E-yearbook of Food and Natural Resource Statistics for 2019

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

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

Natural resources and bioeconomy studies 73/2020

Luke
LUONNONVARAKESKUS

Dear reader

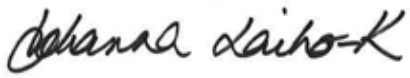
The Natural Resources Institute Finland (Luke) produces most of the statistics concerning the Finnish agriculture and food processing industry, the forest sector, and the game and fisheries industry. This E-yearbook of Food and Natural Resource Statistics presents key figures for the 2018 statistical year. This year, the e-yearbook also includes a brief description of international statistics concerning the sector.

Luke's statistical e-yearbook is freely available for downloading in Luke's statistics portal at stat.luke.fi/en/. Links to tables in the online service and in the statistics database provide access to background data and statistics. Instructions on using the statistics database are available in our online service. A printed version can be ordered via Luke's online shop. The English version of the e-yearbook will be published in the spring of 2020.

The statistics, analyses and other data concerning the bioeconomy in Luke's statistical services were produced as a result of joint efforts by the unit staff. We also work closely with other experts, reporting enterprises and our customers. This year's e-yearbook was compiled by a team of around 30 experts and statistics specialists. The contributors are listed on the back cover of the yearbook.

I would like to thank everyone who contributed to this publication and to Luke's statistics in general for their excellent work and expertise. Feedback and suggestions concerning the publication and our website can be sent by email to tietopalvelu@luke.fi

Helsinki, December 2019



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Agricultural statistics

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Agricultural statistics for 2018

There was a total of 47,633 agricultural and horticultural enterprises in Finland in 2018. The number of farms decreased by approximately 900 farms compared with the previous year. The average arable area on farms was 48 hectares. In 2018, other plant production was the primary production line for the first time, closely followed by cereal production. The number of farmers at retirement age is increasing: nearly 30% of farmers on privately owned farms were over 60, and only 16% were under 40.

Milk production dipped slightly, but the production of organic milk increased

Milk production amounted to nearly 2,328 million litres last year, slightly less than in the previous year. Organic milk production amounted to 69 million litres, an increase of 10% from the previous year. The number of milk producers decreased by around eight per cent. Egg production amounted to 74 million kilograms, the highest amount since 1990.

Meat production lower than the previous year

Total meat production amounted to 393 million kilograms, which was one per cent less than in 2017. Pork production decreased by as much as seven per cent, to 169 million kilograms. However, poultry meat production increased for the ninth year in a row and totalled 135 million kilograms. Beef production increased by one per cent and sheepmeat by 13%. Organic meat production amounted to just under four million kilograms in 2018. Organic meat accounted for around one per cent of total meat production, but more than a quarter of all sheepmeat produced was organic.

Cereals accounted for just under half the total utilised agricultural area

In 2018, the total utilised agricultural area in Finland amounted to 2,271,900 hectares. Of this, cereals accounted for nearly half, and feed grass more than a third. Of special crops, the cultivated area for caraway was as much as 27,700 hectares, while the cultivated area for potatoes amounted to 22,000 hectares, and for broad beans 20,000 hectares. The cultivated area for rape, which amounted to 30,800 hectares, was slightly higher than for turnip rape, which amounted to 27,500 hectares.

Drought weakened cereal harvest

2018 was the second consecutive poor harvest year in Finland. Drought reduced the total yield, particularly in Southwest Finland and surrounding areas. Last year's cereal harvest was the smallest in 26 years. In addition to cereals, the broad bean harvest was much smaller than normal. The organic cereal harvest amounted to 86 million kilograms, of which the majority was oats.

The dry summer reduced the use of plant protection products

The amount of plant protection products used was nearly a quarter lower than in 2013, when the previous statistics were compiled. The dry growing season reduced the need for plant protection. Of the overall amount of plant protection products used, 79% were herbicides, and 17% were agents used to control plant diseases both in 2013 and in 2018.

Large strawberry and apple crops

Outdoor vegetable production dropped slightly from the previous year and remained at 163 million kilograms. Carrots were the biggest crop, totalling 67 million kilograms. Greenhouse vegetable production totalled 90 million kilograms, of which cucumbers accounted for 45 million kilograms and tomatoes 39 million kilograms. The outdoor berry harvest increased to 18 million kilograms. Of this, strawberries accounted for 15 million kilograms, which was around one million kilograms more than in 2017. The apple harvest was an all-time high, at 7.2 million kilograms.

Roughly half the cereals consumed by the industrial sector were used as feed

Finnish industry consumed a total of 1.3 billion kilograms of domestic and imported cereals in 2018. The feed industry consumed 43% of all cereals, and the food industry nearly a third. The rest was consumed by other industrial sectors (e.g. for malting and the production of ethanol and starch). Barley consumption was the highest, at 519 million kilograms. The proportion of barley has decreased since 2017, while the industrial use of oats has increased.

Average producer prices increased in 2018

The producer prices for meat increased from the previous year. The producer prices for beef and pork increased the most, by three per cent, while the price for milk decreased by two per cent from the previous year. The producer price for eggs varied according to the production method: the price for cage eggs increased by seven per cent, and the price for organic eggs by one per cent from the previous year. The producer prices for cereal increased significantly compared with the previous year: for oats and feed barley by as much as 32%, and for bread wheat by 24%.

Milk and dairy the most important agri-food import product group

Some 75% of the imports of agri-food products come from other EU Member States. Other Member States also account for the majority of exports, roughly 70%. In terms of value, the largest product groups were milk and dairy, other processed food, and alcohol, non-alcoholic beverages, sugar confectionery and tobacco.

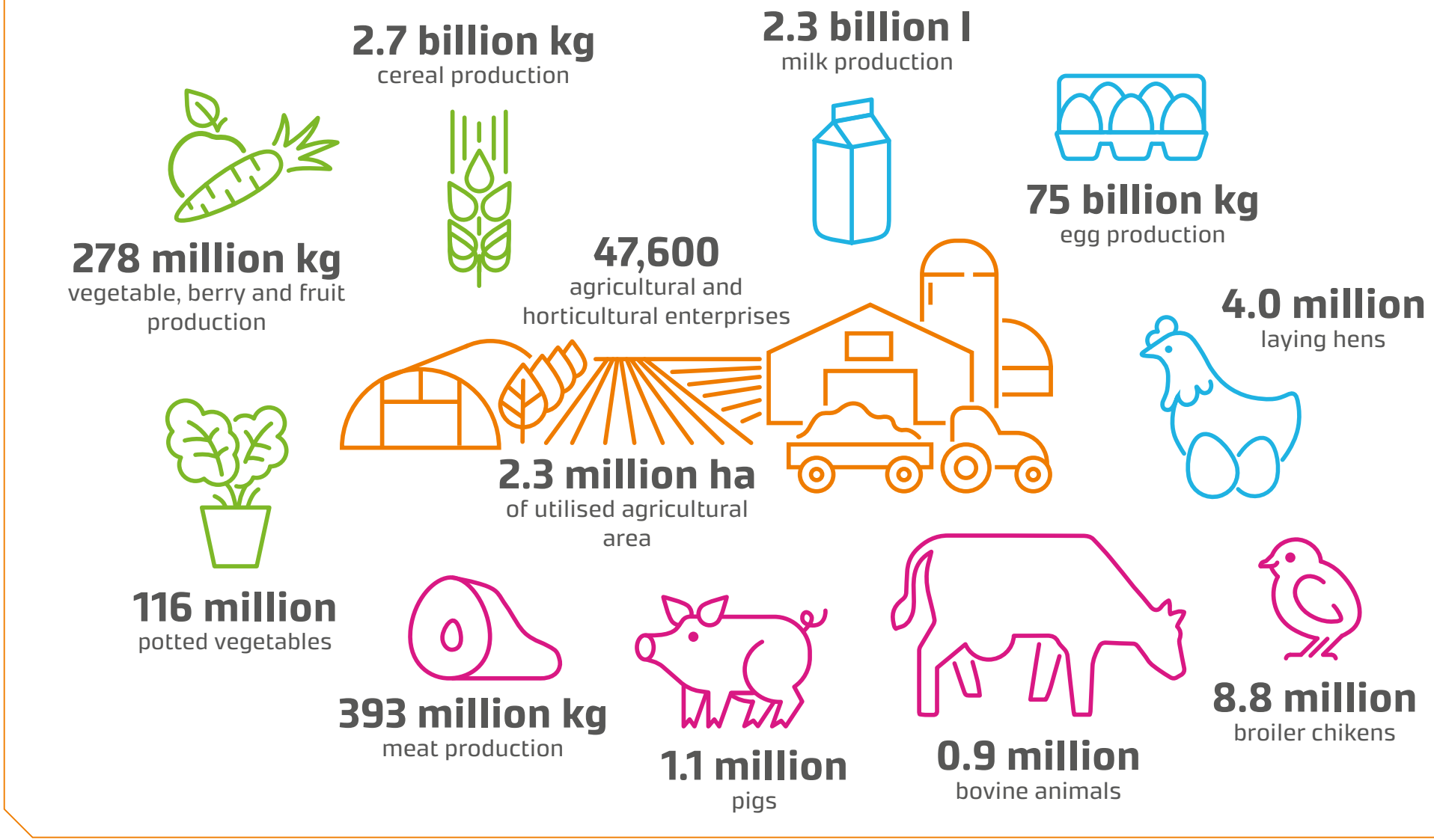
Profitability of agriculture and horticulture improved slightly

The profitability of agriculture and horticulture improved in 2017. The profitability ratio of agriculture and horticulture increased from 0.26 to 0.4. The return on assets was negative by some two per cent. In recent years, profitability has been the lowest on cereal farms and other crop production farms.

The consumption of cereals, fish and meat remained the same

In 2018, Finns consumed on average 79 kilograms of cereals, 81 kilograms of meat, 15 kilograms of fish and 155 kilograms of liquid milk products per capita. No significant changes took place in the overall consumption of cereals, meat or fish compared with the previous year. The consumption of liquid milk products decreased by around three per cent.

Key figures of Finnish agricultural production in 2018



Structure of agriculture

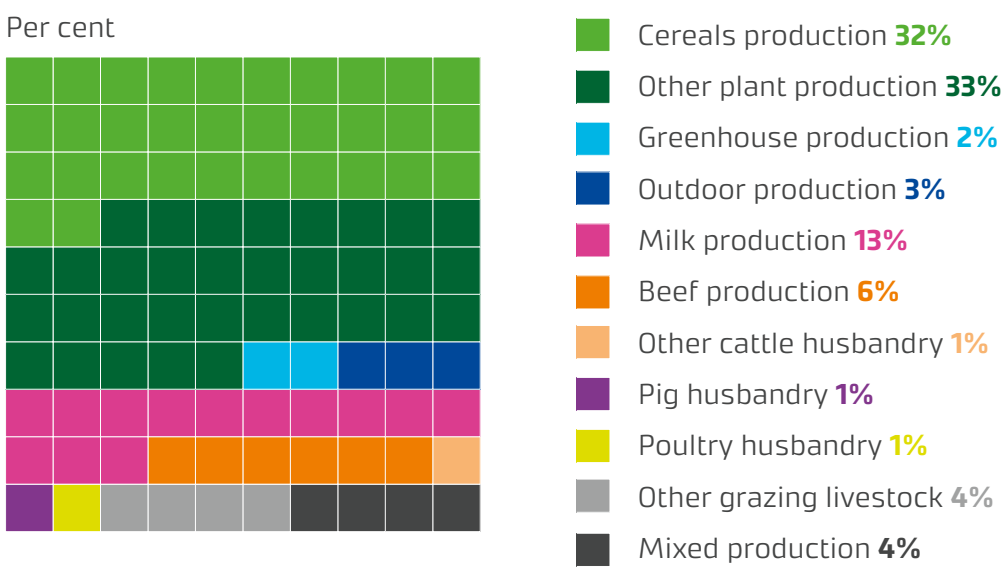
In 2018, the trend in the structural development concerning farms was the same as in previous years: the number of farms decreased, the average size of the remaining farms grew, and the average age of farmers increased. No new data is available regarding the number of people working in agriculture and horticulture. The number of farms dropped below 48,000. Just under 70% of farms have crop production as their primary production line, and 20% of farms are classified as livestock farms. The other Finnish farms are mixed farms with no clear primary production line.

In 2018, there was a total of 47,633 agricultural and horticultural enterprises. The number of farms decreased by approximately 900 compared with the previous year. The fields of farmers ceasing their operations are being sold to the remaining farms, increasing their size. In 2018, the average farm size was 48 hectares.

In 2018, other plant production was the most common production sector for the first time, closely followed by cereals production. The third most common production sector was milk production. In 2018, it was the primary production line on some 6,300 farms. Livestock production was the primary production line on a fifth of all farms.

Some 86% of farms were family-run farms, and 8% were farming syndicates. In addition, farms run by heirs of the estate and limited companies accounted for two per cent of all farms each.

Number of agricultural and horticultural enterprises by production sector 2018



Number of agricultural and horticultural enterprises by production line in 2010-2018

The average size of farms increases by around one hectare per year.

In 2018, agricultural and horticultural enterprises had an average of 48 hectares of arable land. The number of farms of 25-50 hectares was the highest. The number of farms of more than 100 hectares increased, but the number of farms of less than 100 hectares decreased.

Average utilised agricultural area of agricultural and horticultural enterprises 2010–2018

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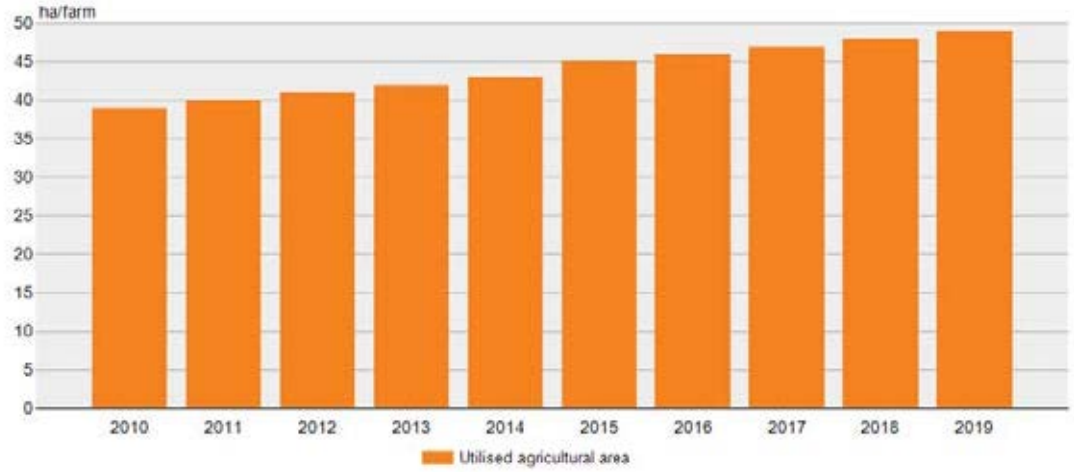

Number of farmers on privately owned farms by age groups 2018

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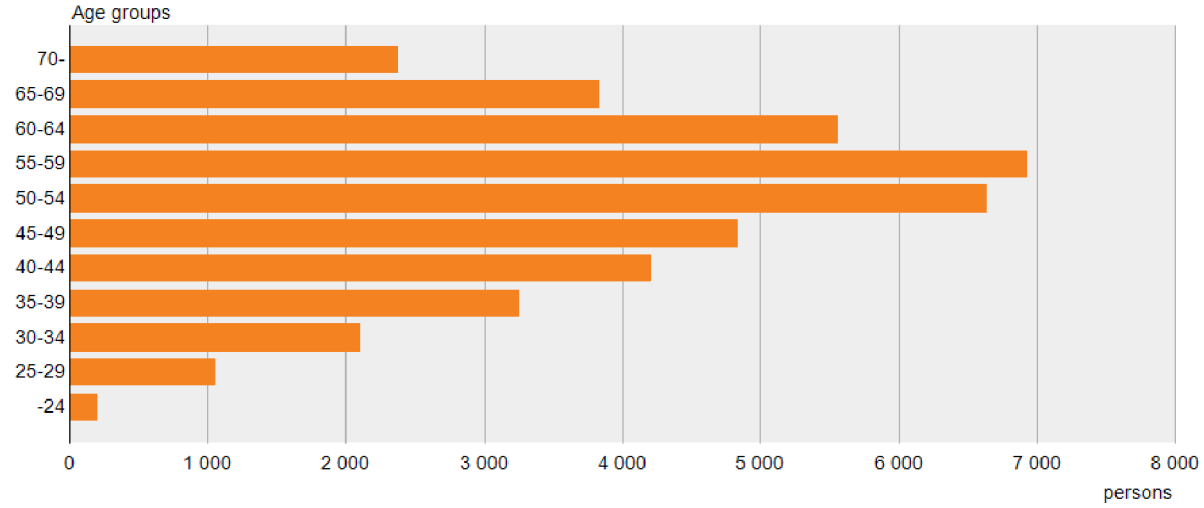


The number of farmers at retirement age increasing

The average age of farmers was 53 in 2018. Farmers responsible for the management of farms operating in the form of limited companies were the youngest, while farmers responsible for farms owned by heirs were the oldest. Nearly 30% of farmers on family-run farms were over 60 years old, and only 16% of these farmers were under 40.

▶ Structure of agricultural and horticultural enterprises

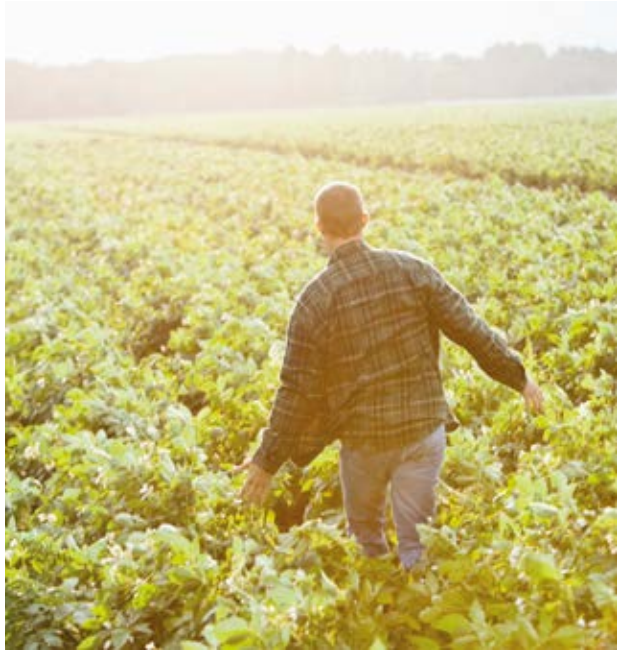
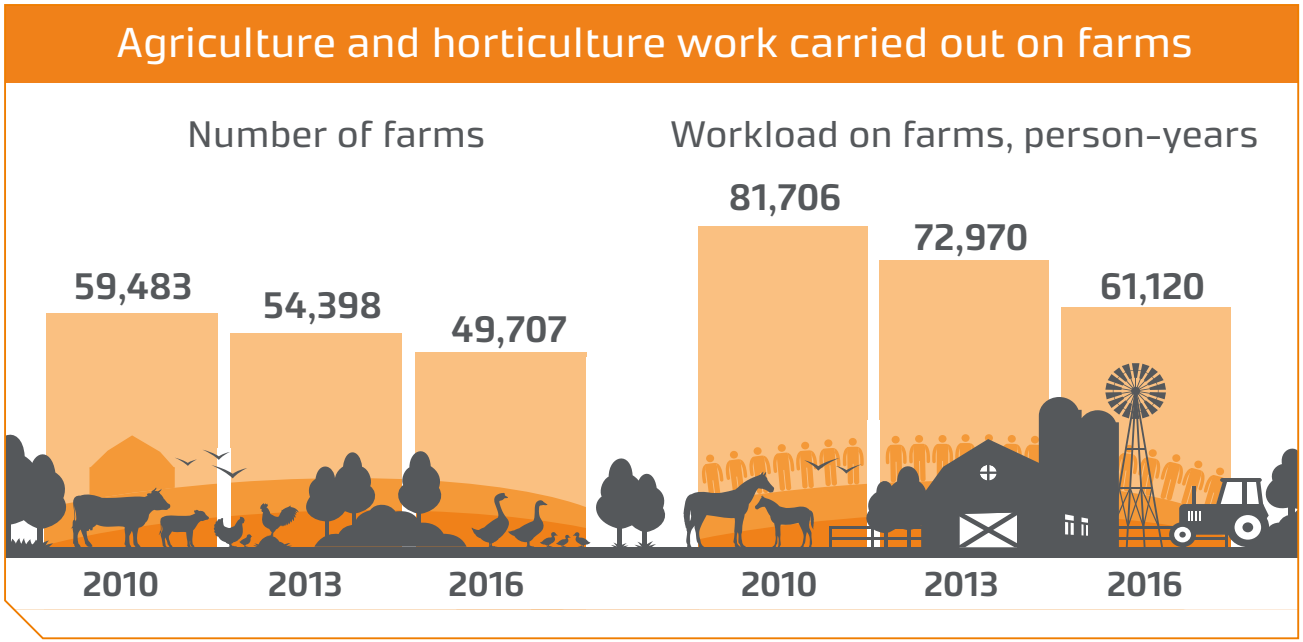
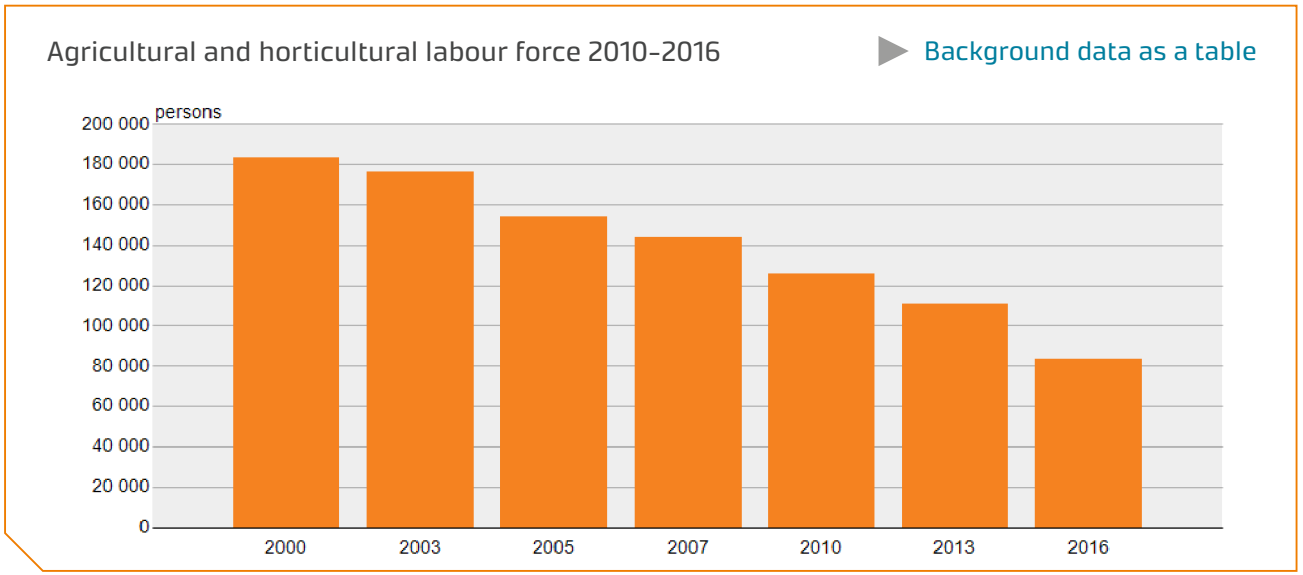


Photo: Luke's photo archive





Agricultural and horticultural labour force

The latest statistics for the agricultural and horticultural labour force were compiled in 2016. At that time, some 120,000 people overall 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.

The number of people working in agriculture and horticulture, as well as their workload, has decreased since 2013, when the previous statistics were compiled.

▶ Agricultural and horticultural labour force

Most agricultural and horticultural 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.

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. The number of farms engaged in other business activities has decreased by around 2,500 since 2013, when the previous statistics for other business activities were compiled. The proportion of diversified farms of all farms decreased by two percentage points from 2013.

▶ Other entrepreneurship in agriculture and horticulture

Number of diversified agricultural and horticultural enterprises 2010–2016

▶ Background data as a table

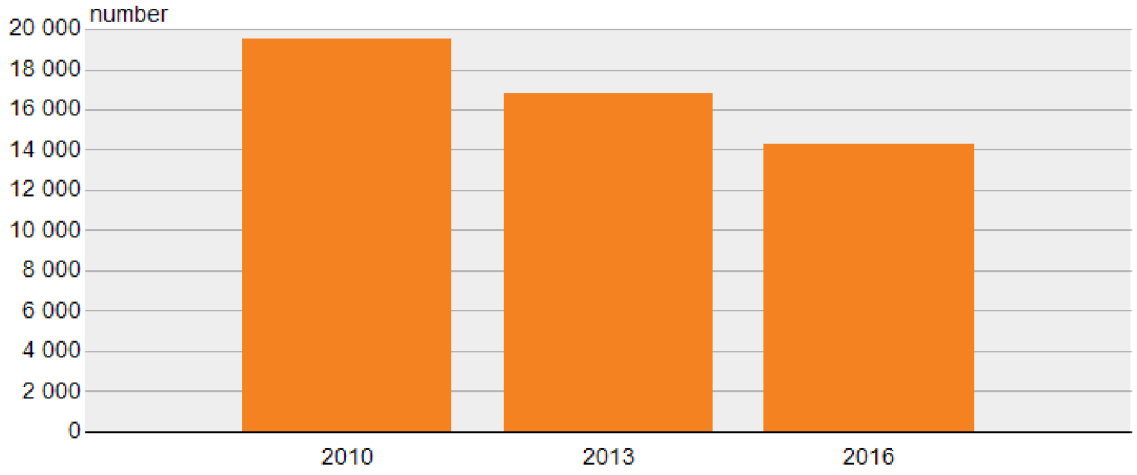


Photo: Luke's photo archive

Livestock production

In 2018, production of poultry meat, beef and eggs continued to grow, while production of milk and pork decreased. Meat production decreased by around one per cent from the previous year. Overall milk production continued to fall, but organic milk production continued to grow. Egg production increased in 2018 to the highest level since 1990.

Milk production decreased

In 2018, milk production experienced a slight decrease from 2017 to 2,328 million litres. The volume of milk supplied to dairies was 2,285 million litres. Farm use of milk was 43 million litres. Farm use of milk includes the use of milk in the household and milk for calves.

Organic milk production continued to grow. Organic milk production amounted to 69 million litres, 10% more than in the previous year. The proportion of organic milk was just under three per cent of total milk production.

The decrease in the number of milk producers accelerated. At the end of 2018, there were 6,250 milk producers in Finland, eight per cent less than at the end of 2017

Dairy cows numbered around 264,000 at the end of 2018, which is almost three per cent less than in the previous year. The average yield slightly increased, and in 2018, the average cow produced around 8,650 litres of milk.

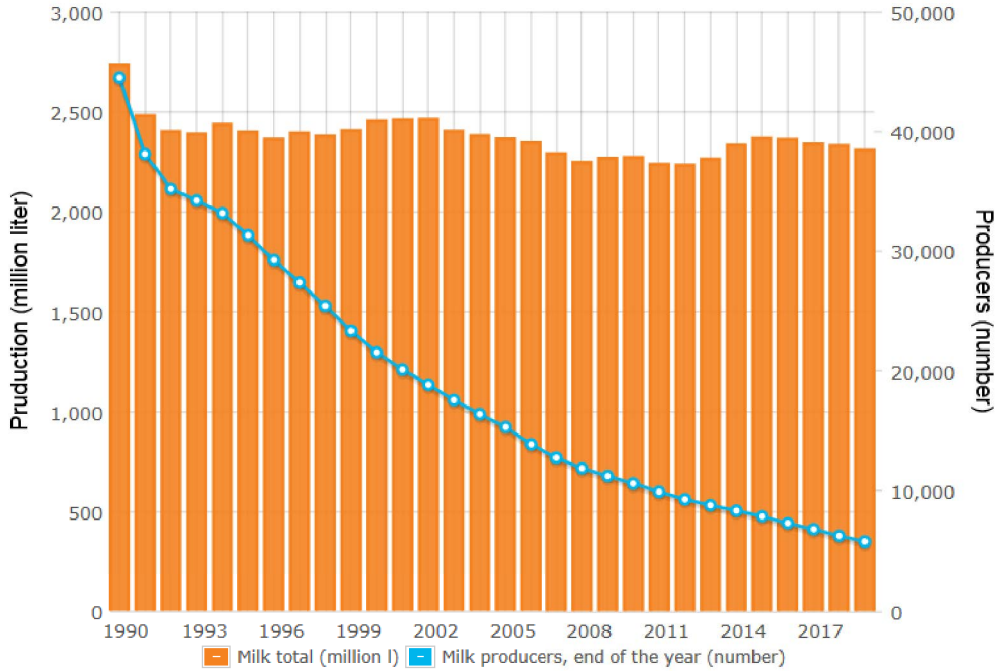
Compared to the volume of milk produced in the early 2000s, five per cent less milk was produced last year. The number of cattle has decreased by a good quarter, and almost three-quarters of milk producers ceased their production activities during this period. Meanwhile, the average yield per cow has increased by a quarter and the average dairy farm size has increased from 15 to 39 cows.

The largest milk-producing municipality was Kuopio

Milk production decreased in the regions of nearly all ELY Centres. Production increased in North Ostrobothnia, Ostrobothnia, North Savo and Kainuu 55% of the milk was produced in North Savo and in the regions of three ELY Centres in Ostrobothnia. There are milk producers all

Milk production and number of milkproducers 1990–2018

Background data as a table



Production of milk products 1990–2018

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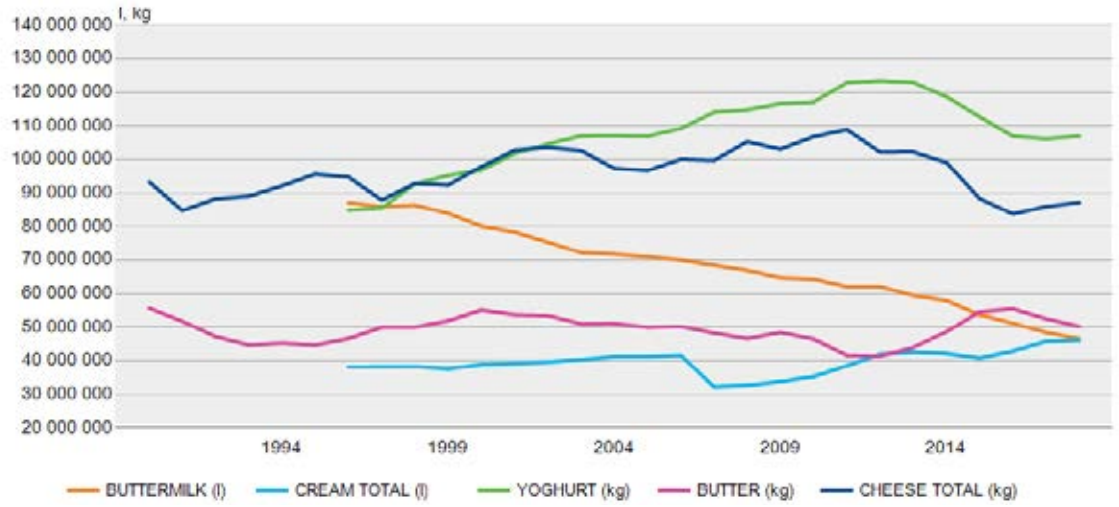
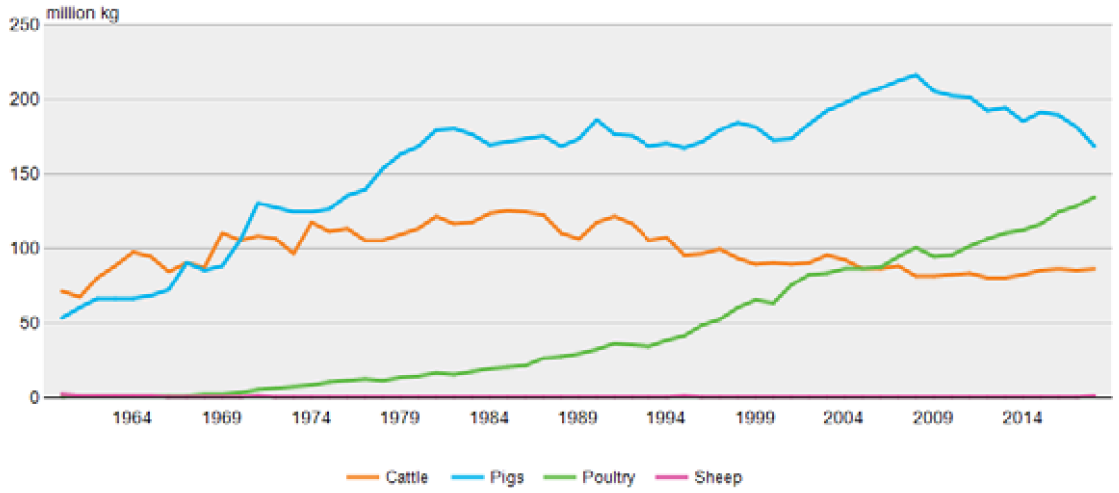


Total beef, pork and poultymeat production 1960–2018

Background data as a table



over Finland; the northernmost dairy farms are located in Utsjoki.

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 butter fell, while cheese production increased

The total volume of milk supplied to dairies in 2018 amounted to 2,285 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 2018, production of milk, sour milk and viili (a type of curd milk) decreased, while production volumes of cream and yoghurt grew slightly.

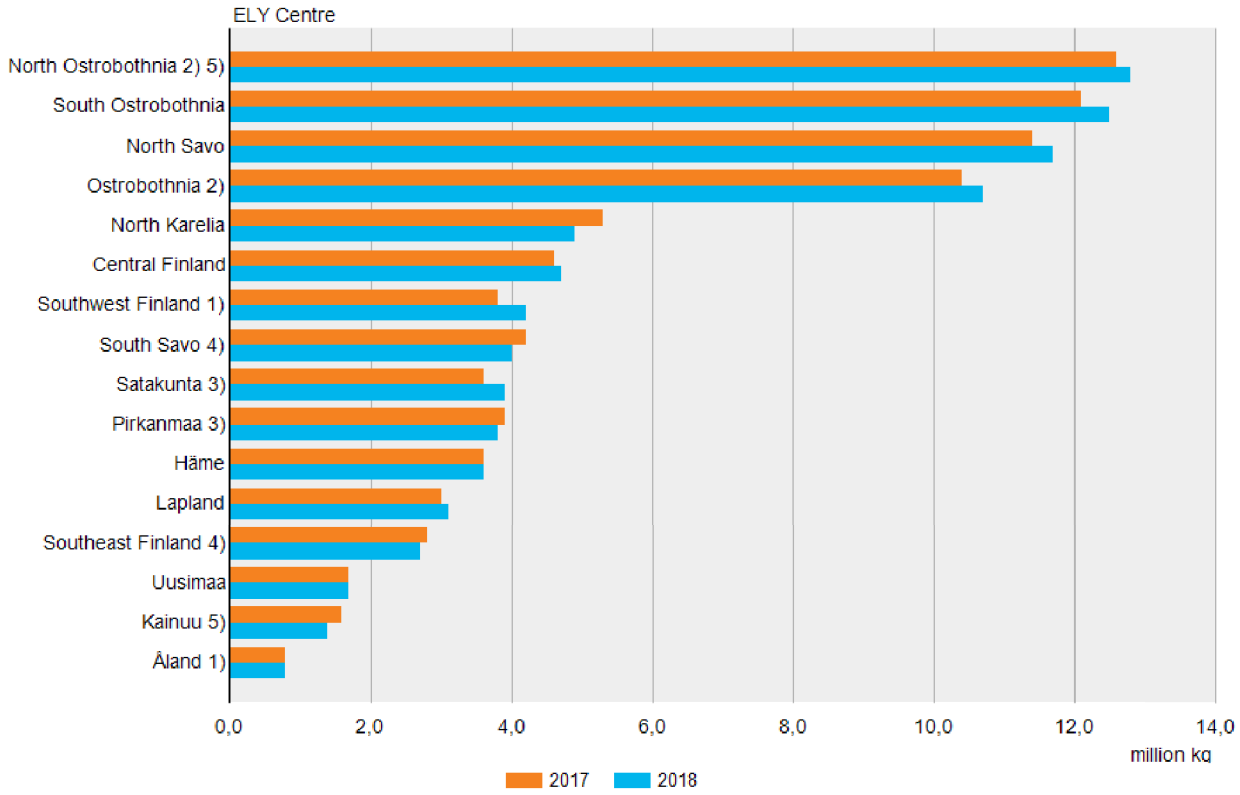
Cheese production increased by one per cent compared with the previous year and was around 87 million kilograms. Butter production fell by four per cent, amounting to just over 50 million kilograms.

Milk and milk product statistics

Milk production by area

Beef production by ELY centre 2017 and 2018

Background data as a table



Meat production decreased

In 2018, meat production amounted to 393 million kilograms, one per cent less than in 2017. Production of beef and poultry meat increased, while production of pork decreased. Pork accounted for 43%, poultry meat 34%, beef 22% and sheepmeat less than 0.5% of the total amount of meat produced.

Beef production increased slightly

Beef production amounted to 87 million kilograms, one per cent more than in 2017. The slaughter volume of heifers increased, while the slaughter volume of bulls decreased. The slaughter volume of cows remained at the previous year's level. The average carcass weight of heifers and bulls increased from the previous year.

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.

The biggest beef producers were North Ostrobothnia (12.8 million kilograms) and South Ostrobothnia (12.5 million kilograms). The largest beef producing municipalities are in Savo: Kiuruvesi and Loimaa each produced around 3.2 million kilograms of beef.

Pork production declined

Pork production decreased for the third year in a row, and totalled just under 169 million kilograms in 2018. This is seven per cent less than in the previous year. The production volume of pork has not been as low since 1995. The average carcass weight of pigs increased to 91 kg.

In 2018, there were around a thousand pig farms. The number of farms decreased by approximately seven per cent over the course of the year.

Pork production decreased in the regions of nearly all ELY Centres except Uusimaa and Satakunta, where production grew slightly. The biggest pork producers were Huittinen (12.5 million kg), Loimaa (12 million kg) and Seinäjoki (9 million kg).

Poultry meat production continued to grow

Production of poultry meat continued and was just over 135 million kilograms. Production grew for the ninth year in a row. The production volume of broiler meat increased by five per cent to 126 million kilograms. Turkey production also grew, amounting to good eight million kilograms.

Organic meat production remains marginal

Organic meat production amounted to 3.7 million kilograms in 2018, slightly less than in the previous year. Organic meat production accounts for the organic slaughter of cattle, pigs and sheep. Around 70% of the organic meat volume was beef. Organic meat accounted for around one per cent of total meat production, but more than a quarter of all sheepmeat produced was organic.

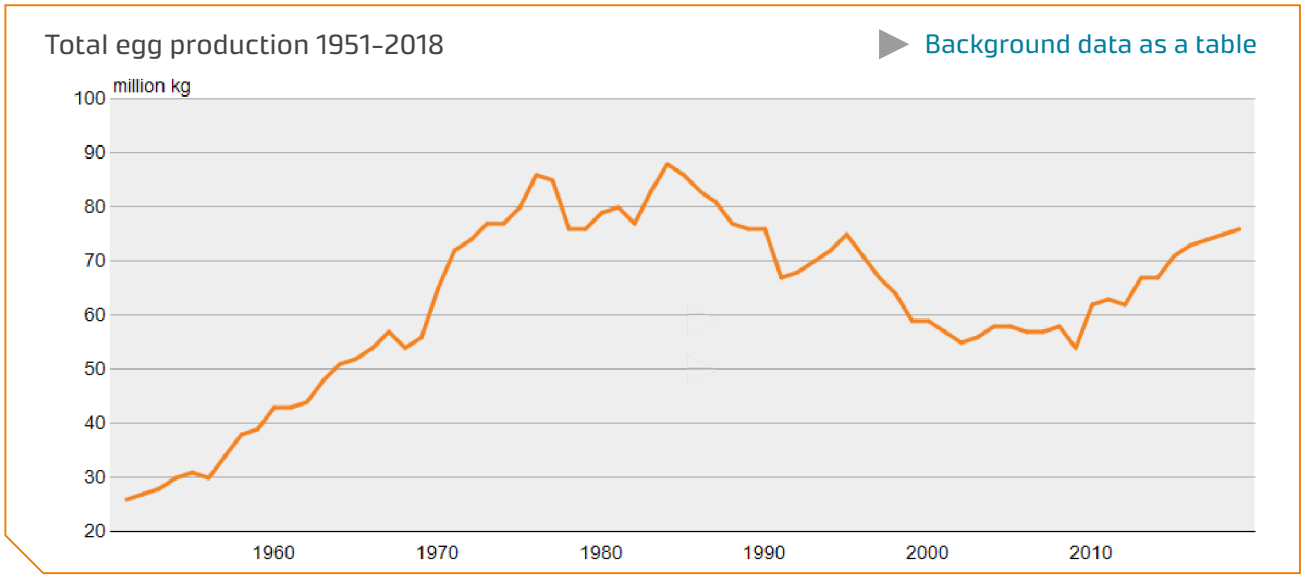
▶ Meat production

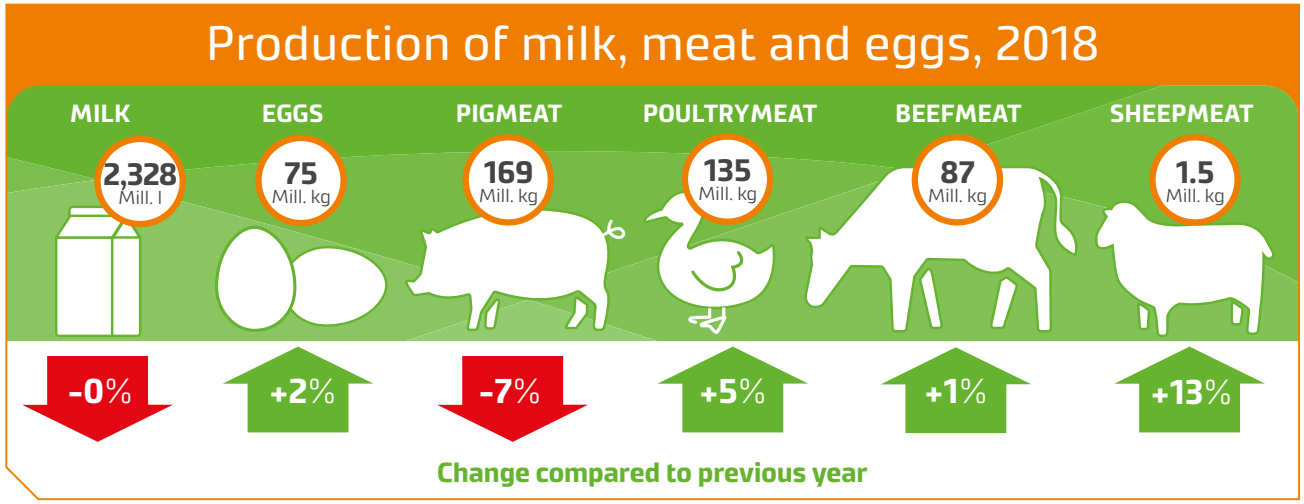
▶ Meat production by area

Egg production the highest since 1990

Egg production increased from the previous year by two per cent to just under 75 million kilograms. This includes eggs processed by packing plants. The production volume of eggs has not been as high since 1990.

