, and entrepreneurial income amounted to EUR 10,500. On poultry farms, the profitability ratio increased to 1.12 from 0.58 in the previous year, and entrepreneurial income amounted to EUR 76,600. The strong annual variations in the profitability of poultry farms and outdoor horticultural farms, are partly due to the small number of farms in these production lines included in profitability accounting.

The outcome data, profitability forecasts and preliminary results for the coming years can be found in the agriculture and horticulture section of Luke's Economy-doctor service.

Farm net income of agricultural and horticultural enterprises 2011-2018

Background data as a table



Economydoctor
Profitability of agriculture

Profitability of reindeer husbandry

According to the results of Luke's profitability accounting, the profitability ratio of reindeer husbandry during the 2018/19 herding season was 0.31 on average, and entrepreneurial income amounted to EUR 7,020. This was 20% less than in the previous herding season. Those engaged in the reindeer husbandry business earned an hourly wage of EUR 3.60.

Revenues of reindeer husbandry decreasing

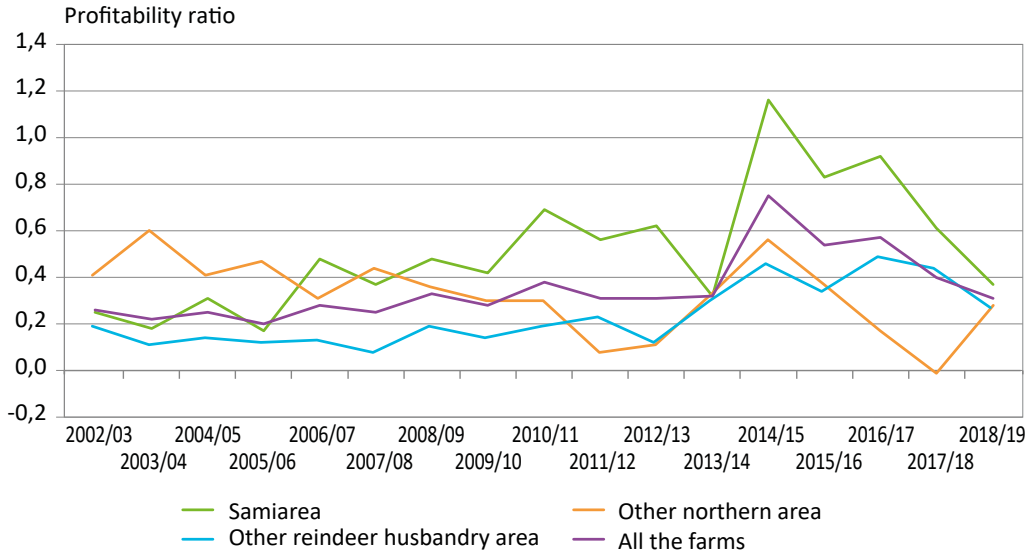
In the 2018/19 herding season, gross revenue from reindeer husbandry amounted to EUR 40,083, which is 2% less than in the previous year. On average nearly half of the gross revenue, roughly EUR 19,400, was came from the sale of reindeer meat. Each reindeer husbandry enterprise produced an average of 2,096 kg of reindeer meat, 3% less than in the previous year. Subsidies accounted for 16% of total income. The share of compensation for reindeer damage decreased by 14% from the previous herding season and was EUR 6,500.

Compared to the previous herding season, production costs increased by 1% to EUR 54,600. In terms of euros, the fuel, maintenance and repair costs of machinery used in reindeer husbandry increased the most, while feed costs decreased. The average number living reindeer per entrepreneur family increased from the previous year by two to 199 reindeer.

Reindeer husbandry in 2019

Number of reindeer	Reindeer meat production	Total number of reindeer owners
		
184,934	1.79 million kg	4,354

Profitability of reindeer husbandry by area



Working hours in reindeer husbandry remained at the previous year's level. In the 2018/19 herding season, the entrepreneur family's work input totalled on average 1,267 hours of work related to reindeer husbandry. Two-thirds of the working hours were allocated to reindeer herding, while one-third were carried out for reindeer herders' cooperatives.

Regional differences in profitability narrowed

In profitability accounting, the special reindeer husbandry area in the northern part of Lapland is divided into two regions: the 'Sámi area'; and the 'other special reindeer husbandry area'. The southern part of the reindeer husbandry area is called the 'other reindeer husbandry area'.

In the 2018/19 financial year, the differences in profitability between the northern and southern parts of the reindeer husbandry area narrowed. Profitability was lowest in the southern and central parts of the reindeer husbandry area: the profitability ratio for the other reindeer husbandry area was 0.27, and for the other special reindeer husbandry area 0.28. In the Sámi area in the north of the reindeer husbandry area, the profitability ratio was 0.37.

Reindeer husbandry revenues do not cover costs

In the 2018/19 herding season, the cost of producing one kilo of reindeer meat was EUR 25.9. Revenue totalled EUR 19.1 per kg, which means that the entrepreneur incurred a loss of EUR 6.8 per one kilo of meat produced. In the smaller enterprises, with 80-100 living reindeer, the cost of producing one kilo of meat averaged EUR 31.7. Correspondingly, in the largest enterprises, with more than 230 living reindeer, the cost totalled EUR 18.1. The cost of production calculated per living reindeer was EUR 272. Total revenue was EUR 201 per living reindeer, which means that the entrepreneur incurred a loss of EUR 71 per living reindeer.

▶ Profitability of reindeer husbandry

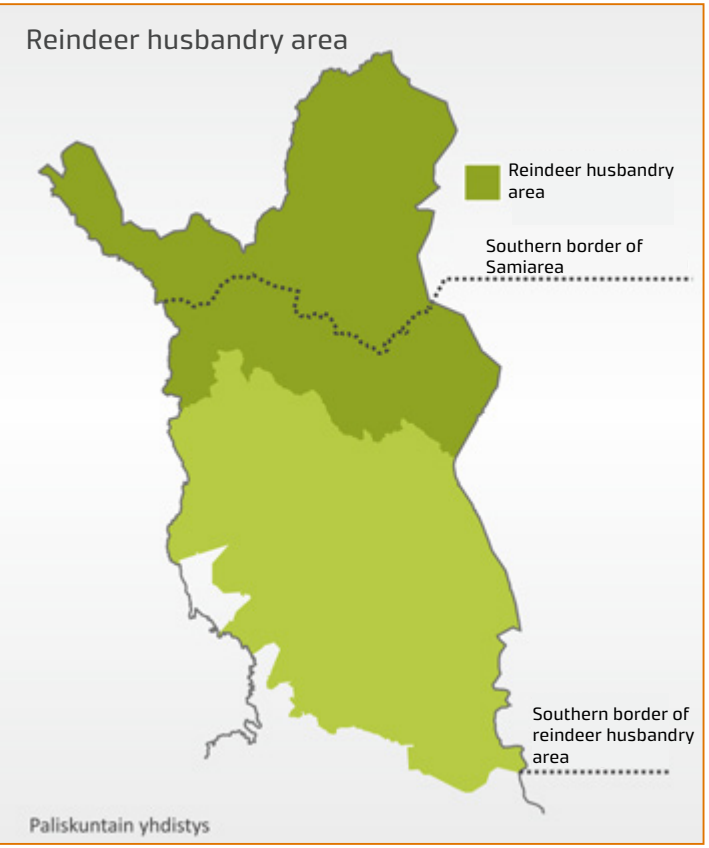


Photo: Erkki Oksanen / Luke

Balance sheet for food commodities

In 2019, Finns consumed on average 148 kg of liquid milk products, 80 kg of meat, 81 kg of cereal, 12 kg of eggs, 15 kg of fish, 66 kg of fruit, and 66 kg of vegetables per capita. Compared with the previous year, the consumption of oats increased, and with it the consumption of cereals, but the consumption of meat and milk decreased.

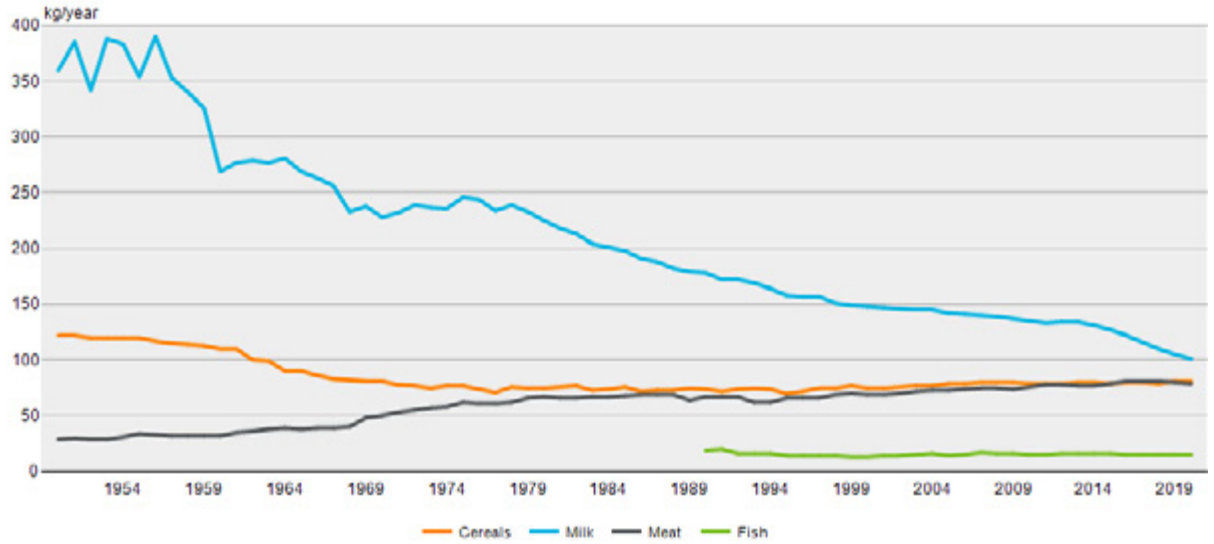
The calculation of the food balance takes into account the production, export and import volumes of food products, changes in stocks and non-nutrient use. Consumption figures per capita have been calculated on the basis of the quantities available for human consumption.

The consumption of milk decreased by approximately 5% from the previous year. This was also the case in 2018. All in all, an average of 102 litres of milk was consumed per capita in 2019, of which 57% was low-fat milk, approximately a third was skimmed milk and just over 10% was whole milk.

On average, the consumption of dairy products either declined slightly or remained unchanged. The consumption of sour milk, yoghurt, curdled milk (viili) and cream decreased by a few per cent. The consumption of other milk-based products, such as flavoured quarks, grew. In 2019, the total consumption of liquid milk products was 148 kg per capita, approximately 4% less than in the previous year. The consumption of cheese and butter declined slightly and amounted to around 25 kg and 3.3 kg, respectively.

Consumption of cereals, milk, meat and fish per capita 1950–2019

▶ Background data as a table



The oats boom continued, increasing the consumption of cereals

The total consumption of cereals increased by more than two kilos per capita from the previous year and was around 81 kg in 2019. The growth was mainly due to the increased consumption of oats. The consumption of oats increased from the previous year by almost two kilos, or almost 30%, to 9.5 kg per capita. The consumption of rice increased by half a kilo from the previous year to 6.6 kg, while wheat consumption slightly decreased to around 44 kg. The consumption of rye and barley remained at the previous year's level at 15.3 kg and 1.8 kg per capita, respectively.

Poultry meat consumption continued to grow

In 2019, the total consumption of meat was almost 80 kg per capita, when game and offal are also taken into account. Total consumption decreased from the previous year by approximately 1.8%, or 1.5 kg per capita.

Grain consumption 2019, kg per capita

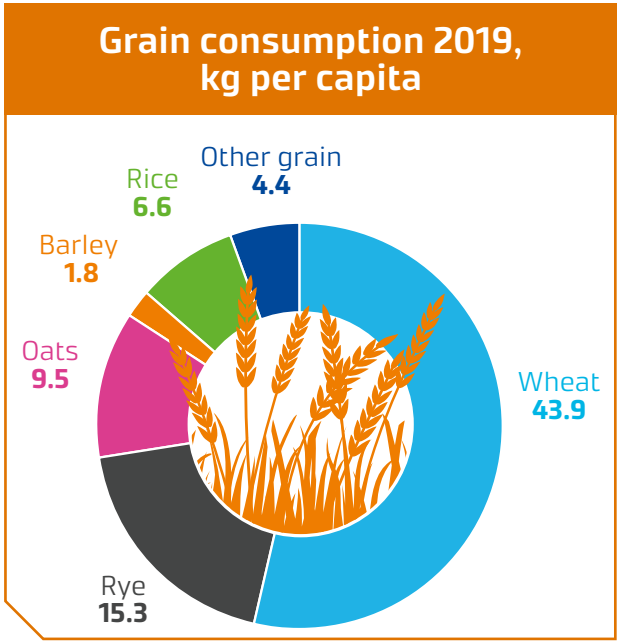


Photo: Erkki Oksanen / Luke

The consumption of poultry meat has continued to increase for more than ten years. Its consumption totalled roughly 26.6 kg per capita in 2019. Poultry consumption increased by almost 4% from 2018. In turn, the consumption of pork decreased by approximately 5%, but its consumption still remains higher than that of poultry meat at 30.8 kg. An average of 18.8 kg of beef was consumed per capita, around half a kilo less than in the previous year. Sheep meat consumption totalled 0.7 kg, reindeer meat consumption 0.4 kg, and horse meat consumption 0.2 kg. There were no significant changes compared to the previous year

▶ Balance sheet for food commodities

The meat consumption figures reported in the balance sheet for food commodities also include bones, i.e., they are reported as carcass meat. Typically, carcass meat contains 80% of boneless meat. In addition, the cooking loss ranges from 10% to 30%, depending on the product. The weight of cooked meat is around 50% of the weight of carcass meat.

Fish, eggs, fruit and vegetables

The total consumption of fish was 14.9 kg per capita. In 2019, the consumption of canned fish increased slightly from the previous year. According to the balance sheet for food commodities, no major changes have taken place in several years in the total consumption of fish. A decade ago, the consumption of eggs was around 10 kg per capita, while in 2019, the consumption was roughly 12 kg. In recent years, there has not been much variation in the consumption of eggs.

The consumption of fresh fruit was approximately 59 kg per capita. The consumption of citrus fruits increased by half a kilo from the previous year to 14.3 kg. The consumption of other types of fresh fruit declined slightly and was slightly less than 45 kg per capita. Just under 7 kg of fruit preserves and dried fruit were consumed per capita. Approximately 66 kg of fresh vegetables were consumed per capita, but the figure also includes possible waste.

Forest statistics

Photo: Erkki Oksanen / Luke

Forest statistics for 2019

The growing stock volume totals 2.5 billion cubic metres

On the basis of the latest inventory, the growing stock volume in Finnish forests totals 2,482 million cubic metres, and the annual increment of growing stock totals 108 million cubic metres. Both the volume and increment of growing stock have increased compared to the previous inventory. Half the growing stock is pine, while spruce accounts for just under a third, and deciduous tree species a fifth.

13% of Finnish forests are protected

At the beginning of 2019, Finland had a total of 2.9 million hectares of protected forest land and poorly productive forest land. This area consists of forests in statutory protected areas (2.4 million hectares) and biodiversity conservation sites in commercial forests (0.5 million hectares). Compared with the previous statistics for 2016, the share of protected forest land and poorly productive forest land grew from 12% to 13%. The majority of protected forest in forest land and poorly productive forest land, nearly 80%, is located in Northern Finland,

Investments were made in ditch network maintenance and in forest roads

The total costs of silvicultural and forest improvement works amounted to EUR 265 million. The costs of silvicultural works totalled EUR 209 million, showing a slight decrease from the previous year. Instead, investments in forest improvement works increased by nearly a third to EUR 55 million. The area of artificial regeneration was 100,000 hectares. Early and later pre-commercial thinning and improvement of young stands covered an area of 169,000 hectares. On the basis of notifications of forest use, the area treated with felling was estimated to be 711,000 hectares.

Wood trade volumes and prices dropped

The economic downturn and lower production volumes of forest industry products reduced wood trade volumes and lowered wood prices. Log trade decreased by a little more than two-fifths and pulpwood trade by a fifth from the previous year. In particular, the prices of softwood logs decreased. In real terms, the prices of logs in standing sales decreased by 8% and the prices of pulpwood by 1%. In delivery sales, the price level of pulpwood increased by 6%. Energywood trade has also slowed down, and the volume of purchases decreased by a quarter from the previous year. The average price of all energywood decreased by 12% in standing sales and increased by 8% in delivery sales.

Removals decreased by five million cubic metres but remained high

Industrial roundwood removals decreased to 64 million cubic metres. This was 8% less than in the previous year, but still 13% higher than the average for the preceding ten-year period. In addition, nine million cubic metres of roundwood was harvested for energy production, which means that the total volume of harvested roundwood amounted to 73 million cubic metres. After the previous year, this figure was the second highest in the history of statistics. The total drain was 88 million cubic metres, including the harvested roundwood and the unused deadwood left in forests. The annual increment of growing stock totalled 108 million cubic metres, meaning that the total volume of growing tree stock in Finnish forests increased by 19 million cubic metres.

Stumpage earnings

The gross stumpage earnings totalled EUR 2.3 billion, decreasing in real terms by 16% to the 2017 level from the previous peak year. Compared to the average of the previous five years, income remained at the same level.

Profitability of non-industrial private forestry

In 2019, the peak of the economic trend had passed, and the profitability of forestry fell clearly from the previous peak year. Even though the operating profit of non-industrial private forestry decreased to EUR 128 per hectare, it still remained high compared to long-term averages. The investment returns on wood production were negative for the first time in years due to the decrease in stumpage prices.

Roundwood consumption still peaks

Roundwood consumption in Finland amounted to 82 million cubic metres, being 3% lower than the previous year's record but still the second largest amount so far. Most of the roundwood (71 million cubic metres) was used to manufacture forest industry products. A total of 11 million cubic metres of roundwood was used in energy generation. In addition, a total of 26 million cubic metres of forest industry by-products and wood residues were used for various purposes. The consumption of solid wood fuels reached a new record, totalling more than 27 million cubic metres.

The boom in the forest industries has passed

The boom in the Finnish forest industries had passed by 2019, and the production and export volumes of forest industry products decreased slightly. The domestic turnover of the forest industries totalled EUR 31.6 billion, decreasing by 5% in real terms from the previous year. Measured by total results, the profitability of the forest industries decreased by 1.5 percentage points to 6.1% of operating income. In the forest industries, the debt-to-turnover ratio fell to 52%, meaning the financial position of the forest industries was significantly better than that of other manufacturing industries.

The value of forest exports decreased from the previous year

Exports of forest industry products totalled EUR 12.5 billion, which in real terms was 6% less than in the previous year. The pulp and paper industries accounted for EUR 9.7 billion of total exports, down by 7%. The value of exports in wood-products industries decreased by 5% to EUR 2.8 billion. Finland's wood imports grew by 3% from the previous year to 12 million cubic metres.

Key figures for the Finnish forest sector in 2019

Volume of growing stock on forest land and poorly productive forest land

2,482 million m³

50% pine, 30% spruce and 20% deciduous trees

Annual increment of growing stock on forest land and poorly productive forest land

108 million m³

Nearly double compared with the 1950s level

Artificial regeneration per year

100,000 ha

75% planted, 25% sown

Protected forests

2.9 million ha

13% of all forest land and poorly productive forest land

Roundwood removals

73.3 milion m³

-8% from 2018

Gross stumpage earnings

EUR 2.3 billion

- 16% from 2018*

Roundwood consumption in forest industries

71.1 million m³

of which 86% domestic wood

Employed in the forest sector

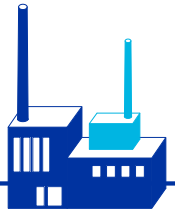
66,000 persons

+6% from 2018

Wood in energy generation

105 TWh

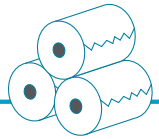
28% of total energy consumption



Forest industries' turnover from domestic operations

EUR 31.6 billion

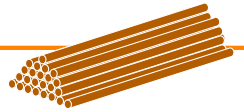
- 5% from 2018*



Export in the forest industries

EUR 12.5 billion

19% of total Finnish goods exports



Wood imports

11.9 million m³

+3% from 2018

*Deflated using wholesale price index

Forest resources

The volume of growing stock in Finland totals 2.5 billion cubic metres, and the annual increment of growing stock volume totals 108 million cubic metres.

Forestry land accounts for 86% (26.3 million ha) of the total land area of Finland. In Southern Finland, forestry's share of the total land area is 78%, and in Northern Finland (i.e., in the regions of North Ostrobothnia, Kainuu, and Lapland) 95%. The forestry land area has slightly decreased over the last hundred years when forest resources have been measured.

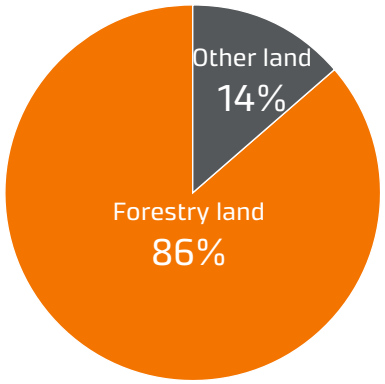
Inventory information is updated annually

The latest information is based on the National Forest Inventory prepared between 2015 and 2019. The increment of growing stock volume data and the volume of decayed trees are based on the results of the 12th National Forest Inventory.

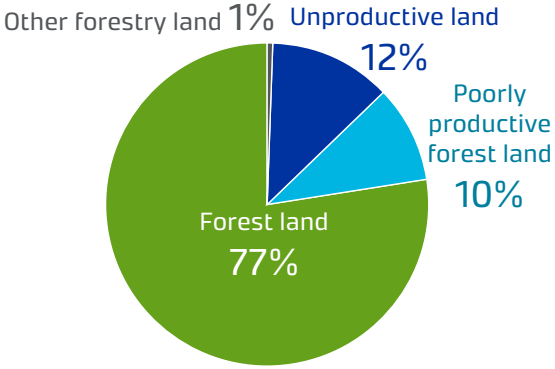
In forest nomenclature, any land which has no special use is considered forestry land; i.e., the land is not agricultural land, built-up land, a road or a utility corridor. In addition to land available for wood production, forestry land accounts for areas in which forestry activities are not allowed for statutory reasons or the owner's decision, for example.

Forest recources of Finland

Finland's land area
30.4 mill. ha



Forestry land
26.3 mill. ha



Growing stock volume
forest land and poorly productive forest land
2,482 mill. m^3

Mean growing stock volume
forest land
119 m^3/ha

Pine 50%

Spruce 30%

Broadleaved 20%

Forests account for most of the total land area

Forestry land is further divided according to the productivity of the land into forest land, poorly productive forest land, and unproductive land. Forest land and poorly productive forest land are wood-growing land, while unproductive land is treeless or nearly treeless land. Forestry land also covers other forestry land, such as forest roads and permanent storage depots for timber.

Forest land totals 20.2 million hectares, and poorly productive forest land 2.6 million hectares, meaning that a total of 75% of the total land area is accounted for by forests. Forest land increased in the 1960s due to the change in the classification of forest land and poorly productive forest land, and then to the draining of peatlands, but has remained practically unchanged since the mid-1970s.

91% of forest land is available for wood production

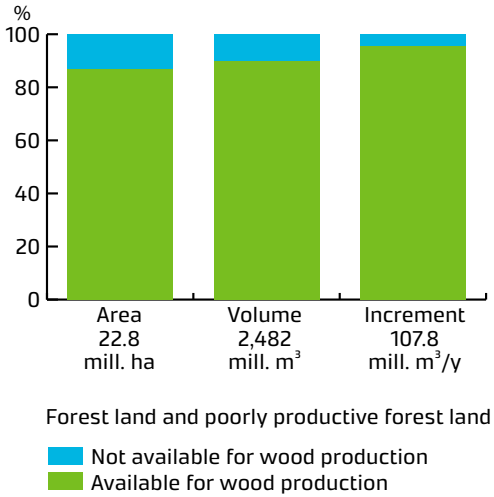
Forestry is mainly practised in forest land areas, of which 18.4 million hectares (91%) is available for wood production. In Southern Finland, the area of forest land available for wood production amounts to 97%, while in Northern Finland, the same figure is 84%. This indicates that most of the protected areas excluded from wood production are in Northern Finland. Poorly productive forest land is mostly excluded from wood production, and removals are scarce in these areas.

Two-thirds of forestry land is heath forest, and a third is peatland

The total area of heath forests is 17 million hectares. Of this, 94% is forest land or poorly productive forest land. The remaining 1.1 million hectares are treeless or nearly treeless unproductive land, such as treeless fells.

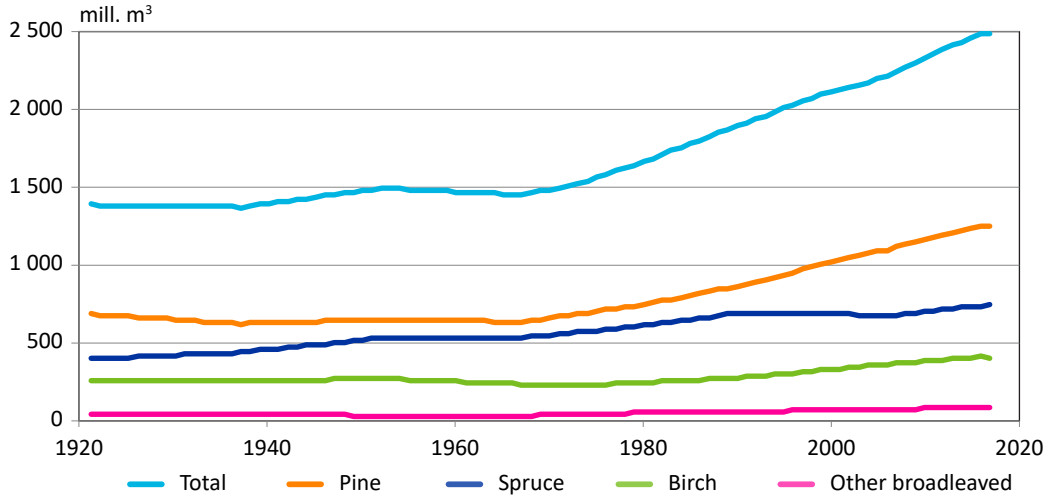
Of all peatlands (8.8 million ha), 76% are spruce mires or pine mires on forest land or poorly productive forest land. The remaining 2.2 million hectares are open marshes and spruce and pine mires on unproductive land. In Southern Finland, the share of peatland of total forestry land is 26%, and in Northern Finland, 40%.

The division of area, growing stock volume and increment



Growing stock volume by tree species, 1921–2019

Background data as a table



The share of undrained peatlands is 47%

The total area of undrained peatlands is 4.2 million hectares, 47% of the total area of peatlands. The area of drained peatlands totals 4.7 million hectares. In Southern Finland, 75% of peatlands are drained, while the same figure in Northern Finland is 41%. Of the drained peatlands, 630,000 hectares have been classified as unsuitable for forestry.

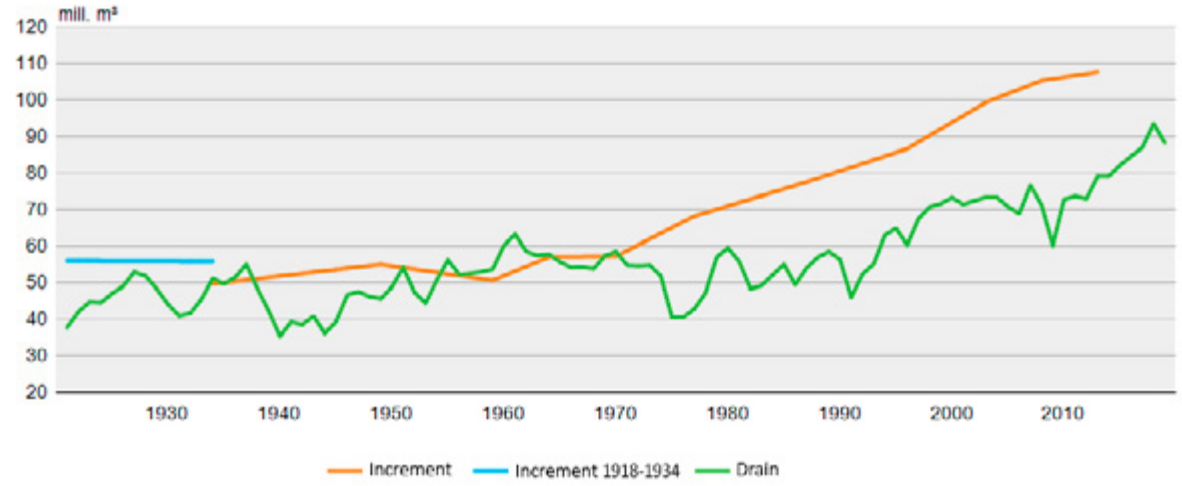
The area of drained peatlands also includes 300,000 hectares of peatlands that are not forestry-drained. They are either old peat soil fields or mires, the drainage of which was caused by roadside ditches or individual drain ditches. Restored peatlands, where ditches have been filled to restore the natural water management of the area, account for 23,000 hectares of the total area of drained peatlands.

The total area of peatlands has decreased by 900,000 hectares compared to the 1960s. This decrease is at least partly due to the fact that peatlands with thin peat layers have become heath forests.

Draining of new peatland areas has in practice ceased, and only drainage maintenance is performed in already drained areas. The significance of peatland forests will increase in the forestry industries in the future as drainage areas are increasingly entering the final cutting stage. Yet increasing attention has been paid to the impact of forest regeneration in drained peatlands on water and carbon sinks.

Annual growth and drain of tree stocks, 1921–2019

Background data as a table



The volume and biomass of the growing stock continue to grow – the increase is mainly in large trees

The growing stock volume on forest land and poorly productive forest land totalled 2,482 million cubic metres, 125 million cubic metres more than in the 11th inventory round (in 2009–2013). The volume of trees with a diameter of at least 20 cm has increased by 135 million cubic metres, while the volume of trees under 20 cm in diameter has slightly decreased. The volume of pine has increased most, but the volumes of spruce and deciduous tree species have also increased.

The biomass of the growing stock (stemwood, branches, foliage, stump and roots) has increased by 65 million tonnes to 1,733 million tonnes.

Half the growing stock volume is pine, while spruce accounts for just under a third, and deciduous tree species (mainly birch) a fifth. 44% of the growing stock are trees under 20 cm in diameter, 36% have a diameter of 20–30 cm, while a fifth are over 30 cm in diameter. A total of 90% of the total growing stock volume is located on land available for wood production. Of the total growing stock, 76% grow in heath forests, and 24% in peatlands.

Annual increment of growing stock on the rise

The annual increment of growing stock on forest land and poorly productive forest land totals 107.8 million cubic metres. Compared with the previous inventory, there is an increase of 2.4 million cubic metres. The increment of pine has increased most, and the increment of spruce

and birch has also slightly increased, but the increment of deciduous trees has decreased. The annual increment on forest land totals 106.1 million cubic metres, i.e., on average 5.2 cubic metres per hectare.

According to Luke's statistics concerning total roundwood removals and drain, the annual drain in 2019 totalled 88.4 million cubic metres, 82% of the latest increment result. In 2014-2019, the average annual drain was 85.9 million cubic metres.

