Luke
NATURAL RESOURCES
INSTITUTE FINLAND

# E-yearbook of food and natural resource statistics for 2015

Photo: Erkki Oksanen/Luke

# Dear reader,

Luke's statistical e-yearbook is an annual compiled publication that contains analyses of the most important food and natural resource statistics in Finland. The analyses are linked to the statistics tables in our online service. This book contains statistical data on natural resources and bioeconomy covering agriculture, fisheries and the game industry as well as forestry.

Luke started as the statistical authority of natural resources on 1 January 2015, and its production of statistics continues the statistical authority operation of the Information Centre of the Ministry of Agriculture and Forestry, and the production of statistics that was the responsibility of the Finnish Forest Research Institute and the Finnish Game and Fisheries Research Institute (FGFRI). Luke's statistical e-yearbook is now published for the first time, and it will start a new series of e-yearbooks. The yearbook is available in the statistics portal of the Natural Resources Institute Finland at stat.luke.fi. It can be downloaded in Finnish, and also in English and Swedish as of the spring of 2016. Links to tables in the online service ensure up-to-date statistics to the user.

As the Editor-in-chief of Luke's e-yearbook, Sanna Kettunen has modernised the traditional statistics yearbook and brought it into the digital age. Actuary Tarja Kortesmaa, Researcher Leena Forsman and Senior Researcher Esa Ylitalo are responsible for the content and analyses of the publication, along with a number of Luke's statistics experts. The layout has been created by Research Graphic Designer Irene Murtovaara.

I would like to thank all statistics experts who have participated in the preparation of this publication and the whole Luke yearbook for their excellent work. We are happy to receive any feedback and development suggestions on the publication and our website by email to the following address: tietopalvelu@luke.fi

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## Agricultural statistics



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## Fisheries and hunting statistics

# Agricultural statistics

# 2014 in agricultural statistics

## The number of agricultural and horticultural enterprises 52,775

In 2014, there was a total of 52,775 agricultural and horticultural enterprises in Finland. The number of farms declined by three per cent in a year and by about 11 per cent since 2010. The average size of farms increased by 1.5 hectares to 43 hectares. The proportion of plant production as the main production sector on farms is increasing, and the proportion of livestock farms is declining. In 2014, plant production was the main production sector on about 65 per cent of farms and livestock production on slightly over 30 per cent of farms.

60 per cent of farms had leased fields. On average, the use of leased fields was more common on livestock farms. More than 80 per cent of pig and cattle farms had leased fields. In 2014, the amount of leased fields was about 777,000 hectares, which is a third of the total utilised agricultural area.

## Milk production volume is increasing

In 2014, the total amount of milk production was 2,330 million litres. The amount of milk production increased by three per cent from the year before and was the highest in eight years. The production of organic milk continued to increase for the eighth year running; the amount of production was 47 million litres. At the end of 2014, the number of milk producers was 8,370, which is about five per cent less than the year before.

Due to Russia's import ban issued in August 2014, the production amount of cheese declined considerably since the autumn. A total of 99 million kilos of cheese was produced in a year, which is three per cent less than the year before. On the other hand, the production of butter increased by 11 per cent to almost 49 million kilos in 2014.

## A record amount of poultry meat was produced again

The production of poultry meat has been breaking records for four years in a row. In 2014, production reached 113 million kilos. The production amount increased by two per cent from the year before. Beef production increased by a couple of per cent to more than 83 million kilos. The amount of pig meat production was 186 million kilos. The production amount is four per cent less than in 2013 and the lowest in 12 years.

In 2014, slightly over 67 million kilos of eggs were produced. The production volume increased slightly from the year before and was the highest in the 2000s. Of the eggs produced, 62 per cent came from enriched battery cage hen houses, 33 per cent from barn and free-range hen houses, and five per cent from organic production.

## The second largest wheat area ever

In 2014, more than half of the approximately 2.3 million hectares of arable land in Finland was used for cultivating grain. The cultivation area of wheat, about 272,000 hectares, was the second largest since statistics have been compiled. Barley was cultivated the most, over an area of nearly 532,000 hectares. The total cultivation area of turnip rape and rape was 43,500 hectares. The area has not been so small in more than 30 years.

## Wheat production slightly exceeded the production of oat

In 2014, the amount of grain crop was over four billion kilos. On average, the crop has reached such a high level every other year in the 2000s. Wheat production was slightly greater than the production of oat for the first time in the over hundred years that crop statistics have been compiled. The production of both in 2014 was more than a billion kilos. Rye crop, 75 million kilos, almost tripled compared to the year before, but it was still far behind the amounts of crop of barley, wheat and oat. Turnip rape crop declined for the fourth year running. In 2014, the crop, which was 33 million kilos, was only a fifth of that in 2010.

The amount of organic grain was slightly over 100 million kilos, that is, 2.5 per cent of the total grain production. Most of the organic grain, about 40 million kilos, was oat, of which the share of the total oat crop was about four per cent. Proportionally, rye was produced the most organically; the proportion of organic production of the total production was 12 per cent.

## 2014 was a good year for vegetable production

Vegetable production grew strongly. Vegetables grown in the open totalled 186 million kilos and greenhouse vegetables 83 million kilos. Carrots were grown the most in the open, with a record crop of 74 million kilos. Onions also amounted to a record crop of 26 million kilos. The longest continuous growth curve in the history of statistics on greenhouse production is found in the production of potted vegetables. In 2014, production already exceeded 100 million pots. The production of tomato and greenhouse cucumbers also increased significantly compared to the year before.

## Producer prices of agricultural products declined

The producer prices of almost all agricultural products were lower in 2014 than the year before. Proportionally, the decrease has been the greatest in the producer prices of grain, an average of more than 20 per cent compared to the year before. The average annual producer price of milk has increased since 2010, but towards the end of 2014, the producer price for it also started to decline.

The average producer prices of meat have increased quite steadily as of 2010, but in 2014, the prices started to decline apart from sheep meat, of which the average price was six per cent higher than the year before when calculated on an annual level. The producer prices of eggs declined by an average of 15 per cent compared to the year before.

# The structure of agriculture

In 2014, there were 52,775 agricultural and horticultural enterprises in Finland. About 1,600 farms ended their operations this year. The average size of farms increased by 1.5 hectares in a year.

## The number of farms continues to decrease

The number of farms has been declining for years. For example, since 2010, every tenth farm has ended their operations. There are no signs of change to this trend.

The drop in the number of farms also affects the main production sectors on farms. The number of livestock farms is declining, and it will result in an increase in the proportion of crop farms. In 2014, grain production was the most common production type and the second most common was other plant production. Milk production was the most dominant livestock sector.

As the number of farms declines, the fields of farms that end their operation are transferred to farms that are still in operation. Currently, it is very common to rent fields. In 2014, about 60 per cent of farms rented fields, and about a third of arable land was rented.

In 2014, the average amount of field on farms was 43 hectares. The largest average areas are located in Uusimaa and Southwest Finland, where the average size of arable land is more than 50 hectares. The smallest average size is in South Savo, where it is less than 30 hectares. The sizes of arable land areas on farms vary greatly according to the production sector. The average size of arable land area is smaller on crop farms than on livestock farms. For example, in 2014, the average size of arable land was 22.6 hectares on farms that produce horticultural plants in open fields as their main production sector, while it was 83 hectares on poultry farms.

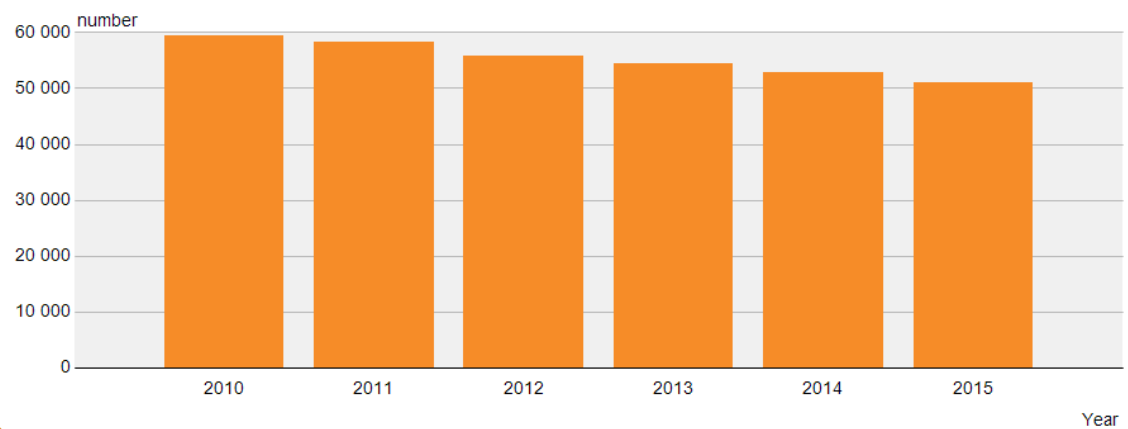
▶ Utilised agricultural area by regions

▶ Structure of agricultural and horticultural enterprises

*Photo: Erkki Oksanen/Luke*

The development of the number of agricultural and horticultural enterprises, 2010–2014

▶ Background data as a table



## The majority of farms are still family-run farms

In Finland, agriculture and horticulture are still firmly founded on traditional family-run farms. In 2014, about 87 per cent of farms were in private ownership, about eight per cent of farms were group holdings, and less than two per cent were limited companies. The average age of farmers on family-run farms was 50.6 years in 2014. The majority of farmers were aged between 40 and 60. The proportion of farmers on family-run farms under the age of 40 was 18 per cent, and 23 per cent of the farmers were over the age of 60.

## The size of the labour force is also declining

Information on the labour force in agriculture and horticulture is collected every three to four years in connection with the Farm Structure Survey. The most recent survey was carried out in 2013 and the next one will be carried out in 2016.

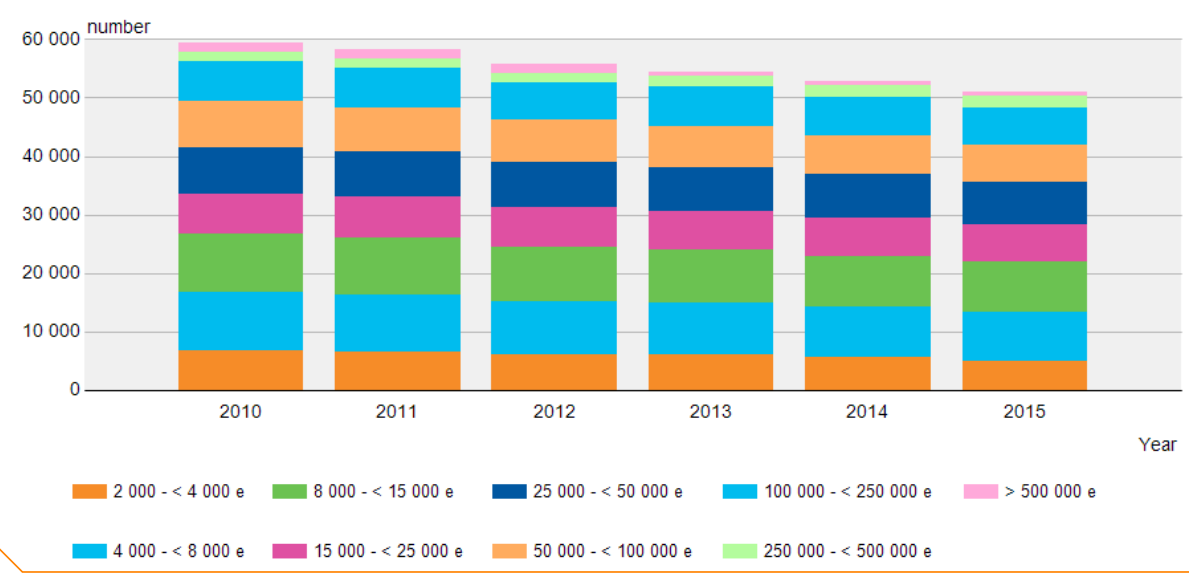
As the number of farms is decreasing, the size of the labour force in agriculture and horticulture is also declining. When the keeping of livestock ends, it has a significant effect on the amount of work carried out on farms, as work is often carried out full-time on livestock farms. Part-time employment is more common on crop farms.

In 2013, about 57,000 farmers or joint owners worked on farms, along with 46,000 family members and a regular labour force of 7,200 persons, that is, a total of 110,000. In addition, the farms employed a temporary labour force of about 41,000 persons.

Farmers and joint owners carry out the majority of work on farms. In 2013, they completed a total of 40,700 person-years. Family members worked for 17,500 person-years and regular labour force 5,800 person-years. Temporary labour force worked for 4,600 person-years, holiday relief staff 3,000 person-years, and contractors 1,300 person-years. In total, about 73,000 person-years were completed on farms.

The number of agricultural and horticultural enterprises by Standard Output, 2010-2014

Background data as a table




The average age of farmers on family-run farms was 50.6 years in 2014.

The majority of agricultural and horticultural work is carried out on dairy farms. Keeping livestock is also laborious on other livestock farms, but due to their smaller number, the total amount of work is clearly lower than on dairy farms. In 2013, a total of 27,400 person-years were completed on dairy farms. This is slightly under 40 per cent of all work carried out in agriculture and horticulture.

The size of the labour force declined by about 40 per cent between 2000 and 2010. The proportion of women has declined more than that of men. Information for 2013 is not fully comparable with previous results due to changes in the manner in which statistics are prepared.

## A third of farms have other gainful activities

The most recent information on other gainful activities of agricultural and horticultural enterprises dates back to 2013. Information is gathered every three to four years in connection with the Farm Structure Survey, which will be carried out again in 2016.

In 2013, less than a third of agricultural and horticultural enterprises, that is, 16,800 farms, had other gainful activities in addition to agriculture and horticulture. As the number of farms is declining, the number of farms that have other gainful activities is also declining.

In 2013, almost 30,000 persons worked in other gainful activities. More than half of them were farmers or joint owners. The amount of work carried out in other gainful activities was nearly 11,000 person-years.

Other gainful activities are mostly carried out on farms where the production sector is grain production or other plant production. Proportionally, diversification was the most common on horse farms. The proportion of diversified farms is the smallest on cattle and pig farms. Taking care of livestock takes up so much time on large livestock farms that there are no resources left for other gainful activities.

By far the most common form of other gainful activity is providing various kinds of services. Services are provided by 74 per cent of farms that have other gainful activities. The most common service is contracting, such as farm machinery contracting, snow ploughing or road maintenance. In 2013, about 8,600 farms acquired additional income through contracting.


- Agricultural and horticultural labour force
- Other entrepreneurship in agriculture and horticulture


Agricultural and horticultural labour force, 2000-2013

Background data as a table

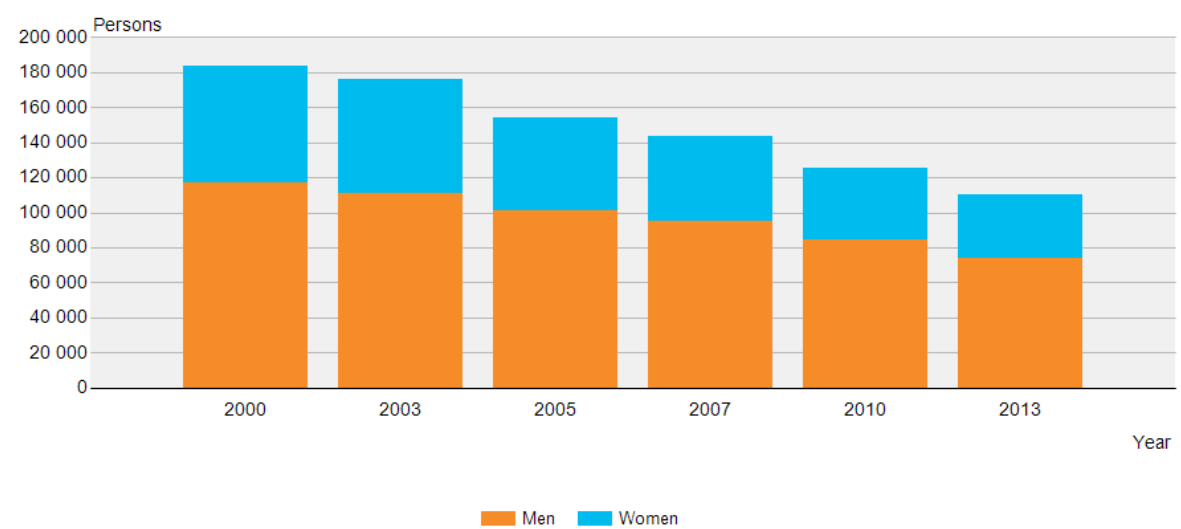
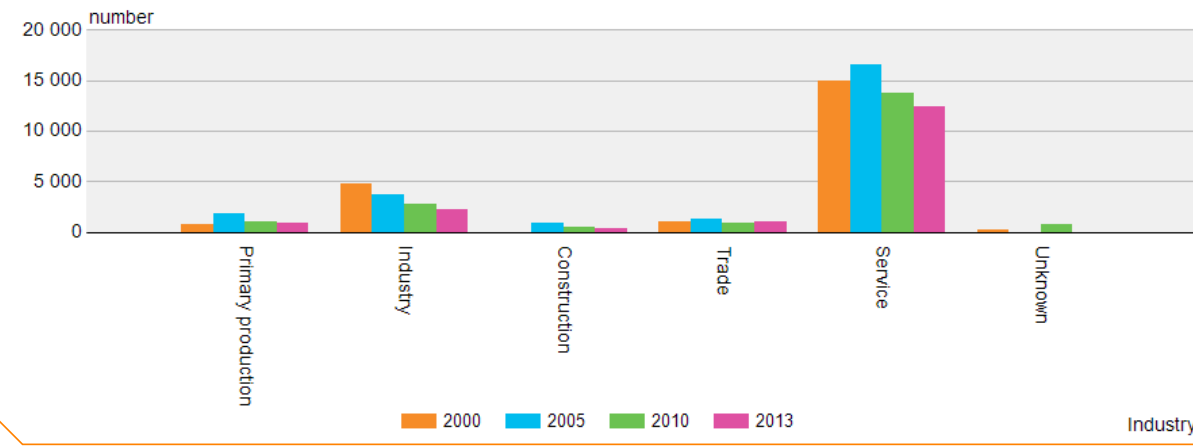


*Photo: Erkki Oksanen/Luke*

Other gainful activities on farms are usually quite small in scale. The annual turnover of other gainful activities amounted to less than 10,000 euros on nearly 40 per cent of farms. The annual turnover of other gainful activities amounted to between 10,000and 50,000 euros on almost as many farms. Other gainful activities are often used for acquiring additional income by using existing resources on a farm, such as machinery and equipment.

The number of diversified agricultural and horticultural enterprises by line of business, 2000–2013

Background data as a table




*About 600 farms sell their products directly to consumers. The share of direct sales is more than half of the total sales on about 20 per cent of these farms.*

## The energy consumption in agriculture and horticulture approximately 10,000 GWh

In 2013, agricultural and horticultural enterprises consumed about 10,000 gigawatt-hours (GWh) of energy. The most important individual energy source is wood chips, which made up nearly a third of the total energy consumption.

## The share of renewable energy is increasing

All in all, the proportion of renewable wood and field energy was 45 per cent of the total energy consumption of agriculture and horticulture. Compared to the previous statistical year, 2010, the proportion of renewable energy of the total consumption increased slightly, from 42 per cent in 2010.

Although peat is not considered a renewable energy source, it is nevertheless a domestic fuel. Most often, various mixtures of solid fuel are used in the energy plants of farms and greenhouses, and peat is one alternative. The availability and price of peat are greatly affected by the weather conditions of the previous summer.

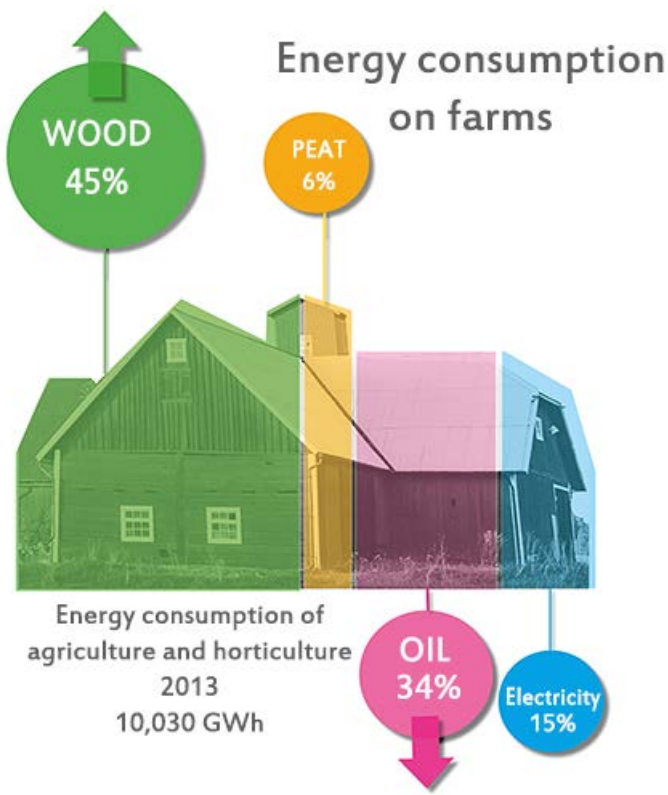
## Management of fields consumes fuel

The share of motor fuel oil of the total energy consumption is almost a quarter, that is, 2,304 gigawatt-hours. The amount is great but the management of fields requires the use of tractors, and as the size of farms increases, also distances between sections become longer.

## Electricity difficult to replace

The proportion of electricity was 15 per cent of the total consumption of energy in agriculture and horticulture, that is, 1,509 gigawatt-hours. Electricity is necessary on farms but the amount of electricity used varies greatly. On dairy farms, electricity is needed for operating milking parlours and cooling milk; on poultry farms, it is needed for air conditioning. Illuminated greenhouse production is a significant electricity consumer.

- Energy consumption in agriculture and horticulture
- The energy consumption in agriculture and horticulture by energy source (GWh)



# Livestock production

Milk production is the most important production sector of agriculture, and it is practised in almost all municipalities in Finland. In 2014, milk was produced in 304 municipalities out of the total of 320 municipalities in Finland.

## Milk production the highest in eight years

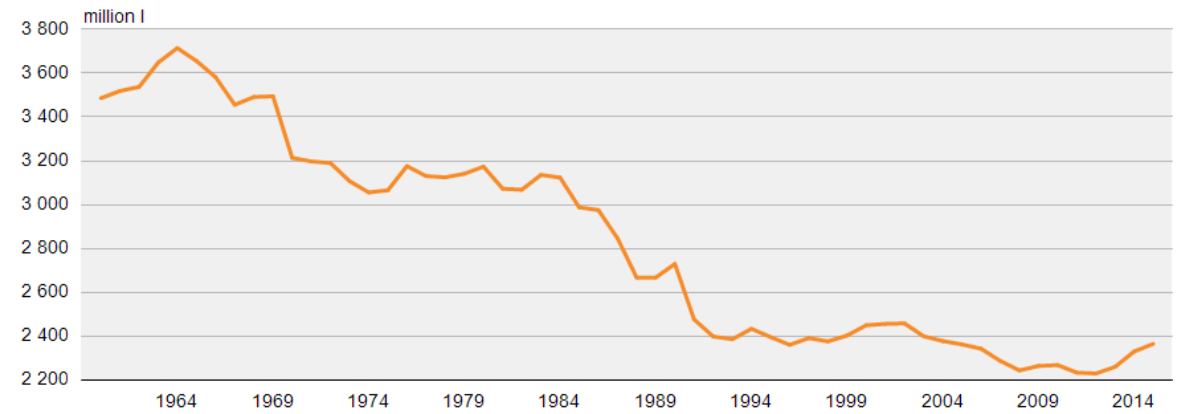
In 2014, milk production was the highest in eight years. A total of 2,330 million litres of milk was produced, which is three per cent more than the year before. The production of organic milk continued to increase for the eighth year running, and the amount produced was 47 million litres. However, the proportion of organic milk of the total production is minor; only about a couple of per cent.

At the end of 2014, there were about 8,370 farms that delivered milk to dairies. Last year, five per cent of farms, that is, about 450 farms, gave up milk production.

In 2014, cows produced an average of 8,200 litres of milk in a year. Over the past decade, the average production amount of dairy cows has increased by 800 litres. The average production amounts of dairy cows have increased due to advanced animal breeding, feeding, and the competence of entrepreneurs, for example.

Background data as a table

Milk production, 1960–2014




## Ostrobothnia and Savo produced the most milk

About half of milk is produced in the area of three ELY Centres in Ostrobothnia and North Savo. During the previous quota period, the amount of milk produced in North Savo, Ostrobothnia, North Ostrobothnia, Kainuu and Åland was the greatest in 17 years. The greatest milk production municipalities were Kokkola, Kiuruvesi and Nivala.

Milk and milk product statistics

Milk production by region

## Production of fresh dairy products declined

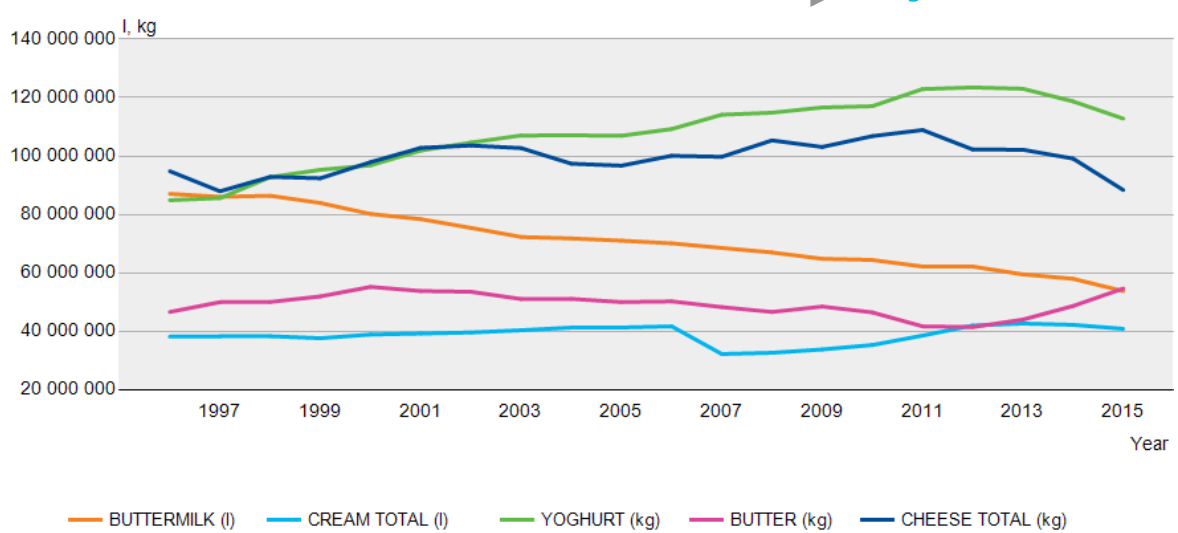
In 2014, the amount of milk received by dairies was 2,289 million litres. Dairies use milk to produce fresh products, cheese, butter and powders. Some of the milk was used as raw material outside the dairy industry, such as for the production of ice cream and chocolate.

In 2014, the total amount of fresh products produced was about 1,000 million kilos. Milk makes up the majority of the amount (73%). The propor-

*Photo: Erkki Oksanen/Luke*

Production of milk products, 1996–2014

▶ Background data as a table




tion of yoghurt was 12% of production, buttermilk 6%, cream 4%, and other fresh products 5%.

In 2014, the production of most fresh products declined compared to the year before. The production of milk and cream reduced by more than one per cent, whereas the production of buttermilk, viili (curdled milk) and yoghurt fell by four per cent.

## Russia's import ban reduced the production of cheese and increased the production of butter and powders

In 2014, the production of cheese amounted to about 99 million kilos. The amount declined by three per cent from the year before. After Russia's import ban came into effect in August 2014, the production amount of cheese declined considerably since the autumn. Meanwhile, the production amounts of butter and powders have increased. The production of butter increased by 11 per cent to almost 49 million kilos in 2014.

In 2014, the amount of milk delivered to dairies totalled 2,289 million litres.

## Slightly less meat was produced than the year before

In 2014, meat production amounted to 384 million kilos, which is one per cent less than the year before. The proportion of pork was 49 per cent of the total amount of meat production, poultry 30 per cent, beef 21 per cent, and sheep meat less than 0.5 per cent.

## Beef production increased a couple of per cent

Beef production increased to more than 83 million kilos, which is a couple of per cent more than the year before. The increase resulted from the higher number of bulls and heifers slaughtered and the increase in average weights.

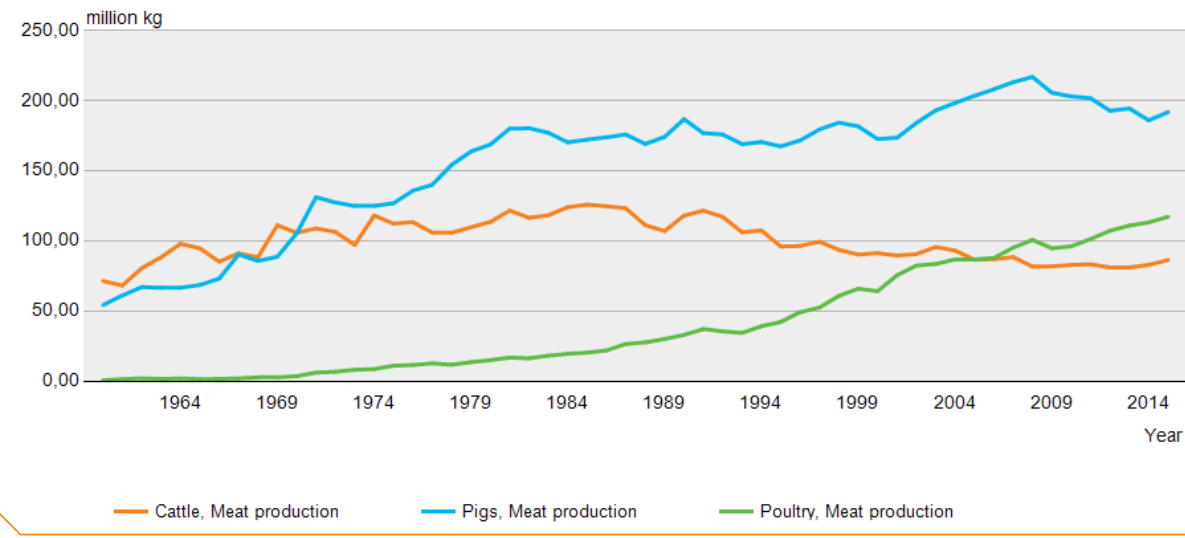
Beef production has declined due to the reduced number of dairy cows over the past decade. Increase in the number of suckler cows has slowed down the decline of production. Production has remained in slightly over 80 million kilos in recent years. Since the beginning of the millennium, production has declined by about 10 per cent.

The average weight of cattle increased last year. A bull weighed an average of 341 kilos, a heifer 243 kilos and a cow 282 kilos.

▶ Meat production

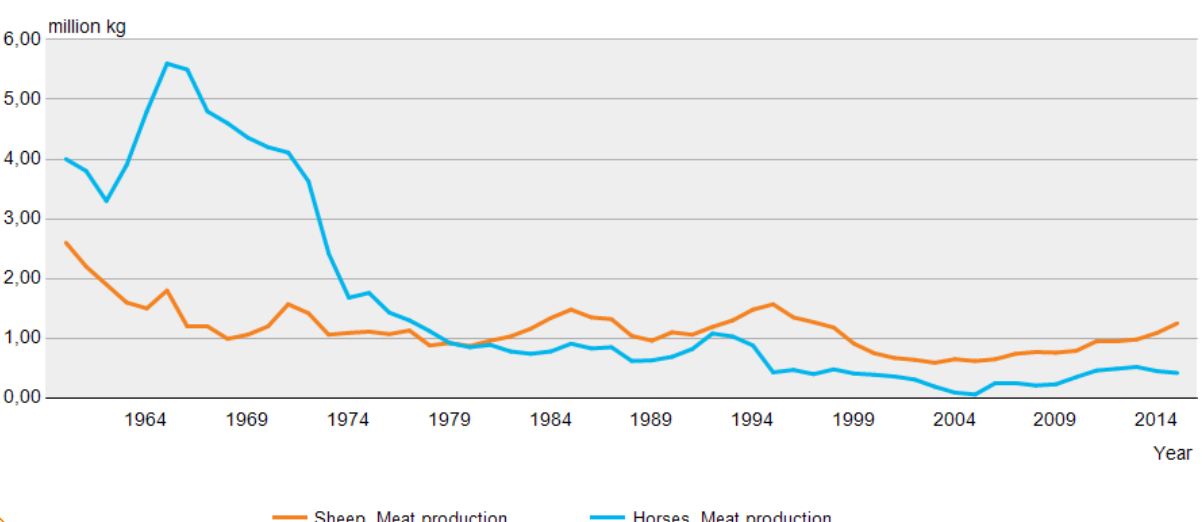
Production of beef, pig meat and poultry meat, 1960–2014

▶ Background data as a table




Production of sheep and horse meat, 1960–2014

▶ Background data as a table



## Most of the beef came from key dairy production areas

Beef is produced the most in the key dairy production areas, that is, North Ostrobothnia, North Savo, South Ostrobothnia and Ostrobothnia. These areas account for 54 per cent of the total beef production in Finland. Last year, the amount of beef produced in South Ostrobothnia and North Savo was the greatest in 17 years. Kiuruvesi is clearly the greatest beef-producing municipality, with 3.4 million kilos. It was followed by Kauhava (1.9 million kilos) and Siikajoki (1.6 million kilos).

## Pork production the lowest in 12 years

Pork production is the second most important production sector in terms of total value after dairy production. In 2014, pork production reached 186 million kilos. The production amount was four per cent lower than the previous year, and the lowest in 12 years. The number of slaughtered pigs declined, and the average weight of a pig (89 kilos) was almost the same as the year before.