Most of the eggs (58%) were produced in enriched cages. 33% of the eggs were produced in barn, 2% in free-range hen houses and 7% in organic poultry farms.





The volume of eggs produced in enriched cages decreased by one per cent from the previous year. The volume of eggs produced in barn and free-range hen houses increased by 4%, while egg production in organic poultry farms increased by 20%.

▶ Egg production

The number of dairy cows continued to decrease

In the spring of 2018, the number of cattle on farms totalled 882,000, which was almost one per cent less than a year earlier.

Dairy cows numbered 271,400, almost one per cent less than in 2016. The number of cattle decreased in the regions of all ELY Centres except Ostrobothnia, where the number remained unchanged. The average number of cows per farm was 39 cows. Some 430 farms had more than a hundred cows, while 12 farms had more than 300.

The number of suckler cows has increased almost every year in the 21st century, and it has doubled since the turn of the millennium. Last year, the number of suckler cows grew slightly to just over 60,000. The highest numbers of suckler cows and dairy cows were recorded in North Ostrobothnia, North Savo and South Ostrobothnia.

The number of pigs decreased

In the spring of 2018, approximately 1.1 million pigs were kept on around a thousand farms. This is four per cent less than in the previous year. The number of sows decreased by three per cent to 83,000. 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.

A third of all pigs (328,000 pigs) were kept on farms located in the region of the Southwest Finland ELY Centre.

Number of poultry 1997–2018

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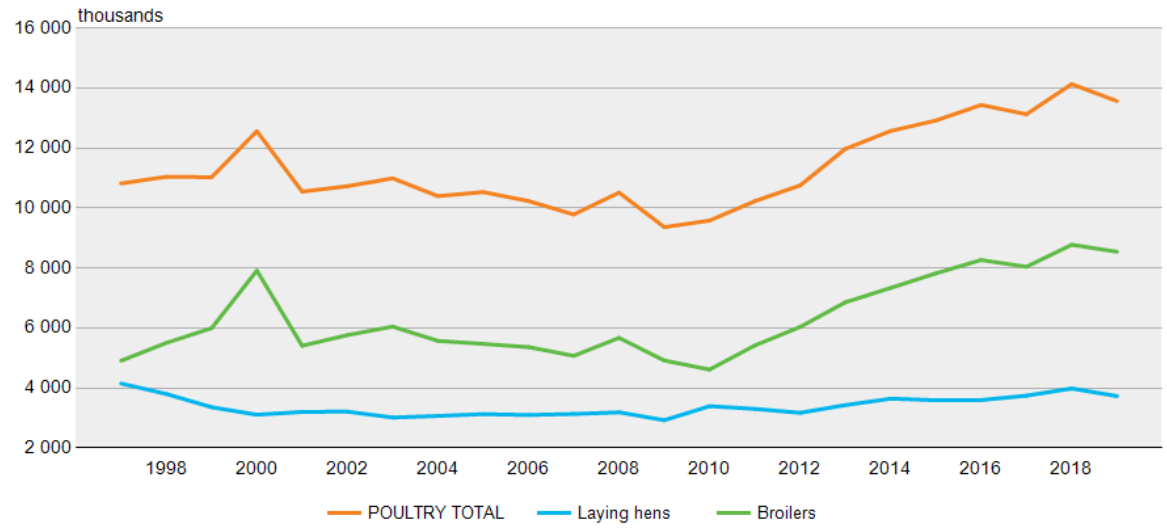


The next highest pig numbers were recorded in South Ostrobothnia (192,000 pigs) and Ostrobothnia (168,000 pigs).

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

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

At the beginning of April, there were approximately 14 million poultry on farms. Poultry were kept on some 1,200 farms. The number includes all farms that have at least a few chickens, for example. 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 around 430 farms.

At the beginning of April, there were around 8.8 million broilers on just under 150 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 numbered just under four million. More than 60% of all chickens were kept on farms in Southwest Finland. Chicken numbers were the highest in Loimaa, Laitila and Oripää.

There were 133 farms with more than 10,000 chickens, and 11 farms with more than 50,000 chickens.

Sheep numbers dipped slightly

At the beginning of May 2018, the number of sheep totalled 155,000, slightly less than in the previous year. The number of ewes and female sheep older than one year was around 75,000. Sheep were kept on just under 1,400 farms.

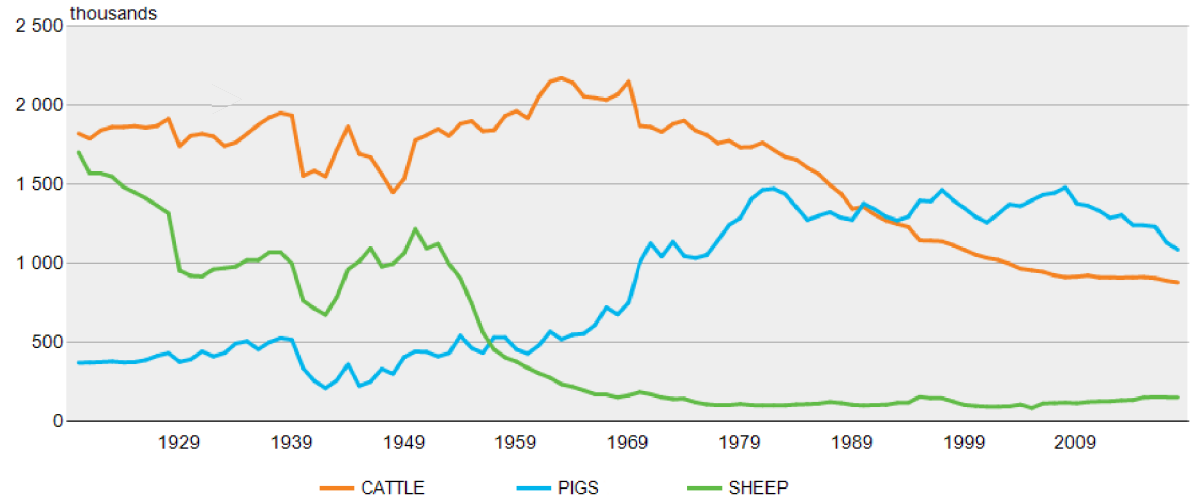
There are sheep farms all over the country. The highest sheep numbers are found in Southwest Finland (10,070 sheep), Ostrobothnia (8,260 sheep) and North Ostrobothnia (7,210 sheep). The biggest sheep municipalities were Salo and Somero.

▶ Number of livestock

Photo: Luke's photo archive

Number of cattle, pigs and sheep 1920–2018

▶ Background data as a table



Arable crops

In 2018, the total utilised agricultural area amounted to 2,271,900 hectares. Of this, cereals accounted for more than one million hectares. Feed barley covered more than one-third and oats nearly one-third of the total area. Rye made up less than two per cent of the total cultivated area. Buckwheat cultivation has increased, and the buckwheat cultivation area was roughly 2,200 hectares last year, comprising 0.2% of the total cultivated area.

The feed grass production of the total area has increased in recent years. In 2018, a third of the total area, i.e. around 763,000 hectares, was accounted for by feed grass. This area mainly consisted of silage feed, showing an increase of approximately 20,000 hectares.

Caraway cultivation surpassed that of turnip rape

Statistics on the caraway cultivation area have been collected since 2003, when the cultivated area totalled roughly 7,000 hectares. Since then, caraway cultivation has become more popular, and in 2018, the cultivation area of caraway covered a record 27,700 hectares. This area is much larger than the cultivated area of potatoes, peas or broad beans, and slightly larger than that of turnip rape.

Cultivated area and fallow 1920–2018

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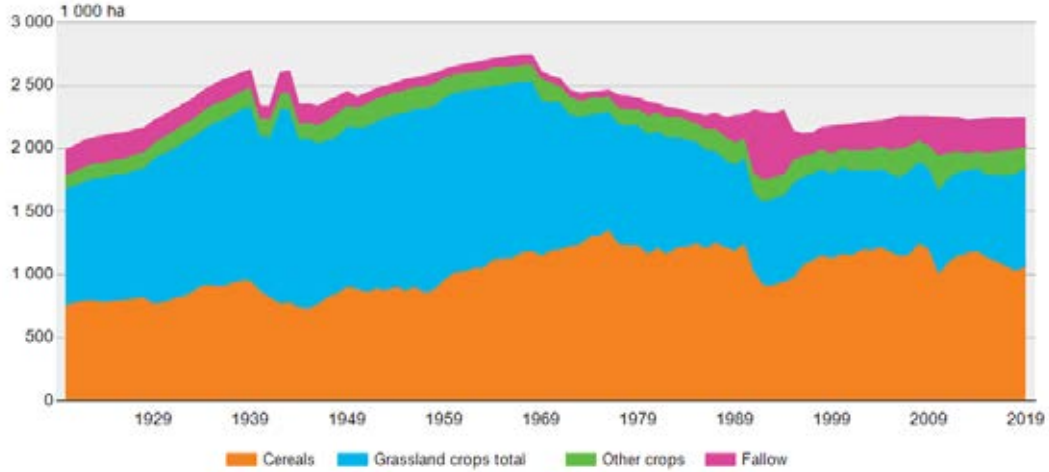

Cereal harvest 1920–2018

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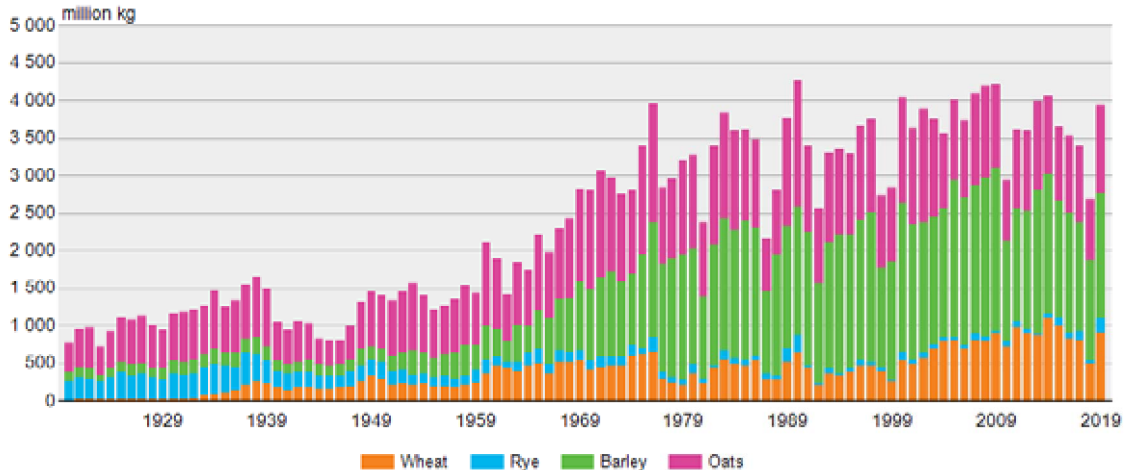
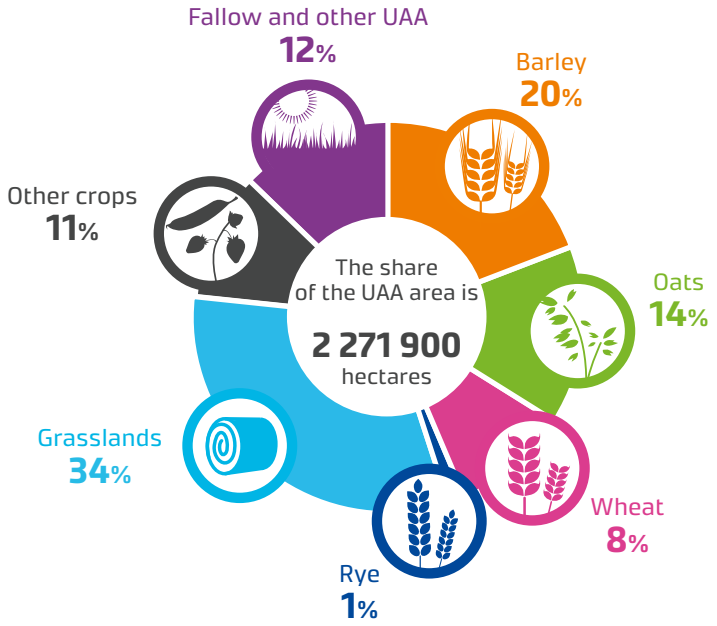


Utilized agricultural area in 2018



Grain harvest, 2018

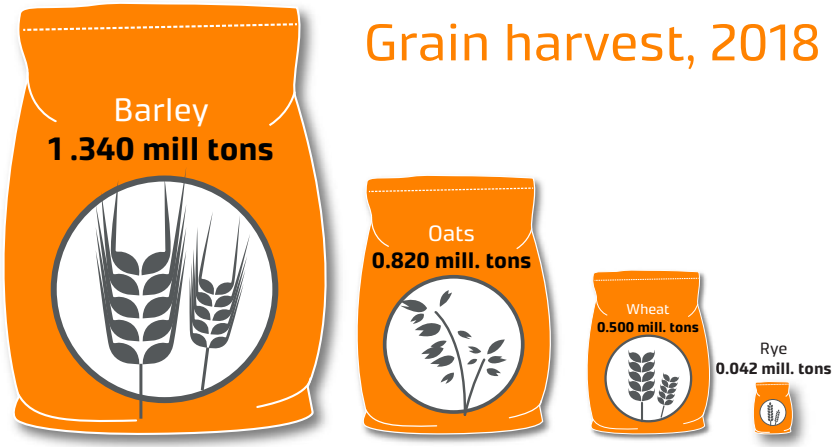


Photo: Erkki Oksanen / Luke

Cereal harvest was the smallest in 26 years

2018 was the second consecutive poor harvest year in Finland. Drought reduced the total yield, particularly in Southwest Finland and surrounding areas. In addition to cereals, the broad bean harvest was much smaller than normal.

Potato cultivation is concentrated in Ostrobothnia

Ostrobothnia, North Ostrobothnia and South Ostrobothnia are the main potato production areas in Finland. They account for two-thirds of all potatoes produced in Finland. The main production area for early potatoes is Southwest Finland, while Satakunta and South Ostrobothnia are important starch potato producers.

The organic cereal harvest decreased by a tenth

Of the total cereal harvest, organic cereals accounted for roughly three per cent, or around 86 million kilograms, most of which consisted of oats. In recent years, the Finnish milling industry has increased the use of regularly and organically produced oats. Finnish oats and oat products are also hot-selling products in other countries.

- Utilised agricultural area
- Crop production statistics
- Organic production statistics

Production of potatoes by areas 2018

600 million kg in total

Harvest of organically produced oats by areas 2018

46 million kg represents 5,6 % of total oat harvest in Finland

Source: Verkkotilastojärjestelmä / SVT: Natural Resources Institute Finland, crop production statistics

Use of plant protection products in agriculture

Data on the agricultural use of plant protection products was collected from farms in 2013 and 2018. Drought is the likely cause of the reduced use of plant protection products in 2018.

Plant protection products are important for food production. They are used to increase and ensure the quantity and quality of the crop. The use of plant protection products also involves health and environmental impacts. For example, farmers who carry out crop spraying may now be more exposed to the products they use. Exposure is increased both by the increase in the farm size and the spraying of plant protection products carried out as contract work. However, over the years, products found to be harmful have been withdrawn from use.

The health and environmental impacts of plant protection products are tested before their authorisation. Nevertheless, new risks may arise from the substances in use. This has recently been the case for substances used in the chemical treatment of turnip rape and rape seeds, for example.

Statistics on the sales volumes of plant protection products have been compiled for decades (Finnish Safety and Chemicals Agency Tukes), but in addition, crop-specific data on the agricultural use of plant protection products has been collected in all EU and EEA countries since the 2010s.

Photo: Kimmo Torkkeli

In Finland, data on the use of plant protection products for the main crops has been obtained from farmers in connection with the 2013 and 2018 crop and horticultural production surveys. Farms provided the data by crop, and no individual parcel or spraying data was requested. In addition, farmers reported the agricultural use of glyphosate preparations on their farm.

The crop species covered by the data collection accounted for more than 90% of the total cultivated area, and about 80% of the utilised agricultural area. Approximately 10,000 farms were included in the data collection, the data of which was extrapolated to account for all farms in Finland. Luke compiles statistics on the agricultural use of plant protection products every five years.

Information on the use of plant protection products has not been previously collected from farms so comprehensively and representatively. The data collected now gives a more accurate picture of the use of plant protection products in Finnish food production.

The dry summer of 2018 reduced the need for plant protection

In 2018, plant protection products were used nearly a quarter less than in 2013. This may have resulted from the dry growing season in 2018, which reduced the need for plant protection and its profitability. In addition, the cultivation areas of most cereals, potato and sugar beet were smaller in 2018 than in 2013.

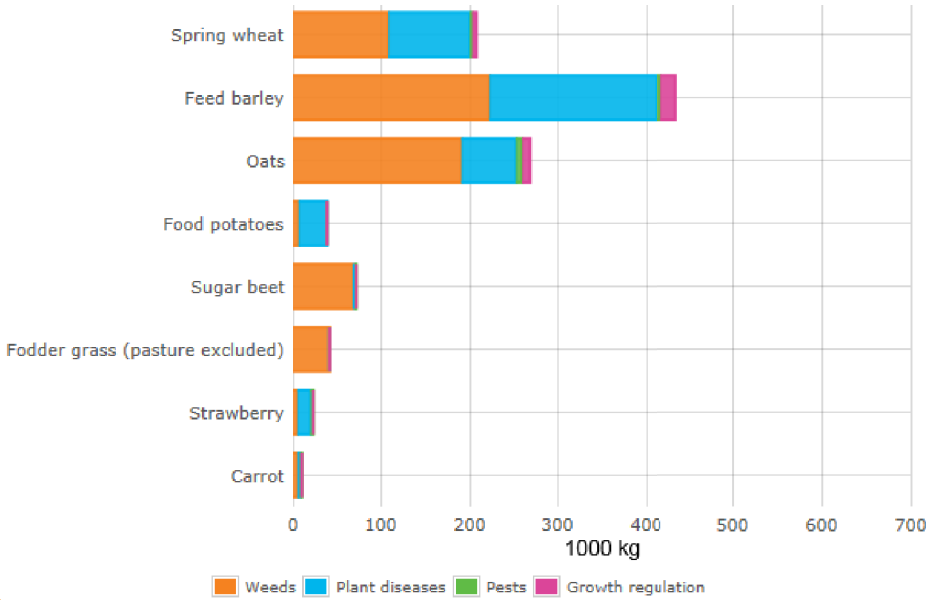
Herbicides and agents controlling plant diseases were used the most

Of the total number of plant protection products used, 79% were herbicides, and 17% were agents used to control plant diseases both in 2013 and in 2018. Glyphosates, which are included in herbicides, covered approximately half the total usage of plant production products in agriculture.

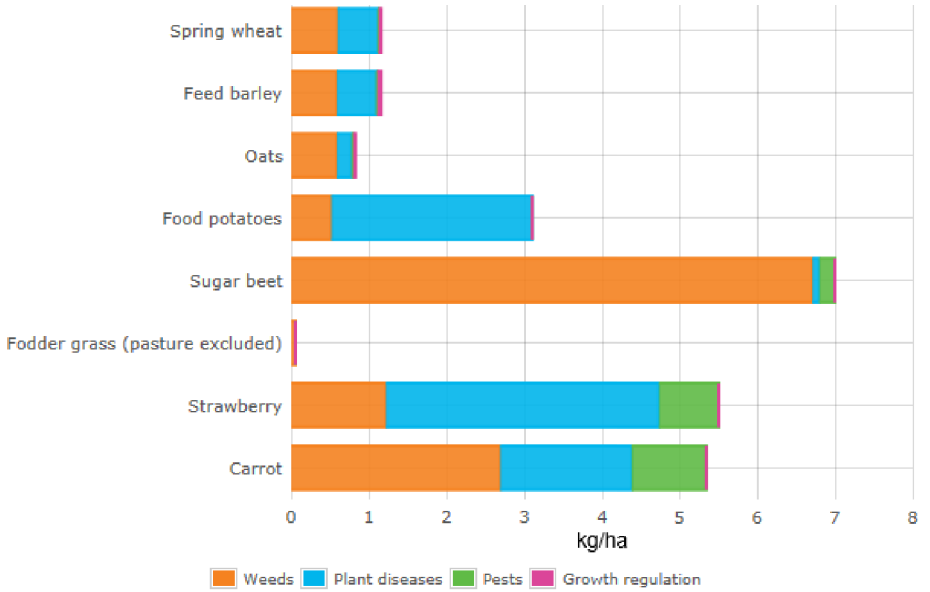
The bird cherry-oat aphid and silver Y increased the use of pesticides

More insecticides were used in 2018 than in 2013. This is largely explained by the extensive protection needed against large bird cherry-oat aphid populations in barley and oats. In addition, the exceptional silver Y invasion required protection in caraway, sugar beet, broad bean, turnip rape and rape.

Total use of pesticide products on the area under cultivation 2018



Use of pesticide products on the area under cultivation per hectare 2018



Background data as a table

Most plant protection products were applied to sugar beets, potatoes and outdoor vegetables

Relative to the cultivation area, most plant protection products were applied to sugar beets, potatoes, outdoor vegetables, strawberries and apples. This is related to the intense cultivation of these crops. The amount of plant protection products applied and the treated area relative to the cultivation area were much lower for fodder grass than for other crops.

Reporting the use of plant protection products as the amounts of products emphasises agents that are used at high application rates per hectare. However, any adverse effects of plant protection products do not depend directly on the amounts used, as their chemical properties are often the decisive factor.

Use of plant protection products in agriculture

Photo: Tero Sivula

Horticultural production

In 2018, horticultural production was practised in an area of 19,131 hectares, while the area of greenhouse production accounted for 393 hectares. The number of horticultural enterprises totalled 3,407. In outdoor production, the most common production line was the production of berries and vegetables, and 60% of the arable area of horticultural production was used for vegetable cultivation. In greenhouses, vegetable production was slightly more common than the production of ornamental plants.

Not all farms and enterprises growing horticultural products and included in horticultural statistics have horticultural production as their main production line. In 2018, horticultural production was the main production line on 2,182 farms, 64% of all horticultural farms.

Some outdoor production farms are classified as mixed farms.

Only half the farms engaged in outdoor horticultural production were classified as outdoor horticultural farms when determining the production line. The rest were classified as mixed farms or as cereal farms, for example. In addition to horticultural crops, cereals or livestock were grown on mixed farms, for example. Having greenhouse production as the main production line was significantly more common in greenhouse production, because the more intensive production is, the more clearly the farm is classified in a specific production line.

Number of farms engaged in outdoor and greenhouse production by production line 2018

	Horticultural statistics Number of enterprises	By production line Number of enterprises	Proportion of all horticultural farms, %
Outdoor production	2,700	1,365	50
Greenhouse production	999	787	79
Total	3,407	2,182	64

Source: Register of agricultural and horticultural enterprises

How is the 'production line' determined?

The production line is determined according to the enterprise's most economically significant production type. In turn, this is calculated using the standard output (SO) method If more than two-thirds of the farm's overall output concerns a single product, the farm is included in the corresponding production line category. In other cases, the farm is classified as a mixed farm.

Read more:

https://stat.luke.fi/en/tilasto/194/kuvaus/4401

Detailed classifications of production types and production lines

https://portal.mtt.fi/portal/page/portal/economydoctor/structural_development/timeline/production_types

A good berry and fruit harvest in 2018 too

The latest growing season produced a good berry and fruit harvest. Outdoor production of berries and fruit amounted to 25 million kilograms, of which 15 million kilograms were strawberries, and 7 million kilograms were apples. The lack of rain forced irrigation, which caused additional work and costs for farms.

However, the outdoor vegetable harvest suffered to some extent due to the drought. For outdoor vegetables, 2018 was the second year in a row with challenging weather conditions, as the 2017 outdoor production was hurt due to rainfall. The harvest of outdoor vegetables remained at 163 million kilograms, decreasing by 3.5 million kilograms from the previous year.

Southwest Finland has become a strong strawberry region

Southwest Finland has traditionally been a strong region for outdoor vegetable production. This is still the case, as

Production of strawberries by areas 2018

Background data as a table

Of 15 million kg total harvest of strawberries 25 per cent was produced in North Savo and 20 per cent in Southwest Finland.

Source: Verkkotilastojärjestelmä / SVT: Natural Resources Institute Finland, crop production statistics

Distribution of outdoor production in 2018

	Number of enterprises	Hectares	Production, 1,000 kg
Outdoor vegetables	1,430	11,314	163,337
Berries	1,592	6,701	17,965
Fruit	362	742	7,424
Seedlings	106	352	-
Cut flowers and ornamental plants	73	93	-
Total outdoor production	2,984	19,341	188,726

Distribution of greenhouse production in 2018

	Number of enterprises	Area, 1,000 m²	Production, 1,000 kg
Outdoor vegetables	484	2,162	89,547
Berries	73	361	10,689
Fruit	39	75	210
	Number of enterprises	Area, 1,000 m²	Production, 1,000 pieces
Ornamental plants	467	1,196	120,422
Bulbous flowers	85	-	76,753
Flowering potted plants	193	-	9,721
Green plants	28	-	243
Bedding plants	391	-	33,705
Seedlings and cuttings	159	178	-
Total greenhouse production	393	393,000	-

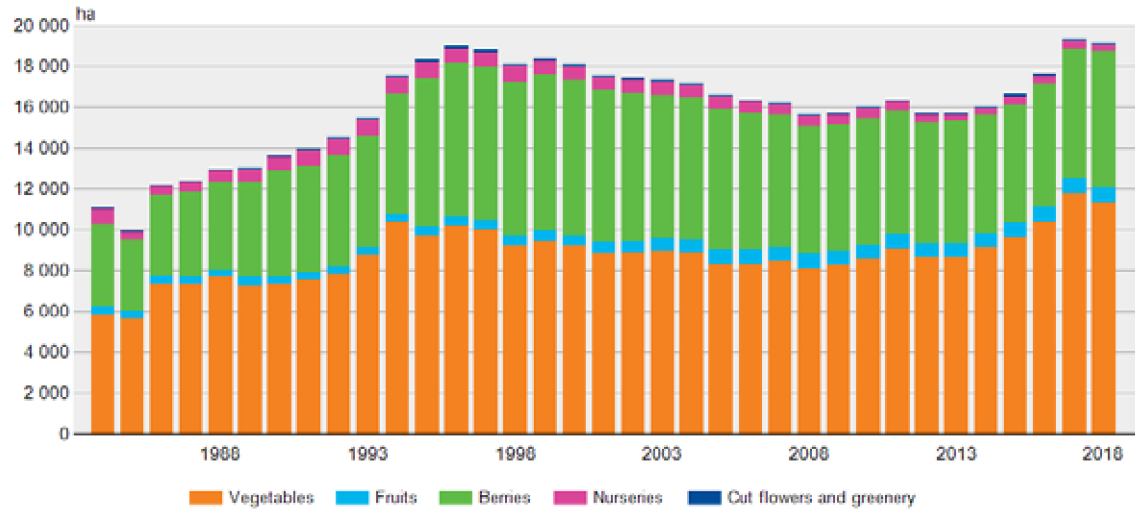
28% of all outdoor vegetables are produced there. However, strawberry has also become an important product in the area, and the region's strawberry harvest now challenges the traditional North Savo strawberry harvest.

Production of tomatoes is divided into traditional and special varieties

The total production of tomatoes remained unchanged at 39 million kilograms, of which 5.2 million kilograms were special tomato varieties. The greenhouse cucumber harvest totalled 45 million kilograms. Production of green-

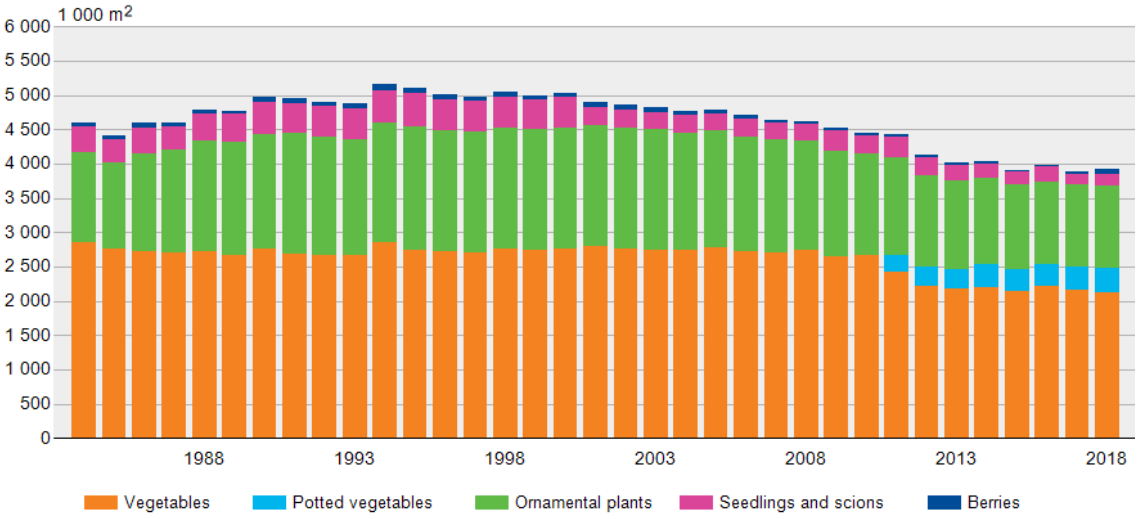
Distribution of outdoor production 1984–2018

Background data as a table



Distribution of greenhouse production 1984–2018

Background data as a table



house cucumber is highly concentrated in Ostrobothnia, and especially in the municipality of Närpes, which produces 60% of all cucumbers and tomatoes in Finland.

A total of 116 million potted vegetable pieces was produced, of which lettuce represented 81 million pots. Some of the lettuce was cut, i.e. sold without the pot. The special varieties have also become common in grocery stores alongside the usual lettuce varieties, and although the total production volume of lettuce has slightly decreased from the peak years, the varieties have become more diverse. The increase in variety is also reflected in the continued growth of the 'other potted vegetables' group.

Photo: Luke's photo archive

Cultivation of bedding plants in greenhouses 2018

▶ Background data as a table

33,7 million pieces in total

Lähde: Verkkotilastojärjestelmä / SVT: Luonnonvarakeskus, puutarhatilastot

70% of Finnish cucumbers and tomatoes are grown in Ostrobothnia

	Tomato and cucumber in total
All Finland	84,774
Ostrobothnia	59,957

▶ More information

Production of ornamental plants is challenged by imports

Production of ornamental plants in greenhouses has undergone drastic changes due to changes in demand and imports. The sector has been particularly strong in summer flower production, where short transport distances and flexibility are an advantage. In 2018, nearly 34 million pieces of summer flowers were produced, of which two million were hanging pots. A large part of production goes to public use, such as to towns and parishes, where competitive tendering for large volumes is crucial. On the other hand, some ornamental plant producers have found strength in the local community and the retail business.

A total of 77 million pieces of bulbous flowers were produced for winter sales, most of which were tulips (71 million).

▶ Horticultural statistics

Photo: Luke's photo archive

Use and stocks of agricultural products

Finnish farms produce approximately four billion kilograms 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 oats from farms to the market

Cereal wholesalers and the industries that use cereals purchased a total of 1.85 billion kilograms of cereals from farms in 2018. This is nearly the same amount as in the year before, but it was distributed differently between different types of cereal than previously.

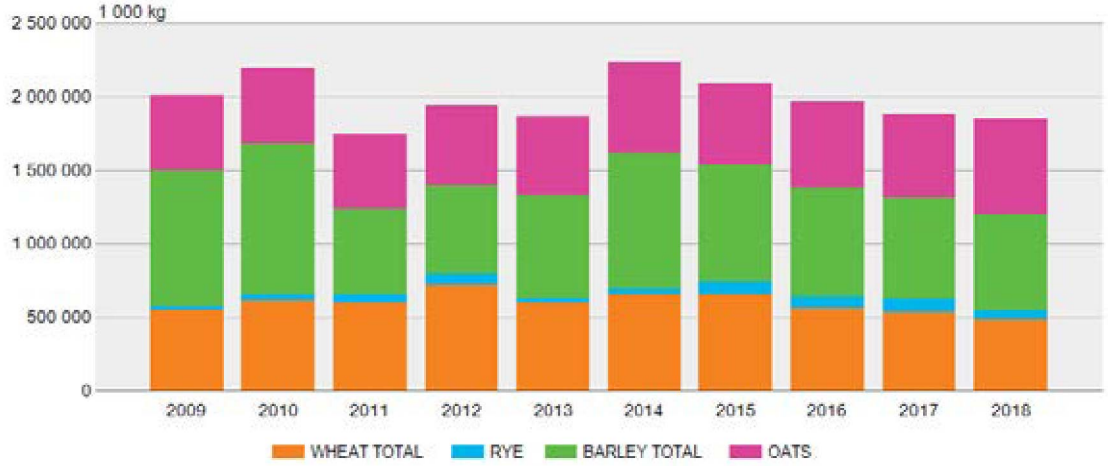
In recent years, purchases of barley and wheat directly from farms have decreased, whereas purchases of oats have increased. In 2018, oat purchases (644 million kg) increased to almost the same level as purchases of barley, which totalled 664 million kilograms. The volume of wheat entering the market was slightly lower (484 million kg). Rye purchases decreased in 2018 to 62 million kilograms.

Turnip rape and rape purchases directly from farms totalled 70 million kilograms, three million kilograms more than in the previous year.

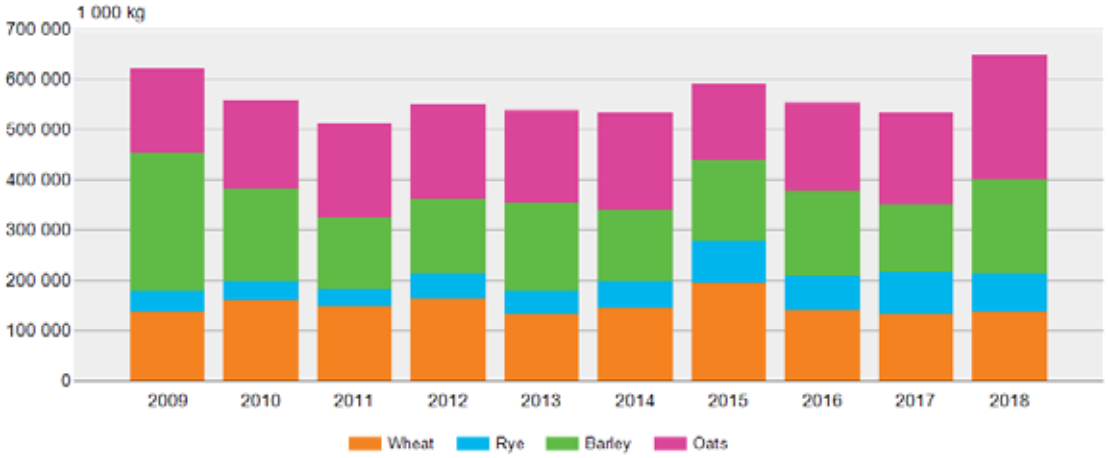
Less barley used in the feed industry

Finnish industry consumed more than 1.3 billion kilograms of domestic and imported cereals in 2018. Of this

Cereals purchased from farms by industry and trade per year ▶ Background data as a table



Cereals stockpiled by industry and trade 2009–2018 ▶ Background data as a table



amount, the food industry consumed just under a third, as in the previous year. The feed industry consumed 43% of all cereals, slightly less than in the previous year. The rest was consumed by other industrial sectors. Other uses include, for example, malting and the production of ethanol, starch, glue powder and enzymes.

The cereal most consumed by the domestic industrial sector was barley, at a total of 519 million kilograms. About a third of this was used for the manufacture of industrial feed. This figure is 14% lower than in the previous year. The food industry consumed a total of 11 million kilograms of barley.

In 2018, a total of 225 million kilograms of wheat was used for food production (mainly milling products). This amount decreased by eight million kilograms from the previous year. In addition, some 196 million kilograms of wheat was used to produce animal wheat, the same amount as in the previous year.

Use of oats in food production has steadily increased. The food industry consumed almost six million kilograms more of oats than the previous year, 98 million kilograms in total. The feed industry consumed 204 million kilograms of oats, three per cent less than during the previous year.

Rye is a traditional bread cereal in Finland. The food industry consumed 88 million kilograms of rye, slightly less than in the previous year.

Cereals purchased, used and stockpiled by industry and trade

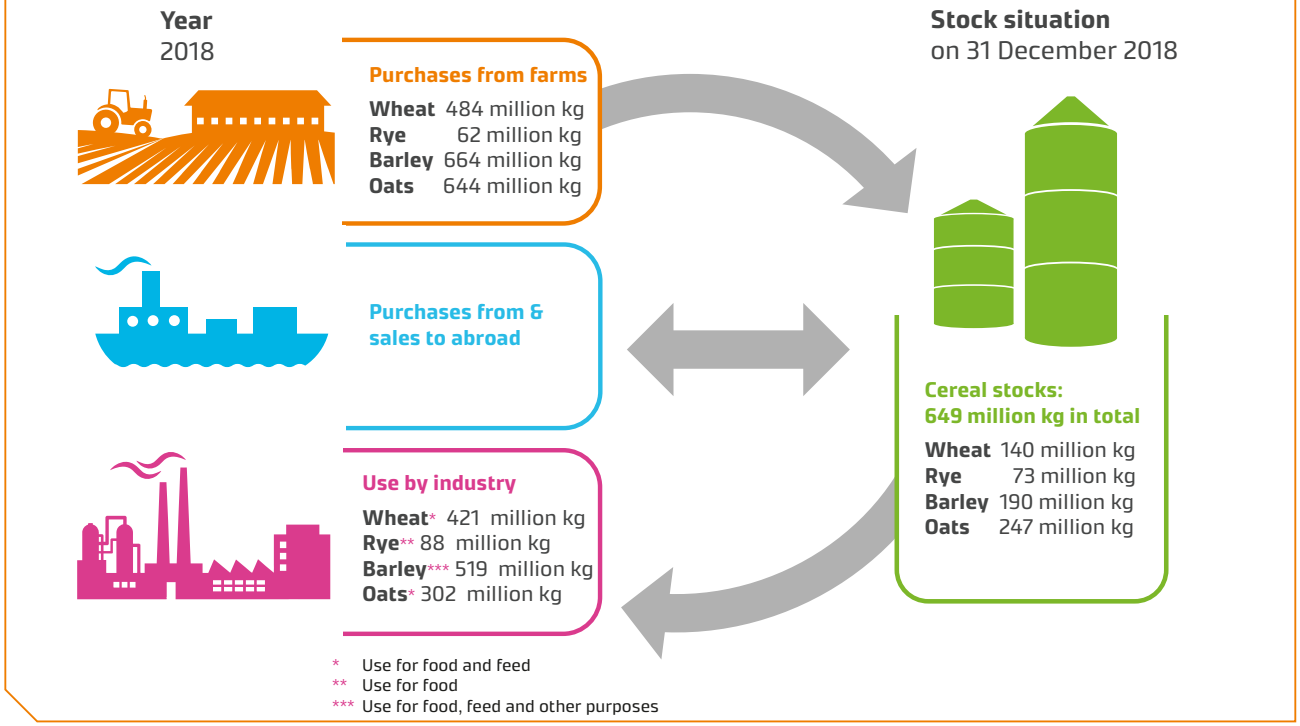


Photo: Luke's photo archive

Stocks of barley and oats increased

At the end of 2018, industrial and commercial stocks of cereals amounted to 649 million kilograms of domestic and imported cereals. This marks a 22% increase from the corresponding period in the previous year. The last time cereal stocks exceeded 600 million kilograms during the corresponding period was in 2009.