The volume of the growing stock has increased by 1.7 times, and its growth has almost doubled in 50 years

The volume of the growing stock is 1.7 times higher than the level in the 1960s, because since that time, the annual increment has increased clearly more than removals. The volumes of pine and deciduous tree species have nearly doubled, while the volume of spruce is nearly 1.3 times higher. The volume of trees over 30 cm in diameter is now 2.2 times the volume in the 1960s. The average volume of growing stock in the forestry land area is now 119 cubic metres per hectare, while in the 1970s it was only 75 cubic metres.

The annual increment of growing stock took a clear upward turn in the 1970s and is now almost double the increment of growing stocks of the 1970s. The increment of pine stock has increased the most, and the increment of deciduous tree stock has also more than doubled. The increment of spruce stock has increased 'only' 1.4-fold. The increase in the annual increment is mainly due to the drainage of peatlands, regeneration of poorly productive forests and the age structure of forests. There is now a growing number of young 20-60-year-old forests which are at their fastest growing stage and have larger volumes of growing stock. Global warming has also accelerated the increment in growing stock.

Photo: Erkki Oksanen / Luke

Volume of dead trees increases in Southern Finland and decreases in Northern Finland

The volume of dead trees, which are important for biodiversity in forests, has increased in Southern Finland, totalling on average 4.5 cubic metres per hectare of forest land. In Northern Finland, the volume of dead trees has decreased compared with the previous inventory, but it is still higher than in Southern Finland, totalling 7.5 cubic metres per hectare.

- Website of the National Forest Inventory (NFI)
- Luke's forest information service (in Finnish)
- Forest resources on Luke's statistical services
- Forest resource tables in the statistics database
- Total roundwood removals and drain

Forest protection and biodiversity

Finland has a total of 2.9 million hectares of protected forest land and poorly productive forest land. This area consists of forests in statutory protected areas (2.4 million hectares) and biodiversity conservation sites in commercial forests (0.5 million hectares). Compared with the previous statistics for 2016, the share of protected forest land and poorly productive forest land grew from 12% to 13% by the beginning of 2019. This is mainly due to the increase in the area of biodiversity conservation sites in commercial forests.

Forest biodiversity is also taken into account in the management of commercial forests. Nature management in commercial forests is based not only on legislation but on voluntariness, forest certification and recommendations. For example, habitats of special importance according to the Forest Act and other valuable nature sites are left untouched. From the perspective of enhancing forest biodiversity, the principle in removals and other forest management activities is to save deciduous trees, retention trees and decayed trees, and favour mixed forests and other activities promoting biodiversity.

What is a protected forest?

Luke compiles statistics on protected forest areas roughly every three years. The latest statistics are based on the situation at the beginning of 2019. In the forest protection statistics, 'forest' means the combined area of forest land and poorly productive forest land, which together form a wooded area, i.e., a forest. Protected forests account for the total area of forest and poorly productive forest land in statutory protected areas, and in biodiversity conservation sites in commercial forests, totalling 2.9 million hectares. In 2019, 1.7 million hectares of protected forests were located in forest land and 1.2 million hectares in poorly productive forest land.

Statutory protected areas

The most strictly protected areas include national parks and nature reserves, as well as private nature reserves, areas governed by nature conservation programmes and wilderness reserves where forestry is not practised at all. Strictly protected areas located in forest land and poorly productive forest land encompass a total of 2.2 million

Area of statutory protected areas, biodiversity conservation sites in commercial forests, and areas supporting conservation of nature values, 1.1.2019

Background data as a table

hectares, 93% of the total area of statutory protected forests, and 10% of the total area of forest land and poorly productive forest land. The area of strictly protected forest land totalled 1.2 million hectares, accounting for 6% of the total area of forest land. Statutory protected areas where cautious felling is possible amounted to 0.2 million hectares.

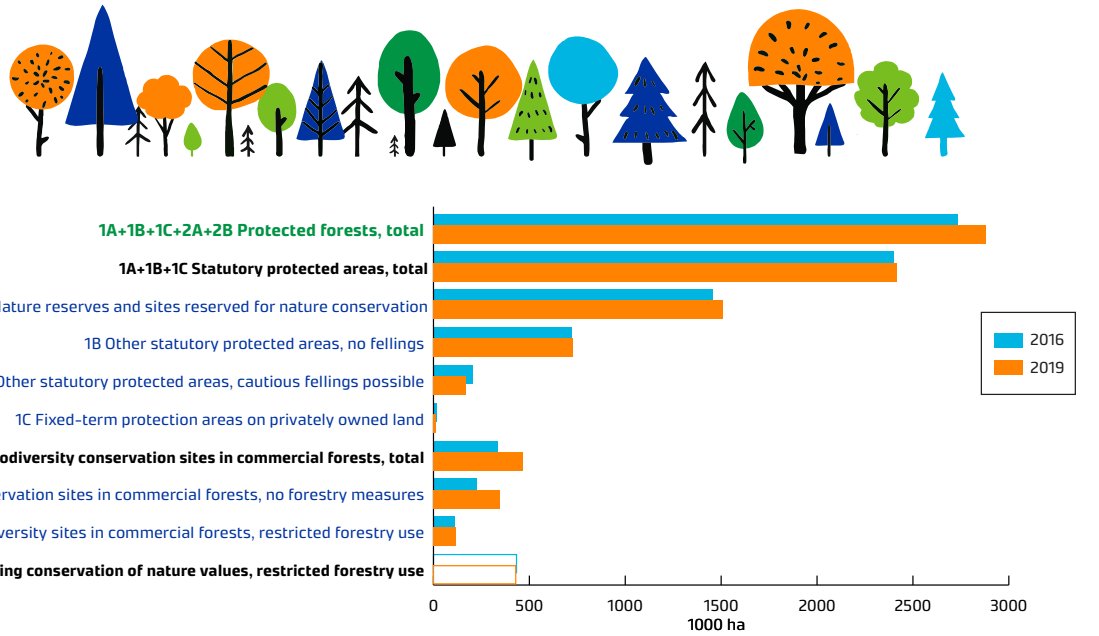
Biodiversity conservation sites in commercial forests

At the beginning of 2019, biodiversity conservation sites in commercial forests were recorded across 0.5 million hectares of forest land and poorly productive forest land. Of this, forest land accounted for 0.3 million hectares, and poorly productive forest land 0.2 million hectares. In some of these biodiversity conservation sites in commercial forests, selection cutting for nature management purposes or to maintain the structural characteristics of the forest may be allowed. In biodiversity sites in limited forestry use, felling is possible, but it must not compromise the site's nature values.

Areas supporting conservation of nature values

In addition to statutory protected areas and biodiversity conservation sites in commercial forests, there is a total of 0.4 million hectares of forests supporting conservation of nature values that are subject to forestry restrictions (such as forests designed for recreational use and special areas for reindeer husbandry and Sámi culture). These are not classified as protected forests in the statistics.

Surface areas of statutory protected areas, biodiversity conservation sites in commercial forests and forests supporting conservation of nature values, 2016 and 2019



Forest means the area of forest land and poorly productive forest land, which together form an area covered by trees, i.e. a forest.

Protected forests mainly located in Northern Finland

The majority of protected forest in forest land and poorly productive forest land, nearly 80%, is located in Northern Finland, where protected areas amount to 2.3 million hectares, or 20% of the total area of forest land and poorly productive forest land. The area of strictly protected forest land totals 0.9 million hectares, accounting for 10% of the total area of forest land. Southern Finland has approximately 0.6 million hectares of protected forest land and poorly productive forest land (5% of the total area of forest land) and 0.3 million hectares of strictly protected forest land (3% of the total area of forest land).

Voluntary protection through the METSO programme

The area of protected areas has increased in recent years thanks to the voluntary Forest Biodiversity Programme for Southern Finland, METSO. State-owned land has also been protected, and conservation measures have been implemented on both state-owned and private land. In 2008-2019, a total of EUR 365 million has been spent in

the ELY Centres and in the Finnish Forest Centre to implement the programme.

Between 2008 and 2019, new permanent and temporary conservation areas have been established, and some 73,500 hectares of state-owned land has been protected under the Nature Conservation Act. The Act on the Financing of Sustainable Forestry has been applied to impose environmental forestry subsidy agreements on nearly 43,000 hectares of land and implement nature management projects across 4,800 hectares of commercial forest. In addition, various restoration and nature management measures have been carried out, particularly in state-owned forests.

The aim of the METSO programme is to expand the network of nature conservation areas by a total of 96,000 hectares and safeguard biodiversity on a total of 82,000 hectares in private commercially managed forests with fixed-term contracts and nature management projects by 2025. By the end of 2019, 77% of the conservation area goal was achieved, and 58% of the goal was achieved for biodiversity sites.

Biodiversity in commercial forests

In addition to forest protection, the conservation and enhancement of forest biodiversity requires the natural management of commercial forests. Activities are based not only on legislation but on voluntariness, forest certification and various recommendations.

The aim in commercial forests is to safeguard the habitats of special importance referred to in the Forest Act and other sites with high nature values. Sites that should be preserved include the immediate surroundings of

Photo: Erkki Oksanen / Luke

springs, brooks and other small water bodies, herb-rich forest patches, and peatlands and heathland forest islets.

Biodiversity in forests are also taken into account in removals and other forest management activities. Examples of activities promoting biodiversity include retaining and increasing the number of deciduous, retention and decayed trees, the favouring of mixed forests, and ensuring diversity in tree species and age classes and forest density.

Results of nature management in commercial forests

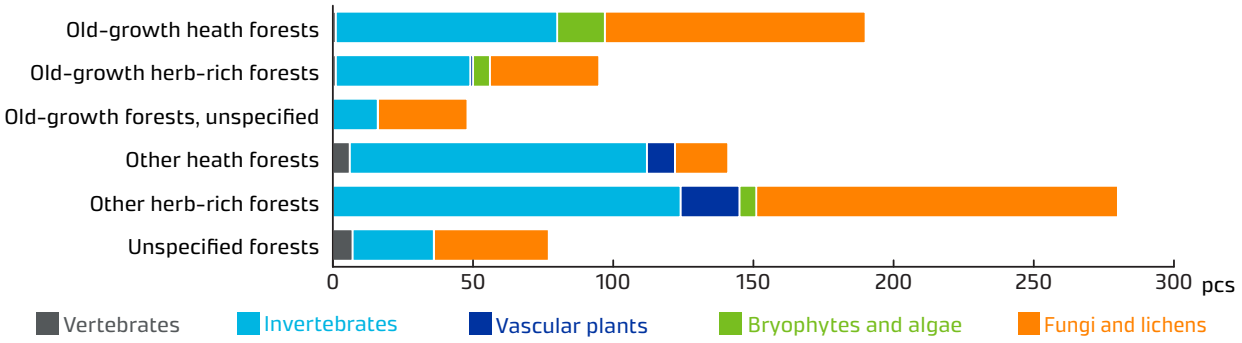
The Finnish Forest Centre assesses each year how nature management has been taken into account in felling activities in commercial privately-owned forests. In 2019:

- The average size of valuable nature sites was 0.5 hectares.
- The characteristics of natural sites were retained in 94% of cases.
- The volume of retained growing stock totalled an average of 124 cubic metres per hectare, of which 8 cubic metres were deadwood.
- Growing stock volumes retained at clearcutting sites totalled on average 3.7 cubic metres, and the volume of deadwood 0.9 cubic metres per hectare.

The volume of deadwood has been monitored in forest resource inventories since the late 1990s. Since then, the average volume per hectare has increased from 2.8 cubic metres to 4.5 cubic metres in Southern Finland. In Northern Finland, the volume has decreased from 9.5 cubic metres to 7.5 cubic metres per hectare.

Threatened species of forests by habitat, 2019

Background data as a table



A total of 10% of forests on forest land are dominated by deciduous tree species, and the volume of deciduous trees is at least a quarter of the area in 12% of all coniferous forests. Biodiversity is further enhanced by the fact that majority of Finland's forests have generated naturally from indigenous tree species and elements.

Nearly a third of threatened species in Finland are forest species

The fifth evaluation of threatened species in Finland was completed in 2019. According to the results, there are approximately 48,000 species in Finland, of which less than half are known sufficiently well to assess whether they are endangered. Of these, 11.9%, or a total of 2,667 species, were classified as endangered.

Almost a third of the endangered species live in forests, especially in herb-rich and old forests. Of the 833 endangered forest species, nearly half are invertebrates. Fungi and lichens account for two-fifths, and the share of mosses, algae, vascular plants and vertebrates is less than a tenth in total.

Compared to the previous evaluation, the number of species assessed was higher in 2019, and the number of endangered species has also increased. The number of endangered forest species increased by 2%.

Forest protection

Plan to develop the compilation of forest protection area and METSO statistics (in Finnish)

Forest biodiversity

Forest resources

Silviculture

In 2019, a total of EUR 265 million was invested in silvicultural and forest improvement works. The amount invested in silviculture decreased slightly from the previous year to EUR 209 million. However, the area of artificial regeneration increased by 4% to 100,000 hectares. Investments in forest improvement work increased by nearly a third in real terms to EUR 55 million. The volume of forest improvement work also increased significantly in 2019.

Soil preparation, artificial forest regeneration, and early and later pre-commercial thinning are among the main types of silvicultural works. Of these, early and later pre-commercial thinning, and the improvement of young forests accounted for the majority of the costs, totalling EUR 75 million, or just over one-third of the costs of silviculture. This was 8% lower in real terms, deflated using the wholesale price index, than in the year before. The costs of artificial forest regeneration were EUR 60 million and that of soil preparation EUR 38 million. The costs of both artificial forest regeneration and soil preparation increased slightly from the previous year.

Forest regeneration opportunities are improved through soil preparation works. In 2019, soil preparation was carried out across the area of 107,000 hectares. Mounding accounted for two-thirds of this total area, disc trenching for a fifth, and patch scarification for a tenth. Compared to 2018, the soil preparation area increased by 1%.

The area of artificial forest regeneration increased

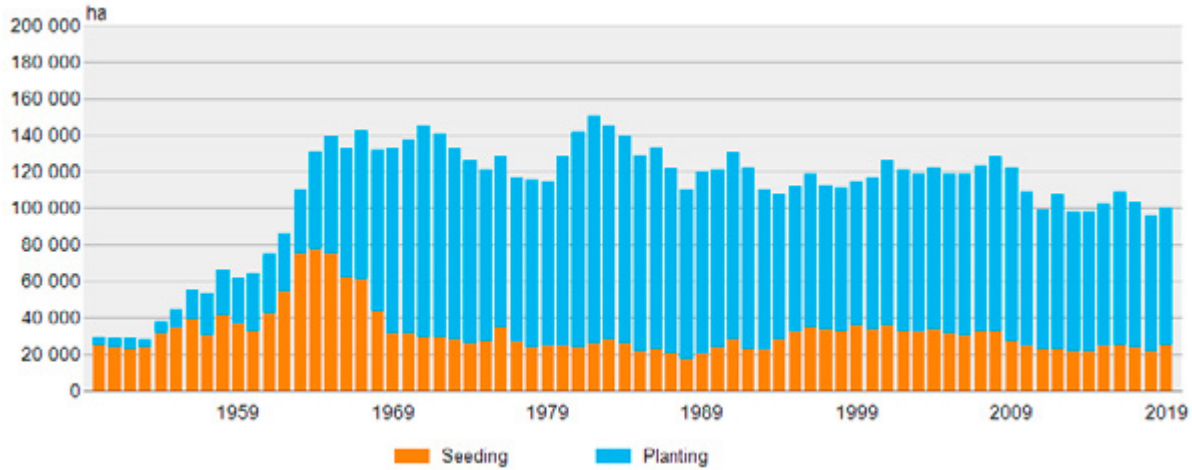
The area of artificial forest regeneration amounted to 100,000 hectares, which was 4% more than in the year before. A quarter of the area was regenerated through seeding. The total area seeded increased by 16% from the previous year, while the planting area remained unchanged. Of all planted trees, just over two-thirds were spruce, 27% were pine and 4% were birch.

The area of early and later pre-commercial thinning, and the improvement of young stands totalled 169,000 hectares. The area of early and later precommercial thinning decreased by 4% to 130,000 hectares from the previous

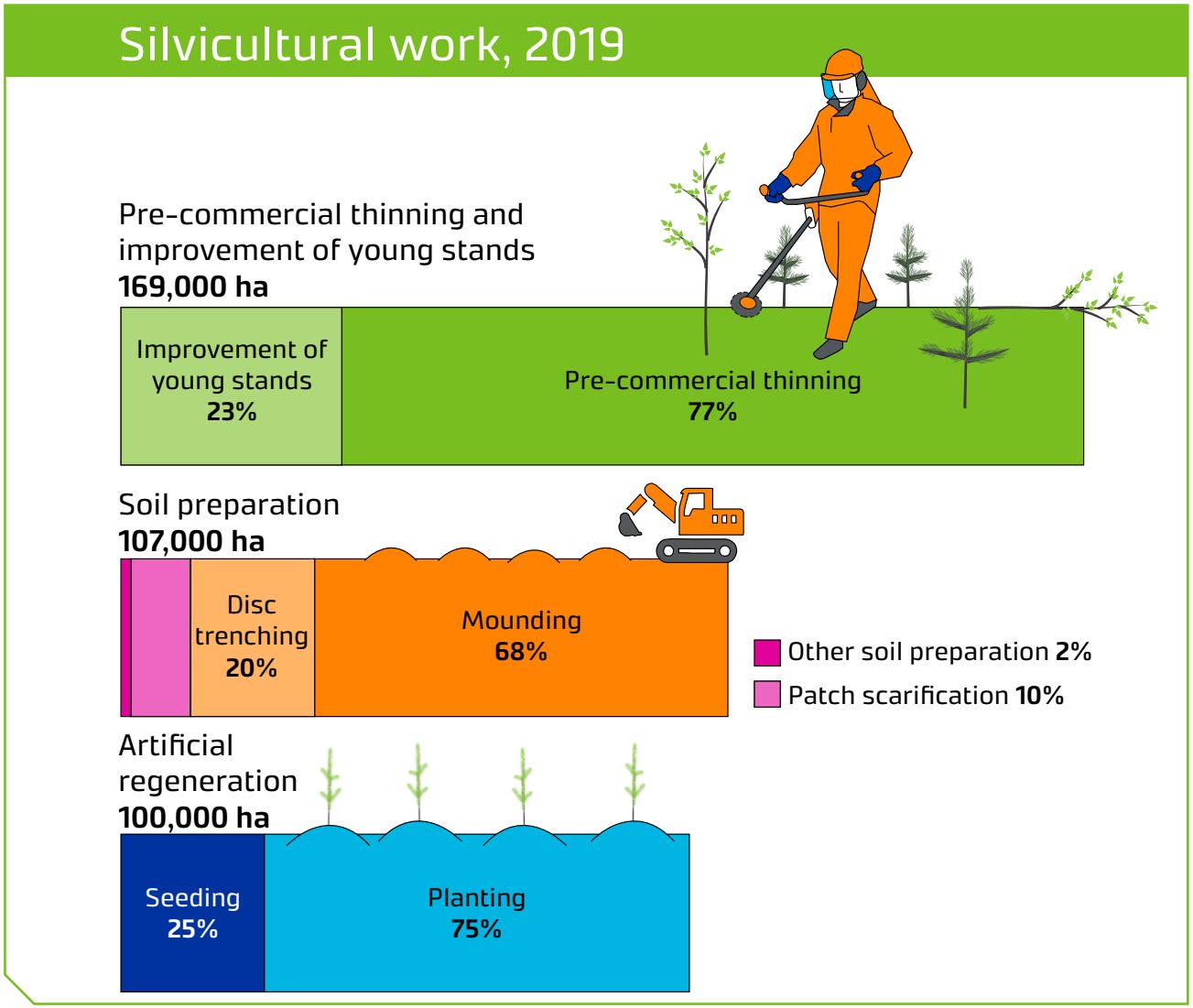
Photo: Erkki Oksanen / Luke

The area of artificial regeneration, 1950–2019

Background data as a table



year. The area with an improvement of young stands decreased by a fifth from 2018 to 39,000 hectares.



Investments were made in ditch network maintenance and forest roads

Forest improvement works include fertilisation, ditch network maintenance, and the basic improvement and construction of forest roads. Costs of forest improvement works also include planning costs related to the ditch network maintenance and the basic improvement and construction of forest roads. Investments in forest roads increased by 74% in real terms to more than EUR 26 million from the previous year. In contrast, the total costs of ditch network maintenance decreased by 8% to EUR 6.5 million.

The area treated with forest fertilisation, which promotes forest growth and health, totalled 60,000 hectares. Remedial fertilisation accounted for just under a quarter of this area (down by 9% from the previous year). The area treated with fertilisation for growth remained at the previous year's level and was 46,000 hectares. In 2019, maintenance works were carried out along 12,000 kilometres of the ditch network, which was 44% more than in the previous year. A total of 2,500 kilometres of forest roads were improved and constructed (up by 74%).

The area treated with felling decreased

On the basis of notifications of forest use, the area treated with felling was estimated at 711,000 hectares in 2019, down by a tenth from the previous year. Felling aimed at the thinning or removal of seed trees and shelterwood trees accounted for 78% of the total area. Clearcutting accounted for 16% and natural regeneration for 4% of the total area.

Background to the statistics

The statistics of silviculture and forest improvement include work carried out in non-industrial private forests, in commercial forests and in state-owned forests. The statistics do not include work carried out independently by forest owners in their own forests, because this is not included in the data collected from forest service providers. The statistical survey on silviculture includes separate questions for unit costs and total costs by type of work, which is why the volume of work multiplied by the unit cost does not necessarily add up to the total cost.

Volume and costs of silvicultural works in 2019

	Volume, 1,000 ha	Unit cost, EUR/ha	Total cost, EUR million
Clearing of regeneration areas	28	162	4.5
Initial clearing of intermediate felling areas	76	294	22.3
Soil preparation	107	352	36.6
Seeding	25	320	8.0
Planting	75	691	52.1
Early and later pre-commercial thinnings	130	430	56.1
Improvement of young stands	39	484	18.4
Fertilisation	60	319	19.2
Repelling root-rot disease	131	79	10.3
Forest improvement work			55.1

Photo: Erkki Oksanen / Luke

Wood trade

The decline in global economic growth reduced the production of many forest industry products and the demand for industrial roundwood in 2019. The volume of logs and pulpwood purchased from non-industrial private forests was almost a third lower than in the peak year of 2018. The average real price level decreased by 7% in standing sales for industrial roundwood and increased by 2% in delivery sales. In particular, the prices of softwood logs decreased.

Energywood trade decreased by around a quarter from the previous year. The average price decreased by 12% in standing sales and increased by 8% in delivery sales. The price of pruned stemwood decreased by 12% in standing sales and that of logging residues by 21%.

Volumes and prices in industrial roundwood trade decreased in 2019

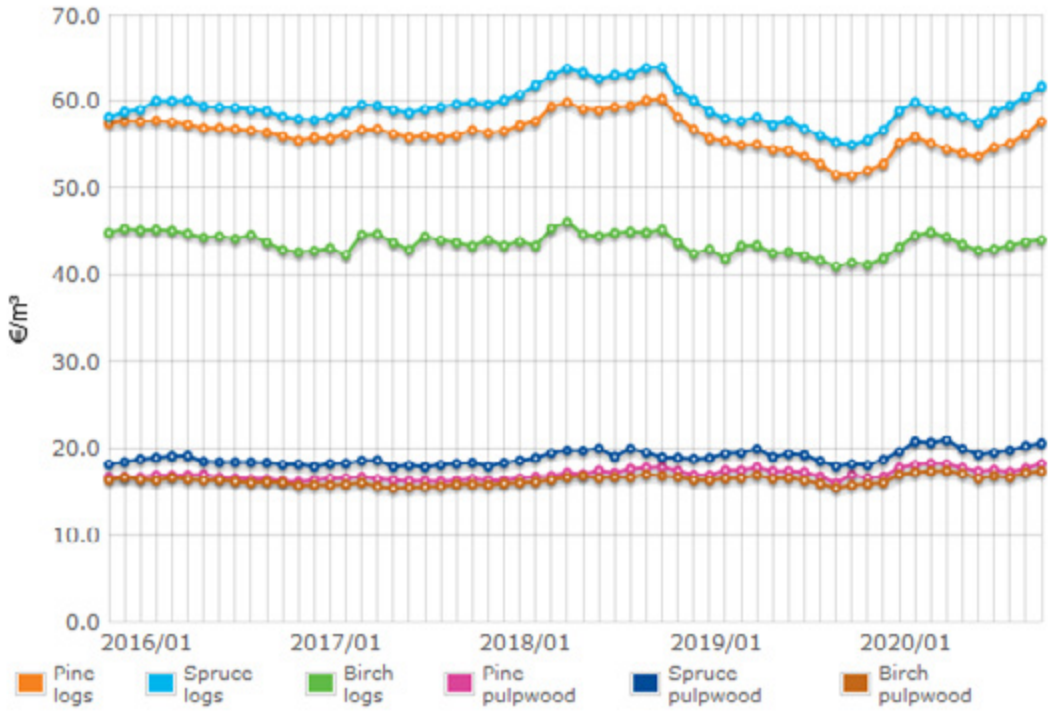
In 2019, the average price paid for pine logs from non-industrial private forests in standing sales was EUR 56.5 per cubic metre and EUR 59.9 for spruce logs. The average price for pine pulpwood was EUR 17.7 per cubic metre and EUR 19.5 for spruce pulpwood. In real terms, the log prices decreased by 8% and the prices of pulpwood by 1% from the previous year.

When comparing the prices, it is good to note that demand for wood and wood prices were exceptionally high in the 2018 peak year. Compared to the average price level of the previous five years (2014-2018), the real price for logs was 3% lower in 2019, while the price for pulpwood was 3% higher in 2019.

In this yearbook, price changes are considered in real terms, deflated using the wholesale price index. In Luke's statistics database, prices of wood are presented as nominal values. In standing sales, the buyer is responsible for felling and transporting the wood to a roadside storage area.

Real monthly stumpage prices of roundwood from non-industrial private forests, 2015-2020 (deflated using wholesale price index)

▶ Background data as nominal prices



Price of industrial roundwood from non-industrial private forests in standing sales and delivery sales in 2019

Product	Standing sales			Delivery sales		
	Average price, EUR/m³	Increase/decrease in real terms, %		Average price, EUR/m³	Increase/decrease in real terms, %	
		compared with the previous year	on the average of the previous 10 years		compared with the previous year	on the average of the previous 10 years
Pine logs	56.5	-8.0	-5.0	60.7	-2.0	-3.0
Spruce logs	59.9	-8.0	-2.0	62.9	-1.0	1.0
Birch logs	43.9	-5.0	-4.0	50.4	0.0	-1.0
Pine pulpwood	17.7	0.0	2.0	32.4	7.0	3.0
Spruce pulpwood	19.5	-1.0	-1.0	34.5	5.0	3.0
Birch pulpwood	16.8	-1.0	-1.0	32.9	6.0	2.0

Percentages of different felling methods of the volume of roundwood sold by standing sales in 2019

Product	Standing sales	
	Percentage of total volume	
	Regeneration felling	Thinning and first thinning
Pine logs	73	27
Spruce logs	85	15
Birch logs	69	31
Pine pulpwood	34	66
Spruce pulpwood	56	44
Birch pulpwood	39	61

The price of wood is affected by the felling method and region

Depending on the tree species, in standing sales, the price of logs was EUR 7-8 and the price of pulpwood EUR 3-4 lower when harvested by means of thinning than when harvested by regeneration felling. With regard to pulpwood harvested by first thinning, the corresponding difference was EUR 6-8.

In Northern Finland, the price of wood is usually lower than in the south. The average price of pine logs was just over four euros and that of spruce logs around six euros lower in the three northernmost regions of Finland than in southern regions. For pulpwood, the difference in prices was less than one euro.

Prices are higher in delivery sales because the seller is responsible for the harvesting of wood

The roadside prices of wood sold in delivery sales are on average higher than the prices in standing sales, because in delivery sales the forest owner is responsible for felling and transporting the wood to a location along a long-distance delivery route. The price difference between the sales methods is largest for pulpwood, but for logs, the average prices can be quite close to each other.

In 2019, the price of pulpwood in delivery sales was on average EUR 15-16 higher than in standing sales. The average price of pine logs was four euros and that of spruce logs three euros higher in delivery sales than in standing sales. Contrary to the standing sales, the price of pulpwood in delivery sales increased by 6% in real terms from the previous year.

Roundwood trade statistics are based on the unit prices written into wood trade contracts between forest owners and buyers. However, wood trade can also involve other conditional pricing components, or the buyer can offer certain forest services to the seller as part of the trade or at a discounted price, for example. Potential additional pricing components or forest services are not included in the price statistics. Some companies engaged in wood trade also offer the stem pricing alternative. However, Luke currently only compiles statistics on log, pulpwood and small-diameter log prices.

The volume of wood trade decreased by nearly a third

The volume of wood trade recorded in 2019 decreased by as much as 30% from the exceptionally high level of the previous year. Log trade decreased even more, by two-fifths, and pulpwood trade by one-fifth.

Pulpwood accounted for 56% of all industrial roundwood purchased. Of the different types of wood, pine pulpwood was traded most: it accounted for clearly more than half of the total pulpwood trade. Of the remaining pulpwood, birch was traded slightly more than spruce. As usual, softwood logs accounted for more than 95% of all log trade, and spruce logs were traded clearly more than pine logs.

In the statistics, around 90% of the wood traded came from non-industrial private forests.

Data for industrial roundwood trade statistics are collected from large and medium-sized forest industry companies, as well as from forest management associations. It is estimated that the statistics currently account for around 90% of all industrial roundwood purchased from non-industrial private forests Data collection was extended in 2013 and 2016, meaning that the wood volumes recorded for those years caused a break in the homogeneity of the time series.

The wood trade volumes reported by companies are included in the statistics as such. The figures are not extrapolated to account for the trade activities of all buyers, which means that the wood volumes recorded in the statistics do not include all wood purchased from non-industrial private forests.

Photo: Erkki Oksanen / Luke

The final volumes of roundwood purchased and felled are reported in the nationwide statistics on commercial roundwood removal. Typically, the felling volumes in non-industrial private forests vary less than the wood trade volumes, and the felling volumes did not decrease at the same rate in 2019 as the wood trade volumes. Compared to 2018, the industrial roundwood removals in non-industrial private forests decreased by only 8%.

Most roundwood is sold by standing sales

Standing sales accounted for 83% of non-industrial private wood trade. Nearly three-fifths of wood sold by standing sales originated in regeneration felling. Thinning accounted for 36% and 5% for first thinning stands.

Pulpwood is mainly procured by delivery sales. Of all wood sold in delivery sales in 2019, pulpwood accounted for 73%, and more than 40 percentage points of this was pine.

▶ Industrial roundwood trade

Energywood prices decreased in standing sales

Wood is also procured from forests as raw material for forest chips used to fuel heat and power plants. In 2019, an average of EUR 3.3 was paid to forest owners for energywood in standing sales and EUR 22.8 per cubic metre in delivery sales. Compared with the previous year, the average price decreased by 12% in standing sales and increased by 8% in delivery sales in real terms.