## A fifth of produced pork comes from an area of three municipalities

Slightly more than 60 per cent of pork is produced on farms in the area of ELY Centres in Southwest Finland, South Ostrobothnia and Ostrobothnia. In terms of amounts, pork production has increased the most in the in Ostrobothnian ELY Centre areas over the past decade. Huittinen, Loimaa and Ilmajoki produced the greatest amount of pork. The total production amount of these three greatest pork-producing municipalities makes up almost a fifth of the total production in Finland.

▶ Meat production by region

## Poultry meat was produced more than ever

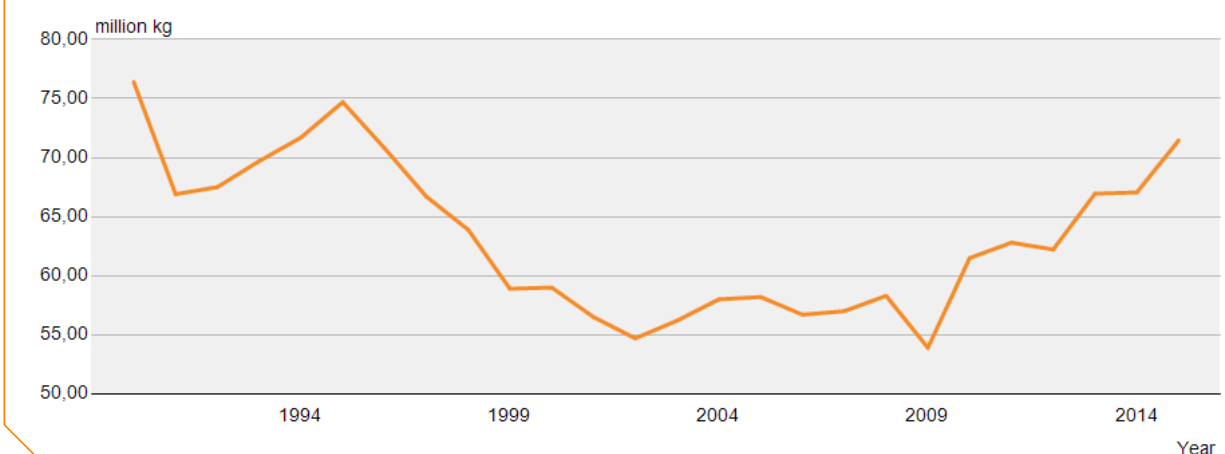
The production of poultry meat increased for the fourth year running to a new record. In 2014, the production of poultry meat amounted to 113 million kilos, which is a couple of per cent more than the year before. The production of broiler meat increased, while the production of turkey meat declined. Broiler meat makes up more than 90 per cent of the production of poultry meat. Due to increased demand, the production of broiler meat has increased by 50 per cent over the past decade. Meanwhile, the production of turkey meat has declined by almost the same percentage.

## Egg production increased slightly

In 2014, egg production amounted to more than 67 million kilos, which is slightly more than the year before. The production amount was the highest in the 2000s; the last time eggs were produced more was in 1996. Of the said amount, 93 per cent of the eggs were class A eggs that can be sold in stores, and 7 per cent were class B eggs. Class B eggs do not meet the quality requirements of class A eggs, but they can be used in the food industry.

Total production of eggs

▶ Background data as a table



In recent years, the number of eggs produced in hen houses with battery cages has declined, whereas the amount of eggs produced in barn and organic hen houses has increased. In 2014, of the eggs produced, 62 per cent came from enriched battery cage hen houses, 33 per cent from barn and free-range hen houses, and five per cent from organic production. The corresponding figures in 2005 were 88%, 10% and 2%.

## The number of cattle increased

The numbers of dairy cows, suckler cows, bulls and calves increased, whereas the numbers of heifers declined compared to the year before.

In the spring of 2014, there were 914,400 cattle on farms, which is slightly more than the year before. The number of dairy cows was more than 285,000, and their number increased by one per cent compared to the same point in time the year before. The number of cows increased in almost all ELY Centre areas.

Compared to the turn of the millennium, the number of dairy cows has declined an average of 20 per cent. Proportionally, the decrease has been the greatest in Southeast Finland, South Savo and Satakunta, more than 30 per cent. The number of cows has declined the least in the key dairy production areas in North Ostrobothnia and North Savo, about 10 per cent since the beginning of the millennium.

In the beginning of May, there were 57,790 suckler cows on farms. Their number started to rise again after a decline last year. The number of suckler cows was the highest in North Ostrobothnia and North Savo.

▶ Egg production

▶ Number of livestock

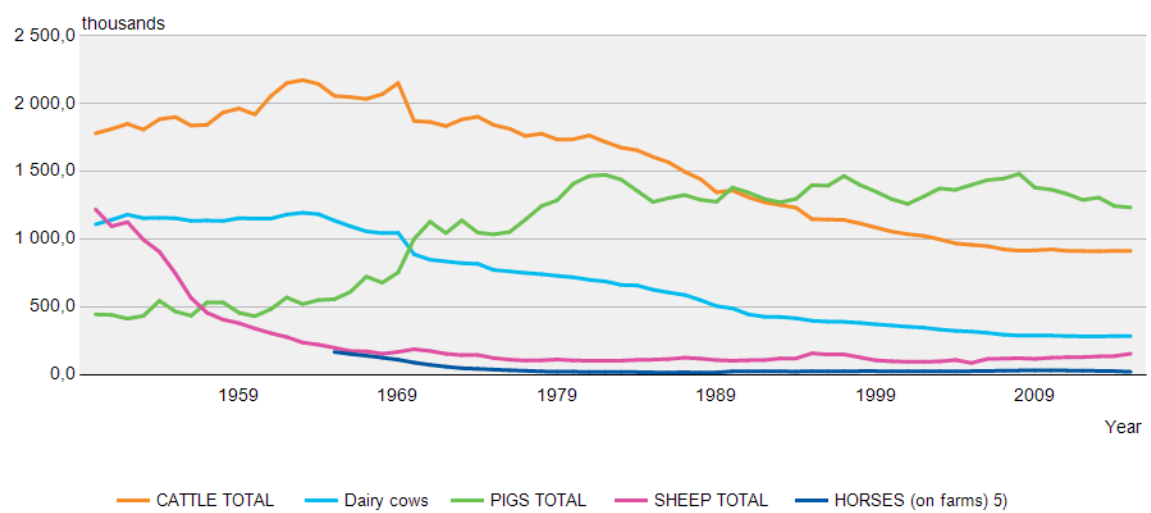
## The average number of dairy cows on farms is 32

In the spring of 2014, the average number of cows on farms was 32. There are still quite a lot of small farms in Finland, as nearly 40 per cent of farms have fewer than 20 cows. At the turn of the millennium, the proportion of small farms was 70 per cent.

The number of farms that have more than 100 cows has multiplied from the turn of the millennium. Last year, there were about 300 farms that had more than 100 cows.

Number of cattle, pigs, sheep and horses, 1950–2014

▶ Background data as a table



## The number of pigs continued to decline

In the spring of 2014, there were about 1.24 million pigs on 1,490 farms. The number declined by five per cent from the year before. The number of sows declined by four per cent to 121,000.

Over the past decade, the number of pigs has declined by eight per cent, whereas the number of sows has declined by a third. The decline in the number of sows has been compensated by the increase in piglet output, as a result of which the number of pigs has not reduced by as much as the number of sows.

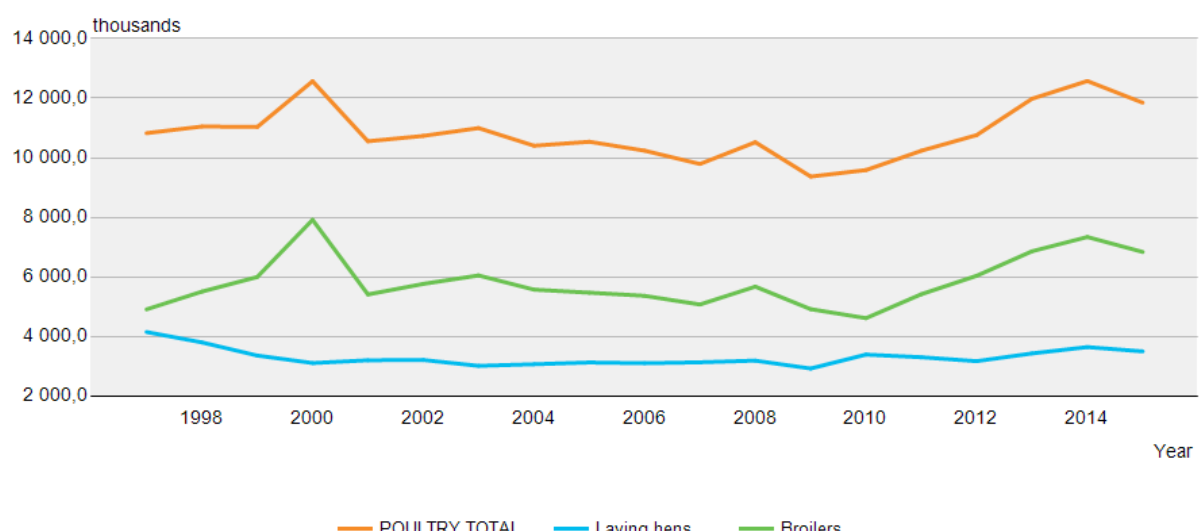
Over the past decade, the numbers of sows have declined in all regions. The decline has been smaller than the average in key pork production areas, that is, in Southwest Finland, Ostrobothnia and South Ostrobothnia. In the spring of 2014, there were more pigs on farms in Ostrobothnia and North Ostrobothnia than there were 10 years ago.

## A record amount of poultry

On 1 April 2014, the total number of poultry on farms was 12.6 million, which is a record. The number increased mainly due to the increase of broilers. The number of hens, turkeys and other poultry also increased.

Number of poultry, 1997–2014

Background data as a table




In the spring of 2014, there was a record number of broilers, 7.3 million on about 140 farms. There was an increase of seven per cent compared to the year before. Broilers are mainly grown in the vicinity of slaughterhouses in South Ostrobothnia, Satakunta and Southwest Finland.

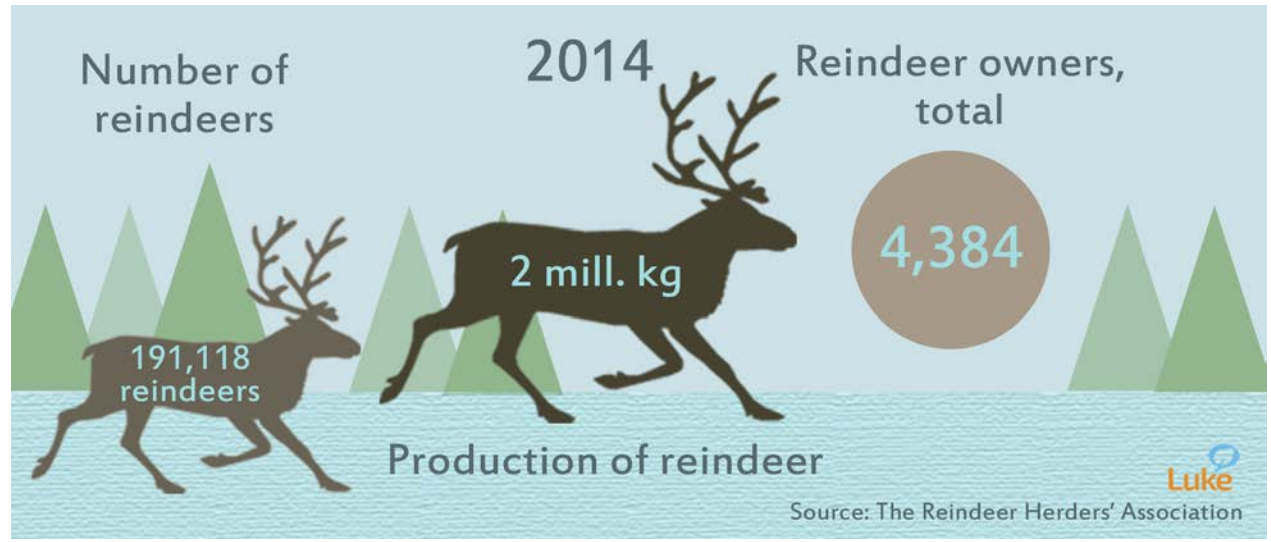
At the beginning of April, there were about 3.6 million hens on farms, which is six per cent more compared to the same point in time the year before. The last time the number of hens was as high was 16 years ago. All in all, there were hens on about a thousand farms. The number of farms consists of all farms that have at least one unit of poultry. However, egg production is the main production sector on only about 160 farms. More than 60 per cent of hens are on farms in Southwest Finland. As the year before, the greatest egg producing municipalities were Loimaa and Laitila.

## The highest number of sheep in 17 years

The number of sheep increased to 138,000, of which the number of ewes was nearly 70,000. As the year before, there were sheep on about 1,400 farms. The number of sheep has increased in recent years, and the number last year was the highest since 1997.

## The reindeer herding area divided into 54 herding cooperatives

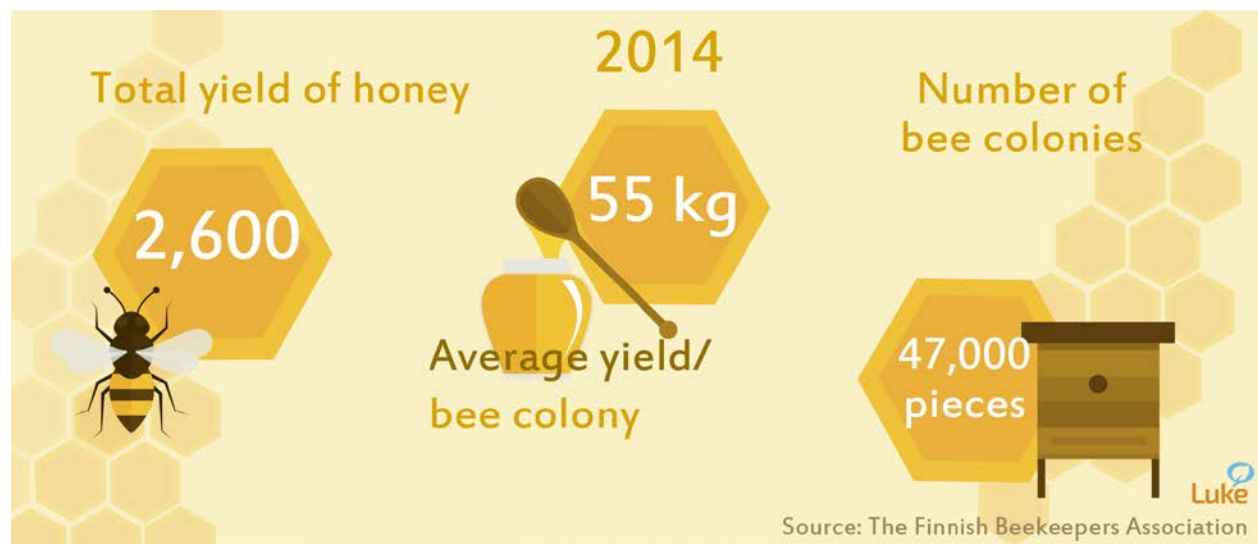
The reindeer herding area is an area regulated by legislation for herding reindeer. It consists of almost the whole of Lapland and the northern parts of North Ostrobothnia and Kainuu. Its surface area is more than a third of the total surface area of Finland. The reindeer herding area is divided into 54 herding cooperatives. In 2014, the number of reindeer owners was nearly 4,400. The Ministry of Agriculture and Forestry regulates the number of reindeers. Currently, the maximum permitted number of reindeer that will not be slaughtered during the year in question is 203,700. During the reindeer herding year 2014/15, the number of reindeer was about 191,100. The production amount of reindeer meat varies annually, mainly as a result of natural conditions and damage due to predators.




Reindeer Herders' Association

## About a hundred full-time beekeepers

More than 70 per cent of beekeepers in Finland (in 2014 about 2,250) are members of the Finnish Beekeepers' Association SML. There are about 100 full-time beekeepers. The majority of honey is produced in southern and central Finland. Currently, the number of productive beehives is slightly over 50,000. The amount of honey produced by a beehive varies greatly due to weather or location, for example. The long-term average honey crop from a single hive has been about 41 kilos. The crop from the most recent production period was better than in recent years, an average of 55 kilos, and the total crop amounted to 2.6 million kilos.




The Finnish Beekeepers' Association SML

# Arable crops

The utilised agricultural area in Finland is about 2.3 million hectares. More or less half of the area was used for grain production, more than a quarter for grass, and about a tenth for fallow. In 2014, the remaining area of six per cent was used for the cultivation of a great variety of special crops. They include turnip rape, rape, potato, sugar beet, caraway, broad beans, peas and several other cultivation plants. Less than one per cent of arable land is used for the production of horticultural plants.

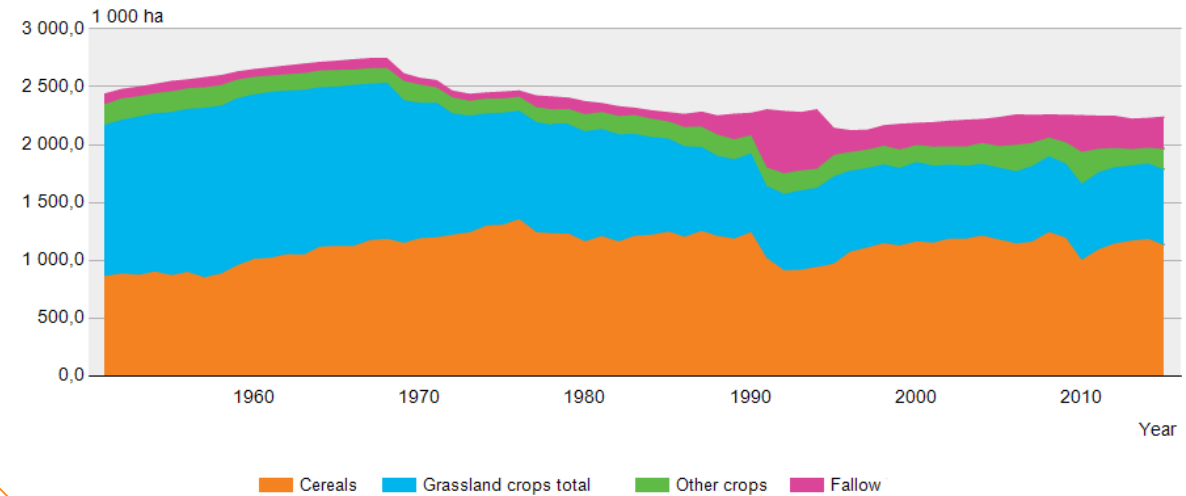
## Wheat area grew to be as large as that of oat

In 2014, grain area was nearly 1.2 million hectares. Nearly half of it was used for barley. The wheat cultivation area was the second largest over the 100 years since statistics have been compiled, about 272,000 hectares. The wheat area was larger only in 1962. The wheat area became almost as large as the oat cultivation area.

In 2014, the total cultivation area of turnip rape and rape was 43,500 hectares. The cultivation area reduced quickly in four years, as it dropped to a quarter of the record-sized area of 158,000 hectares. Great fluctuations in the crop level of turnip rape and rape reflect the challenges related to their cultivation in the conditions in Finland.

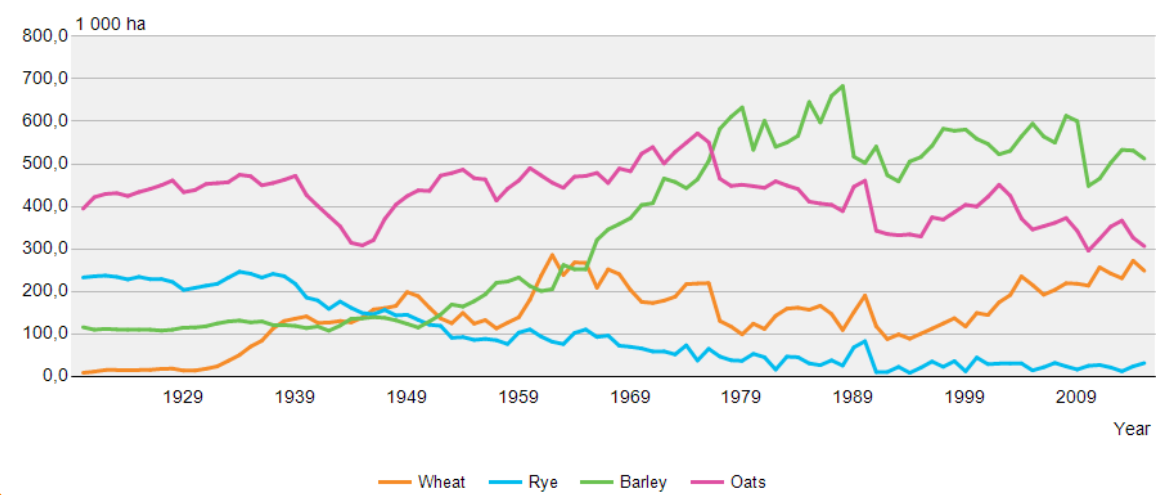
Cultivated area and fallow, 1951–2014

Background data as a table




Areas under cereals, 1920–2014

Background data as a table



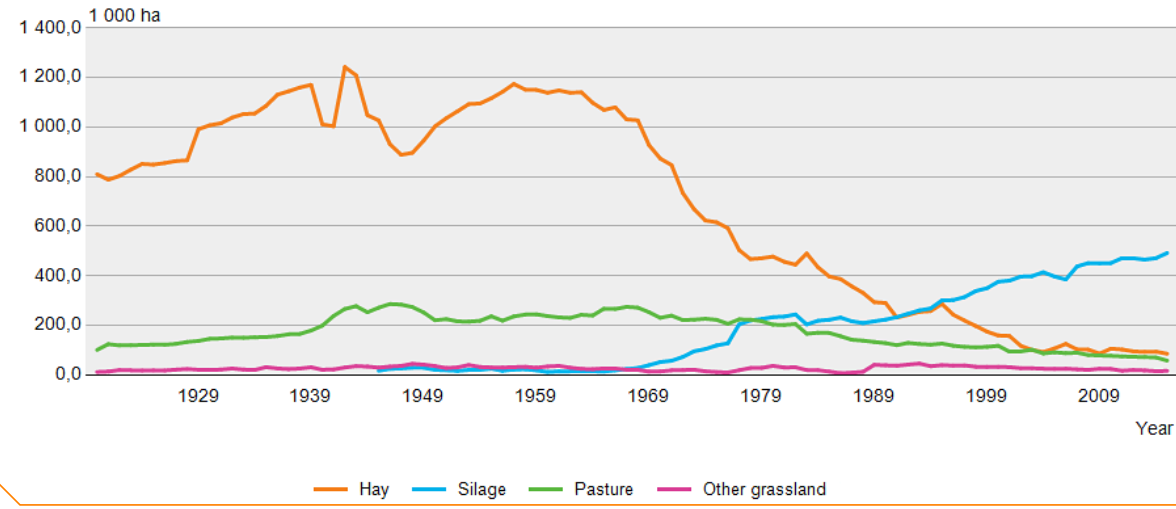
## Quarter of feed grass

Feed grass and pasture area has remained at about 650,000 hectares in the 2000s. Although there have not been any major changes in the total area, silage grass has taken up more area from hay and pasture. In 2014, the proportion of silage area was more than 80 per cent. The classification of feed grass to hay, pre-dried silage, fresh silage and green fodder is obtained from farms in connection with crop information.

▶ Utilised agricultural area

Areas under grass fodder, 1920–2014

▶ Background data as a table




894 hectares of rye were cultivated in Salo, which is 4% of the rye area in Finland in 2014. Other municipality-specific plant areas in the statistics database.

*Photo: Luke's photo archive*

## More than a billion kilos of wheat

Grain crop exceeded four billion kilos in 2014. The amount of four billion kilos has been exceeded on average every other year in the 2000s. In 2014, wheat crop exceeded the amount of more than a billion kilos for the first time during the recorded crop history of 100 years, and it was slightly larger than the oat crop.

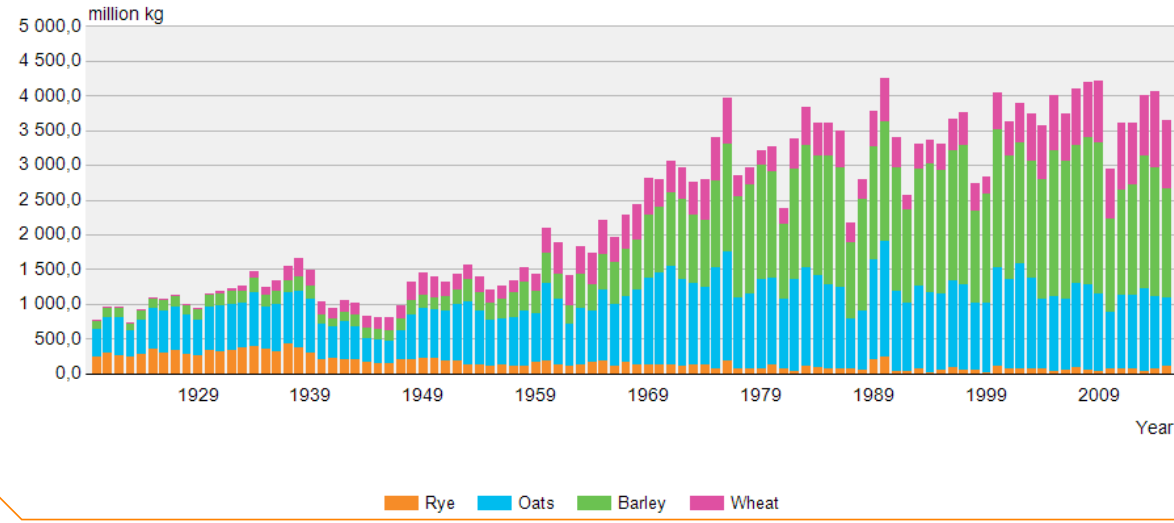
Wheat production has increased in more than a decade almost as strongly as the increase in barley production between the 1960s and the 1980s. In that period, barley crop increased from about 400 million kilos to 1.6 billion kilos, along with the feed grain need of livestock production.

## Barley is the main grain

The largest user group of domestic grain, production animals, has made barley into the most cultivated grain in Finland. The production of oat has changed the least compared to other grains. It was a good source of energy a century ago when horses were used in agriculture, and it is still well-suited as feed for livestock. Meanwhile, rye has been used as an ingredient for bread grain for a century. Rye has thus been losing its share and importance among grains; its production is only a small part in the production of other grains.

Grain harvest, 1920–2014

Background data as a table




## Slow decline in potato crop

Over the past decade, the annual potato crop has totalled 500–750 million kilos. In 2014, the crop was 600 million kilos. The largest crop of the decade was harvested in 2009 and the smallest in 2012. The planting area has been reducing slightly, but the increase in potato crop per hectare has slowed down the decline of the total crop.

The largest potato crop was harvested in 1948, when the crop was triple that of 2014. At the time, the planting area of potato was also the largest; nearly five times larger than in 2014.

## From hay to silage

Major changes have also taken place in grass feed production due to developments in harvesting technology. The production of silage exceeded the production amount of hay in 1977, when silage crop increased by a third from the year before. In the following years, hay crop has continued to decline as the silage crop has increased.

Harvest data is shown in the statistics database for each ELY Centre along with data on crop per hectare.

▶ Crop Production Statistics

Potato harvest, 1920–2014

▶ Background data as a table

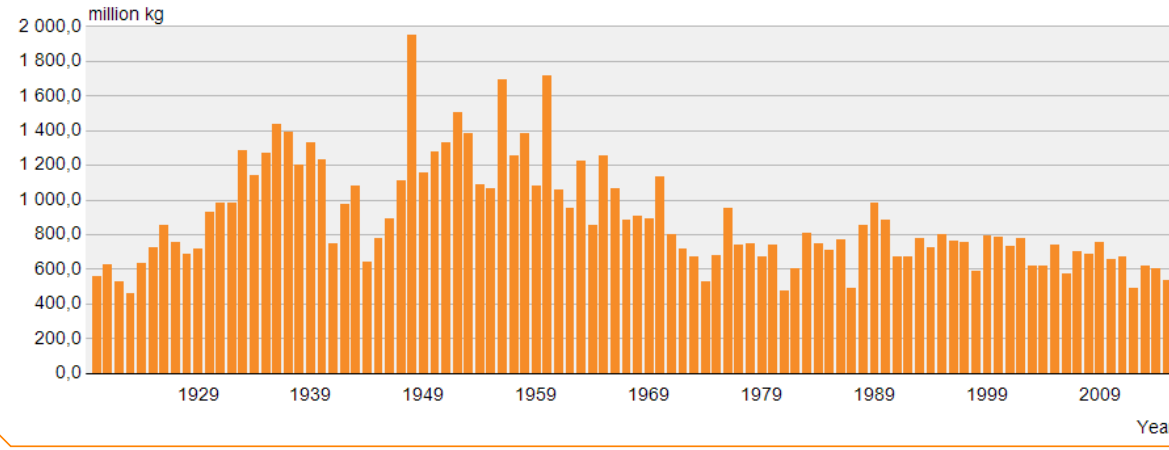



*Photo: Luke's photo archive*

## The share of organic production is increasing

Protein and fodder plants have the greatest proportion of organic production of their total production. In 2014, a third of mixed grain was already produced organically. The increase in organic livestock production is also reflected by the fact that the share of organically grown fodder plants, such as hay, silage and cereals harvested green, is already about a tenth of their total production.

Rye had the largest share of organic production; in recent years, it accounts for about a tenth of the total rye crop. The share of organic production is also significant in the production of broad beans and peas. About a quarter is produced organically.

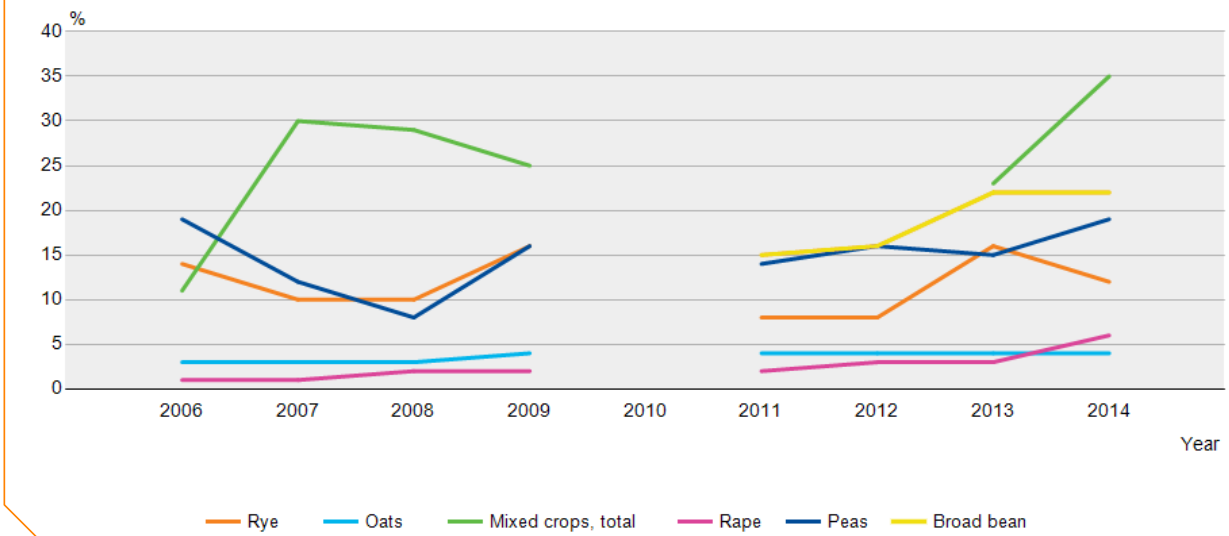
## Organic oat exports

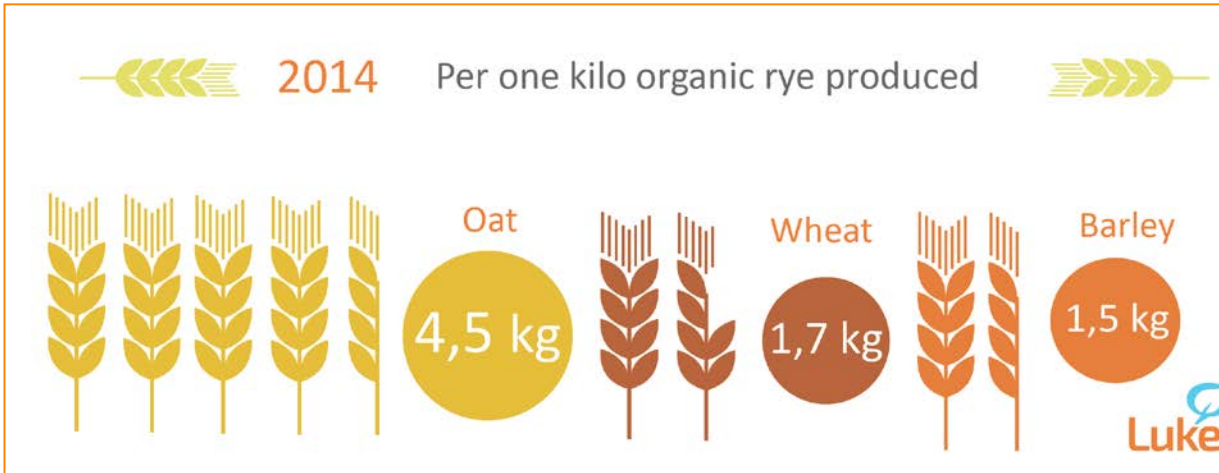
The share of organic production from the total production is still only a couple of per cent for the majority of plants. Less than four per cent of the production of oat, wheat, barley and potato are produced organically. However, the organic production of oat is significant in terms of amounts, as Finnish organic oat flakes and flours have found their way into kitchens around the world. According to the Finnish Cereal Committee (VYR), in 2014 as much as 80% of organic oat products were exported around the world.