Oats (247 million kg) and barley (190 million kg) had the highest stockpiles. Wheat stocks were the smallest, i.e. 140 million kilograms, but they also increased slightly from the year before. Instead, rye stocks decreased to 73 million kilograms.

▶ Statistics on cereals purchased, used and stockpiled by industry and trade

56% of all cereal was used as feed

Cereals are important fodder crops

Production of animal feed is an important sector in Finland, because more than half of all cereals are produced for the needs of cattle, pig and poultry production. Farms reserved around 1.1 billion kilograms of the total 2018 harvest for use as feed. The use of cereals as feed is increased by the production of industrial feed. Production of feed accounted for approximately 560 million kilograms of the total 2018 cereal harvest.

The food industry consumed an eighth of all cereals

The domestic use of cereals for food production has remained at around 430 million kilograms per harvest season for the last five years. Although a regular quantity of wheat, rye, oats and barley was used for food production, there were changes in the use of cereals. The food industry consumed less wheat and more oats. The proportion of oats of the use of cereals for food production has increased by around 60 million kilograms over the last 15 years.

Exports of cereals the lowest in a decade

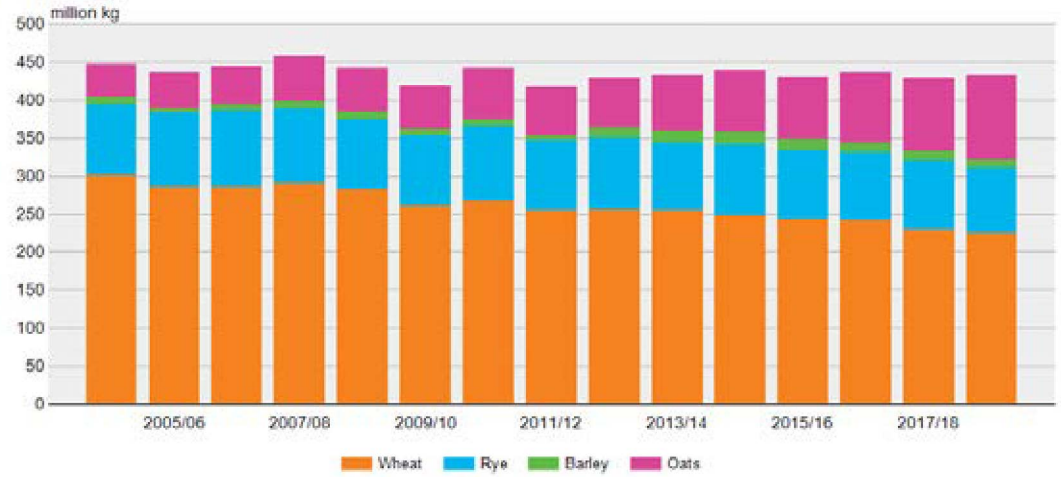
400 million kilograms of the total cereal harvest of around 2.7 billion kilograms were exported. Finnish oats accounted for the majority, or 300 million kilograms, of the export volume. Exceptionally, the wheat harvest was insufficient for exports; wheat imports to Finland were the highest in a decade, totalling roughly 40 million kilograms.

▶ Use of crops on farms

▶ Cereals balance sheet

Use of cereals for food production in Finland 2018

▶ Background data as a table



Domestic use of the 2018 cereal harvest in Finland (mill. kg)

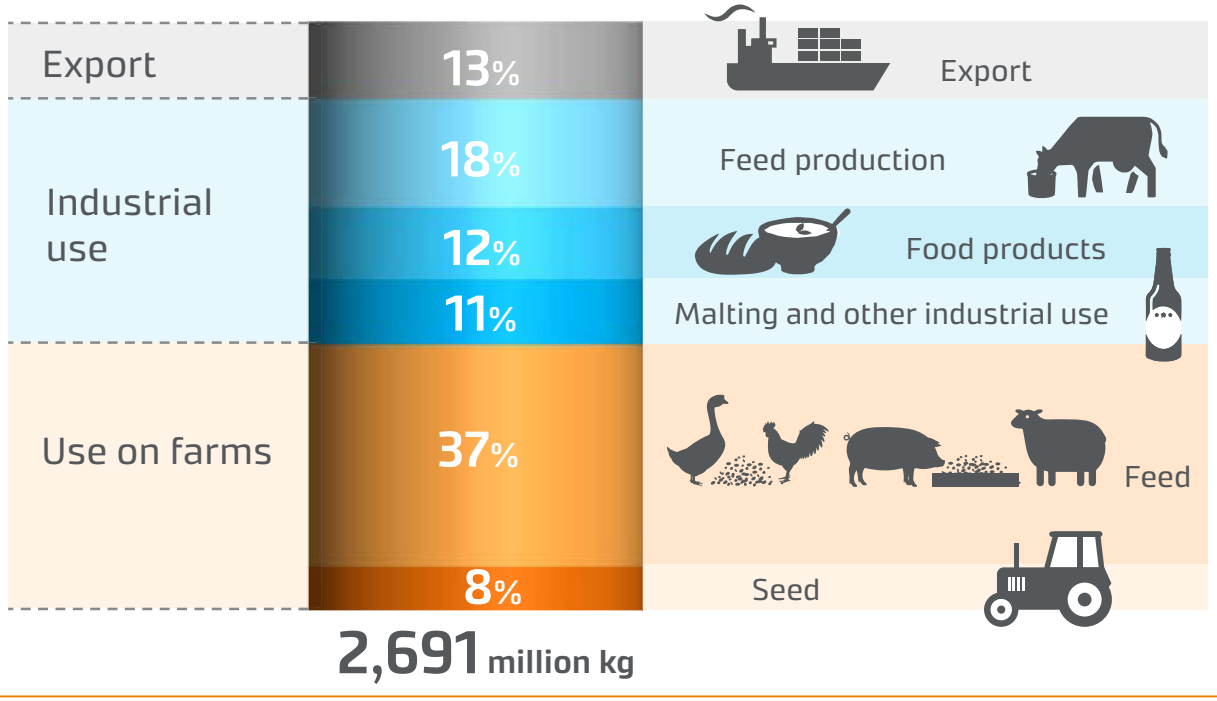


Photo: Luke's photo archive

Photo: Anneli Partala

Photo: Janne Laitinen

Producer prices for agricultural products

Producer prices for cereals shifted to an increase in the autumn of 2018. Producer prices for meat and eggs also grew in 2018.

Producer prices for cereals picked up

The producer prices for cereals started to reverse towards the end of 2018, with monthly collected prices increasing to the level of five or six years ago, depending on the cereal.

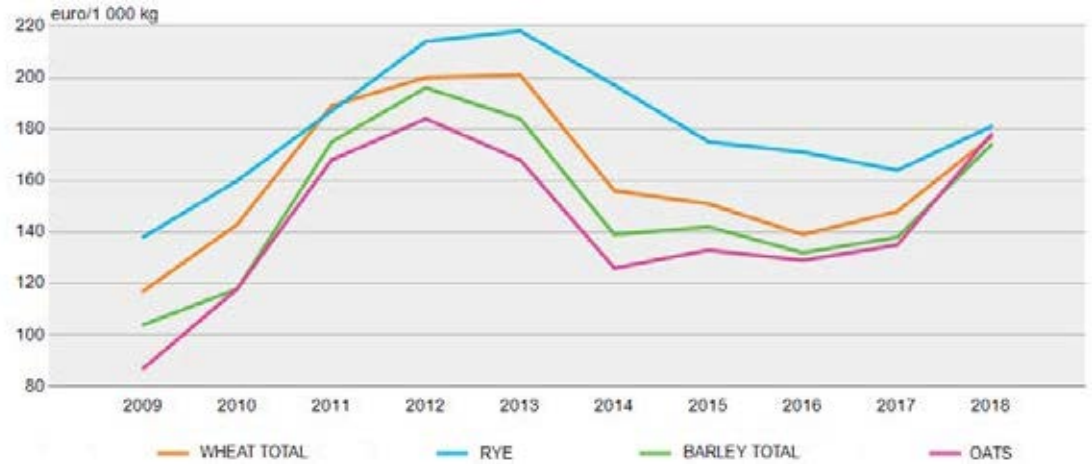
The average price paid to farmers for basic-quality bread wheat in 2018 was EUR 177 per tonne, 19% more than in the previous year. Bread wheat fetched EUR 194 per tonne, and feed wheat EUR 160 per tonne. The producer price for rye increased from the previous year to EUR 181 per tonne.

The average basic price of barley in 2018 was EUR 174 per tonne, 25% higher than in the year before. Feed barley fetched EUR 172 per tonne, and malting barley a little less at EUR 179 per tonne. The basic price of oats was EUR 178 per tonne, 32% higher than a year earlier.

The average basic price of turnip rape and rape was EUR 355 per tonne in 2018, slightly more than during the previous year.

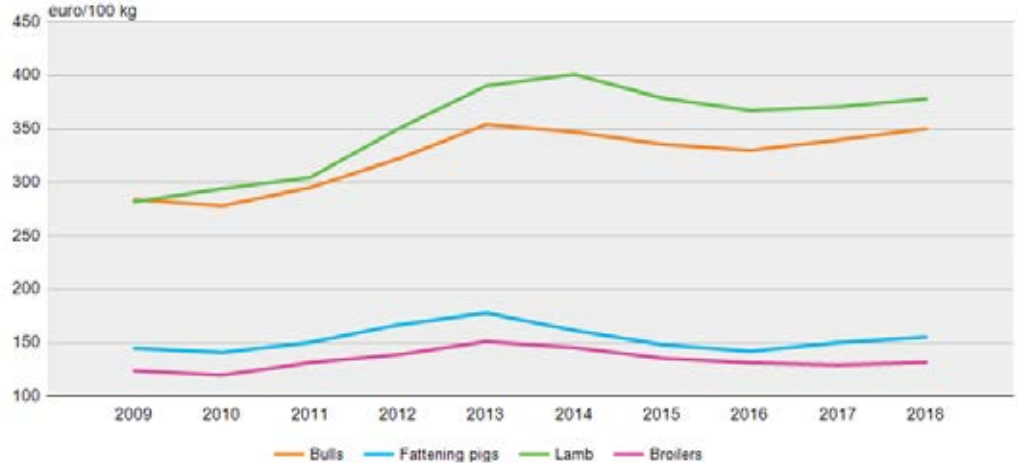
Average producer prices of cereals 2009-2018

▶ Background data as a table



Average producer prices of meat 2009-2018

▶ Background data as a table



Prices of beef and pork increased for the second year in a row

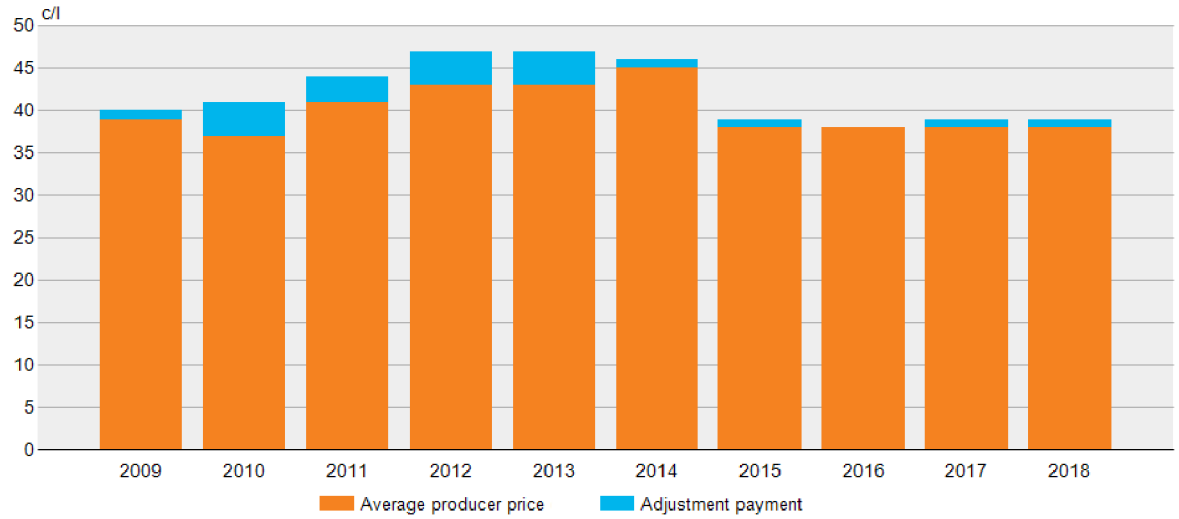
In 2018, the average producer price paid by slaughterhouses for meat from bulls was EUR 3.50 per kilogram, and EUR 1.55 per kilogram for pork. Both figures increased by around three per cent from the previous year. The producer price for broiler meat increased by two per cent to EUR 1.32 per kilogram.

The average price paid to producers for lamb was EUR 3.78 per kilogram, two per cent more than in the year before. The monthly price showed a variation: it was more than EUR 4 at the beginning of 2018 and decreased to EUR 3.54 at the end of the year.

Photo: Erkki Oksanen / Luke

Average producer prices of mik 2009–2018

▶ Background data as a table



Average producer prices of eggs 2009–2018

▶ Background data as a table

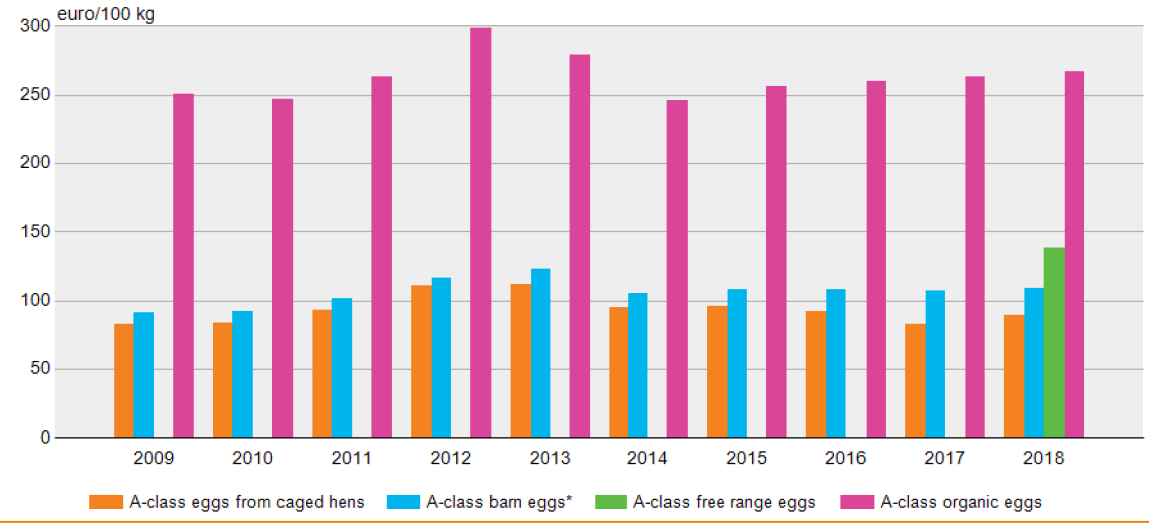


Photo: Kimmo Torkkeli

Producer prices for milk remained at the 2017 level

In 2018, the average producer price paid by dairies to milk producers was 39.05 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.

Data on barn and free-range eggs presented separately

Starting at the beginning of 2018, separate statistics have been compiled on the producer prices for barn eggs and free-range eggs. When examined according to production method, producers were paid on average EUR 1.38 per kilogram for free-range eggs, EUR 1.09 per kilogram for barn eggs and EUR 0.89 per kilogram for enriched cage eggs. Organic eggs fetched EUR 2.67 per kilogram.

The average price paid to producers for class A eggs in 2018 was EUR 1.09 per kilogram, seven per cent more than in the previous year.

Producer prices for food potatoes

The average price paid to producers for food potatoes in 2018 was EUR 0.19 per kilogram, slightly more than in the previous year. The average producer price for early potatoes varies greatly depending on the year. In 2018, it was EUR 0.51 per kilogram.

▶ Producer prices for food potatoes

Producer prices are based on surveys

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 questionnaires sent to 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 can be found on the statistics page.

▶ Producer prices for agricultural products

Agricultural land rents

In recent years, 60% of agricultural and horticultural enterprises have rented agricultural land. More than a third of all arable land has been rented.

Land rents by region, farm type and production line

The latest statistics for agricultural land rents were compiled in 2016. At that time, the average annual price paid by agricultural and horticultural enterprises for rented agricultural land was EUR 223 per hectare. Farm-specific and regional differences are quite high in rental prices: the rates varied from one euro to two thousand euros per hectare.

Regionally, the rates were highest in Southwest Finland (EUR 350 per hectare on average) and in Satakunta (EUR 297 per hectare on average). The average rate was the lowest in Lapland and Kainuu (around EUR 100 per hectare).

Rent for agricultural land was considerably higher for horticultural farms than the Finnish average at EUR 293 per hectare. Organic farms paid slightly higher rent compared to farms with regular production (EUR 227 and EUR 221 per hectare, respectively).

▶ Agricultural land rents

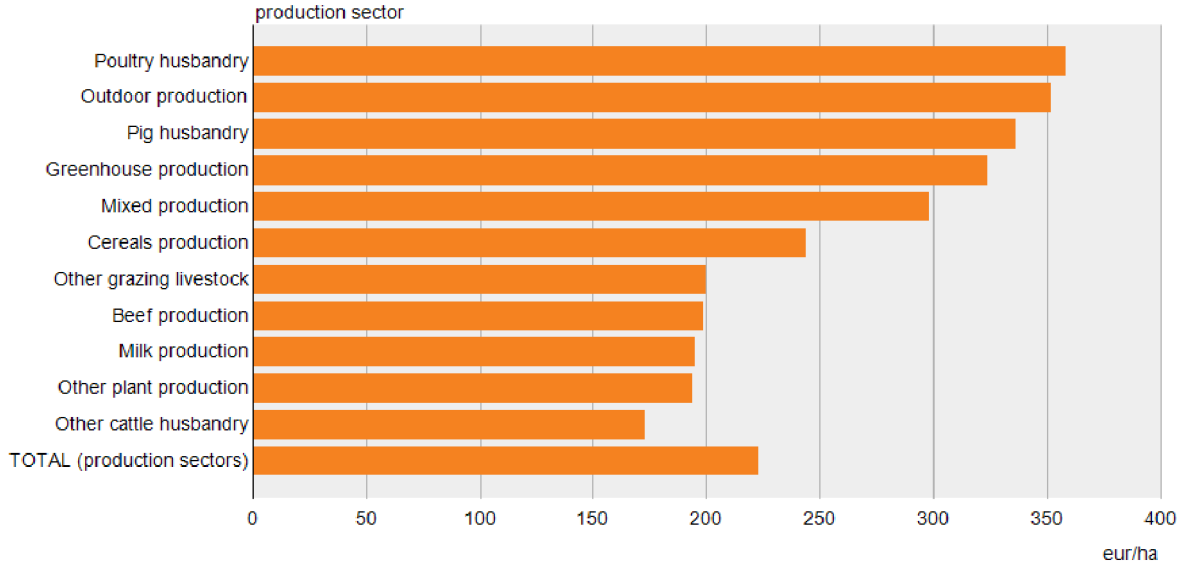
The classification by production line covers eleven sectors. Poultry and pig farms and horticultural farms paid more than EUR 300 per hectare for rented agricultural land, whereas for dairy and beef farms, rents were approximately EUR 200 per hectare.

Further information on land rents by production line and farm type is available in Luke's statistics database.

Regional statistics by type of farm and production line are also available on a map.

Agricultural land rents by production sector 2016

▶ Background data as a table



Foreign trade in agri-food products

In 2018, the value of imported agri-food products was EUR 5.3 billion, while the value of exports remained at EUR 1.5 billion. The ratio between the values of imports and exports has usually ranged between 30% and 40%, being 29% last year. This can mostly be explained by the increase in the value of imports.

When the values of imports and exports are examined since 2002, there can be seen a significant increase in imports in relation to exports. The value of exports has increased relatively slowly and even decreased slightly between 2017 and 2018. Since 2002, the value of imports has increased from around EUR 2.2 billion to EUR 5.3 billion. However, last year the value of imports fell slightly.

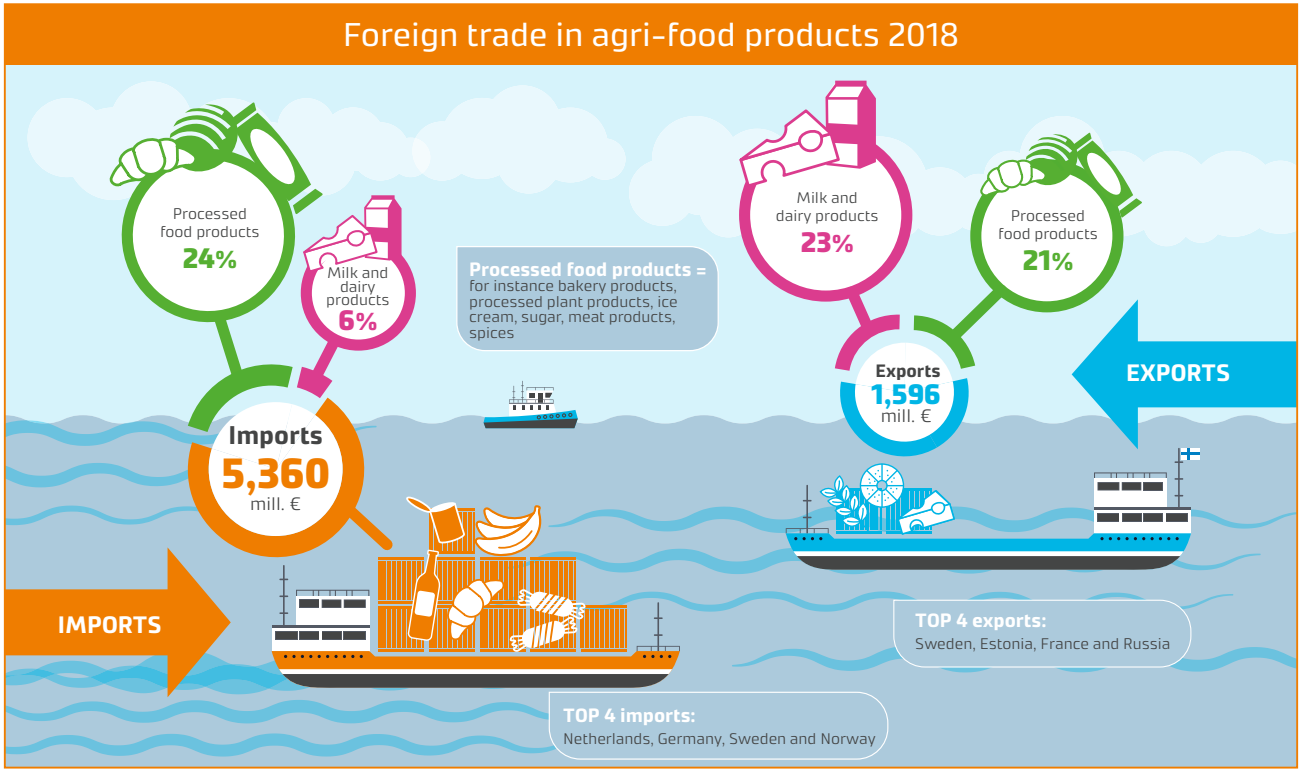
Milk and dairy the most important exports

In terms of value, the largest product groups in 2018 were milk and dairy, other processed food, alcohol, non-alcoholic beverages, confectionery, and tobacco. 'Other processed food' includes for example bakery products, ice cream, sugar, processed vegetables, meat products and spices, for example. Other processed food products and alcohol were also the most important product groups in imports, followed by fruits, berries and vegetables, the imports of which in 2018 totalled as much as 538 million kilograms, whereas, for example, only 157 million kilograms of cereals were imported. The fourth-largest product group in both imports and exports was fish and fish products, but this was influenced by Finland's role as a transit country for Norwegian salmon. Foreign trade in feed was also significant, as the value of imported feed was EUR 335 million last year.

The exports of several products decreased slightly between 2017 and 2018, but the export value of eggs, potatoes, fish and fish products, cereal products, other processed food products, and fats increased moderately.

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 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. Last year, the most important export countries were Sweden, Estonia, France, Russia, Germany and Denmark. The top importing countries were the Netherlands, Germany, Sweden, Norway, Spain and Denmark. The leading countries have been roughly the same for several years, but the order has varied. A few years ago, Germany was the number one importing country.

More milk and dairy products, fish and fish products, processed food products, and beef were exported to Sweden than in the previous year. Milk and dairy products were the most important product group in terms of value. Agri-food products were exported to Sweden to the value of around EUR 0.3 billion. The value of imports from Sweden totalled around EUR 0.55 billion.

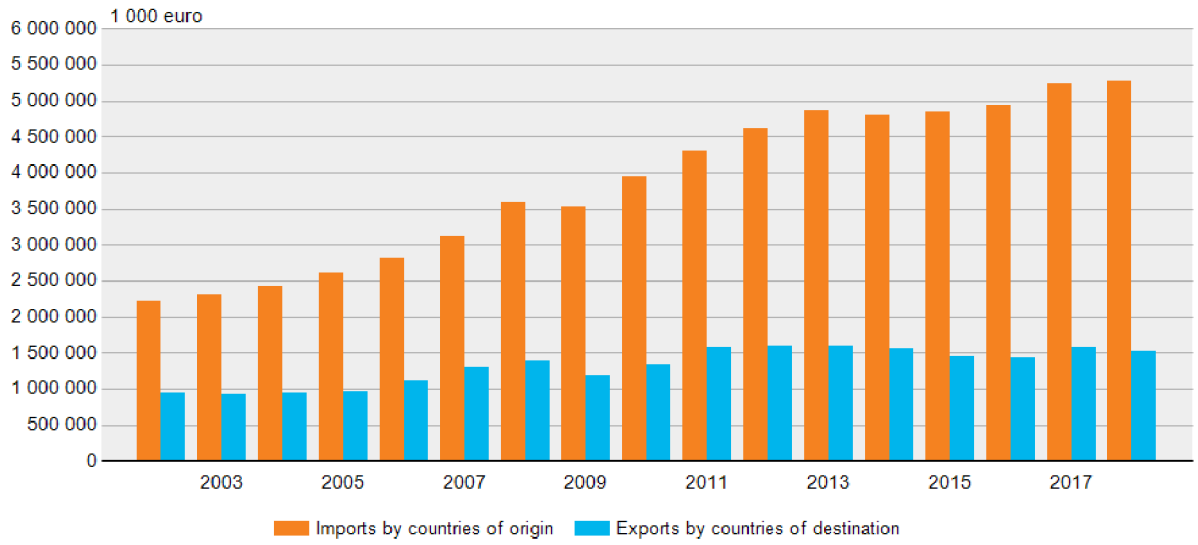
The value of exports to China increased by approximately 50% from 2017. More milk and dairy products and pork were exported to China than in the previous year. As with exports to Sweden, milk and dairy products were the most important export product group to China. The value of Chinese exports was higher than the value of imports. Feed, fish and fish products, and vegetable preserves were the most important imports.

The largest product groups imported from the Netherlands were fats and oils, processed food products, vegetables and horticultural crops. Fruits were mostly imported to Finland from Spain.

▶ Foreign trade in agri-food products

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

▶ Background data as a table



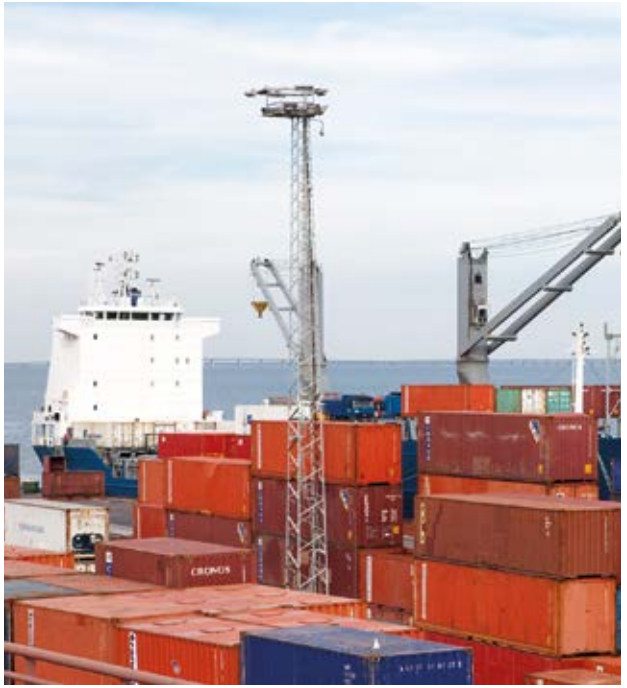


Photo: Anne Saarinen

Profitability of agriculture

According to Luke's profitability accounting, the profitability ratio for agriculture and horticulture improved to 0.4 in 2017. In 2016, the profitability ratio remained at 0.26, which was the weakest result in the 2000s.

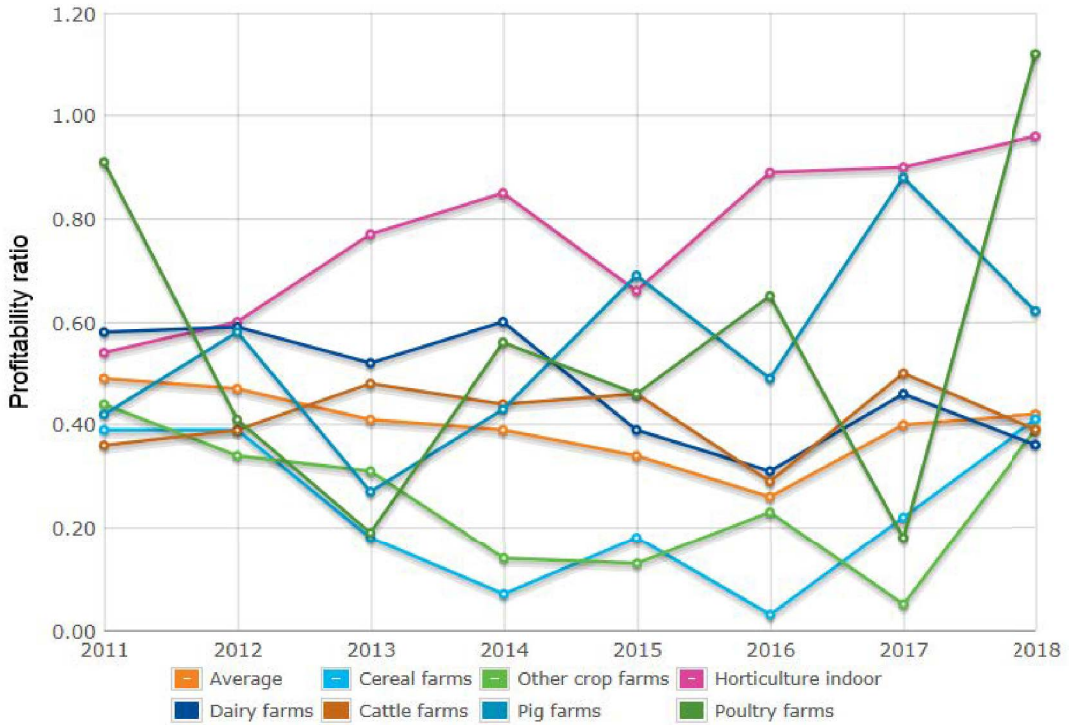
The equity ratio of agriculture and horticulture, i.e. the share of equity in total capital, was on average 72%. The return on total assets was -2.0%. It has not been positive since 2000. This means that no interest has been accrued on capital invested in the business.

On average, businesses operated at a loss

In 2017, the gross revenue of agriculture, i.e. the sum of agricultural production and subsidies, was EUR 153,500 per farm, an increase of three per cent compared with the previous year. Subsidies accounted for around a third of gross revenue.

Agricultural production costs fell by one per cent from the previous year and was on average EUR 178,100. Production costs were higher than gross revenue, resulting in an average loss of EUR 24,600 per farmer. The costs include family businesses' labour costs, which were calculated on the basis of an hourly rate of EUR 15.70, and interest on capital at 3.45%. Excluding these costs, farm net income in 2017 was EUR 16,200, around 44% more than in 2016.

Profitability ratio of agricultural and horticultural enterprises ▶ Background data as a table



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. In 2017, the average profitability ratio for agriculture was 0.40. Thus, farmers achieved 40% of the labour cost and interest targets, i.e. an hourly rate of EUR 6.1 for labour and 1.3% interest on capital. The work input of the

entrepreneur family fell slightly from the previous year and was on average 1,850 hours in 2017.

The size of agricultural and horticultural enterprises remaining in operation has grown continually every year. In 2017, the average cultivation area per farm was 65 hectares, but farm size has increased by 14 hectares in the last decade. Despite this, average profitability has remained weak throughout the 2000s.

Major differences between production lines

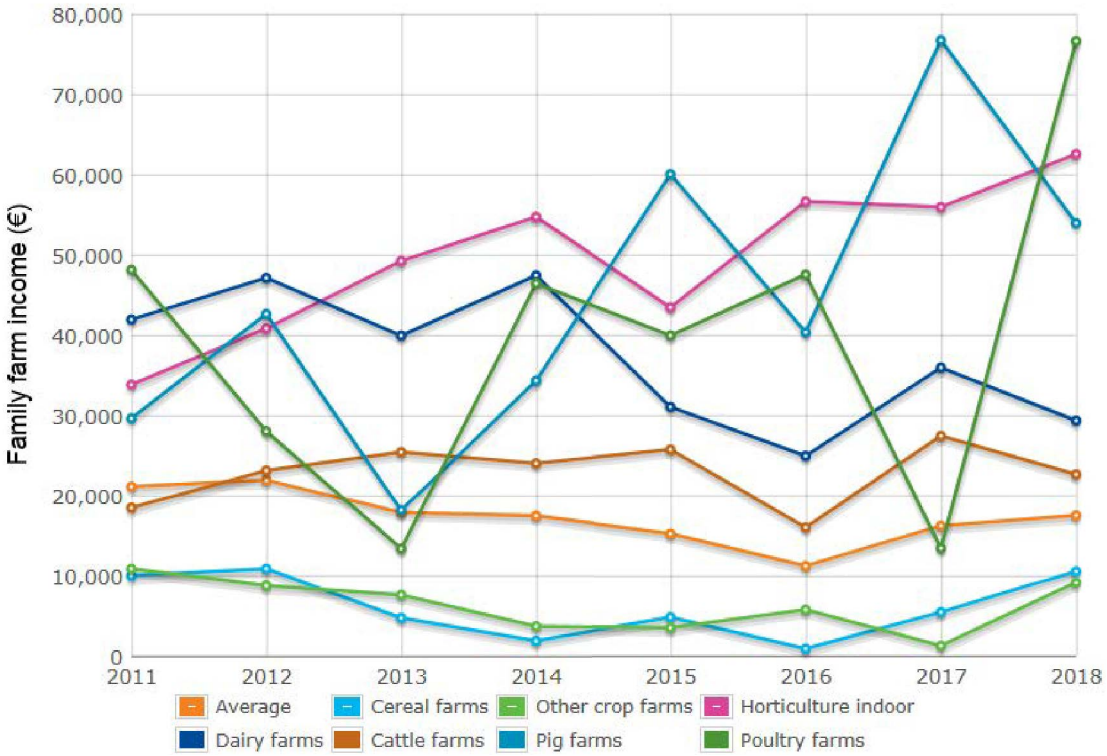
Profitability varies greatly, depending on the type of production. In 2017, greenhouse enterprises and outdoor horticultural farms were the best performers, with their profitability ratio climbing to 0.9. For greenhouse enterprises, entrepreneurial income amounted to EUR 55,000 and for outdoor horticultural farms, to nearly EUR 30,000. The profitability ratio also improved on pig farm at 0.88, while on other crop farms it dropped to 0.05. The poor profitability of cereal farms improved slightly: the profitability ratio rose to 0.2, and entrepreneurial income amounted to EUR 5,000. On poultry farms, the profitability ratio fell to 0.18, and entrepreneurial income remained at EUR 13,400. The strong annual variations in profitability on poultry farms are partly due to the small number of poultry farms included in profitability accounting.

The updated results and profitability forecasts for the coming years can be found in the agriculture and horticulture section of Luke's Economydoctor service.

▶ Economydoctor

▶ Profitability of agriculture

Farm net income of agricultural and horticultural enterprises ▶ Background data as a table



Profitability of reindeer husbandry

The reindeer husbandry area accounts for 36% of Finland's territory, i.e. almost the whole of the region of Lapland and the northern parts of North Ostrobothnia and Kainuu. Luke's profitability accounting monitors the profitability of reindeer husbandry annually on the basis of accounting data collected from 75 reindeer husbandry enterprises.

During the 2017/2018 herding season, the profitability of reindeer husbandry started to decline. The profitability ratio was on average 0.40, and entrepreneurial income amounted to EUR 9,100, around 30% less than in the previous year. Those engaged in the reindeer husbandry business earned an hourly wage of around EUR 4.90.

Production costs are increasing

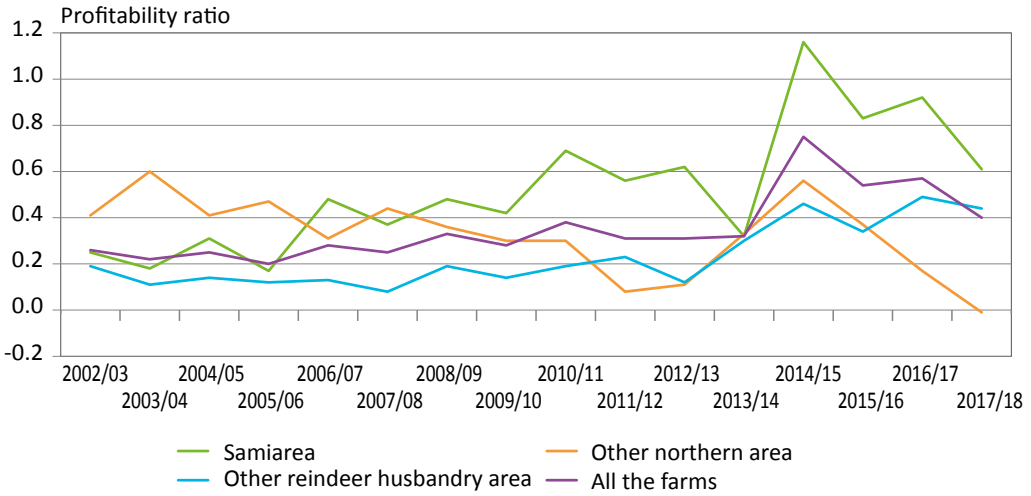
In the 2017/2018 herding season, gross revenue amounted to EUR 41,000. Half the gross revenue, roughly EUR 20,700, was obtained from the sale of reindeer meat. Subsidies accounted for 14% of income. The amount of reindeer damage varies annually and according to region, but on average, compensation for reindeer damage accounts for 20% of gross revenue.

The production costs of reindeer husbandry increased by 10% from the previous year to approximately EUR 53,300. In euro, the biggest increase was recorded in feed and supply costs. The cost of production calculated per living reindeer was EUR 271, which means that the entrepreneur incurred a loss of EUR 63 per living reindeer.

Reindeer husbandry in 2018

Number of reindeer	Reindeer meat production	Total number of reindeer owners
191,188	1.81 million kg	4,394

Profitability of reindeer husbandry by area



Higher profitability in the north

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 2017/2018, profitability was lowest in the southern and central parts of the reindeer husbandry area. The profitability ratio for the other reindeer husbandry area was 0.44, and for the other special reindeer husbandry area -0.01. In the Sámi area in the north of the reindeer husbandry area, the profitability ratio increased to 0.61. The differences in profitability between the different earmark districts are also significant, and the profitability ratio varies between -0.06 and 0.80.

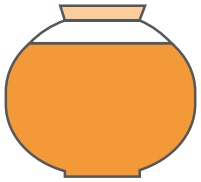
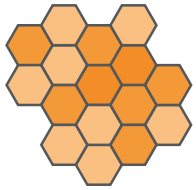
▶ Economydoctor, profitability of reindeer husbandry

Profitability of beekeeping

In 2018, the total honey yield was around 2.6 million kilograms, half a million kilograms more than in the previous year. The honey yield varies greatly between years, and the total yield has ranged between half a million and three million kilograms. The record harvest of three million kilograms of honey was achieved in 2006.

The amount of honey is greatly influenced by the weather conditions in the summer and the location of the hives. In 2018, the average yield of one bee hive was about 47 kilograms of honey; the long-term average is slightly over 39 kilograms. The best hive-specific yields were obtained in Central, Northern and Eastern Finland.

Honey production in 2018

Total production volume	Average production per colony	Number of bee colonies in spring
		
2.6 million kg	47 kg	55,000

Yield variations are reflected in profitability

Beekeeping was included in profitability accounting in 2013. In 2018, the profitability ratio for the beekeeping sector was 0.58, and the entrepreneurial income was around EUR 5,990. Beekeepers achieved an average hourly wage of EUR 8.5 and interest of 2.9% on equity.

In 2018, gross revenue amounted to an average of EUR 16,900. Revenue was mainly generated from honey sales. Production costs increased by more than 20% from the previous year to EUR 21,260. The costs include family businesses' own labour costs of EUR 9,300 and around EUR 1,020 of interest on capital. The average cost of producing one kilogram of honey was EUR 9.8.