The average price paid for pruned stems was EUR 4.0 per cubic metre in standing sales and EUR 25.9 per cubic metre in delivery sales. Compared with the previous year, the price decreased by 12% in standing sales and increased by 6% in delivery sales in real terms.

The average price for logging residue was EUR 2.9 per cubic metre in standing sales and EUR 17.3 per cubic metre in delivery sales. The price fell by 21% in standing sales and increased by 10% in delivery sales.

In addition to the price paid by buyers, forest owners can also receive state subsidies for their small-diameter stands paid for silvicultural works in young forests and the harvesting of small trees. The total amount of these subsidies was EUR 430 per hectare for eligible sites. If the volume of pruned or unpruned stems harvested from such a site totalled, for example, 50 cubic metres per hectare, subsidies amounted to around EUR 9 per cubic metre. Although these subsidies affect decision making concerning such stands and the financial results of the forest owners, they are not included in the statistics for energywood.

Energywood trade decreased by a quarter

Energywood trade recorded in 2019 decreased by a quarter from the previous year. Since the compilation of the statistics started in 2014, the recorded trade volume is the second lowest since 2016.

Of all energywood purchased in 2019, pruned stemwood accounted for 47% and logging residues 43%, while unpruned stems accounted for only 7% and stumps 4%.

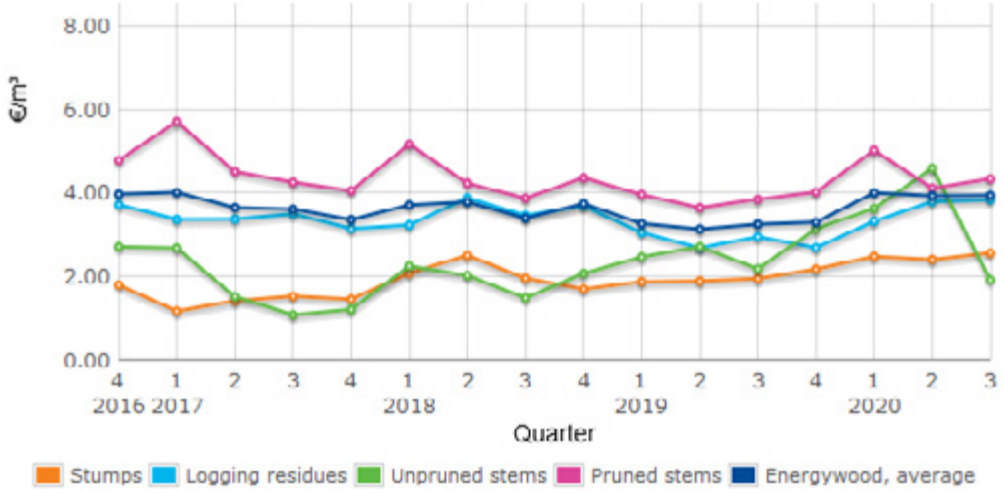
As in the previous year, three-quarters of all energywood purchased came from standing sales. However, the most common energywood type varied according to the trade method: logging residues made up nearly half of standing sales, and pruned stems accounted for three-fifths of delivery sales. Statistics on energywood trade have been compiled since the beginning of 2014. It is estimated that the statistics currently account for around half of all energywood purchased from non-industrial private forests

Price of energywood in standing sales and delivery sales in 2019

Energywood type	**Standing sales** average price, EUR/m³	Increase/decrease compared with the previous year in real terms, %	**Delivery sales** average price EUR/m³	Increase/decrease compared with the previous year in real terms, %
Average	3.3	-12	22.8	8
Pruned stems	4.0	-12	25.9	6
Logging residue	2.9	-21	17.3	10
Unpruned stems	2.8	39	20.7	1
Stumps	2.0	-8	11.5	3

Real prices of energywood in standing sales by quarters, 2016-2020 (deflated using the wholesale price index)

Background data as nominal prices



Energywood trade

Removals and drain

The production and export volumes of the forest industries remained high in 2019. This was also reflected in the felling volumes of industrial roundwood: they were the second highest in the history of the statistics, nearly 64 million cubic metres. In addition, 9 million cubic metres of roundwood were harvested for energy production. This means that total roundwood removals, i.e., the total volume of harvested industrial roundwood and energywood, in 2019 amounted to 73 million cubic metres.

Luke has estimated that the total sustainable roundwood and energywood removal potential in Finland currently amounts to just over 80 million cubic metres of roundwood per year. The actual total removals of roundwood in 2019 accounted for 91% of this estimate.

Removals remained high

In 2019, a total of 63.7 million cubic metres of roundwood were harvested for use by the forest industries. The felling volume was some 5 million cubic metres or 8% lower than in the previous year. However, compared to the average for the preceding ten-year period, the volume was 13% higher.

In 2019, felling of sawlogs totalled 25.9 million cubic metres, while felling of pulpwood amounted to 37.7 million cubic metres. The felling volume of logs decreased by 12% from the previous year, and that of pulpwood by 4%. Compared to the previous ten years, log removals grew by 10%, while pulpwood removals increased by 17%. Spruce accounted for the majority of log removals (13.5 million cubic metres), and pine for the majority of pulpwood removals (17.6 million cubic metres).

Roundwood is also imported for industrial use. In 2019, the volume of imported industrial roundwood increased by 3% from the previous year to 11.9 million cubic metres.

Four-fifths of industrial roundwood originated in non-industrial private forests

A total of 53.1 million cubic metres of industrial roundwood was sourced from non-industrial private forests. This accounts for 83% of the total volume of industrial roundwood removals. A total of 44.1 million cubic metres of timber, 10% less than in 2018, accumulated from standing sales in non-industrial private forests,

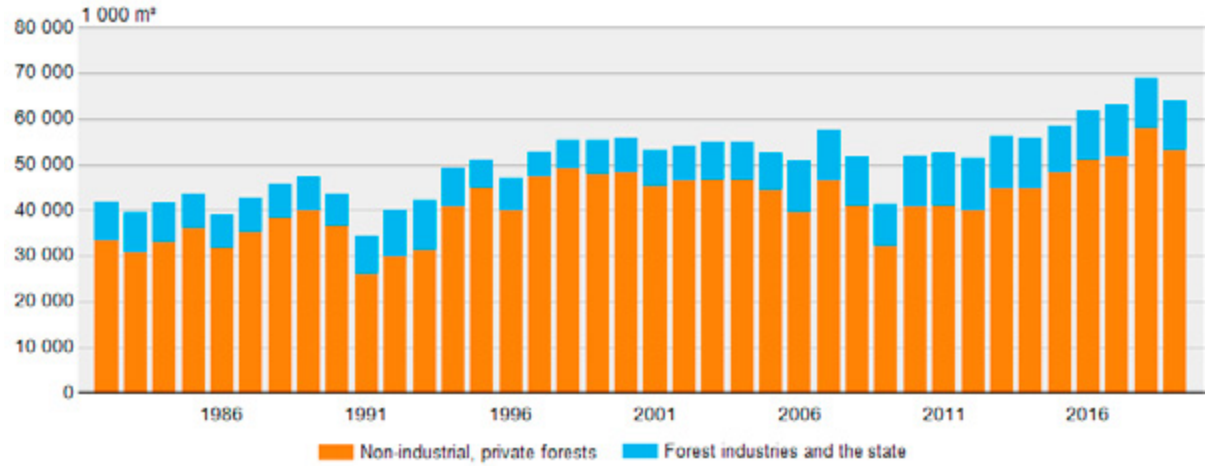
while the volume of delivery sales increased by 4% to 9.0 million cubic metres. A total of 10.6 million cubic metres of industrial roundwood was removed from forestry companies' own forests and state-owned forests, down by 5% from the previous year.

Highest felling volumes in Savo

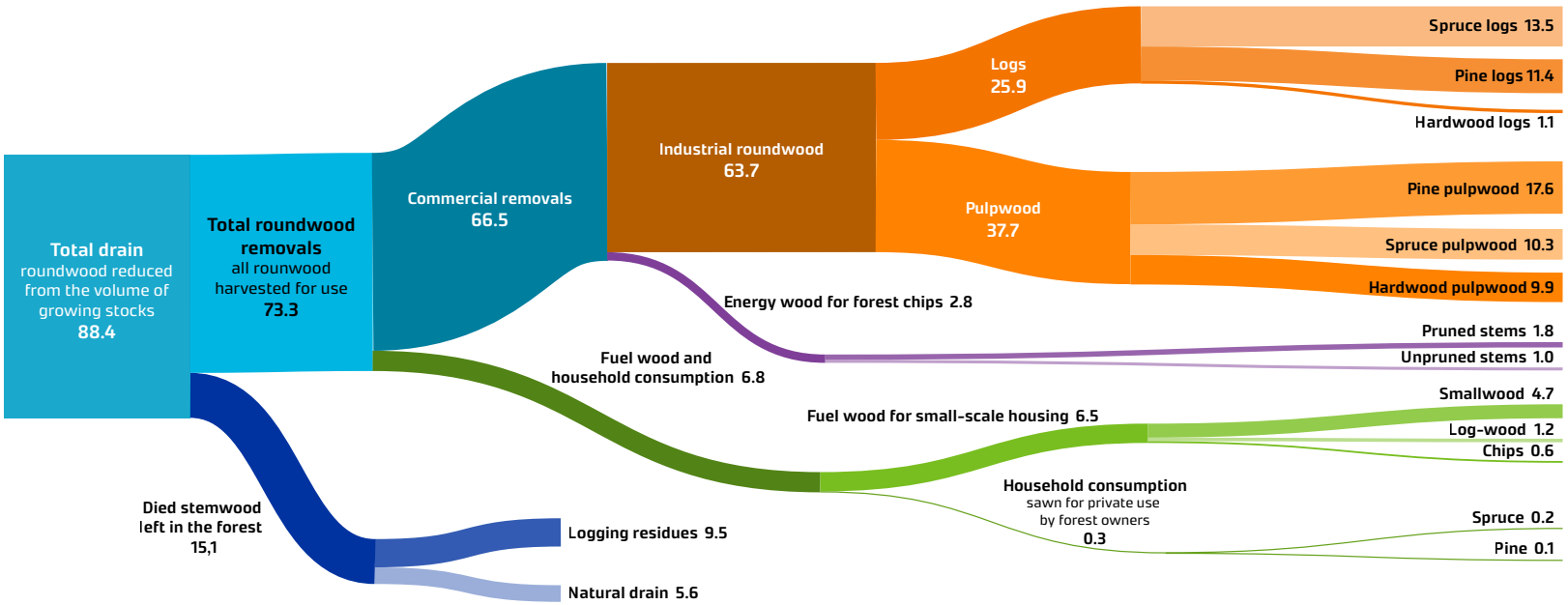
In 2019, the highest industrial roundwood felling volumes were reported in the regions of South and North Savo, Central Finland, and North Ostrobothnia. The quantity

Industrial roundwood removals by ownership category 1982–2019

Background data as a table



Total roundwood removals and drain, 2019 (mill. m³)



of industrial roundwood felled in North Savo totalled 6.5 million cubic metres, 6.3 in South Savo and in Central Finland, and 6.1 in North Ostrobothnia.

Total removals decreased to 73 million cubic metres

The total felling volume of roundwood in 2019, or total removals, amounted to 73.3 million cubic metres. The majority of total removals, or 87%, comprised logs and pulpwood harvested for use as raw material for forest industry products or export. In addition, a small amount of wood harvested by non-industrial private forest owners from their forests for their private use.

A total of 9.2 million cubic metres of roundwood was also harvested for energy production. Of this amount, just over two-thirds were used as fuelwood in small-scale housing and almost a third as forest chips in heat and power plants.

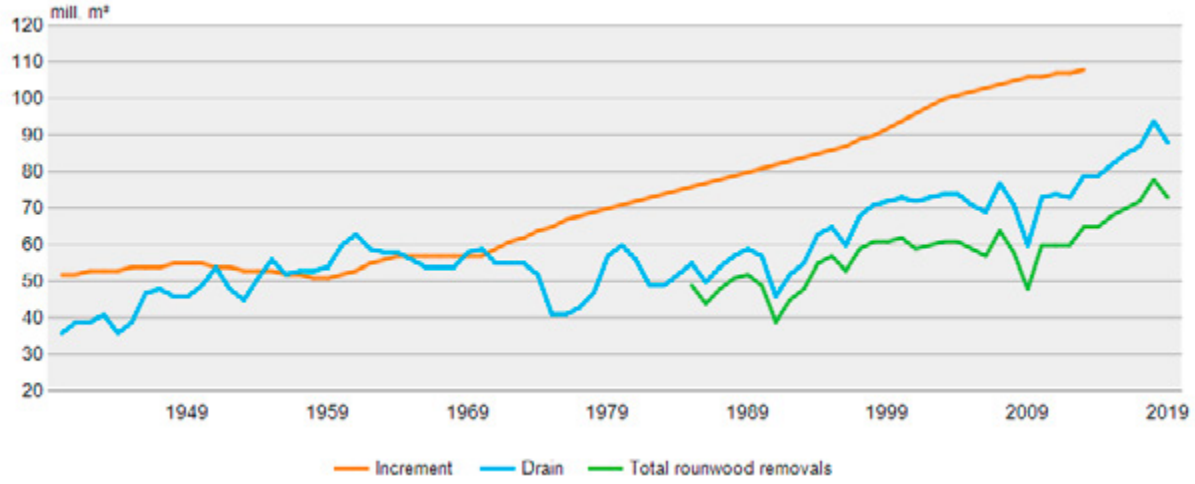
The total felling volume decreased by nearly five million cubic metres from the previous year, but was still the second highest in the history of statistics. The figure was 8.5 million cubic metres, or 13%, higher than the average for the preceding ten-year period.

Logging residue and stumps were also utilised as forest chips

In addition to roundwood, 2.6 million cubic metres of logging residue and stumps were harvested in connection with commercial felling. However, this volume used in energy production is not included in the total felling volume, which only covers roundwood removals.

Total roundwood removals, increment and drain of growing stock, 1940-2019

Background data as a table



The total drain was 88 million cubic metres

In 2019, the total drain of roundwood from the growing stock in Finnish forests amounted to 88.4 million cubic metres. In addition to roundwood removals, total drain includes the roundwood left in the forests. In 2019, natural deadwood and removal waste left in the forests totalled 15.1 million cubic metres.

The total drain decreased by 6% from the previous year. However, it was 12% higher than the average for the preceding ten-year period. Examined by tree species, pine accounted for most of the total drain (40%). Spruce accounted for 32% and deciduous trees for 27%.

Some 108 million cubic metres of new roundwood grow in our forests every year. In 2019, the growth of forests exceeded total drain from removals and natural drain by 19 million cubic metres, which means that the total volume of growing stock in forests increased by this amount. Since 1970, the volume of wood in Finnish forests has grown continuously.

Felling possibilities

According to an estimate made by Luke in February 2020, the maximum sustainable roundwood and energywood removal potential in Finnish forests during the current ten-year period (from 2016 to 2025) is on average 80.5 million cubic metres of roundwood per year. Of this, industrial roundwood (logs and pulpwood) accounts for 74.6 million cubic metres, while roundwood for energy production (including fuelwood for household use) accounts for 5.9 million cubic metres. In addition, approximately 13.5 million cubic metres of logging residues and stumps can be harvested for energy production each year. If achieved, the maximum sustainable removal potential is estimated to result in a carbon sink that absorbs approximately 18 million tCO_2e annually over the current ten-year period in Finnish forests.

The estimated total removals of roundwood was 3.5 million cubic metres lower than the estimate made in the autumn of 2018. The change is due, for example, to the more precise calculation of waste wood in the removals of industrial roundwood, as a result of which the volume of waste wood increased in the calculation while the volume of pulpwood decreased.

In 2016–2019, total removals of roundwood amounted to an average of 73.5 million cubic metres per year, which means that 91% of the maximum sustainable yield was utilised. Removals of roundwood in 2019 totalled 73.3 million cubic metres, and the use rate of the maximum sustainable yield was 100% for small-diameter trees and 73% for logs.

Commercial fellings

Harvesting and long-distance transportation of roundwood

Total roundwood removals and drain

Estimates of felling possibilities

Stumpage earnings

Forest owners received EUR 2.3 billion in stumpage earnings in 2019. Earnings decreased in real terms by 16% to the 2017 level from the previous peak year. Compared to the average of the previous five years, income remained at the same level.

Gross stumpage earnings totalled nearly EUR 2.3 billion

Forest owners' gross stumpage earnings amounted to EUR 2.307 billion in 2019. The earnings of private non-industrial forest owners totalled EUR 2.007 billion, 87% of the total earnings. The stumpage gross earnings of the forest industry and the state totalled EUR 300 million.

Stumpage earnings were highest in South Savo (EUR 248 million), Central Finland (EUR 228 billion) and North Savo (EUR 226 million).

Gross stumpage earnings are calculated by multiplying the quantities of industrial roundwood, and energywood felling and wood harvested for private use by average standing sale prices. Here, 'non-industrial private forests' also includes forests owned by municipalities, parishes, and enterprises other than those engaged in forestry.

The majority of earnings come from standing sales

In real terms, gross stumpage earnings decreased by 16% from the previous year, when deflated using the wholesale price index. Compared to the preceding ten-year

Real gross stumpage earnings by source, 2002–2019 (deflated using wholesale price index)

Background data as nominal prices

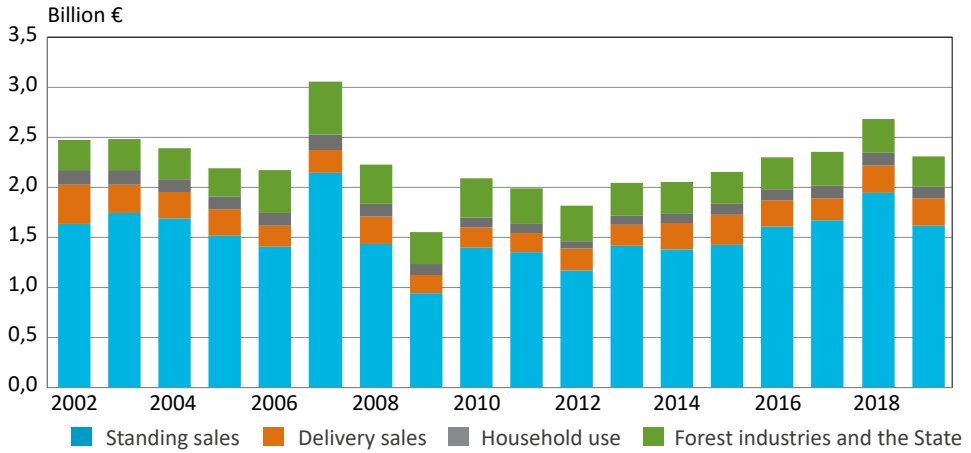


Photo: Erkki Oksanen / Luke

period, earnings increased by 10%. In non-industrial private forests, earnings increased by 14%, but in the case of forests owned by forest industry companies or the state, earnings decreased by 11%.

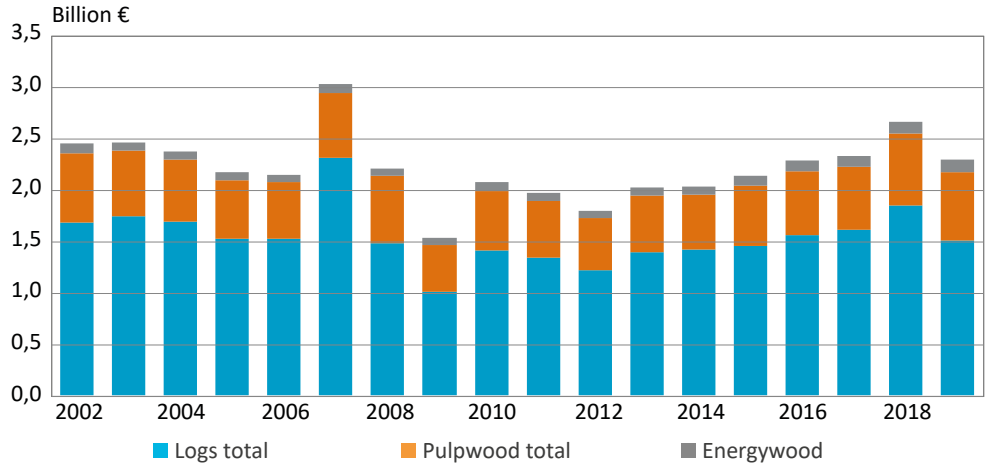
In 2019, the share of standing sales in non-industrial private forests of total gross stumpage earnings decreased by a few percentage points to 70%. During the preceding ten-year period, the share of standing sales was on average 68% of total earnings.

The share of logs decreased by three percentage points to 66%, and spruce maintained its position as the most important tree species, with 46%. In Ostrobothnia and Northern Finland, where most forests owned by the forest industry and the state are located, pine was the most important tree species.

- Stumpage earnings
- Gross stumpage earnings by ownership category and by region 2019
- Gross stumpage earnings by ownership category 2002-2019

Real gross stumpage earnings by roundwood assortment, 2002-2019 (deflated using wholesale price index)

- Background data as nominal prices



The earnings fell clearly from the record year but were still clearly higher than the average of the previous 10 years.

Profitability of non-industrial private forestry

In 2019, the peak of the economic trend had passed, and the profitability of forestry fell clearly from the previous peak year. Even though the operating profit of non-industrial private forestry decreased to EUR 128 per hectare, it still remained high compared to long-term averages. The investment returns on wood production were negative for the first time in years due to the decrease in stumpage prices.

Despite the decrease in the operating profit in non-industrial private forestry, the operating profit remained high

The operating profit of non-industrial private forestry decreased by 17% in real terms from the previous year to EUR 128 per hectare. Despite this, the operating profit improved by a fifth compared to the average for the preceding tem-year period, when deflated using the cost-of-living index.

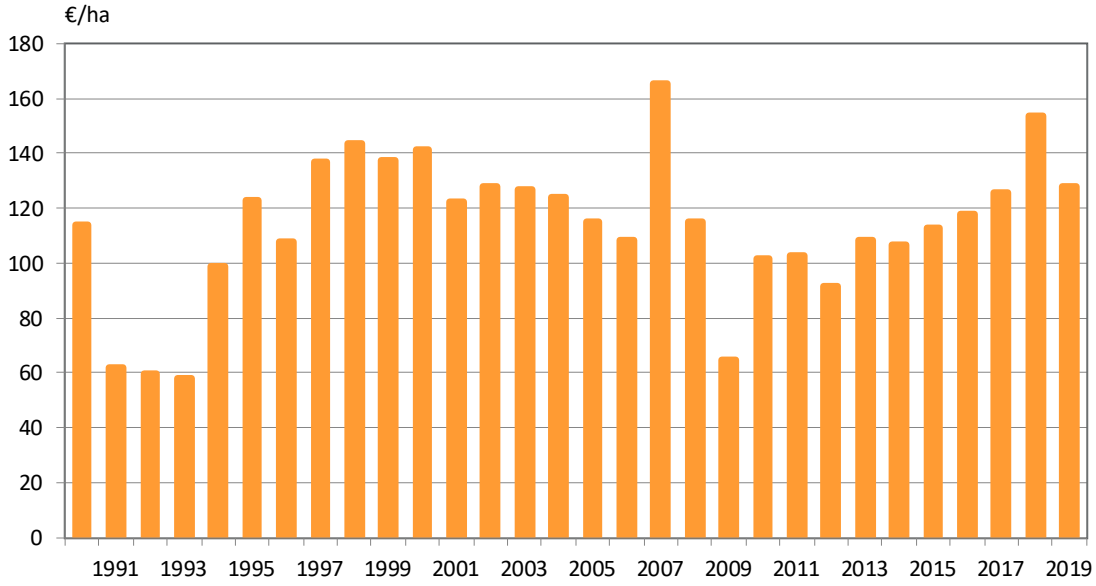
In Southern Finland, the operating profit was EUR 163 per hectare, showing a decrease of nearly 20% from the previous year in real terms. In Northern Finland, the operating profit decreased by 5% to EUR 58 per hectare. Northern Finland comprises the regions of Oulu, Kainuu, and Lapland. The operating profit fell more clearly in Southern Finland than in Northern Finland, where the impact of logs on earnings is higher. Standing sales prices of softwood logs decreased clearly in the whole country, while pulpwood prices remained almost at the previous year's level.

Gross stumpage earnings from non-industrial private forestry amounted to EUR 2.007 billion, or EUR 146 per hectare. The total costs of wood production remained at EUR 300 million, or EUR 22 per hectare, of which investments in wood production accounted for EUR 17 per hectare. These investments also include three euros per hectare of work performed by forest owners. As in the previous year, state subsidies for wood production totalled EUR 50 million, four euros per hectare.

- Operating profit in non-industrial private forestry
- Operating profit in non-industrial private forestry by region 2015-2019
- Operating profit in non-industrial private forestry 1990-2019

Operating profit in non-industrial private forestry, 1990–2019 (deflated using wholesale price index)

- Background data as nominal values



Investment return on wood production was negative

The investment return on wood production decreased to -0.9% in 2019. The previous year when the return was negative was in 2012. The figure was 15 percentage points lower compared to the peak year of 2018. The average for the preceding ten-year period was 3.5%.

In Luke's calculations, the return has been divided into five components. Earnings from wood sales increased the return by 3.7 percentage points, the value of the net increment by 1.7, and state subsidies by 0.1 percentage points. The decrease in standing sales prices reduced the return by 6.5 percentage points and total wood production costs by 0.6 percentage points.

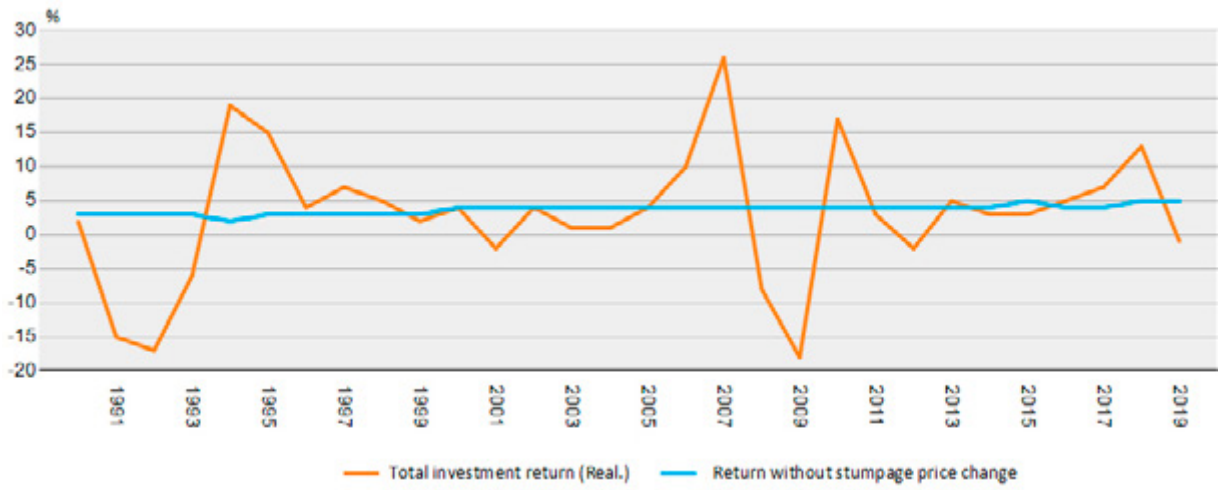
The investment returns on wood production is a return index in which the factors producing the return are divided by the value of assets in the previous year. The value is calculated by multiplying the volume of standing trees by standing sales prices. In 2018, the value of non-industrial private forests, calculated using the above method, totalled EUR 53 billion, and in 2019, it decreased to EUR 51 billion.

- Forestry as an investment
- Investment return in wood production by region 2012-2019
- Investment return in wood production 1990-2019

Photo: Erkki Oksanen / Luke

Investment return in wood production, 1990–2019

Background data as a table



In Luke's calculations, changes in standing sales prices affect the value of forest assets, which in turn has a great impact on gross revenue.

Wood consumption

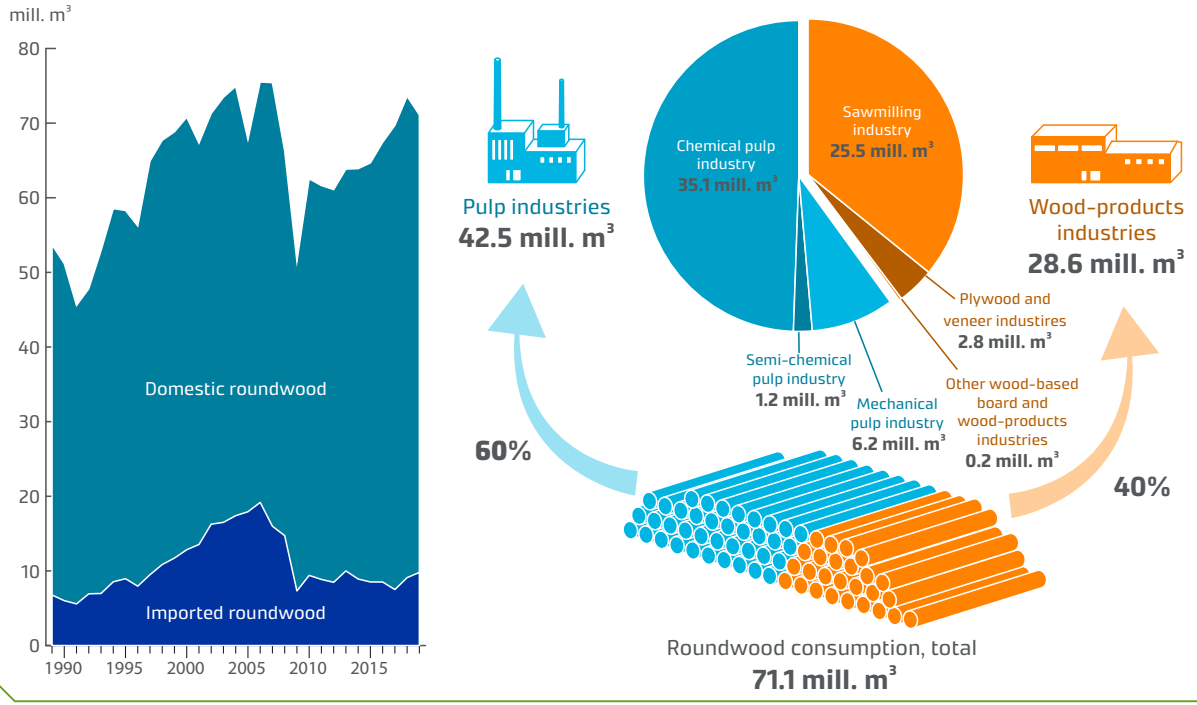
In 2019, roundwood consumption in Finland amounted to 81.9 million solid cubic metres, being 3% lower than the previous year's record but still the second largest amount so far. Nearly 90% of roundwood were consumed in the manufacture of forest industry products, while the remaining proportion was used in energy generation in heat and power plants, and as fuelwood in small-scale housing. In addition, a total of 26.3 million cubic metres of forest industry by-products and wood residues were used for various purposes.