▶ Organic crop statistics

Proportion of organic production of total production, 2006–2014

▶ Background data as a table



# Horticultural production

In 2014, 3,539 companies produced horticultural products for sale. Of these companies, 2,768 practised cultivation in the open and 1,190 companies were engaged in greenhouse horticulture. The total area was 16,456 hectares, of which the area of greenhouse production was 404 hectares.

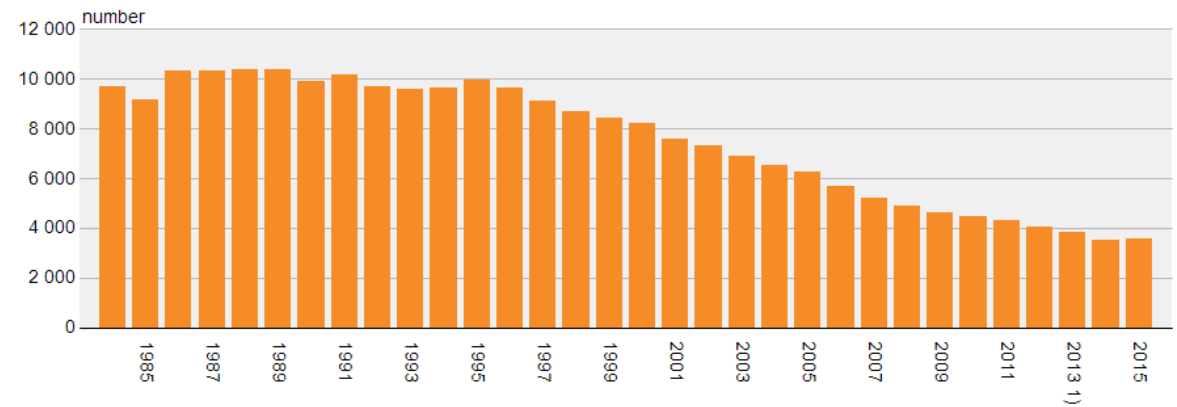
Although the number of companies has continued to decline steadily, the area has remained the same. As companies have become larger and production has become more efficient, the amount of edible crops has remained relatively stable. Meanwhile, in the greenhouse sector, the production of cut flowers has practically ended, and bedding plants and bulb flowers have increased their share.

## Favourable crop season for vegetables grown in the open

Good growing conditions increased the production amounts of carrot and onion to new records. Carrots, which are the most important vegetable grown in the open in terms of production value, amounted to a crop of 74 million kilos, whereas onions amounted to 26 million kilos. All in all, 186 million kilos of vegetables grown in the open were produced. The crop was excellent, as the average total crop in the 2000s has been 167 million kilos. Previous crops that were as good were in 2011, and the all-time record dates back to 1997 when the total vegetable crop amounted to 196 million

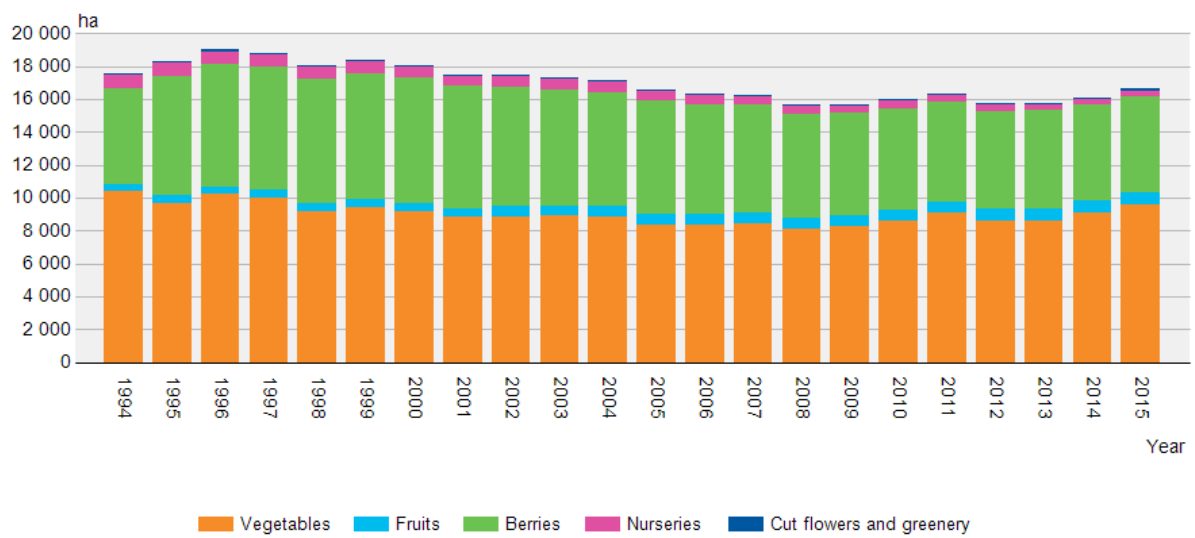
The number of horticultural enterprises, 1984–2014

▶ Background data as a table




Distribution of production in the open, 1994–2014

▶ Background data as a table



kilos. However, the area at the time was 900 hectares larger than that in 2014.

In 2014, the total area of vegetable production was 9,142 hectares. In terms of area, garden peas continue to be the most important plant (3,060 hectares); the majority of the area is used for contracted production for the frozen pea industry. Annual changes in the contract situation are evident in areas, and the crop level of pea is extremely dependent on weather conditions. The areas of garden peas also include peas that are sold in pods. They are often cultivated on berry farms in order to diversify the product range of the farm.

The main areas for vegetables grown in the open are located in Southwest Finland and Satakunta; almost half of the vegetable cultivation area and crop in Finland are located in the said area.

## Strawberries are the number one berry

The focus of berry production is located in eastern Finland, but when compared to vegetables, berry production is spread more evenly throughout Finland. As usual, nearly 30 per cent of berries grown in Finland came from North Savo. The most important areas after that were Southwest Finland and equally Häme, South Savo and North Karelia. Strawberries continue to be the most important berry; in 2014, the proportion of strawberry of the total berry crop of nearly 16 million kilos was 83 per cent: that is, 13 million kilos. The berry crop in 2014 was slightly smaller than the year before.

▶ Horticultural statistics

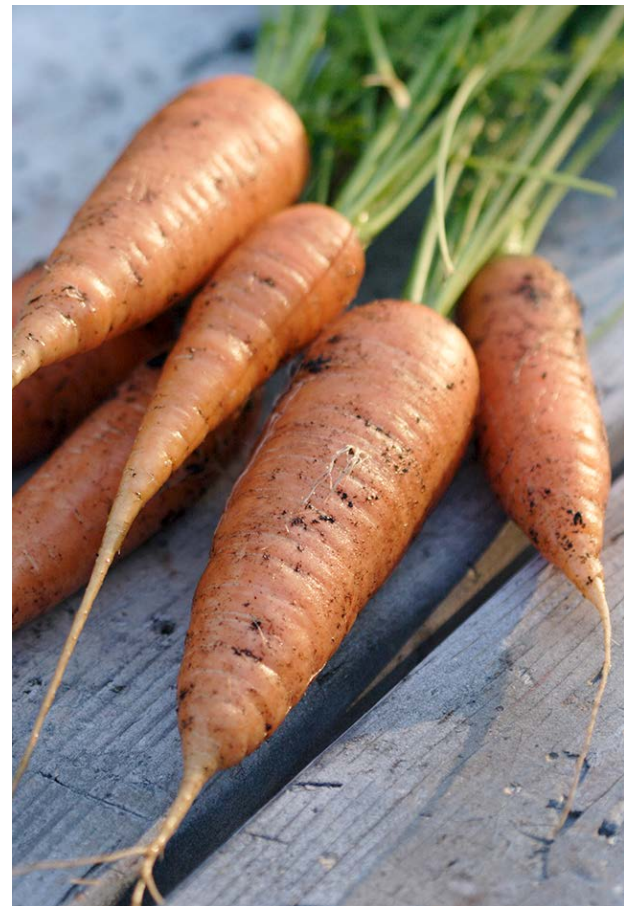


*Photo: Luke's photo archive*

Domestic fruit production relies mainly on apples due to the climate, and the size of the apple crop has varied in recent years below and above five million kilos. Åland has the most favourable climate for apple production and 70 per cent of apples are grown there; the crop level of the area is clearly better than that of continental Finland.

## Top three: tomato, cucumber and potted vegetables

The amount of greenhouse vegetables was 83 million kilos, of which 40 million kilos were tomatoes and 38 million kilos were cucumber, which is a new record. The crop in 2014 was the all-time record. The production of greenhouse vegetables is very distinctly focused on Ostrobothnia, and tomato especially in the area of Närpiö municipality.

The increase in the production of potted vegetables has been exceptional in the history of horticultural statistics, as the growth has been almost continuous since the start of the compilation of statistics in 1987. In 2014, the number of 100 million pots was exceeded as the number reached 108 million pots. The majority of potted vegetables are various kinds of lettuce but the range of species is extensive. The production of potted vegetables is extremely efficient and automated, as the same illuminated area can be used for cultivating as many as eight cycles in a year as the growing period is about a month. The production of potted vegetables is focused on half a dozen large greenhouse companies.

## Violets and tulips continue at the top year after year

Ornamental plants were grown by 557 greenhouse enterprises in an area of 127 hectares. The production was focused on the production of bedding plants and bulb flowers, although there were some farmers of potted plants in Southwest Finland and Ostrobothnia. Meanwhile, the production

of cut flowers has practically finished in Finland. In 2014, out of nearly 39 million bedding plants, violets constituted 11 million. Tulips were the most common bulb flowers, with a total production of 59 million.

## Heat from wood and light from electricity

Greenhouse production consumes a lot of energy as especially during the winter season, greenhouses must be heated and additional light must be provided to the plants. In 2014, greenhouse enterprises consumed 1,587 gigawatt-hours (GWh) of energy. Compared to the previous statistical year, 2011, the figure was down by 128 GWh, or 7%. On the other hand, their consumption of electricity increased to 547 GWh (+14%).

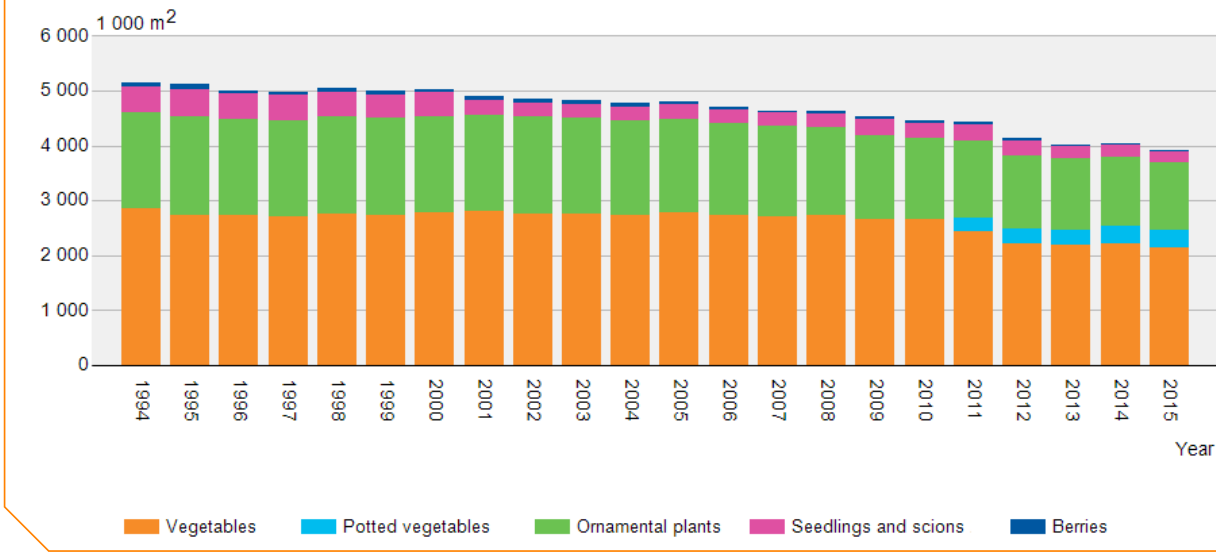
## The share of Finnish and renewable energy is increasing

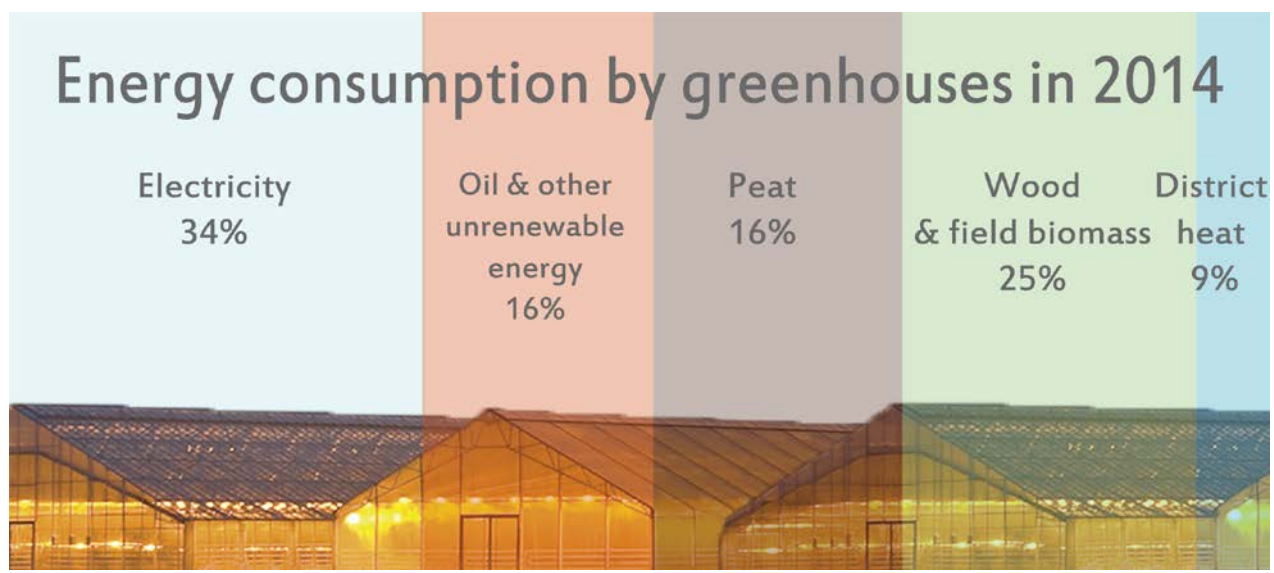
There has been a significant transfer in greenhouse production away from the use of oil, and more and more companies are using energy chips as the most important source of heat energy. In addition, fuels based on peat, wood and crops are used.

Electricity accounts for one third of total energy consumption by greenhouse farming. The increased electricity use is mainly due to increased winter cultivation of vegetables. For example, the cultivation area of energy-intensive potted vegetable production has increased by as much as 25% over three years.

Distribution of greenhouse production, 1994-2014

Background data as a table



# Use and stocks of agricultural products

About four billion kilos of grain are produced annually on Finnish fields. The majority of it is used as feed for livestock on farms. A third is used in industrial processing.

## Grain from farms to the market

In 2014, industries that use grain and grain wholesalers purchased a total of 2.2 billion kilos of grain from farms. The amount is nearly 0.4 billion kilos greater than the year before, which is due to the good grain crops of 2013 and 2014.

Barley was bought the most from farms, a total of 920 million kilos. A fifth of the amount was malting barley, and the rest feed barley. The amount of wheat bought was the second largest, a total of 660 million kilos. Almost half of the amount was purchased as bread wheat and the rest as feed wheat. The amount of oat bought was almost as much as the amount of wheat, a total of about 620 million kilos. The amount of rye bought was considerably smaller than that of other grains, 43 million kilos, but it is still nearly 10 million kilos more than the year before.

The total amount of turnip rape and rape purchased from farms was 40 million kilos. Over the past four years, the amount has declined to a quarter of the amount in 2010.

## Majority of grain used in the feed industry

In 2014, the industry in Finland used a total of 1.4 billion kilos of grain, of which 620 million kilos were used for the production of feed and 430 million kilos for the production of food. The remaining 310 million kilos were used in the pro-

Annual grain purchases of industry and trade from farms

Background data as a table

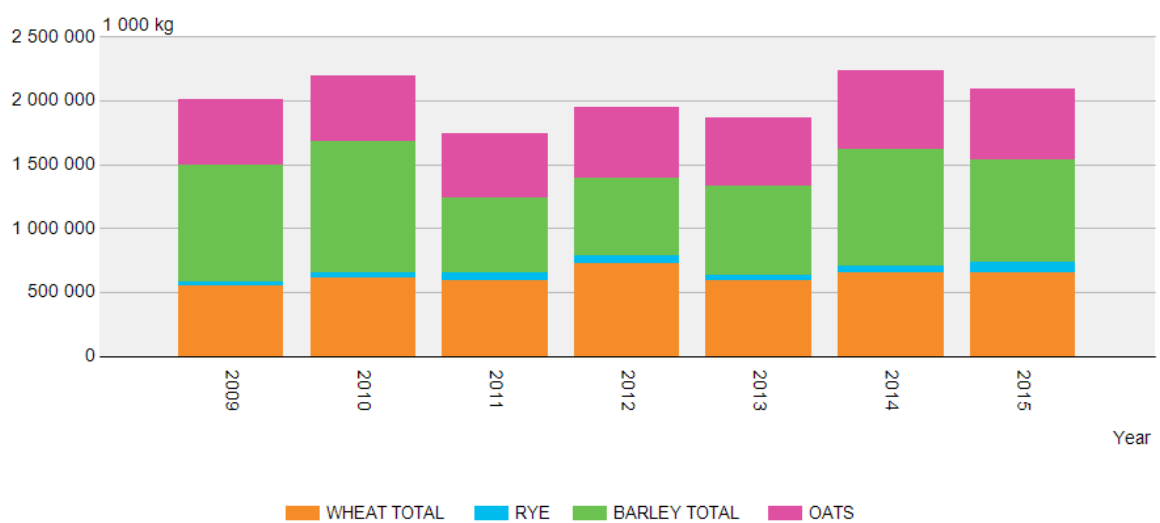



*Photo: Luke's photo archive*

duction of other industrial products. Other use includes malting and the production of ethanol, starch, glue powder and enzymes, for example.

Barley was used the most in the industry, 560 million kilos, of which almost half was used for the production of feed. The use of barley in the food industry was minor, 14 million kilos. The use for feed and food production was at the same level as the year before. The other use of barley was 300 million kilos, and it increased slightly compared to 2013 amounts.

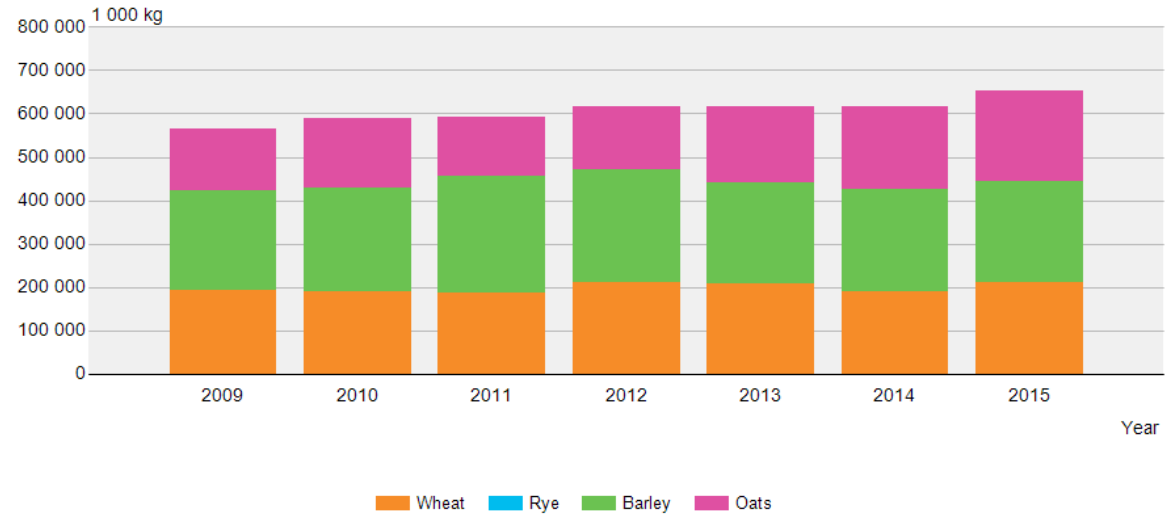
In 2014, 250 million kilos of wheat was used for food production (mainly milling products) and 190 million kilos for the production of feed, a total of 440 million kilos. Wheat was used slightly less than the year before.

The industrial use of oat continued to increase. In 2014, the total amount of oat used was 270 million kilos. The use has increased by 11 per cent since 2013 and 27 per cent since 2012. The majority of oat, 190 million kilos, was used as feed, which increased by nearly eight per cent compared to the year before. The amount of oat used in the food industry was 80 million kilos, which is nearly 13 million kilos more than the year before.

The majority of rye is used in the food industry. The amount used, 87 million kilos, has reduced by five million kilos compared to the year before.

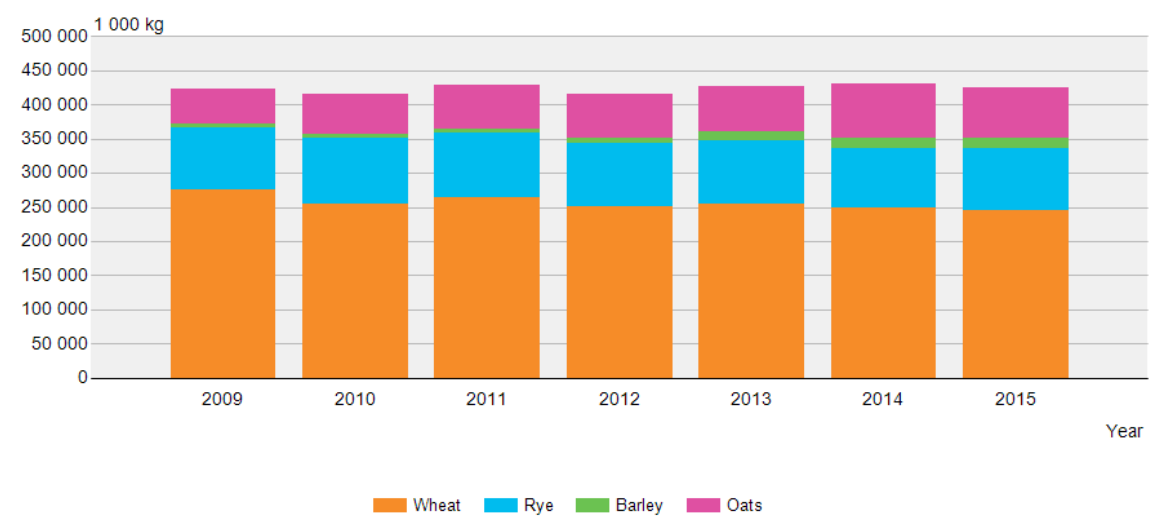
Use of grain in the feed industry, 2009–2014

Background data as a table




Use of grain in the food industry, 2009–2014

Background data as a table



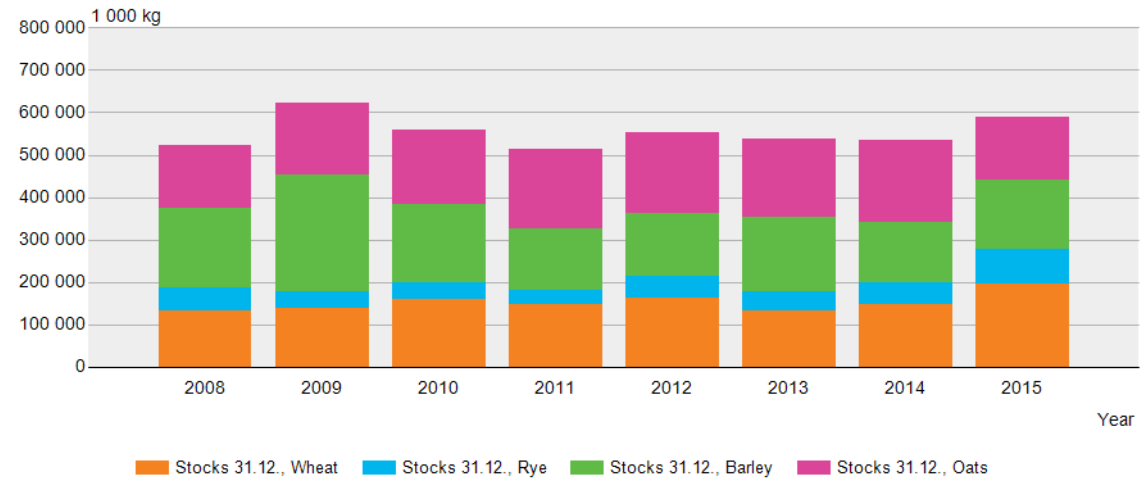
## Grain stocks

At the end of 2014, the total amount of grain stockpiled by industry and trade amounted to 535 million kilos, which is almost the same amount as at the end of the previous year. Of the grain stocks, 193 million kilos were oat, 143 million kilos were barley, 146 million kilos were wheat, and 52 million kilos were rye. The total amount of turnip rape and rape stocks at the end of the year was 10 million kilos.

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

Cereals stockpiled by industry and trade at the end of the years, 2008–2014

Background data as a table




The industrial use of oat has increased by 27% 2012–2014.

*Photo: Luke's photo archive*

## Use of crops on farms

The applications of domestic grain used by the industry, a total of about two billion kilos, are known in detail thanks to statistics. About two billion kilos were used on farms from the crop in 2013; half of this amount was barley, about a billion kilos.

The majority of grain that is left on farms is used for feeding livestock. The share of barley of the total grain used as feed is nearly two-thirds, about 1.3 billion kilos. The share of oat is clearly the second largest, and the share of wheat is about half of the amount of oat used for feed.

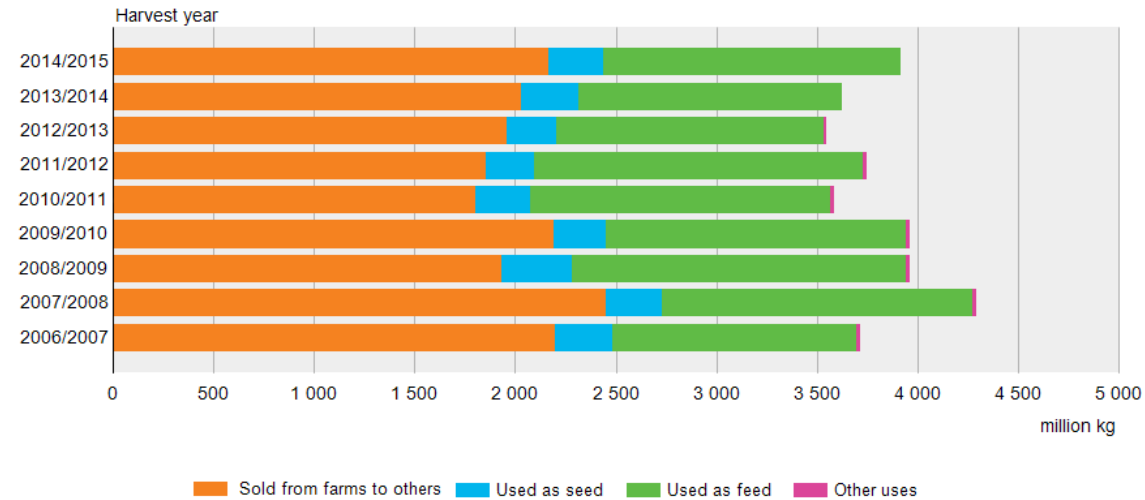
The rest of the grain used on farms during the crop year 2013–2014 was almost completely used as seeds and put in storage. About 300 million kilos of seeds were needed for the grain area of about 1.2 million hectares. On 1 July 2014, there were about 300 million kilos more grain in storage on farms than the year before, so the good crop of autumn 2013 increased the amount of grain in storage on farms before the new crop.

Rye is not really used on farms, but it is almost completely sold from farms to the market.


- Grain-specific use in the statistics database
- Use of crops on farms

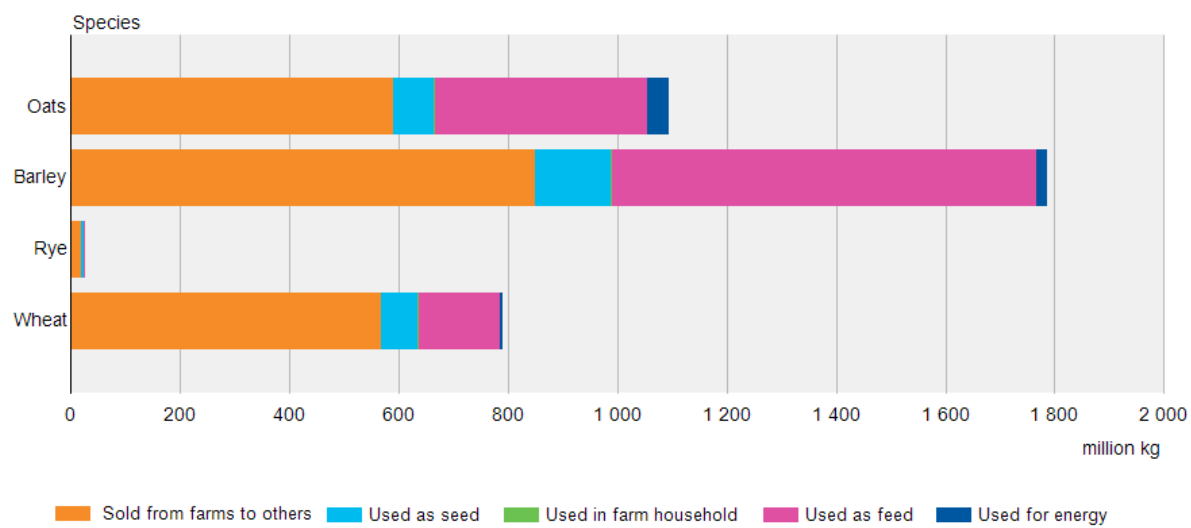

Use of grain on farms by crop year (million kg)

Background data as a table




Use of grain on farms, 2013–2014 (million kg)

Background data as a table



## Information on crop use assembled in the Cereals balance sheet

The Cereals balance sheet assembles the available information on the use of grain crop during a crop year. The objective of the Cereals balance sheet is to collect all use methods of grain and information on stocks and international trade into table format. Since the annual domestic use of grain is fairly constant, the future use of grain can be estimated on the basis of previous years for the upcoming crop year already on the basis of the first crop estimates.

▶ Cereals balance sheet

**14%**
of grain is used for human consumption.

Over the past decade, the annual consumption of grain in Finland is slightly over three billion kilos. The production of the four main grains has varied between 2.9 and 4.2 billion kilos, so there has been enough grain to be exported. Oat has been exported the most from Finland; the annual amount has been slightly over 300 million kilos over the past decade. Rye is regularly imported to Finland, an average of 50 million kilos a year.

The majority, that is, about two-thirds, of the grain crop is used for feeding livestock. A third of grain used as feed is recycled through the feed industry back to farms. Farms use barley the most directly as feed, whereas grain used in the feed industry is quite evenly distributed between all three grains used by the feed industry: barley, wheat and oat. Only about one-seventh of grain is used directly by the food industry.

*Photo: Erkki Oksanen/Luke*

# Producer prices of agricultural products

The producer prices of almost all agricultural products were lower in 2014 than the year before. However, the producer price of sheep meat was an exception – its average price was higher.

## Producer price of milk decreased

The average price paid to dairy producers for standard milk was 45.60 cents per litre in 2014; more than three per cent less than the year before. The annual adjustment payment has been taken into account in the figure in addition to the milk account price.

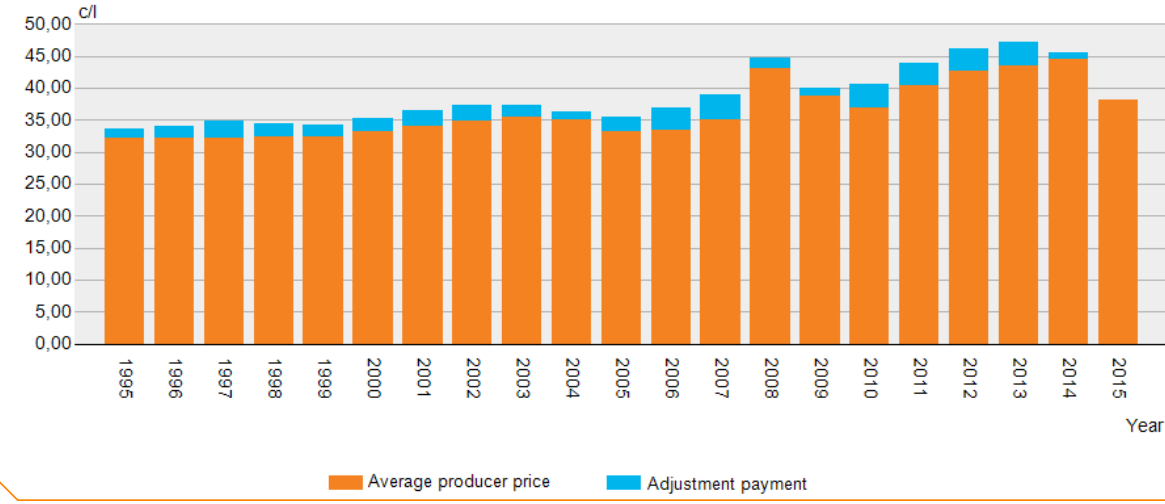
The producer price of milk increased between 2009 and 2013, but it started to decline in the middle of 2014 due to weaker export markets. Dairy producers also received a smaller adjustment payment in 2014. This decline continued in 2015.