Profitability varies greatly between years. The honey yield was weak in 2016, and the profitability ratio of the beekeeping sector remained at 0.06, whereas in the good harvest year of 2014, the profitability ratio increased to 1.47.

The number of beekeepers is increasing

In 2018, approximately 80% of the beekeepers in Finland belonged to the Finnish Beekeepers' Association. The number of members increased from the previous year by 160 beekeepers and totalled 2,750. There were 79 professional beekeepers, i.e. beekeepers with more than 100 beehives.

▶ Profitability of beekeeping

Balance sheet for food commodities

In 2018, Finns consumed on average 79 kilograms of cereals, 81 kilograms of meat, 15 kilograms of fish and 155 kilograms of liquid milk products per capita. Compared with the previous year, there have been no major changes in the overall consumption levels of cereals, meat and fish. The consumption of liquid milk products decreased by around three per cent.

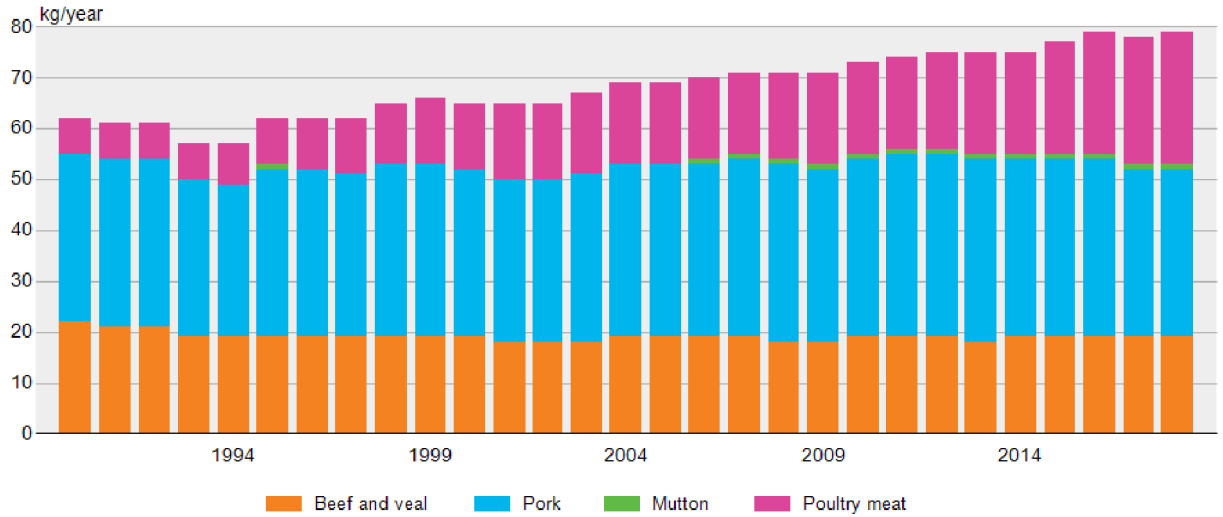
Total cereal consumption has remained fairly constant for a long time. Last year, the consumption of cereals was only one kilogram lower than in 2008, representing a decrease of around one per cent. Consumption of liquid dairy products has fallen by 17% in ten years, while consumption of meat has increased by almost 8%. The consumption of fish has remained roughly the same.

Oats consumption remained steady

The total consumption of cereals was 79 kilograms per capita in 2018, which is one kilogram less than in the previous year. The consumption of oats remained the same as in 2017 at 7.3 kilograms. The consumption of rice also remained unchanged and was six kilograms. The consumption of wheat was roughly the same as in the previous year, while the consumption of rye declined slightly. The consumption of wheat was 44.6 kilograms, and the consumption of rye was 15.3 kilograms per capita.

Consumprion of meat per capita 1990–2018

Background data as a table



Poultry meat consumption continued to grow

The total consumption of meat remained roughly at the level of the two previous years, 81 kilograms per capita, when game and offal were also taken into account.

The consumption of poultry meat has continued to increase for more than ten years. It has grown by almost three per cent since 2017. Since 2008, consumption has increased by almost 50%. However, pork consumption has been decreasing for three consecutive years, and beef consumption has remained roughly the same for several years. In 2018, an average of nearly 26 kilograms of poultry meat, almost 33 kilograms of pork and 19 kilograms of beef was consumed per capita. Sheepmeat consumption totalled 0.7 kilograms, reindeer meat consumption 0.4 kilograms, and horse meat consumption 0.3 kilograms. There were no changes compared to the previous year

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.

Milk consumption continued to decrease

The consumption of milk decreased by almost five per cent from the previous year. Skimmed milk consumption decreased by nearly nine per cent, and that of low-fat milk decreased by approximately three per cent, but the consumption of whole milk remained nearly the same as in 2017.

All in all, approximately 107 litres of milk were consumed per capita last year, of which nearly a third was skimmed milk, 57% was low-fat milk, and just over 10% was whole milk.

On average, consumption of dairy products either declined slightly or remained unchanged. Consumption of other fresh products, such as flavoured quarks, grew. Yoghurt consumption remained roughly at the 2017 level. The consumption of sour milk and curdled milk (viili) decreased by 4–5%. In 2018, the total consumption of liquid milk products was 155 kilograms per capita, or approximately three per cent less than in the previous year.

▶ Balance sheet for food commodities

The consumption of cheese remained almost unchanged at 26 kilograms. The consumption of butter was also of the same order as in the previous year at 3.5 kilograms. Egg consumption likewise remained at nearly 12 kilograms per capita last year.

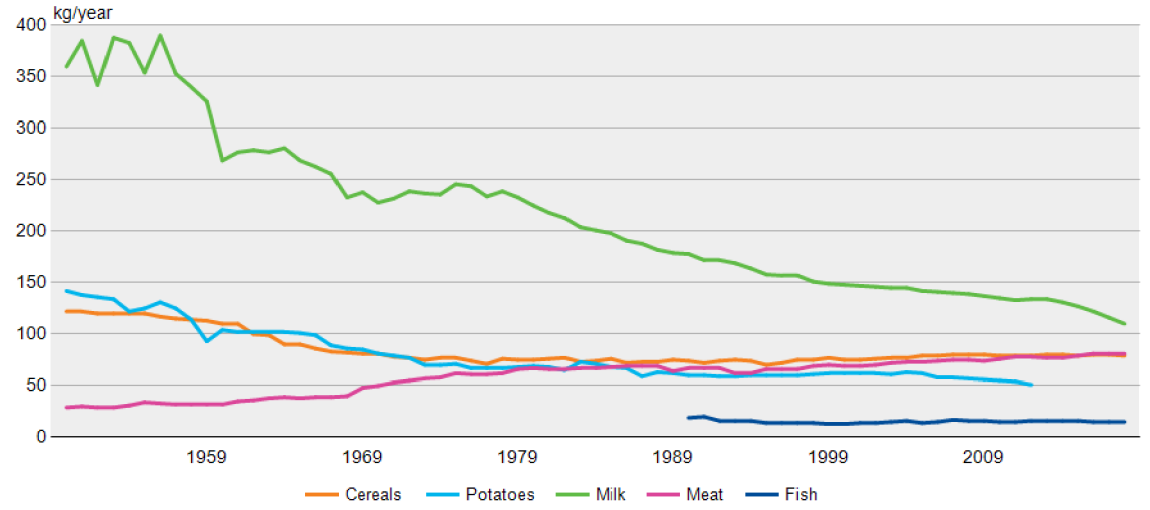
Photo: Luke's photo archive

Consumption of citrus fruits grew slightly

Consumption of citrus fruits shifted to an increase and was about 14 kilograms per capita. The consumption of other fresh fruit declined slightly and was 45 kilograms per capita last year. Just under seven kilograms of fruit preserves and dried fruit were consumed per capita. Vegetable consumption was roughly at the previous level. Consumption of fresh vegetables is estimated at approximately 64 kilograms per capita. However, this figure also includes possible waste.

Consumption of cereals, potatoes, milk, meat and fish per capita 1950–2018

▶ Background data as a table



Forest statistics

Photo: Tiina Sauvula-Seppälä

Forest statistics for 2018

Annual growth of tree stocks totals 108 million cubic metres

On the basis of the latest inventory carried out in 2014-2018, the volume of growing tree stock in Finland totals 2.5 billion cubic metres, and the annual growth of tree stocks totals 108 million cubic metres. Both the volume and growth of tree stocks have increased compared to the previous inventory.

Forest protection statistics have been updated

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.

Total costs of silviculture and forest work improvement were EUR 252 million

In 2018, the costs of silvicultural works amounted to EUR 230 million, and forest improvement costs totalled EUR 22 million. Early and later pre-commercial thinning and improvement of young stands generated nearly a third of the costs of silviculture and forest improvement. On the basis of notifications of forest use, the area treated with felling totalled 794,000 hectares, of which clearcutting accounted for more than a fifth. The area of artificial forest regeneration totalled 96,000 hectares, the majority of which was planted.

Wood trade was very active, and prices were high

The peak of the economic trend for the forest sector and the increase in the capacity of the forest industries increased the demand for industrial roundwood in 2018. Purchases of both logs and pulpwood were exceptionally high, and the total volume of wood trade increased by a fifth from the previous year. Real prices of roundwood increased by six per cent in standing sales, and by two per cent in delivery sales. Energywood trade was also active, and the purchases of raw materials for forest chips increased by a fifth from the previous year. The real average price of energywood increased by two per cent in standing sales and fell by three per cent in delivery sales.

Removals and drain reached record levels

In the forest industries' peak year, industrial roundwood felling increased to 69 million cubic metres, nine per cent more than in the previous year. In addition, a total of nine million cubic metres of roundwood was harvested for energy production, which means that the total volume of harvested roundwood amounted to 78 million cubic metres. The total volume of harvested roundwood increased by eight per cent from the previous year and by almost a quarter from the average for the preceding ten-year period. The total drain of roundwood increased to 94 million cubic metres. The annual increment of growing stock totalled 108 million cubic metres, meaning that the volume of growing tree stock increased by 14 million cubic metres.

The profitability of forestry continued to improve

Record felling volumes and increased wood prices improved the profitability of forestry. The gross stumpage earnings increased to EUR 2.7 billion, or by 14% from the previous year in real terms. The operating profit in non-industrial private forestry increased to EUR 157 per hectare. This result was almost a fifth higher than in the previous year and nearly double the average for the preceding ten-year period. The increase in wood prices increased real investment returns on wood production to 13%. The return was double compared with the two previous years and was more than ten percentage points higher than the average for the preceding ten-year period.

Record in roundwood consumption

Roundwood consumption in Finland amounted to 84 million cubic metres in 2018, the largest amount so far. Most of the roundwood (74 million cubic metres) was used to manufacture forest industry products. Of the roundwood processed by the forest industries, more than 64 million cubic metres consisted of domestic roundwood, and 9 million cubic metres were imported. Of the different branches of the forest industries, the highest amount of roundwood was consumed in the chemical pulp industry. In 2018, the consumption of solid wood fuels totalled 27 million cubic metres. Of this, 11 million cubic metres were roundwood, and 16 million cubic metres were forest industry by-products, wood residues, wood pellets and recycled wood. Wood fuels were the most important energy source in Finland, accounting for 27% of total energy consumption.

The boom increased forest industry production

The production and export volumes of both the wood products and pulp and paper industries increased. The majority of the most important products of the Finnish forest industries are exported, except for pulp. Driven by the boom, the turnover of the forest industries rose to EUR 33 billion, showing an increase of five per cent from the previous year in real terms. The profitability of the forest industries also improved, and the operating margin was 8.6% of operating income. In the forest industries, the debt-to-turnover ratio fell to 55%, meaning the financial position of the forest industries was significantly better than that of other manufacturing industries.

Wood imports increased by a third

Finland's wood imports totalled 12 million cubic metres. Of this, 63% was pulpwood, and its import volume increased by half from the previous year. The value of exported forest industry products totalled EUR 13 billion. The value of exports in the wood-products industries fell by five per cent from the previous year to EUR 2.9 billion. The value of the pulp and paper industries' exports was EUR 10.3 billion, an increase of eight per cent from the previous year.

Key figures for the Finnish forest sector in 2018

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

2,475 million m^3

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

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

108 million m^3

Nearly double compared with the 1950s level

Artificial regeneration per year

96,000 ha

77 % planted, 23 % sown

Protected forests

2.9 million ha

13 % of all forest land and poorly productive forest land

Roundwood removals

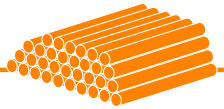
78.2 million m^3

+8 % from 2017

Gross stumpage earnings

EUR 2.7 billion

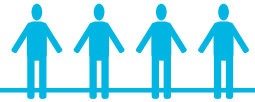
+14 % from 2017*



Roundwood consumption in forest industries

73.6 million m^3

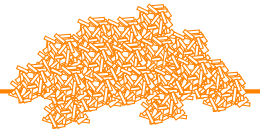
of which 88 % domestic wood



Employed in the forest sector

62,000 persons

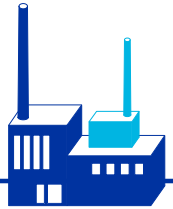
+6 % from 2017



Wood in energy generation

104 TWh

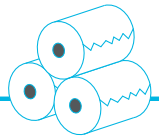
27 % of total energy consumption



Forest industries' turnover from domestic operations

EUR 32.7 billion

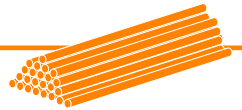
23 % of the total turnover in the industrial sector



Export in the forest industries

EUR 13.2 billion

21 % of total Finnish goods exports



Wood imports

11.6 million m^3

+33 % from 2017

*Deflated using wholesale price index

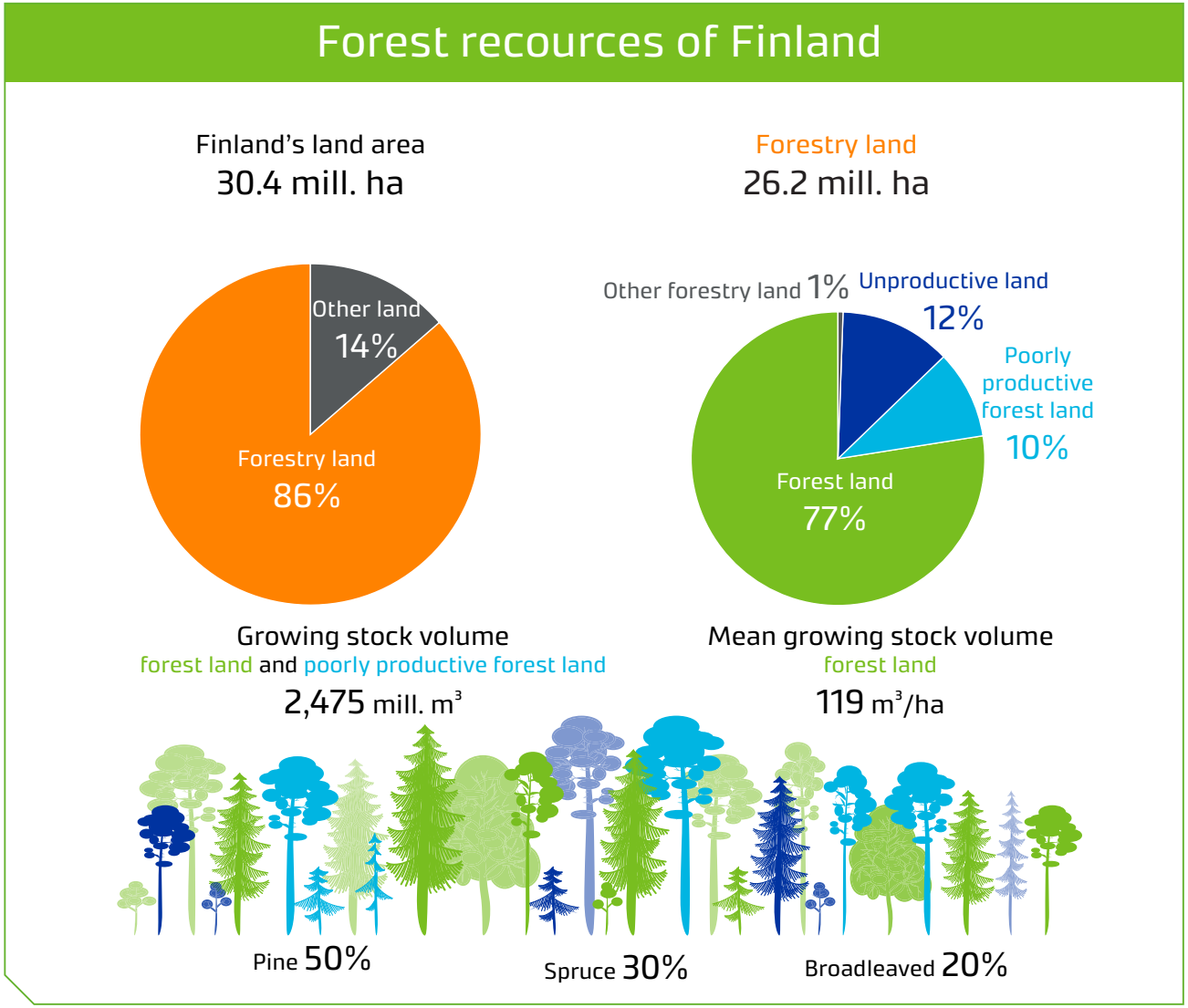
Forest resources

Field measurements for the 12th National Forest Inventory (NFI12) started in 2014 and were completed in 2018. Based on the measurements (50,000 plots and one million trees), the volume of growing tree stock in Finland totals 2.5 billion cubic metres, and the annual growth of tree stocks totals 108 million cubic metres. Compared with the previous inventory, in five years, the volume has increased by 119 million cubic metres, and the annual growth by 2.4 million cubic metres. The volume of decayed trees continued to increase in Southern Finland and decrease in Northern Finland.

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.

Forests account for most of the total land area

Forestry land accounts for 86% (26.2 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.

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 20.3 million hectares, and poorly productive forest land 2.5 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

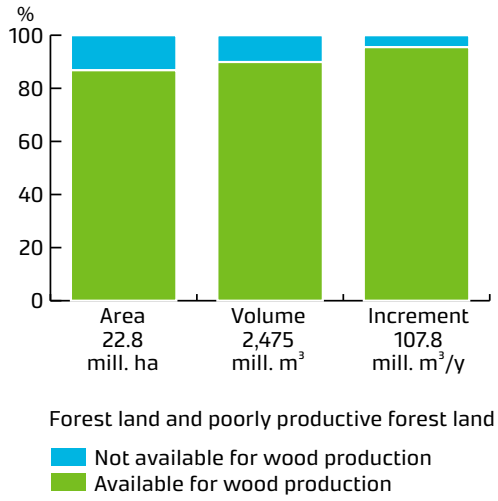
Forestry is mainly practised in forest land areas, of which 18.4 million hectares (91%) is available for wood production. In Southern Finland, the area of forest land available for wood production amounts to 97%, while in Northern Finland, the same figure is 84%. This indicates that most of the protected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

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.

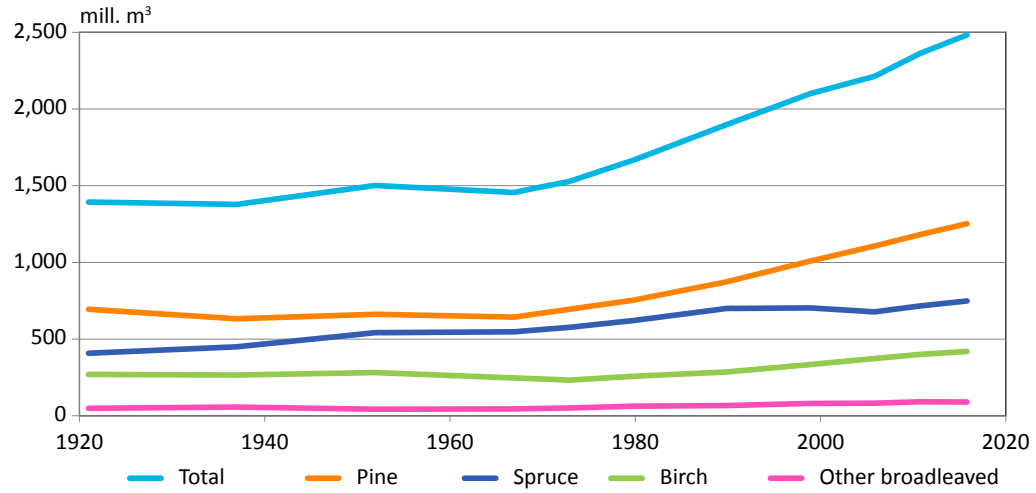
Of all peatlands (8.8 million ha), 76% are spruce mires or pine mires on forest land or poorly productive forest land. The remaining 2.1 million hectares are open marshes and spruce and pine mires on unproductive land. In Southern

The division of area, growing stock volume and increment



Growing stock volume by tree species 1921-2018

▶ Background data as a table



Finland, the share of peatland of total forestry land is 26%, and in Northern Finland, 40%.

The share of undrained peatlands is 47%

The total area of undrained peatlands is 4.1 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, 600,000 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 20,000 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.

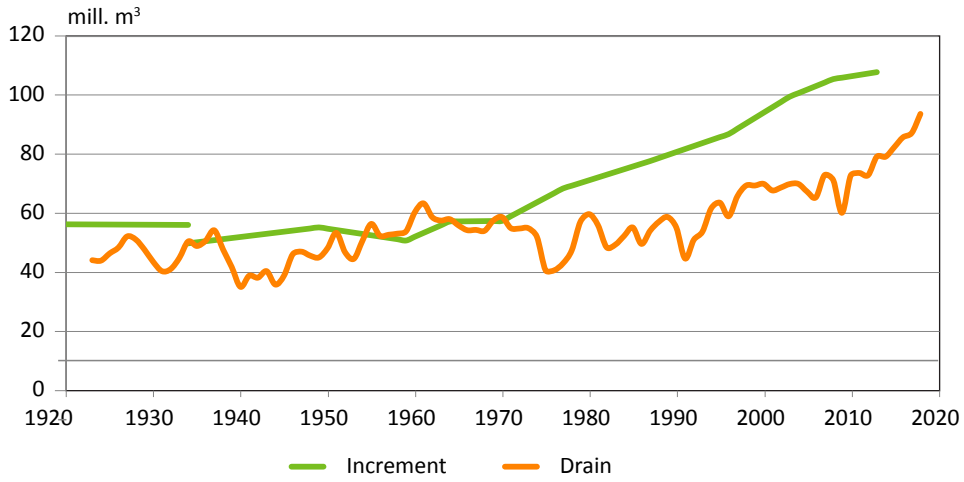
The volume and biomass of the growing stock continue to grow – the increase is mainly in large trees

The volume of tree stocks on forest land and poorly productive forest land totalled 2,475 million cubic metres, 119 million cubic metres more than the previous inventory (2009–2013). The volume of trees with a diameter of at least 20 cm has increased by 130 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 75 million tonnes to 1,744 million tonnes. Concerning carbon sinks, the impact of the biomass increase has been on average 28 million tonnes of CO_2 per year.

Half the growing stock 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 growth and drain of tree stocks 1921–2018



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 2018 totalled 93.7 million cubic metres, 87% of the latest increment result. In 2014-2018, the average annual drain was 85.6 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.

Photo: Erkki Oksanen / Luke

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.

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?

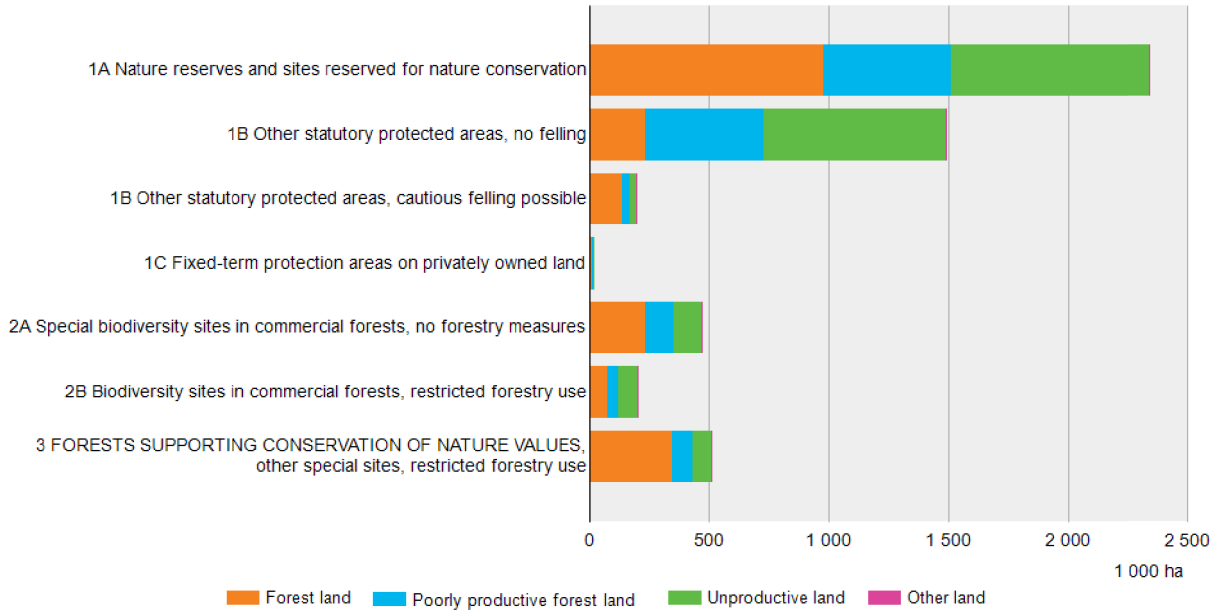
Luke compiles statistics on protected forest areas roughly every three years. The latest statistics are based on the situation at the beginning of 2019. In the forest protection statistics, 'forest' means the combined area of forest land and poorly productive forest land, which together form a wooded 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,

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



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 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.

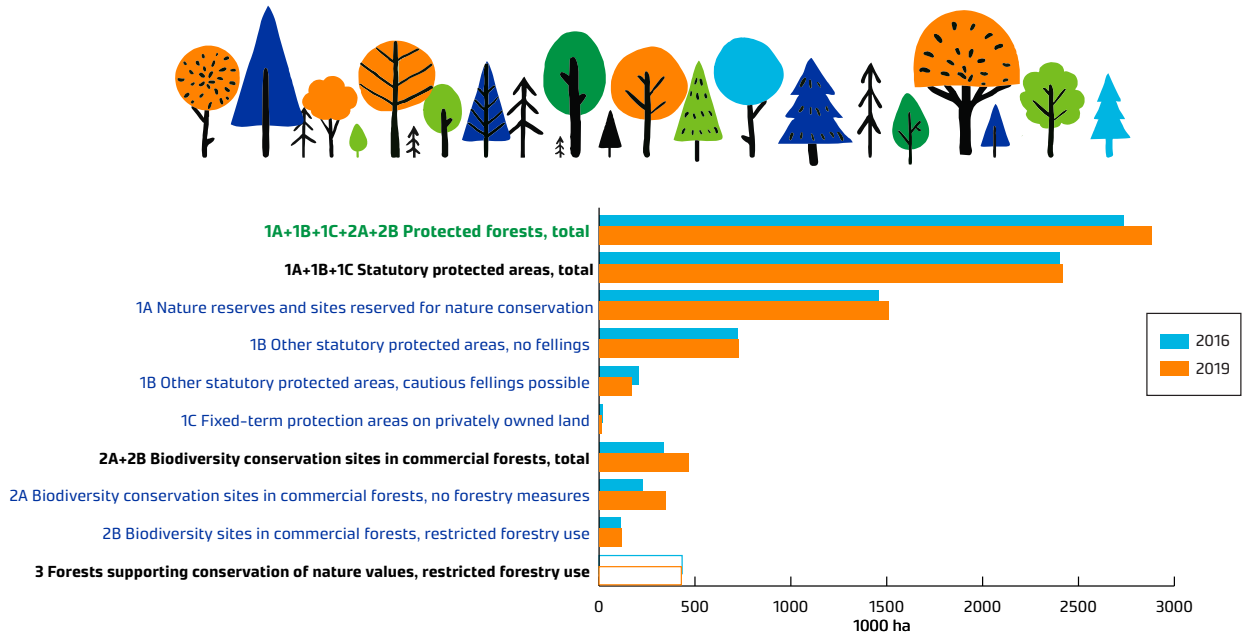
Biodiversity conservation sites in commercial forests

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%, are 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 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 2008–2018, approximately EUR 330 million has been spent in the ELY Centres and in the Finnish Forest Centre to implement the programme.

Between 2008 and 2018, new permanent and temporary conservation areas have been established, and a total of 68,835 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 40,552 hectares of land and implement nature management projects across 4,739 hectares of commercial forest. In addition, various restoration and nature management measures have been carried out, particularly in state-owned forests.

Photo: Erkki Oksanen / Luke

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 2018, 72% of the conservation area goal was achieved, and 55% 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 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 2018:

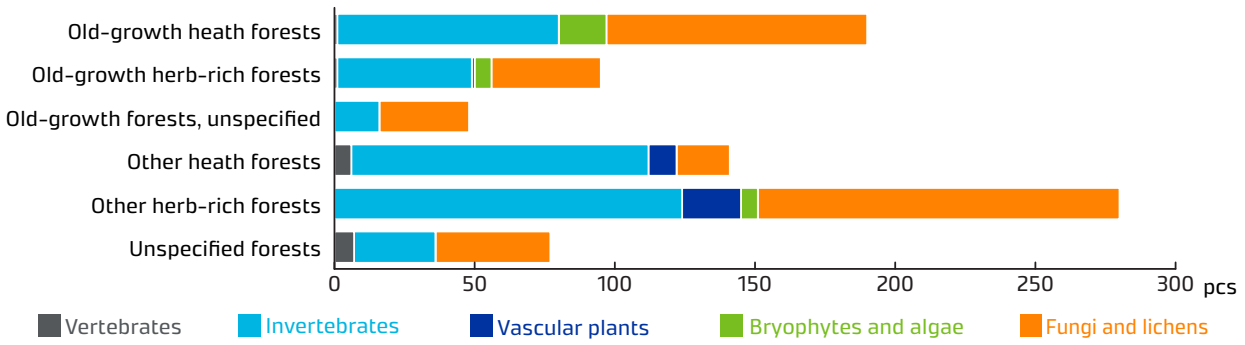
- The average size of valuable nature sites was 0.3 hectares.
- The characteristics of natural sites were retained in 84% of the surface areas.
- The volume of retained growing stock totalled an average of 226 cubic metres per hectare, of which 14 cubic metres were deadwood.
- Growing stock volumes retained at clearcutting sites totalled on average 3.5 cubic metres, and the volume of deadwood 0.7 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.

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 provenances.

Threatened species of forests by habitat, 2019

▶ Background data as a table



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 two per cent.

▶ Forest protection

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

▶ Forest biodiversity

▶ Forest resources

Silviculture

In 2018, a total of EUR 252 million was invested in silviculture and forest improvement work, three per cent more than in the previous year in real terms. The amount invested in silvicultural work increased by four per cent to EUR 230 million. However, investments in forest improvement work decreased by eight per cent and were EUR 22 million. Nearly a third of the total cost was generated in the early and later pre-commercial thinning and improvement of young stands, and a quarter in artificial forest regeneration.

Artificial forest regeneration is prepared by clearing of regeneration areas and soil preparation. In 2018, a total of 32,000 hectares of regeneration areas was cleared, and soil preparation was carried out across 105,000 hectares. Mounding accounted for two-thirds of the total soil preparation area, disc trenching for a fifth, and patch scarification for a tenth. Other soil preparation methods were used for three per cent of the total soil preparation area.

Planting is the most popular method of artificial forest regeneration.

The area of artificial regeneration amounted to 96,000 hectares, and its costs were EUR 58 million. Of this area, 77% (75,000 hectares) were planted. Two-thirds of the planting area were allocated to spruce and less than a third to pine. The total area sown was 22,000 hectares, 79% of which was carried out using mechanical seeding methods. The area of artificial regeneration decreased by seven per cent compared with the previous year.

Early and later pre-commercial thinning and improvement of young stands generated nearly a third of the costs

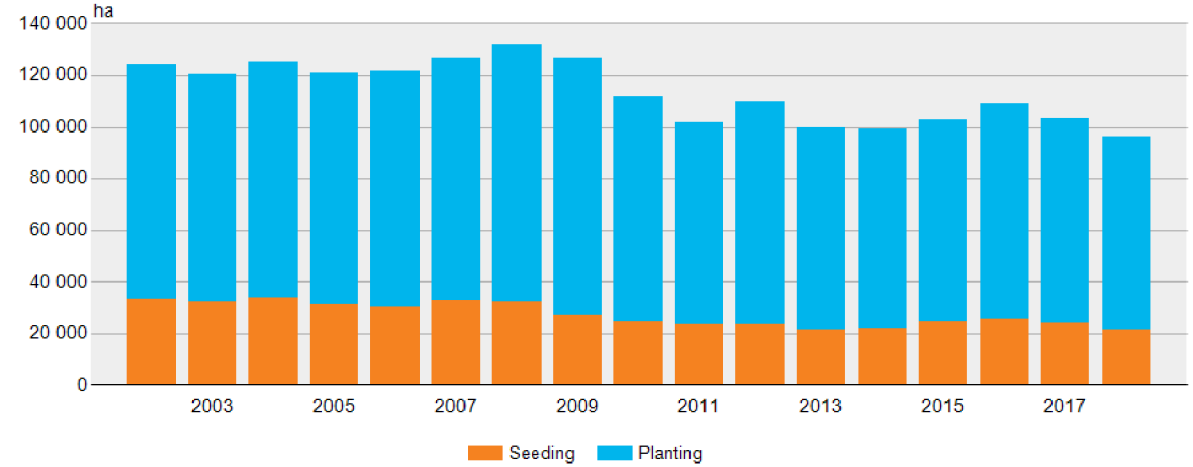
In 2018, investments in early and later pre-commercial thinning totalled 56 million, while improvement of young stands required EUR 24 million. The total area of early and later pre-commercial thinning was 136,000 hectares, and the work was undertaken almost exclusively manually. The area treated with early and later pre-commercial thinning decreased by 7% from the year before, while the area with improvement of young stands increased by 13% to 49,000 hectares.

The area treated with forest fertilisation increased

The area treated with forest fertilisation totalled 61,000 hectares. Fertilisation for growth accounted for three-quarters of this area, and remedial fertilisation for the rest. The purpose of the latter is to improve the balance of soil nutrient levels. The area treated with fertilisation increased by 22% from the previous year. The total cost of fertilisation was EUR 20 million.

The area of artificial regeneration, 2002-2018

Background data as a table

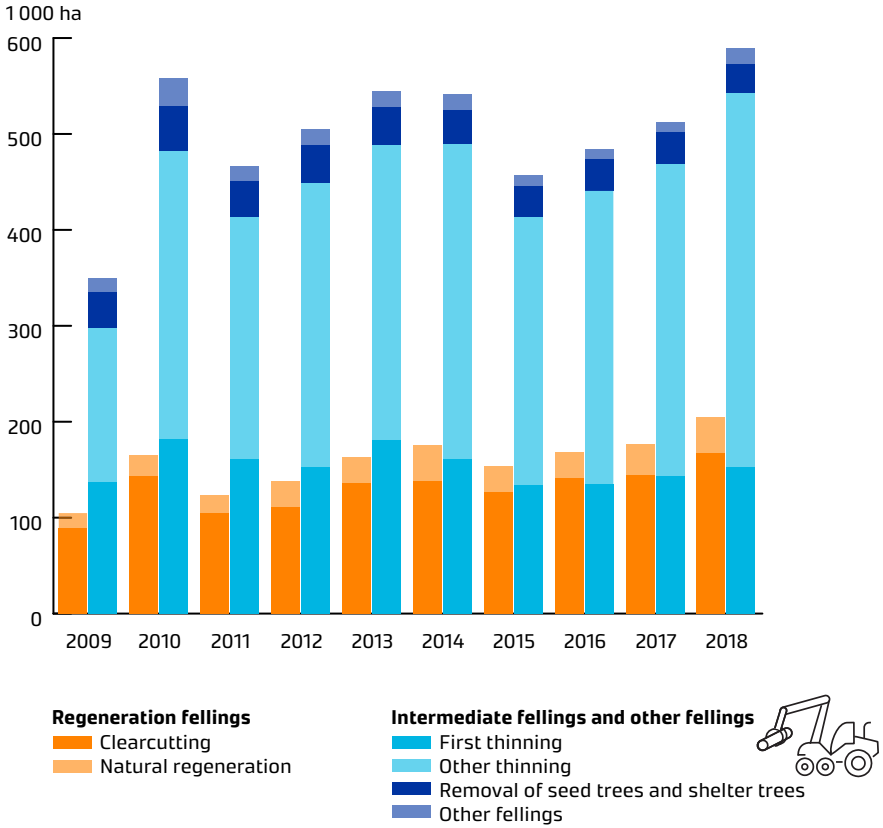


Total cost of forest improvement works was EUR 22 million

Forest improvement works include ditch network maintenance, construction and basic improvement of forest roads and planning of forest improvement work. More than half the total costs was spent on the basic improvement of forest roads and a third on ditch network maintenance.

Area treated with fellings, based on notifications of forest use, 2009–2018

Background data as a table



The area treated with fellings was nearly 800,000 hectares

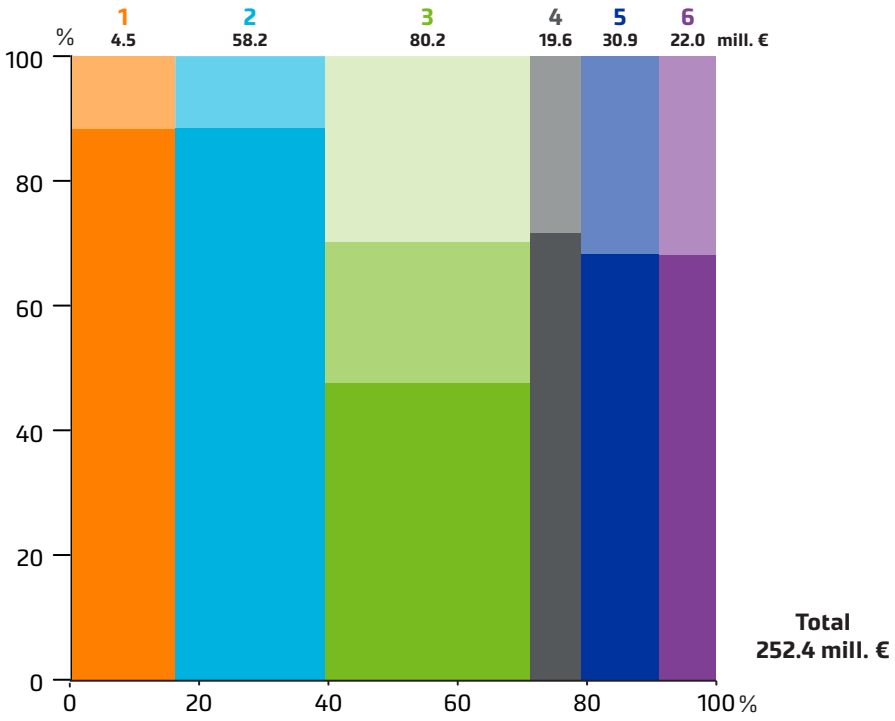
On the basis of notifications of forest use, the area treated with felling was estimated at 794,000 hectares. The data for the area treated with fellings are based on notifications of forest use, which forest owners must submit before the start of the planned felling. The notification is valid for three years from the date of lodging, so the felling notified may not be carried out during the same year as reported in the statistics. Furthermore, the notification does not obligate the forest owner to perform the planned felling.

Felling aimed at the thinning or removal of seed trees and shelterwood trees accounted for 72% of the total area of the planned felling. Clearcutting accounted for just over a fifth, and natural regeneration for five per cent.

Background to the statistics

The statistics of silvicultural and forest improvement work 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, as this is not recorded in the statistics from the data collected from forest service providers.

Total costs of silvicultural and forest improvement work, 2018



Volume and costs of silvicultural works in 2018

	Volume, 1,000 ha	Unit cost, EUR/ha	Total cost, EUR million
Clearing of regeneration areas	32	153	4.8
Initial clearing of intermediate felling areas	73	288	21.1
Soil preparation	105	346	36.6
Seeding	22	314	6.7
Planting	75	713	51.5
Early and later pre-commercial thinnings	136	415	56.3
Improvement of young stands	49	509	23.9
Fertilisation	61	320	19.6
Repelling root-rot disease	138	71	9.8
Forest improvement work	.	.	22.0

The statistical survey included 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.

▶ Silvicultural and forest improvement work

Wood trade

The peak of the economic trend for the forest sector and the increase in the domestic capacity of the forest industries increased the demand for industrial roundwood in 2018. The recorded wood trade grew by a fifth from the previous year, as the purchases of both logs and pulpwood increased to an exceptionally high level. Compared with the previous year, real prices of roundwood increased by six per cent in standing sales and by two per cent in delivery sales.

Energywood trade was also active, and purchases of raw materials for forest chips increased by a fifth from the previous year. The real average price of energywood increased by two per cent in standing sales and fell by three per cent in delivery sales.