The majority of the roundwood consumed in Finland in 2019 (71.1 million cubic metres) was used to manufacture forest industry products. Of the total amount, 61.3 million cubic metres consisted of domestic roundwood and 9.8 million cubic metres of imported roundwood. Forest industries' total roundwood consumption decreased by 3% from the previous year. The consumption of domestic roundwood decreased by 5% from the previous year's record, while the use of imported roundwood increased by 7%. The consumption of domestic roundwood was at its highest in 2006, when it amounted to 75.5 million cubic metres.

Chemical pulp industry the largest user of roundwood

Of the total volume of roundwood consumed by the forest industries, 42.5 million cubic metres were processed in the pulp industries and 28.6 million cubic metres in the wood products industries. Consumption decreased from 2018 in all industries, apart from the semi-chemical pulp industry. Nearly half of all roundwood (35.1 million cubic metres) was processed by the chemical pulp industry. Consumption by the sawmilling industry totalled 25.5 million cubic metres of roundwood. The most important roundwood assortments used were pine pulpwood (17.9 million cubic metres) and hardwood pulpwood (14.0 million cubic metres). The consumption of spruce logs totalled 13.9 million cubic metres.

Forest industries' roundwood consumption, 1989—2019



The consumption of forest industry by-products in the production of forest industry products was nearly at the previous year's level, totalling 9.6 million cubic metres. Of this, the chemical pulp industry accounted for nearly three quarters.

Wood consumption in energy generation

In 2019, wood fuels represented the most important energy source in Finland, accounting for 28% of total energy consumption. According to Statistics Finland's preliminary data, the total use of wood fuels increased for the fourth consecutive year, reaching a new record of 105 terawatt-hours (TWh). Of this, solid wood fuels and black liquor consumed in heat and power plants accounted for 40 TWh and 47 TWh, respectively. The small-scale combustion of wood accounted for 17 TWh, while other forest industry by-products and wood residues accounted for 2 TWh.

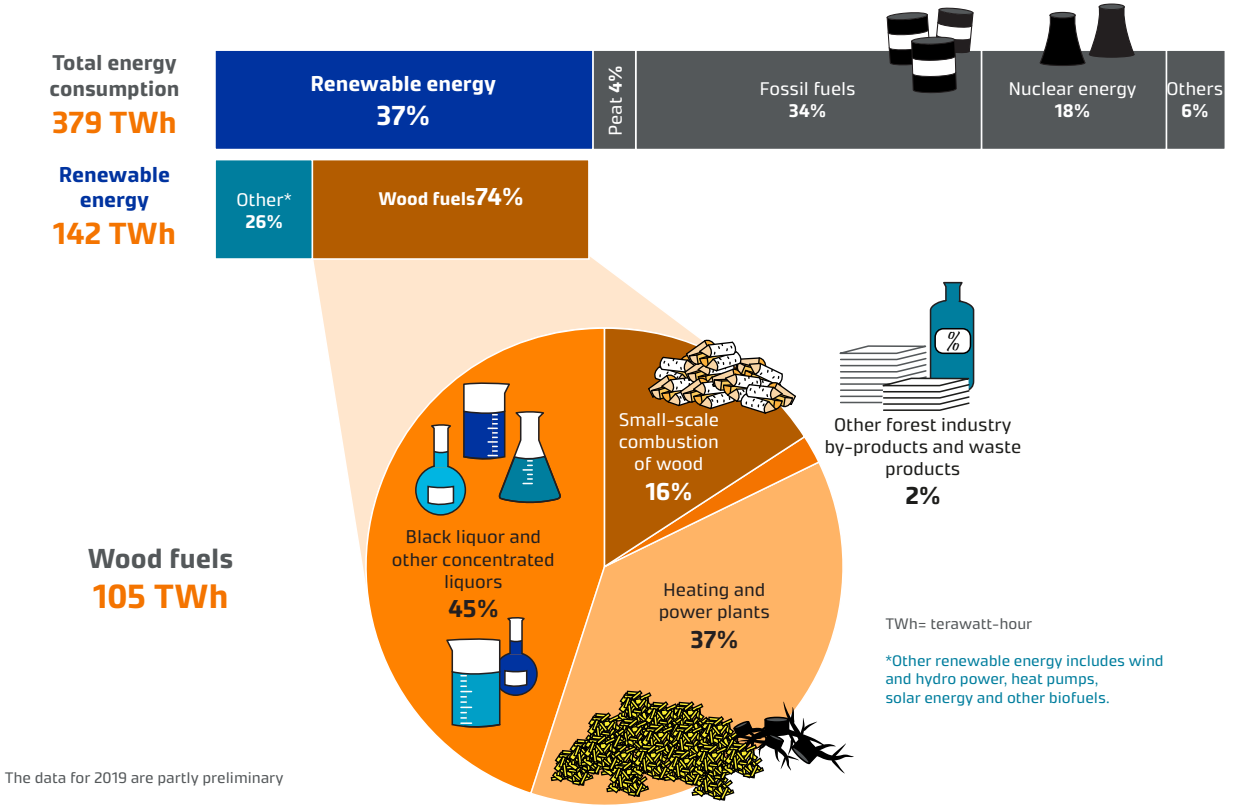
Solid wood fuel consumption reached a new record

In 2019, the consumption of solid wood fuels totalled 22.5 million cubic metres, of which heat and power plants accounted for 22.5 million cubic metres and small-scale housing 6.9 million cubic metres. The use of solid wood fuels in heat and power plants increased by 2% from the previous year and reached a new record. The most significant solid wood fuel assortment was forest industry by-products and wood residues, totalling 11.7 million cubic metres. Of this, nearly 70% was bark. Plants consumed a total of 7.6 million cubic metres of forest chips.

In total, 10.8 million cubic metres of roundwood were used in energy generation. This was the same volume as in 2018. Small-scale housing consumed a total of 6.5 million cubic metres of energywood produced from roundwood, in the form of logwood, smallwood and forest chips. Heat and power plants consumed 4.3 million cubic metres of forest chips produced from roundwood.

The use of forest industry by-products and wood residues, including stumps and logging residues, for energy production totalled 15.4 million cubic metres. Heat and power plants burned a total of 11.7 million cubic metres of forest industry by-products. This mainly consisted of

Consumption of wood fuels, 2019



The data for 2019 are partly preliminary

Sources: Statistics Finland, Natural Resources Institute Finland

bark (7.9 million cubic metres), sawdust (2.5 million cubic metres) and industrial chips (1.2 million cubic metres). In addition, heat and power plants consumed 2.9 million cubic metres of logging residues and 0.3 million cubic metres of stumps. Small-scale housing burned a total of 0.4 million cubic metres of recycled wood, wood by-products and wood pellets. Heat and power plants also burned a total of 1.1 million cubic metres of recycled wood and 0.2 million cubic metres of wood pellets and briquettes.

- Total wood consumption
- Forest industries' wood consumption
- Wood consumption in energy generation
- Fuelwood consumption in small-scale housing
- Energy
- Forest accounts

Distribution of total wood consumption in 2019

	million m^3	%
Total roundwood	**81.9**	**100**
Forest industries	**71.1**	**87**
Domestic roundwood	61.3	75
Imported roundwood	9.8	12
Energy generation	**10.8**	**13**
Heat and power plants	4.3	5
Forest chips from (pruned and unpruned) stems	3.9	5
Forest chips from large timber (mainly dead and decayed roundwood)	0.4	1
Fuelwood in small-scale housing (logwood, smallwood, forest chips)	6.5	8

	million m^3	%
Total forest industry by-products and wood residues	26.3	100
Forest industries (sawmill chips and sawdust)	**9.6**	**37**
Energy generation	**16.7**	**63**
Heat and power plants	16.2	62
Stumps and logging residues	3.3	12
Forest chips from logging residues	2.9	11
Forest chips from stumps	0.3	1
Forest industry by-products and wood residues (chips, sawdust, bark), incl. recycled wood and wood pellets and briquettes	13.0	49
Wood residues (recycled wood, by-products and wood residues, wood pellets) used as fuelwood in small-scale housing	0.4	2

Forest industries

The boom in the Finnish forest industries had passed by 2019, but the impact of the coronavirus pandemic was not felt until the following year and is thus not yet reflected in the industry indicators. The production volumes of forest industry products decreased slightly. Finnish forest industries are heavily export-driven.

In real terms, the forest industries' domestic turnover decreased by 5% to EUR 31.6 billion in 2019, and profitability also decreased. The financial position of the forest industries has improved markedly in the 2010s, and the debt-to-turnover ratio has decreased to 52%.

Production volumes decreased from the previous year

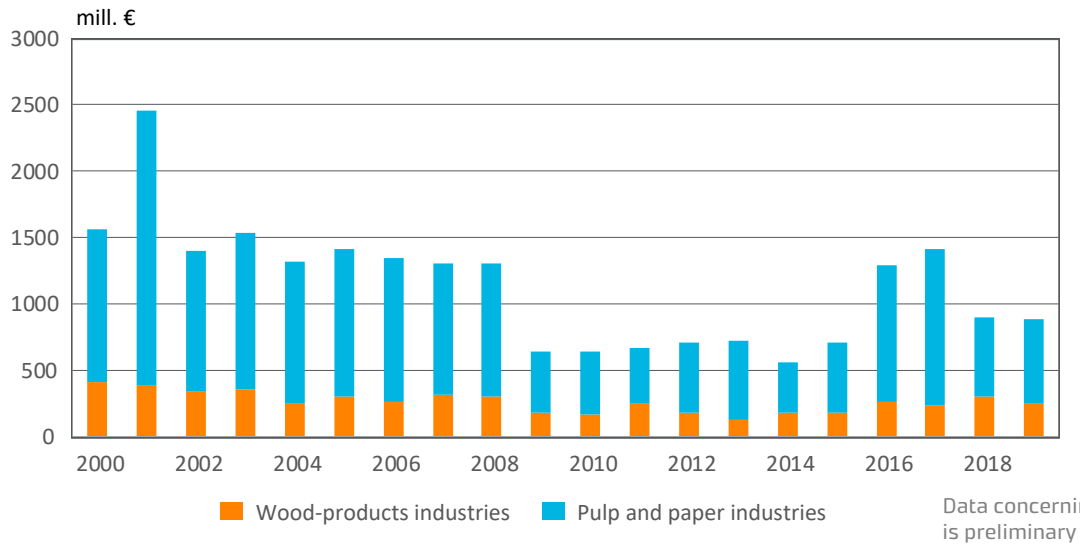
The output of both the wood products industries and the pulp and paper industries fell slightly from the previous year. Most Finnish forest industry products are exported, which means that production volumes adapt to export demand.

In the wood products industries, production decreased by 4% from the previous year to 11.3 million cubic metres. The production level that preceded the slump in 2008 has not been reached, although production has mainly been increasing after the slump. Four-fifths of the sawn goods produced are exported. Production volumes of sawn spruce and pine goods were nearly equal.

Photo: Erkki Oksanen / Luke

Real investments of the forest industries in Finland, 2000–2019 (deflated using the wholesale price index)

▶ Background data as nominal prices



Data concerning 2018–2019 is preliminary (July 2019)

Key indicators for the forest industry in 2019

	Unit	2019	Increase/decrease 2018, %	Increase/decrease, average in 2009-2018, %
Forest industry production				
Sawn softwood	million m^3	11.3	-4	9
Pulp	million t	8.3	2	18
Paper	"	5.8	-14	-24
Paperboard	"	3.7	-3	21
Turnover of the forest industries*	EUR billion	31.6	-5	17
Wood products industries	"	7.4	-2	8
Pulp and paper industries	"	24.1	-6	20
Investments of the forest industries*	EUR million	883.0	-1	7
Wood products industries	"	249.0	-20	19
Pulp and paper industries	"	634.0	8	2
Investment rate, forest industries	%	17.0	-1.0 percentage points	-1.2 percentage points
Profitability of the forest industries*	Operating margin, %	6.2	-2.4 percentage points	-0.9 percentage points
Wood products industries	"	3.8	-1.3 percentage points	+0.0 percentage points
Pulp and paper industries	"	6.9	-2.7 percentage points	-1.5 percentage points
Forest sector labour force	1,000 persons	66.0	6	1
Forestry	"	26.0	24	13
Wood products industries	"	20.0	-5	-14
Pulp and paper industries	"	20.0	0	5
Value added, forest sector*	EUR billion	9.0	-2	11
Forestry	"	3.9	-6	8
Wood products industries	"	1.3	-6	2
Pulp and paper industries	"	3.8	4	17

*Preliminary data.
Turnover, profitability and added value: increase/decrease in real terms, deflated using wholesale price index (1949=100).
Operating margin, % = (operating income - operating costs) / operating income x 100
Sources: Statistics Finland, Finnish Forest Industries Federation and Finnish Sawmills Association.

Plywood production decreased by 11% to 1.1 million cubic metres. The share of softwood plywood increased to 73% of total production.

In the pulp and paper industries, production decreased in 2019. The production volume of wood pulp amounted to 11.6 million tonnes, almost at the previous year's level. In terms of wood pulp, the increased production of chemical pulp compensated for the opposite trend in mechanical pulp production. The production of chemical pulp reached a new record, 8.3 million tonnes, and its share of total wood pulp increased to 72%. The majority of wood pulp is consumed as raw material in the domestic paper industry, while other forest industry products are often sold in export markets.

The production volume of paper fell by 14% and that of paperboard by 3% from the previous year. Paper production has been declining in Finland for a while now; compared to the average for the preceding ten years, paper production has decreased by a quarter. On the other hand, there has been a strong upward trend in paperboard production, and the production volume has increased by a fifth compared with the average for the preceding ten years. Digitalisation, an increase in electronic trade and new consumption habits are changing the structures of the pulp and paper industries. The global demand for printing and writing paper has decreased, which is also reflected in the steady decline in production volumes throughout the 2010s. This trend is also reflected in the Finnish paper industry.

Investments in the forest industries mainly focus on pulp and paper industries

In 2019, forest industry investments totalled EUR 0.9 billion, and in real terms the investments were 7% higher than on average during the preceding ten-year period. Of the total forest industry investments, 72% were made in the pulp and paper industries. The investment rate (value of investments in relation to the value added) was 17%, while the corresponding figure for the entire manufacturing industry was 20%.

Turnover of forest industries decreased

The domestic turnover of forest industries totalled EUR 31.6 billion in 2019, showing a decrease of 5% from the previous year in real terms, but remaining still 17% higher than the long-term average. Within the industries, the pulp and paper industries' share of turnover amounted to 76%. The forest industries represented 22% of the total turnover of all manufacturing industries.

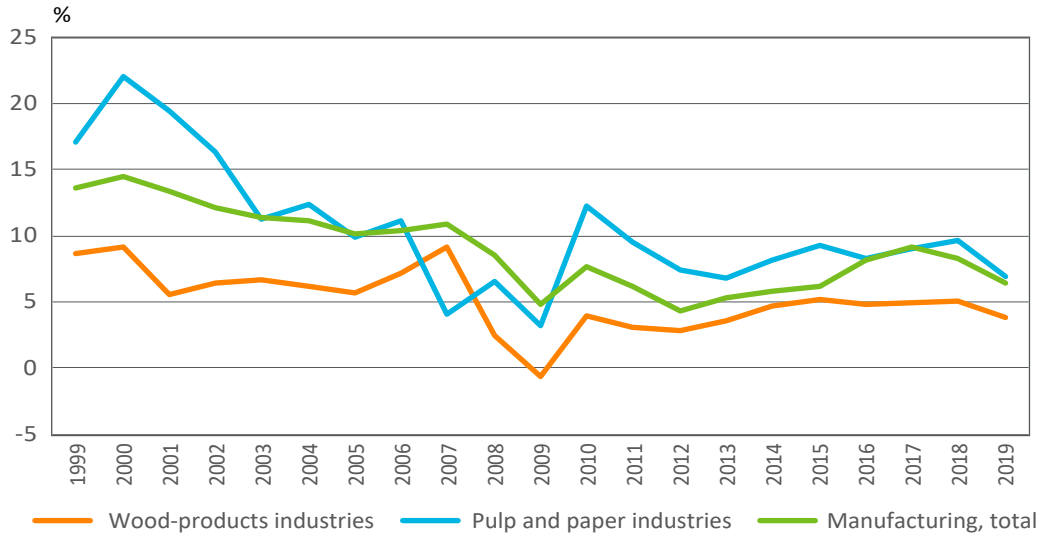
Measured both in terms of operating margin and total results, the profitability of the forest industries decreased in 2019. The change concerned both the pulp and paper industries and the wood products industries. The forest industries produced an operating margin of EUR 2.0 billion, accounting for 6.2% of the operating profit. Measured by total results, the profitability of the forest industries decreased by 1.5 percentage points to 6.1% of the operating profit.

The financial position of the forest industries has significantly improved in the 2010s. While the total liabilities of the forest industries were roughly at the same level as the turnover at the beginning of the decade, the debt-to-turnover ratio decreased to 52% in 2019. In all manufacturing industries, the debt-to-turnover ratio was 78%, i.e., higher than in the forest industries on average. The corresponding figures were 29% in the wood products industries, and 60% in the pulp and paper industries.

The equity ratio in the forest industries was 61%, clearly better than in manufacturing industries on average. This figure represents the proportion of equity from capital committed to operations.

Profitability of the forest industries in Finland 1999–2019
(% of operating income)

▶ Background data as a table



Forest sector labour force increased

In 2019, the number of people employed in the forest sector increased to 66,000 persons, showing an increase of 6% from the previous year. However, long-term employment has decreased: at the turn of the 21st century, the sector employed nearly 100,000 persons. The fall in employment was due to improved labour productivity and organisational changes in the forest sector, for example. The forest sector is highly male-dominated: only 15% of employees were women.

Even though removals decreased from the record level in 2018, forestry labour force numbers increased to 26,000

persons in 2019. Of the forestry labour force, around 14,000 persons were wage earners and salaried employees, and the remaining 12,000 were self-employed.

The number of people employed in the forest industries was 40,000 in 2019. This shows an increase of 4% from the year before. The wood products industries employed 20,000 persons, and the pulp and paper industries a similar amount.

In 2019, the general unemployment rate in all sectors was 6.7%, and unemployment decreased by 0.7 percentage points from the previous year. In the forest sector, the unemployment rate was lower than this, but its trend was the opposite: the unemployment rate in the forest sector increased by 4.6 percentage points from the previous year. The employment data is based on the Labour Force Survey by Statistics Finland.

- Forest industries
- Labour force in the forest sector

Photo: Erkki Oksanen / Luke

Foreign trade by forest industries

The value of exported forest industry products totalled more than EUR 12 billion, accounting for a fifth of Finland's goods exports in 2019. The total value of Finland's goods exports was EUR 65 billion. The volume of wood imports increased by 3% to 11.9 million cubic metres from the year before.

The export value of forest industry products decreased by 6% from the previous year in real terms, totalling EUR 12.5 billion (deflated using the wholesale price index). The export value wood products industries amounted to EUR 2.8 billion, down by 5% from the previous year. The value of exports in the pulp and paper industries totalled EUR 9.7 billion, down by 7%.

Export price of chemical pulp in steep decline

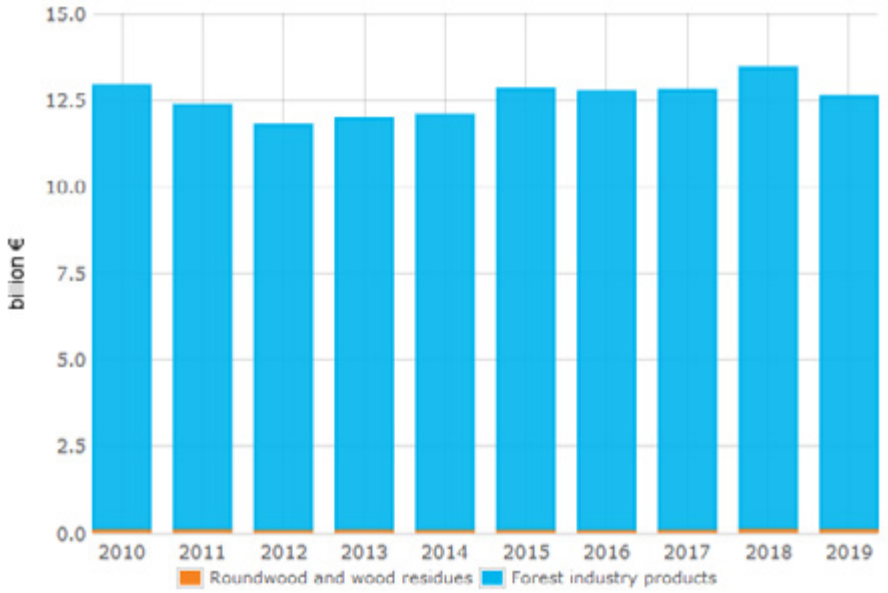
Paper continued to be the most important export article for forest industries, with the export value of EUR 4.0 billion. In real terms, the export value decreased by 8% from the previous year. The export value of chemical pulp decreased by a tenth to EUR 2.4 billion. Of the total value, bleached sulphate pulp accounted for 90%. Although the export volume of bleached sulphate pulp increased by 12% from the previous year, its export value decreased by 11%. The value of paperboard exports amounted to EUR 2.9 billion, showing a decrease of 2% from the previous year.

36% of all bleached sulphate pulp exported to China

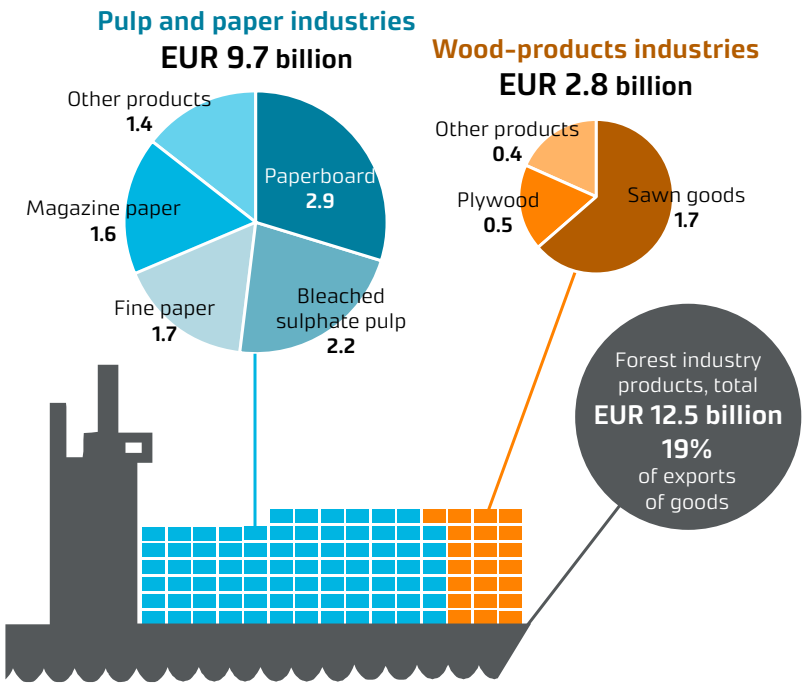
Finland's most important trading partners were Germany, China and the United Kingdom. A total of 14% of earnings from forest industry exports came from Germany, 9% from China, and 7% from the United Kingdom. Germany was the largest buyer of Finnish paperboard, fine paper and plywood. Bleached sulphate pulp and sawn goods were exported to China.

Exports by the forest industries, 2010–2019
(deflated using wholesale price index)

▶ Background data as nominal prices



Exports of forest industry products, 2019



The most significant buyer (share of exports value)

Paperboard	Bleached sulphate pulp	Fine paper	Magazine paper	Sawn goods	Plywood
Germany 14%	**China 36%**	**Germany 23%**	**USA 20 %**	**China 12%**	**Germany 18%**

Change from previous year (value*/volume, %)

Paperboard	Bleached sulphate pulp	Fine paper	Magazine paper	Sawn goods	Plywood
-2/-2	**-11/+12**	**-10/-11**	**-4/-10**	**-7/+3**	**-11/-9**

* Deflated using wholesale price index

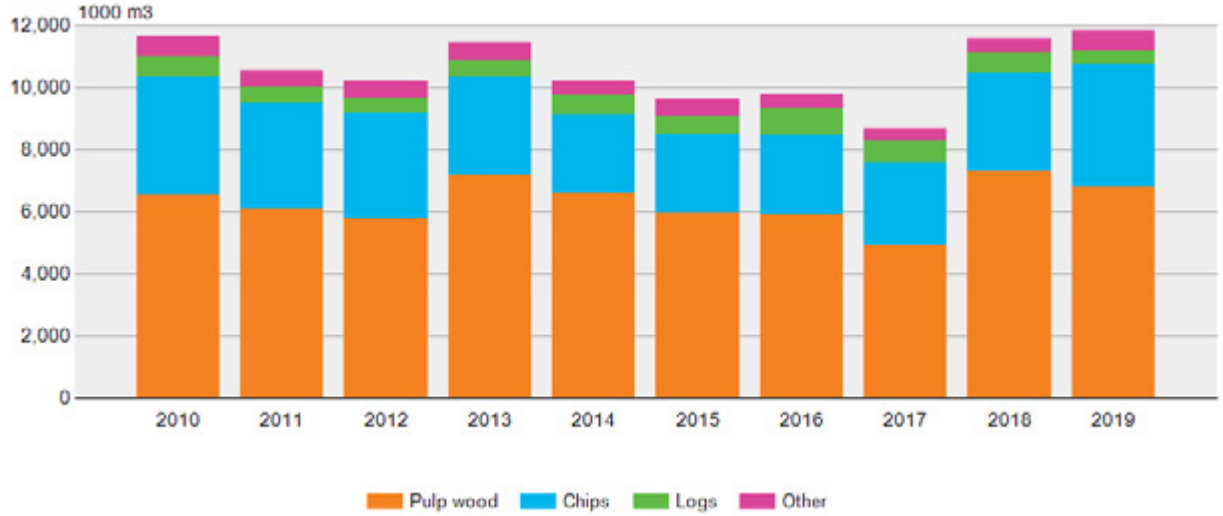
Photo: Erkki Oksanen / Luke

Forest industry exports in the most important product groups in 2019

		Increase/decrease in real terms, %		
	Value of export 2019, EUR billion	compared with the previous year	on the average of the previous 5 years	on the average of the previous 10 years
Finland's goods exports in total	65.1	1.2	7.1	7.5
Forest industry products, of which	12.5	-6.2	-1.5	1.5
Paper	4.0	-7.9	-12.9	-20.6
Paperboard	2.9	-2.0	7.9	19.6
Pulp	2.4	-10.3	14.6	38.0
Sawn goods	1.7	-6.7	-3.2	11.1
Plywood	0.5	-10.9	12.8	-4.4

Wood imports, 2010-2019

Background data as a table



Imports to Finland include furniture, paper and paperboard products, and bleached sulphate pulp

The value of forest industry imports totalled EUR 1.5 billion. Wooden furniture was the most important import article, the value of which was just under a fifth of the total forest industry imports. Sweden, Estonia and Russia were the most significant import countries for forest industry products.

Wood imports increased slightly

In 2019, the amount of wood imported to Finland increased by 3% from the previous year to 11.9 million cubic metres. Of all imported wood, pulpwood made up 57% and wood chips a third. Pulpwood imports decreased by 7% from the previous year, while chips imports increased by more than a quarter. Logs only accounted for 3%. The value of wood imports totalled around half a billion euros. In 2019, 74% of wood imports came from Russia and 21% from the Baltic region.

Wood exports decreased slightly

The volume of Finland's wood exports is considerably lower than the volume of imports. In 2019, a total of 1.9 million cubic metres of roundwood was exported from Finland, 4% less than in the previous year. In particular, wood was exported to Sweden

Foreign trade in roundwood and forest industry products

Finland’s wood flows

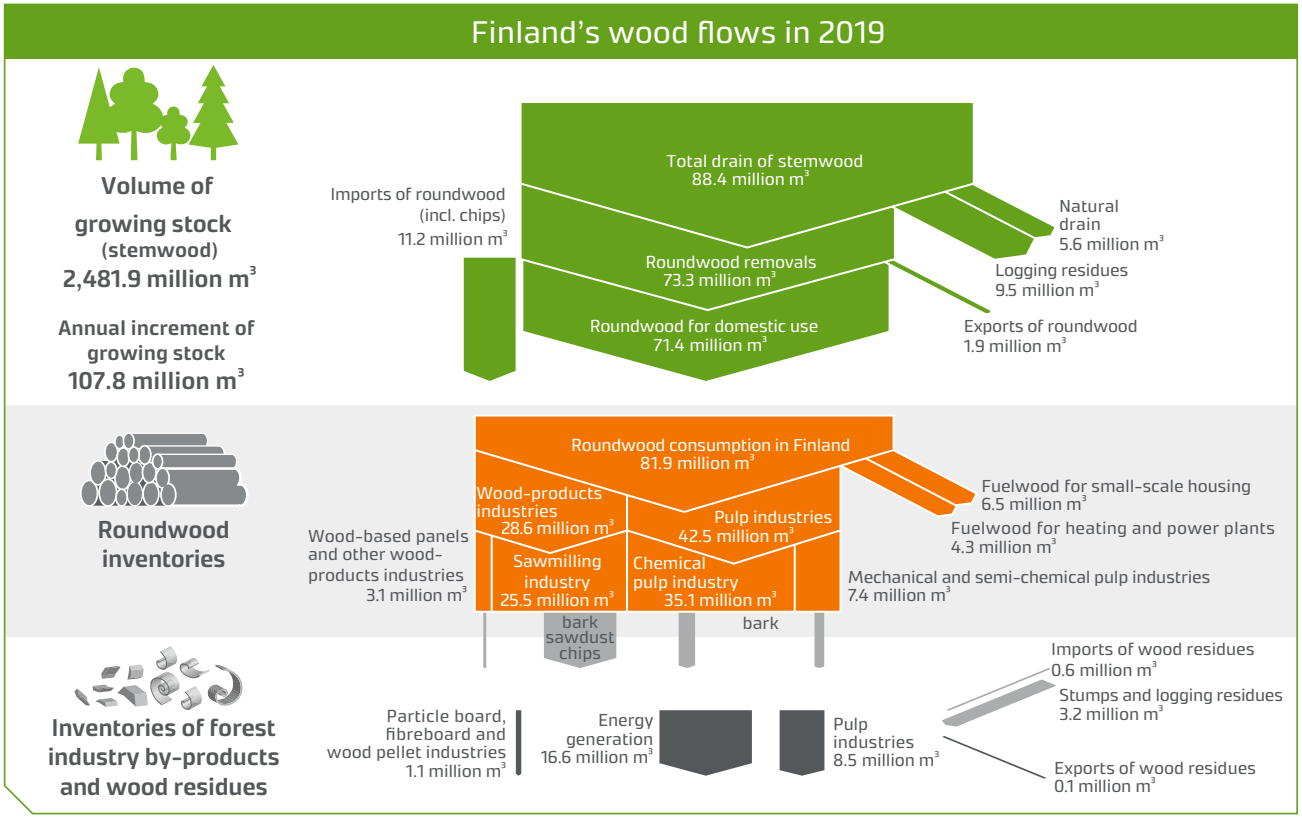
The total volume of the growing stock (stemwood only with bark) in Finland’s forests has increased to 2,482 million cubic metres. The annual increment of growing stock was 107.8 million cubic metres of roundwood. In 2019, 88.4 million cubic metres of stemwood was drained from Finnish forests, mainly as a result of felling. The drain also accounts for natural drain, i.e., naturally dead trees. The difference between growth and drain (19.4 million cubic metres) remains in the forest to add to the wood inventory.