## The price of sheep meat was the only one to rise

The average producer prices of all types of meat have increased quite steadily since 2010, but in 2014, the prices started to decline apart from sheep meat. The average producer price of pork, which makes up half of all meat production, was 1.58 euros per kilo in 2014, that is, nine per cent less than the year before. The average producer price of beef was 3.03 euros per kilo, that is, two per cent less than the year before. The average producer price of poultry meat was 1.48 euros per kilo, that is, four per cent less than the year before. The average producer price of sheep meat was 3.48 euros per kilo, that is, six per cent more than the year before.

Annual milk producer prices

Background data as a table




## Producer prices of eggs decreased

The average price of eggs paid to producers (average for class A and B) was 1.00 euro per kilo in 2014, that is, 15 per cent less than the year before. In 2010–2013, the producer price rose from 0.87 euros to 1.17 euros per kilo.

*Photo: Luke's photo archive*

In terms of production methods, the price for eggs produced in barn hen houses was higher than that for eggs produced in enriched battery cage hen houses: 1.05 euros per kilo for eggs produced in barn hen housess, and 0.95 euros per kilo for eggs produced in enriched battery cage hen houses. The average price paid for organic eggs was 2.46 euros per kilo, which is 12 per cent less than the year before. The producer price of organic eggs continued to decline for the second year running.

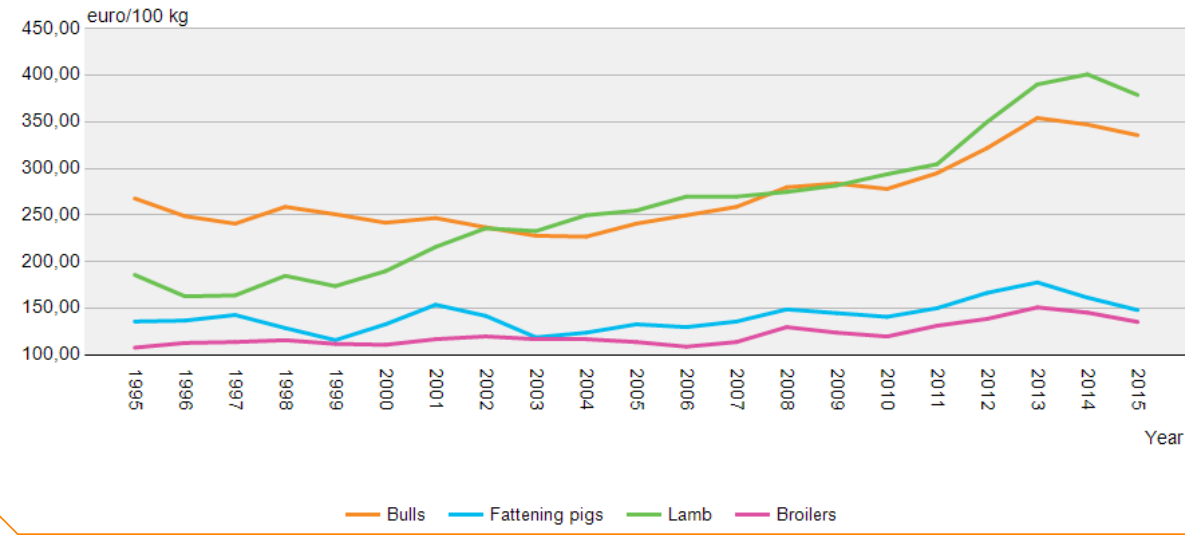
## Producer prices of grain declined by 20 per cent

The average basic price of bread wheat paid to farmers in 2014 was 167 euros per tonne, that is, 17 per cent less than the year before. The price of rye was 197 euros per tonne, that is, 10 per cent less than the year before. The average producer prices of both wheat and rye, which are traditional bread grains, increased in the past four years, but started to decline in 2014. In the first half of 2015, the average monthly price of rye has continued to decline, whereas the price for bread wheat has increased.

The average basic price paid for feed barley to producers in 2014 was 133 euros per tonne and 159 euros per tonne for malting barley, that is, 24 per cent less than the year before. The price of oat was 126 euros per tonne, that is, 25 per cent less than the year before. The price of feed grain started to decline already in 2013. When examined on a monthly basis, the average price of feed barley started to increase towards the end of 2014, and

Annual meat producer prices

Background data as a table




Annual egg producer prices

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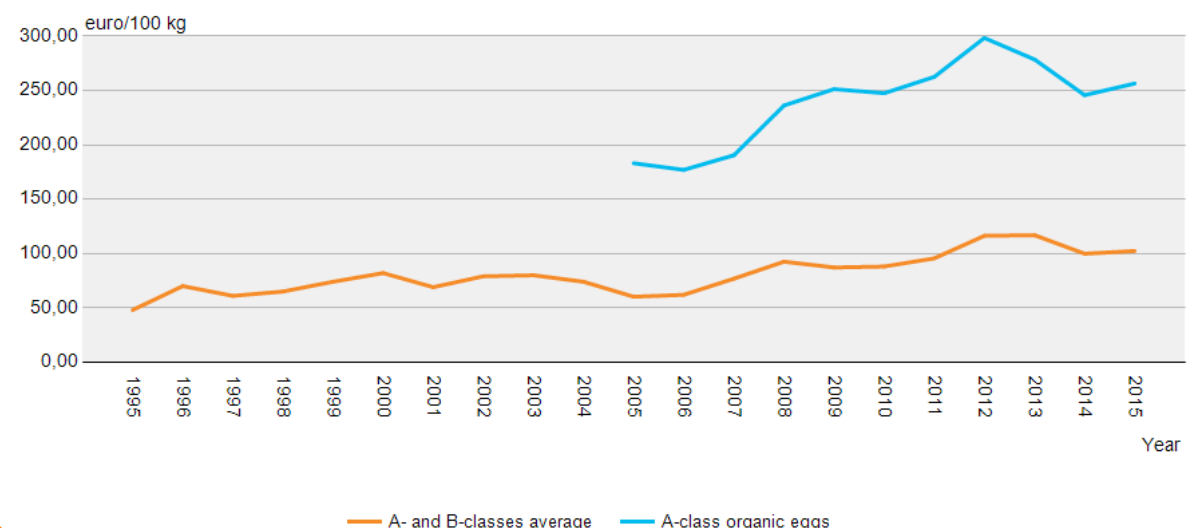


it continued to increase in early 2015. The average monthly price of oat also increased towards the end of 2014, but it peaked in early 2015. The average basic price of turnip rape and rape in 2014 was 362 euros per tonne, that is, 12 per cent less than the year before.

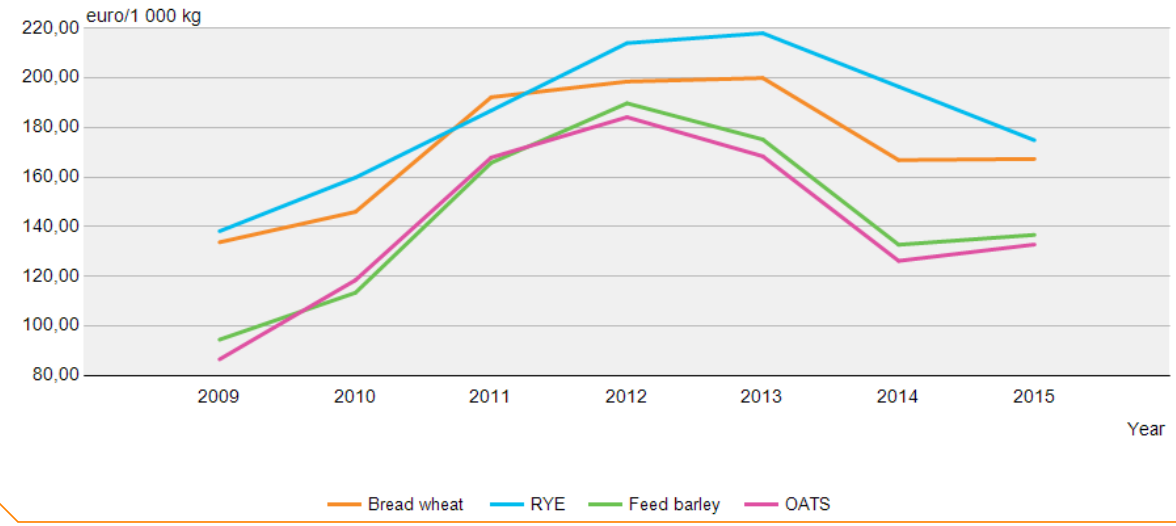
The average producer price of food potato in 2014 was 0.15 euros per kilo, that is, 0.09 euros less than the year before. In 2013, the price of food potato was the highest in five years. In 2014, the average price of early potatoes was 0.46 euros per kilo, that is, 0.10 euros more compared to the year before.

## Producer price based on questionnaires

A producer price is the price paid to a farmer for an agricultural product without value added tax. Information on producer prices is based on questionnaires sent to the first buyers, that is, dairies, slaughterhouses, agricultural trade, grain using industry, and packing companies of eggs and potatoes. Information is collected monthly and it is available on the statistics website.

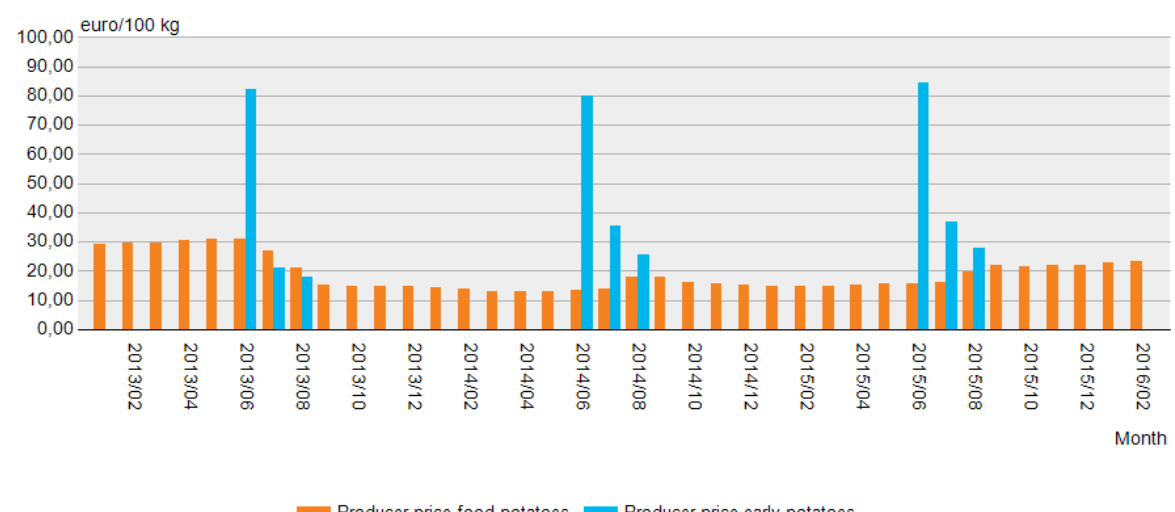
Annual grain producer prices

Background data as a table




Monthly food potato producer prices

Background data as a table



# Balance sheet for food commodities

Liquid dairy products are the most commonly used food products in Finland. In 2014, the average consumption was almost 180 kilos per person, which is a couple of per cent less compared to the year before. The proportion of milk is more than 70 per cent of this amount.

## Low-fat milk is consumed the most

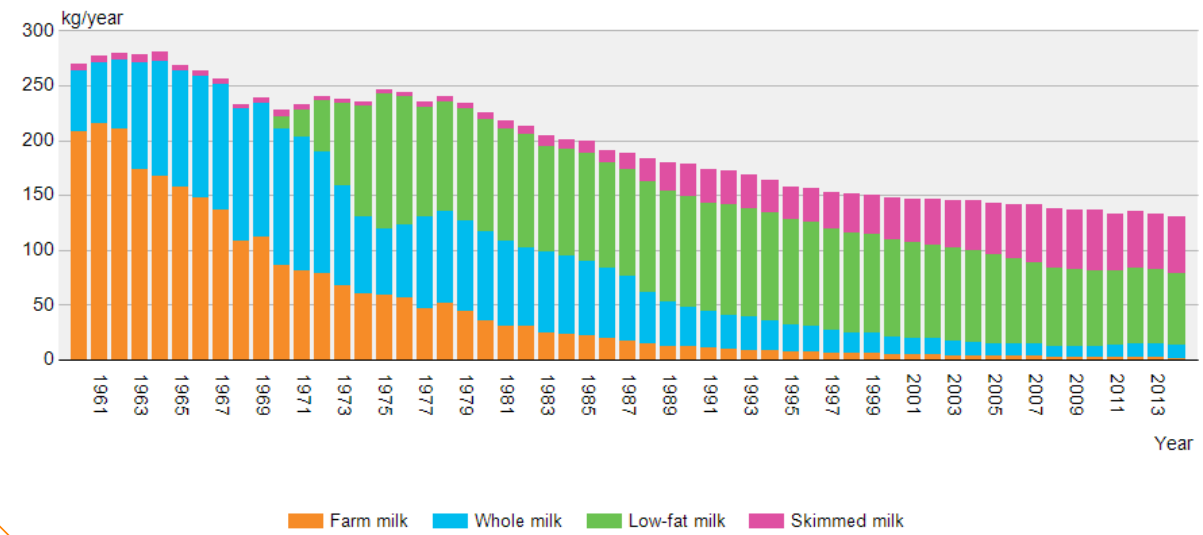
About half of all milk is consumed as low-fat milk, 40 per cent as skimmed milk, and about 10 per cent as whole milk. Whole milk consumption began to decrease slightly last year after having increased for several years. Skimmed milk consumption also fell slightly from the previous year. The most popular dairy product is yoghurt, which is consumed slightly more than 20 kilos a year. However, its consumption has started to decline in recent years due to the increasing popularity of other fresh milk-based products, such as flavoured quark.

## No major changes in grain consumption

Total grain consumption has remained unchanged at 80 kilos per person for several years. More than half of that amount is wheat, of which the consumption has been an average of 46 kilos in recent years. The consumption of rye was 15 kilos in 2014, which was just under a kilo less than the year before. Oat consumption, on the other hand, increased by a kilo to about 6.5 kilos.

Milk consumption per person, 1960–2014

Background data as a table




Rice consumption has remained quite steadily at slightly over five kilos; there was a slight decline from the year before.

## Pork consumption fell and egg consumption rose

In 2014, average meat consumption was 77 kilos per person, when game and offal are included in the amount. Less than half of the amount was pork, of which the consumption declined by about three per cent compared to the year before. The consumption of poultry meat continued to increase, as in the previous years. The increase was 0.6 kilos. Beef consumption also rose slightly.

Just under 11 kilos of eggs were consumed. There continued to be a slight increase in consumption, with growth being just under two per cent from the previous year. Butter consumption fell to approximately four kilos, the level it was at a few years ago. Cheese consumption grew to about 25 kilos per person.

## Changes in consumption in recent decades

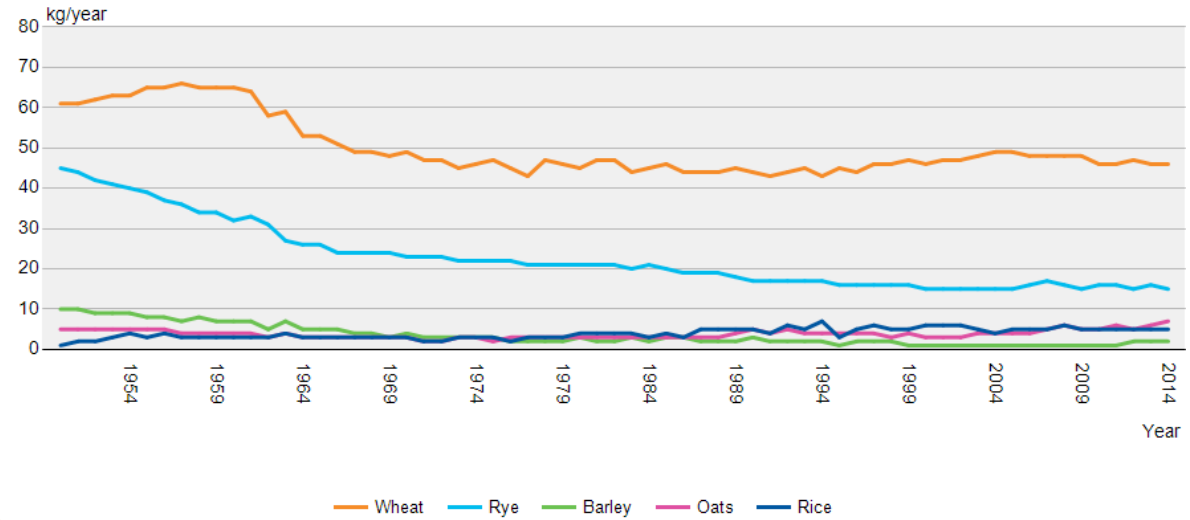
Statistics have been compiled on the food consumption with the help of the Balance Sheet for Food Commodities already since 1950. Consumption has changed significantly since then. For example, in the beginning of the 1950s, the consumption of rye was still more than a third of the amount of grain used for food, 120 kilos, and the proportion of wheat was about half. Currently, the average amount of grain consumed each year is 80 kilos and more than half of that amount is wheat, but rye only constitutes a fifth of the amount.

The consumption of meat has increased from 30 kilos to 77 kilos. Milk consumption has declined to a third, that is, less than 130 litres compared to the early 1950s. More than 60 years ago, the average amount of cheese consumption was only about three kilos a year; currently, the amount is already about 25 kilos. Butter consumption was 15 kilos, and it is now down to about four kilos. Potato consumption has dropped to nearly a third of the amount that was consumed sixty years ago. At the beginning of the 1950s, potatoes were consumed more than grain, that is, 140 kilos per person. Currently, the amount used is only about 60 kilos a year.

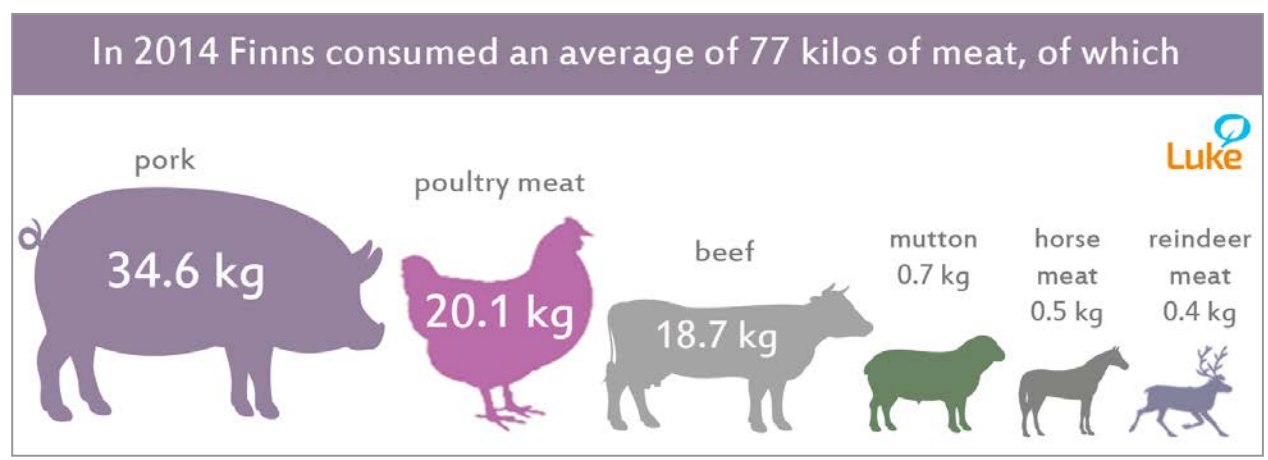
▶ Balance sheet for food commodities

Grain consumption per person, 1950–2014

▶ Background data as a table




▶ Meat consumption 1950–2014



# Forest statistics

Photo: Erkki Oksanen/Luke

# 2014 in forest statistics

## Results of the eleventh National Forest Inventory have been completed

Forestry land covers 86 per cent of the land area in Finland, that is, 26.2 million hectares, of which the majority, 20.3 million hectares, is forest land that is mainly available for wood production. The total volume of growing stock is 2.4 billion cubic metres and the annual total increment is 105.5 million cubic metres. In recent years, the drain of the growing stock has been 72 per cent of the increment occurring in forests available for wood production.

## The number of private forest owners was 685,000

At the end of 2013, private owners had 376,000 forest property entities of at least one hectare; their average size was about 28 hectares. However, the number of private forest owners was 685,000 people as a forest property entity usually has several owners. Other forest owner groups had the ownership of 7,500 forest property entities.

## Silvicultural and forest improvement work behind targets

In 2014, a total of 302 million euros was used for silvicultural and forest improvement work, which was as much as the year before in real terms. The majority of this, 216 million euros, was used in non-industrial private forests. The majority of total funding was used on the tending of seedling stands. However, the annual target amounts set in the Finnish National Forest Programme 2015 for the key types of silvicultural and forest improvement work have not been reached in nearly any types of work.

## Roundwood trade declined

In 2014, industrial roundwood trade was characterised by a fairly stable price level and reduced amounts purchased. Stumpage and roadside prices of roundwood in non-industrial private forests were almost at the same level as the year before in real terms. However, compared to the preceding ten-year period, the price level in both types of sale was eight per cent lower on average. The roundwood trade volume, 34.0 million cubic metres, declined eight per cent compared to the year before.

## New statistics for energy wood trade

The Natural Resources Institute Finland started to compile statistics on the energy wood trade in 2014. Statistics contain information on energy wood prices and volumes purchased as the raw material for forest chips used by heating and power plants.

## Record high removals and drain

The volume of industrial roundwood removals, 55.9 million cubic metres, remained at a peak level in 2014, the same as the year before. The last time roundwood has been harvested more was in 2007, when the volume reached 57.7 million cubic metres. The proportion of non-industrial private forests of the removals in 2014 was 80 per cent. Due to increased industrial roundwood removals, the total removals and drain also reached all time records.

## Stumpage earnings unchanged from the previous year

In 2014, forest owners received gross stumpage earnings of 1.92 billion euros, which was as much as the year before in real terms. The majority of stumpage earnings, 84 per cent, that is, 1.62 billion euros, accumulated from privately-owned forests. Earnings from forests owned by the state and the forest industries were 0.30 billion euros. Earnings from privately-owned forests increased by one per cent in real terms compared to the year before, but remained three per cent lower than the average over the preceding ten-year period.

## Chemical pulp industry the main user of roundwood

Some 73.4 million solid cubic metres of roundwood was consumed in 2014, which was as much as the year before. Nearly 90 per cent of it was used for the production of forest industry products, while the rest was used for energy generation as fuelwood used in small-scale housing and as forest chips by heating and power plants. The chemical pulp industry consumed 46 per cent of roundwood and the sawmilling industry used 37 per cent of it. Up until now, the volume of forest chips used by heating and power plants has continued to increase, but now it has declined to 7.5 million cubic metres.

## Paper is the most important export product of the forest industries

The total value of forest industry products exported from Finland in 2014 was 11.2 billion euros. Exports increased by one per cent in real terms from the year before, but they were 12 per cent lower than the average over the preceding ten-year period. Forest industry products constitute a fifth of the total goods exports from Finland. The most important individual product group, paper, constituted 40 per cent of the total value of the forest industries' products exports. Wood imports to Finland dropped to 10.2 million cubic metres compared to the year before. The majority of imported wood was birch pulpwood and wood chips. 80 per cent of imported wood came from Russia. Imports constituted a sixth of the total acquisition of roundwood of the forest industries, as it has been as much as 30 per cent.

## Profit from privately-owned forests declined slightly

Real operating profit in non-industrial private forestry was EUR 1.41 billion in 2014, corresponding to EUR 105, when calculated per hectare of forest land. Compared to the year before, the operating profit only declined by 1.5 per cent. The real investment return in wood production in private forests amounted to 2.3 per cent. The profit was 2.4 percentage points smaller than the year before.

# Forest resources

The statistics on forest resources are based on the National Forest Inventories carried out by the Natural Resources Institute of Finland, which were first compiled in the 1920s. The inventories gather information on forestry land area, growing stock volume and increment, and forest biodiversity and health. The most recent information has been compiled from the eleventh National Forest Inventory, the field work of which was carried out in 2009–2013. The data production of the National Forest Inventory is not part of the Statistical Services of the Natural Resources Institute Finland, but it is an essential part of national forest statistics.

## Forestry land divided into four land classes

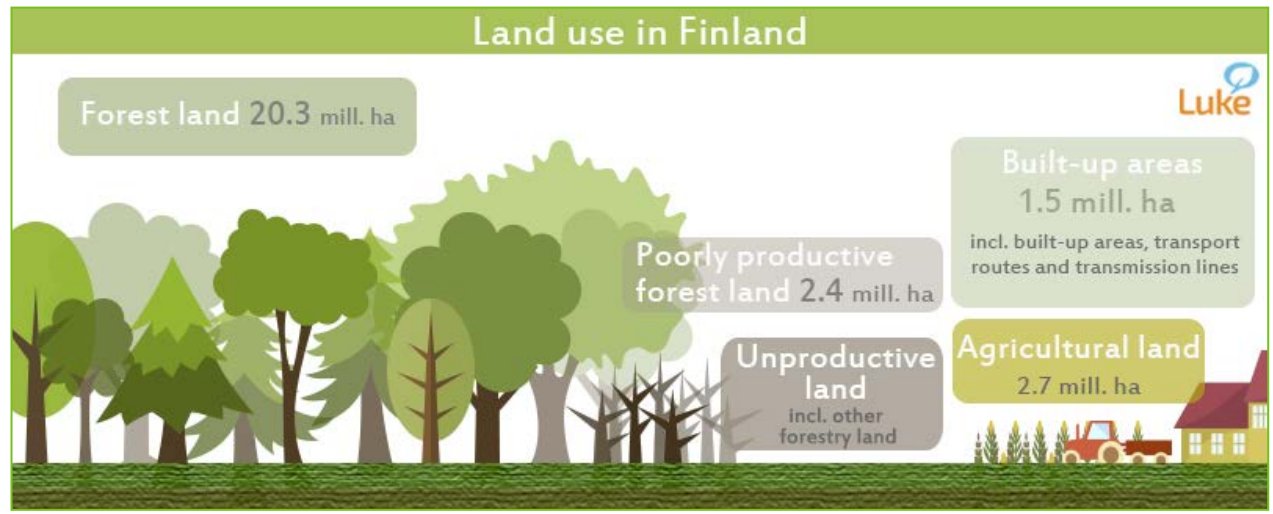
The land area in Finland is divided into land classes according to its purpose of use. Land that has no other primary purpose of use is classified as forestry land, that is, it is not agricultural area or constructed land, for example. Forestry land consists of both land available for wood production and areas where forestry is not permitted due to protection, such as restrictions related to legislation, zoning or a decision made by the owner.

Forestry land is divided into forest land, poorly productive forest land and unproductive land on the basis of wood production ability. In addition, forestry land contains other forestry land, for example forest roads and permanent timber storage locations. Forestry mainly takes place on forest land and to some extent also on poorly productive forest land. In the National Forest Inventory growing stock volume and increment are based on data on forest land and poorly productive forest land. Unproductive land is completely or almost completely treeless.

## Majority of land area covered by forest

Forestry land covers 86 per cent of the total land area in Finland (30.4 million hectares), that is, 26.2 million hectares. The majority of this, 20.3 million hectares, is forest land. Poorly productive forest land constitutes 2.4 million hectares, unproductive land 3.2 million hectares and other forestry land 0.2 million hectares. In southern Finland, the amount of forestry land is a total of 12.0 million hectares (78% of the total land area) and in northern Finland (regions in North Ostrobothnia, Kainuu and Lapland) 14.2 million hectares (95%).

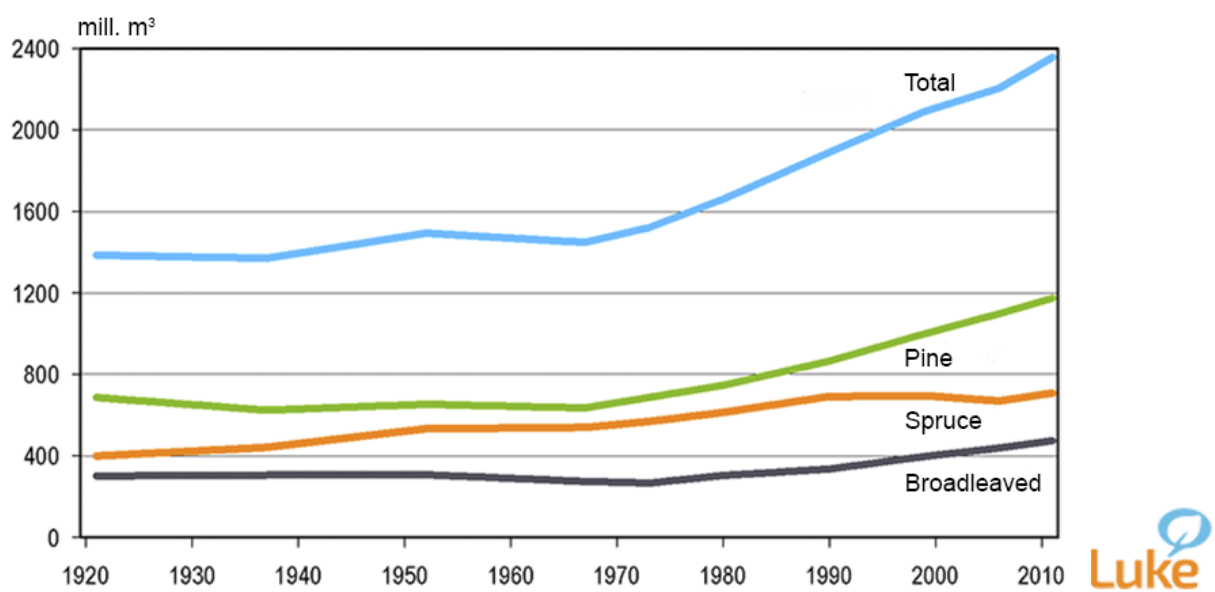
Forestry is mainly practised on forest land, of which more than 90 per cent, about 18.4 million hectares, is available for wood production. The amount of forest land intended for wood production in southern Finland is 10.8 million hectares, 97 per cent of the area of forest land. In northern Finland, the corresponding area is 7.6 million hectares, which covers 83 per cent of forest land. The majority of protected areas excluded from wood production are located in northern Finland.



Peatlands constitute 34 per cent of forest and poorly productive forest land as well as of unproductive land (8.8 million hectares). They are classified as pine dominated peatlands (58 per cent), spruce dominated peatlands (24 per cent) and treeless peatlands (17 per cent). In southern Finland, peatlands cover 25 per cent of forestry land and 41 per cent in northern Finland. The total area of drained peatlands is 4.6 million hectares. The area of drained mineral soils, of which some has been peatland, is 1.3 million hectares.

The majority of pine and spruce dominated peatlands in southern Finland have been drained. Drainage has turned peatlands on poorly productive forest land and unproductive land into forest land, or have improved the growing conditions of the growing stock on poorly productive peatlands of forest land. Currently, the first-time drainage of peatlands has practically ended and drained peatlands are managed by ditch network maintenance. The silvicultural importance of drained peatland forests will increase in the future, because within a couple of decades the cutting possibilities on these areas will make approximately one fifth of the all cutting possibilities of Finland's forests.

## Development of growing stock volume




## Half of the growing stock consists of Scots pine

Growing stock volume on forest land and poorly productive forest land is 2,356 million cubic metres. The volume has increased since the 1970s by nearly 60 per cent, as growing stock increment has increased significantly more than removals. 90 per cent of growing stock volume, 2,123 million cubic metres, is located on land available for wood production. Growing stock volume on mineral soils is 1,806 million cubic metres and on peatlands 551 million cubic metres.

50 per cent of the growing stock consists of Scots pine, 30 per cent is Norway spruce, and 17 per cent is birch. Other broadleaved trees constitute the remaining three per cent. Downy birch (*Betula pubescens*) constitutes 12 per cent of growing stock volume and silver birch (*Betula pendula*) five per cent. Silver birch grows almost solely on mineral soils, whereas downy birch can also grow on peatlands.

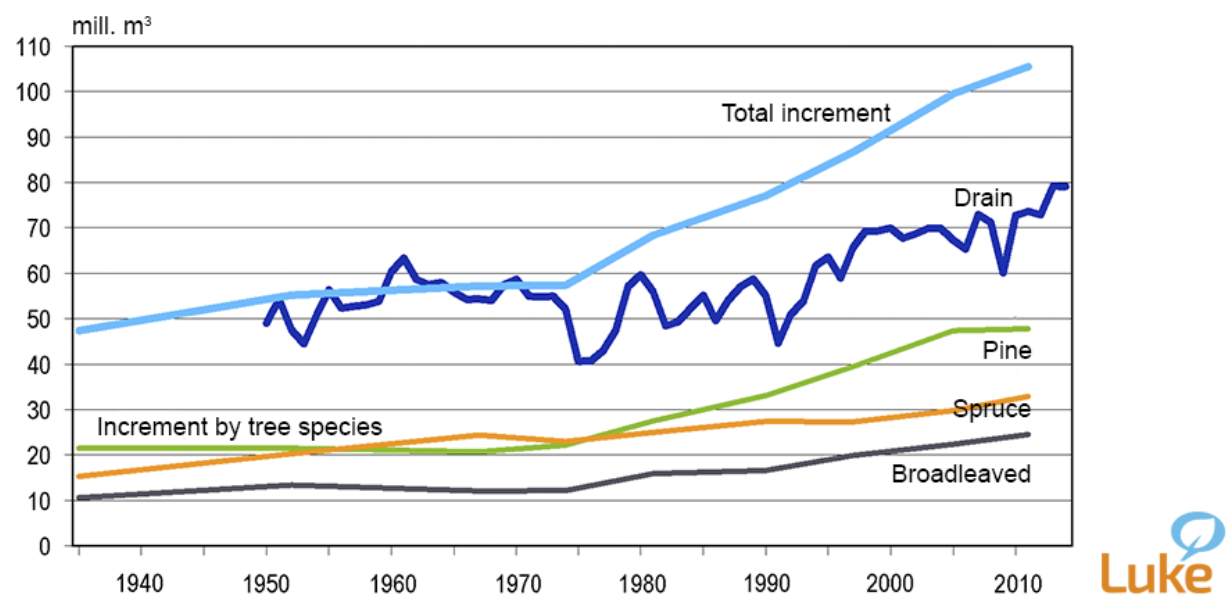
Currently, the mean growing stock volume on forest land is as much as 113 cubic metres per hectare, while it was 75 cubic metres in the early 1970s. The mean growing stock volume on mineral soils is 116 cubic metres per hectare and on peatlands 104 cubic metres per hectare.