Wood trade peaked in 2018

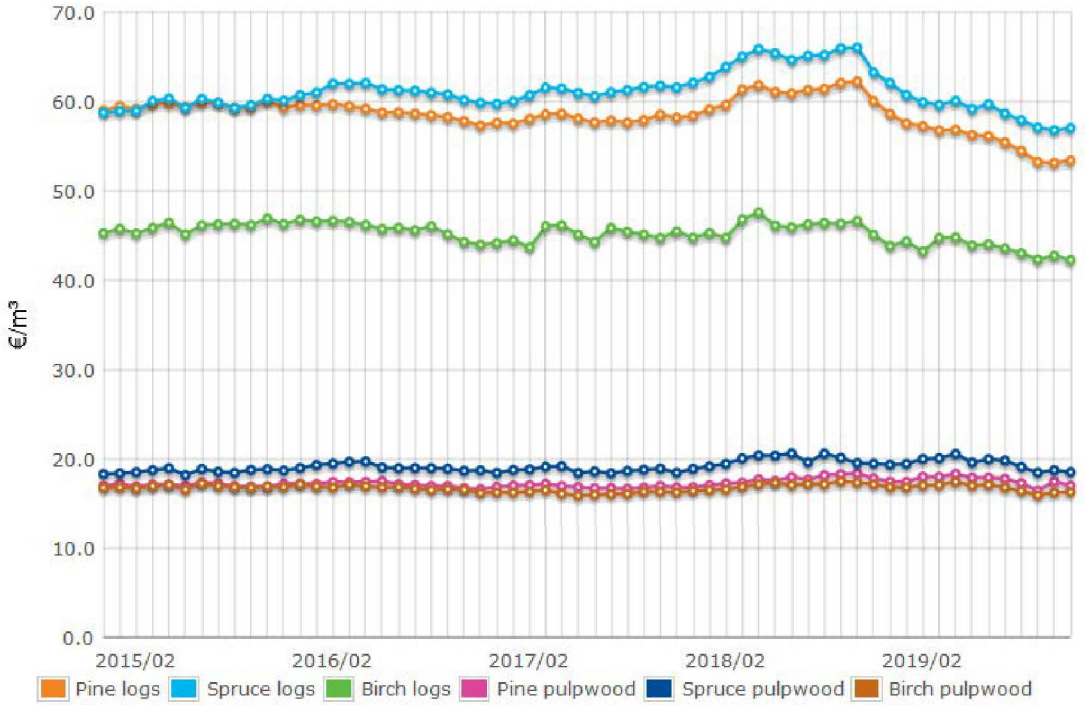
Increased demand for wood in the forest industries heated the wood market in 2018. The wood price level increased steadily during the first half of the year and remained high towards the end of the year.

The prices of pine and spruce logs already started to differentiate in 2016, and the difference in their average prices for the whole country increased to EUR 3.7 in 2018. Pine logs fetched an average of EUR 60.5, and spruce logs EUR 64.3 per cubic metre in standing sales in non-industrial private forests. The average price for pine pulpwood was EUR 17.6 per cubic metre, while spruce pulpwood fetched EUR 19.6, and birch pulpwood EUR 16.8. Real prices of logs increased by six per cent from the previous year and by five per cent in the case of pulpwood.

The economic downturn and the decrease in production volumes have led to a fall in wood prices since 2018. Prices of softwood logs in standing sales have decreased most.

Real monthly stumpage prices of roundwood from non-industrial private forests, 2014–2019 (deflated using wholesale price index)

▶ Backgroud data as nominal prices



Price of industrial roundwood from non-industrial private forests in standing sales and delivery sales in 2018

Product	Standing sales			Delivery sales		
	Average price	Increase/decrease in real terms, %		Average price	Increase/decrease in real terms, %	
	EUR/m³	compared with the previous year	on the average of the previous 10 years	EUR/m³	compared with the previous year	on the average of the previous 10 years
Pine logs	60.5	5.2	1.5	61.1	1.0	-2.8
Spruce logs	64.3	6.3	5.9	62.8	1.2	0.9
Birch logs	45.9	2.7	-0.8	50.1	-0.3	-2.9
Pine pulpwood	17.6	5.2	1.2	30.1	3.7	-6.7
Spruce pulpwood	19.6	5.5	-3.8	32.6	3.6	-4.6
Birch pulpwood	16.8	4.9	-0.7	30.8	5.1	-6.4

Percentages of different felling methods of the volume of roundwood sold by standing sales in 2018

Product	Standing sales	
	Percentage of total volume	
	Regeneration felling	Thinning and first thinning
Pine logs	80	20
Spruce logs	90	10
Birch logs	77	23
Pine pulpwood	42	58
Spruce pulpwood	68	31
Birch pulpwood	47	53

In Luke's statistics database, prices of wood are nominal, i.e. they are presented as values at the time under review. In this yearbook, however, price changes are considered in real terms, i.e. the effect of inflation on nominal prices has been eliminated by deflating them using the wholesale price index.

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 8-11 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 prices of softwood logs were EUR 6-7 lower in the three northernmost regions than in southern regions.

In delivery sales, the seller is responsible for harvesting the wood

In standing sales, the buyer is responsible for felling and transporting the wood to a roadside storage area. The roadside prices of wood sold in delivery sales are on average higher than the prices in standing sales, as 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 is largest for pulpwood, but for logs, the average prices can be quite close to each other.

In 2018, the average price recorded for pine logs in delivery sales was just under one euro higher than in standing sales, but the roadside price for spruce logs was more than one euro lower. The roadside price for pulpwood was on average EUR 13-14 higher than the price for pulpwood sold in standing sales. When examining these figures, it should be noted that many factors affect the prices of wood, and that the share of the more expensive wood harvested by means of regeneration felling is significantly smaller in delivery sales than in standings sales.

Roundwood trade statistics are based on the wood 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, for example. Potential additional pricing components or

forest services are not included in the roundwood price statistics. Some companies engaged in wood trade also offer the stem pricing alternative. However, statistics are currently only compiled for log, pulpwood and small-diameter log prices.

The volume of wood trade grew by a fifth

The increased demand for wood has already also increased the volume of wood purchased from non-industrial private forests for a few years, but wood trade was exceptionally active in 2018. As many as 51.5 million cubic metres, or 19% more than in the year before, were recorded for the purchases of industrial roundwood.

Half the purchased industrial roundwood was pulpwood. Of the different types of wood, pine pulpwood and spruce logs were traded most, at 13-14 million cubic metres each.

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

The wood volumes recorded in the statistics only represent the wood trade reported by companies included in the statistics, and wood trade figures are not extrapolated to account for the non-industrial private wood trade in Finland as a whole. Data for wood trade statistics is collected from large and medium-sized forest industry companies, as well as from forest management associations. It is estimated that the statistics 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.

Photo: Erkki Oksanen / Luke

After felling, purchased wood is also reported in the commercial roundwood removal statistics. In 2018, a total of 57.8 million cubic metres of commercial roundwood was felled from non-industrial private forests. According to the wood trade statistics, 89% of this volume was purchased from non-industrial private forests in the same year. This difference results not only from the differing coverage between the wood trade and felling statistics, but from a delay between wood trade and felling events. This means that wood trade and felling can be recorded for different years. In addition, the volume of trees marked for cutting is typically underestimated in wood trade agreements.

Most roundwood is sold by standing sales

Standing sales accounted for 87% (44.8 million cubic metres) of non-industrial private wood trade. Around two-thirds of wood sold by standing sales originated in regeneration felling. Thinning accounted for 29% and first thinning stands for 4%.

Delivery sales accounted for 6.3 million cubic metres. These concerned mostly pulpwood. Of all wood sold in delivery sales in 2018, pulpwood accounted for 71%, and more than half of this was pine.

▶ Industrial roundwood trade

Energywood prices increased

In 2018, an average of EUR 3.8 per cubic metre was paid to forest owners in standing sales of energywood purchased for making forest chips to fuel heat and power plants, and EUR 20.9 per cubic metre in delivery sales. Compared with the previous year, the price in standing sales rose by two per cent in real terms, and in delivery sales, the price decreased by three per cent.

The average price paid for logging residue was EUR 3.7 per cubic metre in standing sales and EUR 15.4 per cubic

metre in delivery sales.Compared with the previous year, the price increased by nine per cent in standing sales and decreased by three per cent in delivery sales in real terms.

The average price for pruned stems was EUR 4.5 per cubic metre in standing sales and EUR 24.1 per cubic metre in delivery sales. Compared with the previous year, the price decreased by four per cent in standing sales and by one per cent 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. 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. In 2018, subsidies paid for eligible sites totalled EUR 430 per hectare. 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.

Energywood trade picked up

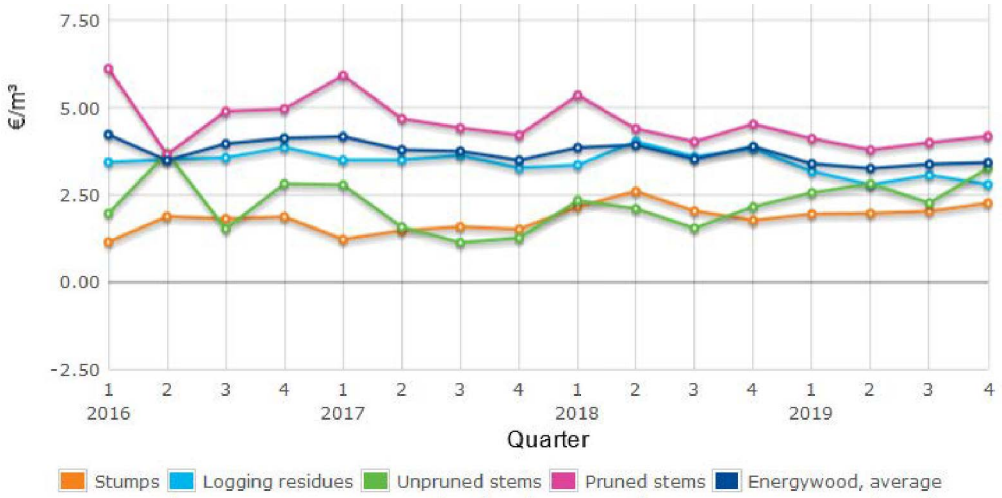
Wood-procuring organisations participating in the data collection purchased a total of 4.3 million cubic metres of energywood from non-industrial private forests in 2018. This figure is a fifth higher than in the previous year and the highest since the compilation of statistics started in 2014. It also accounted for three-fifths of the volume of corresponding assortments consumed by heat and power plants in the same year.

Price of energywood in standing sales and delivery sales in 2018

	Standing sales EUR/m³	Increase/decrease compared with the previous year in real terms, %	**Delivery sales** EUR/m³	Increase/decrease compared with the previous year in real terms, %
Average	3.8	2	20.9	-3
Logging residue	3.7	9	15.4	-3
Pruned stems	4.5	-4	24.1	-1
Unpruned stems	2.0	29	20.3	1
Stumps	2.2	56	11.1	-8

Real prices of energywood in standing sales by quarters, 2015-2019 (deflated using the wholesale price index)

▶ Backgroud data as nominal prices



Half of all energywood purchased in 2018 was logging residues, and 37% were pruned stems, while unpruned stems accounted for only 9% and stumps 4%. 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 three-fifths of standing sales, and pruned stems accounted for more than half of delivery sales.

▶ Energywood trade

Removals and drain

As a result of an increase in production and export volumes in the forest industries, industrial roundwood felling reached a new record of 69 million cubic metres in 2018. Nearly nine million cubic metres of roundwood was also harvested for energy production, which means that the total volume of harvested roundwood amounted to 78 million cubic metres.

This accounts for 93% of the total sustainable roundwood felling potential in Finland according to Luke's estimates. The total removal of roundwood was nearly 94 million cubic metres, around 14 million cubic metres less than the annual increment of growing stock.

Roundwood felling continued to increase in 2018

Industrial roundwood felling increased by six million cubic metres, or nine per cent, compared with the previous year. The volume was 27% higher than the average for the preceding ten-year period.

In 2018, felling of sawlogs totalled 29.4 million cubic metres, while felling of pulpwood amounted to 39.5 million cubic metres. The volume of logs increased by 8%, and the volume of pulpwood by 11% from the previous year. Compared to the previous ten years, log removals grew by 28%, while pulpwood removals increased by 26%. Spruce accounted for the majority of log removals (15.6 million cubic metres), and pine for the majority of pulpwood removals (18.2 million cubic metres).

Roundwood is also imported for industrial use. In 2018, the volume of imported industrial roundwood increased by a third from the previous year to 11.1 million cubic metres.

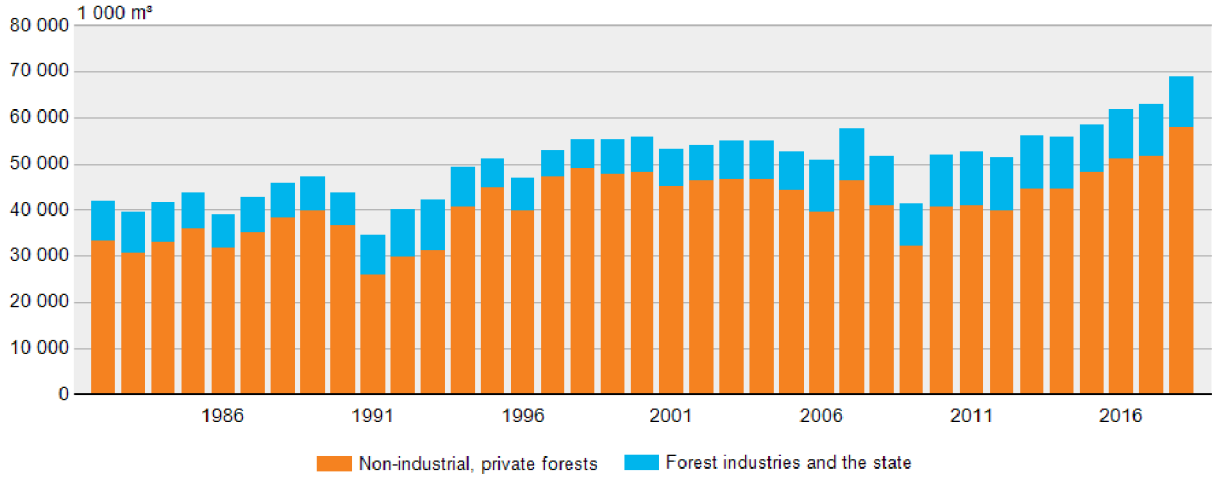
Four-fifths of industrial roundwood originated in non-industrial private forests

A total of 57.8 million cubic metres of industrial roundwood was sourced from non-industrial private forests. This accounts for 84% of the total volume of industrial roundwood removals. A total of 49.1 million cubic metres of timber, 11% more than in 2017, accumulated from standing sales in non-industrial private forests, while the volume of delivery sales increased by 15% to 8.7 million cubic metres.

The total volume of roundwood removed for the industrial sector from forestry companies' own forests and state-owned forests amounted to 11.1 million cubic metres. The figure shrank by two per cent compared with the previous year.

Industrial roundwood removals by ownership category 1982–2018

Background data as a table



Highest felling volumes in Savo and Central Finland

In 2018, the highest industrial roundwood felling volumes were reported in the regions of South and North Savo, and Central Finland. The quantity of industrial roundwood felled in South Savo totalled 7.6 million cubic metres, 7.0 in North Savo, and 6.7 in Central Finland.

Total removals increased to 78 million cubic metres

In addition to roundwood sold to the forest industry and to the export market, the total felling volume also accounts for wood harvested by forest owners from their forests for their private use. It also includes all roundwood harvested for energy production

Total removals in 2018, million cubic metres

Total removals	**78.2**
Roundwood, of which	**69.2**
- forest industry and exports	68.9
- wood sawn for household consumption	0.3
Energywood, of which	**8.9**
- fuelwood for small-scale housing	6.5
- forest chips for heat and power plants	2.5

The majority of the felling volume (68.9 million cubic metres or 88% in total) comprised logs and pulpwood harvested for raw material for forest industry products or export. A total of 8.9 million cubic metres of roundwood was also harvested for energy production. Of this amount, nearly three-quarters were used as fuelwood in small-scale housing, and just over a quarter as forest chips in heat and power plants.

Photo: Erkki Oksanen / Luke

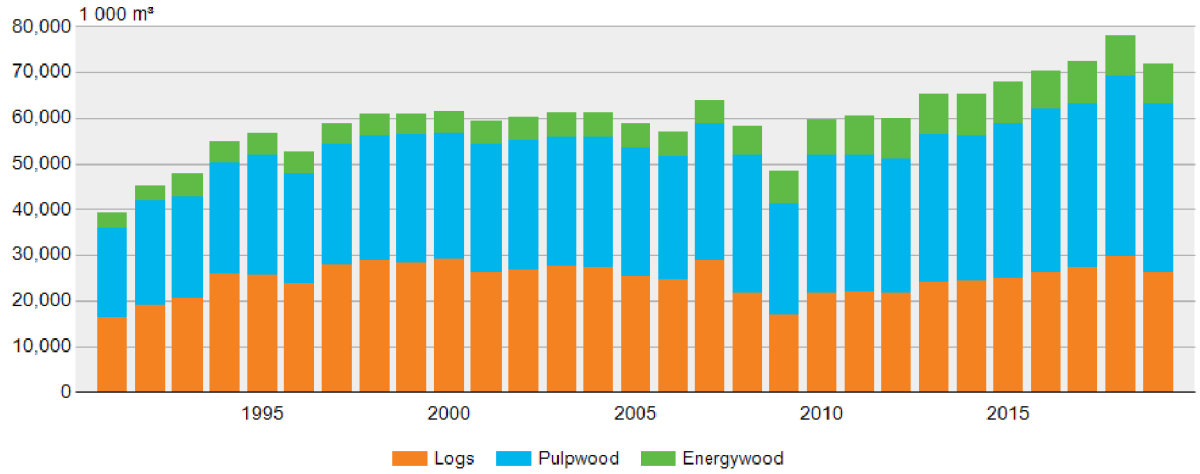
In 2018, the total felling volume was eight per cent higher than in the previous year – the highest on record. Compared with the average of the preceding ten-year period, the amount increased by nearly a quarter, by approximately 15 million cubic metres.

Logging residue and stumps were also utilised as forest chips

In addition to roundwood, 2.3 million cubic metres of logging residue and stumps were also harvested from forests for use as forest chips in heat and power plants. However, this volume is not included in the total felling volume, which only covers roundwood removals.

Total roundwood removals by roundwood assortment, 1991–2018

▶ Background data as a table



The total drain was almost 94 million cubic metres

In addition to roundwood removals, total drain includes the roundwood left in the forests in connection with felling and the unused natural deadwood. In 2018, removal waste and natural drain totalled nearly 16 million cubic metres, meaning that the total drain increased to almost 94 million cubic metres. Most of this wood was pine (40%). Spruce accounted for 34% and deciduous trees for 26%.

The total drain was seven per cent higher than in the previous year. In addition, it was 23% higher than the average for the preceding ten-year period.

The total volume of growing stock in forests increases when growth exceeds drain. According to the latest surveys, the annual growth is approximately 108 cubic metres. In 2018, the growth of forests exceeded total drain from removals and natural drain by 14 million cubic metres. The growth of Finnish forests has exceeded total drain every year since 1970, which means that the volume of wood has grown continuously.

Felling potential

According to an estimate made by Luke in the autumn of 2018, the maximum sustained yield of Finnish forests during the current ten-year period (from 2015 to 2024) is approximately 84 million cubic metres of roundwood per year. Of this, industrial roundwood (logs and pulpwood) accounts for 76.9 million cubic metres, while roundwood for energy production (including fuelwood for household use) accounts for 7.1 million cubic metres. Approximately 16 million cubic metres of roundwood logging residue and stumps can also be harvested for energy production each year.

In 2015–2018, total removals of roundwood amounted to an average of 72 million cubic metres per year, which means that 86% of the maximum sustained yield was utilised. Removals of roundwood in 2018 increased to 78 million cubic metres, which means that the use rate of the maximum sustained yield increased to 93% (100% for small-diameter trees and 83% for logs). Further information is available from the statistics home page.

Further information is available from the statistics home page

▶ Industrial roundwood removals and labour force

▶ Industrial roundwood removals by region

▶ Harvesting and long-distance transportation of roundwood

▶ Total roundwood removals and drain

▶ Regional felling possibilities

Stumpage earnings

Record felling and the rise in stumpage prices increased gross stumpage earnings in 2018. Earnings increased to EUR 2.7 billion, an increase of 14% on the previous year. This increase was particularly attributable to the increase in the share of standing sales in non-industrial private forests, which accounted for significantly more than 70% of total earnings.

Logs made up 70% of earnings, and the most important tree species was spruce. The increase in stumpage earnings continued for the sixth year, and they were the biggest since the peak year of 2007 by a significant margin.

Gross stumpage earnings totalled nearly EUR 2.7 billion

Forest owners' gross stumpage earnings amounted to EUR 2.69 billion in 2018. The increase in euros was more than EUR 430 million from the previous year. The earnings of private non-industrial forest owners totalled EUR 2.33 billion, 87% of the total earnings. The stumpage gross earnings of the forest industry and the state totalled EUR 333 million.

Stumpage earnings were highest in South Savo (EUR 329 million), Central Finland (EUR 267 billion) and North Savo (EUR 264 million).

Photo: Erkki Oksanen / Luke

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 and parishes.

The share of earnings from standing sales has increased in good years

In real terms, gross stumpage earnings increased by 14% from the previous year, when deflated using the wholesale price index. Compared with the preceding ten-year period, earnings increased by 31%. This proportion was 37% in non-industrial private forests, but in the case of forests owned by forest industry companies or the state, earnings decreased by two per cent.

In 2018, the share of standing sales in non-industrial private forests of total gross stumpage earnings increased for the fourth year and was more than 72%. The share was the highest since 2002, when the compilation of the statistics started. During the preceding ten-year period, the

share of standing sales was on average 67% of total earnings, while in the peak year of 2007, it increased to 70%.

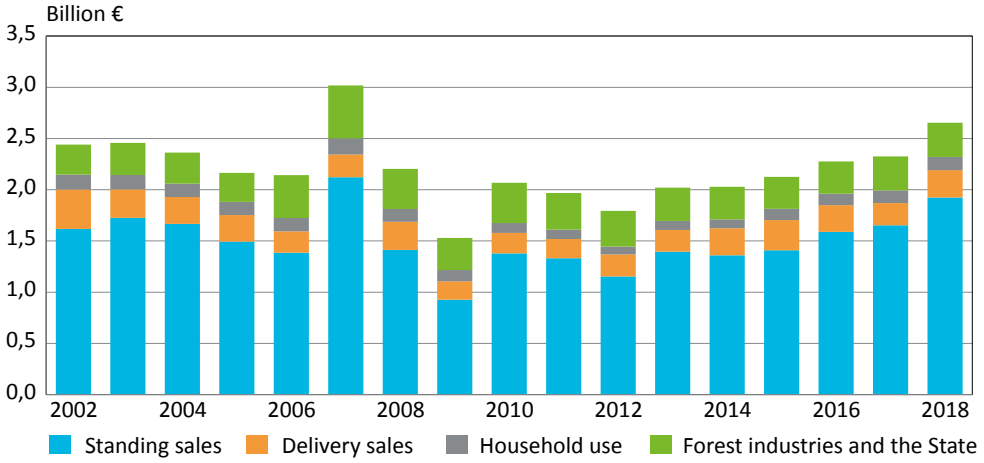
The share of logs remained at 69%, and spruce maintained its position as the most important tree species, with 46%. In Ostrobothnia and Northern Finland, where most forests owned by the forest industry and the state are located, pine was the most important tree species.

- Stumpage earnings
- Gross stumpage earnings by ownership category and by region 2018
- Gross stumpage earnings by ownership category 2002-2018

Stumpage earnings grew significantly, but 2007 retained first place in stumpage earnings.

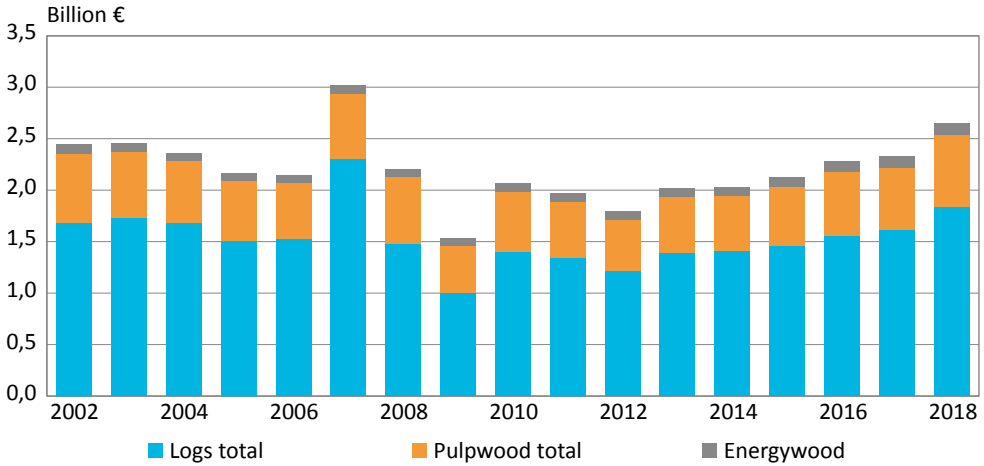
Real gross stumpage earnings by source 2002–2018 (deflated using wholesale price index)

Backgroud data as nominal prices



Real gross stumpage earnings by roundwood assortment 2002–2018 (deflated using wholesale price index)

Backgroud data as nominal prices



Profitability of non-industrial private forestry

Record felling volumes and the increase in stumpage prices drove the operating profit in non-industrial private forestry to EUR 157 per hectare in 2018. The increased stumpage prices were the biggest factor behind the increase in the investment return from wood production to 13%, more than ten percentage points higher than the average for the preceding ten-year period.

The operating profit in non-industrial private forestry increased to EUR 157 per hectare on forest land available for wood production. In real terms, it improved by more than a fifth compared with the previous year and was nearly double the average for the preceding ten-year period, when deflated using the cost-of-living index. In euros, the operating profit was higher than in the peak year of 2007, but when inflation was factored in, the operating profit was seven per cent lower.

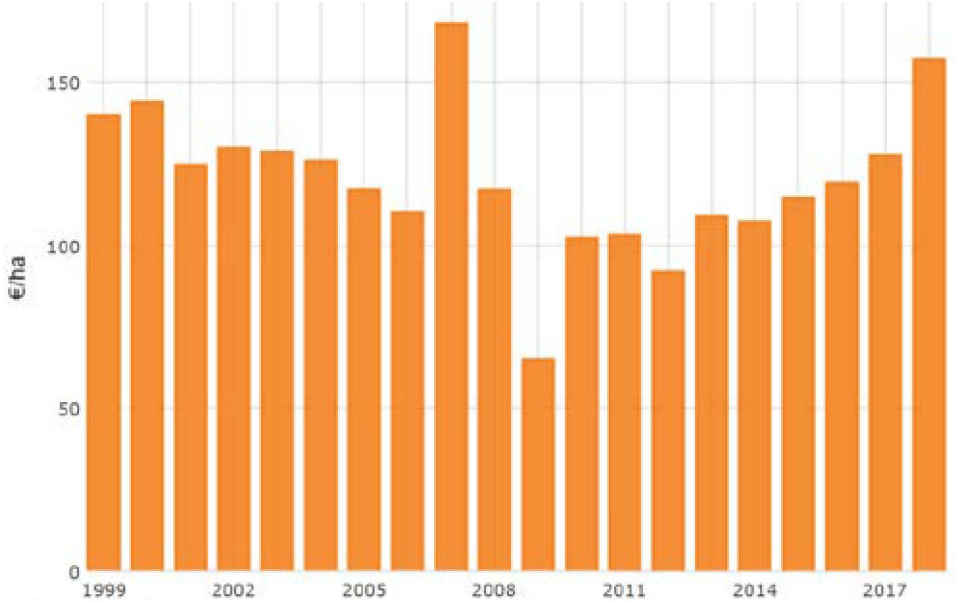
In Southern Finland, the operating profit exceeded EUR 200 per hectare

In Southern Finland, the operating profit was EUR 202 per hectare, a fifth more than in the previous year. In Northern Finland (Northern Ostrobothnia, Kainuu and Lapland), the operating profit improved by a quarter to EUR 63 per hectare. The operating profit per hectare increased to close to EUR 300 in the Päijät-Häme and Kanta-Häme regions. In Lapland, where growing conditions are significantly worse than in Southern Finland, the operating profit remained at EUR 37 per hectare.

In 2018, gross stumpage earnings from non-industrial private forestry amounted to EUR 2.36 billion, or EUR 175 per hectare. The total costs of non-industrial private wood production increased by one euro to EUR 22 per hectare and totalled EUR 294 million, 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. State subsidies for wood production decreased to EUR 49 million, less than four euros per hectare.

Real gross stumpage earnings by roundwood assortment, 1999–2018 (deflated using the wholesale price index)

▶ Backgroud data as nominal prices



- Operating profit in non-industrial private forestry
- Operating profit in non-industrial private forestry by region 2015-2018
- Operating profit in non-industrial private forestry 1991-2018

Investment return on wood production was 13%

In real terms, the investment return on wood production increased to 13% in 2018. The return was twice that compared with the previous year and was more than ten percentage points higher than the average for the preceding ten-year period, when the decrease in real stumpage prices also decreased the returns.

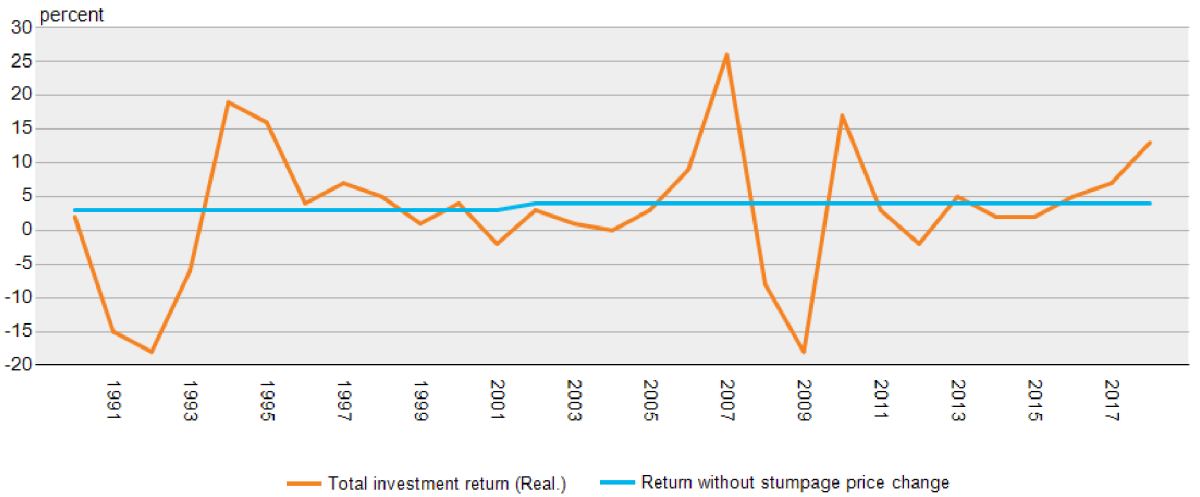
In Luke's calculations, the return has been divided into five factors. The impact of the increase in stumpage prices on the investments returns on wood production was 8.8 percentage points in 2018, when the stumpage prices for pulpwood also increased significantly for the first time in years. Earnings from wood sales increased returns by 4.4 percentage points, while the value of the net increment increased returns by 0.2, and state subsidies by 0.1 percentage points. Wood production costs decreased total returns 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 2017, the value of non-industrial private forests, calculated using the above method, totalled EUR 45.5 billion, and in 2018, it increased to EUR 50.0 billion.

- Forestry as an investment
- Investment return in wood production by region 2012-2018
- Investment return in wood production 1990-2018

Investment return in wood production 1990-2018

- Background data as a table



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

Wood consumption

Roundwood consumption in Finland amounted to 84.4 million solid cubic metres in 2018. This is a new record and five per cent more than in the previous year. The majority of roundwood (87%) was consumed by the forest industries, and the remaining 13% was burnt in energy generation in heat and power plants and small-scale housing. In addition, 25.9 million cubic metres of forest industry by-products and wood residues were used for various purposes.

Most of the roundwood (73.6 million cubic metres) was used to manufacture forest industry products. The consumption increased by six per cent, or nearly four million cubic metres, from the previous year, and was the fourth highest of all time. Forest industries' roundwood consumption peaked in 2006, when it amounted to 75.5 million cubic metres.

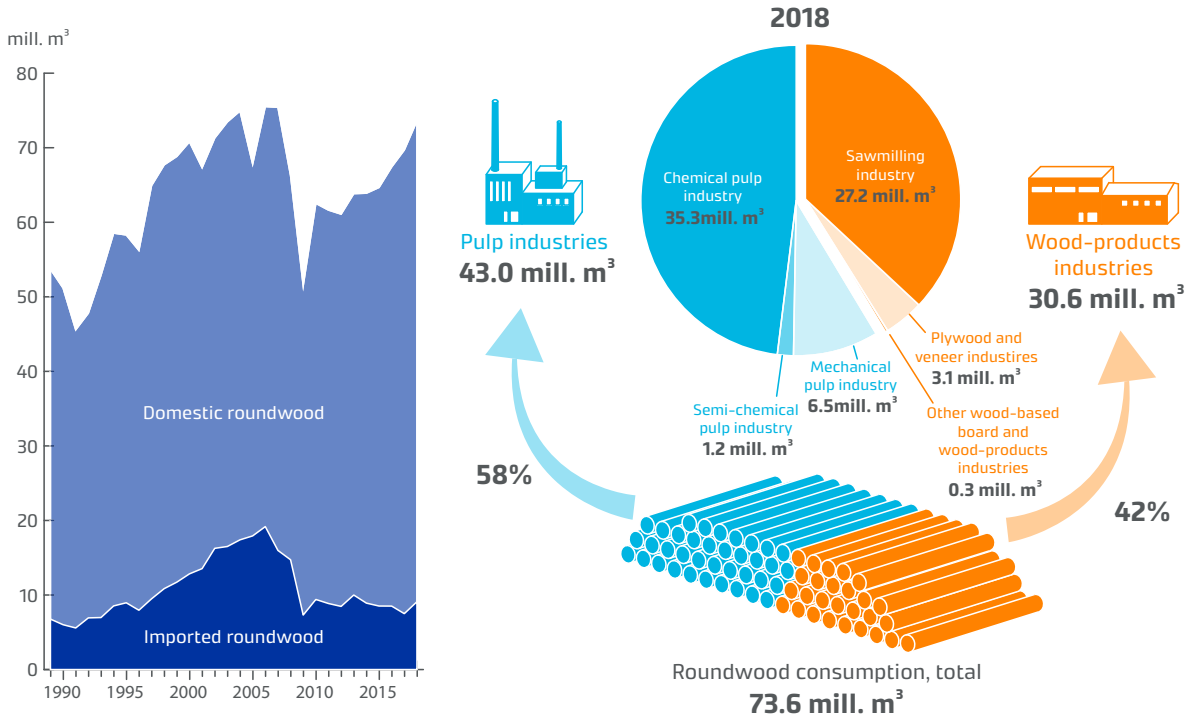
Record year in the consumption of domestic roundwood

The forest industries processed a total of 64.5 million cubic metres of domestic roundwood. This amount was four per cent higher than in 2017 and more than ever before. The consumption of imported roundwood also turned into an increase after four years of a decrease. In 2018, the forest industries' consumption of imported roundwood totalled 9.1 million cubic metres, an increase of more than a fifth from the year before. In the record year of 2006, more than twice as much (19.2 million cubic metres) imported roundwood was used. Imported roundwood then accounted for a quarter of the total consumption of industrial roundwood, while in 2018, its share was 12%.

Chemical pulp industry the largest user of roundwood

The consumption of roundwood increased from 2017 in all assortments and in all forest industry branches apart from the semi-chemical pulp industry and other wood-

Forest industries' roundwood consumption, 1989—2018



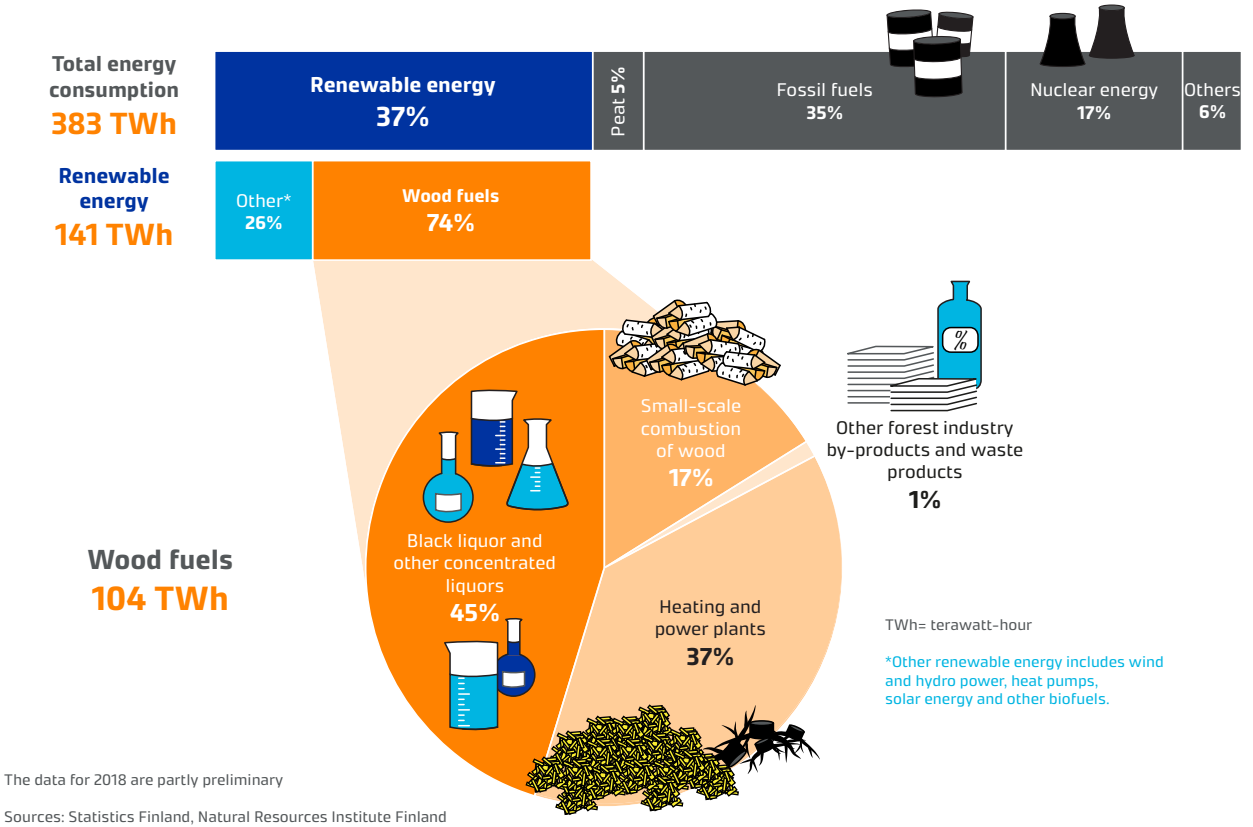
products industries. The chemical pulp industry processed the highest amount of roundwood, 35.3 million cubic metres in total. This was nine per cent more than in the year before, and the highest amount recorded in the industry so far. Consumption by the sawmilling industry increased by three per cent to 27.2 million cubic metres.

The most important roundwood assortments used were pine pulpwood (19.2 million cubic metres) and spruce logs (14.6 million cubic metres). The consumption of pine pulpwood increased from the previous year by two million cubic metres to the highest record by now. Consumption of sawmill chips and sawdust produced by the forest industries in the manufacture of forest industry products totalled 9.7 million cubic metres.

Wood consumption in energy generation continues to increase

In 2018, wood fuels represented the most important energy source in Finland, accounting for 27% of total energy consumption. According to Statistics Finland's preliminary data, a total of 104 terawatt-hours (TWh) of wood fuels was consumed. This is a new record, and three per cent more than in the previous year. This increase resulted from the increased use of black liquor produced by the forest industries, which grew by nine per cent to 47 TWh. The consumption of solid wood fuels in heating and power plants (39 TWh), as well as the small-scale combustion of wood (17 TWh) and other wood fuels (1 TWh), remained almost at the previous year's level.

Comsumption of wood fuels, 2018



The data for 2018 are partly preliminary

Sources: Statistics Finland, Natural Resources Institute Finland

No changes in solid wood fuels

In 2018, the consumption of solid wood fuels in Finland totalled 27.0 million solid cubic metres, the same as a year earlier. Of this amount, heating and power plants consumed 20.1 million cubic metres, and small-scale housing 6.9 million cubic metres.

The use of roundwood in energy production totalled 10.8 million cubic metres. Of this amount, 4.3 million cubic metres consisted of forest chips manufactured from stemwood and burnt at heating and power plants, and 6.5 million cubic metres which were used as fuelwood in small-scale housing. Of the roundwood consumed in small-scale housing, smallwood accounted for two-thirds, logwood for a sixth, and forest chips for a tenth.

A total of 16.2 million cubic metres of forest industry by-products and wood residues was used. Heating and power plants used 3.1 million cubic metres of different types of forest residues (i.e. logging residues and stumps), and 12.6 million cubic metres of forest industry by-products and wood residues (industrial chips, sawdust, bark, including also pellets and briquettes, and recycled wood). Small-scale housing burnt a total of 0.4 million cubic metres of fuelwood from wood residues from sawmills and construction as well as wood pellets.