Wood harvested from Finland passes through roundwood inventories either to the forest industries or the production of energy. A small proportion of the harvested wood is exported. Domestic wood supply is supplemented by imports of roundwood.

The volume of roundwood for domestic consumption (82.6 million cubic metres) is calculated as the volume of roundwood removals (73.3 million cubic metres) plus imports and minus exports of roundwood. The consumption of roundwood in industry and energy production was slightly lower than this, at 81.9 million cubic metres. The difference increased roundwood inventories by 0.7 million cubic metres.

The majority of stems are used as a raw material for the forest industries. The rest are mainly used in energy generation. In addition to stems, branches and stumps are used for energy production, but the green (roundwood production) and orange (roundwood consumption) sections of the figure only include stems. By-product flows and wood residue flows also include other parts of trees.

The grey colour at the bottom of the diagram depicts the volume of solid by-products and wood residues from industrial processes or originating from other sources. They are primarily used to produce energy or as raw material in the pulp industry.



Fisheries and hunting statistics

Photo: Markku Saiha

Fisheries and hunting statistics for 2019

Profitability of the fishery industry improved

There were 1,506 fishery businesses in 2018, and the industry provided 2,498 person-years of employment. Total revenue of the fishery industry amounted to EUR 964 million. Fish processing and fish trade were the most important sectors of the fishery industry: almost 90% of the total revenue comes from fish processing, as well as the wholesale and retail trade of fish. Profitability improved in all sectors, except for aquaculture.

Coastal catch increasing slowly

Finland's commercial marine fishery catch amounted to 135 million kg in 2019. Baltic herring accounted for 113 million kg, and sprat for 16 million kg of the total. The share of Baltic herring amounted to 83% of the volume and nearly two-thirds of the value of the total commercial catch. More than 90% of commercial marine fishermen used gillnets or trap nets to catch fish, European whitefish, perch, pikeperch, salmon and vendace, for example. Catches of European whitefish and salmon were low compared with the long-term average in the observation period that began in 1980, while perch and pikeperch had average catches. Instead, the vendace catch was the highest in nearly four decades.

The pikeperch catch came level with the vendace catch

While vendace has been the most important inland species measured by both volume and value, the value of the pikeperch catch was slightly higher than that of the vendace catch in 2019. If the figures are rounded, the value of the vendace catch was EUR 5.7 million, while the value of the pikeperch catch reached EUR 5.8 million. Combined, these two species accounted for three quarters of the total value of the commercial inland fishery catch.

Recreational fishing statistics are compiled every two years, most recently in 2018

A total of around 1.5 million people participated in recreational fishing. Around 37% of men and 18% of women fished in 2018. Approximately 29 million kg of fish were caught, of which 7 million kg were released alive back into the water. The 2018 catch was around 9 million kg lower than two years earlier. Some 19 million kg of fish caught by recreational fishermen were used for human consumption.

Total fish catch in Finland

In 2019, the register of commercial fishermen comprised roughly 4,000 fishermen engaged in fishing activities at sea, in inland waters or both. The number of recreational fishermen was estimated to be roughly 1.5 million. The total catch amounted to 164 million kg. Of this, some 80% were Baltic herring and sprat caught at sea by commercial fishermen. After Baltic herring and sprat, the largest catches were perch, pike, pikeperch and vendace, which were all important species both in terms of commercial fishery and recreational fishing.

The value of food fish production grew

Food fish production totalled 15.3 million kg, a million kilos more than in the previous year. Of this amount, 14.2 million kg were rainbow trout and 0.8 million kg were European whitefish. The value of food fish production was 70 million kg, 3 million kg less than in the previous year. The number

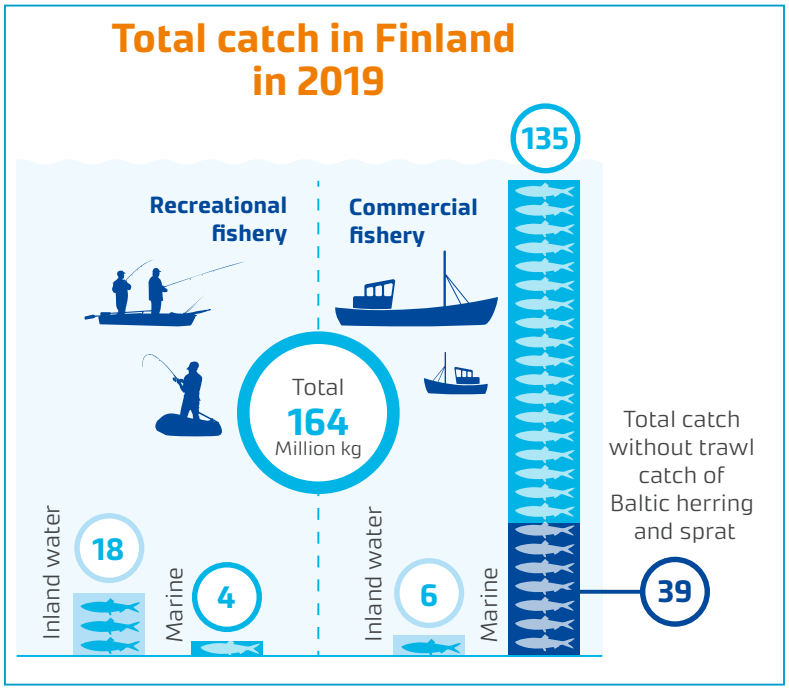
of juveniles produced for both restocking in water bodies and further rearing totalled around 50 million fish fry, excluding newly hatched fry. In terms of numbers, rainbow trout and European whitefish juveniles were the most produced.

The amount of fish used in fish processing decreased

Approximately 76 million kg of fish were processed for human consumption in Finland in 2019. Of this amount, raw material purchased from abroad accounted for 41%. The processing volumes were the highest for domestic Baltic herring (26 million kg) and Norwegian salmon (around 22 million kg). There were a total of 124 fish-processing enterprises in Finland in 2019.

Volume of fish and fish product exports increased

Roughly 100 million kg of fish and fish products were imported to Finland in 2019. The total value of imports was approximately EUR 488 million. Finland exported around 87 million kg of fish and fish products, the value of which totalled EUR 164 million. Fish and fish products were imported from 61 countries. Three-quarters of the volume of imports came from the Nordic countries. Fish were exported to 36 countries. More than half the export volume went to the Nordic countries.



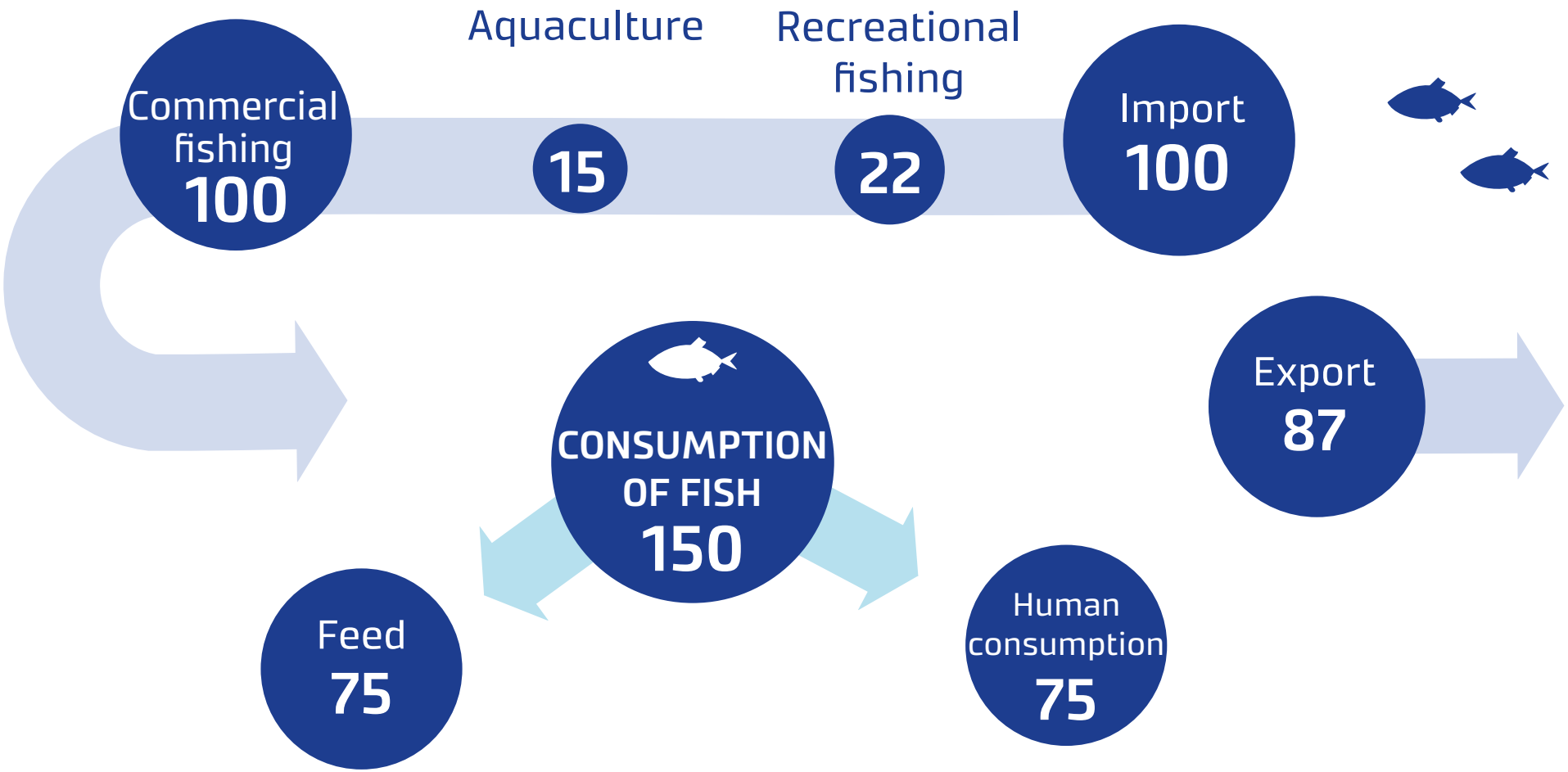
A third of the fish consumed in Finland was domestic

Around 13 kg of fish were consumed per capita in Finland. Domestic fish accounted for almost a third of this amount. Nearly 1.5 kg were self-caught, 1.4 kg were farmed fish purchased from the grocery, and 1 kg was fish caught by commercial fishermen. The most important domestic species in terms of consumption was farmed rainbow trout (1.3 kg per capita), while of imported fish, farmed salmon was consumed the most (3.5 kg per capita). Of all wild-caught domestic fish, pike was consumed the most, followed by perch, Baltic herring, pikeperch, vendace, and European whitefish.

The grouse bag was large

There were approximately 200,000 active hunters in Finland in 2019. Large numbers of wood pigeons and mallards were caught. The grouse bag was large, and in particular the numbers of black grouse increased from the previous year. The deer bag was the largest in a couple of decades because white-tailed deer and European roe deer were caught more than previously.

Supply and consumption of fish in Finland 2019 (million kg)



Commercial marine fishery

Finnish-registered fishing vessels caught a total of 135 million kg of fish at sea in 2019. The total value of the catch was EUR 36 million. Although the volume of the catch decreased by 12 million kg, its value remained at the 2018 level. Both in terms of volume and value, Baltic herring was by far the most important species, followed by sprat.

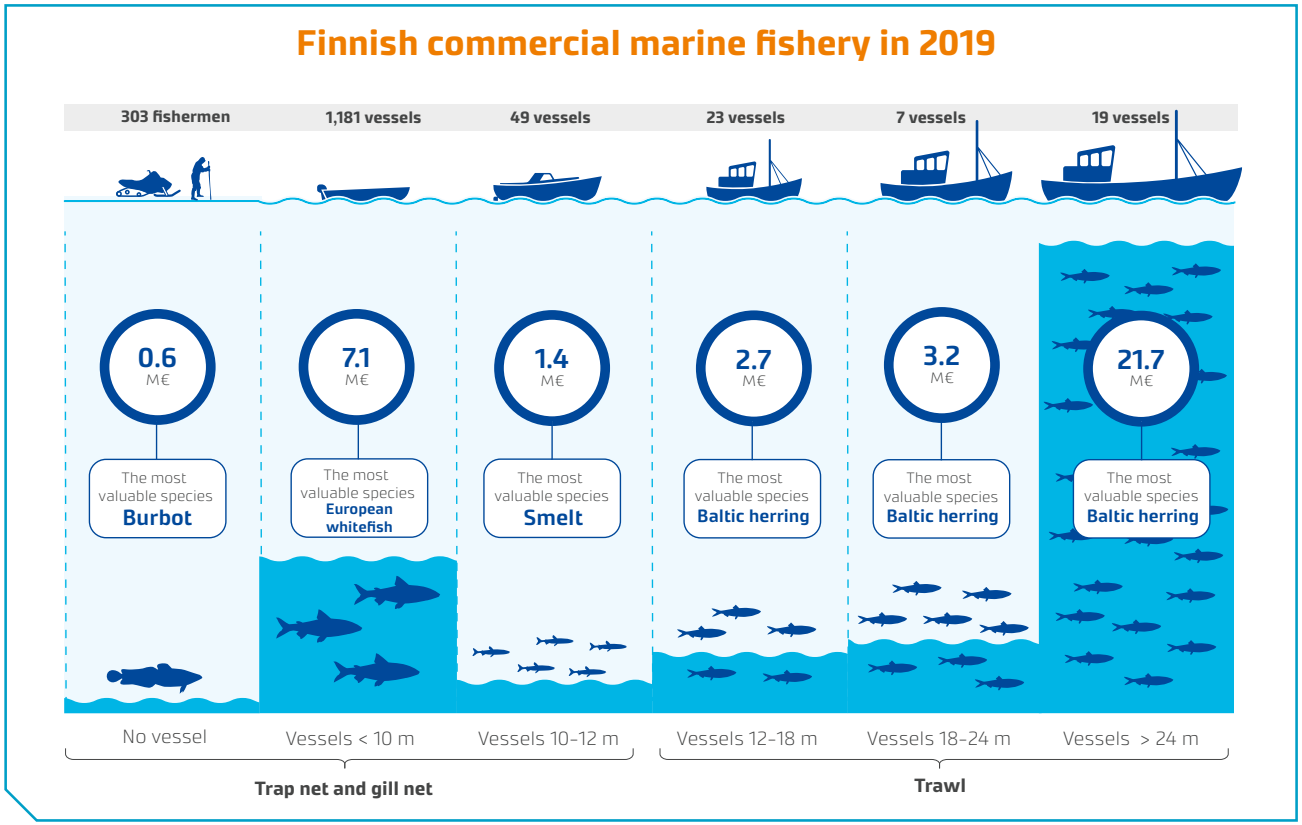
Around 50 fishermen achieved revenue exceeding EUR 10,000 from the fishing of Baltic herring and sprat. Of these, 30 caught fish by trawling, and 20 by using trap nets. Coastal fishing employed significantly more fishermen than offshore trawling. In terms of value, the most important species in coastal fishery were European whitefish, perch, vendace, salmon, pikeperch and smelt. Around a thousand fishermen reported coastal fishing catches. Of them, more than two hundred fishermen achieved revenue exceeding EUR 10,000.

Baltic herring catch decreased, landings abroad increased

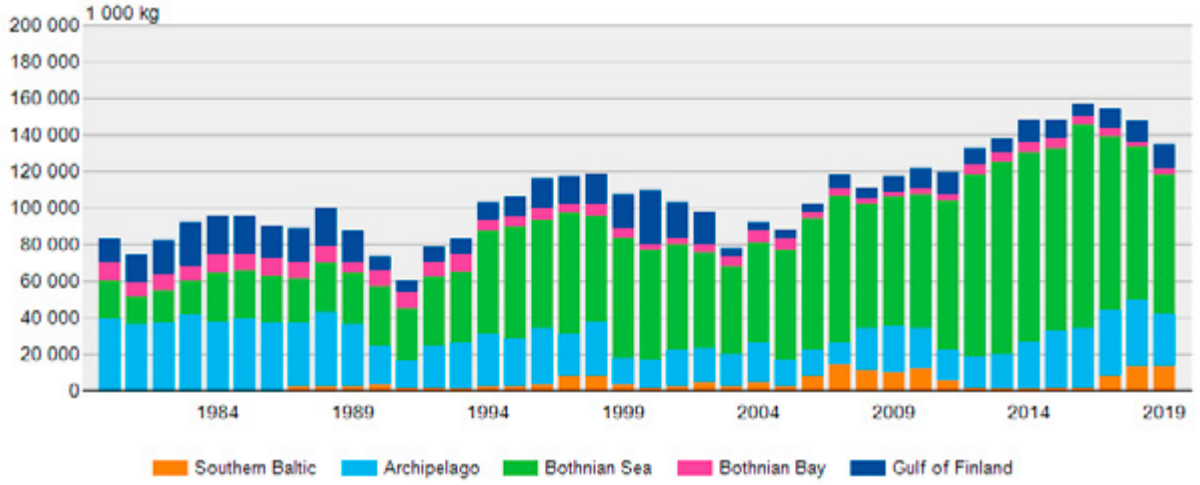
The Baltic herring catch totalled 113 million kg, amounting to EUR 24 million in value. It accounted for 83% of the volume and nearly two-thirds of the value of the total commercial catch. The 2019 catch was 14 million kg lower than in the previous year and 24 million kg lower than the record catch in 2016, but still high compared to the long-term average. In the main fishing area, the Gulf of Bothnia, the Baltic herring stock is still strong, but 10% of the herring fishing quota was not used. There are a number of reasons: for example, the demand for herring for use in the fur industry decreased slightly, and the operator-specific quota required some fishermen to cease their activities despite quota trading.

The sprat catch totalled 16 million kg, the same as in the previous year. Baltic herring and sprat fishery was very centralised: the top ten vessels in terms of catch volume caught three quarters of the total catch.

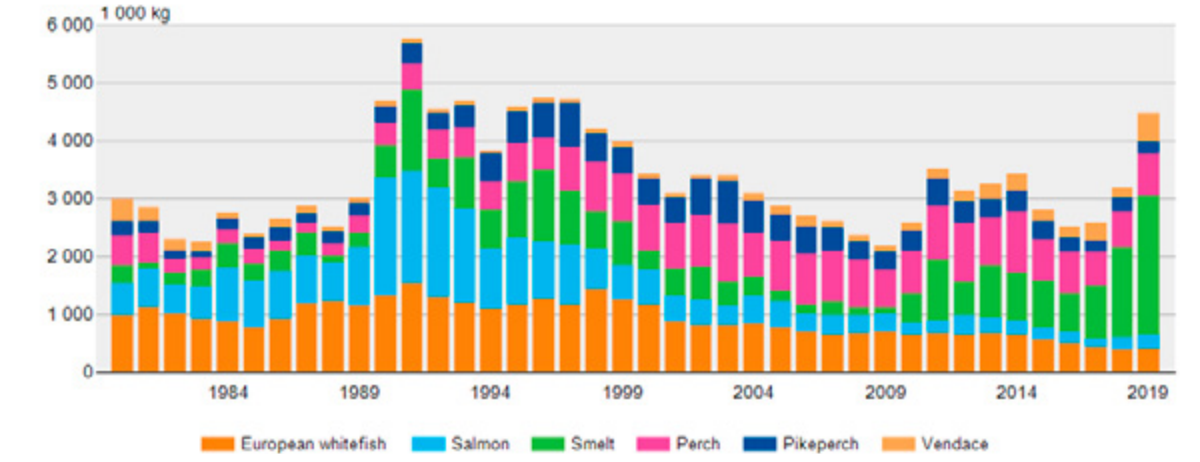
The largest volumes of fish were landed in the ports of Uusikaupunki, Kasnäs in Kemiönsaari, and Paldiski in Estonia. Landings abroad increased from the previous year:



Catches in commercial marine fishery by region 1980–2019 ▶ Background data as a table



Commercial marine catch of European whitefish, salmon, smelt, perch, pikeperch and vendace 1980–2019 ▶ Background data as a table



a third of the Baltic herring catch and two-thirds of the sprat catch were landed in Estonia, Denmark, and Sweden.

Commercial fishery of Baltic herring and sprat, as well as cod and salmon, is regulated by international agreements by setting fishing quotas for them, as well as regional and time-bound fishing restrictions. Regulation is based on regular assessment of the fish stocks and on consultation of stakeholders. In Finland, Luke collects data on catches and fisheries activities that is used to evaluate the state of fish stocks.

Coastal catch improving slowly

The coastal catch amounted to just over 9 million kg. The economically most significant species in coastal fishing were European whitefish, perch, pikeperch and salmon. After these, the most valuable species were Baltic herring and vendace. The European whitefish, pikeperch and perch catches increased slightly from the previous year. Catches of European whitefish and salmon were low compared with the long-term average in the observation period that began in 1980, while perch and pikeperch had average catches. Instead, the vendace catch was the highest in nearly four decades. The smelt catch has increased significantly during the last two years. It accounted for roughly half of the total coastal catch in 2019.

More than 90% of commercial marine fishermen used gillnets or trap nets to catch fish. During the 2000s, both gillnet and trap net fishing has decreased, measured both by the number of fishing days and the number of fishermen.

A third of fishermen reported they had suffered damage caused by seals It was considered difficult to estimate the amount of damage, because seals do not always leave traces of their visits on fishing gear. According to fishermen, seals can steal a large number of fish from fishing gear undetected, or the mere presence of seals can expel fish. At times, fishing had to be stopped completely, leaving the amount of reported damage as zero. In addition to the catch, seals caused damage to fishing gear and especially to nets, and fish were able to escape from broken gear. Cormorants also caused catch damage for fishermen.

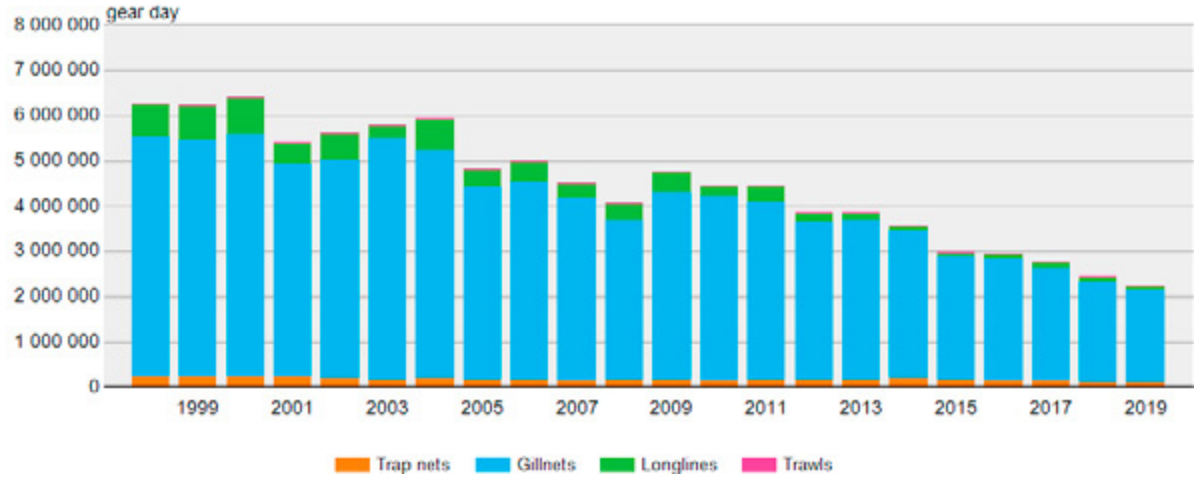
Anyone who catches fish for the purposes of sale must be registered

All persons catching fish for the purposes of sale must be listed in the register of commercial fishermen. Commercial fishermen are entitled to use specific fishing gear and larger amounts of fishing gear. In 2019, the register included 2,231 commercial marine fishermen, most of them being enterprises. Fishermen are classified into two groups on the basis of turnover. Group I comprises fishermen whose average turnover from fishing activities during the last three accounting periods exceeds EUR 10,000. The number of fishermen registered in Group I was 400.

Although the number of fishermen in the register has increased as a result of the amendment of the Fishing Act, the number of active fishermen has declined by about half in ten years. For example, fishing activity is described by the number of fishing days, which is calculated by multiplying the number of fishing days by the number of fishing gears. In the past 20 years, the number of days spend on trap net and gillnet fishing has halved while the number days spent on line fishing has decreased to a seventh.

Fishing effort in commercial marine fishery 1998–2019

▶ Background data as a table



Vessels engaged in commercial fishing must also be registered. In 2019, the register of commercial fishing vessels included 3,205 vessels. Of these, 1,279 vessels were used actively for fishing purposes. Unlike in many other EU countries, commercial fishing is also carried out without a vessel in Finland. In 2019, more than 300 commercial fishermen caught fish (mainly burbot, pike and pikeperch) by casting gillnets under the ice cover.

▶ Commercial marine fishery

Photo: Markku Saiha

Commercial inland fishery

In 2019, the number of registered commercial fishermen decreased by nearly 350 fishermen compared to the previous year, but the number of active fishermen increased by 450 fishermen. The catch volume increased by more than a million kilos, and its value by nearly EUR 3 million. The commercial inland fishery catch totalled 6.4 million kg, the total value of which was EUR 17.2 million.

Vendace continues to be the most important inland species by volume. Of the total catch, vendace accounted for more than 40%. In 2019, 2.6 million kg of vendace were caught, close to the average of the 2000s. Nearly half of the total catch was caught from the lakes of South Savo. Other important vendace fishing areas were Southeast Finland, Kainuu, and Central Finland.

The amount of vendace caught by seining was approximately 1.5 million kg. This nearly doubled from the 2018 catch, when the poor ice conditions and slush accumulating under the ice cover impeded winter seining. In 2019, vendace caught by trawling totalled 0.8 million kg, which was considerably less than in 2016-2018.

The value of the vendace catch, EUR 5.7 million, accounted for more than a third of the total value of the commercial inland fishery catch. In addition, the value of vendace roe was EUR 312,000. Vendace has previously been the most valuable inland species, but for the first time, pikeperch took the first place by a thin margin.

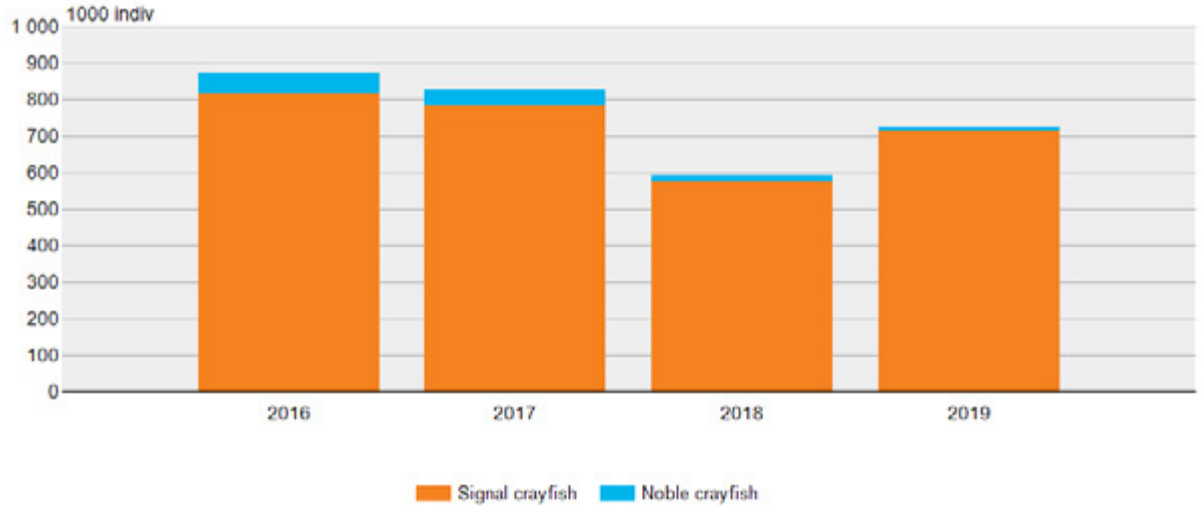
Pikeperch catches continued to grow

Since 2016, pikeperch catches have been at least 710,000 kg per year. The catch continued to grow, totalling 879,000 kg in 2019. This represents only a sixth of the total catch volume, but in terms of value, pikeperch was the most important species with EUR 5.8 million. Combined, pikeperch and vendace accounted for three quarters of the total value of the commercial inland fishery catch. The catch value is calculated by multiplying the price (VAT 0%) fetched by fishermen by the catch volume.

The largest pikeperch catches were caught in North Karelia, and Kainuu. Catches were considerably smaller in the lakes of Southeast Finland, Lapland, Uusimaa, and Southwest Finland. The majority of the pikeperch catch, approximately 86%, was caught using gillnets. Roughly 10% of the catch was caught using trap nets, and only a small proportion was caught by other types of traps or as a by-product of trawling.