## Growing stock increment has increased

Annual increment of growing stock on forest land and poorly productive forest land is 105.5 million cubic metres, which corresponds to a mean annual increment of 4.6 cubic metres per hectare. The annual increment of growing stock started to increase significantly in the 1970s; before that, it had remained at slightly less than 60 million cubic metres for two decades. Over the past five years, forests have produced about 30 million cubic metres of wood more than has been removed by fellings or naturally each year. The increase in the increment is mostly affected by the drainage of peatlands, improved forest management and the age structure of forests: there are currently more and more forests aged between 30 and 60 years that are at the fastest growing phase and have substantial stock. The area of low-yielding forests has declined significantly compared to forests in the 1970s.

Currently, the increased increment of growing stock mainly results from Scots pine forests, which is due to the fact that pine was favoured earlier in connection with forest regeneration and the drainage of pine dominated peatlands that used to be common. Of the total annual increment, the proportion of Scots pine is 45 per cent, Norway spruce 31 per cent, birches 19 per cent and other broadleaved trees four per cent. Proportionally, the annual increment of Norway spruce has increased more slowly than that of Scots pine over the past two decades. During the transition period of forest taxation 1993–2005, old spruce forests that were mature enough to be clearcutted were renewed in abundance, and the annual increment of small seedling stands is still minor.

Annual increment of growing stock and drain




## Majority of forests privately owned

Non-industrial private forest owners own 53 per cent of forestry land, the state 35 and companies 7 per cent. The remaining five per cent belong to municipalities, parishes, jointly owned forests and other minor community owners. Private forest owners have a larger share of forest land available for wood production, that is, 67 per cent. The state's share of forest land available for wood production is 18 per cent, as nature reserves are almost entirely located on state land. The land area of nature reserves on the basis of the Nature Conservation Act and Act on Wilderness Reserves is 3.7 million hectares.

Non-industrial private forest owners' share of the total growing stock volume is 65 per cent (71% in forests available on wood production), which is more than the owner group's share of forestry land. The state's share of growing stock volume is 21 per cent (only 13% in forests available for wood production), that is clearly smaller than its ownership share of forestry land, as the majority

of state-owned forests are located in northern Finland. Companies own nine per cent of growing stock and other owners (municipalities, parishes and communities) six per cent.

The ownership of forest land and the size distribution of forest property entities are presented in this yearbook in chapter Ownership of forest land, based on statistics compiled by the Finnish Tax Administration. Surface areas obtained from taxation information differ from the figures obtained from the National Forest Inventory.

▶ The National Forest Inventory website

The share of private forest owners of the total growing stock is 65%.

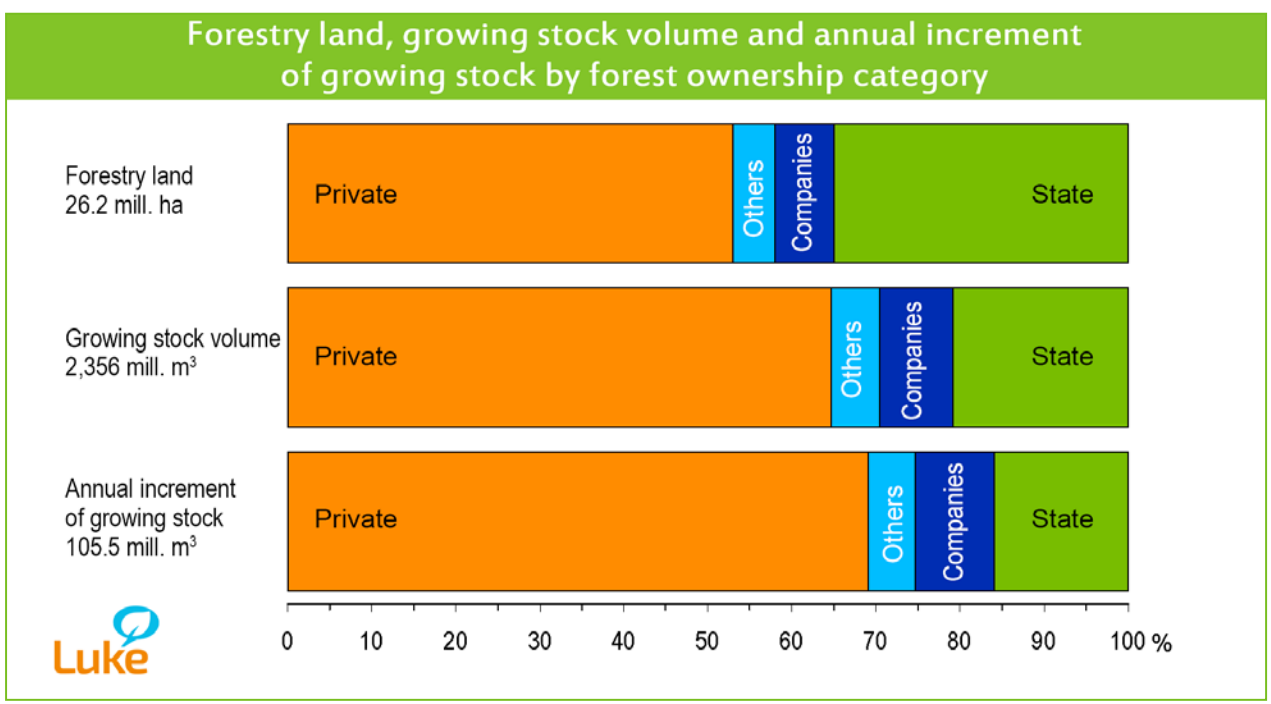



*Photo: Erkki Oksanen/Luke*

# Ownership of forest land

The statistics on Ownership of forest land contain information on the number and forest land area of private forest properties as well as forest property entities owned by private persons and other owner groups. Privately-owned forests include forests owned by 1) a private person alone or with his/her spouse, 2) a real property partnership, and 3) a member of an undistributed estate of a deceased person. Forest property entity refers to all the forest holdings of the same owner or owner groups that are included in the statistics as one entity regardless of their location.

## There are 685,000 owners of private forests

At the end of 2013, private owners owned 376,000 forest property entities of at least one hectare. Their forest land area covered a total of 10.5 million hectares, and the average area of a forest property entity was 27.8 hectares. However, the corresponding number of forest owners reached 685,000 as a forest property entity usually has several owners.

Private persons owned 73 per cent of forest property entities either alone or with a spouse, 15 per cent as a real property partnerships and 12 per cent as undistributed estate of a deceased person. Forest property entities owned either alone or with a spouse covered a total of 74 per cent of all privately-owned forest land.

The number of forest property entities that were smaller than 20 forest land hectares accounted for 61 per cent of all privately-owned properties, but their proportion of forest land was only 17 per cent. Only five per cent of forest properties contained an area of more than 100 hectares, but they constituted 30 per cent of the forest land area. In the past seven years (2007–2013), the number of properties with less than 10 hectares and those of more than 100 hectares have increased.

## Number and area of jointly owned forests have increased

In 2013, other forest owner groups owned about 7,500 forest property entities that covered a total of seven million forest land hectares. Out of that, the state owned 4.5 million hectares, municipalities 0.4 million hectares and parishes slightly over 0.1 million hectares. Limited companies owned 1.5 million hectares and jointly owned forests 0.4 million hectares.

The number of limited companies that own forest has increased in the past seven years (2007–2013) by 672 limited companies (+22%), but their total forest land area has reduced by 49,000 hectares (–3%) due to the sales of large forest properties. The number of jointly owned forests has increased by as many as 120 new jointly owned forests (+83%) and the area of forest land by 69,000 hectares (+21%). The increase of forest land in jointly owned forests originates from the forests of private persons, limited companies, municipalities and the state.

## Differences between statistics

The forest land area information of the Finnish Tax Administration differs from forest land areas by owner group category calculated on the basis of National Forest Inventory. The key rea-

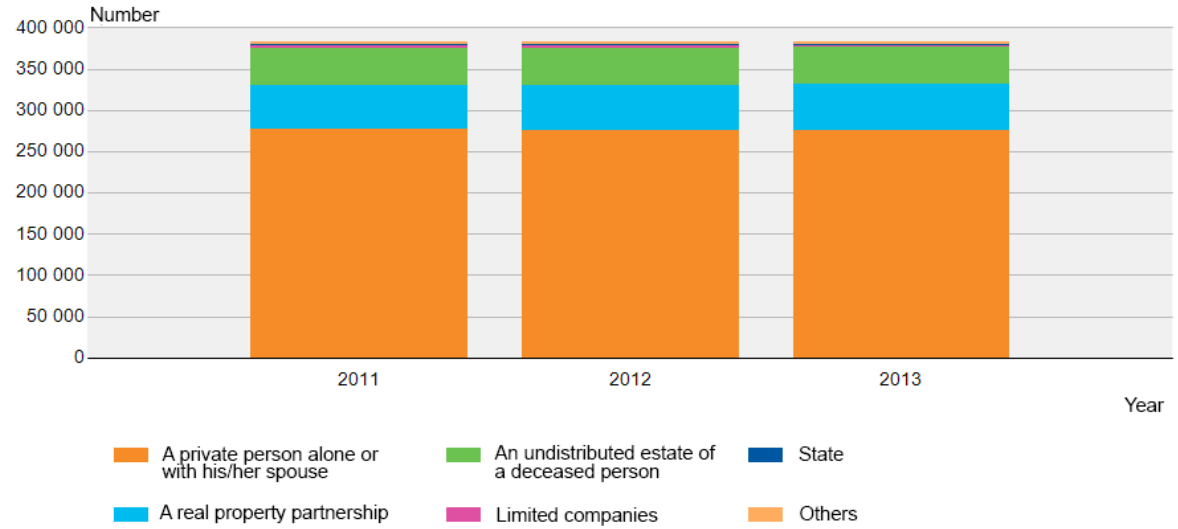
*Photo: Erkki Oksanen/Luke*

son is that the ground quality information of the Finnish Tax Administration is based on land taxation categories dating back to various periods and discontinued in the early 1990s, whereas the newest land class inventory data from the National Forest Inventory is based on field survey carried out in 2009–2013. Since the implementation of land tax classification by the Tax Administration, the drainage of peatlands, for example, has increased the forest land area.

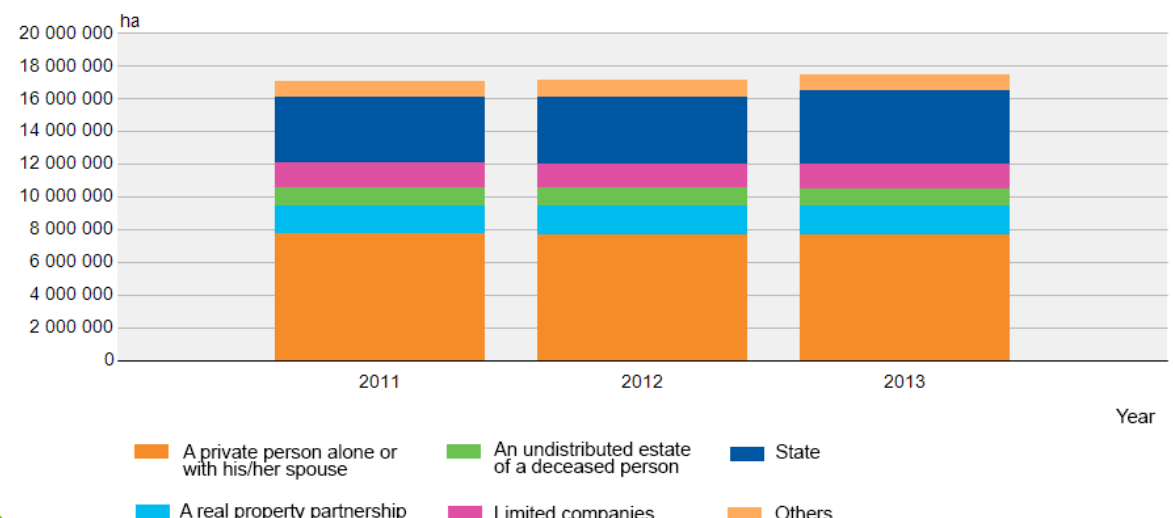
Therefore, areas published in this statistics are underestimations of the current forest land area. According to the Finnish Tax Administration, the total area of forest land was 17.5 million hectares in 2013, whereas the corresponding area was 20.3 million hectares on the basis of inventory data from the National Forest Inventory (2009–2013). According to the Finnish Tax Administration, the forest land area of privately-owned forests was 10.5 million hectares and 12.4 million hectares on the basis of inventory data.

▶ More information on the statistics website

Forest property entities by type of ownership (number)




Forest property entities by type of ownership (forest land area)



# Silvicultural and forest improvement work

The statistics on silvicultural and forest improvement work describe the amount of silvicultural and forest improvement work carried out by forest owners each year in their forests and the unit and total costs that have resulted from the work. The statistics contain a lot of various types of work, of which the most essential have been selected for this publication. The statistics also contain information on areas treated with fellings by felling method. Cost information has been presented here in real terms (deflated using the wholesale price index, 1949=100), whereas it is presented as nominal values in the statistics database of the Natural Resources Institute Finland.

## Forest improvement work has long-term effects

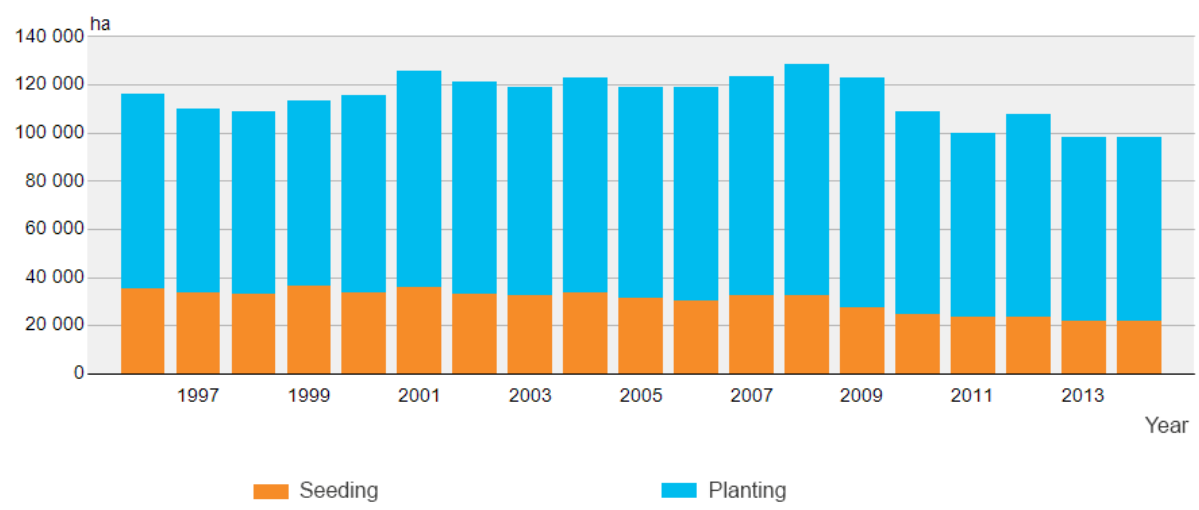
Silvicultural work improves the quality of growing stock and ensures the regeneration, health and growth of forests until the next felling. Usually, forest improvement work has long-term effects that are used for promoting the regeneration of forests, increasing wood production capability by improving the growing conditions, and ensuring year-round fellings. The state participates in the funding of forest improvement work according to the Act on the Financing of Sustainable Forestry.

## Forest regeneration unchanged from the previous year

In 2014, the total area of forests that were regenerated was 122,000 hectares, of which 98,000 hectares by artificial regeneration and 24,000 hectares naturally, which was the same area as the year before. Of the artificial regeneration area, 76,000 hectares were planted, of which 52,000 hectares by spruce and 21,000 hectares by pine. The seeding area, which consisted almost entirely of pine seeding, was 22,000 hectares.

In recent years, the regeneration areas of forests have declined compared to previous years. Usually, as a result of the size reduction of the clearcutting areas also the areas of artificial regeneration will reduce, with a delay. During the five-year period prior to 2014, an average of 120,000 hectares were clear-cut each year, which was nearly 20,000 hectares less than the average in 2004–2008. Based on the number of domestic seedlings produced for forest regeneration and imported seedlings, planting areas in the statistics would seem to be underestimations, especially

Artificial regeneration, 1996–2014



in the 2010s. The service companies of the forest industries have increased seedling sales directly to forest owners, and the areas planted by these seedlings have not been comprehensively included in the statistics.

In 2014, the soil preparation area was slightly larger than the year before, a total of 111,000 hectares. The most common soil preparation method was mounding, which covered more than 60 per cent of the total area. A quarter of the preparation area was disc trenched. The proportion of mounding of the preparation area has increased since the early 2000s by nearly 40 percentage points.

## More tending of seedling stands, less improvement of young stands

In 2014, the area of the management of young forests, that is, the tending of seedling stands and the improvement of young stands, totalled 222,000 hectares. The tending of seedling stands was carried out on an area of 165,000 hectares (+8% from the year before) and the improvement of young stands on 57,000 hectares (-6%). Compared to the average of the preceding ten-year period, the area of the tending of seedling stands increased by eight per cent, whereas the area of the improvement of young stands was 28 per cent smaller. The last time young stands have been improved less than in 2014 was in 1997.

Tending of seedling stands and improvement of young stands, 1996–2014

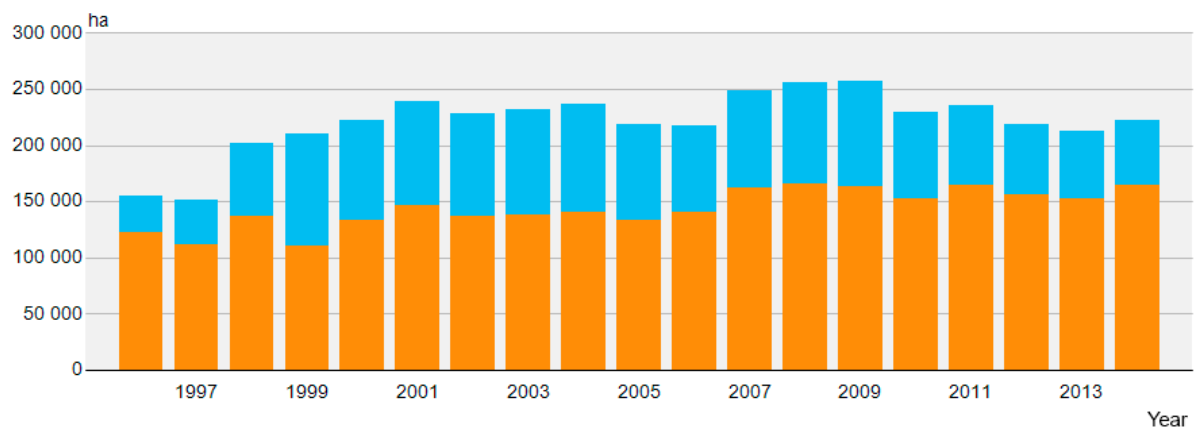



*Photo: Erkki Oksanen/Luke*

## Area treated with fellings reduced slightly

In 2014, the total area treated with fellings, 690,000 hectares, declined by four per cent compared to the year before. Intermediate fellings took place on 505,000 hectares (-7%), regeneration fellings on 168,000 hectares (+3%) and other fellings on 17,000 hectares (+23%), of which the majority were fellings that led to changes in land use, such as changing an area into agricultural land or built-up area.

In the 2010s, intermediate fellings covered an average of three-quarters of the whole felling area. Compared to the preceding ten-year period, their area has increased an average of nearly 30 per cent, and at the same time, the focus has shifted from the first thinning to thinnings performed later. During the same period, the areas of clearcutting have declined on average by three per cent and the areas of natural regeneration by as much as 30 per cent.

## Forest improvement work is increasing

Apart from work related to forest roads, the amount of work of all forest improvement work increased since 2013. The area of forest fertilisation increased by eight per cent to 44,000 hectares. Of this area, fertilisation for growth took place on 32,000 hectares (+18%) and remedial fertilisations on 12,000 hectares (-11%). Ditch network maintenance was carried out on 62,000 hectares, which was 12 per cent more than the year before.

Basic improvement of forest roads declined by almost a fifth to 2,478 kilometres. 484 kilometres of new forests roads were constructed, that is, 28 per cent less than the year before.

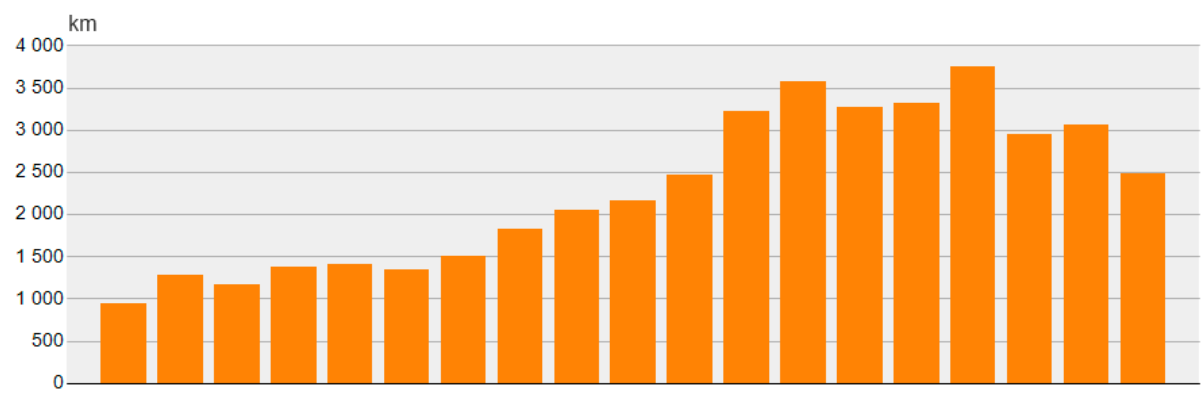
## No changes in costs

In 2014, a total of 302 million euros was spent on silvicultural and forest improvement work, which was as much as the year before in real terms. Of the said amount, 216 million euros were used in non-industrial private forests (-1% compared with the year before), 34 million euros (+4%) in forests owned by the forest industries, and 52 million euros (+3%) in state-owned forests. The investments on this work were at top level in 2009, when the total costs in real terms reached 360 million euros. In non-industrial private forests the peak was reached in 1991, when the total costs amounted to 287 million euros.

In 2014, most of the total funding, that is, 67 million euros, was spent on the tending of seedling stands. A total of 58 million euros was used on artificial regeneration (seeding and planting) and 39 million euros was used on the construction and basic improvement of forest roads. Compared to the year before, the funds used for the tending of seedling stands, forest fertilisation for growth and the ditch network maintenance increased the most, whereas the largest drop was targeted at funds used on forest roads.

The state subsidised the wood production in non-industrial private forests by a total of 70 million

Basic improvement of forest roads, 1996-2014



euros. 59 million euros (-8%) was used on the actual silvicultural and forest improvement work, in addition to which 10 million euros (-14%) was used for supporting the harvesting of energy wood. The largest subsidies were targeted at the tending of seedling stands and the improvement work on young stands, as well as the construction and basic improvements of forest roads.

The unit costs of all essential types of work increased in real terms from the year before. The unit costs targeted at forest roads increased the most: their construction was more than a third and basic improvement nearly a fifth more expensive than the year before.

Total costs of silvicultural and forest improvement work, 1963-2014

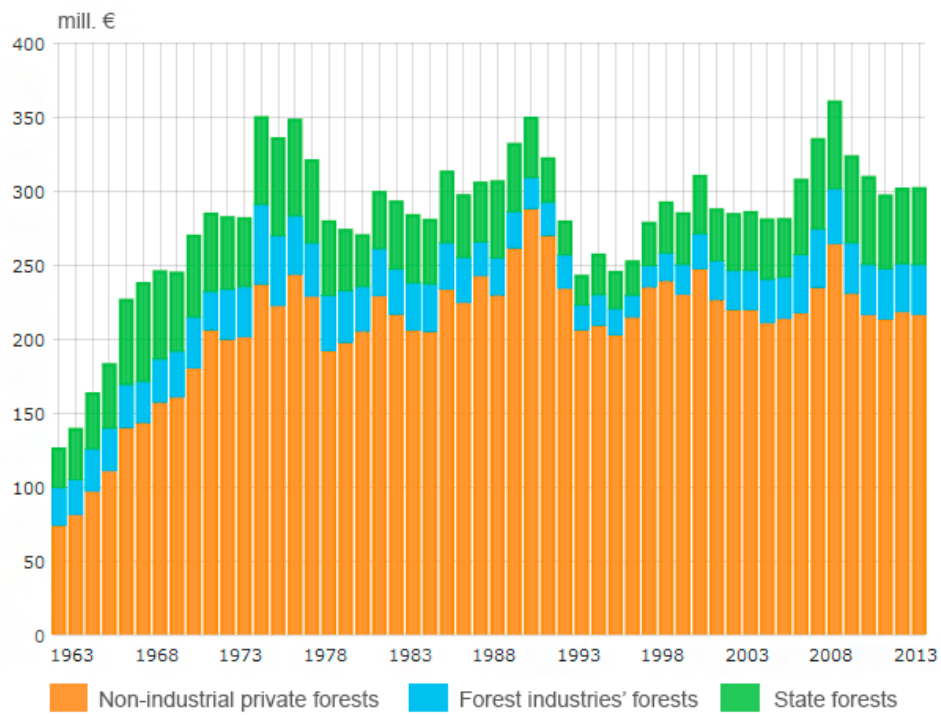



*Photo: Erkki Oksanen/Luke*

## Finland's National Forest Programme 2015

Finland's National Forest Programme 2015 -*Turning the Finnish forest sector into a responsible pioneer in bioeconomy* - for 2011-2015 included the key forest policy guidelines. In terms of sustainable wood production, the objective of the programme was to improve the growth conditions in the forests as well as to increase the increment of growing stock.

The targets set in Finland's National Forest Programme 2015 for various silvicultural and forest improvement work types and their implementation are presented in the attached table. The objectives have not been reached in any of the types of work apart from the repelling root-rot disease and in the long run, also the construction of forest roads. Objectives related to the remedial fertilisation of forests have been the most difficult to achieve.

In 2014, Finland's National Forest Strategy 2025 was prepared and it contains the main objectives for forest-based business and activities until 2025. The objective of the strategy is to create growth, investments and new jobs in the forest sector.

▶ More information on the statistics website

Objectives set in the Finnish National Forest Programme 2015 on the amount of work for silvicultural and forest improvement work and their implementation.

| Type of work | The Finnish National Forest Programme 2015 | Year 2014 | | 2009-2013 on average | |
|---|---|---|---|---|---|
| | tarket 1,000 hectares/year | realised 1,000 hectares | realised/ target, % | realised 1,000 hectares | realised/ target, % |
| First thinning | 250 | 165 | 66 | 181 | 72 |
| Artificial regeneration | 160 | 98 | 61 | 107 | 67 |
| Management of young stands | 280 | 222 | 79 | 231 | 83 |
| Forest fertilisation | 80 | 44 | 56 | 43 | 54 |
| remedial fertilisation | 30 | 12 | 40 | 13 | 43 |
| fertilisation for growth | 50 | 32 | 65 | 30 | 60 |
| Ditch network maintenance | 80 | 62 | 77 | 59 | 74 |
| Repelling root-rot disease | 65 | 95 | 146 | 75 | 115 |
| | km/year | km | | km | |
| Construction of forest roads | 640 | 484 | 76 | 725 | 113 |
| Basic improvement of forest roads | 4,000 | 2,479 | 62 | 3,270 | 82 |

*As part of the National Forest Strategy, Luke prepares initial surveys on the statistics of forest ecosystem services and connections of the forest industries with other industries.*

▶ National Forest Strategy 2025

# Wood trade

Wood trade is carried out in non-industrial private forests by two types of sale. In the case of standing sales, the buyer of the wood takes care of fellings and transport to roadside storage, and prices are recorded into the statistics as stumpage prices. In delivery sales, the forest owner delivers the wood alongside the transport route. In that case, the roadside price paid for wood also includes a compensation for harvesting.

## Statistical data on industrial roundwood and energy wood

The Natural Resources Institute Finland compiles statistics on prices and purchased volumes on both industrial roundwood and energy wood. Industrial roundwood trade covers roundwood purchased by forest industry companies from non-industrial private forests, to be used in the production of forest industry products. Nominal stumpage price indexes are also published on the prices of industrial roundwood that describe the development of roundwood price by assortment. Statistics on energy wood contain information on energy wood purchased as raw material for forest chips used by heating and power plants. The compilation of the statistics was started at the beginning of 2014.

The prices of industrial roundwood have been presented in this publication in real terms (deflated using the wholesale price index, 1949=100). Prices are presented as nominal values in the statistics database of the Natural Resources Institute Finland.

## Prices of industrial roundwood at the level of the year before

In 2014, industrial roundwood trade was characterised by reduced volumes purchased and a fairly stable price level. In 2014, the actual stumpage prices in non-industrial private forests were almost at the same level in real terms as the year before. The price of logs increased slightly, whereas that of pulpwood declined. The most significant changes took place in the prices of birch logs (+2%) and spruce pulpwood (-2%). The prices of pine logs (55.4 €/$m^3$) and spruce logs (55.9 €/$m^3$) were the highest. However, compared to the previous ten-year period, the average stumpage price level was eight per cent lower in real terms.

*Photo: Erkki Oksanen/Luke*

Proportionally, the price of spruce pulpwood has dropped the most, by 25 per cent.

The price of roundwood is essentially affected by the felling method of the stand marked for felling. Stumpage prices are usually higher in regeneration felling stands including mainly logs than in various kinds of thinning stands that contain trees with a small diameter.

The price of roundwood procured in delivery sales from non-industrial private forests declined in real terms by nearly one per cent from the year before. The price level of logs increased by 0.5 per cent and the price of pulpwood declined by two per cent. The prices of pine pulpwood (-3%) and spruce pulpwood (-2%) changed the most. Similar to stumpage prices, the average price level of delivery roundwood was also eight per cent lower in real terms than the average price for the previous ten-year period. Similar to standing sales, the price of spruce pulpwood reduced the most proportionally (-15%).

## Roundwood trade volumes declined

Roundwood trade volumes are characterised by strong monthly and year-to-year fluctuations. In 2014, the forest industries purchased a total of 34.0 million cubic metres of roundwood from non-industrial private forests. The amount was nearly three million cubic metres (-8%) less than

Stumpage prices by main roundwood assortment, 2014.

| | Stumpage price 2014 €/m³ | Real change | |
|---|---|---|---|
| | | compared to the year before, % | compared to the average of the previous 10-year period, % |
| Pine logs | 55.4 | 0.8 | -6.8 |
| Spruce logs | 55.9 | -0.1 | -7.5 |
| Birch logs | 41.8 | 2.0 | -12.9 |
| Pine pulpwood | 15.8 | -0.1 | -5.9 |
| Spruce pulpwood | 17.3 | -1.5 | -24.6 |
| Birch pulpwood | 15.7 | 0.2 | -3.1 |

Roadside prices by main roundwood assortment, 2014.

| | Roadside price 2014 €/m³ | Real change | |
|---|---|---|---|
| | | compared to the year before, % | compared to the average of the previous ten-year period, % |
| Pine logs | 57.6 | 0.5 | -6.2 |
| Spruce logs | 57.0 | 0.4 | -6.3 |
| Birch logs | 46.5 | 0.9 | -10.4 |
| Pine pulpwood | 28.7 | -2.5 | -9.7 |
| Spruce pulpwood | 30.0 | -2.0 | -15.3 |
| Birch pulpwood | 30.0 | -0.9 | -5.9 |

the year before. The coverage of industrial roundwood trade statistics improved at the beginning of 2013 when some member companies of Finnish Sawmills were included in them. As a result, long-term comparisons in the development of purchased volumes cannot be made in a reliable manner. Currently, the statistics cover about 90 per cent of all industrial roundwood bought from non-industrial private forests.

In 2014, 15.5 million cubic metres of roundwood trade were logs and 17.2 million cubic metres were pulpwood. Small-sized logs and various specialty roundwood assortments were purchased for the amount of 1.3 million cubic metres. The amounts purchased of all roundwood assortments declined compared to the year before; logs an average of 10 per cent, and pulpwood five per cent. Proportionally, the decrease was the greatest, 14 per cent, in the sales of spruce logs and spruce pulpwood. Pine pulpwood was purchased the most, amounting to nine million cubic metres.

The majority of stands marked for felling were sold by standing sales. In 2014, the share of standing sales of roundwood trade in non-industrial private forests was 82 per cent, which was three percentage points less than the year before. Standing sales were slightly log-oriented in terms of their distribution of roundwood assortments. In 2014, standing sales totalled 27.7 million cubic metres of roundwood (-11% compared with the year before), of which 14.0 million cubic metres were logs and 12.9 million cubic metres was pulpwood. Of the roundwood sold in standing sales, 19.6 million cubic metres were procured from regeneration fellings, and 8.2 million cubic metres of wood were procured from various thinnings.

The volume of roundwood procured in delivery sales was six million cubic metres (+18%). Compared with standing sales, delivery sales are clearly more pulpwood-oriented: in 2014, nearly three-quarters of delivery wood was pulpwood, mainly pine.