Forest chip consumption is growing slightly

Consumption of forest chips in heating and power plants shifted to an increase in 2018, growing by three per cent from the previous year to 7.4 million cubic metres. The use of forest chips in combined heat and power production (CHP) increased by four per cent to 4.7 million cubic metres after a four-year decrease. In heat production (HP), their use increased by two per cent to 2.7 million cubic metres. With forest chips burnt in small-scale housing (0.6 million cubic metres), total consumption of forest chips reached 8.0 million cubic metres. Thus far, the consumption of forest chips was highest in 2013, when it amounted to 8.7 million cubic metres.

Photo: Erkki Oksanen / Luke

The majority of the forest chips used in heat and power plants, 3.9 million cubic metres, was manufactured from small-sized trees, i.e. from pruned and unpruned stems. A total of 2.7 million cubic metres of logging residues was burnt, while the figure for forest chips manufactured from stumps and large-sized timber unsuitable for industrial use was 0.4 million cubic metres each.

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

Forest industries

2018 was a peak year in the forest industries, which was also reflected in the key indicators for the sector. As a rule, both the production and export volumes of forest industry products increased. Finnish forest industries focus heavily on exports.

In real terms, the forest industries' domestic turnover increased by five per cent to EUR 32.7 billion in 2018, and profitability also improved. The financial position of the forest industries has also improved markedly in the 2010s, as the debt-to-turnover ratio has decreased to 55%.

Production volumes continued to grow

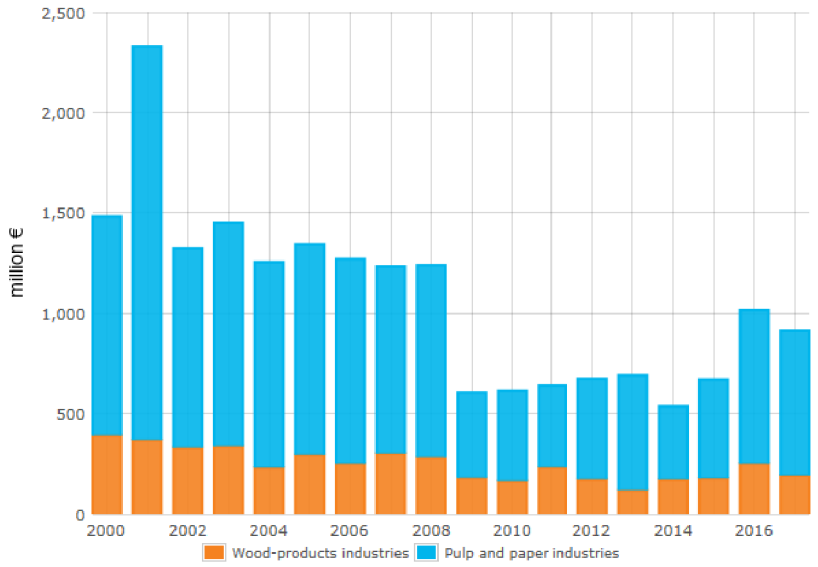
Forest industry production increased in both the wood products industries and the pulp and paper industries. Most Finnish forest industry products are exported, so the increase in production volumes requires a strong export performance.

In the wood products industries, production increased slightly from the previous year to 11.8 million cubic metres. Production of sawn goods has increased following the slump in 2008, although the production level preceding the slump has not been achieved. Production volumes of sawn spruce and pine goods are nearly equal, roughly 6 million cubic metres each.

Photo: Erkki Oksanen / Luke

Real investments of the forest industries in Finland, 2000–2017 (deflated using the wholesale price index)

▶ Backgroud data as nominal prices



Data concerning 2016–2017 is preliminary (July 2018).

Key indicators for the forest industry in 2018

	Unit	2018	Increase/decrease 2017, %	Increase/decrease, average in 2008-2017, %
Forest industry production				
Sawn softwood	million m^3	11.8	1	17
Pulp	million t	8.2	6	18
Paper	"	6.7	1	-16
Paperboard	"	3.8	5	29
Turnover of the forest industries*	EUR billion	32.7	5	26
Wood products industries	"	7.5	3	10
Pulp and paper industries	"	25.2	6	32
Profitability of the forest industries	Operating margin, %	8.6	+0.5 percentage points	+1.8 percentage points
Wood products industries	"	5.2	+0.3 percentage points	+1.7 percentage points
Pulp and paper industries	"	9.6	+0.6 percentage points	+1.6 percentage points
Forest sector labour force	1,000 persons	62.0	5	-8
Forestry	"	21.0	0	-10
Wood products industries	"	21.0	0	-14
Pulp and paper industries	"	20.0	18	1
Value added, forest sector*	EUR billion	9.1	4	13
Forestry	"	4.3	9	23
Wood products industries	"	1.4	0	6
Pulp and paper industries	"	3.4	1	6

*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.

With the exception of the slump years, plywood production has long remained in the range of 1.2 million cubic metres. The share of softwood plywood has settled to two-thirds of total plywood production.

Demand for wood pulp continued strongly in 2018, increasing the production of chemical and mechanical pulp to 11.7 million tonnes in 2018. Compared with the average of the previous ten years, the production volume of wood pulp increased by 11%. Production focused on chemical pulp, whose share of total wood pulp increased to 70%. The production volume of chemical pulp reached a new high in 2018. Unlike other forest industry products, wood pulp mainly goes to the domestic paper industry, not to the export market.

The long-term steady decline in paper production volume came to a halt in 2018, with the production volume increasing slightly to 6.7 million tonnes. For paperboard, the trend has been the opposite. Compared with the average for the preceding ten years, paperboard production has increased by nearly a third. Production of paperboard reached yet another record, at 3.8 million tonnes.

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 pulp and paperboard

Forest industries make the second biggest investments after the technology industry. After the recession in the early 2010s, forest industries' domestic investments are growing.

Investment data by industry for 2018 have yet to be published, so the data presented here relates to 2017. In 2017,

total investments in the sector amounted to EUR 0.9 billion, of which four-fifths were made in the pulp and paper industries.

In real terms, the value of the investment increased by 15% compared with the average for the previous ten years. This increase is mainly due to capacity increases in the pulp and paperboard industries. The investment rate of the forest industry (value of investments in relation to value added) was the same as the average for the manufacturing industry, at 20%.

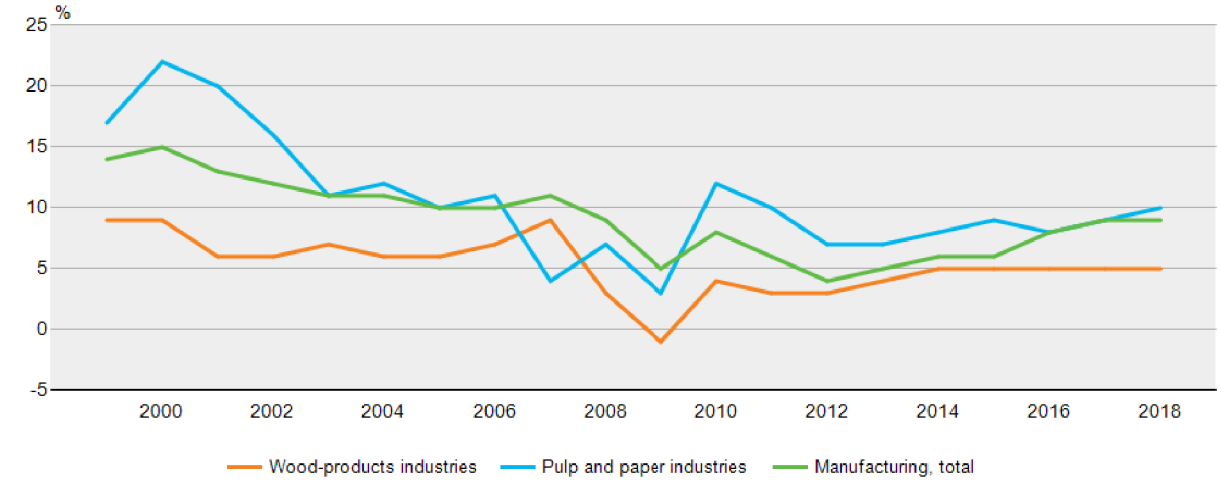
Profitability of forest industries improved

The domestic turnover of forest industries reached EUR 32.7 billion in 2018, showing an increase of five per cent from the previous year in real terms, and a quarter compared with the average for the preceding ten years. The forest industries represented 23% of the total turnover of all manufacturing industries. Within the industries, the pulp and paper industries' share of turnover increased to 77%.

In 2018, the forest industries improved their profitability, both in terms of operating margin and total results. The change concerned both the pulp and paper industries and the wood products industries. In 2018, the forest industries produced an operating margin of EUR 2.9 billion, accounting for 8.6% of the operating profit. Operating margin refers to earnings before interest, taxes, depreciation and amortisation. Measured by total results, the profitability of the forest industries improved by 0.4 percentage points, to 7.7% of the operating profit.

Profitability of the forest industries in Finland 1999-2018 (operating margin, % of operating income)

Background data as a table



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 ratio of total liabilities to turnover decreased to 55% in 2018. The corresponding figures were 32% in the wood products industries, and 61% in the pulp and paper industries. Other manufacturing industry had more debt than the forest industries, as the debt-to-turnover ratio for manufacturing industry as a whole was 80%.

The equity ratio in the forest industries was 58%. This figure represents the proportion of equity from capital committed to operations. Based on all these indicators, the financial position of the forest industries was better than in manufacturing industries on average.

Forest sector labour force increased

The forest sector labour force shifted to an increase in 2018 due to the recent boom. The forest sector employed a total of 62,000 persons, six per cent more than 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 im-

Photo: Erkki Oksanen / Luke

proved labour productivity and organisational changes in the forest sector, for example.

Although felling reached a record level in 2018, forestry labour force numbers were the same as a year earlier, at 21,000 persons. Of the forestry labour force, around 12,000 persons were wage earners and salaried employees, and the remaining 9,000 were self-employed.

The number of persons employed in the forest industries increased from the previous year by a tenth to 42,000. The wood products industries employed 21,000 persons, and the pulp and paper industries 20,000 persons. In 2018, the unemployment rate in the forest sector was 4.3%, 3.5% lower than in the previous year. In other industries, employment also improved. Data on employment in the forest sector 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 13 billion, accounting for 21% of Finland's goods exports in 2018. The total value of Finland's goods exports was EUR 64 billion. The volume of wood imports increased by a third from the previous year, reaching 11.6 million cubic metres.

The value of exported forest industry products increased by five per cent in real terms to EUR 13.2 billion from the previous year. The export value of wood-products industries amounted to EUR 2.9 billion, a decrease of five per cent in real terms from the previous year. The value of exports in the pulp and paper industries totalled EUR 10.3 billion, an increase of eight per cent from 2017 in real terms.

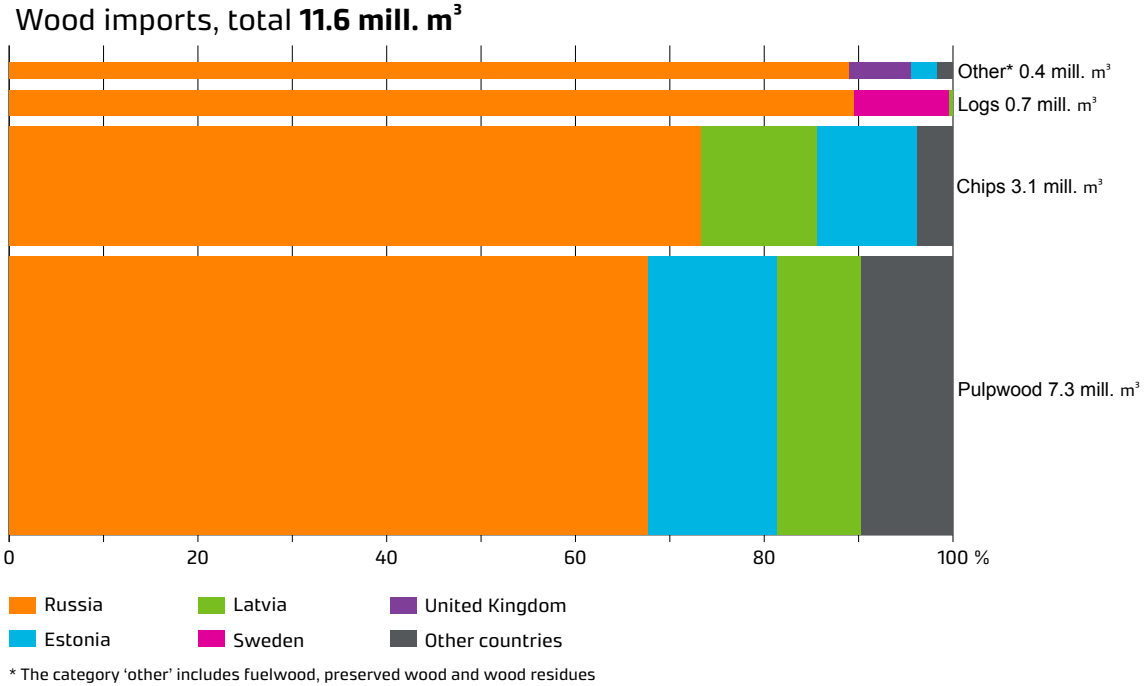
Paper was the most important export product

The pulp and paper industries accounted for 78% of the value of forest industry exports. The most important export articles for Finnish forest industries were paper (33% of the value of exported forest industry products), paperboard (22%) and pulp (20%). Fine paper and magazine paper accounted for more than 80% of the total value of paper exports. Bleached sulphate pulp accounted for 92% of the value of pulp exports. The export values of paper and paperboard increased by three per cent in real terms from the previous year. The value of pulp exports increased by up to 28%.

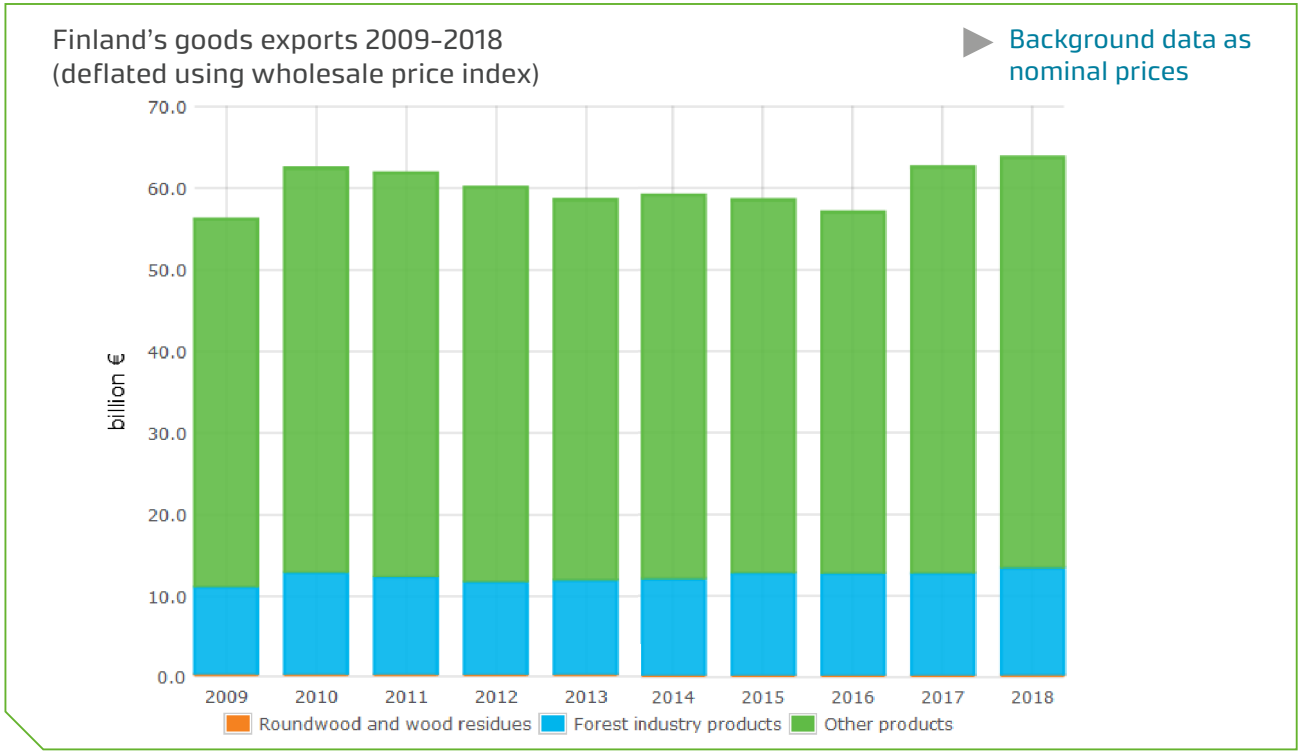
Germany is the most important trading partner

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, a tenth from China, and 7% from the United Kingdom. In terms of the value of exports, Germany and the United Kingdom were the biggest countries for paper exports, while three-quarters of exports to China concerned pulp used in the manufacture of paper products.

Wood imports by country, 2018



* The category 'other' includes fuelwood, preserved wood and wood residues



Forest industry exports in the most important product groups in 2018

		Increase/decrease in real terms, %		
	Value of export 2018 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	**63.7**	**1.9**	**7.8**	**4.1**
Forest industry products, of which	**13.2**	**5.0**	**7.5**	**8.2**
Paper	4.3	2.8	-7.9	-17.3
Paperboard	2.9	3.1	15.8	26.4
Pulp	2.6	27.6	41.3	67.5
Sawn goods	1.8	-3.4	8.0	22.9
Plywood	0.6	-5.5	0.0	4.3

Imports to Finland include paperboard, furniture and bleached sulphate pulp

The value of forest industry imports totalled EUR 1.6 billion. Finland's main trading partner was Sweden, which accounted for 17% of all imports. The second most important trading partners were Estonia and Brazil, each accounting for 15% of the import value.

Wood imports increased significantly

In 2018, Finland imported 11.6 million cubic metres of wood, a third more than in the previous year. Of all imported wood, 63% was pulpwood, and 27% was wood chips. Pulpwood was 68% birch. The remaining 10% comprised logs, fuelwood, preserved wood and wood residues. The value of wood imports totalled around half a billion euros.

Russia's share of wood imports decreased

In 2018, 71% of wood imports came from Russia. Previous year the share was 85%. Although Russia's share of wood imports decreased, it remained the most important country for imported wood. The next biggest countries for wood imports were Estonia (12%) and Latvia (5%).

Wood was exported especially to Sweden

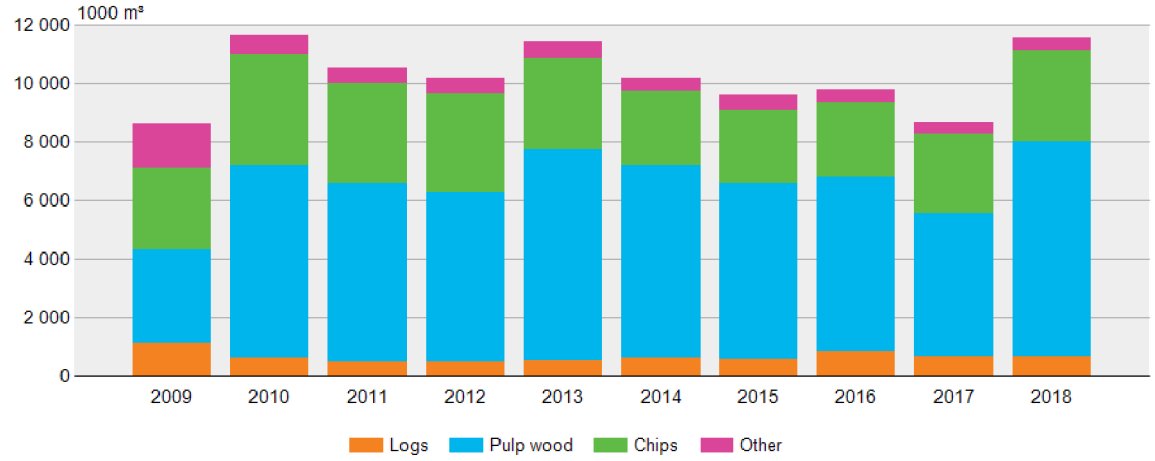
A total of 2.1 million cubic metres of wood was exported from Finland, nearly half more than in the previous year. Of total wood exports, 72% were exported to Sweden, while 6% were exported to Germany, and 5% to Poland. The total value of wood exports was EUR 130 million.

Exports by the forest industries 2009–2018
(deflated using wholesale price index)

Background data as nominal prices

Wood imports 2009–2018

Background data as a table



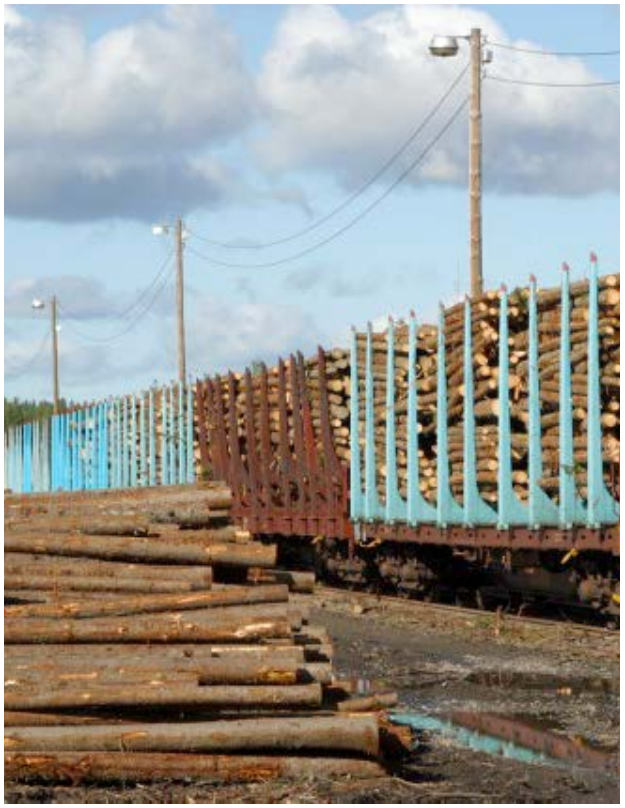


Photo: Erkki Oksanen / Luke

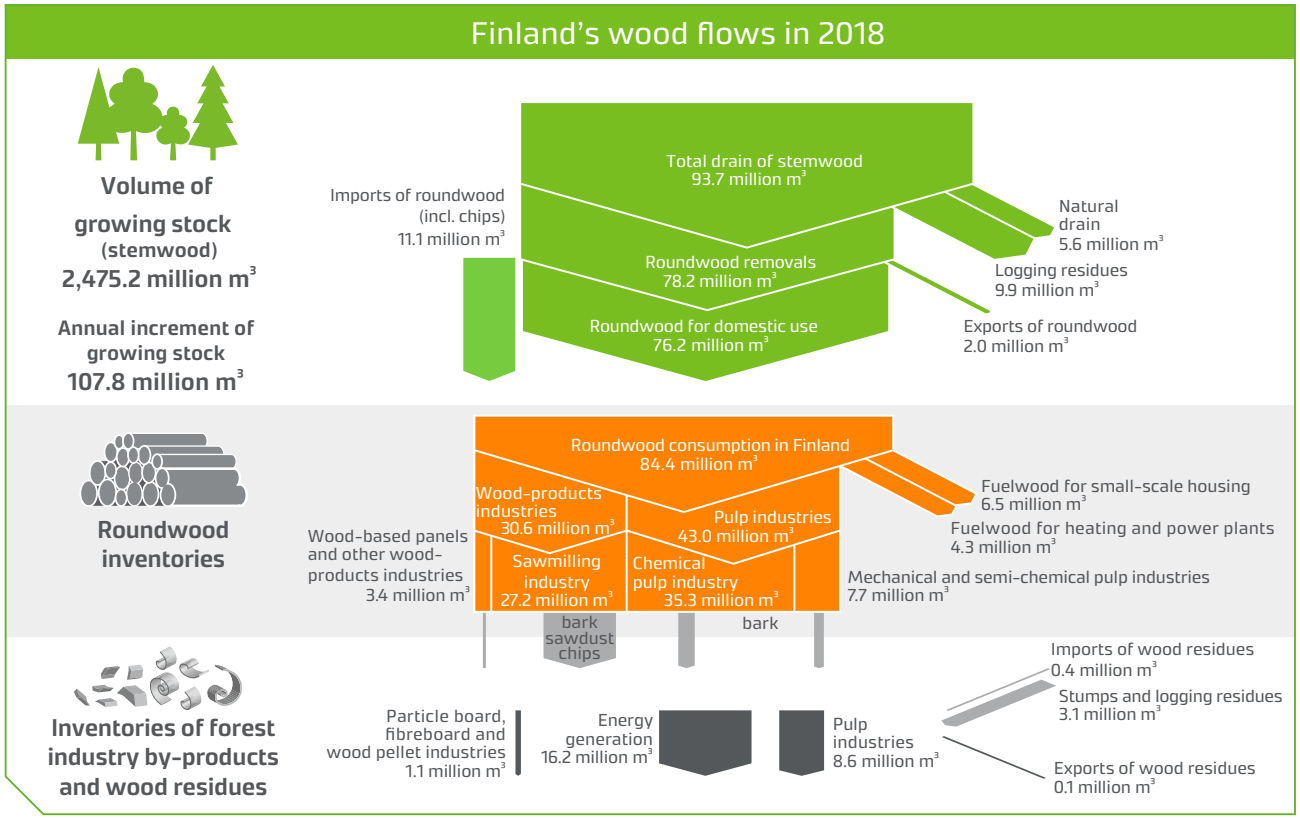
Finland's wood flows in 2018

The total volume of the growing stock (stemwood only with bark) in Finland's forests has increased to 2,475 million cubic metres. The annual increment of growing stock was 107.8 million cubic metres of roundwood. In 2018, 93.7 million cubic metres of stemwood was drained from Finnish forests, mainly as a result of fellings. In addition to fellings, the drain also accounts for natural drain, i.e. naturally dead trees. The difference between growth and drain (14.1 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 (87.3 million cubic metres) is calculated as the volume of roundwood removals (78.2 million cubic metres) plus imports and minus exports of roundwood. The consumption of roundwood in industry and energy production was lower than this, at 84.4 million cubic metres. The difference increased roundwood inventories by 3.0 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: Veijo Pruuki

Fisheries and hunting statistics for 2018

Fish processing is the most profitable and employment-intensive industry

There were 1,643 fishery businesses in 2017, and the total revenue of the fishery industry was EUR 959 million. The fishery industry produced EUR 155 million in value added and provided 2,498 person-years of work in employment. Fishing companies accounted for 71% of all fishery industry companies. The fishery sector with the highest revenue and employment was fish processing.

Abundant catches for commercial fishermen offshore - poor catches along the coast

Finland's commercial marine fishery catch amounted to 148 million kilograms in 2018. Baltic herring accounted for 126 million kilograms, and sprat for 16 million kilograms of the total. The share of Baltic herring amounted to 85% of the volume and nearly 70% of the value of the total commercial catch. More than 90% of commercial marine fishermen used gillnets or trap nets to catch fish. The total coastal fishing catch was exceptionally small, but the long-lasting decline in catches of perch, salmon and pikeperch has been reversed.

Pikeperch and vendace are the key species in commercial inland fishery

The value of the pikeperch catch has approached the value of vendace, although vendace remains the most important fish species in inland fisheries. The value of the vendace catch was EUR 5.8 million, while the value of the pikeperch catch reached EUR 4.8 million. Combined, these two species accounted for three-quarters of the total value of the inland fishery catch. The commercial inland fishery catch totalled 5.2 million kilograms in 2018. The total value of the catch, EUR 14.5 million, was nearly the same as in the previous year.

The recreational catch decreased

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 kilograms of fish were caught, of which seven million kilograms were released alive back into the water. The catch was around nine million kilograms lower than two years ago. Some 19 million kilograms of fish caught by recreational fishermen were used for human consumption.

The value of food fish production decreased

Food fish production totalled 14.3 million kilograms. Of this amount, 13.2 million kilograms were rainbow trout, and 0.8 million kilograms were European whitefish. The value of food fish production was 73 million kilograms, eight million kilograms 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, both around 19 million fish fry.

Fish-processing statistics are compiled every two years, most recently in 2017

Approximately 80 million kilograms of fish were processed for human consumption in Finland in 2017. Of this amount, raw material purchased from abroad accounted for 36%. The processing volumes were the highest for domestic Baltic herring (around 27 million kg) and Norwegian salmon (around 25 million kg). There were a total of 140 fish-processing enterprises in Finland in 2017.

Foreign trade in fish increased

A total of 117 million kilograms of fish and fish products were imported to Finland in 2018. The total value of imports was approximately EUR 522 million. Finland exported around 85 million kilograms of fish and fish products, the value of which totalled EUR 181 million. Fish and fish products were imported from 72 countries. Three-quarters of the volume of imports came from the Nordic countries. Fish were exported to 34 countries. More than half the export volume went to the Nordic countries.

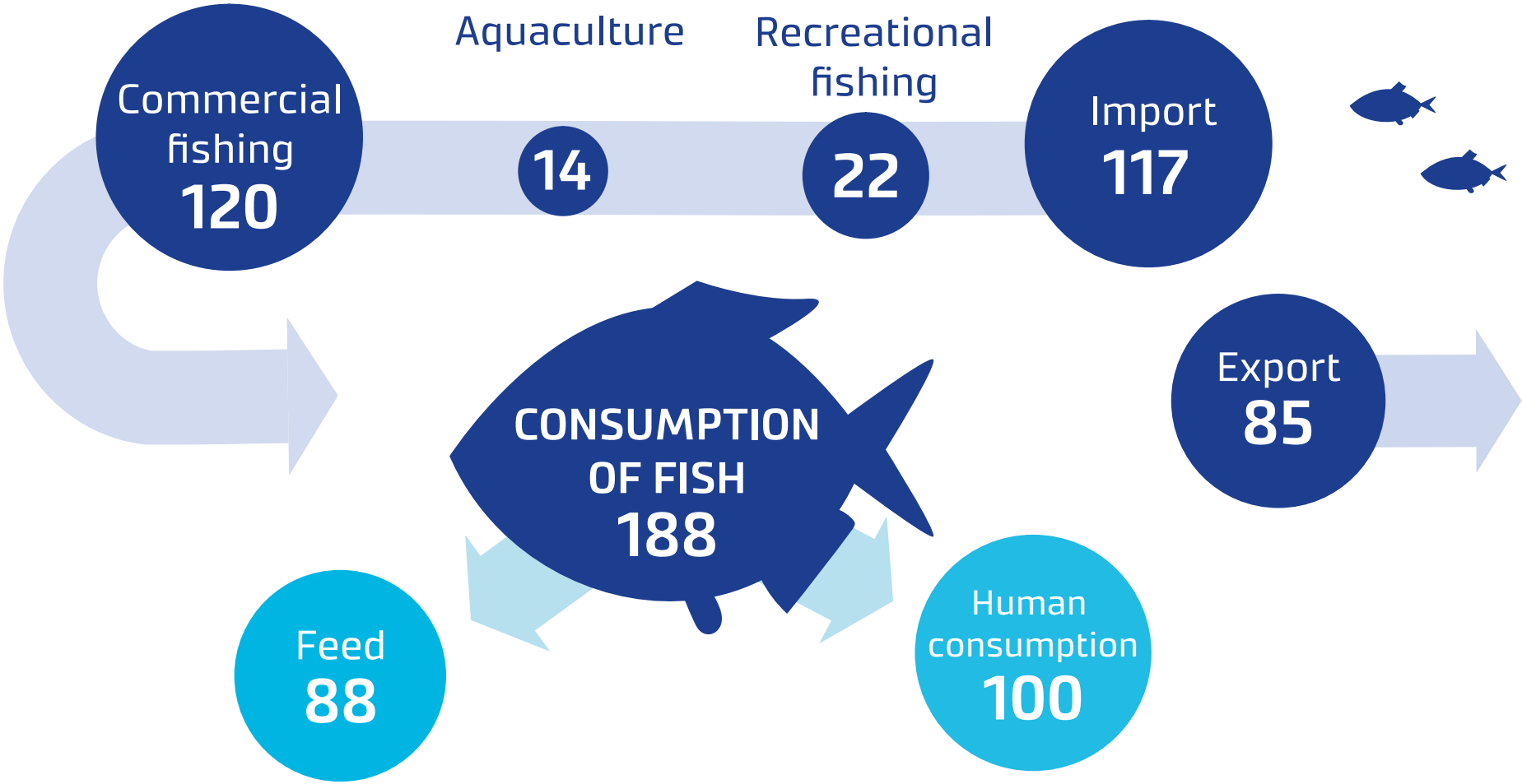
Fish consumption is decreasing

In 2018, around 13 kilograms of fish were consumed per capita in Finland. Domestic fish accounted for nearly a third of this amount. The total consumption of fish decreased by 6.5% from the year before. Norwegian salmon was consumed most (around 3.5 kg per capita), followed by rainbow trout (around 2.0 kg per capita. The consumption of canned tuna and other tuna products totalled around 1.3 kilograms per capita.

The grouse bag increased

There were approximately 200,000 active hunters in Finland in 2018. The number of active hunters has remained roughly the same in recent years. There were around 170,000 small-game hunters and 120,000 deer hunters. Approximately 125,000 hunters caught small game. The grouse bag increased significantly from the previous year.

Supply and consumption of fish in Finland in 2018 (million kg)



Commercial marine fishery

Finnish-registered fishing vessels caught a total of 148 million kilograms of fish at sea in 2018. The total value of the catch was EUR 36 million. Although the volume of the catch decreased by seven million kilograms, its value remained at the 2017 level. Both in terms of volume and value, Baltic herring was by far the most important species, followed by sprat.

Around 60 operators achieved revenue exceeding EUR 10,000 from the fishing of Baltic herring and sprat. Of these, 40 caught fish by trawling, and 20 by using trap nets and gillnets. Coastal fishing employed significantly more fishermen than offshore trawling. Around 1,075 fishermen reported coastal fishing catches.

Abundant catches of Baltic herring and sprat offshore

The Baltic herring catch totalled 1,075 million kilograms, amounting to EUR 24 million in value. It amounted to 85% of the volume and nearly 70% of the value of the total commercial catch. The 2018 catch was more than ten million kilograms smaller than in the previous year, and up to 24 million kilograms smaller than in 2016. In the main fishing area, the Gulf of Bothnia, the Baltic herring stock is still strong, but 13% of the herring fishing quota was not remained unused. There are a number of reasons: Baltic herring catches were slightly smaller than before, 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 kilograms, the same as in the previous year. Baltic herring and sprat fishery was very centralised: ten vessels caught two-thirds of the total catch.

The largest volumes of fish were landed in the ports of Uusikaupunki, Reposaari in Pori and Kasnäs in Kemiönsaari. Landings abroad decreased by half from the previous year, but a third of sprat catches and a sixth of Baltic herring catches were landed in Sweden, Denmark and Estonia.

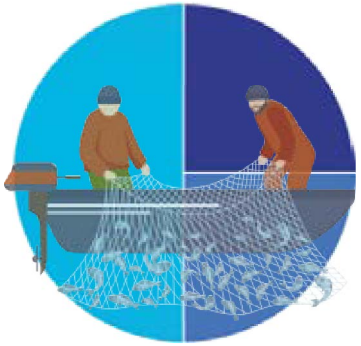
Coastal fishing continued to decline

More than 90% of commercial marine fishermen used gillnets or trap nets to catch fish. The economically most significant species in coastal fishing were European whitefish, perch, pikeperch and salmon. After these, the economically most important species were smelt and common bream. The smelt and most of the Baltic herring and sprat catches were used as raw material for animal feed, but the value of the common bream catch may also have reflected consumers' growing interest in sustainably produced local food. The long-term decrease in perch, salmon and pikeperch catches halted, but the European whitefish catch continued to decline.

Average age of commercial fishermen in 2018 was **58** years

Half of fishermen are between 49 and 69 years old

Youngest is 12 years old, eldest is 93 years old

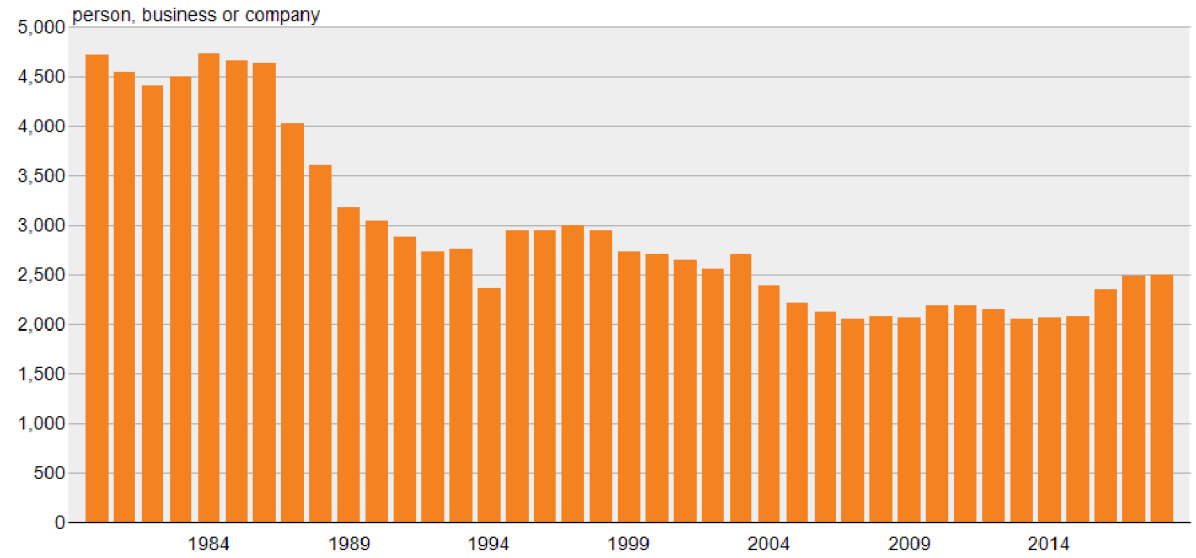


Four quarter are over 69 years old

Four quarter are below 49 years old

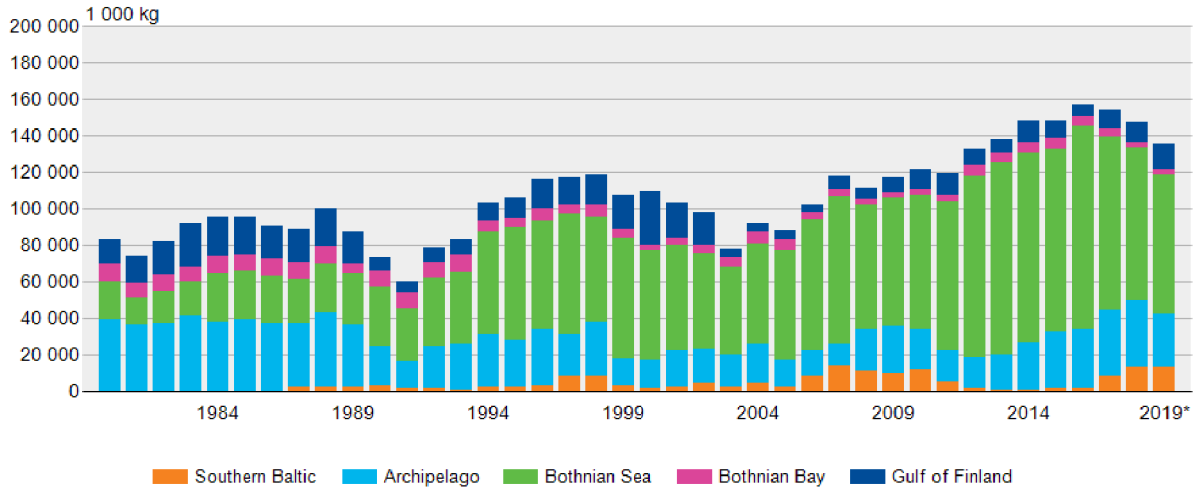
Commercial marine fishermen 1980–2018

Background data as a table



Catches in commercial marine fishery 1980–2018

Background data as a table



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.

Fishermen are ageing

All the fishermen catching fish for selling are included in the register of commercial fishermen. In 2018, the register included 2,499 commercial marine fishermen. Of these, 850 were registered as an enterprise, and the rest were natural persons. In the last twenty years, the average age of commercial fishermen has increased from 49 to 58. The arrival of new fishermen in the industry is rare. Young people find the fishing profession unattractive. They see it as a physically challenging job that requires major investment, while earnings are uncertain. In addition, damage caused by seals and cormorants may contribute to the decision to become a fisherman.

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.