Catches of signal crayfish and noble crayfish in commercial fishery 2016–2019

▶ Background data as a table



Noble crayfish catch is shrinking

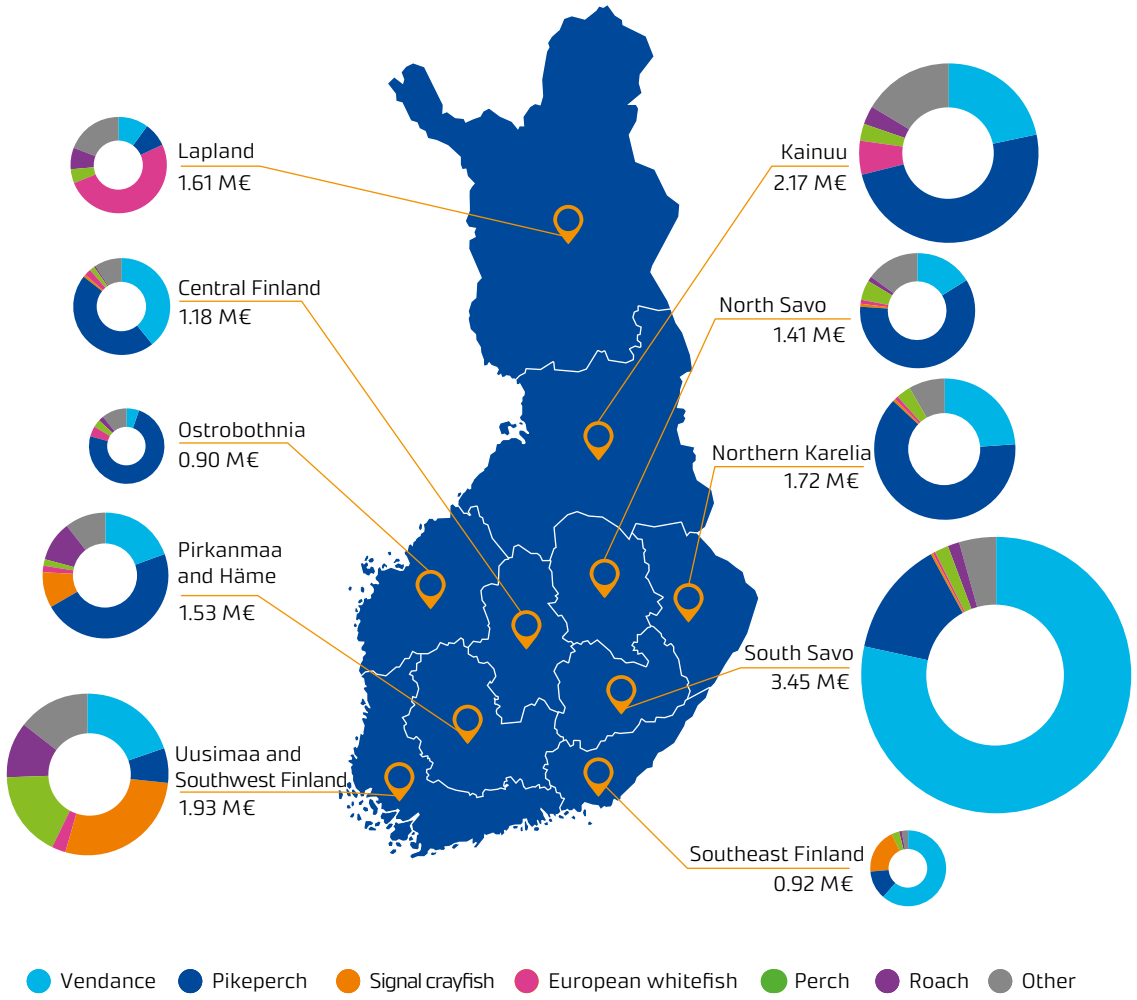
The commercial crayfish catch increased by a fifth. A total of 729,000 crayfish were caught in 2019. Last year, noble crayfish only accounted for 2% of the total crayfish catch. The price paid for noble crayfish was double the price of signal crayfish. However, signal crayfish was the fourth most valuable inland species, with the total value of EUR 888,000. The shrinking commercial catches of noble crayfish may reflect a decrease in the stocks of this highly endangered species and the weak status of the remaining populations. Signal crayfish has been stocked in water bodies since the 1960s to replace noble crayfish, which is the original species of water bodies in Finland.

Last year, European whitefish was the third most valuable species after pikeperch and vendace, with the value of EUR 1.14 million. The value of the European whitefish catch has doubled in three years, but it was only a fifth of the value of the pikeperch catch.

Perch, pike and cyprinid catches also increased

In 2018, the value of the roach catch was, for the first time, higher than the value of the pike or perch catch. In 2019, the perch and pike catches combined increased by 60%, and their value exceeded the value of the cyprinid catch. The roach and bream catches also increased, but more moderately (by 20%). In 2019, the value of the roach catch was EUR 668,000, the value of the perch catch was EUR 773,000, and the value of the pike catch was EUR 727,000.

Value of the fish and crayfish catch in the commercial inland fishery in 2019



The size of the circle indicates the total catch value, excluding fish roe, and the share of vendace, pikeperch, signal crayfish and other species. Value of catch are presented using the regional distribution of fishery units applied by the Centres for Economic Development, Transport and the Environment (ELY Centres) until the end of 2014.

The importance of cyprinids (roach and bream) for commercial inland fishery has increased considerably throughout the 2010s. For example, it has not always been possible to produce enough cyprinid products to meet the consumer demand. Since the compilation of the statistics started, roach has been a more important species than bream. The largest roach catch in the commercial inland fishery was landed in 2000, but only a small fraction of the catch then ended up for human consumption, and the value of the catch was also lower than it would be today. The commercial marine roach and bream catches have also been larger in the 2010s than in the past.

Changes in the number of fishermen

There were around 1,600 registered commercial inland fishermen in Finland in 2019. The number of registered fishermen decreased from the previous year nearly by 350 operators; some of the operators did not apply for an extension of their three-year registration. The ELY Centre removed 550 fishermen from the register, but around 340 new fishermen enlisted in the register. The number active fishermen and their share of the registered fishermen grew.

Photo: Erkki Oksanen / Luke

Recreational fishing

Luke conducts its statistical survey on recreational fishing every two years. The previous data collection was carried out at the beginning of 2019 concerning recreational fishing in 2018.

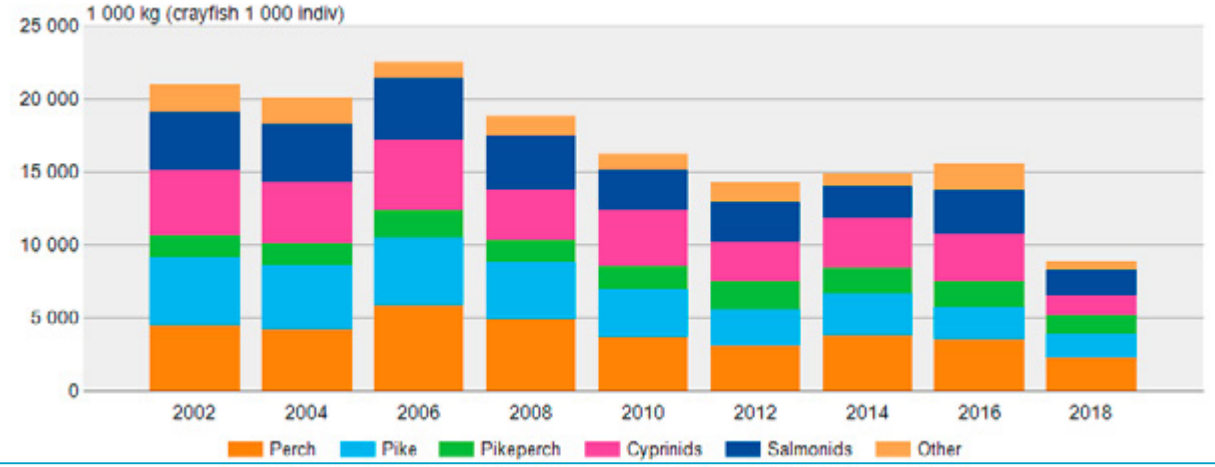
One and a half million people participated in recreational fishing in 2018, and their catch amounted to more than 22 million kg. Fish caught using gillnets accounted for just over 30% of the total catch, while fish caught with a spinning rod or trolling accounted for 38%. More than seven million fish were released alive back into the water. The volume of fish caught using passive fishing gear has decreased since the early 2000s from around 20 million kg to under 10 million kg. In 2018, the most common species caught using a gillnet were perch, pikeperch, pike, European whitefish, common bream and vendace. The most common species caught using fish traps were perch, pike and cyprinids.

Rod and line was the most commonly used gear

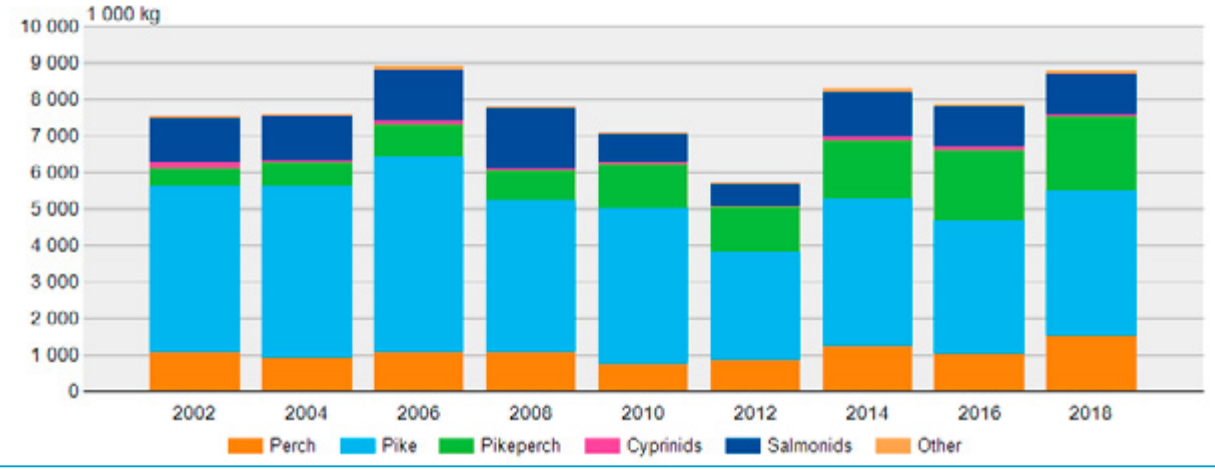
In 2018, fish caught using a spinning rod or fly rod or by trolling totalled nearly 9 million kg. This was significantly more than in the early 2000s. The share of pikeperch of the total catch has significantly increased. Pike, pikeperch and perch accounted for 86% of the total rod-and-line catch in 2018.

Fish caught using a rod and line, tip-up or jig totalled more than 4 million kg. Catching fish with a rod and line, tip-

Fish catch by gillnets, traps, pots or trap nets 2002-2018 ▶ Background data as a table

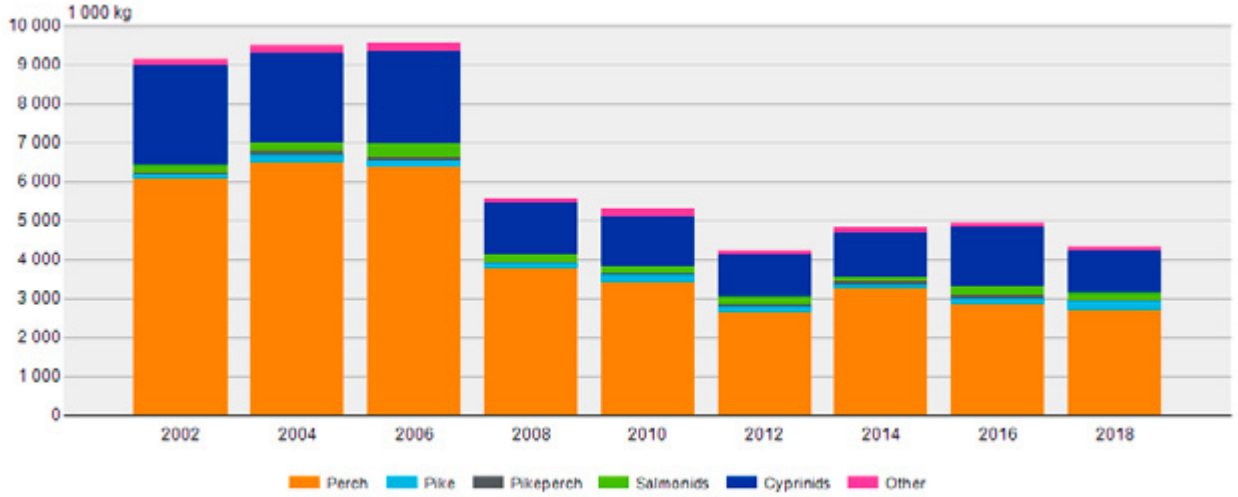


Catch caught by spinning rod, fly rod or by trolling 2002-2018 ▶ Background data as a table



Catch caught by a rod and line, a tip-up or a jig 2002–2018

▶ Background data as a table



up or jig is part of everyman's rights. The catches mainly comprise perch and cyprinids. Rod and line continued to be the most popular fishing gear in 2018. Roughly 60% of all fishermen use this method. However, based on the 2018 data, the number of fishermen using a rod and line has decreased by a third compared since the early 2000s. The number of fishermen engaged in ice fishing has also reduced, but to a lesser extent. The change has been more drastic in catch volumes: in 2018, fish caught using a rod and line, tip-up or jig amounted to around half the catches made in the early 2000s.

▶ Recreational fishing

Photo: Anssi Luukkonen

37 %

of men...

18 %

of women... **27 %**

of Finnish citizens...

...engaged in recreational fishery in 2018.

The share of different fishing gear in the total recreational catch

- gillnet, fish trap and trap net 40%
- spinning rod, fly rod and trolling 40%
- rod and line, tip-up or jig 19%
- other fishing gear 1%

Total fish catch in Finland

'Commercial fishermen' refers to those engaging in fishing activities for the purpose of sales, and reporting fishing as their exclusive or partial source of income. For 'recreational fishermen', fishing is a hobby that offers experiences and an opportunity to catch your own food. In 2019, the register of commercial fishermen comprised some 4,000 fishermen engaged in fishing activities at sea, in inland waters or both. The number of recreational fishermen was estimated to be roughly 1.5 million. The total catch amounted to 164 million kg.

Of this, some 80% were Baltic herring and sprat caught at sea by commercial fishermen. After Baltic herring and sprat, the largest catches were perch, pike, pikeperch and vendace, which were all important species both in terms of commercial fishery and recreational fishing.

Baltic herring is the backbone of commercial marine fishery

A total of 113 million kg of Baltic herring and 16 million kg of sprat were caught in 2019. The majority of the Baltic herring was caught in the Bothnian Sea, and the majority of the sprat in the southwest marine areas and in the Gulf of Finland. Both species were mainly caught by trawling offshore and by a few dozen vessels. However, the majority of commercial marine fishermen used gillnets or trap nets to catch, for example, European whitefish, perch, vendace, pikeperch and salmon close to the shore.

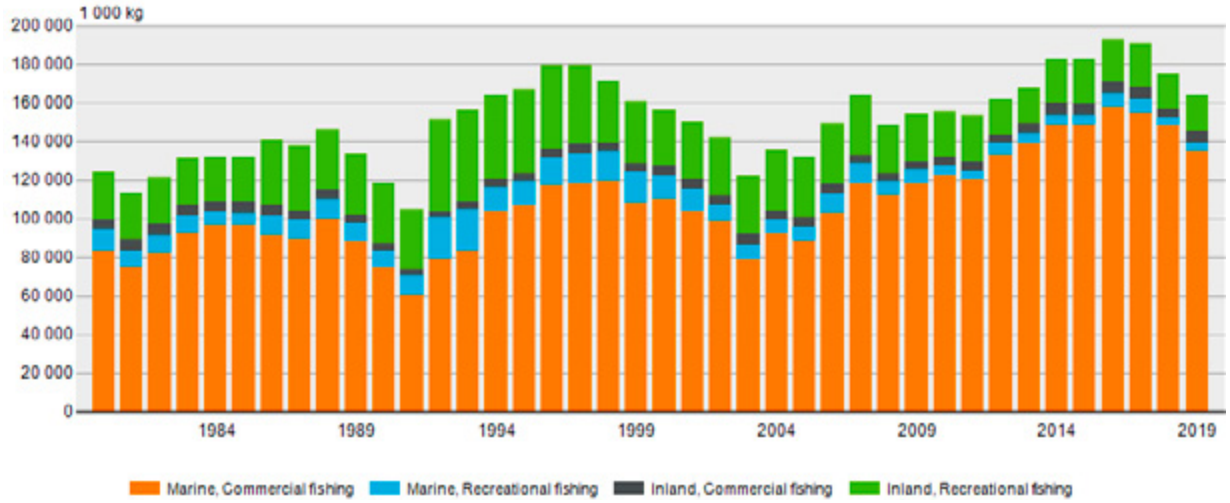
Vendace and pikeperch are the most important species in commercial inland fishery

The vendace catch for 2019 totalled 3.9 million kg. It was the most important species in commercial inland fishery in terms of volume and the only species whose value is among the top three in all areas in Finland. Other important commercial inland fishery species include pikeperch, European whitefish, signal crayfish, perch and roach. Vendace is principally caught from inland waters, but a small vendace catch (0.5 million kg) was also made in the Bothnian Bay. Two-thirds of the vendace catch in Finland was caught by commercial inland fishermen. Commercial fishermen caught vendace by seining and trawling, recreational fishermen by gillnets.

If the value of vendace roe is not taken into account, after Baltic herring, the second most important species in commercial fishing by value was pikeperch. Three quarters of the total pikeperch catch of 4.5 million kg were made by recreational fishermen. The majority of the pikeperch catches in recreational fishing were caught by trolling or using a spinning rod, while commercial fishermen used gillnets.

Total catch in Finland 1980–2019

▶ Background data as a table



Recreational fishermen caught perch and pike

Perch and pike were also the most important species in recreational fishing, accounting for roughly half the total recreational catch of 22 million kg in 2018. The pikeperch catch was roughly half the perch catch. Roach and European whitefish were the next most important species in recreational fishing. Nearly 90% of the perch catch and more than 90% of the pike catch were made by recreational fishermen. The majority of the perch and pike catches in recreational fishing were caught using rod and bait, while the majority of the catches in commercial fishery were made using gillnets and trap nets.

Compilation of fishery statistics has a long history

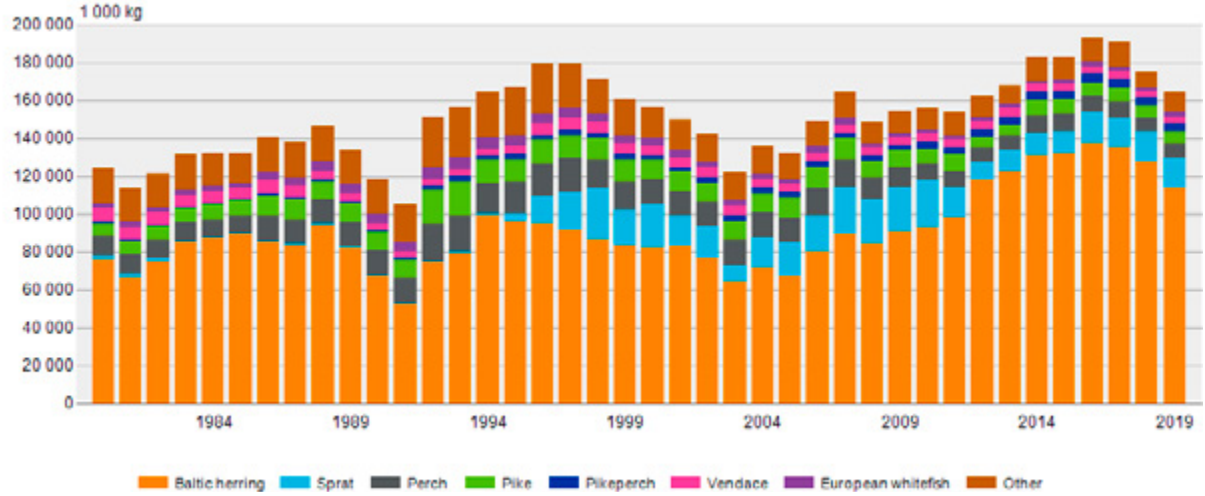
Finland has compiled catch statistics since the 1950s. During the observation period, the catches of Baltic herring, sprat, cod and salmon in particular have fluctuated significantly. This fluctuation has been due, for example, to the demand for fish used as animal feed, variations in fish stocks and fishing quotas, and developments in fishing technology.

Finland accounts for a large share of the total Baltic Sea catch

Nearly 750 million kg of fish were caught in the Baltic Sea in 2018. Of the individual fishing countries, Finland accounted for the largest share of the catch, nearly a fifth. The second-biggest country was Poland, whose most important catches consisted of sprat, Baltic herring and flounder. Sweden was in third place. Its total catch mainly consisted of Baltic herring and sprat.

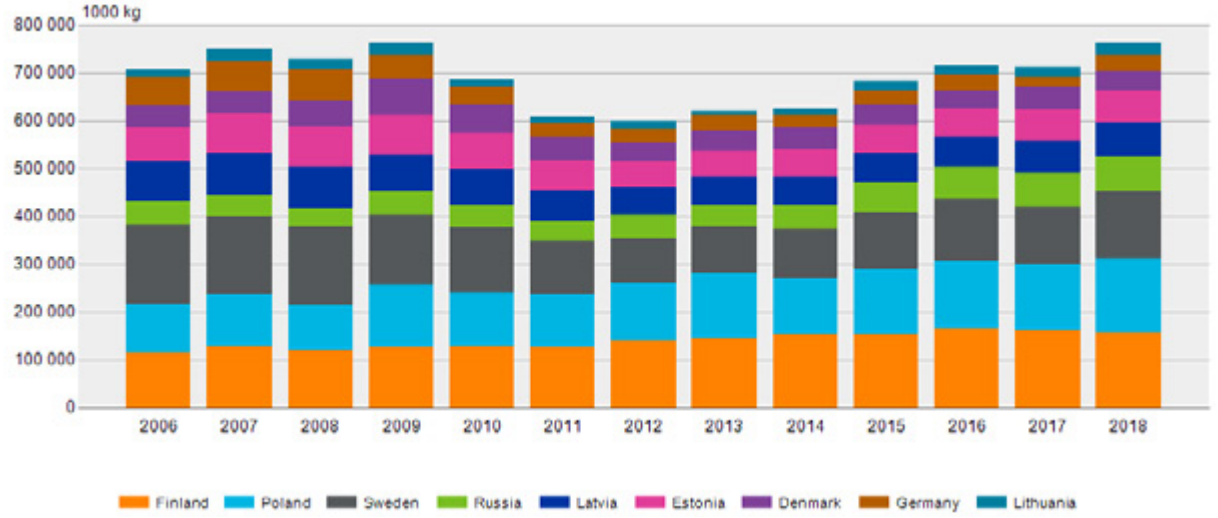
Finnish fishery catch by species 1980–2019

▶ Background data as a table



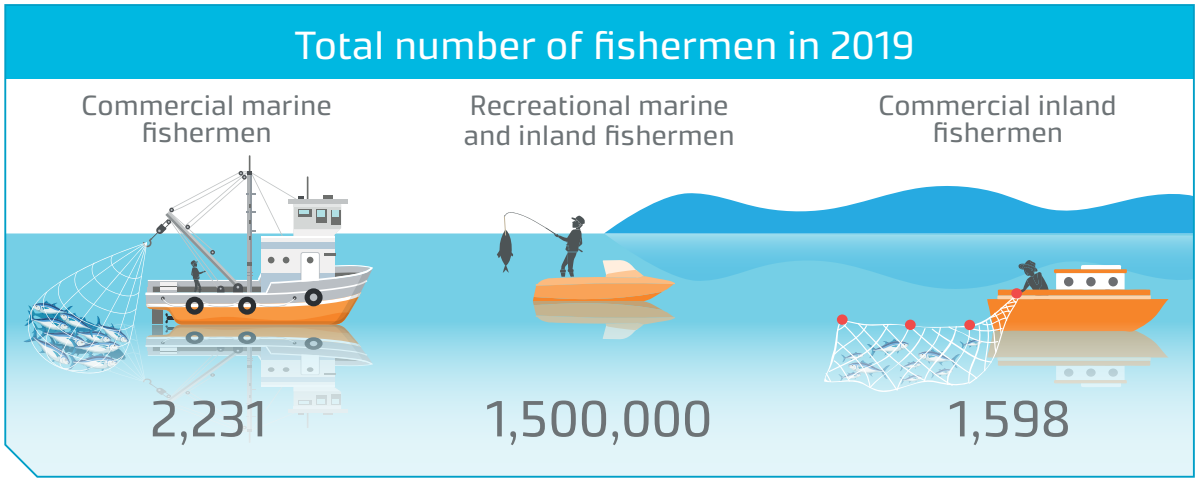
Baltic fishery catch by country 2006–2018

▶ Background data as a table



The value of Finland's commercial inland fishery and marine fishery catch by species in 2019 (EUR 1,000). The value is the producer price excluding VAT.

Species	Inland fishery	Marine fishery	Total, EUR 1,000
Baltic herring	-	24,380	24,380
Pikeperch	5,784	1,202	6,986
Vendace	5,746	1,224	6,970
European whitefish	1,139	1,822	2,961
Sprat	-	2,833	2,833
Perch	773	1,775	2,548
Salmon	77	1,203	1,280
Pike	727	351	1,078
Smelt	182	724	906
Roach	668	82	750
Burbot	298	232	530
Bream	245	220	465
Trout	119	110	229
Cod	-	187	187
Other fish species	135	216	351
Total fish catch	15,893	36,561	52,454
Noble crayfish	38	-	38
Signal crayfish	888	-	888
Total crayfish catch	927	-	927
Total	16,820	36,561	53,381



The number of commercial fishermen refers to the number of registered commercial fishermen at the end of the year. Both legal and natural persons can register as fishermen.

Photo: Markku Saiha

Aquaculture

In 2019, food fish production increased by around a million kilos from the previous year. The increase in production resulted from the increase in rainbow trout production. European whitefish production decreased slightly from the previous year. The number of juveniles produced for stocking and further farming was the same as in the previous year.

There were 73 enterprises farming food fish in Finland in 2019. Combined, these produced a total of 15.3 million kg of fish for sale at 148 fish farms. The ten largest companies produced more than 70% of the farmed food fish.

The value of food fish production decreased

In 2019, the value of food fish production was EUR 69.8 million, approximately 5% lower than in 2018. Rainbow trout accounted for EUR 59.7 million of the total value of production. The decrease in the value of food fish production is explained by a decrease in the producer price for rainbow trout.

Rainbow trout accounted for 93% of the total food fish production, or 14.2 million kg, showing an increase of more than a million kilos from the previous year. European whitefish production amounted to 780,000 kg, roughly 50,000 kg less than in the previous year.

A small volume of rainbow trout (around 100,000 kg) was supplied for fishing ponds, from which they ended up in human consumption. This volume was included in the total volume of food fish production.

Half of all food fish comes from Åland

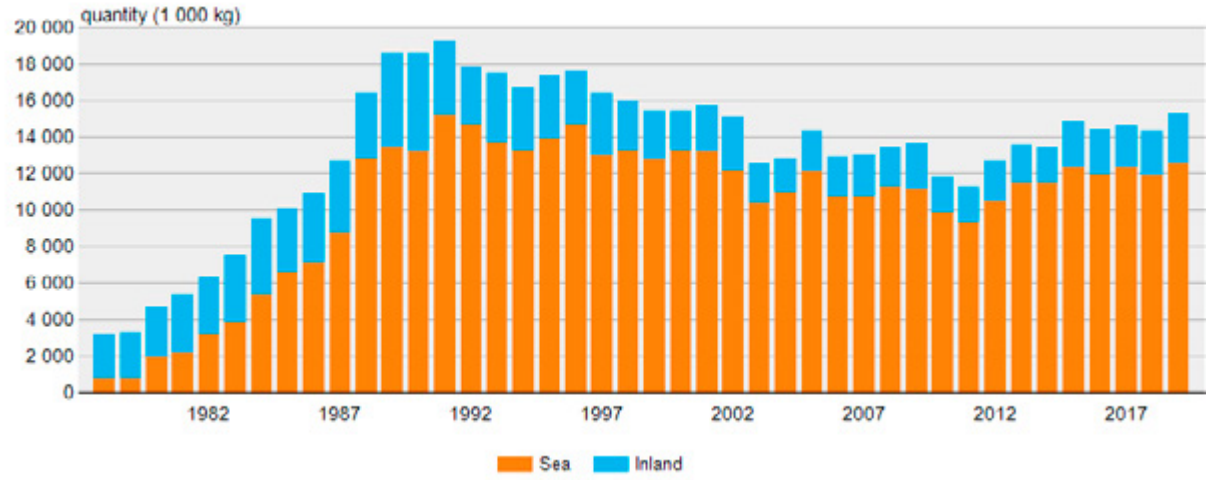
Åland accounted for around 48% of the total Finnish food fish production. Over the past 20 years, the production in Åland has increased, while production in Mainland Finland has decreased. In 2019, food fish production grew from the previous year both in the Åland Islands and in Mainland Finland.

According to the Finnish Aquaculture Strategy, the aim is to significantly increase fish farming in Mainland Finland. However, environmental requirements set for fish farms regulate the maximum production volumes of farms, which means that new solutions are required to increase production volumes.

The aim is to improve the preconditions for fish farming through location guidance and the development of new offshore and recirculating aquaculture technologies. Efforts will also be made to reduce the nutrient load in the Baltic Sea by increasing use of fish from the Baltic Sea as fish feed. Such fish feed is produced from Baltic herring from which dioxin content is eliminated Since the fish

Food fish production 1978–2019

▶ Background data as a table



used in the feed comes from the Baltic Sea, there will be no extra nutrient load to the Baltic Sea in this respect.

Inland waters account for a fifth of total food fish production

Most of the food fish is produced in sea areas in net cages. Inland production amounted to 2.8 million kg in 2019, while food fish production in sea areas totalled 12.5 million kg.

Of the marine areas of Mainland Finland, the largest volume of fish was produced in Southwest Finland, totalling 4 million kg. Most of the food fish farmed in inland waters, just over a million kilos, was produced in the region of the Kainuu ELY Centre.

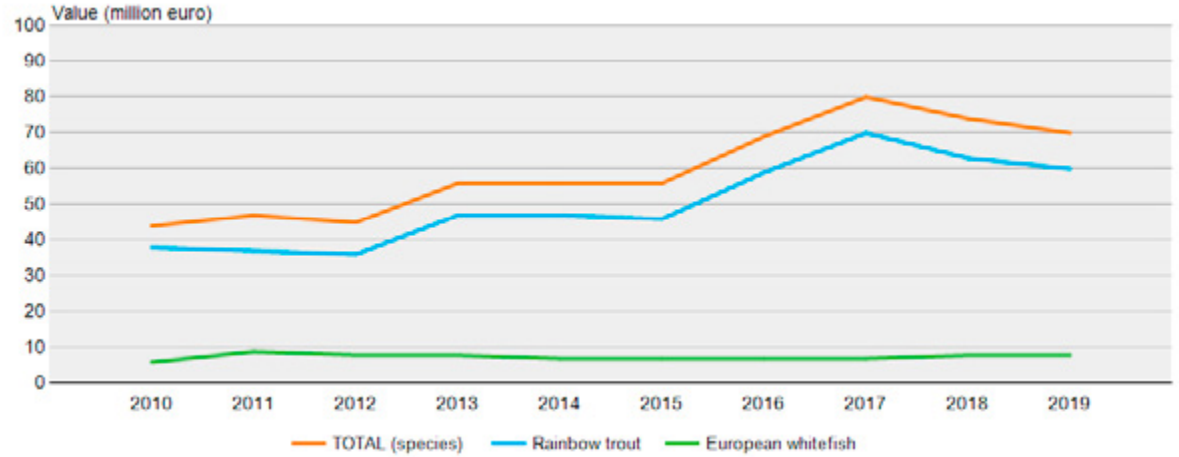
Improving the profitability of recirculating aquaculture production could also increase food fish production in inland waters. In 2019, farms using recirculating aquaculture technologies produced more than a million kilos of food fish.