## Pruned stems were the most valuable type of energy wood

In 2014, there was great regional variation in the average prices of energy wood and energy wood assortments. On a national level, pruned stems were the most valuable energy wood assortment both in standing sales and delivery sales. In 2014, non-industrial private forest owners were paid an average of 4.2 euros per cubic metre in standing sales for pruned stems. The price of unpruned stems, 1.1 euros per cubic metre, was clearly lower. The price paid for logging residues in standing sales was 3.2 euros per cubic metre, while stumps fetched 1.2 euros per cubic metre. The price of pruned stems in delivery sales reached 23.6 euros per solid cubic metre. The price of un-

Proportion of various felling methods of round-wood trade volumes in standing sales by round-wood assortment, 2014.

| | Regeneration felling, % | Thinnings (thinning and first thinning),% |
|---|---|---|
| Pine logs | 83 | 17 |
| Spruce logs | 91 | 9 |
| Birch logs | 79 | 21 |
| Pine pulpwood | 46 | 54 |
| Spruce pulpwood | 69 | 31 |
| Birch pulpwood | 50 | 50 |

More information on the statistics website

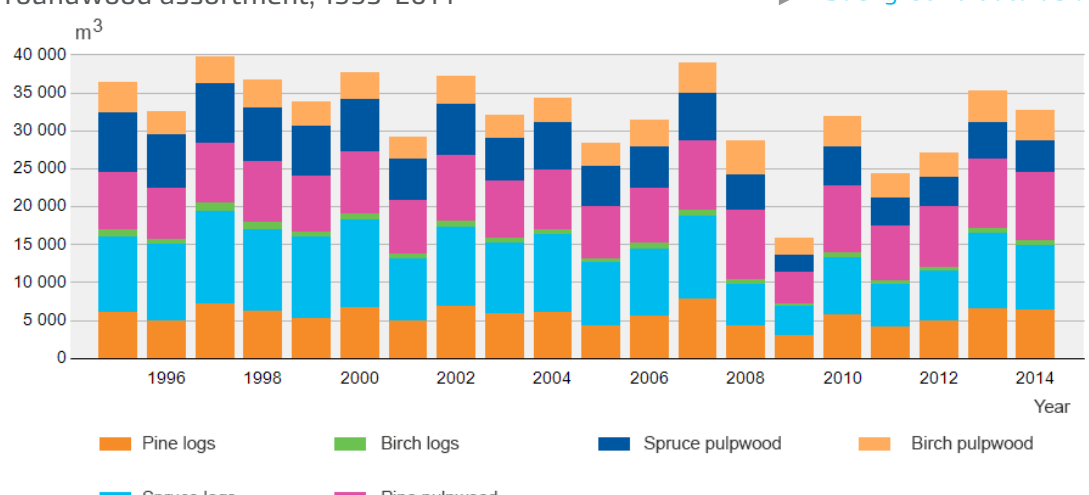
- Volumes and prices in industrial roundwood trade
- Volumes and prices in energy wood trade

pruned stems was 21.0 euros per cubic metre, logging residues 16.1 euros per cubic metre, and stumps 12.0 euros per cubic metre.

The recorded prices do not include government subsidy, which was received by a considerable portion of pruned and unpruned stems. The harvesting subsidy and management subsidy for young stands can multiply the stumpage price of small-sized trees. In 2014, the harvesting subsidy was seven euros per cubic metre in the whole country and the management subsidy for young stands, for example, varied regionally between four and seven euros per cubic metre.

Roundwood trade volumes by main roundwood assortment, 1995–2014

Background data as a table




Energy wood prices, 2014.

| | Standing sales €/m³ | Delivery sales €/m³ |
|---|---|---|
| Average | 3.4 | 21.6 |
| Pruned stems | 4.2 | 23.6 |
| Logging residues | 3.2 | 16.1 |
| Stumps | 1.2 | 12.0 |
| Unpruned stems | 1.1 | 21.0 |

## Pruned stems constituted half of the sales

In 2014, the amount of recorded energy wood purchases was 3.8 million cubic metres, which is estimated to cover about two-thirds of the domestic energy wood market. Half of the energy wood was pruned stems, and the proportion of logging residues was about a third. The proportion of both unpruned stems and stumps of the trade was 8 per cent.

The majority of energy wood, three-quarters, was purchased in standing sales. Standing sales covered about 90 per cent of the purchased stumps and logging residues; the corresponding proportion for pruned stems was 69 per cent and for unpruned stems 60 per cent.

The compilation of statistics on the energy wood trade started in 2014.

# Removals and drain

In 2014, a total of 55.9 million cubic metres of roundwood was harvested for the use of the forest industries. The volume was as much as the year before and eight per cent more than the annual average of the previous ten-year period.

## Industrial roundwood removals at peak level

Over the past two years, the volumes of industrial roundwood removals have been at a peak level: roundwood has been harvested more than this only in 2007, when the volume reached 57.7 million cubic metres. In addition to roundwood used in the production of forest industry products, the harvested volume also covers exported roundwood. However, over the past preceding ten-year period, the proportion of exported roundwood of all industrial roundwood removals has only been two per cent, on an average. In 2014, 1.2 million cubic metres of roundwood were exported.

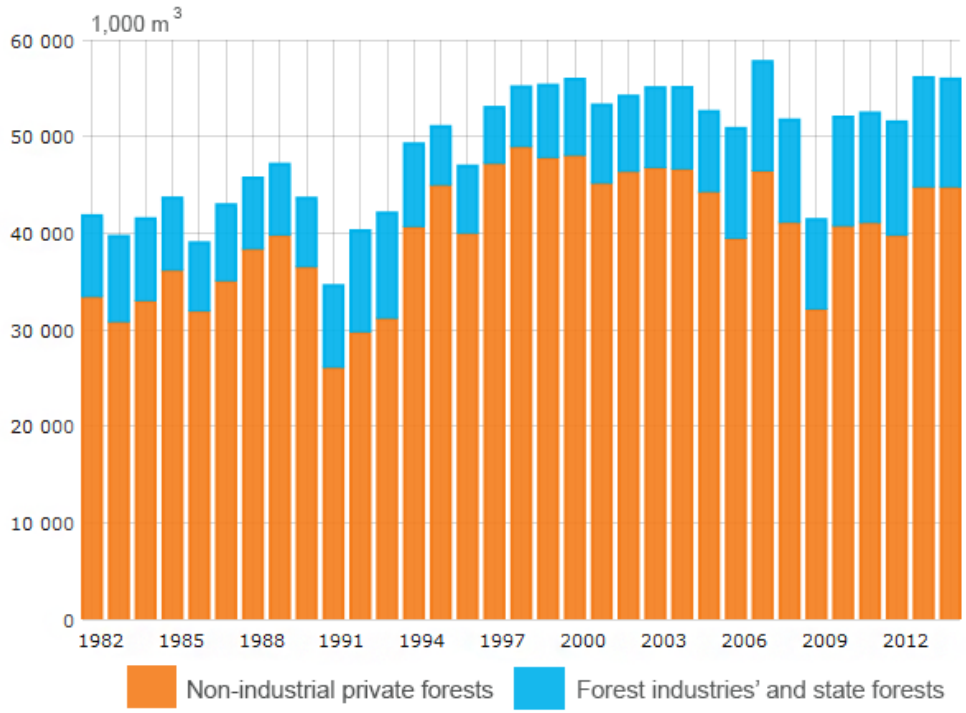
Of the industrial roundwood removals, 24.1 million cubic metres were logs and 31.9 million cubic metres were pulpwood. The removals of logs increased by one per cent compared to the year before, while the removals of pulpwood declined by the same amount. There was no significant variation in the proportions of various roundwood assortments. Pine pulpwood (15.3 million $m^3$) and spruce logs (12.6 million $m^3$) were harvested the most. Compared to the average of the previous ten-year period, the harvesting of pine pulpwood has increased by 13 per cent and hardwood pulpwood by 18 per cent; there are no major changes in other roundwood assortments.


Background data as a table

## The majority of roundwood originates from non-industrial private forests

The majority of harvested industrial roundwood, 80 per cent, that is, 44.7 million cubic metres, originated from non-industrial private forests. The remaining 11.2 million cubic metres originated from removals in forest industry companies' own forests and state-owned forests. A total of 36.4 million cubic metres of the fellings in privately-owned forests, that is, 82 per cent, came from standing sales and the remaining 8.3 million from delivery sales. The removals in privately-owned forests were at the level of the year before, but the volumes of delivery sales increased from the year before by nearly a fifth, as the volume of standing sales declined slightly.

Industrial roundwood removals by owner groups, 1982–2014




## Total roundwood removals at a new high

Total roundwood removals refer to the total volume of roundwood harvested in forests. In addition to the industrial roundwood removals presented before, it also covers wood that has been taken by forest owners from their own forests into their use, and harvested roundwood for energy generation. In 2014, the total roundwood removals were made up as follows (million $m^3$):

| | |
|---|---|
| Total removals | 65.3 |
| Total industrial roundwood of which | 56.3 |
| – forest industries and exports | 55.9 |
| – sawlogs from own forests | 0.3 |
| Energy wood of which | 9.0 |
| – fuelwood in small-scale housing | 5.4 |
| – forest chips for heating and power plants | 3.6 |

In 2014, the total removals, 65.3 million cubic metres, were the same as the year before, and at the same time, they were the largest recorded so far. The majority of the total removals consist of logs and pulpwood harvested as raw material for the forest industries or for exports; in 2014, it covered 86 per cent, that is, 56.3 million cubic metres. The remaining nine million cubic metres were energy wood, which consisted of fuelwood consumed in small-scale housing, and forest chips manufactured from stemwood and used by heating and power plants. Both the increase in industrial roundwood removals and the increased use of forests chips in heating and power plants have together affected the fact that in 2014, the total removals were 10 per cent higher than the average of the previous ten-year period.

## The total drain also covers logging residues and natural drain

The total drain comprises the total removals as well as stemwood residues left in the forest, that is, logging residues (2014: 9.2 million $m^3$) and naturally dead wood left in the forest, that is, natural drain (4.7 million $m^3$). In 2014, the total drain in forests in Finland was at a record level as the year before, 79.2 million cubic metres, of which pine constituted 40 per cent, spruce 33 and broad-leaved trees 27 per cent.

The ratio between growing stock increment and drain is the most important indicator of sustainable wood production. In the long run, the drain must not exceed the increment, and the grow-

ing stock volume will increase when the increment is larger than the drain. The total drain in Finnish forests has continuously been smaller than the growing stock increment. Over the past five years 2010–2014, the average drain was 75.5 million cubic metres a year, which corresponded to 76 per cent of the growing stock increment in forests available for wood production. The ratio for pine was 67 per cent, 78 per cent for spruce and 88 per cent for broadleaved trees.

## 80 per cent of cutting possibilities in use

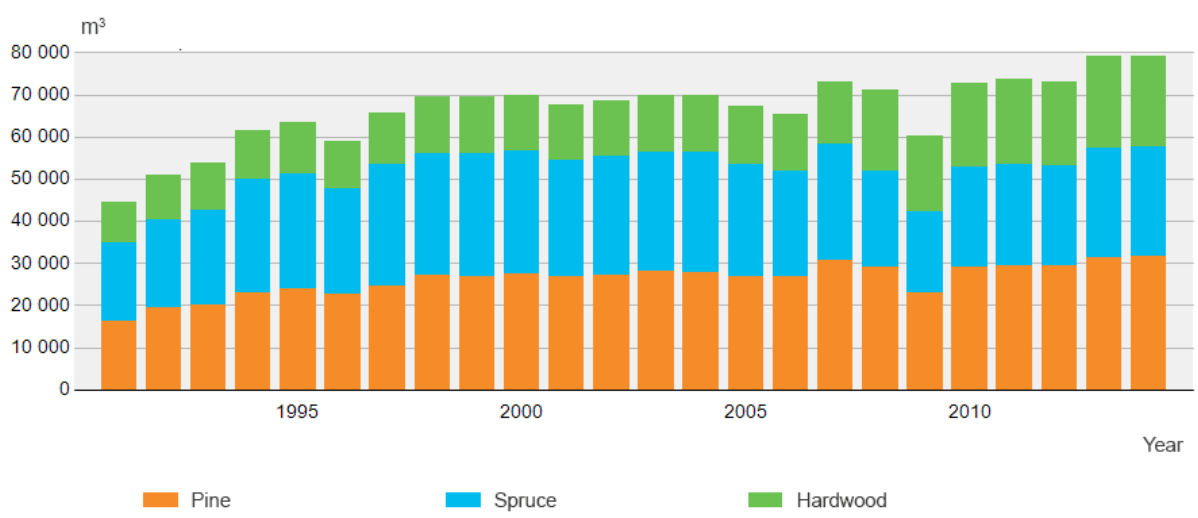
Currently, the maximum sustainable cutting possibilities of industrial roundwood and energy wood in forests in Finland (2011–2020) is about 81 million cubic metres of stemwood a year. In 2014, the total removals were about 65 million cubic metres, so currently, 80 per cent of the cutting possibilities are in use. It is estimated that 75 million cubic metres of industrial roundwood (logs and pulpwood) can be harvested sustainably each year and 21 million cubic metres of energy wood. The total removals of energy wood are closely connected to industrial roundwood removals, as about 15 million cubic metres of energy wood is accumulated from logging residues and stumps of wood that is harvested to be consumed by the forest industries; the rest is stemwood that meets the measurement requirements of industrial roundwood.

More information on the statistics website

- Industrial roundwood removals and labour force
- Total roundwood removals and drain
- Cutting possibilities

Drain by tree species, 1991–2014

Background data as a table




A total of 75 million cubic metres of industrial roundwood can be harvested sustainably each year and 21 million cubic metres of energy wood.

# Stumpage earnings

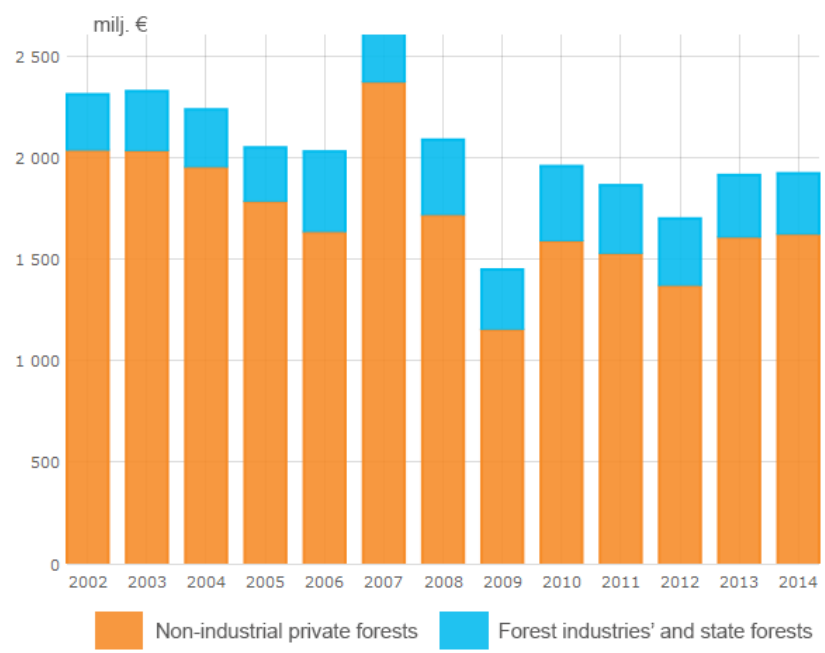
Gross stumpage earnings is an estimate calculated on the basis of annual roundwood removals and stumpage prices describing the sales revenue received by forest owners. In addition to roundwood assortment-specific and regional information, stumpage earnings are also calculated for each forest ownership category including non-industrial private forests, state forests and forests owned by forest industry companies. However, information on the two latter owner groups is presented together due to privacy rules related to individual parties. Besides forests actually owned by private persons, non-industrial private forests also include forests owned or managed by municipalities, parishes, jointly owned forests and other associations than those related to the forest industries. In addition to industrial roundwood removals, the stumpage earnings of non-industrial private forests also include the value of wood that private forest owners have harvested for their own use. Stumpage earnings have been presented here in real terms (deflated using the wholesale price index, 1949=100), whereas they are presented as nominal values in the statistics database of the Natural Resources Institute Finland.

## Stumpage earnings unchanged from the previous year in 2014

In 2014, the gross stumpage earnings of forest owners were 1.92 billion euros, which was as much as the year before in real terms. The majority of stumpage earnings, 84 per cent, that is, 1.62 billion euros, accumulated from privately-owned forests. Earnings from forests owned by the state and the forest industries were 0.30 billion euros.

Earnings from non-industrial private forests increased by one per cent in real terms compared to the year before, but remained three per cent lower than the annual average for the preceding ten-year period. Stumpage earnings from privately-owned forests were the highest in 2007, which was a peak year for industrial roundwood removals and stumpage prices; stumpage earnings reached 2.37 billion euros in real terms. This was twice as much as during the recession in 2009, when stumpage earnings plunged to the lowest level. Earnings from forests owned by the forest industries and the state declined from the year before in real terms by two per cent, and

Stumpage earnings by forest ownership category, 2002-2014



were 13 per cent lower than the average during the previous ten-year period.

In 2014, 70 per cent of stumpage earnings accumulated from logs. Pulpwood constituted 27 per cent of earnings and fuelwood four per cent. Here, fuelwood also covers energy wood manufactured from pruned and unpruned stems and sold from non-industrial private forests to heating and power plants.

The most important roundwood assortments were spruce logs (37% of stumpage earnings) and pine logs (30%). The most important pulpwood assortment was pine pulpwood, with a 12 per cent share. The share of standing sales of the earnings from non-industrial private forests was 80 per cent. Earnings from delivery sales amounted to 15 per cent and wood harvested for own use amounted to five per cent.

▶ More information on the statistics website

| **Amounts and values of various forest products, 2014** | Amount | Unit | Value, million € |
|---|---|---|---|
| Wood obtained from forest | | | |
| Industrial roundwood | 55.9 | million $m^3$ | 1,840 |
| Sawlogs from own forest | 0.3 | " | 17 |
| Fuelwood in small-scale housing | 5.9 | " | 78 |
| Domestic forest chips used in heating and power plants | 7.0 | " | 20 |
| Christmas trees, trade and own use [1)] | 1.5 | million trees | 53 |
| Game bag (amount of meat) | 7.5 | million kilos | 63 |
| Mammals | 7.0 | " | 51 |
| Game birds | 0.5 | " | 12 |
| Harvested products | | | |
| Wild berries, purchased for retail [2)] | 9.1 | million kilos | 15 |
| Wild mushrooms, purchased for retail [2)] | 0.5 | " | 1 |
| Lichen, exports [3)] | 0.2 | " | 1 |
| Products of reindeer husbandry | | | |
| Reindeer meat [4)] | 2.0 | million kilos | 18.5 |

Sources: [1)]Christmas Tree Association, [2)]The Finnish Agency for Rural Affairs, [3)]Finnish Customs, [4)]Reindeer Herders' Association

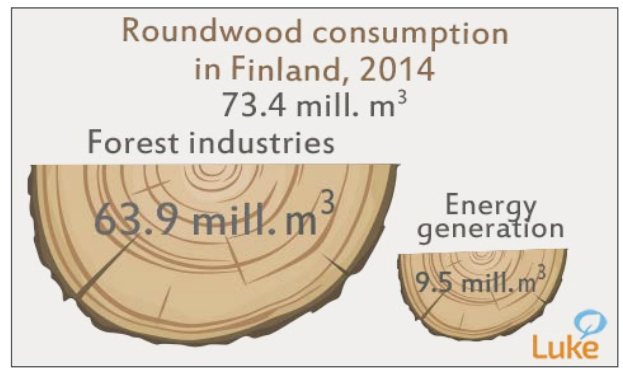
*Photos: Erkki Oksanen/Luke*

# Wood consumption

In 2014, a total of 73.4 million solid cubic metres of roundwood over bark were consumed in Finland, which was as much as the year before. Nearly 90 per cent of roundwood, 63.9 million cubic metres, was used for the production of forest industry products. The remaining 9.5 million cubic metres were burnt for energy as fuelwood in small-scale housing (5.4 million $m^3$) and as forest chips manufactured from stemwood (4.2 million $m^3$) in heating and power plants. A total of 25.1 million cubic metres of forest industry by-products and wood residues were consumed. The production of forest industry products consumed 9.2 million cubic metres and energy generation 15.9 million cubic metres.

## Production capacity cuts have reduced wood consumption

The peak years of industrial roundwood consumption were 2004, 2006 and 2007, when the annual consumption was an average of 75 million cubic metres. Since then, cuts in the production capacity of the pulp and paper industries and reduced production in the wood-products industries have reduced wood consumption. The reduced wood consumption of the forest industries has been compensated by the increase in the volume of wood used in energy generation since the beginning of the 2000s, particularly as the consumption of forest chips has increased in heating and power plants. The total consumption of roundwood was at the highest level after the mid-2000s, when the annual consumption volumes exceeded 81 million cubic metres. In recent years, the lowest consumption figure was recorded during the recession in 2009, when it was less than 60 million cubic metres.




## Chemical pulp industry the main consumer of wood

By branch of industry, the most roundwood was consumed by the chemical pulp industry in 2014, a total of 29.5 million cubic metres (-3% from the year before). The sawmilling industry was the second highest consumer of roundwood: 23.6 million cubic metres (+4%). The most important roundwood assortments were pine pulpwood (15.7 million $m^3$), spruce logs (12.9 million $m^3$) and hardwood pulpwood (12.8 million $m^3$). Compared to the year before, the consumption of softwood logs increased the most, whereas the consumption volumes of pulpwood remained unchanged. Chemical pulp industry used the most of forest industry by-product wood, i.e. sawmill chips and dust (6.6 million $m^3$).

The forest industries processed 55.0 million cubic metres of domestic roundwood (+2% compared with the year before) and 8.9 million cubic metres of imported roundwood (-11%). The consumption of imported roundwood by the forest industries was the highest in 2006 (19.2 million $m^3$), when it constituted a quarter of the total roundwood consumption by the forest industries.

## Consumption of forest chips slumped

Wood in energy generation consists of solid wood fuels consumed by heating and power plants and fuelwood used by small-scale housing. In 2014, heating and power plants consumed a total of 18.7 million solid cubic metres (36 terawatt-hours) of solid wood fuels - nearly as much as the year before, which was a record year.

The most important wood fuel used by heating and power plants was forest chips, the consumption of which declined by six per cent compared to the year before to 7.5 million cubic metres. Almost half, that is, 3.7 million cubic metres, of forest chips were mainly manufactured from small-sized trees (pruned small-diameter stems and unpruned small-sized trees) from thinnings. The second most common source was logging res-

Forest industries' wood consumption by branch of industry 2014.

| | million $m^3$ | Proportion, % |
|---|---|---|
| **Forest industries, total** | **63.9** | **100** |
| **Wood-products industries** | **26.7** | **42** |
| Sawmilling industry | 23.6 | 37 |
| Plywood and veneer industries | 2.8 | 4 |
| Others | 0.3 | 0 |
| **Pulp industries** | **37.2** | **58** |
| Mechanical | 6.5 | 10 |
| Semi-chemical | 1.2 | 2 |
| Chemical pulp | 29.5 | 46 |

Others: chipboard and fibreboard industry, production of pillars and log houses.

idues (2.6 million $m^3$). Together with the forest chips burned in small-scale housing (0.7 million $m^3$), total consumption reached 8.2 million cubic metres (-5%).

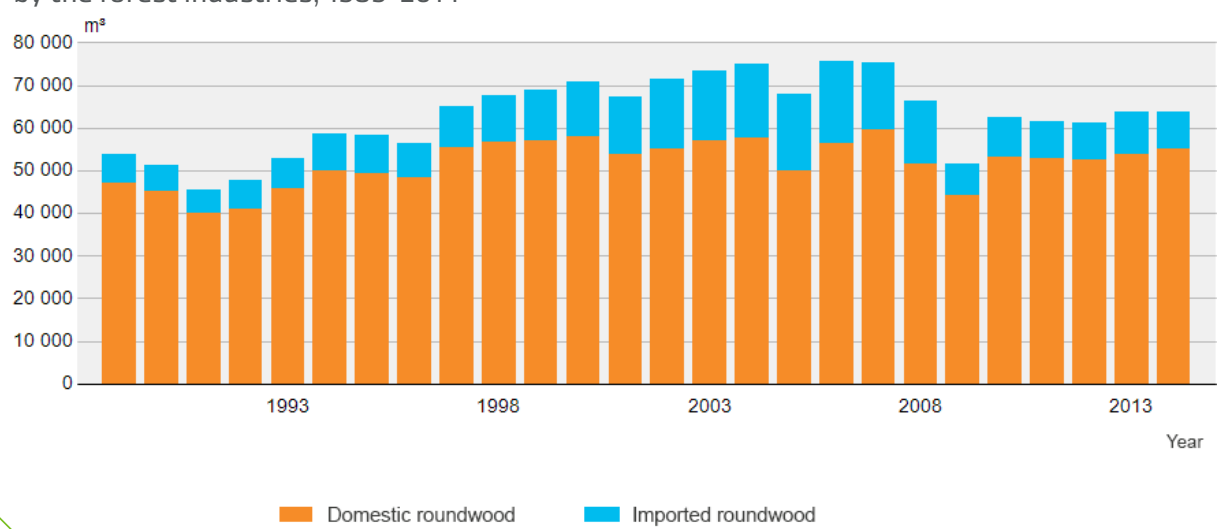
The target set in Finland's National Forest Programme 2015 for the consumption of forest chips in 2015 is at 10-12 million cubic metres, which will probably not be achieved. According to the National Energy and Climate Strategy, the use of forest chips in electricity and heat generation should be increased by 2020 to 25 TWh, which corresponds to about 12-13 million wood cubic metres.

The reduced consumption of forest chips was compensated in heating and power plants by solid forest industry by-products, the consumption of which was 10.2 million cubic metres (+3% compared with the year before). The main solid by-product used in burning was bark, accounting for almost 70 per cent, or 7.1 million cubic metres, of all solid by-products.

Small-scale housing (residential houses, farms and holiday homes) uses 6.7 million cubic metres of wood for heating each year. Stemwood accounted for 5.4 million cubic metres of fuelwood used by small-scale housing, which was mainly burnt as chopped firewood. The most important fuelwood species was birch, which covered more than 40 per cent of all roundwood. A total of 1.3 million cubic metres of forest, sawmill and construction waste wood was burnt. Fuelwood constituted 40 per cent of the total heating energy of small-scale housing.

Consumption of domestic and imported roundwood by the forest industries, 1989-2014

▶ Background data as a table




More information on the statistics website

▶ Forest industries' wood consumption
▶ Wood in energy generation
▶ Total wood consumption

# Foreign trade of roundwood and forest industry products

The majority of the production of the Finnish forest industries is exported. In 2014, 94 per cent of paper and paperboard production was exported, 69 per cent of sawn goods and 87 per cent of plywood. Meanwhile, the majority of pulp industries' production was processed further in Finland; 40 per cent of it was exported.

## The forest sector constitutes a fifth of the total exports

In recent years, the proportion of forest sector products of the total goods exports from Finland has become stable at 20 per cent, whereas it was 10 percentage points higher 20 years ago. In the 1970s, more than half of export income was received from forest sector's products. Currently, the exports in the forest sector consist almost entirely of forest industry products, while the exports of unprocessed wood is minor. On the other hand, imported wood has been an important source of raw material for the Finnish forest industries: in 2014, imported wood accounted for 15 per cent of roundwood acquired by the Finnish forest industries. Its proportion was at the highest level, nearly 30 per cent, in 2005.

The export values of goods are presented in this publication in real terms (deflated using the wholesale price index, 1949=100). However, they are presented as nominal values in the statistics database of the Natural Resources Institute Finland.

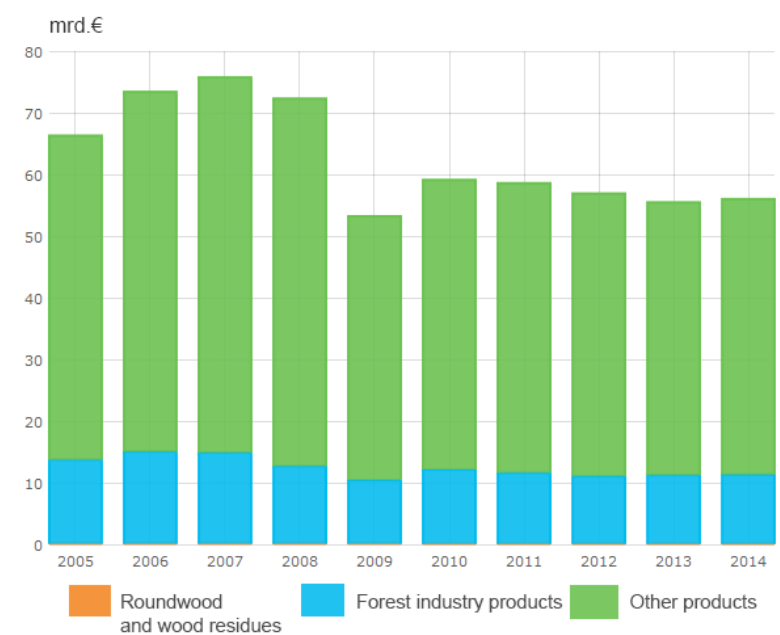
## The value of exports of the Finnish forest industries 11.2 billion in 2014

In 2014, the total value of Finnish goods exports, 56.0 billion euros, was at the same level as the year before in real terms. The Finnish foreign trade of goods was in deficit, as was the case in the preceding three years, that is, imports exceeded Finnish exports. The total deficit was 1.8 billion euros, which is nevertheless clearly less than in previous years.

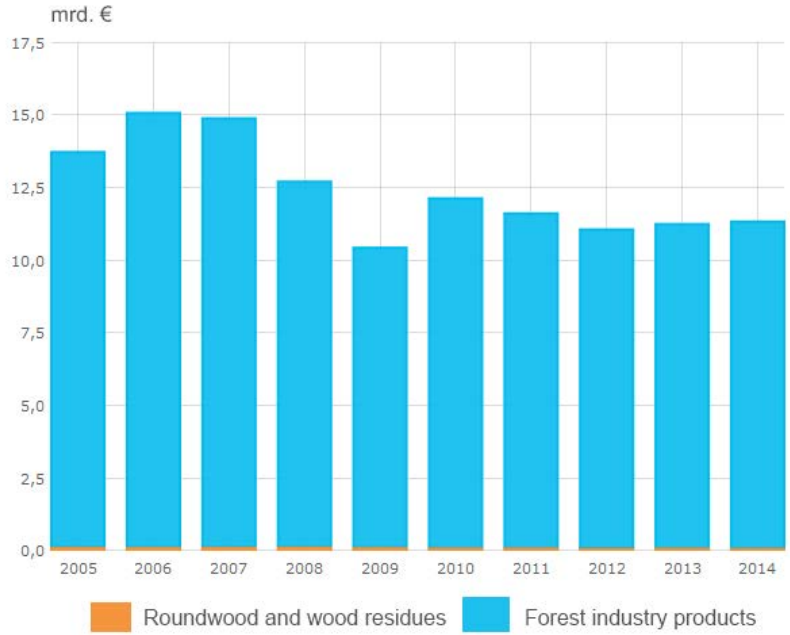
The total value of forest industry products exported from Finland in 2014 was 11.2 billion euros. Exports increased by one per cent in real terms from the year before, but they were 12 per cent lower than the average over the past decade.

Value of exports of Finland, 2005-2014

Link to publication



Value of exports of Finnish forest industry products, 2005–2014 ▶ Link to publication




Four-fifths of the value of forest industry exports, that is, 8.7 billion euros, were obtained from pulp and paper industries' products. The most important individual product group was paper, of which export income amounted to 4.5 billion euros. The exports of paper declined by three per cent in real terms compared to the year before and 26 per cent compared to the average of the previous ten-year period. The value of exported paperboard was 2.2 billion euros and pulp 1.6 billion euros. The value of exported paperboard increased both compared to the year before (+2%) and the average of the previous ten-year period (+7%). The corresponding growth figures for pulp were three and 25 per cent.

Value of exports of Finnish forest industry products by most important product groups, 2014.

| | | Real change | |
|---|---|---|---|
| | Value of exports 2014, billion € | compared to the year before, % | compared to the average of the previous 10-year period, % |
| **Finland's goods exports** | **55.97** | **1** | **-12** |
| **Forest industry products of which** | **11.22** | **1** | **-12** |
| Paper | 4.53 | -3 | -26 |
| Paperboard | 2.15 | 2 | 7 |
| Pulp | 1.61 | 3 | 25 |
| Sawnwood | 1.54 | 9 | 5 |
| Plywood | 0.53 | 12 | -11 |

Exports of forest industry products by target country 2014.

| | Value of exports 2014, billion € |
|---|---|
| **ALL COUNTRIES** | **11.22** |
| Germany | 1.80 |
| United Kingdom | 1.06 |
| China | 0.61 |
| United States | 0.61 |
| Russia | 0.58 |
| Belgium | 0.56 |
| Poland | 0.48 |
| Italy | 0.46 |
| Japan | 0.44 |
| Sweden | 0.41 |
| Others | 4.23 |

The sales of the most important exports product of the wood-products industries, sawn goods, increased from the year before by five per cent to 7.5 million cubic metres. Pine constituted 3.8 million cubic metres of sawn goods and spruce 3.2 million cubic metres. The value of exported sawn goods reached 1.5 billion euros, which meant an increase of 9 per cent in real terms compared to the year before and 5 per cent compared to the average of the previous ten-year period. Plywood was exported 8 per cent more than the year before, all in all a million cubic metres.

Europe is the main market area of Finnish forest industry products. In 2014, the value of exported forest industry products to the European Union was 58 per cent and the rest of Europe 10 per cent. The most important individual countries in terms of the forest industry exports were Germany (16%) and the UK (9%). The countries that followed were China, the United States, Russia and Belgium, all with a share of five per cent. In terms of product groups, paper and paperboard were exported most to Germany and pulp to China. The majority of sawn goods was exported to Egypt. The exports of forest industry products to Asia have increased significantly in the 2010s: in 2014, Asia constituted 17 per cent of exports, whereas in the middle of the 2000s, the share of exports was an average of six percentage points less.