▶ Commercial marine fishery

Fishing effort in commercial marine fishery 1998–2018

▶ Background data as a table

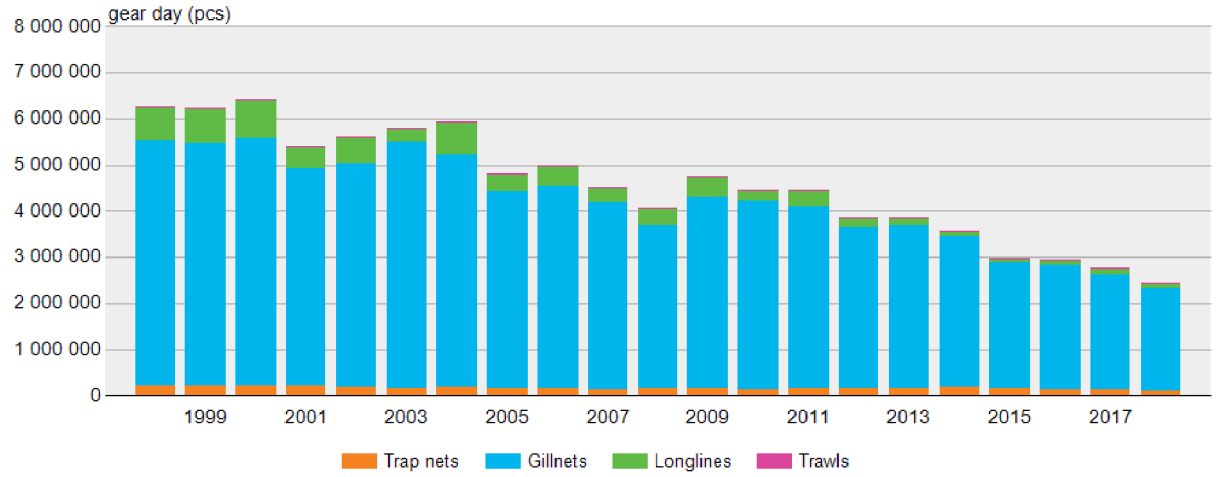


Photo: Esa Lehtonen

Photo: Pekka Salmi

Commercial inland fishery

The number of registered commercial fishermen increased slightly compared to the previous two years, but the number of active fishermen decreased. The catch and its value also decreased slightly. The commercial inland fishery catch totalled 5.2 million kilograms in 2018. The total value of the catch was EUR 14.5 million. For the first time, the value of the roach catch was greater than the value of that of pike or perch, our national fish.

Vendace continues to be the most important inland species measured by both volume and value. Vendace accounted for almost 50% of the volume of the total catch and 41% of its value. The vendace catch was 2.4 million kilograms in 2018, slightly lower than the average for the 2000s, at 2.7 million kilograms.

Difficulties in winter seining of vendace

The decrease in the total vendace catch was due to reduction in the volume of vendace caught in the seine. Catches by gillnets and trap nets also decreased.This is probably partly due to the natural variation in the vendace population, but poor ice conditions and slush accumulating under the ice cover also impeded winter seining in Eastern Finland and Satakunta last year. Catches caught using gillnets and trap nets also decreased. They accounted for a small proportion of the total vendace catch. Between 2016 and 2018, 90% of the vendace catch was caught by trawling and seining. The volume of trawled vendace did not decrease from the level of previous years.

A large proportion of the catches was harvested from the lakes of South Savo, which accounted for 43% of the total vendace catch in Finland.

Catches of pikeperch are still large

During the previous three years, pikeperch catches have been at least 710,000 kilograms per year. Last year's catch is still the highest, at 727,000 kilograms. The value of the pikeperch catch, EUR 4.8 million, is approaching the value of the vendace catch, which was EUR 5.5 million. Combined, these two species accounted for three-quarters of the total value of the commercial inland fishery catch. Catch value is calculated by multiplying the price (VAT 0) fetched by the fishermen by the catch volume.

The majority of the pikeperch catch, approximately 80%, was caught using gillnets. Less than 20% of the catch was caught using trap nets, and only a small proportion was caught by trawling.

Crayfish catch almost exclusively of signal crayfish

The commercial crayfish catch decreased by almost 30% compared to 2017, and totalled 594,000 crayfish. Noble crayfish only accounted for three per cent of the total crayfish catch in 2018. This may reflect a decrease in the abundance of this highly endangered species and the weak status of the remaining populations. In the case of signal crayfish, the decrease in catch is more likely to be due to market factors than to the decrease in the number of crayfish in water bodies.

The decrease in noble crayfish catch is mainly due to crayfish plague that spread to Finland in the late 19th century. Catching crayfish as a livelihood started to decline shortly afterwards. The plague has gradually eliminated noble crayfish, because it has spread across water bodies. The majority of Finnish crayfish catches are now signal crayfish, which has been stocked in water bodies since the 1960s to replace noble crayfish. However, signal crayfish populations maintain and spread the crayfish plague, and the noble crayfish populations continue to shrink.

Clearing the rapids for log floating, forest ditching and peat production have also contributed to the loss and decline of noble crayfish populations due to the short-term mechanical impact, or due to the loss of habitats caused by sedimentation, and water acidification in the long run.

In 2016 and 2017, the signal crayfish was the third most valuable inland species, but last year the value of the European whitefish catch (EUR 0.84 million) surpassed the value of the signal crayfish catch. The value of the

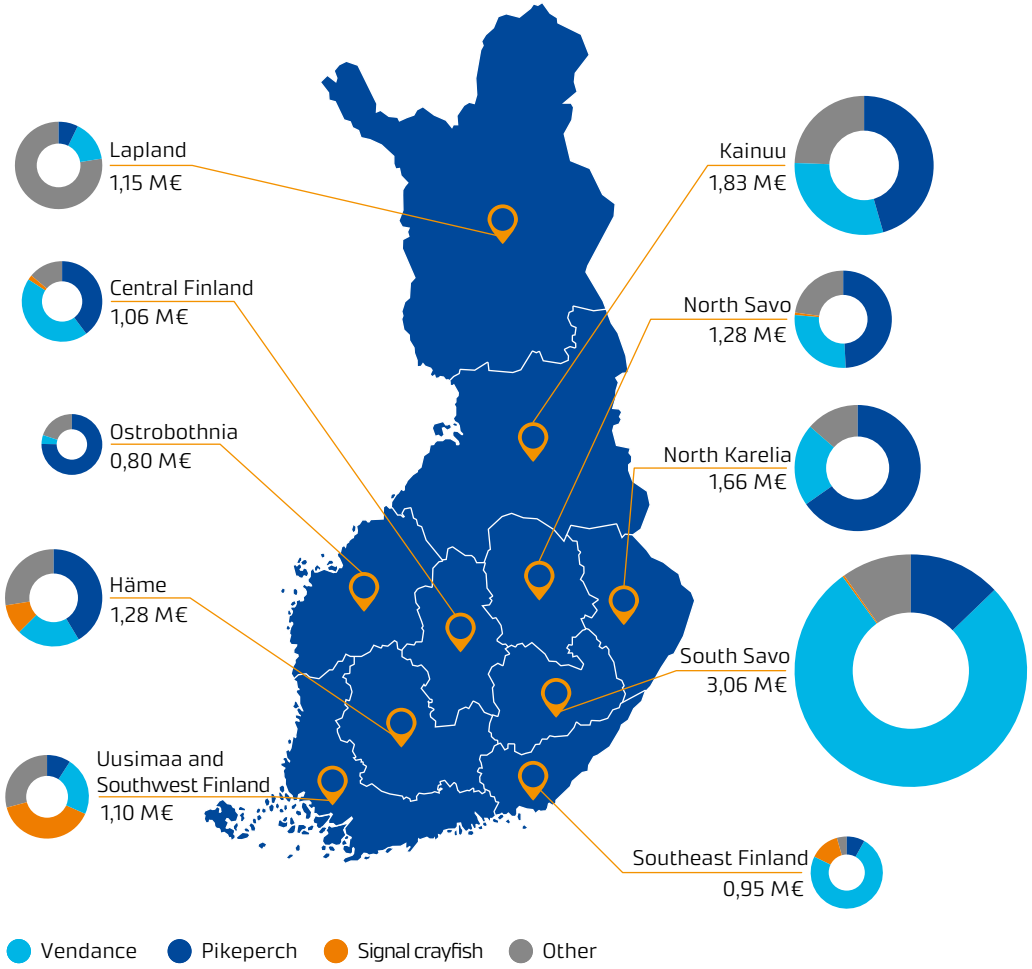
European whitefish catch has significantly increased in recent years.

The importance of cyprinids has increased

The value of the roach catch was higher than the value of the traditional species, i.e. pike or perch, from Finnish lakes for the first time. In 2018, the value of the roach catch was EUR 588,000, the value of the pike catch was EUR 465,000, and the value of the perch catch was EUR 387,000. The importance of cyprinids (roach and bream) for commercial inland fishery has increased considerably throughout the 2010s. 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 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.

▶ Commercial inland fishery

Value of the fish and crayfish catch in the commercial inland fishery in 2018



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.

Recreational fishing

One and a half million people participated in recreational fishing in 2018. Their catch amounted to more than 22 million kilograms. 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 kilograms to roughly 10 million kilograms. 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.

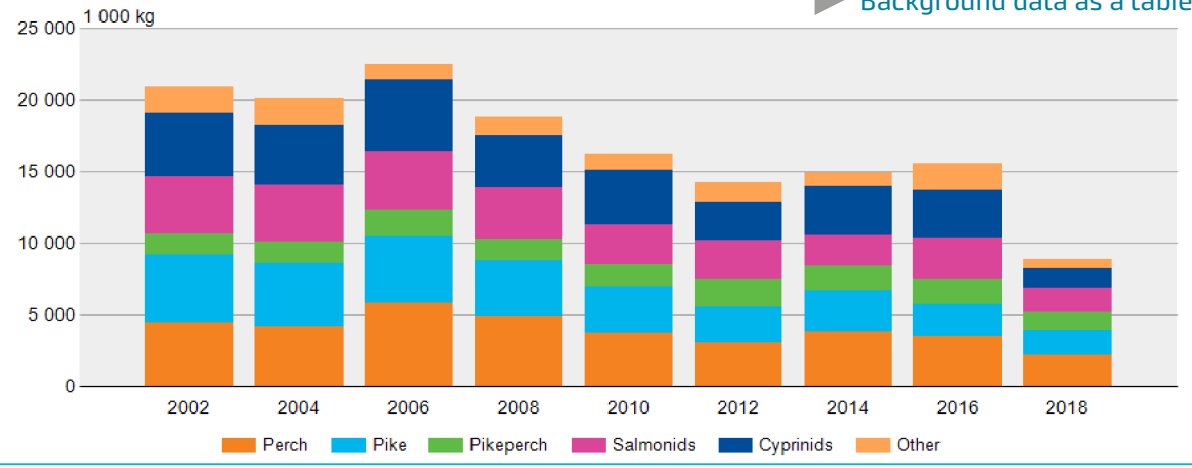
Rod and line was the most commonly used gear

Fish caught using a spinning rod or fly rod or by trolling totalled almost nine million kilograms, slightly more than in the early 2000s. The pikeperch share 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 four million kilograms in 2018. Catching fish with a rod and line, tip-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.

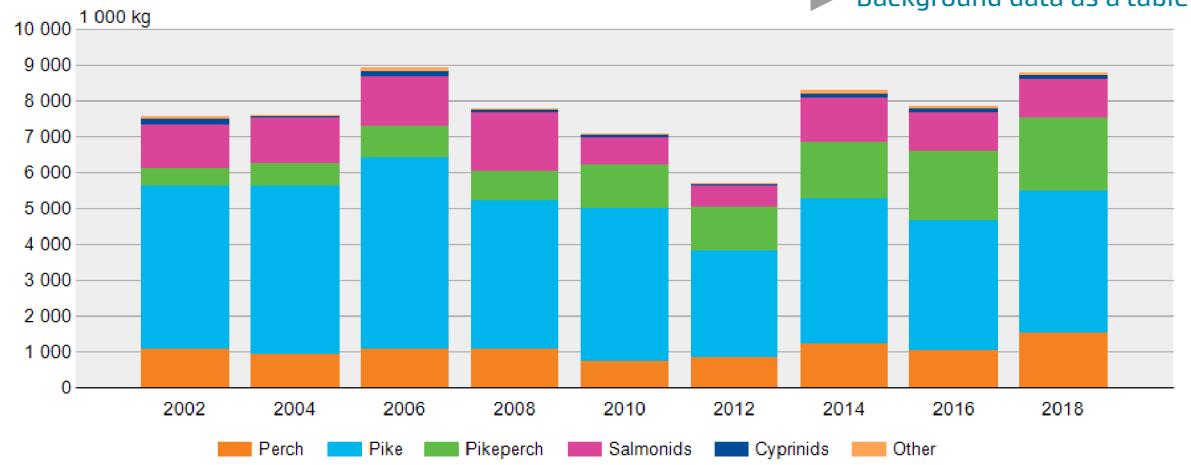
Fish catch using a gillnet, a fish trap, a pot or creel or a trap net 2002–2018

Background data as a table



Fish catch using a spinning rod or a fly-rod or by trolling 2002–2018

Background data as a table



Fish catch with a rod and line, a tip-up or a jig 2002-2018

Background data as a table

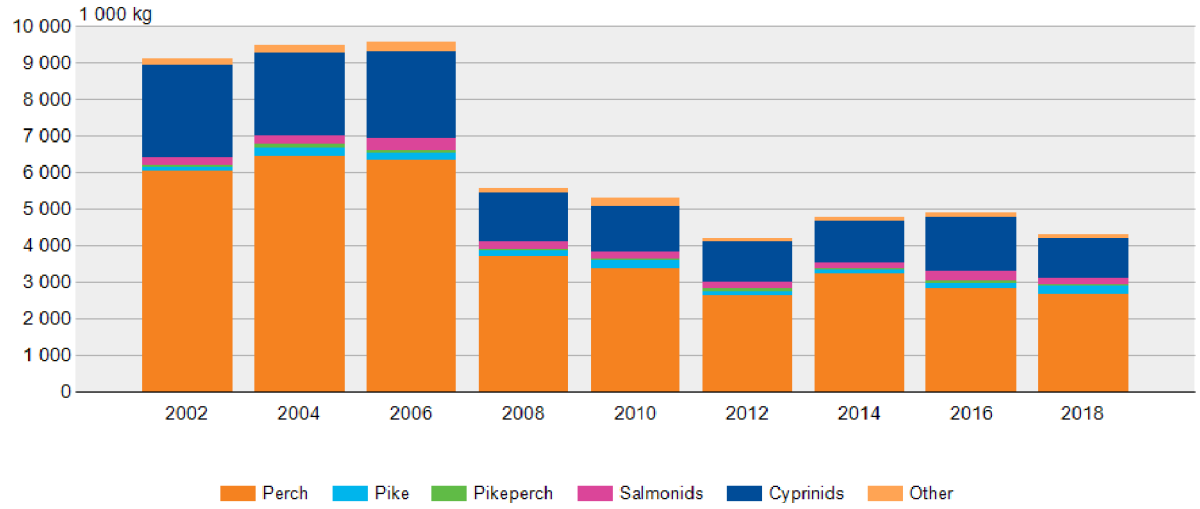


Photo: Hannu Pruuki

Roughly 60% of all fishermen use this method. However, 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 declined 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

The share of different fishing gear in the total recreational catch

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

Total 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. In 2018, the register of commercial fishermen comprised roughly 4,300 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 175 million kilograms.

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 127 million kilograms of Baltic herring and 16 million kilograms of sprat were caught. 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 European whitefish, perch, pikeperch and salmon close to the shore, for example.

Vendace is the most important species in commercial inland fishery

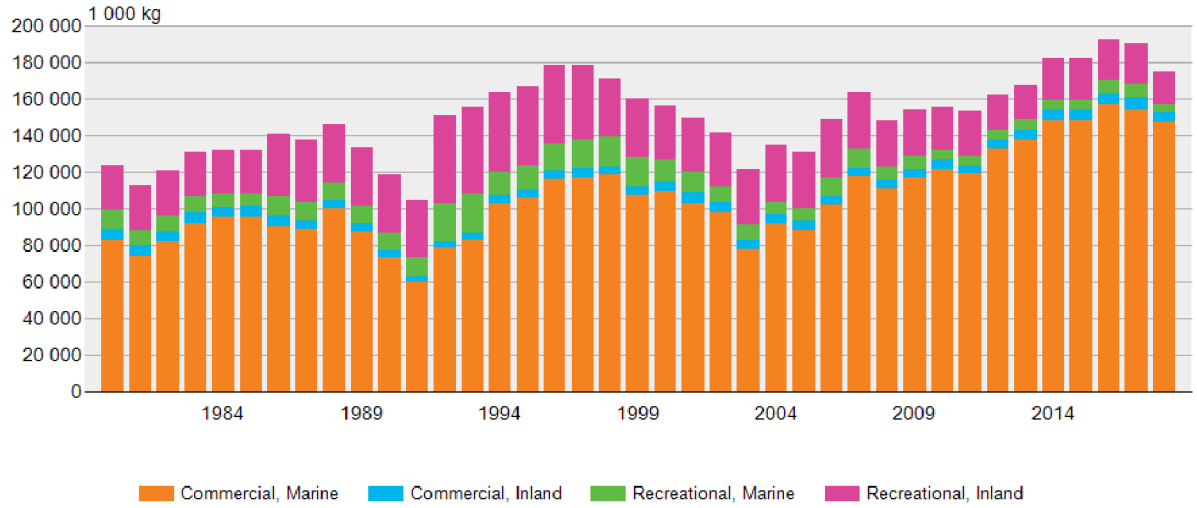
In terms of both quantity and value, vendace is by far the most important species in commercial inland fishery, and it has also become a popular catch among recreational fishermen. The vendace catch for 2018 totalled 3.3 million kilograms, of which four-fifths were caught by commercial fishermen. Vendace is principally caught from inland waters, but small vendace catches were also made in the Bothnian Bay. Commercial fishermen caught vendace by trawling and seining, recreational fishermen by gillnets.

Recreational fishermen caught perch and pike

After Baltic herring, sprat and vendace, perch and pike catches were the largest. Perch and pike were also the most important species in recreational fishing, accounting for roughly half the total recreational catch of 22 million kilograms. More than 90% of the perch and pike catch was 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.

Total catch in Finland 1980–2018

Background data as a table



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 especially 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.

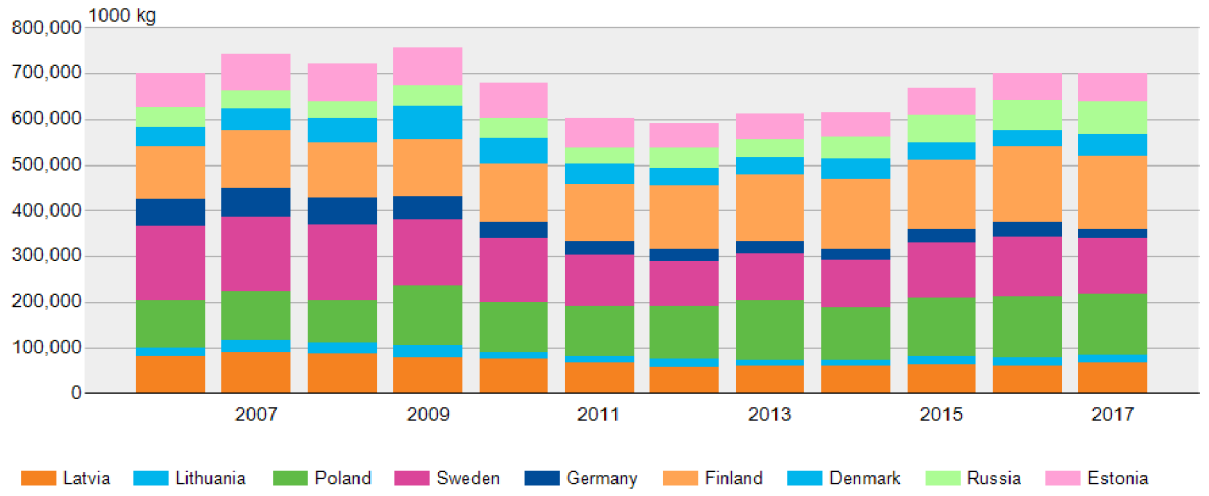
Finland accounts for a large share of the total Baltic Sea catch

Approximately 700 million kilograms of fish were caught in the Baltic Sea in 2017. Of the individual fishing countries, Finland accounted for the largest share of the catch, at nearly a quarter. 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.

▶ Total fish production

Baltic fishery catch by country 2006–2017

▶ Background data as a table



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

Aquaculture

A total of 14.3 million kilograms of fish was farmed for human consumption. Rainbow trout accounted for 92% of the total volume. Approximately 50 million juveniles were produced, excluding newly hatched fry. The total value of the food fish production was EUR 73.5 million.

The volume of food fish production has remained at the same level for the last four years. However, the value of production has varied. The price of rainbow trout rose sharply in 2016 and 2017, but fell in 2018, so the value of production also decreased from the previous year. The price of rainbow trout is generally in line with the fluctuations in the world market prices for salmon.

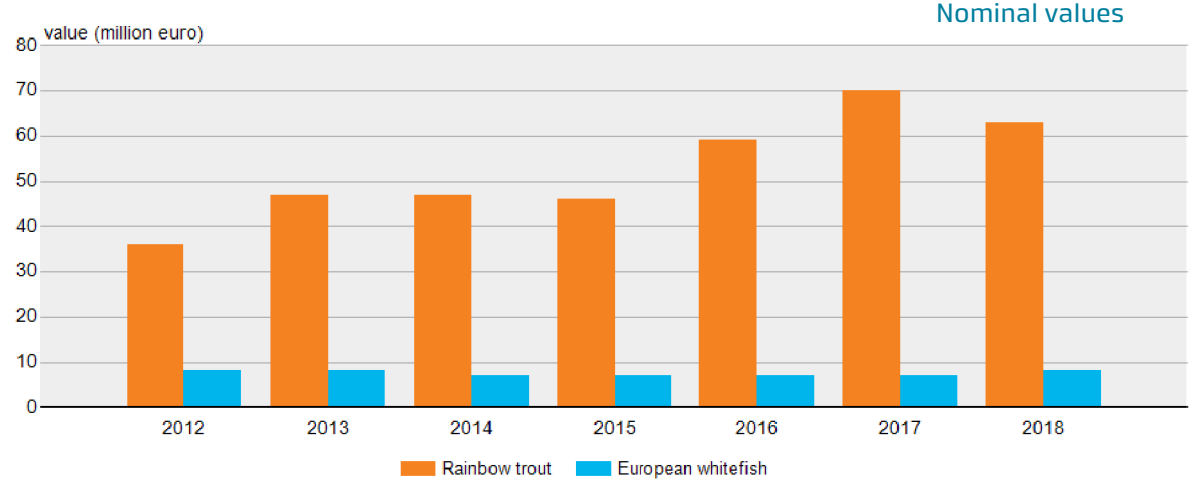
In 2018, European whitefish accounted for six per cent of total food fish production. Compared with rainbow trout, the price of European whitefish has remained steadier in recent years, so the value of its production has not fluctuated as much as the value of rainbow trout production.

The farming of rainbow trout in Finland started to produce significant volumes in the 1980s. At the turn of the 1980s and 1990s, the volume of production was at its highest, at almost 20 million kilograms per year. The turn of the 2010s marked the lowest point, when about half the volume of the peak years was produced.

Photo: Markus Kankainen

Rainbow trout and European white fish production 2012–2018

Background data as a
Nominal values



European whitefish has been farmed in small quantities since the late 1990s. At its best, the production volume exceeded one million kilograms between 2011 and 2013, but since 2014, it has been around 0.8 million kilograms per year.

Fish farming production volumes are quite regulated and are based on the authorisation issued by the environmental administration. According to the Finnish Aquaculture Strategy adopted five years ago by the Government, the aim is to support the growth of aquaculture through new technologies. A lot of salmon and some rainbow trout are imported to Finland (see the statistics on foreign trade in fish).

Half of all food fish comes from Åland

Most of the food fish produced in sea areas were grown in Åland (about 60% of the total production in sea areas). Åland also accounted for about half the total production in Finland.

Inland waters accounted for a fifth of total Finnish food fish production. Most of this was grown in Northern Finland, especially in Kainuu.

Roe sales amounted to just under half a million kilograms

Rainbow trout roe is a significant product in terms of sales. In the last two years, the value of roe produced for human consumption has been around EUR 7 million per year.

The volume and value of fish farming in 2018 (Note: food fish production also includes roe produced for human consumption)

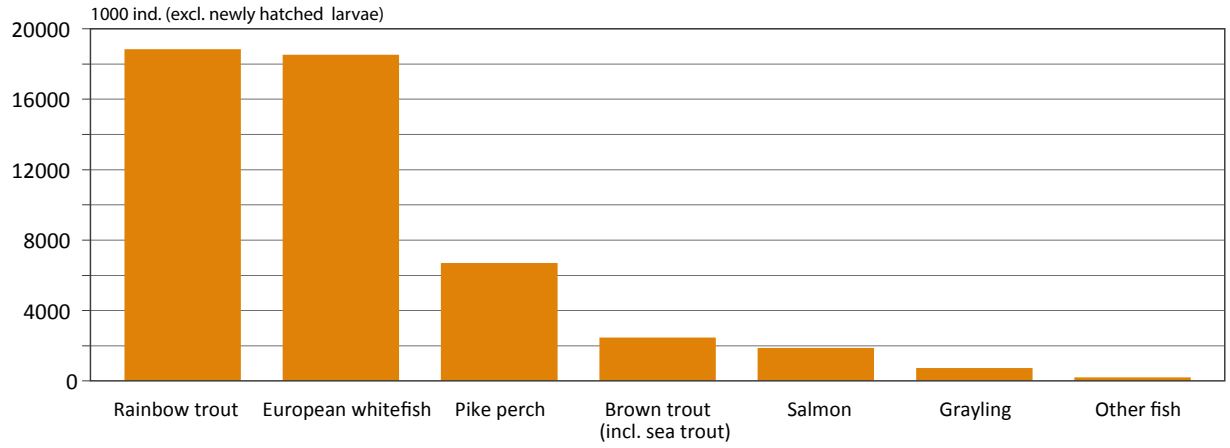
Species	Food fish production		Roe produced for human consumption		Fry production	
	Volume (million kg)	Value (EUR million)	Volume (million kg)	Value (EUR million)	Volume (million pcs)	Value (EUR million)
Rainbow trout	13.2	63.2	0.42	6.9	18.9	15.5
Other fish species	1.1	10.3	0.01	0.5	30.5	11.8
Total	14.3	73.5	0.43	7.4	49.3	27.3

Juveniles are produced for both restocking in water bodies and further rearing

Fish juveniles are mainly produced in inland waters. In 2018, approximately 50 million fish fry were produced, and their value was about EUR 27 million. Rainbow trout and European whitefish juveniles were the most produced. Rainbow trout juveniles were transferred for further rearing, but almost 90% of European whitefish juveniles were produced for stocking.

Production of fish juveniles 2018

▶ Background data as a table



The third-largest species produced was pikeperch, which were also produced for stocking. In addition to pikeperch and European whitefish, trout, salmon and grayling were produced for stocking, as well as smaller quantities of other species. About 60% of the total production of fish juveniles was produced to restock fishing populations in water bodies.

The farming of signal crayfish is forbidden

Since December 2015, signal crayfish has been listed as an invasive alien species throughout the EU and must therefore no longer be placed on the market or released into the environment. In the past, significant quantities of signal crayfish have been produced for stocking purposes.

The number of fish farms has decreased steadily in the 2000s

Food fish is mainly farmed in net cages at sea. Production of juveniles takes place either on land in tanks or in natural nutrition ponds. In the 2000s, the number of both natural nutrition pond and active food fish enterprises has decreased significantly: the number of natural nutrition pond enterprises has almost halved, and the number of food fish farms by a good third.

Recent efforts have been made to develop recirculation technology in fish farming. The environmental impact of this technology is smaller than for conventional fish farming. Finland already has some fish farms using recirculation technology. Their food fish production amounted to around 0.6 million kilograms in 2018.

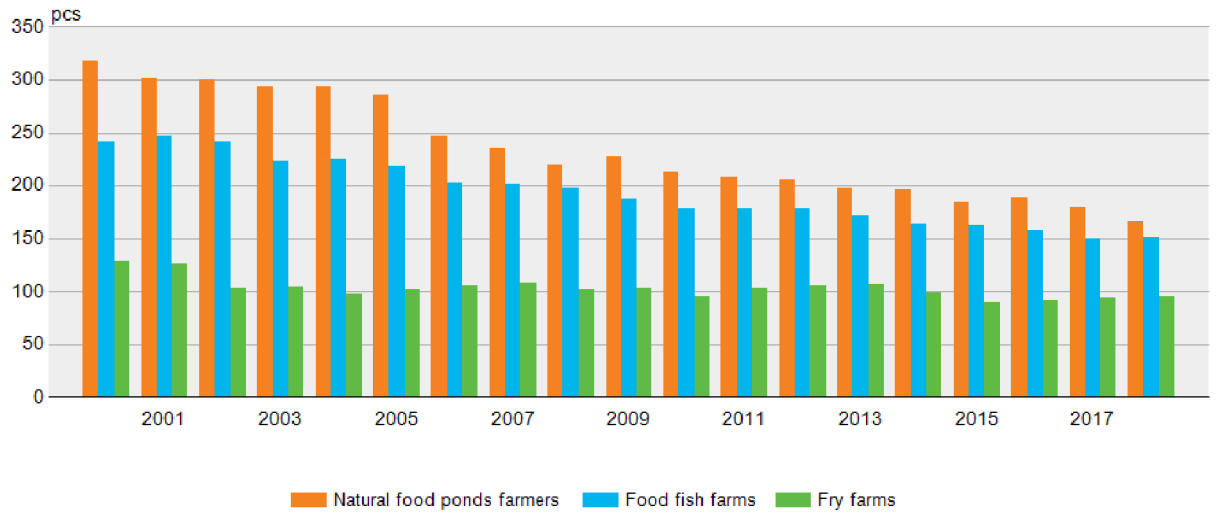
In 2018, there were 265 fish-farming enterprises in Finland. The same enterprise may have several fish farms, and the same farm may be engaged in both food fish and juvenile production, so one farm may occur several times in the table.

▶ Aquaculture

Photo: Markus Kankainen

The number of fish farms 2000–2018

▶ Background data as a table



Fish processing

In 2017, there were approximately 140 fish-processing enterprises in Finland. They processed around 80 million kilograms of fish. Of this amount, 51 million kilograms were of domestic origin, and 28 million kilograms were imported. The highest processing volumes were recorded for Baltic herring, salmon and rainbow trout.

Statistics on fish processing are compiled in odd years, most recently in 2017. The majority of enterprises processing fish processed less than 50 tonnes of fish per year; a third processed less than 10 tonnes. Around 20 enterprises processed more than one million kilograms of fish. These larger enterprises accounted for around 90% of the total volume of fish processed in Finland.

A third of processed fish from abroad

In 2017, Finland processed the largest quantities of domestic Baltic herring but also small quantities of imported Baltic herring, mainly originating in Estonia. The amount of Baltic herring processed totalled around 27 million kilograms.

Baltic herring was followed by Norwegian salmon (around 25 million kg) and domestic rainbow trout (around 22 million kg). Rainbow trout farmed by Finns in Sweden was also recorded as domestic fish, so all the processed rainbow trout were considered domestic in the statistics. Ap-

Raw material weight of fish used in fish processing in 2017

▶ Background data as a table

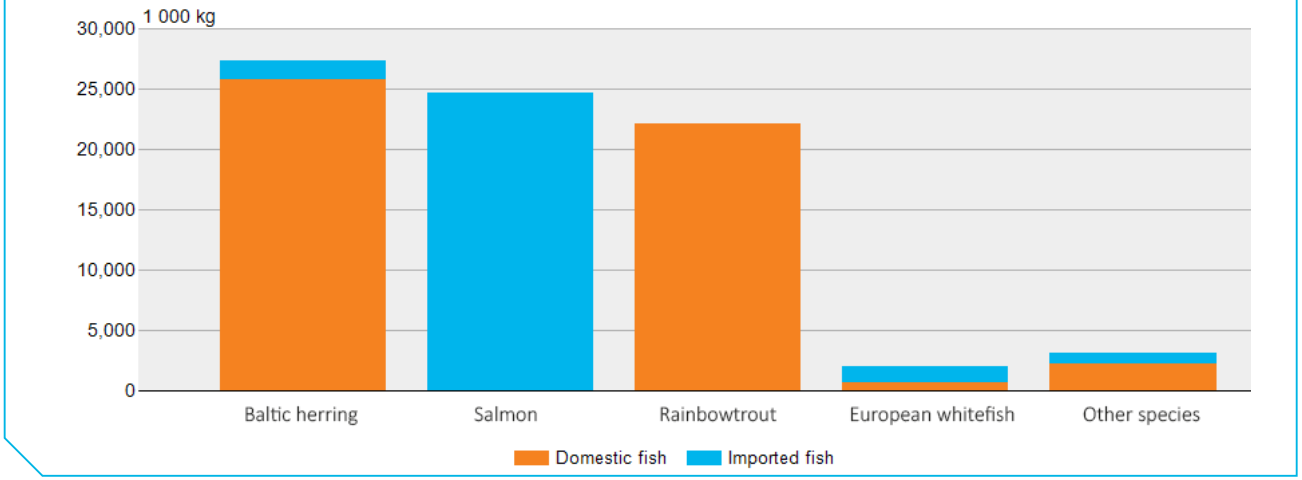
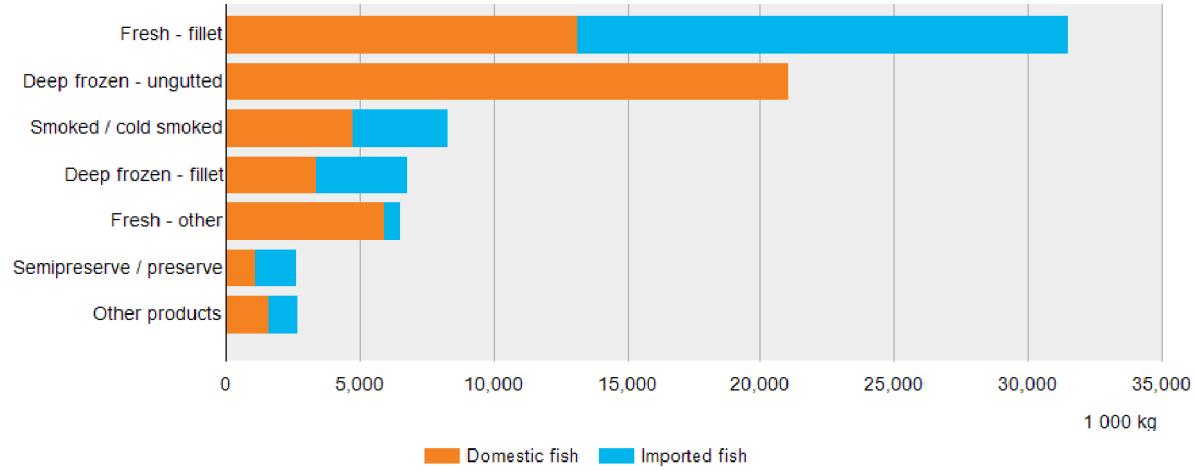


Photo: Markku Saiha / SAKL ry

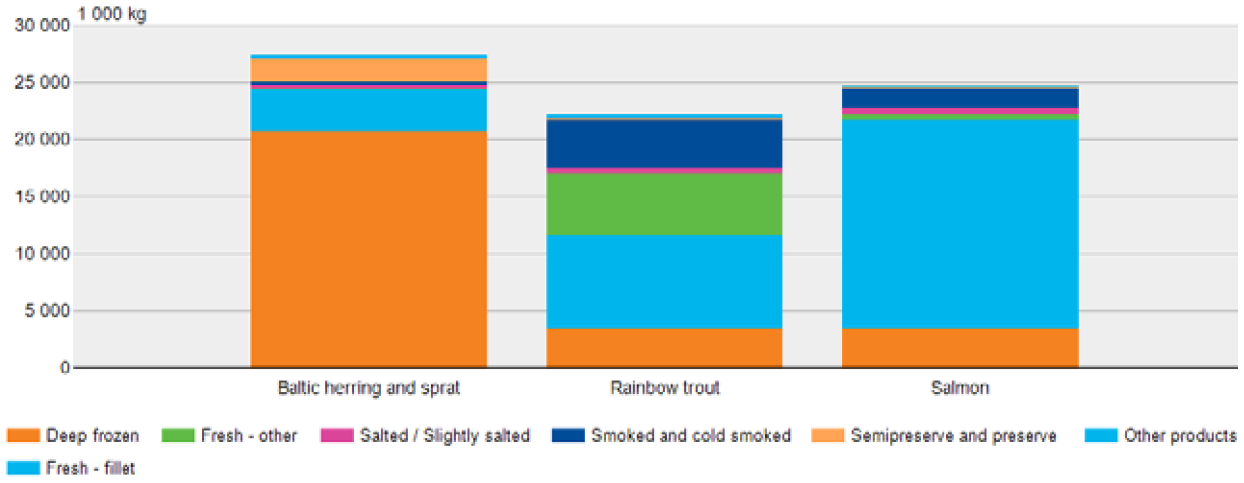
Raw material weight of fish used in fish processing by end-product group 2017

Background data as a table



Raw material weight of salmon by end-product group 2017

Background data as a table



proximately two million kilograms of European whitefish were processed. More than half was of foreign origin.

Filleting was the most common processing method

The most common method of fish processing was filleting. Some 30 million kilograms of fresh fillets were produced, and nearly seven million kilograms of frozen fillets. Of the fresh fillets, 58% were Norwegian salmon, 25% rainbow trout, 12% Baltic herring and 5% other fish. Frozen fillets consisted mainly of salmon and rainbow trout in almost equal amounts.

Approximately 20 million kilograms of fish were frozen whole, of which almost all were domestic food-grade Baltic herring. Most of Finland's Baltic herring catches for human consumption were frozen. However, most of the Baltic herring catches were used as raw material for the feed industry.

Approximately eight million kilograms of fish were smoked. A fifth of this amount was cold smoked. Domestic smoked fish consisted mainly of rainbow trout and smoked fish of foreign origin, mainly of salmon and European whitefish, in almost equal amounts.

The main raw material for other fish products manufactured from fresh fish was rainbow trout. Most preserves were produced from Baltic herring of both domestic and foreign origin.

Fish processing

Producer prices for fish

In 2018, producer prices for many fish species increased as in previous years. The price of Baltic herring intended for human consumption rose slightly from the previous year and was 27 cents per kilogram. Prices for pikeperch, perch, burbot, pike and common bream also increased. However, the prices for wild salmon caught in the sea and farmed rainbow trout fell compared to 2017.

Baltic herring and sprat are the most important species in commercial fishery by volume. Herring is also the most important species by value. Most of the Baltic herring catches end up as feed used in fur and fish farming. Sprat is almost exclusively caught for animal feed.

The price for Baltic herring depends on size

The price paid for larger Baltic herring is usually higher than the prices fetched by smaller Baltic herring, which are closer to the price paid for Baltic herring intended for industrial use. For example, the price paid for larger Baltic herring intended for human consumption was EUR 0.81 per kilogram, while smaller Baltic herring fetched EUR 0.18–0.20 per kilogram. Larger herring are mainly used for smoked fish, and medium-sized herring for fish fillets. The smallest herring are mainly exported or used as animal feed.

Prices for salmon and farmed rainbow trout decreased

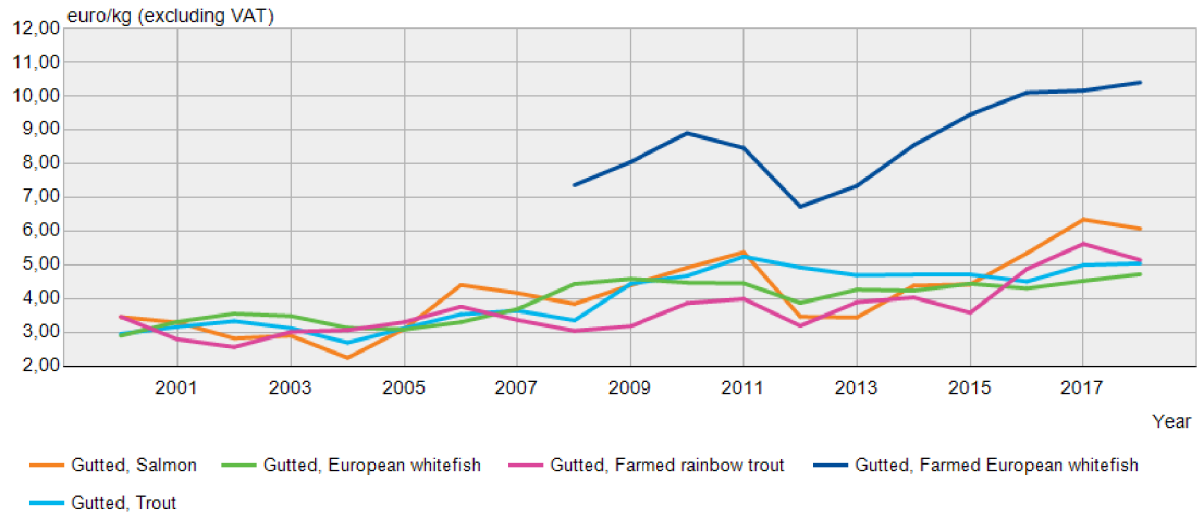
The increase in prices for Baltic Sea salmon and farmed rainbow trout was reversed, and both prices decreased compared to 2017. Wild-caught salmon fetched EUR 6.08 per kilogram, while the price for farmed rainbow trout was EUR 5.15 per kilogram. Prices for both species are broadly in line with the world market price for farmed salmon. Instead, the price for farmed European whitefish increased from EUR 10.28 to 10.41 per kilogram.

Pikeperch was the most valuable species

The price of pikeperch reached a record level in the 2000s. Similarly, the prices for other coastal fishery species, such as perch, burbot, pike and European whitefish, increased from the previous year, except for the price for vendace caught at sea, which remained at the previous year's level. The price for burbot and pikeperch has risen sharply in the 21st century. Prices for cyprinids remained low, but with increased food use, they have been rising in recent years.