Juveniles were produced for restocking natural water bodies and for further rearing as food fish

In recent years, approximately 50 million fish fry have been produced annually, excluding newly hatched fry. Rainbow trout juveniles have mainly been transferred for further rearing on food fish farms. A small proportion of European whitefish juveniles (approximately 8% in 2019) has also been transferred for further rearing, as well as a small share of trout juveniles, but nearly all

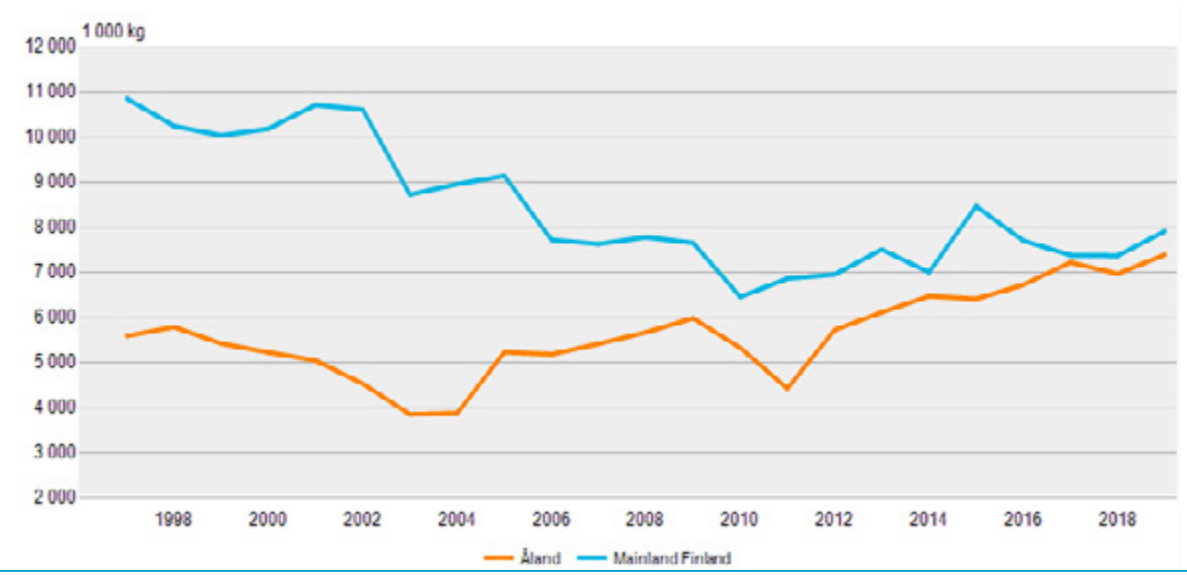
Value of food fish production 2010–2019

▶ Background data as a table

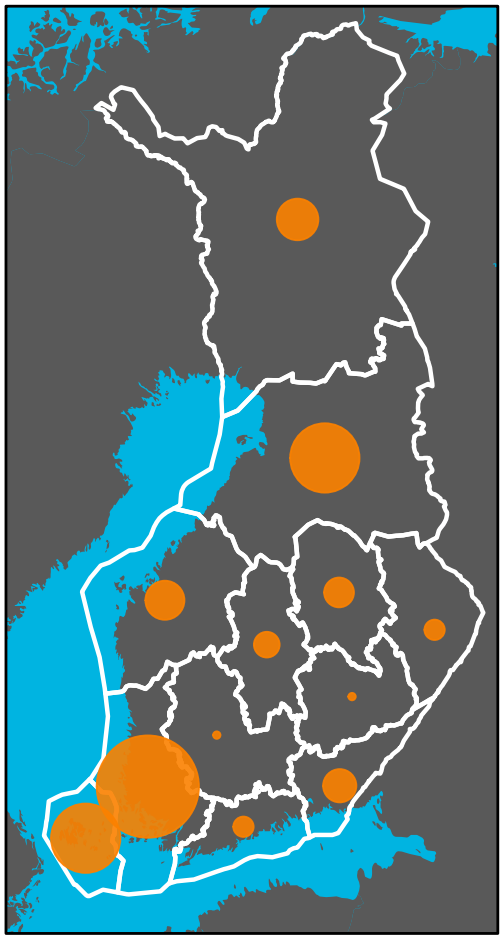


Food fish production in Åland and Mainland Finland 1997–2019

▶ Background data as a table



Number of fish farms 2019



5 10 20 40

other juveniles have been produced for restocking natural water bodies.

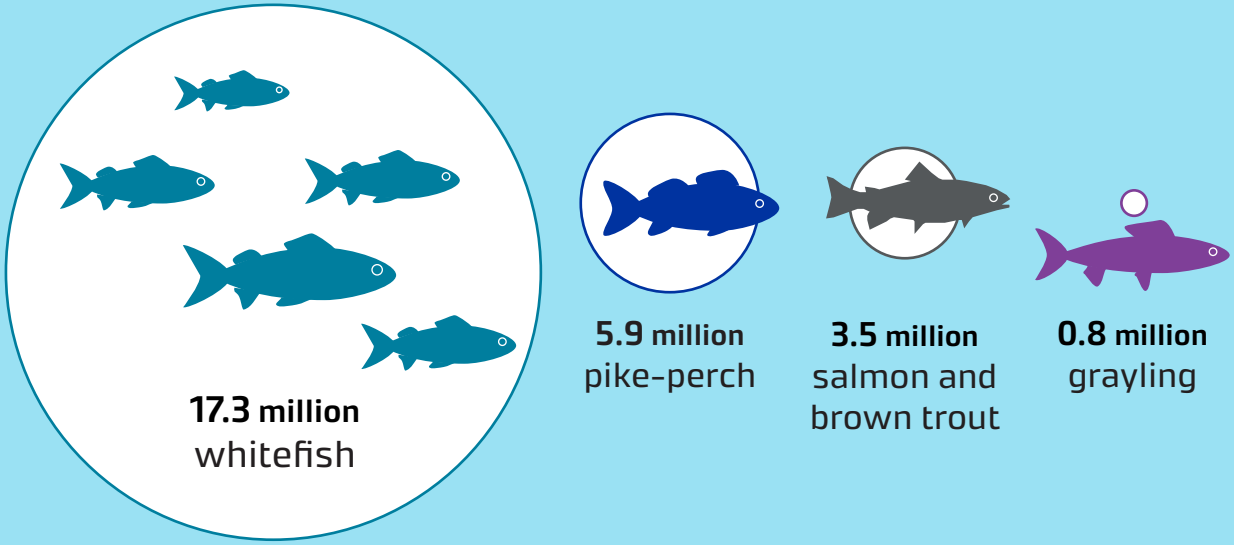
Production for stocking has decreased since the 1990s. Currently, the quantity of European whitefish produced for stocking is half the amount in the peak years in the 1990s. The production of salmon, arctic char and grayling for stocking has also halved since the beginning of the 2000s. At that time, trout production was also higher than at present. Pikeperch juvenile production peaked in 2006. Since then, the production has halved.

The decrease in the production for stocking largely results from the recovery of fish stocks and the restoration of fish waters becoming a higher priority in the management of fishing grounds. The restocking methods have also improved.

With the exception of salmon and trout, nearly all fish produced for stocking is farmed in natural nutrition ponds. In 2019, roughly the same amount of salmon and trout juveniles was reared for stocking purposes, around 17 million juveniles both.

The value of the total juvenile production was roughly EUR 20 million.

Number of juveniles released to the wild 2019



Fish processing

Of all fish used as raw material in fish processing in 2019, 45 million kg were of a domestic origin and 31 million kg were imported. The total, 76 million kg, was 3 million kg lower than in 2017.

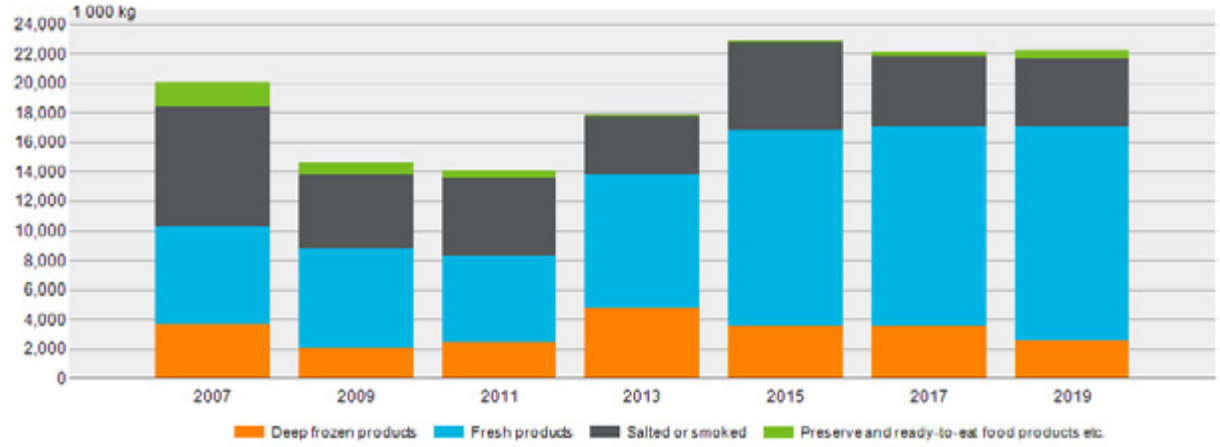
The export volume of Baltic herring and sprat frozen whole increased by nearly 3 million kg from 20 to 23 million kg. The processing industry consumed Baltic herring the most, followed by salmon, rainbow trout and European whitefish. These four species accounted for 95% of all fish-based raw material.

The processing volume of salmon imported from Norway decreased slightly, by roughly 2 million kg, to some 22 million kg.

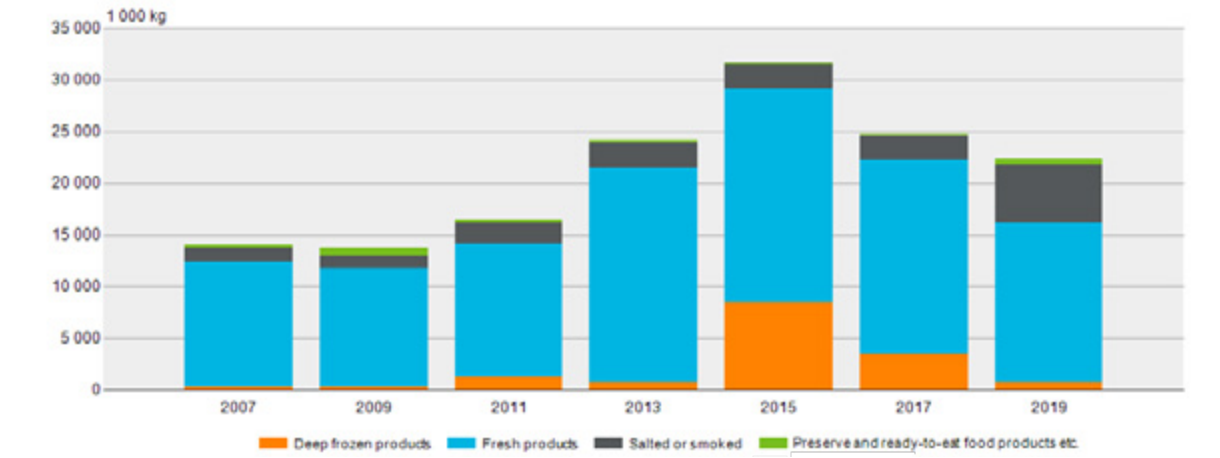
More than 15 million kg of domestic fish and nearly 22 million kg of imported fish were processed by filleting or produced into other fresh products. Moreover, 14 million kg of fish, 40% of which was domestic fish, were used for highly processed products.

There were 124 fish processing enterprises, of which 19 processed more than half a million kilos of fish. These accounted for 94% of the total volume of processed fish.

Rainbow trout used in fish processing by end product 2007–2019 ▶ Background data as a table



Salmon used in fish processing by end product 2007–2019 ▶ Background data as a table



Producer prices for fish

In 2019, the producer price of Baltic herring intended for human consumption (EUR 0.32 per kg) continued to increase, while the increase in the prices of several important coastal fishery species came to a stop. The prices of wild salmon and European whitefish remained at the previous year's level. The price of farmed rainbow trout decreased as a result of the decrease in the world market price for salmon.

Baltic herring is the economically most important species

The price of Baltic herring depends on whether it is intended for human consumption or for industrial purposes. The producer price of Baltic herring intended for human consumption is significantly higher than that of Baltic herring sold for feed.

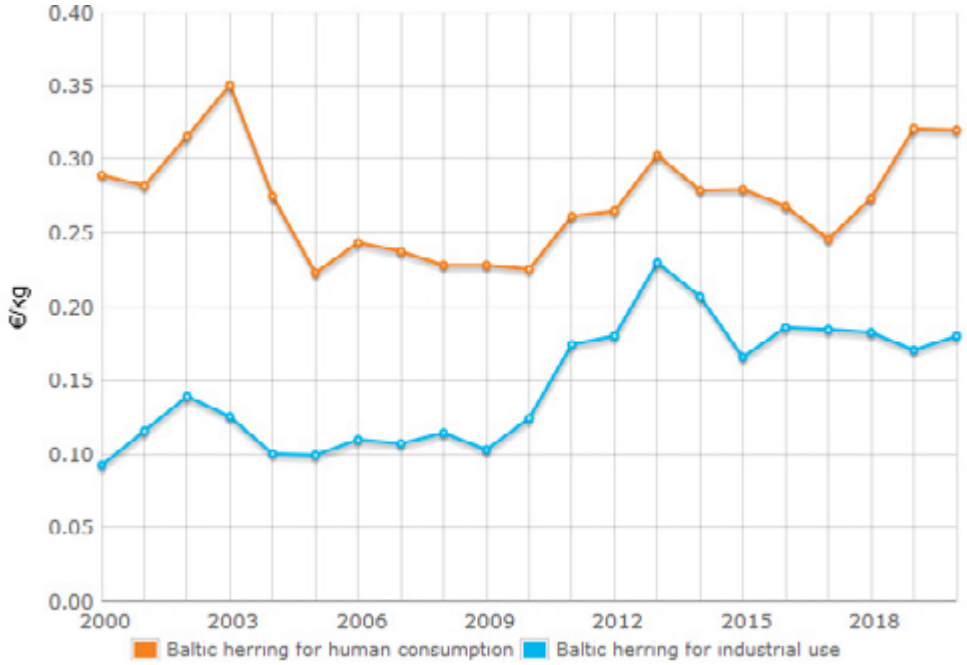
Photo: Markku Saiha

The price of Baltic herring intended for human consumption depends significantly on the size of the fish. The price paid for larger Baltic herring (12-17 fish per kg), which are mainly used for smoked fish, increased by nearly 20% from the previous year to EUR 0.96 per kg. The producer price of medium-sized herring in size classes 18-24 fish per kg and 25-32 fish per kg, which are typically processed into fillets, increased more moderately and was EUR 0.79 and 0.32 per kg, respectively.

The price paid for the smallest Baltic herring, which are mainly exported or used as animal feed, decreased from the previous year to EUR 0.17 per kg in 2019. The majority of the Baltic herring catch and almost all sprat are used as feed in fish farming and fur farming.

Real producer prices of Baltic herring used for human consumption and for industial use 2000–2019

Background data as nominal prices



The price for farmed rainbow trout continued to decrease

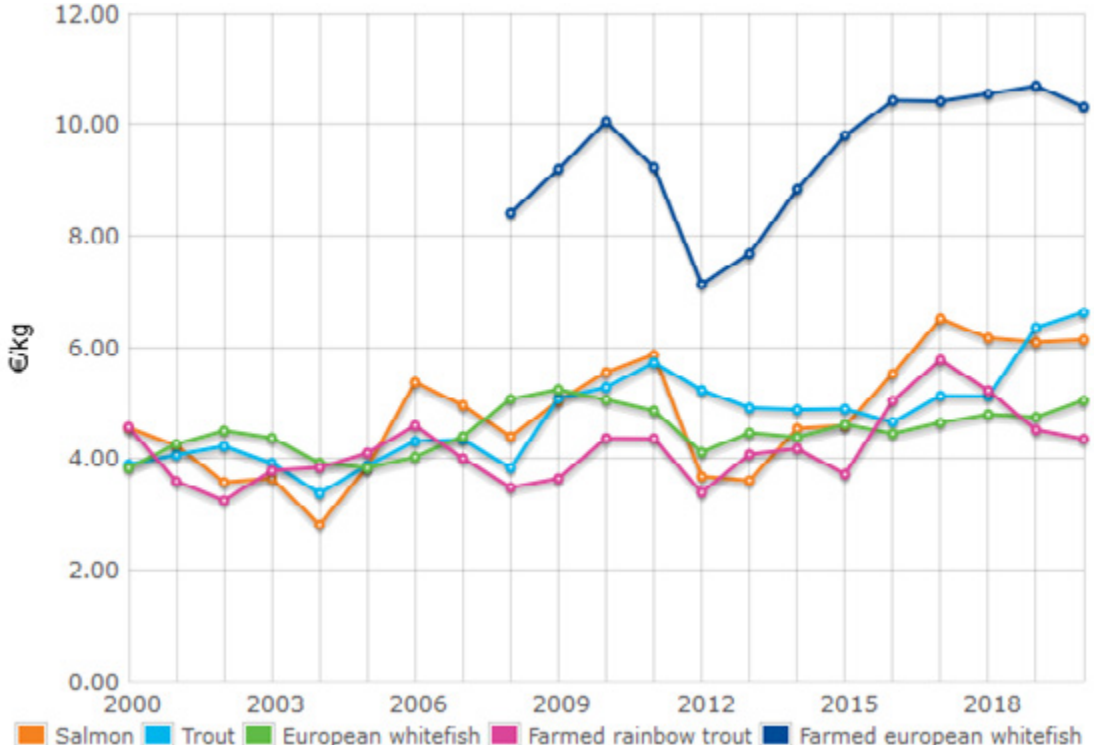
In 2019, the price of Norwegian salmon decreased significantly, which also put pressure on the producer price paid for domestic farmed rainbow trout. The producer price for rainbow trout decreased from the previous year to EUR 4.50 per kg in 2019. The price decrease intensified towards the end of the year. Economically, rainbow trout is the most important fish species farmed in Finland. The price of farmed European whitefish reached a new record in 2019, being EUR 10.66 per kg. While there would be more demand for farmed European whitefish, its farming capacity has remained low.

The increase in prices for coastal fishery species came was reversed

The decrease in the world market price for salmon was also reflected in the producer prices for wild-caught fish, and the increase in prices for the most important coastal fishery species came to a stop after several years. The prices of wild-caught salmon (EUR 6.07 per kg) and European whitefish (EUR 4.73 per kg) remained at the previous year's level, while the price of trout (EUR 6.33 per kg) increased slightly from the year before. However, the economic importance of the trout is limited. The producer price for pikeperch (EUR 6.08 per kg) slightly decreased from the previous year, and the price for perch remained unchanged from 2018 (EUR 2.38 per kg).

Real producer prices of salmonids 2000–2019

Background data as nominal prices



Foreign trade in fish

The most important country by far in terms of the total import value is Norway, which accounted for 61% of the total value of fish imports, followed by Sweden, Denmark, and Poland.

Norwegian salmon through Finland to the rest of the world

The imports of fresh Atlantic salmon from Norway totalled around 40 million kg in 2019. Of the imported salmon, 21 million kg were re-exported whole. The volume of salmon imported whole and remaining in Finland decreased by approximately 4 million kg, while the volume of salmon imported as fillets increased by nearly 4 million kg from the previous year. In total, 100 million kg of fish and fish products were imported to Finland, the value of which amounted to EUR 488 million. In addition to fresh fish, the imports covered a variety of fish products and preserves, frozen fish products of different species, crustaceans, molluscs, etc. Fish were also imported for use as animal feed. The volume of fish products imported for human consumption amounted to 89 million kg, which was 7 million kg lower by volume and EUR 33 million lower by value than in the previous year.

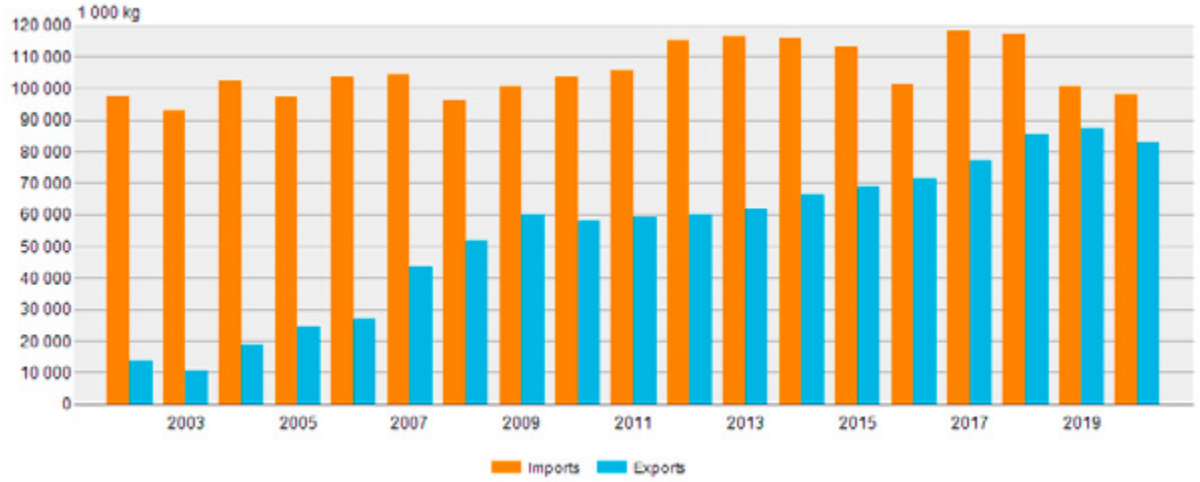
The Nordic countries and Estonia are the most important trade partners

Fish and fish products were imported from 72 countries. Three-quarters of total imports came from the Nordic countries, roughly 15% from other European countries, and around 10% from outside Europe.

Photo: Erkki Oksanen / Luke

Quantity of imports and exports of fish and fish products 2002–2019

▶ Background data as a table



Of the total import volume, nearly 60% (58 million kg) originated in Norway. The volume of fish and fish products imported from Sweden totalled 11 million kg, 6 million kg from Estonia, and 5 million kg from Denmark.

UK was the most important export destination

Fish and fish products were exported to 36 countries. Finland's most important export products included fresh salmon and rainbow trout, fresh and frozen Baltic herring and sprat, salmon products, and fish roe and roe products.

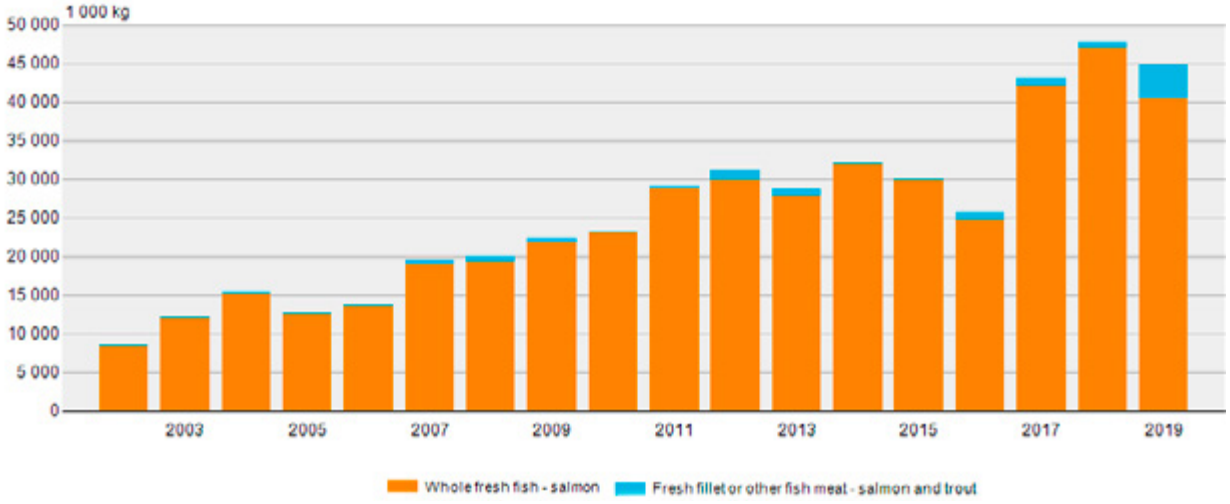
More than half the total exports were destined for the Nordic countries, around 40% to other European countries, and only a few per cent outside Europe. The most important export destinations for fish and fish products were the UK, France, Lithuania, Estonia, Poland, Denmark, and Sweden. Of the exports of fresh whole salmon, a total of 40% were directed at the UK and France.

Norwegian salmon was the most valuable export item

In terms of value, fresh salmon and rainbow trout were the most important export items from Finland. The high value of salmon exports is largely explained by the re-export of fresh whole Norwegian salmon to Europe via Finland. The value of re-exported salmon amounted to EUR 117 million. Other important export products included fresh and frozen Baltic herring and sprat products, and fish roe and roe products. Fish waste was exported to Denmark in particular.

Photo: Markku Saiha

Imports of fresh salmon from Norway 2002-2019 ▶ Background data as a table



Profitability of fisheries

The profitability of all of the branches of the fishery industry, except for aquaculture, improved in 2018. Total revenue of fishery industry enterprises amounted to EUR 964 million, and the industry provided 2,406 person-years of employment. Fish processing and fish trade remained the most important sectors of the fishery industry: almost 90% of the total revenue comes from fish processing, as well as from the wholesale and retail trade of fish. These sectors employed almost 80% of the total workforce in the industry.

In 2018, there were 1,506 companies operating in the fishery industry in the sectors of commercial marine fishery, aquaculture, fish processing, and fish wholesale and retail trade.

The fishery industry provided 2,406 person-years of employment, 4% less than in the previous year. Fish processing provided the most employment: 34% of the entire industry. Combined, wholesale and retail accounted for 43% of the industry's jobs, while the share of primary production (i.e., fishing and aquaculture) was 23%.

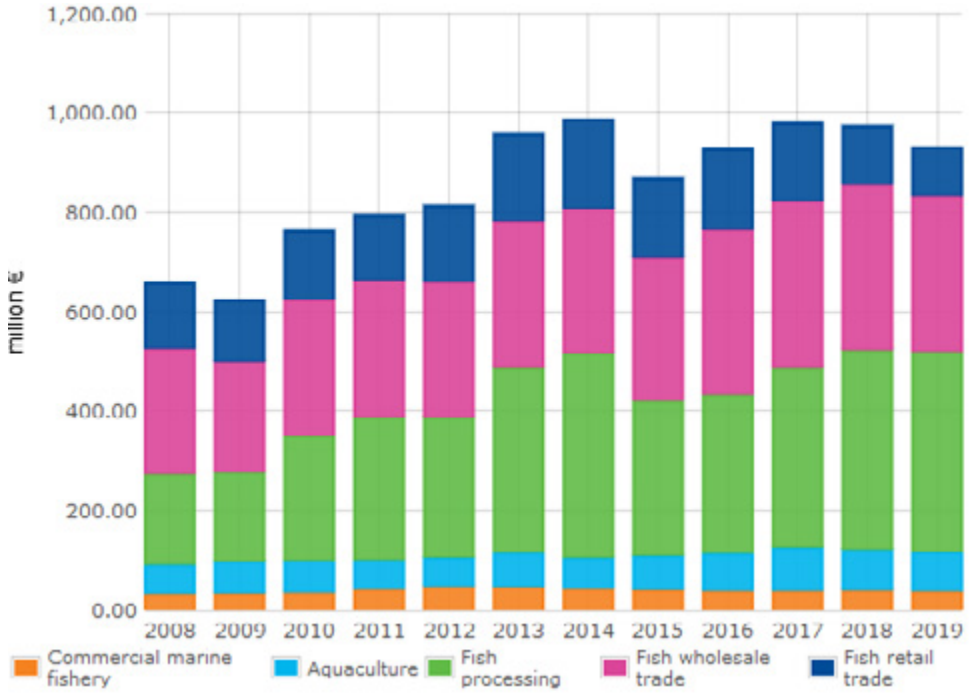
The fishery industry is concentrated

The total revenue of the fishery industries amounted to EUR 964 million in 2018. Revenues of fishing increased by 2% from 2017, and fish processing revenues by 11%, while aquaculture revenues decreased by 6% and fish retail revenues nearly by a quarter. Fish retail revenues were nearly a quarter lower than in 2017, but the net result remained at the same level. Of the fishery industries, fish processing produced the highest revenues in 2018

Most fishery industry companies were fishing companies, and most of the fishing companies were small companies operating in coastal areas. When combined, however, fish processing and fish wholesale and retail trade accounted for almost 90% of the total fishery industry revenue. Fish processing and fish trade are highly centralised sectors, which means that the ten largest companies produce clearly more than 80% of the industry's total revenue.

Fishery revenues in real terms 2008-2018

Background data as nominal income



Also in the case of aquaculture, the ten largest companies account for more than half of the total revenue.

Profitability of the fishery industry improved

Profitability improved in all sectors, except for aquaculture. Compared to 2017, the net result of fishing increased by more than 70% to EUR 9.4 million as a result of the improved profitability of trawlers. The profitability of aquaculture companies experienced a significant decrease when recirculation aquaculture companies made a loss of almost EUR 10 million.

Fish processing companies improved their result and, as in 2017, produced the highest net result with EUR 13.3 million. The result also clearly improved in the wholesale trade of fish. Investments in recirculation aquaculture continued: the sector's net investments amounted to more than EUR 25 million.

- Profitability of fisheries
- Economydoctor

Photo: Erkki Oksanen / Luke

Fish consumption

In 2019, Finnish people consumed 3.5 kg of domestic fish and nearly 10 kg of imported fish per capita. The consumption of domestic fish was converted into fillets, while the consumption of imported fish was primarily calculated according to the fresh weight.

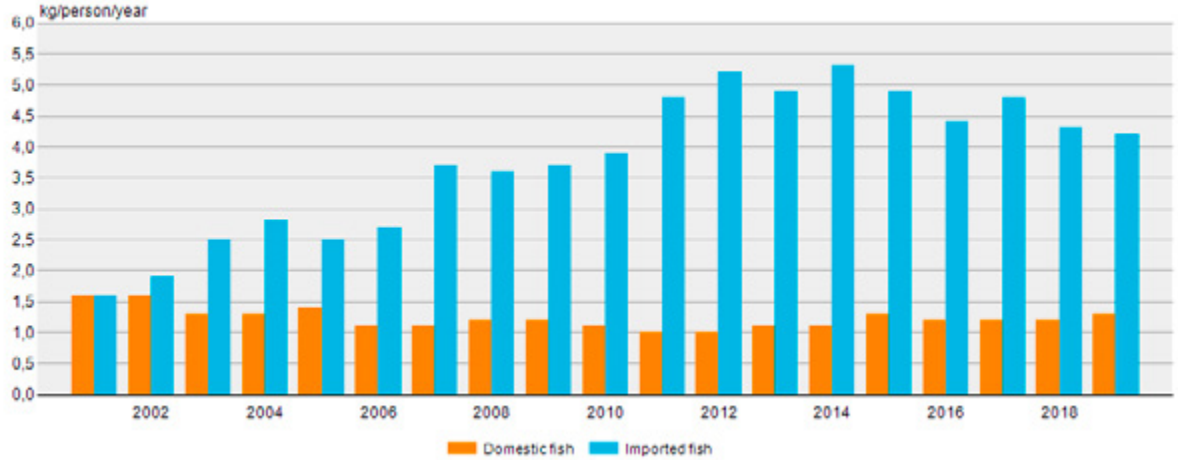
The most important domestic species in terms of consumption was farmed rainbow trout (1.3 kg per capita), while farmed salmon was the most consumed imported fish (3.5 kg per capita). The consumption of domestic rainbow trout increased slightly, but the consumption of imported salmon was at the same level as in 2018.