*Photo: Erkki Oksanen/Luke*

In 2014, wood exports from Finland totalled 1.5 million cubic metres, which was the same as the year before and 10 per cent above the average in the previous 10-year period. Four-fifths of wood was exported to Sweden. The most exported roundwood tree species was pine, a total of 0.7 million cubic metres.

## Wood imports dropped by 11 per cent

In 2014, goods were imported to Finland at a total value of 57.8 billion euros, of which the value of forest sector products was 1.8 billion euros, that is, three per cent. Forest industry products constituted 1.3 billion of the imports and wood 0.4 billion euros. In terms of forest industry products, 0.7 billion euros' worth of various pulp and paper industries' products were imported, and 0.2 billion euros of converted paper and paperboard products. The most important import countries were Sweden (€0.3 billion ), Estonia (€0.2 billion ) and Germany (€0.2 billion ).

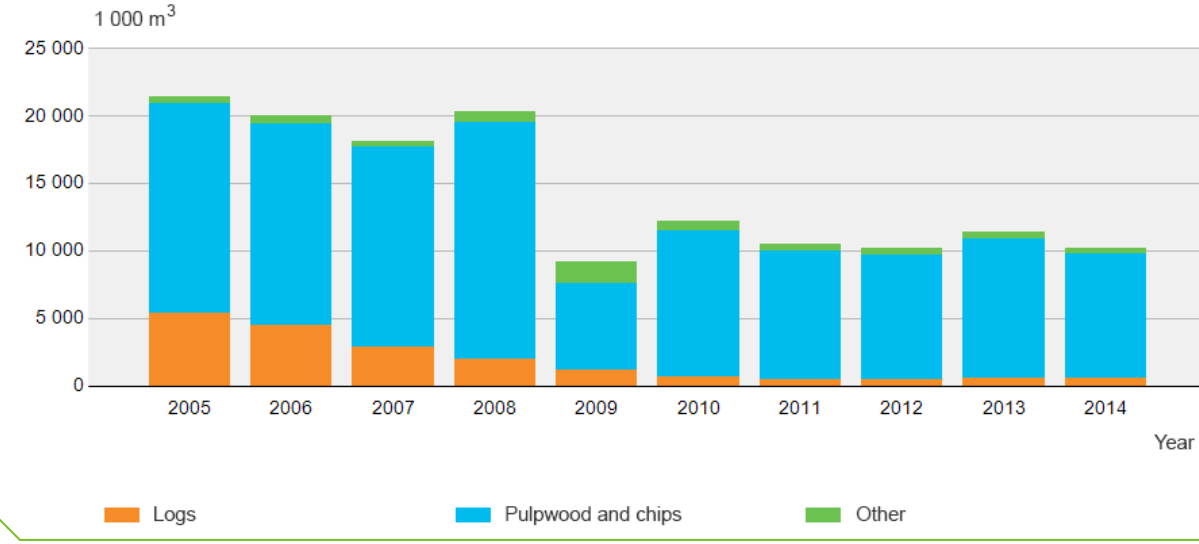
Wood imports to Finland dropped by 11 per cent to 10.2 million cubic metres compared to the year before. The peak of imports took place in 2005–2008, when the annual imported volumes of wood were an average of 20 million cubic metres, and imported wood covered nearly 30 per cent of the total acquisition of roundwood in the forest industries. The level of imports was halved in 2009, and the amounts have not reached the amounts of previous years since.

The majority of wood imported to Finland in 2014 was pulpwood and wood chips. Birch pulpwood was imported the most, a total of 4.9 million cubic metres. The total volume of imported chips was 2.5 million cubic metres. Compared to the year before, the imports of birch pulpwood declined by three per cent and wood chips by as much as 19 per cent. However, imported birch pulpwood still constituted nearly 40 per cent of the total hardwood pulpwood acquired for the forest industries. The proportion of logs of the total imports was only six per cent.

The imported volumes of birch pulpwood were highest in 2008, more than seven million cubic metres, although the amount dropped to less than two million cubic metres the following year. The imports of wood chips started to increase at the beginning of the 2000s, and reached its peak in 2010, a total of 3.8 million cubic metres.

Wood imports, 2005–2014

Link to publication




In 2014, the majority of wood was imported from Russia, of which the proportion of wood imports was 80 per cent. Wood from Estonia constituted 11 per cent of imports and wood from Latvia seven per cent. 90 per cent of the imported birch pulpwood came from Russia.

More information on the statistics website

In 2014, four forest industry products were among the seven most important products in terms of their export value: bleached softwood pulp, coated magazine paper, coated fine paper and pine sawn goods.

# Profitability of non-industrial private forestry

The profitability of non-industrial private forestry is described by economy and investment return statistics. In the statistics, the profit of non-industrial private forestry is measured as the operating profit calculated as the difference between income and expenses as well as the investment profit of wood production in which the return components are adjusted with the stumpage price value of growing stock. Besides forests actually owned by private persons, non-industrial private forests in the statistics also include forests owned or managed by municipalities, parishes, jointly owned forests and other associations than those related to the forest industries.

## Profitability statistics compile several statistics

The basic material for statistics is mainly compiled from other statistics on forestry. Gross stumpage earnings and state subsidy for harvesting energy wood and for wood production are used as income information in the calculations. Costs include cost information of silvicultural and forest improvement work and forestry administration costs. Costs also include the value of work carried out by the forest owner. Information is presented here in real terms (deflated using the cost-of-living index, 1951=100), whereas it is presented as nominal values in the statistics database of the Natural Resources Institute Finland. The surface area information of forests has been obtained from the National Forest Inventory results.

## The operating profit of non-industrial private forestry is based on a marginal profit calculation

Determining the operating profit of non-industrial private forestry is based on a marginal profit calculation, in which the expenses of wood production are deducted from the earnings. The result is a sum which is left to the non-industrial private forestry to be used for taxes and loans, investments and consumption. Here, the operating profit only measures cash flows, and so it does not take into account, for example, the effect of cutting savings or fellings that reduce the value of growing stock capital on the total result of wood production.

Operating profit of non-industrial private forestry, 2004–2014.

| | | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | Real change 2014: Compared to the year before | Real change 2014: Compared to the average of the previous 10-year period |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Million € | | | | | | | | | | | % | % |
| **Operating profit** | | **1,609** | **1,496** | **1,405** | **2,147** | **1,495** | **854** | **1,346** | **1,358** | **1,210** | **1,434** | **1,412** | **-1.5** | **-1.6** |
| Earnings (+) | Gross stumpage earnings and state subsidy | 1,880 | 1,759 | 1,677 | 2,425 | 1,790 | 1,166 | 1,639 | 1,639 | 1,490 | 1,718 | 1,691 | -1.6 | -1.6 |
| Costs (+) | Total costs in wood production | 272 | 263 | 272 | 278 | 295 | 311 | 293 | 281 | 280 | 284 | 278 | -1.8 | -1.6 |
| | Investments in wood production | 200 | 193 | 203 | 209 | 227 | 243 | 217 | 213 | 210 | 214 | 208 | -3.1 | -2.5 |
| | Forestry administration costs | 71 | 70 | 68 | 69 | 68 | 68 | 76 | 68 | 70 | 69 | 71 | 2.1 | 1.1 |
| | | €/hectare | | | | | | | | | | | % | % |
| **Operating profit** | | **123** | **115** | **108** | **164** | **114** | **63** | **100** | **101** | **90** | **107** | **105** | **-1.5** | **-3.2** |
| Earnings (+) | Gross stumpage earnings and state subsidy | 144 | 135 | 128 | 186 | 137 | 87 | 122 | 122 | 111 | 128 | 126 | -1.6 | -3.3 |
| Costs (+) | Total costs in wood production | 21 | 20 | 21 | 21 | 23 | 23 | 22 | 21 | 21 | 21 | 21 | -1.5 | -2.9 |
| | Investments in wood production | 15 | 15 | 16 | 16 | 17 | 18 | 16 | 16 | 16 | 16 | 15 | -3.6 | -4.1 |
| | Forestry administration costs | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 5 | 5 | 5 | 5 | 2.8 | 0.4 |

## Operating profit unchanged from the previous year in 2014

In 2014, the operating profit of non-industrial private forestry in real terms was 1.41 billion euros, which was only 1.5 per cent less than the year before. The change was rather similar in size compared to the average of the previous ten-year period. Gross stumpage earnings increased by one per cent from the year before, but reduced subsidy granted to energy wood reduced the total income by nearly two per cent in the red, a total of 1.69 billion euros. The expenses, which consist of investments in wood production and various administration costs, also declined by nearly two per cent compared to the year before, to 278 billion euros.

In 2014, the operating profit per hectare was a total of 105 euros per hectare. The best return so far, 164 euros per hectare, was achieved in 2007, when the earnings reached a record level and the expenses remained at an average level.

## Forestry as an investment statistics present wood production return by component

Forestry as an investment statistics present wood production investment return in non-industrial private forests by component. Investment return is an index for return that describes the annual profit for capital as a percentage. It is calculated as a natural logarithm transformation in terms of received income, operating costs, changes in property value, and capital. Thanks to the logarithm transformation, averages and dispersions, for example, can be calculated on the basis of the time series of profits. The components of investment return from non-industrial private forestry include income from roundwood sales derived from removals and stumpage prices, total costs in wood production, state subsidy granted for wood production, the value of net increment of growing stock and change in stumpage prices. More information on the statistics' website:

- Operating profit in non-industrial private forestry
- Forestry as an investment

## Investment return dropped in 2014

The real investment return in wood production in non-industrial private forests amounted to 2.3 per cent in 2014. The return was 2.4 percentage points smaller than the year before and 1.3 percentage points below the previous 10-year average. Over the preceding ten-year period, the investment return was the highest in 2007 (26.0%) and the lowest in 2009 (-17.7%).

Income from roundwood sales forms the most important part of the various return components. In 2014, it increased the return by 3.5 percentage points. The return was also increased by the value of net increment of growing stock (1.3 percentage points) and state subsidy for wood production (0.1 percentage points). At the same time, the decline of stumpage prices in real terms (-2.0) and wood production costs (-0.6) reduced the profit.

The real investment return in wood production by component, 2014.

| | 2014, % | Real change, percentage points: Compared to the year before | Real change, percentage points: Compared to the average of the previous 10-year period |
|---|---|---|---|
| **Investment return** | **2.3** | **-2.4** | **-1.3** |
| Income from roundwood sales | 3.5 | 0.0 | 0.0 |
| Value of net increment of the growing stock | 1.3 | 0.1 | 0.3 |
| State subsidy for wood production | 0.1 | 0.0 | 0.0 |
| Total costs in wood production | -0.6 | 0.0 | 0.0 |
| Stumpage price change from the previous year | -2.0 | -2.4 | -1.6 |

The operating profit per hectare of non-industrial private forestry in 2014 was 105 euros.

# Fish and game statistics

Photo: Ville Vähä/Luke

# 2014 in fish and game statistics

## Value of fish catch

In 2014, a total of 200 million kilos of fish were caught and farmed in Finland. The total value of the catch and fish farming was nearly 170 million euros. The catch consisted of catch caught by commercial marine and inland fishermen and recreational anglers. The value of recreational fishing catch was 61 million euros when calculated using the producer prices of fish, the value of commercial fishing catch was 51 million euros, and the value of aquaculture 55 million euros.

The value of the total catch was approximately the same as the year before. The decline of the value of both aquaculture and commercial marine fishing catch was compensated by the increased value of the catch from recreational fishing and commercial fishing in inland waters.

## The most important fish species of commercial fishing

Baltic herring is by far the most important catch species of commercial fishing. The value of Baltic herring catch was 28 million euros, and the total catch was 130 million kilos. The second most important catch species was vendace, the total value of the catch of which was six million euros for about three million kilos. The third most important catch species was pikeperch. The value of pikeperch was nearly five million euros, of which nearly 60% consisted of the proportion of pikeperch caught in inland waters. The value of European whitefish catch was three million euros, and the value of the perch and sprat catch was more than two million euros.

EU specifies annual country-specific catch quotas for Baltic herring, salmon, cod and sprat caught in the Baltic Sea, as well as a couple of other fish species that are less important in Finland. The fulfilment of the quotas is monitored and fishing is interrupted, if necessary.

## Recreational fishing

In Finland, there were nearly 1.6 million recreational anglers in 2014. The amount of catch caught by recreational anglers was about 29 million kilos. Perch and pike were caught the most and their share of the total catch was more than half. Both the number of fishermen and the amount of catch increased since the previous statistics year 2012.

## Aquaculture

In 2014, about 13.3 million kilos of fish was farmed for human consumption in Finland. A total of 12.4 million kilos of rainbow trout was produced, which was more than 90 per cent of the total food fish production. The production of farmed European whitefish was nearly 0.9 million kilos. The total production amount was about 0.3 million kilos smaller than in 2013.

In 2014, the government approved the aquaculture strategy, the aim of which is to have more than 20 million kilos of fish farmed a year in continental Finland by 2022.

## Fish imports and exports

In addition to fish caught and farmed in Finland, Finns also consumed imported fish. The total value of imported fish was 390 million euros, and the value of exported fish was 41 million euros. The value of imports and exports was close to the level of the year before. Whole salmon was imported the most for food from Norway, and Baltic herring was exported the most to Denmark as feed.

## Fish consumption

In 2014, the consumption of domestic fish was four kilos per person, and the consumption of imported fish slightly over ten kilos. The consumption of domestic fish is calculated in fillet weight, and that of imported fish mainly in product weight. Of domestic fish species, consumers favoured farmed rainbow trout the most, and of imported fish species, the consumption of farmed salmon was highest. In the 2000s, the consumption of imported fish has nearly doubled, and at the same time the consumption of domestic fish has declined by nearly a third.

## Hunting

Only small amounts of bag from hunting are used commercially. The majority of the bag is used by hunters and their circle of acquaintances. The value of meat from the game was estimated at about 63 million euros, which is only a million euros less than the year before. The value of the bag consisted mainly of deer meat. The amount of deer bag increased slightly from the year before. On the other hand, the amount of small game bag declined by only eight per cent, which was due in particular to a smaller bag of grouse and water birds.

# Commercial fishing at sea

In 2014, the professional marine fishing register contained about 2,070 fishermen. A quarter of them received at least 30 per cent of their income from fishing. The number of registered fishing vessels for commercial fishing was about 3,140. The majority of them were less than six metre-long vessels used for coastal fishing. The number of commercial fishermen declined rapidly in the 1980s and 1990s. At the beginning of the 1980s, there were still about 5,000 commercial marine fishermen. Regardless of the smaller number of commercial fishermen, the total catch has increased.

## Baltic herring determines the level of the total catch

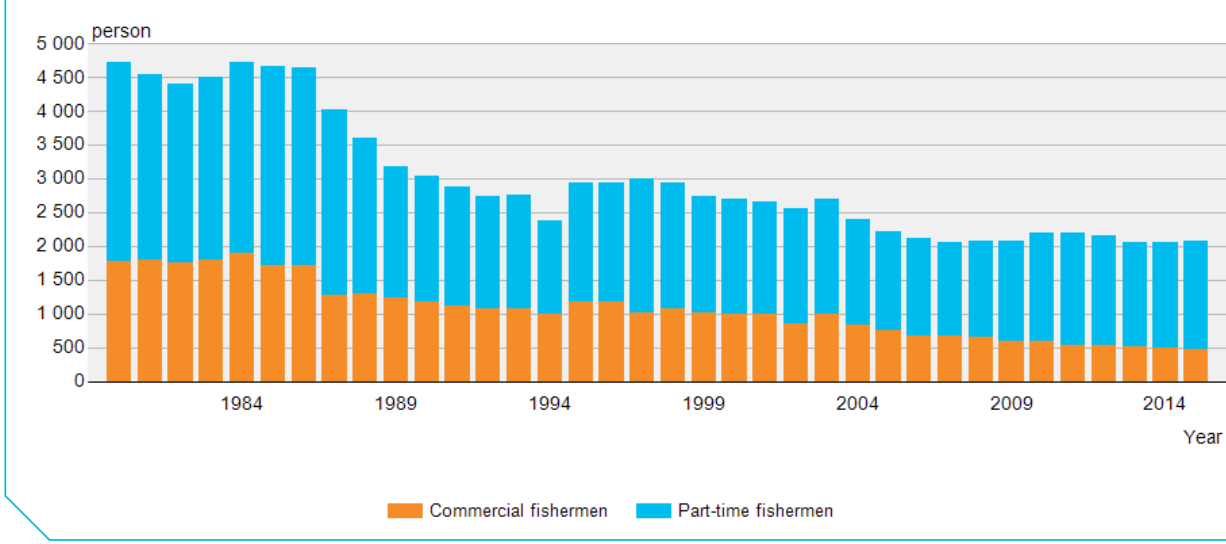
In 2014, the commercial marine fishing catch was larger than ever before, 148 million kilos. Baltic herring was the most important catch species both in terms of volume and value. The share of Baltic herring of the total catch was 90 per cent and 70 per cent of the total value. Other important catches included European whitefish, sprat, pikeperch, perch and salmon. Nearly a third of the catch was caught in the Bothnian Sea and less than a fifth in the Finnish Archipelago Sea. The Finnish commercial fishing catch accounted for less than a fifth of the total commercial fishing catch from the Baltic Sea in 2010.

## Demand, population status and quotas have affected the catch level

Over the past three decades, the catches of Baltic herring, sprat, cod and salmon in particular have varied to a great extent. Catch fluctuations were affected by the demand for fish used in feed industry, changes in fish populations and catch quotas, for example. The need for feed at fur farms declined in the beginning of the 1990s, which reduced the demand for Baltic herring. The least amount of Baltic herring was caught in 1991, about 50 million kilos. The fishing of Baltic herring increased over the past decade when some of the large trawlers transferred into foreign ownership and the catch was taken more and more to Sweden and Estonia. In 1995, sprat catches started to increase rapidly due to the increase in the species population. The catch increased in four years from four million kilos to 27 million kilos. After that, the catch amount has

Commercial marine fishermen, 1980–2014
(Changes in the statistics method 1988 and 1995)

Background data as a table



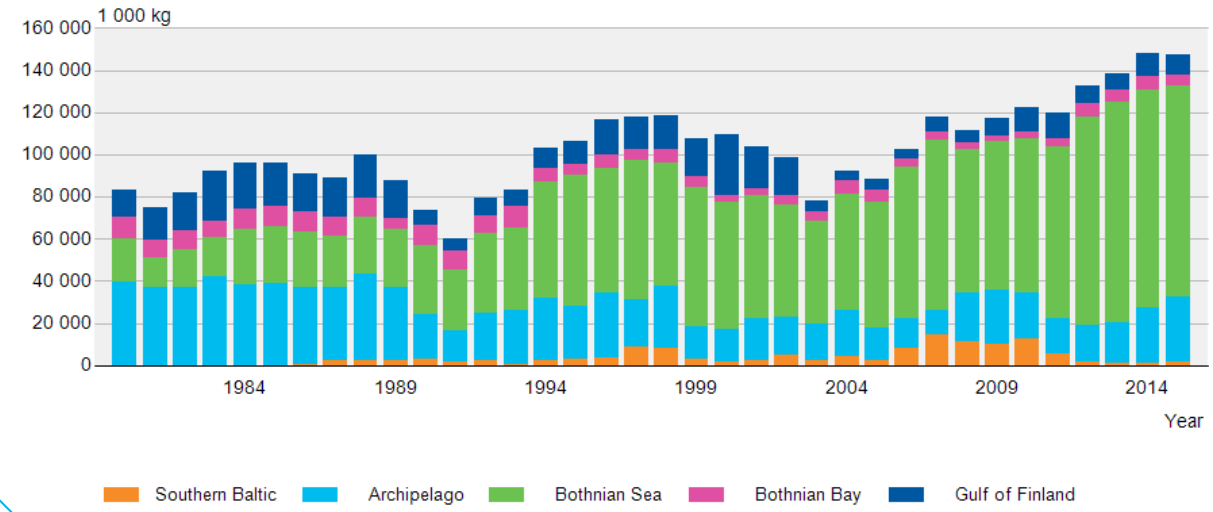
remained at a high level. Almost the entire sprat catch is used as feed, and three-quarters of the Baltic herring catch. The amount of cod caught in the 1980s was more than five million kilos a year at most. Since then, catches started to decline rapidly due to the reduced population of the species. In the 1990s, a couple of Finnish vessels started to fish for cod in the southern part of the Baltic Sea, and the catches started to increase once again up to the 2000s, when the cod population declined again.

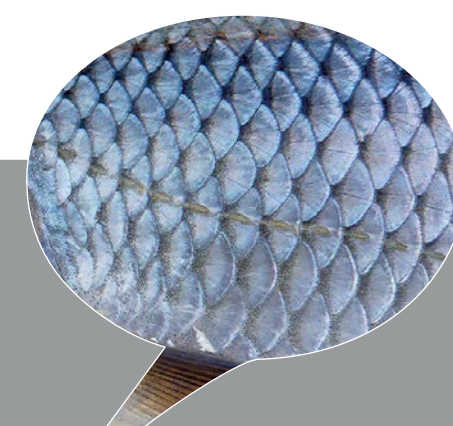
There have also been great fluctuations in the salmon catch. The largest amount of salmon was caught in 1990, more than 2 million kilos. In the 2000s, the salmon catch has amounted to 0.2–0.5 million kilos each year. In the 1980s, the majority of the catch was caught in the south-west sea areas. In the 1990s, the focus of fishing moved to the Bothnian Sea. In 2014, 70 per cent of the total catch and three-quarters of the Baltic herring catch was caught in the Bothnian Sea. The change was affected by strong Baltic herring population in the Bothnian Sea, more efficient trawling, and the focusing of fish processing companies and the feed industry on the west coast.

More information on the statistics website

Background data as a table

Commercial fishing catch by sea areas, 1980–2014



*At the beginning of 2016, the amended Fishing Act entered into force.*

# Commercial fishing in inland waters

In 2014, commercial fishermen caught six million kilos of fish in inland waters, which was more than 1.3 million kilos more than the previous year recorded in the statistics 2012. The total value of the catch, including roe and crayfish (11.7 million euros) was over a million euros more than in 2012.

## Vendace an important inland fish

Vendace is the most important catch species in inland waters in terms of volume and value, and the second most important catch species for all commercial fishing in Finland. Only the value of Baltic herring was higher. Over the past 15 years, the amount of vendace catch has varied between 2.4 and 2.8 million kilos.

In 2014, the vendace catch of commercial inland fishery (2.8 million kilos) increased slightly from recent years. However, the value of the catch, 6.2 million euros, was slightly lower than in the previous recorded year in statistics 2012, which is due to the lower average price per kilo of vendace. Roe accounted for about 0.5 million euros of the value of the vendace catch.

## Pikeperch catch has increased

The second most important catch species after vendace in terms of value was pikeperch, of which both the volume (0.4 million kilos) and value (2.6 million euros) continued to grow. Other important inland species, in terms of the value of the catch, included perch (0.5 million euros) and European whitefish (0.5 million euros).

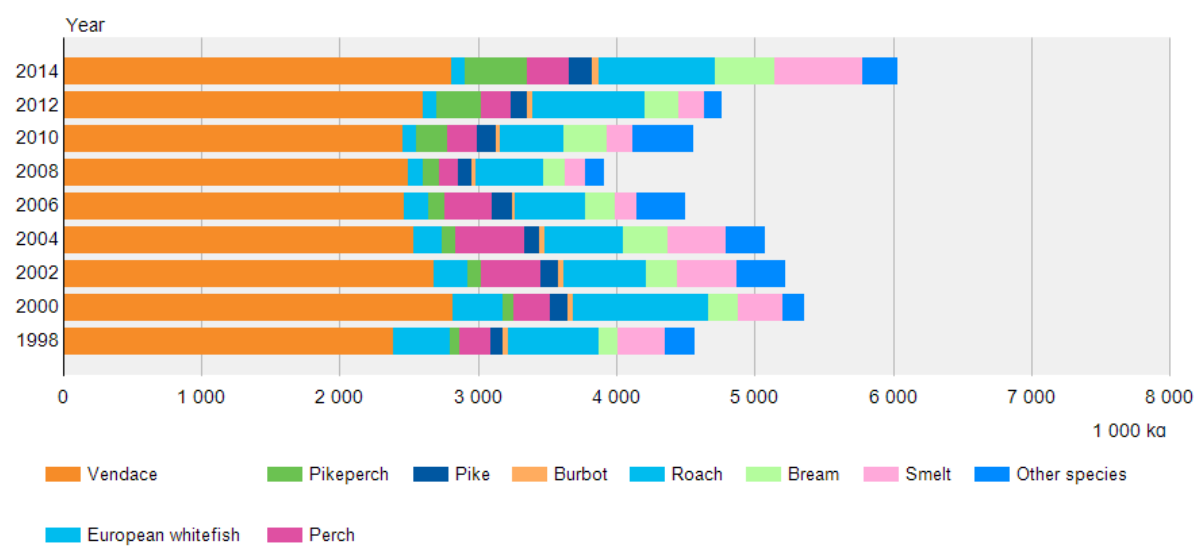
Domestic inland fish accounted for only a couple of per cent of fish trade. In particular, pikeperch and European whitefish are very popular among consumers, and their demand exceeds the supply. Meanwhile, vendace is available in greater volumes.

## Crayfish catch

Commercial fishermen recorded a major haul of signal crayfish in 2014, which was 253,000 crayfish. Fortunately, crayfishing takes place towards the end of the summer, when other fishing is not as active. Crayfishing is an important source of additional income for many commercial fishermen. In recent years, signal crayfish catches caught by commercial fishermen have been about 150,000–500,000 individuals and the value has been 0.2–0.4 million euros.

Catches in commercial inland fishery (1000 kg), 1998–2014

Background data as a table



## Large management fishing catches

The catch of the commercial inland fishery also includes management fishing. Management fishing is a type of intensive fishing designed to change the structure of the fish stock in a water area by reducing the numbers of fish belonging to undesirable species, such as cyprinids and other less valuable and small fishes. In recent years, management fishing has been used for removing about a million kilos of fish from lakes each year. The catch is not often used entirely for human consumption.

In 2014, more than a quarter of the total catch in inland waters was caught in connection with the management fishing in lakes. The value of the management fishing catch was around 1.7 million euros. It was about 0.7 million kilos more than in 2012, which explains the fact that the total catch increased by more than a half. Smelt's share of the management fishing catch was considerable.

## South Savo is the vendace region

In 2014, South Savo was the most important fishing area in terms of catch value (2.1 million euros). About a third of the vendace catch of the whole country was caught there. Other important fishing areas included Kainuu, North Karelia and Lapland, in each of which the catch exceeded a million euros in value.

▶ More information on the statistics website

## The majority of catch was caught using trawls and seines

In 2014, more than 40 per cent of the total catch was caught using seines, less than 30 per cent using a trawl, a fifth using fyke nets and about a tenth using nets. Half of the vendace catch was caught using a trawl and less than half using seines, while the best pikeperch and European whitefish catches were caught using nets. The largest roach and bream catches were caught using seines and trapnets.

## Commercial fishermen have registered

In Finland, there are about 550 registered commercial inland fishermen, of which about 400 fished actively in 2014. Nearly two-thirds of active fishermen belonged to a group of fishermen who receive at least 30 per cent of their income from fishing. Most commercial fishermen were located in the regions of Lapland, Kainuu and South Savo.

*Photo: Ville Vähä/Luke*

# Recreational Fishing

In Finland, the number of recreational anglers totalled almost 1.6 million in 2014, while in 2012 the number stood at approximately 1.5 million. Of the Finnish population, almost one in three - around 30% - is engaged in recreational fishing. Of Finnish males, approximately 40% are recreational anglers, while 20% of females go fishing.

## The number of fishermen is back on a growth path again

While the number of anglers has been on the decline during the 2000s, the trend now seems to be reversing itself. At the turn of the millennium, as many as two million Finns reported that they engaged in recreational fishing.

The number of anglers increased among those under 10, between 45 and 65 and those over 64 years of age. The number of anglers decreased in other age groups.

However, when children come into their teens, their interest in angling clearly wanes, and is particularly true when they reach 18. The number of anglers in the working age population, in the group of those under 45 years of age, has nearly halved compared with the peak years in the early 2000s.

## Net fishing is decreasing

The catch made by recreational anglers increased compared with 2012. The pike and perch catch, amounting almost to the half of the total catch of nearly 29 million kilos, saw the largest growth. Net fishing accounted for less than 40% of the catch, while in 2000, net anglers caught one-half of the total catch. Fish caught using a spinning rod or by trolling accounted for nearly 30% of the total catch.

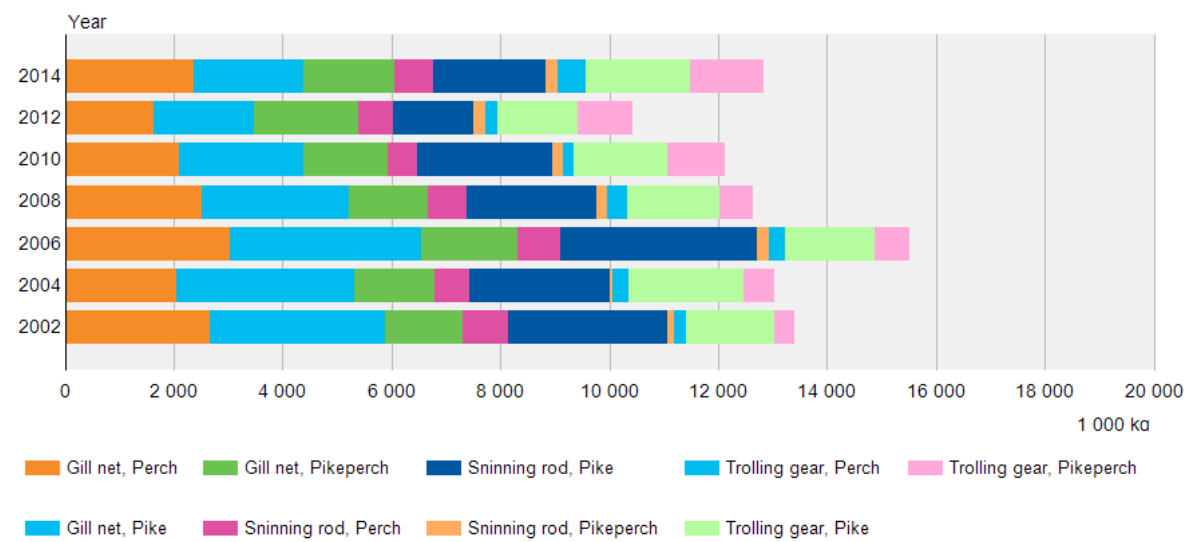
▶ More information on the statistics website

## Perch, pike and pikeperch are the most common catch species

In 2014, perch accounted for slightly over a fifth of the catch caught with a net and pike for slightly less than a fifth. Other important species included pikeperch, bream, vendace and European whitefish. The catch caught using a wire mesh trap consisted mainly of perch, pike, roach and bream. The catch caught using ice fishing and angling equipment was mainly perch and roach. Besides pike, other important species for spinning rod fishing and trolling include pikeperch, perch and salmonoids.

Recreational fishing catch by fishing method, 1,000 kg

▶ Background data as a table



# Aquaculture

In 2014, about 13.3 million kilos of fish was farmed in Finland for human consumption. Food fish was grown on 164 farms. A total of 108 of the farms are located in the coastal regions of Finland and Åland, where farming takes place almost entirely in cages. Food fish was grown on 56 inland farms. Inland food fish production is mainly focused on riverside farms. Recently, recirculating aquaculture systems have also been constructed inland.

In 2014, 86 per cent of farmed fish used for human consumption in the whole of Finland was produced in sea areas. About half of fish used for human consumption was produced in Åland and more than a third along the coast and archipelago of Southwest Finland as well as other sea areas. Only slightly more than a tenth of fish used for human consumption was farmed inland.

## Farming of food fish species

Commercial rainbow trout farming began in the 1960s, and it is still the most important farmed food fish species in Finland. In 2014, 12.4 million kilos of rainbow trout were produced, which accounted for 93 per cent of the total production of fish for human consumption.

The farming methods of other food fish species are also developed. European whitefish has reached the most established status as a new food fish species, and the annual production of about a million kilos in recent years complements the supply of domestic farmed fish. In 2014, European whitefish production reached almost 0.9 million kilos. About 0.1 million kilos of other food fish species was farmed, such as trout, char, sturgeon and pikeperch. A total of 0.4 million kilos of rainbow trout roe was produced as food.

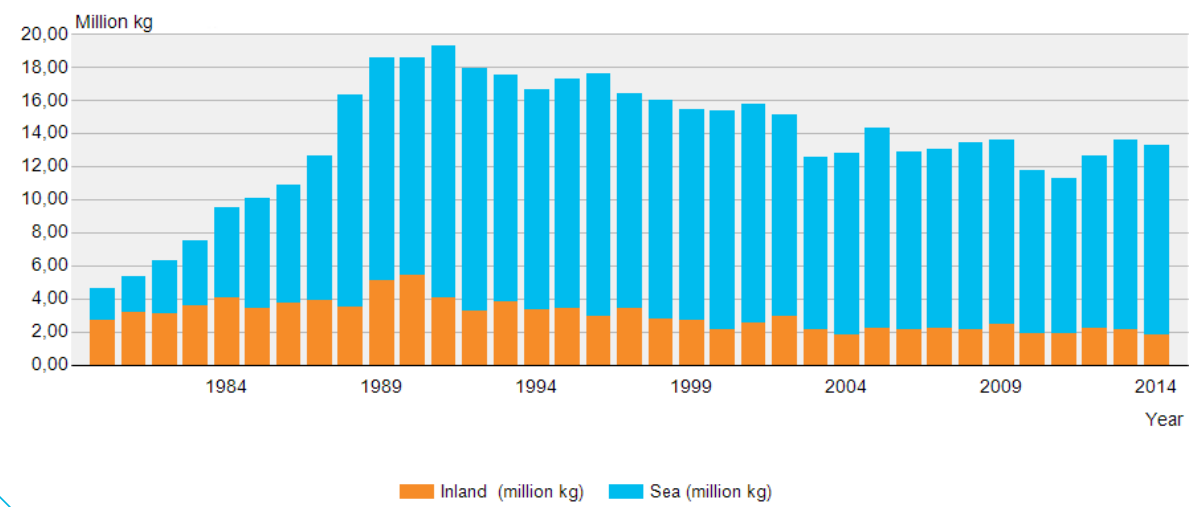
## Production amounts

During the 2000s (2002–2014), the production volumes of food fish have remained almost unchanged, at a level of about 12–13 million kilos. The peak years of production took place in the early 1990s when food fish was farmed about 19 million kilos a year.