Producer prices (nominal value) of salmon, trout, European whitefish and farmed rainbow trout and European whitefish during 2000–2018

Link to release



The statistics on producer prices for fish are compiled on the basis of the producer prices for fish caught at sea.

▶ The nominal prices for 2009-2018 in the form of a table

Photo: Ari Saura

Producer prices (nominal value) of selected fish species important for coastal fisheries during 2000–2018

▶ Link to release

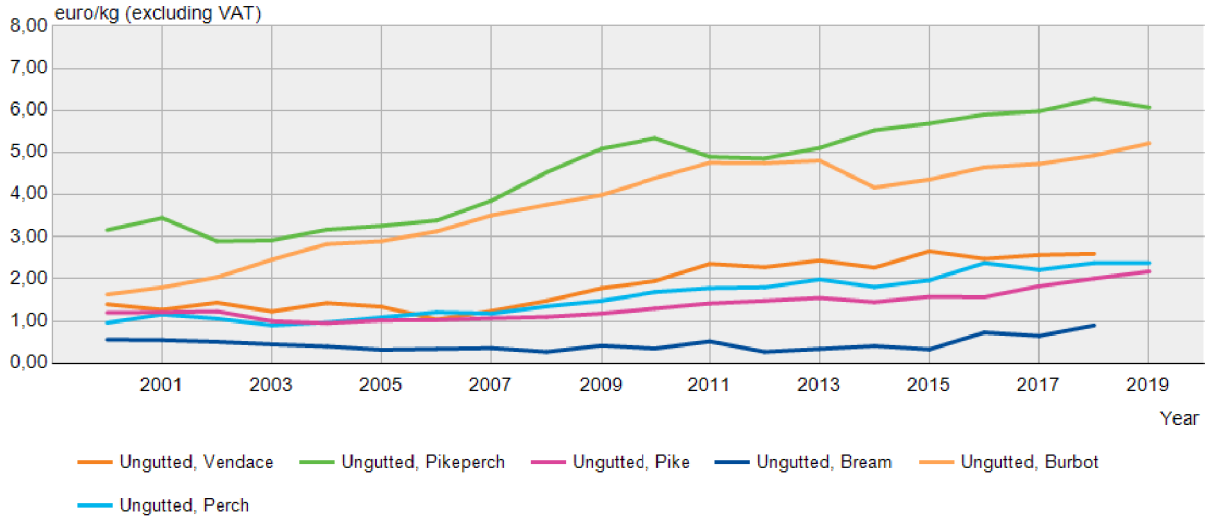


Photo: Pro Fish Association

Foreign trade in fish

A total of 118 million kilograms of fish and fish products were imported to Finland in 2018. The total value of imports was approximately EUR 526 million. Finland exported around 85 million kilograms of fish and fish products, the value of which totalled EUR 181 million. The volume of imports was almost the same as in the previous year, but exports increased by more than nine per cent. The value of imports was EUR 15 million, and the value of exports roughly EUR 33 million, higher than during the previous year.

95 million kilograms of fish were imported to Finland for human consumption, the value of which amounted to EUR 510 million. However, not all remained in Finland: fresh whole salmon imported from Norway, for example, was exported from Finland to the rest of Europe to a value of EUR 137 million. Fish imported for human consumption accounted for 81% of total imports, and 98% of its value.

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.

The most important country by far in terms of the total import value is Norway, which accounted for 60% of the total value of imports, followed by Sweden, Denmark and Estonia.

Norwegian salmon was the most important import item

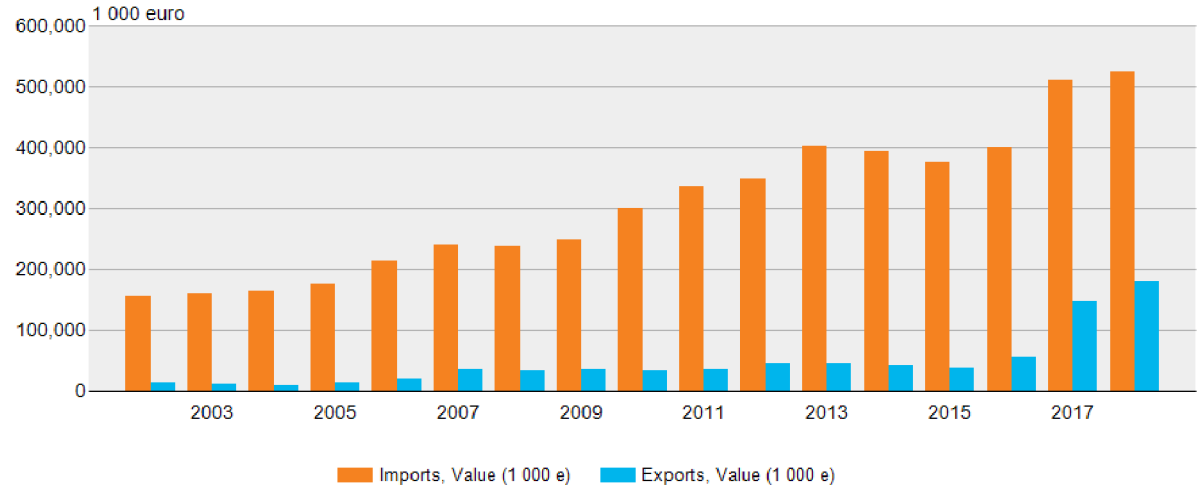
The imports of fresh Atlantic salmon from Norway totalled around 47 million kilograms in 2018. It was the most important imported fish product. The total value of salmon imports (EUR 287 million) increased by 11% compared with the previous year. Imports of Atlantic salmon from Norway have quintupled, and their value has grown tenfold over the last 15 years.

Rainbow trout from Sweden and a variety of products from Denmark

Imports of fish and fish products for human consumption from Sweden totalled 14 million kilograms, the value of which amounted to EUR 68 million. More than half were fresh whole rainbow trout. Imports of fish products and preserves made from herring and Baltic herring from Sweden amounted to one million kilograms. The quantity was the same for crustaceans and shrimps.

Imports of fish products from Denmark totalled around six million kilograms, the value of which was EUR 27 million.

Imports and exports of fish and fish products 2002–2018 ▶ Background data as a table



Imports from Denmark covered a variety of fish product and preserves, frozen fish products of different species, crustaceans, molluscs, etc.

France was the main export destination

Fish and fish products were exported to 34 countries. 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. By monetary value, the most important export destination was France, followed by the United Kingdom, Lithuania, Estonia, Denmark and Spain.

Norwegian salmon through Finland to the rest of the world

In monetary terms, the most important export item was salmon because of the re-export of fresh whole Norwegian salmon to Europe. The value of Norwegian salmon exported abroad totalled EUR 137 million, and most of the volume was exported to the United Kingdom and France. The next largest export items were fish waste and frozen Baltic herring, both of which were exported to a value of more than EUR 4 million. Baltic herring was used as human food mainly in Estonia and Denmark, and fish waste was used as feed in Denmark.

Foreign trade in fish

Photo: Pro Fish Association

Profitability of fisheries

In 2017, fishery revenues increased. Wholesale revenue from aquaculture, fish processing and fish were higher than in the previous year, while fishermen's revenue remained the same, and fish retail revenue decreased slightly. The profitability of fisheries weakened both for trawling companies and coastal fishermen with the lowest turnover. However, aquaculture enterprises' and fish processors' revenue and net results increased significantly. The net result for the fish wholesale and retail trade remained lower than in the previous year.

In 2017, there were 1,643 companies operating in the fisheries industry. Most (71%) were fishing companies. The total revenue of the fishery industry amounted to EUR 959 million, an increase of six per cent from 2016. The added value produced by the fishery industry increased by five per cent to EUR 155 million. Fish trade and fish processing are very centralised, meaning that the ten largest companies produced significantly more than 80% of total revenue in these sectors.

Fish processing provided the most employment

The fishery industry provided 2,498 person-years of employment. Fish processing provided the most employment: 30% of the entire industry. The number of person-years increased in aquaculture, fish processing and the fish wholesale trade, but decreased in fishing and the fish retail trade.

Fish processing and wholesale are the fishery industry's largest segments

In 2017, fisheries revenue increased as in the previous year. The largest sectors in terms of revenue were fish processing and fish wholesale. Fish processing and fish trade accounted for nearly 90% of total revenue. Fish-processing companies succeeded in increasing their profits by 13% from the previous year. Fish processors also achieved the largest revenue in the fishery industry in 2017, at EUR 354 million. The total revenue of the fish wholesale trade amounted to EUR 329 million.

Fishery revenues in real terms in 2008-2017

Background data as a
Nominal values

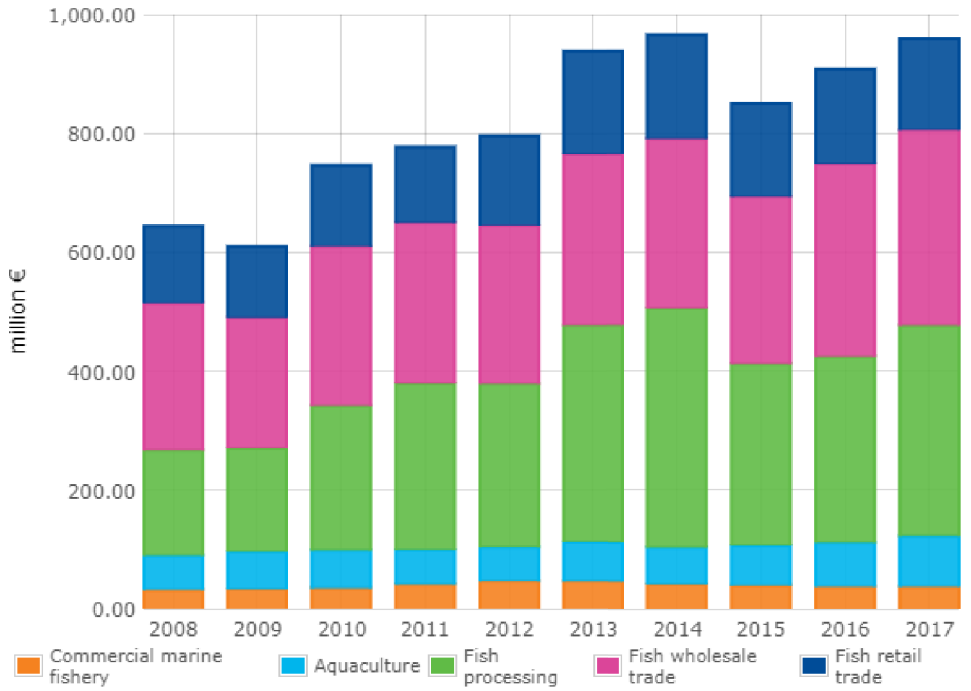


Photo: Markku Saiha / SAKL ry

Aquaculture companies' revenue and profitability continued to improve

In 2017, there were 177 companies with aquaculture as their main line of business in Finland. The aquaculture companies are divided into five categories based on their main production orientation. The categories are: marine food fish production, freshwater food fish production, recirculating aquaculture systems, hatcheries and nurseries, and ponds.

The segment provided 346 person-years of employment. The profit from aquaculture increased by 15% to EUR 86 million. Approximately 60% of the revenue of aquaculture enterprises came from food fish production in sea areas. The business of companies in this size class was also the most profitable. The net result showed a profit in almost all forms of production, and the profitability of the entire segment improved considerably.

The value of net investments made by aquaculture enterprises amounted to more than EUR 5 million. Recirculation fish farms made the highest investments, totalling around EUR 2.3 million, closely followed by producers of food fish in sea areas. In other forms of production, the volume of investments remained low. The solvency and liquidity of companies in the segment were good or satisfactory.

- Profitability of fisheries
- Economydoctor

Photo: Omer Levin

Fish consumption

In 2018, Finnish people consumed just under four kilograms of domestic fish and a little more than nine kilograms 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 product weight. Of the domestic species, the consumption of vendace was calculated as the weight of gutted fish.

Fish consumption decreased

The total consumption of fish decreased by roughly six per cent from the year before. The most important domestic species in terms of consumption was farmed rainbow trout (1.2 kg per capita), while of imported fish, farmed salmon was consumed the most (3.5 kg per capita). The consumption of imported salmon decreased by 13% from the previous year.

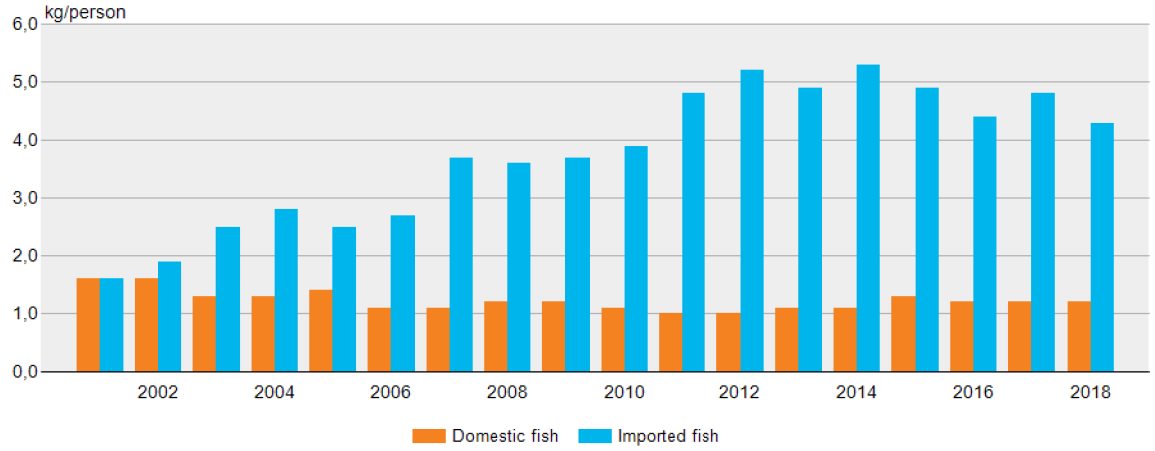
The decrease in domestic fish consumption is explained by the smaller catch of recreational fishermen and the smaller vendace catch of commercial fishermen compared with the previous year.

Vendace, pike and perch are the most popular wild species

Of wild-caught domestic fish, vendace was consumed the most (0.46 kg per capita). It was followed by pike (0.44

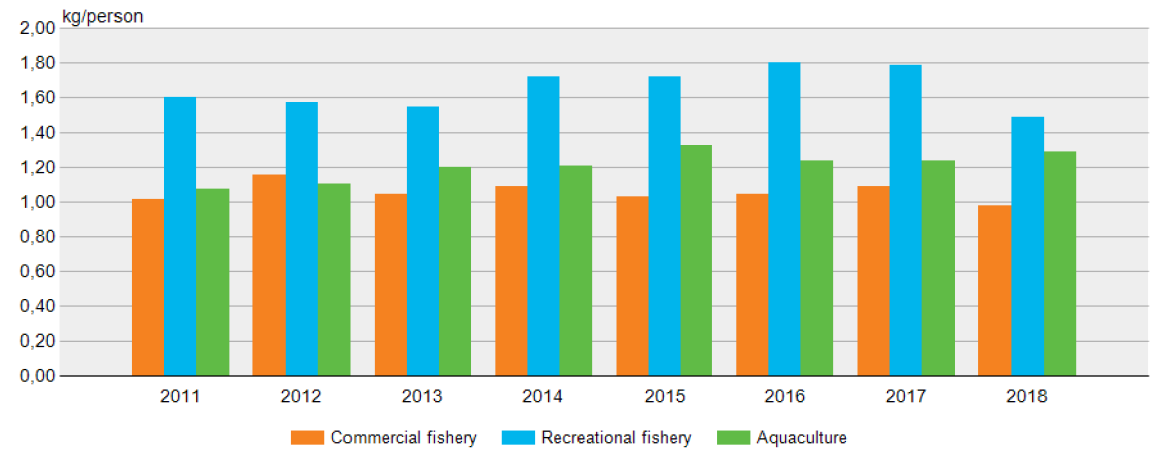
Use of fish for food 2002-2018

Background data as a table



Domestic fish consumption by origin 2011-2018

Background data as a table



kg), perch (0.40 kg), pikeperch (0.34 kg), Baltic herring (0.31 kg) and European whitefish (0.23 kg).

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

▶ Fish consumption

Photo: Veijo Pruuki

Domestic fish consumption by origin 2018

▶ Background data as a table

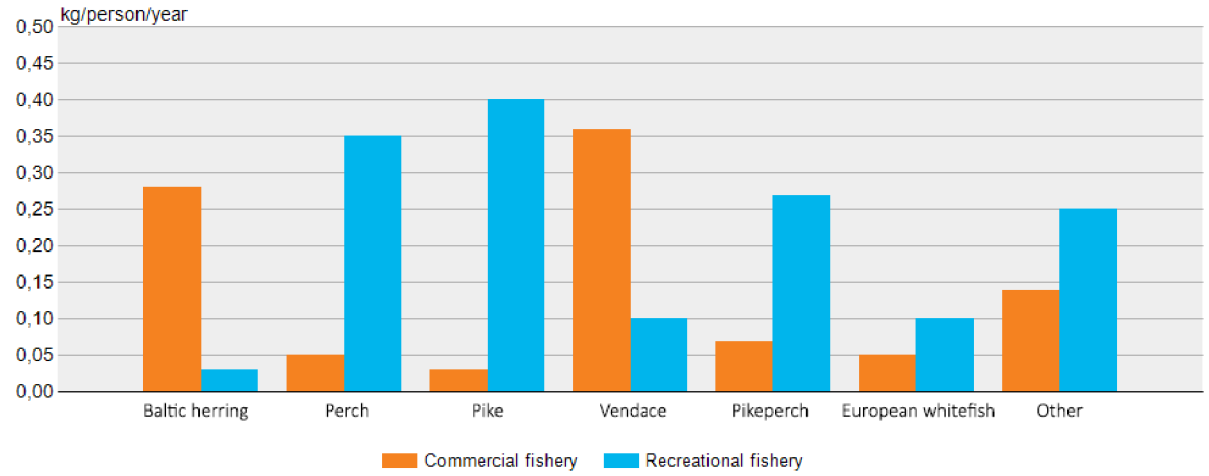


Photo: Veijo Pruuki

Photo: Erkki Oksanen / Luke

Hunting

In 2018, the grouse bag was significantly higher than in the previous couple of years. The deer bag was also considerable. Fur animals were also caught a little more than in the previous year. However, the waterfowl catch declined for the fifth year in a row. The number of hunters has remained constant for years.

Approximately 300,000 hunters pay the game management fee each year in Finland. In 2018, the number of hunters who paid the fee was highest in the Oulu district of the Finnish Wildlife Agency, followed by Lapland and Uusimaa. Eight per cent of those who paid the fee were women. The number of women has increased in recent years.

Most hunt small game

About two-thirds of those who paid the game management fee were active hunters in 2018. By region, the highest numbers of active hunters were in Kainuu and North Savo, and the lowest in South Häme and Uusimaa. More than 80% of all active hunters hunted small game, and about 60% hunted deer. Three out of four small game hunters were successful.

The number of grouse hunters increased slightly from the previous year. Around half of all active hunters hunted grouse, and approximately 40% hunted waterfowls. The number of hunters who caught black grouse was highest. Almost as many caught mallard.

Game birds accounted for more than half the total game bag

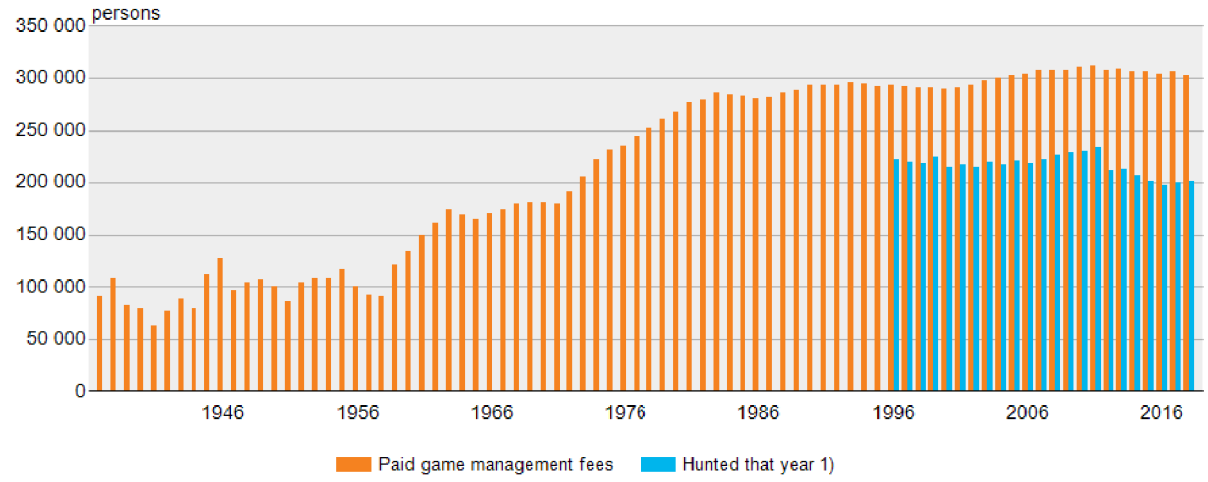
In numbers, more than half hunters' total game consisted of game birds, excluding non-protected species such as crows, common magpies, jackdaws and seagulls. A quarter of the game bag consisted of fur animals, and just under 10% of deer and other even-toed ungulates, which naturally produced the most meat (more than 90% of the total game meat). The total game bag consisted of around 1.4 million individuals.

The grouse bag increased, and the waterfowl bag decreased

Grouse stocks fluctuate naturally. In recent years, stocks have remained low, but they are now recovering. In 2016 and 2017, the numbers of hazel grouse, black grouse and wood grouse caught were particularly low, but in 2018, the grouse bag doubled compared to previous years and was

The number of hunters who paid the game management fee and hunters engaged in hunting

Background data as a table

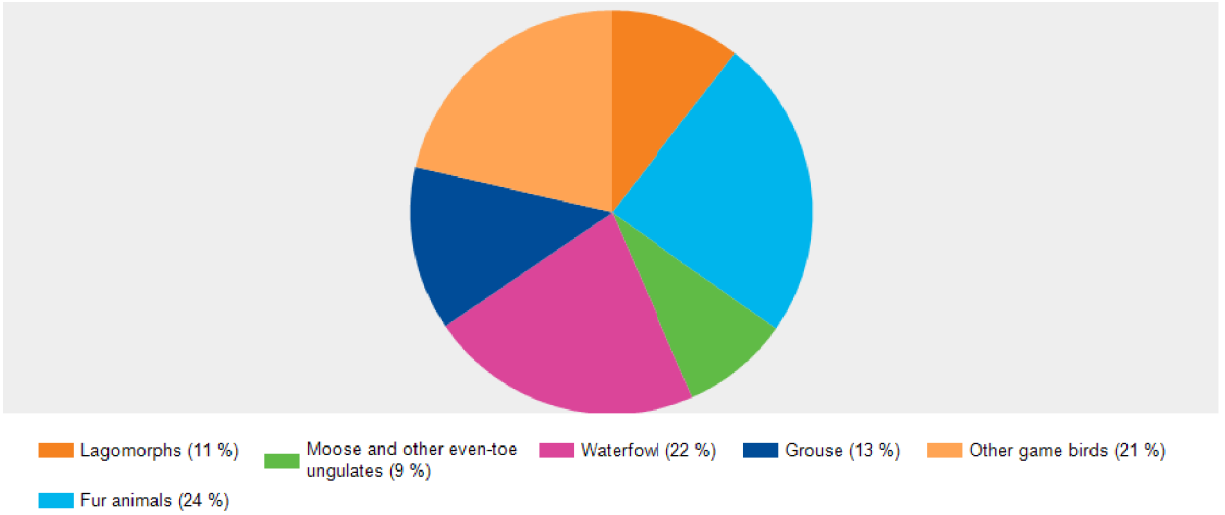


almost the same as in 2015. Wood grouse were hunted even more than that year.

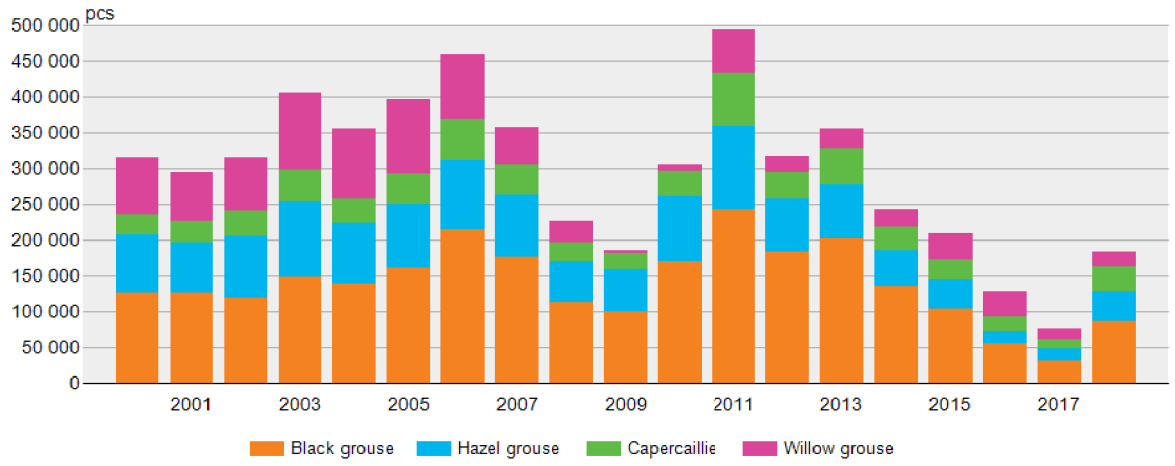
The waterfowl bag consists of almost 90% of our most common waterfowl, such as mallard, goldeneye and teal, but some other rarer species are also hunted. In 2018, the hunting of common pochard and red-breasted merganser was completely forbidden. Both the number of waterfowl hunters and the waterfowl bag have decreased in recent years.

Photo: Jari Kangasniemi

Game bag (1.4 million individuals) by species group in 2018 ▶ Background data as a table



Grouse bag 2000–2018 ▶ Background data as a table



Wood pigeon, raccoon dog and mallard the most hunted species

The fur animal bag consisted mainly of small predators (fox, raccoon dog, mink, pine marten, European polecat, stoat and European badger), more than half of which were raccoon dogs. The raccoon dog bag increased significantly at the turn of the millennium but has since stabilised. In 2018, the number of raccoon dogs caught was slightly higher than in the previous year.

The mountain hare bag almost halved in the previous three years, but in 2018, the decline stopped, and the hare bag remained at the previous year's level. Around 40% of the total hare bag consisted of brown hares, whose numbers have remained more stable than those of the mountain hare.

In 2018, the most hunted species in terms of numbers was wood pigeon, followed by raccoon dogs and mallards. These have been the most hunted species for years.

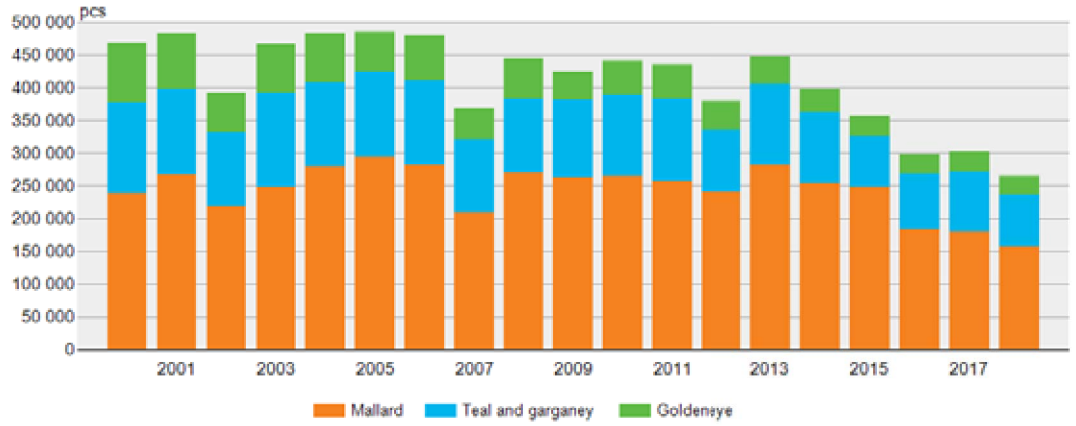
More deer-hunting permits were issued, and the deer bag increased

The number of deer hunting permits issued was higher than in the previous year, which is why the deer bag increased. The number of white-tailed deer caught increased especially from previous years, and it amounted to almost as much as the number of elk caught.

▶ Hunting

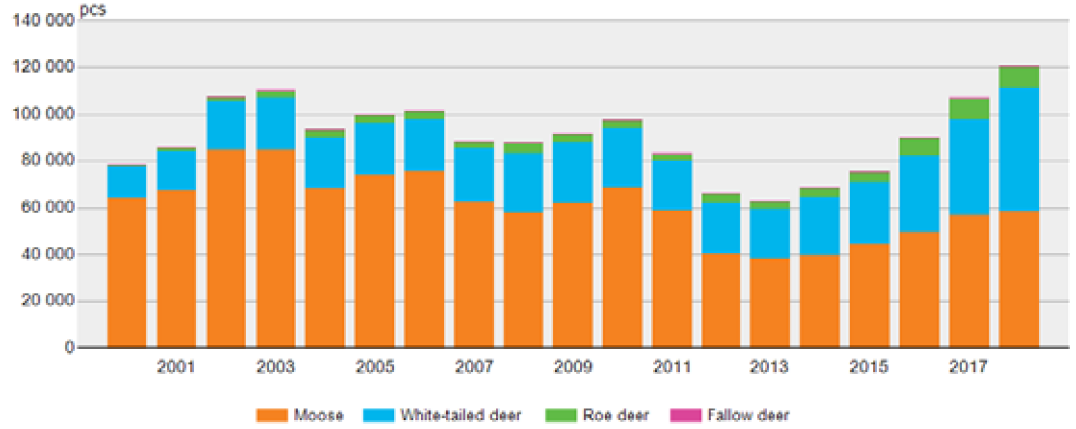
Bag of the most common waterfowl 2000–2018

▶ Background data as a table



Deer game bag 2000–2018

▶ Background data as a table



Bioeconomy in Finland

Photo: Erkki Oksanen / Luke

Bioeconomy in Finland

The proportion of the bioeconomy from the output of Finland's national economy and value added has remained nearly unchanged during the 2010s. In 2018, the output of the bioeconomy accounted for 17% of the national economy's total output. Compared with the previous year, the output volume increased by one per cent.

In 2018, the total value added of the bioeconomy sectors was EUR 25.2 billion, 12% of the national economy's total value added. Measured at constant prices, the value added increased by two per cent from 2017.

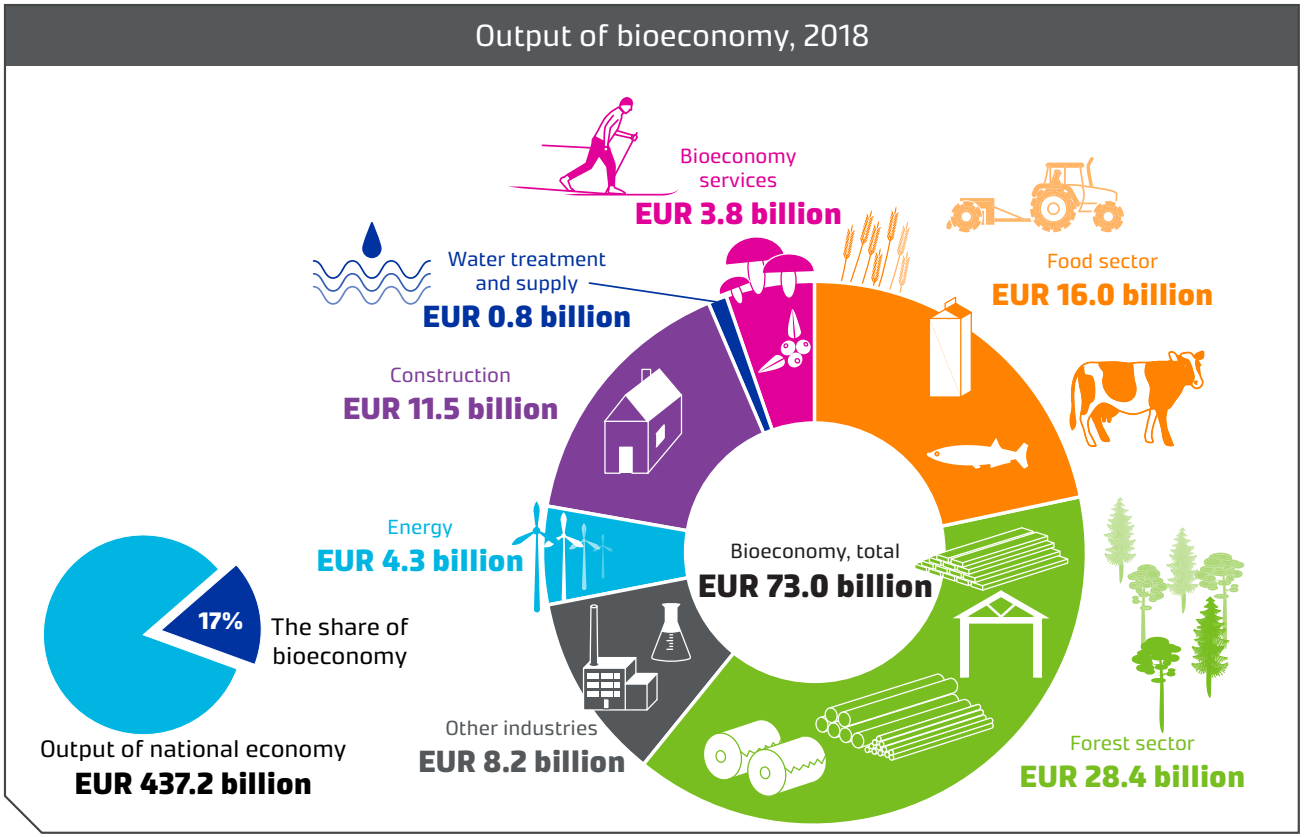
Approximately a third of Finland's goods exports are bioeconomy products, of which around 70% are forest industry products. In 2017, EUR 6.4 billion was invested in the bioeconomy industries, which represents more than a tenth of the total national investment. The forest sector's share of investment in the bioeconomy rose to nearly a third.

The decline in employment halted

In 2018, sectors in the bioeconomy employed 303,200 people, 12% of the total labour force in Finland. The bioeconomy labour force has decreased by 13,500 people compared with the beginning of the 2010s. In 2018, however, the decline halted, and the number of employed persons increased by half a per cent from the previous year. At the same time, however, the number of people employed in the national economy increased by roughly three per cent.

The food sector, mainly agriculture and the food industry, employed a third of the total labour force in the bioeconomy in 2018. Agriculture remained the largest employer in the bioeconomy, with 65,300 people employed, although the agricultural labour force has decreased by 20,900 people since 2010. The number of people employed in the forest sector, i.e. forestry, wood products industries, and the pulp and paper industries, totalled 62,500, or a fifth of the labour force in the bioeconomy.

Output of bioeconomy, 2018



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 wood construction and renewable energy production. Recreational use of nature and the use of other bioeconomy services are also increasing.

In 2018, the forest sector represented 39% of the total output of the bioeconomy and 36% of the value added. These proportions have remained fairly stable in recent years. It was followed by the food sector (output 22%).

Sectors regarded as the 'blue bioeconomy', i.e. commercial fishery and aquaculture, the fish-processing industry and recreational fishing, represent less than one per cent of the output and value added 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. Because the number of persons employed in the bioeconomy has decreased by more than 13,500 since 2010, the target appears difficult to achieve. The strategy also aims to increase the output of the bioeconomy to EUR 100 billion. This will be achieved if the average output of the bioeconomy increases by five per cent annually.

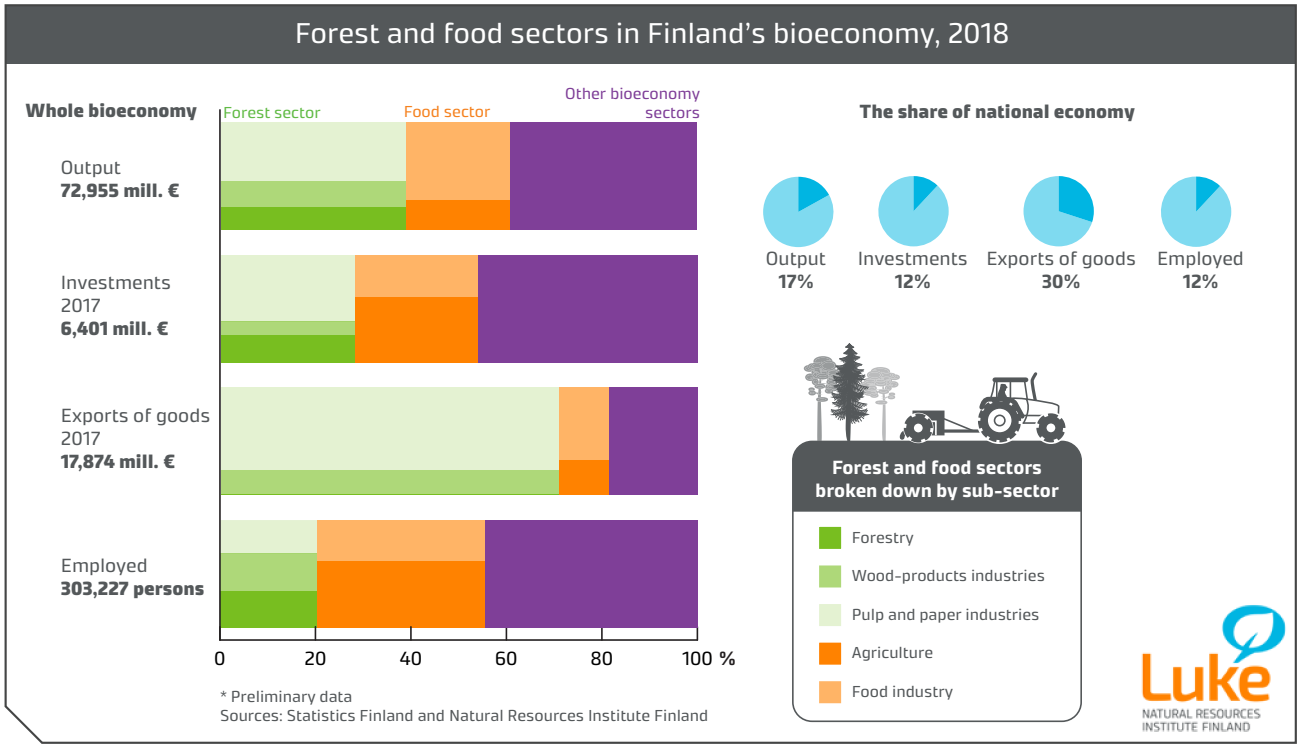
Key terms

Output at basic price consists of products produced during a calendar year. 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, and independent entrepreneurs who participate in production activities in the national economy.

- Bioeconomy in figures
- The principles for monitoring the bioeconomy
- Bioeconomy in the statistics database



International data sources

Photo: Manfred Richter / 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 forest land 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 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 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.

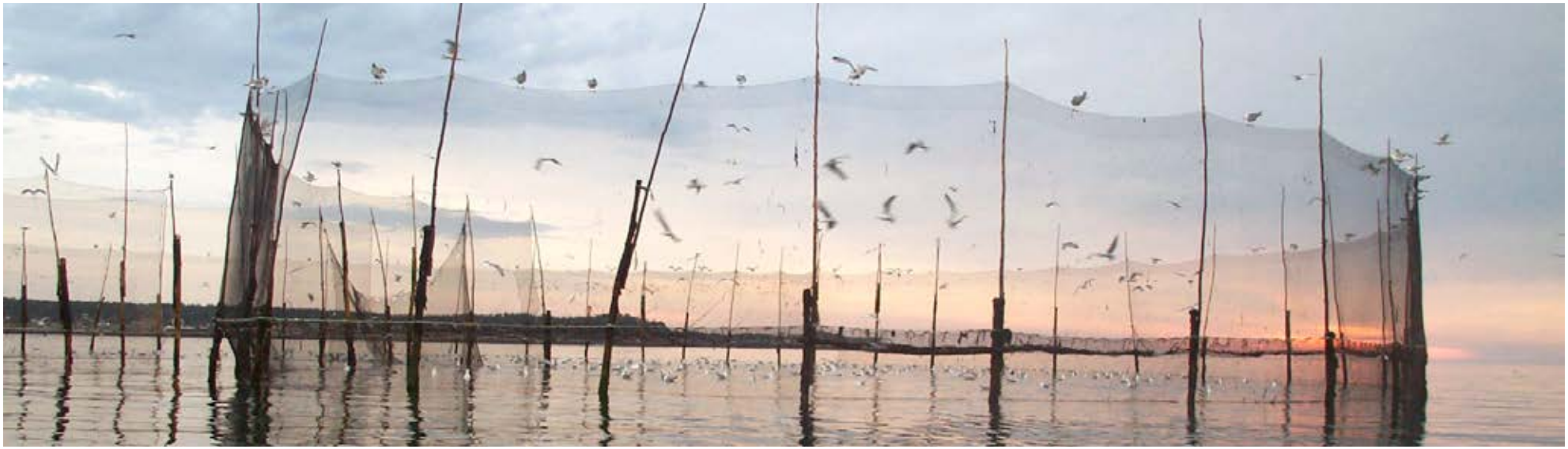


Photo: Mika Rahikainen

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