Of wild-caught domestic fish, pike was consumed the most (0.44 kg per capita), followed by perch (0.41 kg), Baltic herring (0.39 kg), pikeperch (0.35 kg), vendace (0.28 kg), and European whitefish (0.23 kg). The consumption of vendace was converted into fillet weight, as in the case of other domestic species. Previously, the weight of gutted fish was used for vendace.

With regard to the consumption of imported fish products, farmed Norwegian salmon was consumed the most, followed by canned tuna and other tuna products, canned Baltic herring, shrimps and shrimp products, and frozen pollock.

Consumption of domestic rainbow trout and imported salmon and rainbow trout 2001–2019

▶ Background data as a table



Domestic fish consumption by origin 2011–2019

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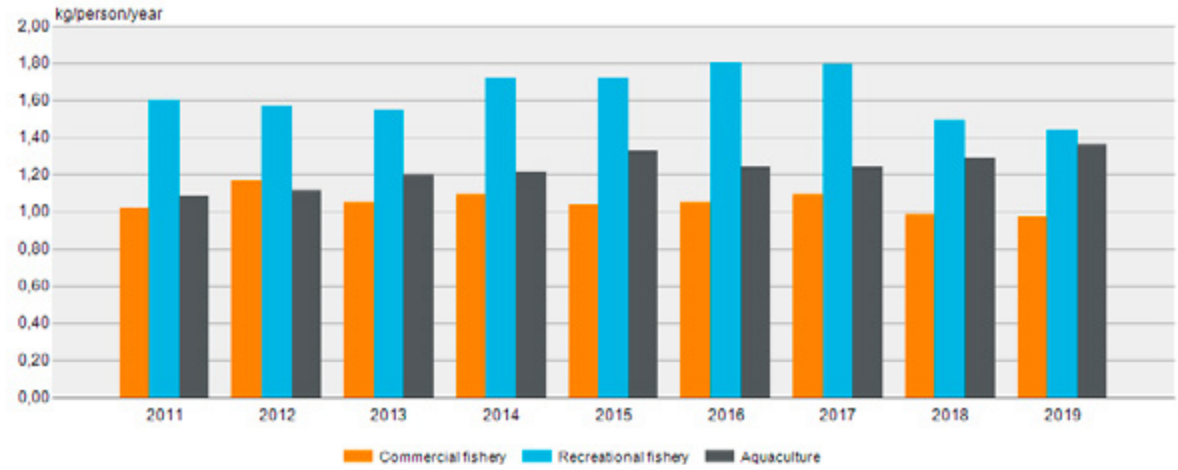

Finns ate an average of 13.5 kg of fish in 2019.

Domestic fish consumption by origin 2019

Background data as a table

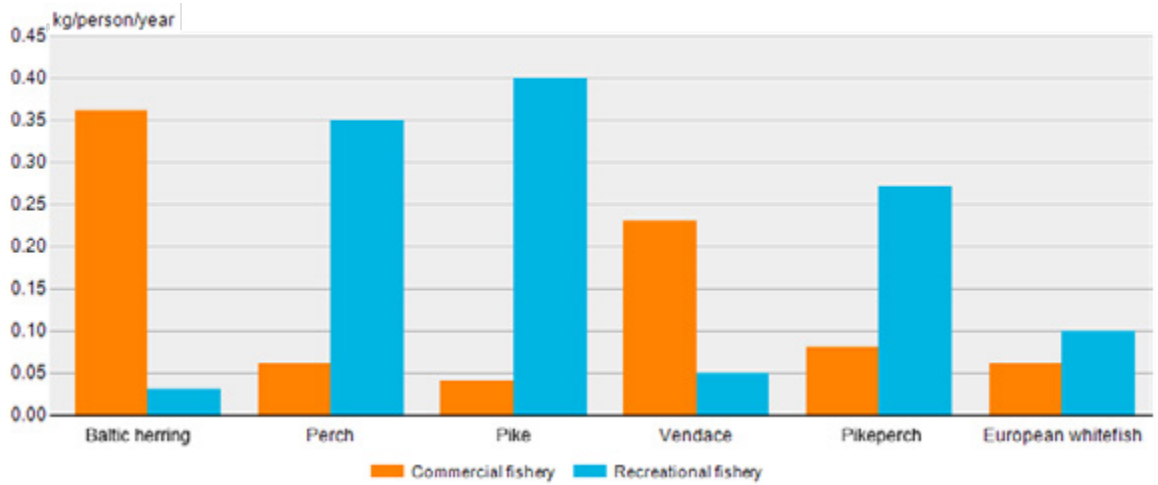

Photo: Atso Romakkaniemi

Photo: Erkki Oksanen / Luke

Hunting

For a long time, the total number of hunters has remained roughly the same, while the number of female hunters has increased. Large numbers of wood pigeons and mallards were harvested in 2019. The grouse bag was large, and in particular the numbers of black grouse increased from the previous year. The deer bag was the largest in 20 years because white-tailed deer and European roe deer were caught more than previously.

In 2019, 307,759 hunters paid the game management fee. For the last fifteen years, the number of hunters paying the fee has been slightly over 300,000.

The number of female hunters is growing each year. In 2019, the share of female hunters was 8%. The numbers of female hunters were highest in Uusimaa, southern parts of Lapland, and North Savo. Of all hunters in the region, the share of women was the highest in northern, central and southern parts of Lapland and the lowest in Ostrobothnia, in the region south of Oulu, and in Satakunta.

The number of active hunters has slightly decreased in ten years

Around 200,000 hunters reported having gone hunting in 2019, i.e., two out of three hunters who paid the game management fee. During this decade, the number of active hunters has decreased by 10%. The number of waterfowl hunters has decreased by nearly a third, and the number of grouse hunters has decreased significantly, by 20%. The number of active grouse hunters was the lowest in

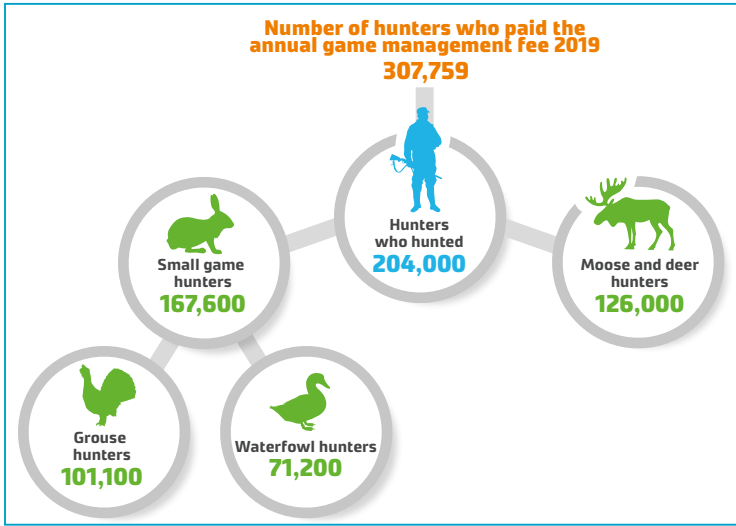


Photo: Tapani Pakarinen

Grouse bag 1996–2019

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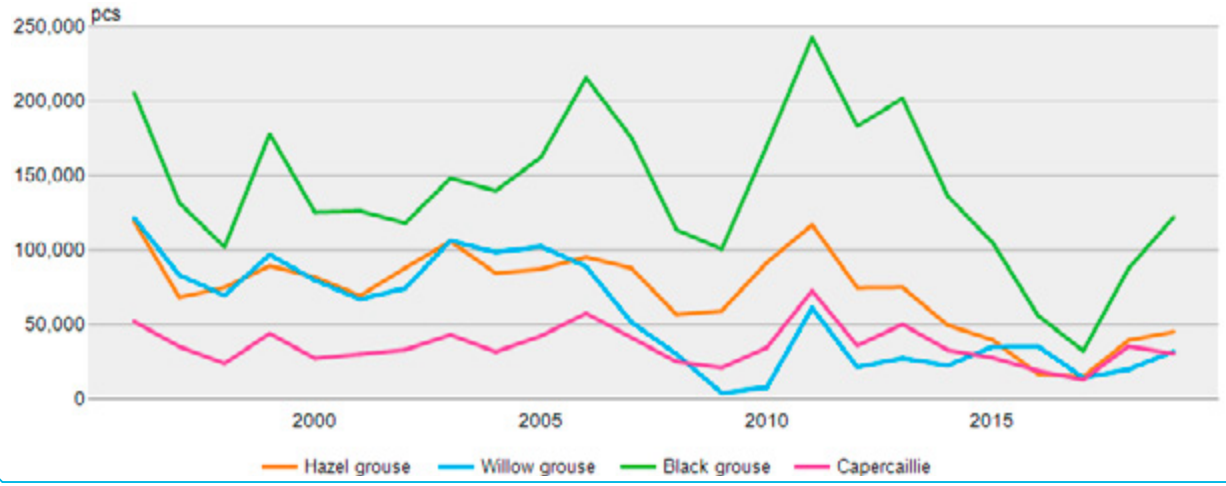


2017, mainly due to the poor grouse populations, but as the populations recovered, the number of active hunters increased in 2018 and remained roughly the same in 2019.

In 2010, the number of deer hunters was roughly as high as in 2019, but in the middle of the decade (in 2014-2015), the number of deer hunters was 15,000 fewer than in 2019. The increase in the number of hunting licences for deer may also have increased the number of active deer hunters. In addition, the increase in the number of roe deer may also have affected the number of hunters.

Black grouse bag still increasing

Grouse bags can vary greatly from one year to the next. This is usually caused by fluctuations in grouse stocks and by related game-management activities. At the beginning of the decade, grouse bags were abundant, but since then, the numbers harvested have decreased rapidly until hitting the bottom in 2017. In the last few years, stocks have recovered and more bags have increased.

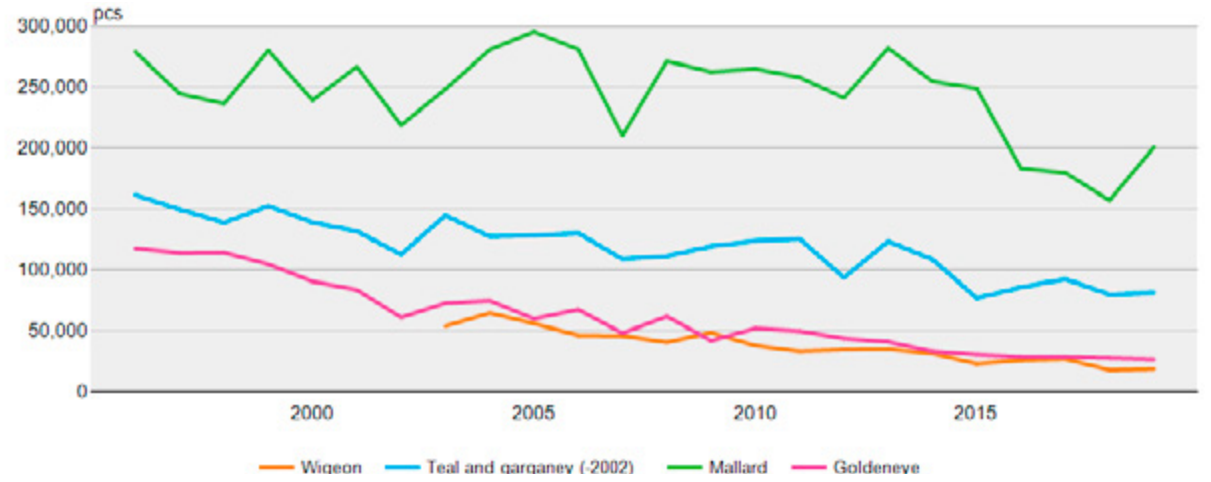
The 2019 black grouse, wood grouse, willow grouse and hazel grouse bags more than doubled compared to 2017. Compared to 2018, the numbers of black grouse harvested increased by 40%, while the wood grouse bag was slightly smaller. Willow grouse and hazel grouse bags increased slightly.

Mallard bag was bigger than in the previous year

Waterfowl bags have decreased since the 1980s and partly since the 1990s. The most hunted species is mallard, followed by teal and goldeneye and wigeon. The

Hunting bag of most common waterfowl 1996–2019

▶ Background data as a table



Hunting bag of wood pigeon 1996–2019

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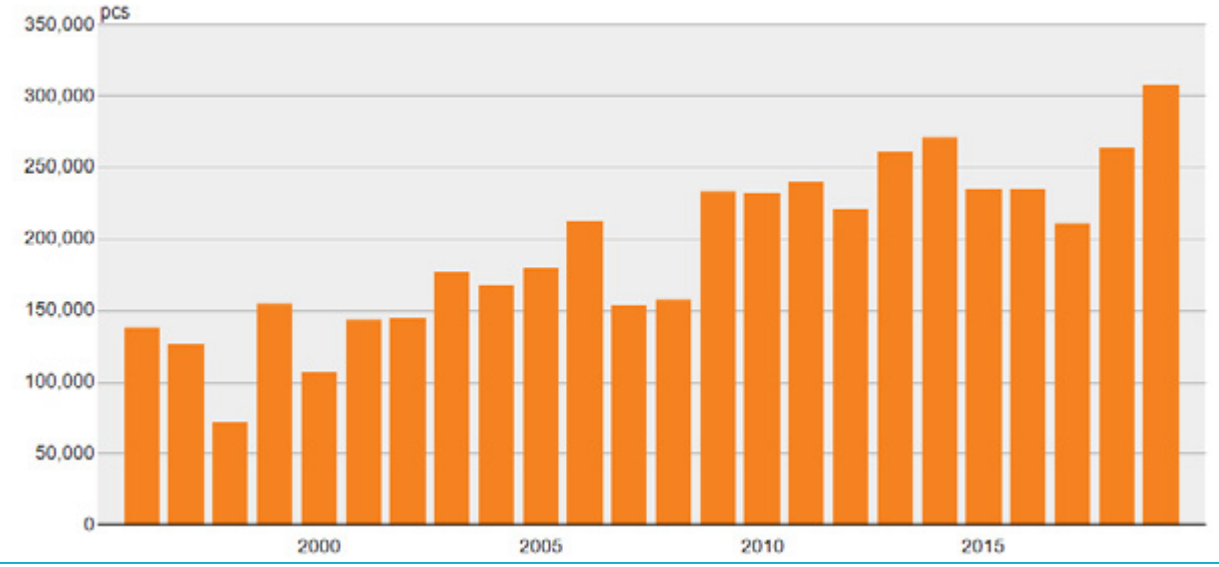


mallard bag increased from the previous year, while the teal, goldeneye and wigeon bags remained roughly at the previous year's level. In 2019, the hunting of common pochard and red-breasted merganser was forbidden.

Wood pigeon bag was abundant

The wood pigeon bag was record high with over 300,000 pigeons. An average pigeon hunters's bag was ten birds. A total of 29,000 hunters harvested wood pigeons.

No change from the previous year in the hare bag

The numbers of mountain hare harvested was roughly the same as in the two previous years. However, the hare bag has halved compared to the beginning of the decade and has decreased to a fifth compared to the peak years in the 1990s. No similar changes have occurred in the brown hare bag.

Fewer small predators were harvested

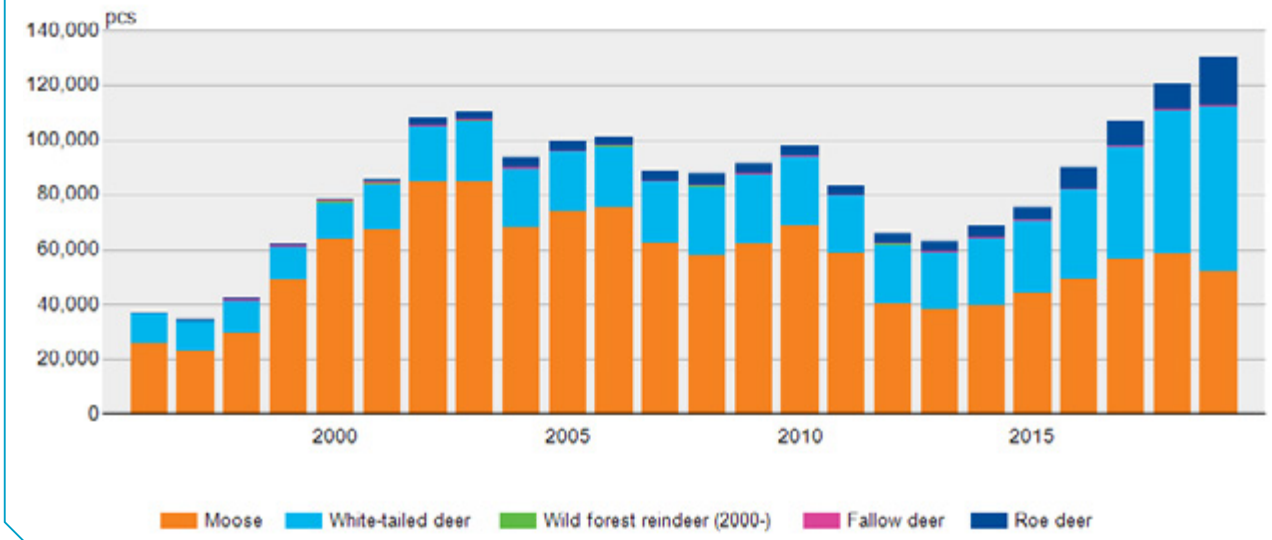
Raccoon dogs are abundant in Finland, and they are also hunted a lot. Last year's total catch was 138,000 raccoon dogs, 20% less than in the previous year. The second most hunted small predator species were mink and fox, 40,000 of each were harvested. The mink and fox bag was about a fifth smaller than in the previous year. The raccoon dog and mink are now classified as invasive alien species, so people other than those who have paid the game management fee may also hunt them. The statistics do not include data on the bag made by these individuals.

White-tailed deer bag increased

The number of elk hunting permits issued slightly decreased from 2018, which means that the elk bag was also smaller. Instead, more white-tailed deer hunting permits were issued than in the previous year, which increased the white-tailed deer bag by 15%. For the first time, the number of white-tailed deer harvested exceeded the number of elk harvested. The roe deer bag nearly doubled from the previous year. Hunting of roe deer does not require a separate hunting permit as in the case of white-tailed deer or elk, but any deer harvested must be reported to the Finnish Wildlife Agency.

Deer bag 1996–2019

▶ Background data as a table



Bioeconomy in Finland

Photo: Tiina Sauvula-Seppälä

Bioeconomy in Finland

The proportion of the bioeconomy from the output Finland's national economy and value added has remained nearly unchanged over the past ten years. In 2019, the bioeconomy accounted for 13%, or EUR 26 billion, of the national economy's total value added. The volume of value added in the bioeconomy increased by 2% from the previous year.

In 2019, the output of the bioeconomy was EUR 74.4 billion, which was 16% of the national economy's total output. Compared to the previous year, the output volume increased by 1%.

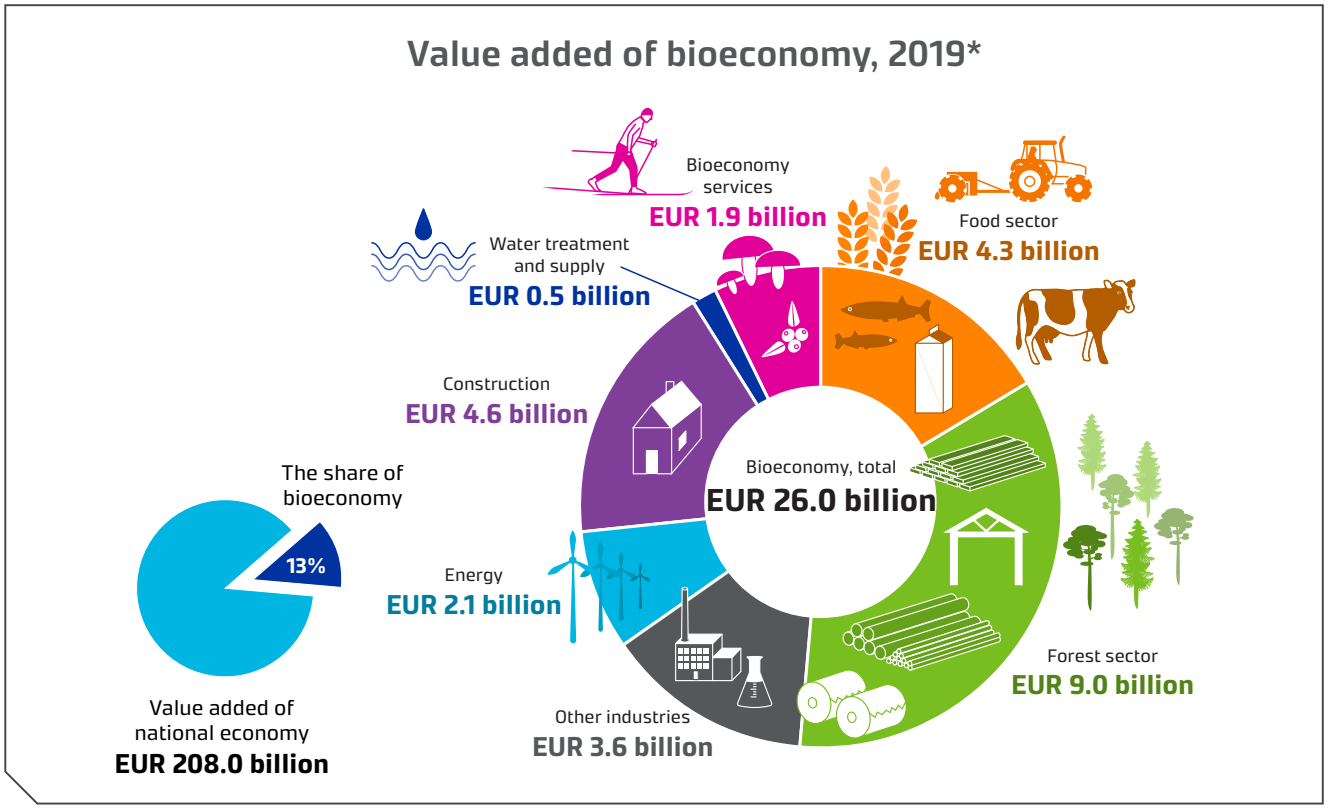
In 2019, EUR 5.6 billion was invested in the bioeconomy industries, which represents a tenth of the total national investment. The food sector's share of investment in the bioeconomy rose to nearly a third.

In 2018, around a third of all goods exported from Finland were bioeconomy products, and some 70% of all bioeconomy products were forest industry products. The food sector accounted for 10% of total bioeconomy exports.

The number of labour force decreased

Bioeconomy sectors employed a total of 301,800 people, 11% of the total labour force. The number of people employed in the bioeconomy decreased by 1,500 from the previous year, even though the total labour force increased by 44,000 people. The bioeconomy labour force increased the most in nature tourism and recreation, as well as in forestry, by a total of 2,800 people. Correspondingly, the number of employees decreased the most in the food sector, by 1,800 people.

Agriculture remained the largest employer in the bioeconomy, with 64,300 people employed, although the agricultural labour force has decreased by 21,900 people since 2010. During the same period, the number of people employed in the forest sector decreased by 6,400 persons to 63,300. Instead, the number of people employed in wood construction, nature tourism and recreation has increased by 7,000 people.



The forest sector was the most significant industry

The traditional food and forest sectors have maintained their position as the strongest pillars of the Finnish bioeconomy, although in recent years higher growth percentages were achieved in other sectors, such as the chemical industry. Recreational use of nature and the use of other bioeconomy services has also increased.

In 2019, the forest sector represented 38% of the total output of the bioeconomy and 35% of the value added. These proportions have remained fairly stable in recent years. The value added produced in the food sector was the third highest, at 17%. The second highest value added was in wood construction, at 18%.

Sectors regarded as the 'blue bioeconomy', i.e., commercial fishery and aquaculture, the fish-processing industry and recreational fishing, represent less than 1% of the output, value added and labour force of the bioeconomy.

Can we achieve the goals of the Finnish Bioeconomy Strategy?

The goal set in the 2014 Finnish Bioeconomy Strategy is to create 100,000 new jobs in the bioeconomy by 2025. In the light of statistics, this goal appears difficult to achieve. The number of people employed in the bioeconomy has decreased by 14,900 people compared to the beginning of the 2010s.

Furthermore, the strategic goal of increasing the bioeconomy output to EUR 100 billion requires an increase of more than 5% in the output volume during the next few years. Between 2018 and 2019, the output volume increased by 1%.

Key terms

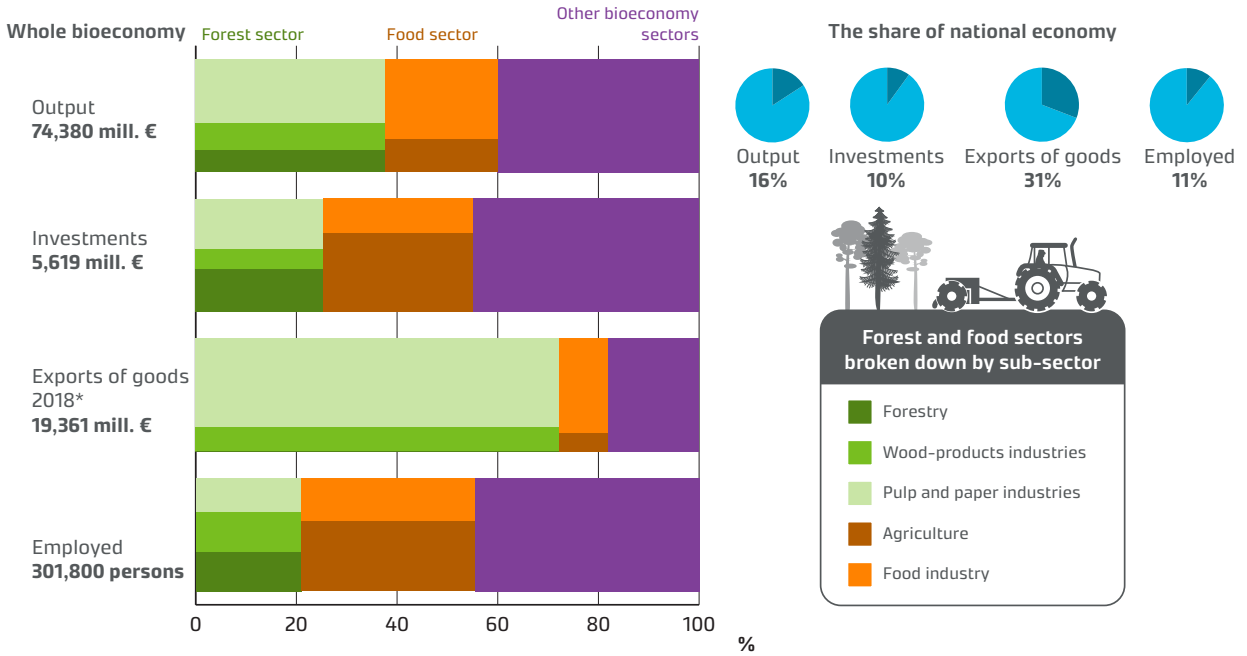
Output is itemised into three types: market output, output for own use, and other non-market output. Non-market output is not taken into account in bioeconomy calculations.

Value added (gross) refers to the total value generated by units engaged in a production activity. In market production, it is calculated by deducting from the unit's output the intermediates (goods and services).

Employed persons in national accounts include all persons drawing a salary, as well as independent entrepreneurs who participate in production activities in the national economy.

- Finnish Bioeconomy in figures
- Principles for monitoring the bioeconomy
- Bioeconomy in the statistics database

Forest and food sectors in Finland's bioeconomy, 2019*



* Preliminary data
Sources: Statistics Finland and Natural Resources Institute Finland

International data sources

Photo: David Mark, Pixabay

International data sources

National Resources Institute Finland (Luke) produces national statistics for its field as part of the European Statistical System. In addition, Luke participates globally in both bilateral and multilateral statistical cooperation.

International statistics produced following the same principles allow reliable comparison of statistical figures between Finland and other countries.

To improve comparability, internationally accepted concepts, classifications and methods are also used in the production of national statistics. This is not always fully possible, and published statistical figures are influenced by the availability of data, as well as by the available data sources.

For example, data presented in global forest resources reports may differ from the national forest statistics of different countries. The United Nations Food and Agriculture Organization (FAO) defines a 'forest' as an area with a canopy cover of more than 10% and trees higher than 5 metres. In Finland, the definition of forest is based on the land's ability to produce wood, which means that forest land and poorly productive together form a wooded area, i.e., a forest.

This section of the yearbook contains a list of key international data sources by industry and a brief description of their content. The links to the websites can be found in the pdf version of the yearbook.

Agricultural statistics

Eurostat (statistical office of the European Union) publishes agricultural statistics for all EU Member States, including statistics on the structure of agriculture, agricultural production, producer prices and price indices, and organic production. Eurostat's database also contains data from other industries.

FAOSTAT (statistical service of the Food and Agriculture Organization of the United Nations) produces extensive information on agriculture and food production around the world, including the use of inputs, agricultural emissions and environmental indicators.

Jordbruksverket (the Swedish Board of Agriculture) publishes the official Swedish statistics on agriculture and horticulture.

Luke's Economydoctor service contains, for example, data on the profitability of agriculture and horticulture in Finland and in other EU Member States, including the latest profitability forecasts.

Forest statistics

Eurostat (statistical office of the European Union) publishes data on forest resources, forest protection, forest-sector employees and economy, felling, and the production and sale of wood products within the territory of the European Union.

FAOSTAT (statistical service of the Food and Agriculture Organization of the United Nations) produces annual global statistics on the production, import, export and consumption of forest industry products, as well as statistics on the forest area and forest carbon flows.

Global Forest Resources Assessment (FRA) is a report on global statistics published by the Food and Agriculture Organization of the United Nations every five years on forest resources, biodiversity and forest health, for example.

ITTO (International Tropical Timber Organization) reports on the production and trade of basic wood products worldwide.

Skogsstyrelsen (the Swedish Forest Agency) publishes official statistics on forestry and related production and employment in Sweden.

UNECE (United Nations Economic Commission for Europe) publishes statistics on forest resources, forest health and biodiversity in the pan-European region, and on forest ownership in the UNECE region.

The Forest Products Annual Market Review by UNECE and FAO provides statistical information on the forest products market in the UNECE region of Europe, North America, and the Commonwealth of Independent States.

Fishery statistics

Eesti statistika (Statistics Estonia) publishes official statistics on Estonian commercial fishing, aquaculture, and hunting.

The Joint Research Centre of the European Commission collects and publishes fisheries data concerning EU Member States for scientific advice.

Eurostat (statistical office of the European Union) publishes statistics on fish catches, landings, fishing vessels, aquaculture, and fish trade within the European Union.

The FAO (the Food and Agriculture Organization of the United Nations) publishes worldwide statistics on the fisheries sector and its employment.

Havs- och vattensmyndigheten (the Swedish Agency for Marine and Water Management) publishes official statistics on Swedish commercial and recreational fishing.

ICES (International Council for the Exploration of the Sea) publishes statistics on fishing in the North Atlantic.

Miljø- og Fødevareministeriet, Fiskeristyrelsen (the Danish Fisheries Agency) publishes official statistics on commercial fisheries, aquaculture, and the fish trade in Denmark.

Photo: Quang Nguyen vinh, Pixabay

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