The value of rainbow trout production in 2014 was 47.1 million euros and that of European whitefish 6.6 million euros. The total value of food fish production was 54.5 million euros. There is great annual fluctuation in the production values. Since the production volumes have remained relatively stable, the variation in value is mainly due to the average price of rainbow trout that varies each year.

Background data as a table

Food fish production (ungutted fish, million kilos), 1980–2014



## Great demand for domestic fish

Food fish farmed in Finland is mainly used in Finland. There is more demand for domestic fish than there is supply. Only a fifth of the fish used for human consumption in Finland is domestic fish. The closest product to domestic rainbow trout is farmed Norwegian salmon which is imported to Finland about 30 million kilos each year.

## Solutions sought to expanding production

The expansion of domestic production is slowed down by, for example, fishing permits necessary for fish farming according to the Environmental Protection Act. They regulate in detail where and how much fish is farmed.

Solutions to expanding production are sought from open sea farming, in which case larger farms could be placed in an environment that is more sustainable than the coastal region. Currently, recirculating aquaculture is also being developed in which water consumption and nutrient emissions can be reduced by purifying and recycling water.

Besides food fish, fish is also cultivated for further farming and stocking in natural waters. Fish fry that are farmed further are mainly used as starting material for food fish. Fish stocking, on the other hand, is used for maintaining and strengthening fish populations.

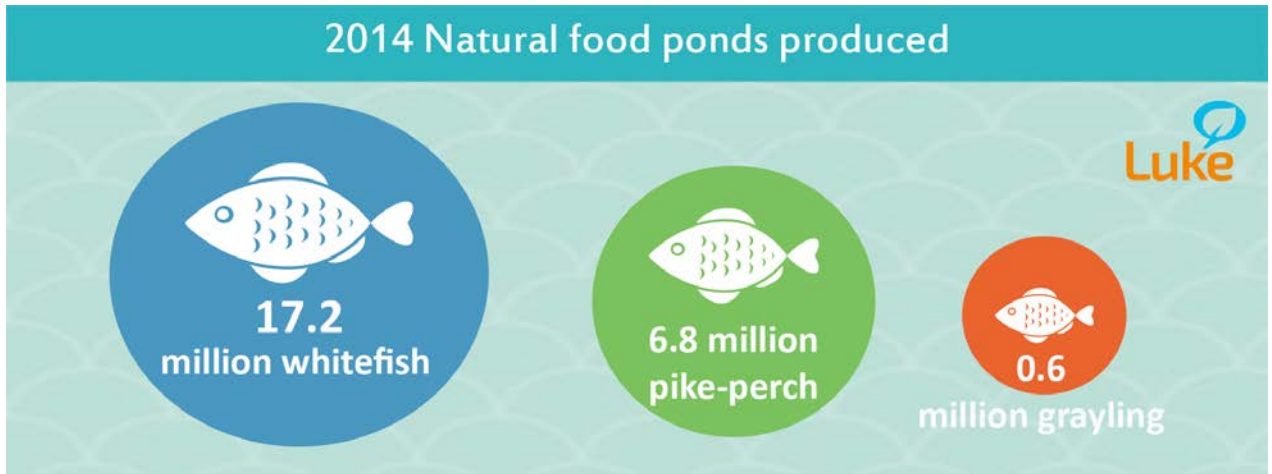
## Fish fry production in inland waters

Fish fry production has focused on inland waters, as the farming of species at the fry phase requires fresh water in order to succeed. The fish fry of salmon, trout, rainbow trout and char are mainly produced on fish farms through intensive farming. In the case of extensive pond farming the newly-hatched fry are reared over their first summer in large ponds with natural food without any additional feeding. This method is mainly used for producing the fish fry of European whitefish, pikeperch, grayling and cyprinids for stocking purposes. In 2014, fish fry was produced on 99 fry farms.

The number of farmers using natural food ponds was 196 and they used a total of 5,559 hectares of ponds.

## 53 million fish juveniles

In 2014, a total of 53 million units of fish and crayfish juveniles of various sizes, apart from newly-hatched, were produced for stocking and further farming. Rainbow trout juveniles were produced a total of 19.2 million units and European whitefish juveniles 1.5 million units which were mainly used for further farming on net cage farms that produce food fish. In addition, fish juveniles of salmon (2.5 million units), sea trout (1.5 million units), brown trout (1.9 million units) and char (0.2 million units) were also farmed. About three-quarters of them were used for stocking. Whitefish, pikeperch and grayling juveniles produced in natural food ponds were used for stocking. In addition, small quantities of fish juveniles of pike, cyprinids, vendace and crayfish were farmed. In 2014, the total value of fish juvenile production was about 24.6 million euros.




▶ More information on the statistics website

# Fish Processing

In 2013, a total of 80 million kilos of fish were used as raw material for fish products in Finland. Of the said amount, 53 million kilos was domestic fish and 27 million kilos was imported fish. Statistics on the production of fish products are compiled every other year.

## Baltic herring, rainbow trout, salmon and European whitefish the most important species

The proportion of frozen Baltic herring and sprat used as food for exporting was more than half of the amount of domestic fish used by the processing industry. A total of 21 million kilos of domestic fish and 23 million kilos of imported fish were processed as fillets or other fresh products. A total of nine million kilos of fish, half of which was domestic fish, were used for products that included further processing.

Besides Baltic herring, the most important fish species used by the processing industry were rainbow trout, salmon and European whitefish. These four species accounted for 94 per cent of all fish raw material. Apart from Baltic herring, the domestic fish species that were processed the most included vendace, pikeperch, perch and pike.

## Processing amount has increased

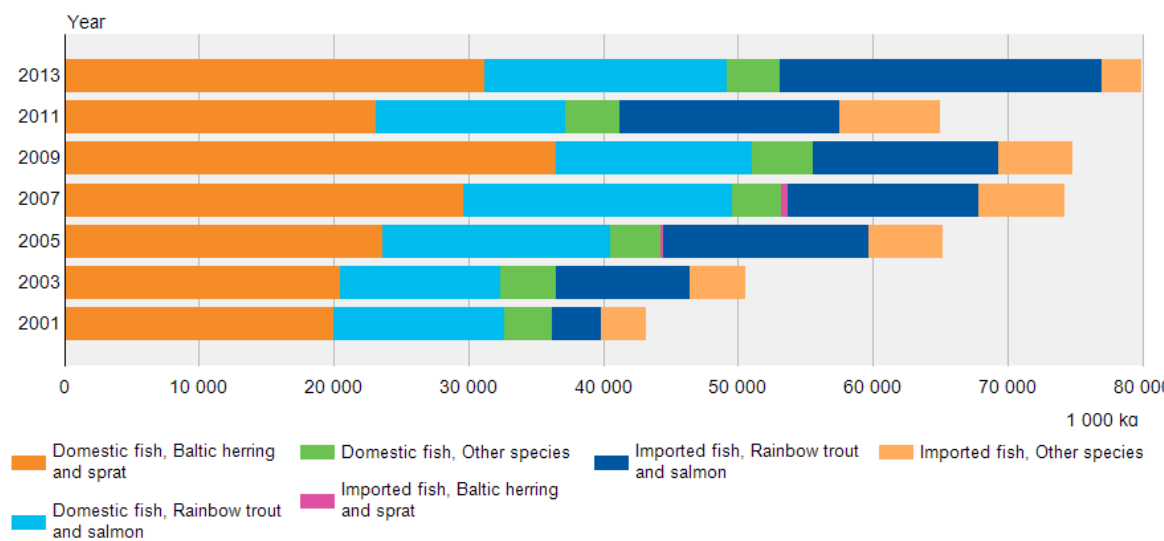
The total amount of fish used for processing increased compared to 2011. In particular, there was increase in frozen Baltic herring for exporting and the use of domestic rainbow trout and imported salmon. Compared to the beginning of the 2000s, the processing amount has almost doubled. In 2009–2011, the exporting amounts of frozen Baltic herring and sprat declined whereas the exporting amounts of fresh Baltic herring and sprat increased.

The number of companies that process fish was 136 in 2013. Nearly 90 per cent of the total amount of processed fish was processed by 22 companies.

A total of 53 million kilos of domestic fish were used as raw material for fish products.

Fish used in the production of fish products as raw material weight (1,000 kg)

Background data as a table



# Producer prices for fish

The real prices of more and more fish species have increased in the 2000s.

## Farmed European whitefish the most valuable

In Finland, a significant amount of European whitefish has been farmed for human consumption in the last ten years. In fact, farmed European whitefish is the most valuable Finnish fish at the moment in terms of producer prices. In 2014, the average price of farmed European whitefish was €8.55/kg. Fish farmers have received double the price for it per kilo on average compared to rainbow trout.

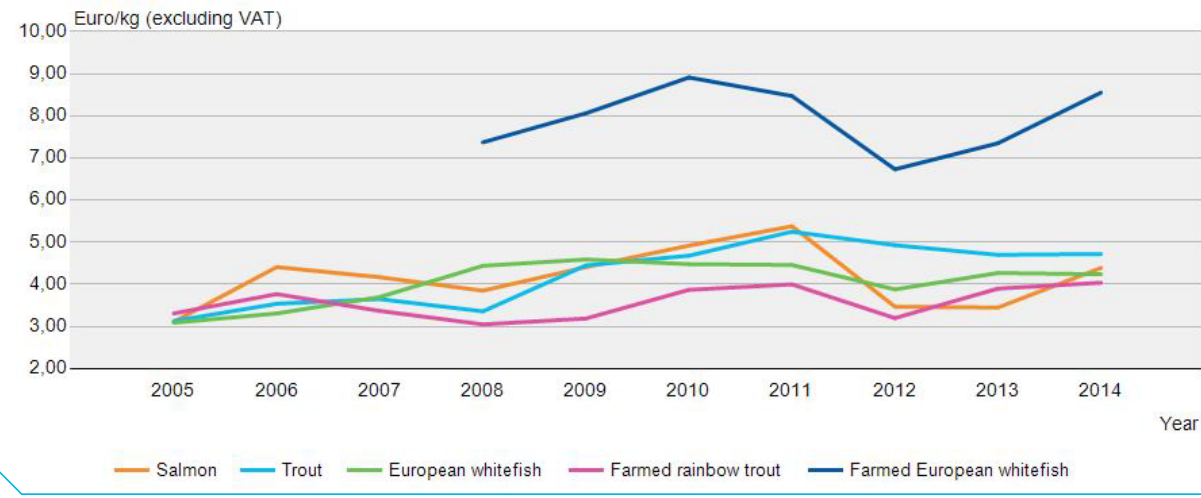
## Price of wild salmon at the same level as the price of rainbow trout

The price fluctuation of rainbow trout as well as that of salmon is affected by the world market price of farmed salmon from Norway. Over the past decade, a salmon fisherman has received slightly more than a euro more at best than a rainbow trout farmer, but over the past three years, the price difference has been minor. Over the past five years, the producer price of European whitefish caught in the sea has been more stable than that of salmon and rainbow trout.

The average prices of salmon, rainbow trout, trout and European whitefish are presented in the statistics for gutted fish, as species sold as food must be gutted as soon as they are caught. Most other fishes are sold ungutted.

Producer price of salmon, trout and European whitefish caught in the sea, and of farmed rainbow trout and European whitefish, 2005–2014

Background data as a table




## Pikeperch is the second most valuable fish

Commercial fishermen have received the best price on pikeperch. In the last three years, the price of ungutted pikeperch has been more than a euro higher than that of a kilo of salmon. In 2014, the average price of ungutted pikeperch was €5.53/kg and gutted €6.42/kg. Usually, only a small portion of pikeperch catch is sold gutted.

The price of ungutted fish has remained quite stable in recent years. The greatest change in 2014 was the decline of burbot producer price by 13 per cent compared to the year before.

## Baltic herring price fluctuations are reflected in the value of the catch in Finland

Baltic herring accounts for the majority of catch in Finland (about 70% of the value of the catch). Therefore, even small changes in the producer prices of Baltic herring affect the whole value of the catch. A third of the Baltic herring catch is

used for human consumption and the rest is used in the industry mainly as feed for fur animals.

Over the past five years, the price of industrial Baltic herring has doubled and the price of Baltic herring used for human consumption has also increased by 35%. However, in 2014, the price of both industrial Baltic herring and Baltic herring used as food declined by two cents from the year before. As a result, the value of the Finnish catch declined compared to previous years even though the catch was at a record level. In 2014, the producer price of Baltic herring used as food was €0.27/kg and industrial Baltic herring €0.20/kg.

## Baltic herring used as food reached a top price in September 2014

The high price of Baltic herring used as food in September 2014 is explained by the fact that the fish that was sold was larger in size on average compared to recent years. The sales of smaller size classes declined considerably. All in all, in autumn, from August until the end of the year, Baltic herring was sold as food half the amount compared to the year before. The reason is probably the decline in exports to Russia in August as a result of the import ban.

The producer prices of fish are based on the price information of fish provided by commercial buyers. The price for farmed rainbow trout is collected by the Finnish Fish Farmer's Association. Prices are shown as nominal prices without the value added tax.

Producer price of ungutted pikeperch, perch, pike and burbot caught in the sea, 2005–2014

Background data as a table

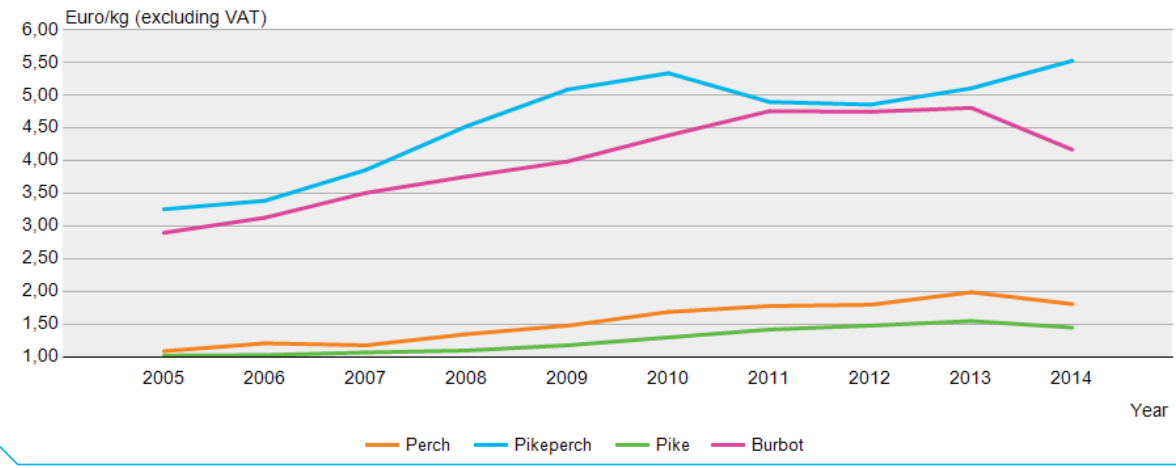



*Photo: Erkki Oksanen/Luke*

# Foreign Trade in Fish

In 2014, about 116 million kilos of fish and fish products were imported to Finland. The total value of imports was 394 million euros. Two-thirds of the imports, about 77 million kilos, were food products and their value was 360 million euros.

## Salmonoids as well as tuna and shrimp products were popular imports

Fresh fish and fish fillets were imported the most as food of which the most important are salmon and rainbow trout. The majority of salmon and rainbow trout was imported from Norway and Sweden, a total of 42 million kilos, worth about 190 million euros.

The second largest product group was various fish products and canned fish of which the imported value was 72 million euros. More than half of the value of the whole product group consisted of canned tuna, which was mainly imported from Thailand and Mauritius.

The third largest product group was frozen, salted, dried and smoked fish products (51 million euros), of which the most important were coalfish and various salmon products. Denmark was the most important import country.

The value of imported crustaceans, molluscs and roe products was a total of about 40 million euros. Shrimps accounted for almost two-thirds; half of the amount was imported from Norway.

## The Nordic countries the most important import countries

All in all, fish and fish products were imported from 65 countries in 2014. In terms of value, three-quarters of the imports came from the Nordic countries. In terms of value, nearly half of all fish and fish products were imported from Norway alone. Only about a tenth of products was exported outside Europe.

Importing fish and fish products for food has continued to increase. In 2014, its amount had doubled and in terms of value, it had tripled compared to 2000.

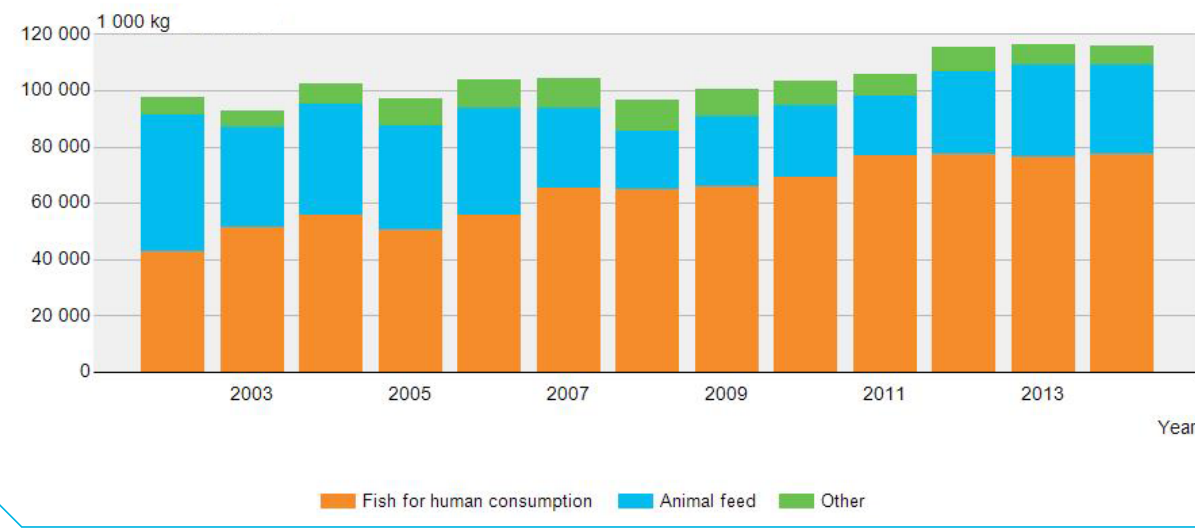
During the same period of about 15 years, the imported amount of fish-based products to be used for another purpose than as food, such as fish oils, fish powder and fish waste, has dropped by half. At most, the products in question were imported to Finland in the 1980s, as much as 300 million kilos each year, mainly for the needs of the fur industry and agriculture. In 2014, only 39 million kilos of corresponding products were imported.

## Minor exports compared to imports

In 2014, the amount of fish and fish products exported from Finland was 65 million kilos. The val-

Imported fish and fish products (1,000 kg), 2002-2014

Background data as a table



32 million kilos of fresh salmon was imported from Norway.

ue of exports was 42 million euros, that is, more than a tenth of the corresponding value of imports.

## Baltic herring, sprat and salmonoids exported

In 2014, Baltic herring and sprat were exported the most in terms of amounts, and together they constituted three-quarters of the amount of exports (49 million kilos). The proportion of salmonoids (five million kilos), including mainly rainbow trout and salmon, was only less than a tenth of the exported amount but in terms of value, about half of the value of exports. Salmon and rainbow trout were exported as fresh but also as frozen and salted. Other important exported products were fish roe and roe products.

## The most important export countries are located in the surrounding regions

In 2014, the most important export countries were Denmark, Estonia, Russia, Latvia and Sweden. The majority of Baltic herring and sprat was exported to Denmark and Russia. Baltic herring and sprat were exported to Estonia and Latvia along with the majority of salmonids. Salmonids were exported to Sweden. Exports to Russia declined due to the import bans that came into effect in August 2014 as a result of which Baltic herring was exported to Denmark more than previously.

Fish exports as well as imports have increased recently. Exporting has more than tripled in ten years (2004–2014). The increase is mainly explained by the increased exports of Baltic herring to the Baltic countries and Denmark.

▶ More information on the statistics website

*Photo: Ville Vähä/Luke*

# Fish Consumption

In 2014, Finns consumed four kilos of domestic fish per person calculated as fillet weight. The amount of imported fish used was more than 10 kilos. Consumption increased slightly compared to the year before.

## Rainbow trout is the domestic fish that is used the most

Rainbow trout was the domestic fish that was used the most (1.1 kg/person/year) followed by vendace, which was consumed about half of the amount of rainbow trout. Farmed salmon was used the most out of foreign fish (4.4 kg/person/year). The second most popular fish was tuna that was consumed half as much as salmon. The proportion of farmed fish of the total consumption of fish was slightly more than 40 per cent.

In addition to domestic rainbow trout, Finns also consumed exported rainbow trout. Foreign rainbow trout was consumed almost as much as domestic rainbow trout. More and more Finnish entrepreneurs farm rainbow trout in Sweden, for example, from where the fish is imported to Finland.

More than half of domestic fish that is used as food is either farmed or caught by professionals. Recreational anglers accounted for 43 per cent.

The consumption of domestic fish has decreased by approximately one third in the 2000s. Of the domestic species, only the consumption of pikeperch has increased slightly in the 2000s.

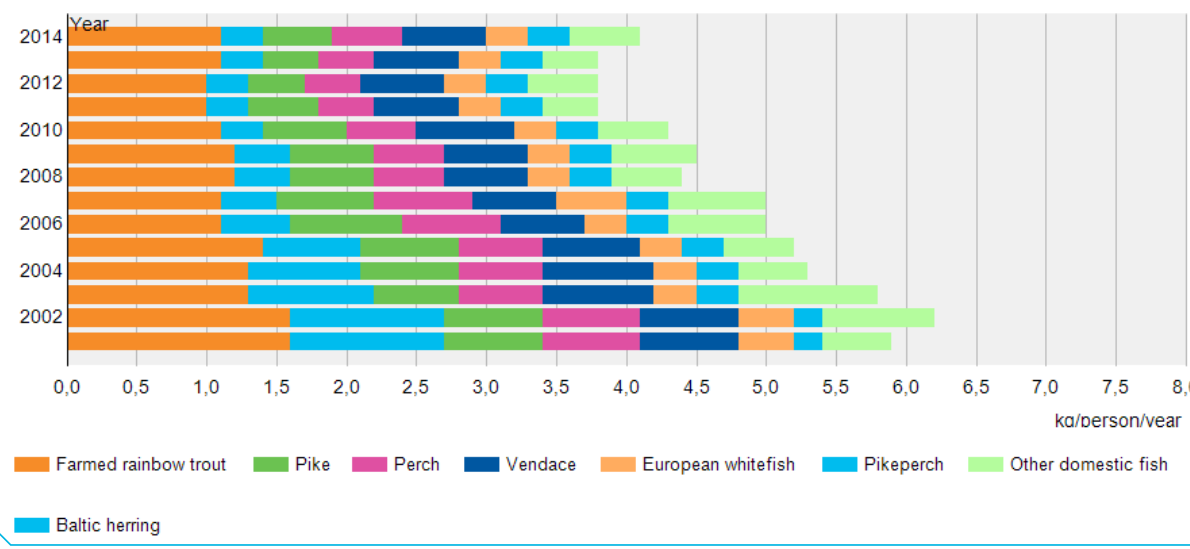
As the consumption of domestic fish has declined, the consumption of imported fish has nearly doubled, and the consumption of salmon imported from Norway has as much as quadrupled.

▶ More information on the statistics website

*Photo: Jaakko Erkinaro/Luke*

Use of fish for food (kg/person/year)

▶ Background data as a table



# Hunting

Over a period of more than 20 years, about 300,000 hunters have annually paid the game management fee that entitles them to hunting. Over the past 80 or so years, the number of hunters has been known in detail, as in the Hunting Act that came into effect as early as in 1934, hunters were requested to pay a game management fee, that is, to have a hunting card.

## Also women among hunters

Traditionally, hunting has been a rather male-dominated leisure time activity, but recently, women have also become interested in hunting. The number of female hunters has almost doubled in ten years. In 2014, the game management fee was paid by 20,190 women and 286,352 men (11% of Finnish men and less than one per cent of women).

## Number of active hunters declining

However, not everyone who has paid the game management fee hunts actively during the year in question. Since 1996, annual statistics have also been compiled on the number of active hunters. During this time, the number of active hunters has varied between 68 and 77 per cent. Over the past three years, the number of active hunters has been declining; in particular, the number of hunters for ducks and grouse has declined. In 2014, about 180,000 hunters were hunting for small game, and about 112,000 hunters were hunting for deer. About 65 per cent of small game hunters caught at least one prey to take home with them.

## Wood pigeon bag the largest

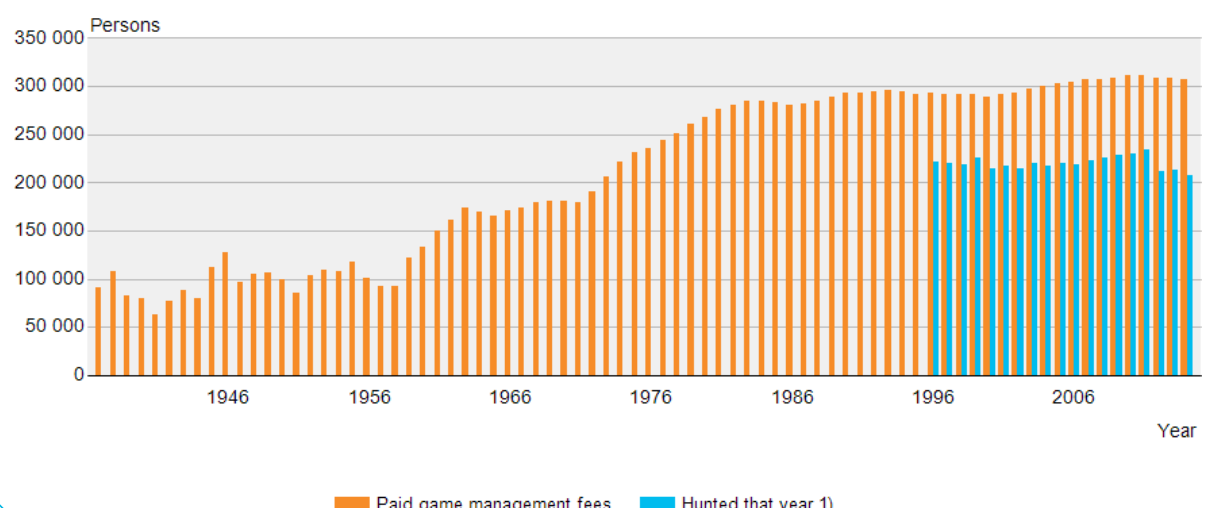
In 2014, wood pigeons were harvested the most (about 270,000 individuals). The number of wood pigeons harvested exceeded for the first time the number of mallards, that is, wild ducks (about 255,000 individuals). The third largest bag was mountain hare (about 180,000 individuals) and the fourth largest bag was raccoon dog (about 175,000 individuals).

The number of wood pigeons and raccoon dogs has increased over the past 15 years in our country, which is also visible in the statistics. Bags have increased quite steadily during this entire statistics recording period; raccoon dog bag has nearly tripled and wood pigeon bag has doubled.

▶ More information on the statistics website

The number of people who have paid the game management fee 1937–2014 and the number of active hunters, 1996–2014

▶ Background data as a table



## Amount of mountain hare bag

The number of mountain hare population dropped at the turn of the millennium, which mainly explains the number of bag at the time. Since then, the number of bag has remained stable. Several explanations have been presented for the drop in the population, in particular, changes in living environments and mild winters are probably the key reasons for the decline in the population.

## Weather in the early summer affects the success of grouse

In 2014, grouse bag (black grouse, western capercaillie, hazel grouse and willow grouse) declined by a third compared to the year before. Cold early summers in 2014 and 2015 made nesting more difficult for birds and thus reduced the sizes of grouse populations. It is estimated that the current size of bird populations is about 60% compared to the peak years 2011–2013. Therefore, the hunting of grouse was restricted this autumn in many places with regional restrictions and recommendations. It has been predicted that in 2015, the amount of bag would still decline from the year before.

## From game statistics to hunting statistics

The currently used recording of small game statistics was started in the 1960s. Initially, the Finnish Hunters' Association collected bag information from their members, but soon, information was collected using a bag survey connected to the permit. Currently, a separate survey is sent to 5,400 hunters (sample: 300 hunters/game management district). Unfortunately, the response rate has declined over the years from over 80 per cent to 66 per cent.

In 1996, the recording of the statistics was changed in such a way that instead of collecting information for a hunting season, bag information was requested for a calendar year. Therefore, bag statistics for 1995 are missing.

The name of the Game statistics publication was changed in 2008 to Hunting statistics, as it was considered that the new title would describe the contents of the statistics better. Statistics include, among other things, the number of active hunters, and the number of hunters for water birds, grouse and small game in general as well as deer.

Bag numbers of the four most common bag species (individuals), 1996–2014

Background data as a table

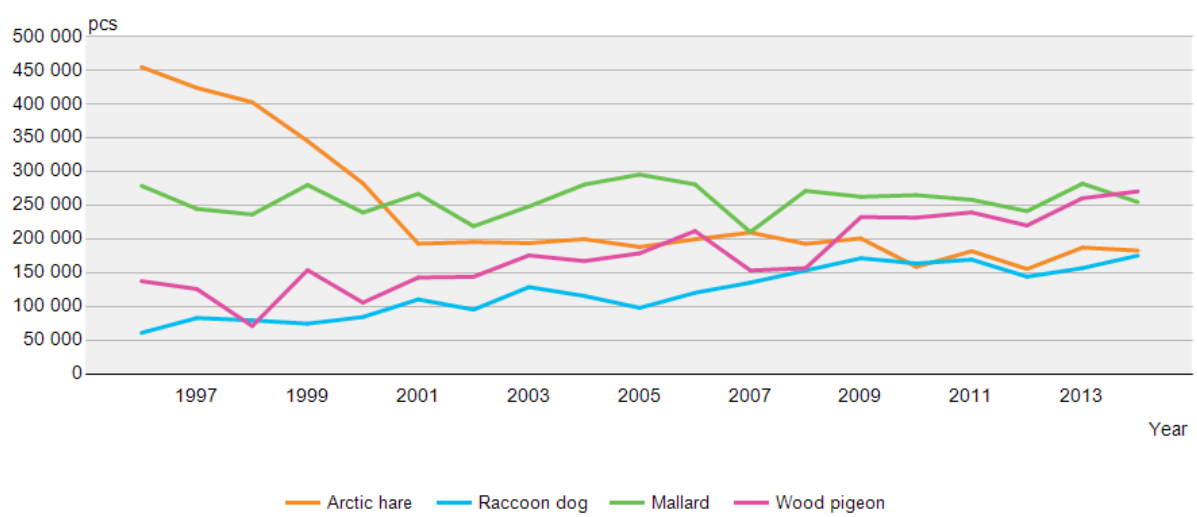



*Photo: Pekka Hyvärinen/Luke*

# Links to statistical services

**Luke's statistical services:** *http://stat.luke.fi/en*

**Luke's statistics database:** *http://statdb.luke.fi/PXWeb/pxweb/fi/LUKE/*

**Statistics Finland:** *http://stat.fi/index_en.html*

**FAOSTAT Statistical database:** *http://faostat3.fao.org*

**Eurostat database:** *http://ec.europa.eu/eurostat/data/database*

**Agricultural statistics of Sweden:** *http://www.jordbruksverket.se/omjordbruksverket/statistik.4.67e843d911ff9f551db80003060.html*

**Global Forest Resources Assessment 2015 – Country Reports:** *http://www.fao.org/forest-resources-assessment/documents/en/*

**State of Europe's Forests 2015 Report:** *http://www.foresteurope.org/*

**FAO Forestry Statistics:** *http://www.fao.org/forestry/46203/en/*

**UNECE Forestry and Timber:** *http://www.unece.org/forests/welcome.html*

**Forest statistics of Sweden:** *http://www.skogsstyrelsen.se/Myndigheten/Statistik/*



*Photo: Erkki Oksanen/Luke*

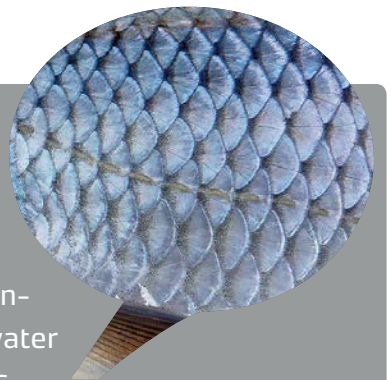
# Thematic research programmes of the Natural Resources Institute Finland

More information: www.luke.fi/en/

## The Green Bioeconomy in the North

The objective is to secure a stable, growing raw-material resource based on forest and field biomass, advance the flexible planning of its use, and create efficient supply chains for the needs of various customer groups.

## Blue Bioeconomy



The objective is to develop water-based bioeconomy across the value chain. Our operation will contribute to building an entity that will make more diverse use of water resources and water ecosystems in a sustainable manner.

## Innovative food chain

The objective is to improve the competitiveness of food production and increase food exports. Research will improve food and nutrition safety and the circular economy in food production, and will also promote the following: consumer well-being through sustainably produced food, the development of the food system with a consumer focus, and the use of new technologies and digital solutions in food production.

## Sustainable natural resources economy in society

The objective is to study and promote the realisation of the natural resources economy and the required changes in society. Research will influence the formation of policies for the sustainable and acceptable use of renewable natural resources, the functioning of the markets, the promotion of the spread of new technologies and business models in society, and practices that will ensure balanced societal and regional development.

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