



European Agricultural Fund for Rural  
Development:  
Europe investing in rural areas



# Rural Development Programme for Mainland Finland 2007-2013

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UNOFFICIAL TRANSLATION



**RURAL DEVELOPMENT PROGRAMME FOR MAINLAND FINLAND 2007–2013**

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## **1 NAME OF THE RURAL DEVELOPMENT PROGRAMME**

Rural Development Programme for Mainland Finland 2007–2013

## **2 MEMBER STATE AND ADMINISTRATIVE AREAS**

### **2.1 Geographical coverage of the programme**

The Rural Development Programme for Mainland Finland (hereinafter the programme) covers the State of Finland excluding the Åland Islands.

### **2.2 Regions eligible under the Convergence Objective (“Convergence regions”)**

Finland has not been classified as a region eligible under the Convergence Objective.

## **3 ANALYSIS OF THE SITUATION IN TERMS OF STRENGTHS AND WEAKNESSES, THE STRATEGY CHOSEN TO MEET THEM AND THE EX-ANTE EVALUATION**

### **3.1 Analysis of the situation in terms of strengths and weaknesses**

#### **3.1.1 General information on Finland and its rural areas**

Finland is located between the 60th and 70th latitudes. A quarter of Finland’s area lies to the north of the Arctic Circle. Finland shares borders with Russia, Norway and Sweden. In the west and south, Finland borders on the Baltic Sea: the Gulf of Bothnia, the Archipelago and the Gulf of Finland.

The total area of Finland is 390,920 km<sup>2</sup>, of which 304,112 km<sup>2</sup> (78%) is land and 86,808 km<sup>2</sup> (22%) is water (sea and inland waters). Of the land area, 86% is covered by forests and 8.9% is agricultural land. Apart from forests, arable areas, settlements, roads and water bodies, the other areas mainly consist of treeless peatlands and rocks. Because of its climatic conditions, Finland has many peatlands (approximately 29% of the land area). There is little built environment in Finland (approximately 3% of the total area). The autonomous Åland Islands belong to Finland and have approximately 6,500 islands, covering 1,527 km<sup>2</sup>, and a population of 26,530 (Statistics Finland, 2005a).

Finland is by many indicators a very rural country. In terms of its population density, Finland is the most sparsely populated EU Member State, consisting wholly of either predominantly or significantly rural areas according to the OECD rural classification based on population density. The classification of regions based on municipalities, which divides Finland into urban areas, urban-adjacent rural areas, rural heartland areas and sparsely populated rural areas, facilitates the study and comparison of the disparities in the development between different types of regions. First, the classification distinguishes the urban areas and urban-adjacent rural areas, and then a multivariable analysis and various surveys have been applied to distinguish the rural heartland areas and sparsely populated rural areas (Annex 1). According to the division of rural areas into three types, more than 90% of the Finnish area is classified as rural areas, with approximately 42% of the Finnish population. Only about 32% of the jobs are located in rural areas. The division of rural areas into three types is used in this analysis to describe the special features which lead to considerable differences within Finland.

Urban-adjacent rural areas, rural heartland areas and sparsely populated rural areas can be described in the following way:

Urban-adjacent rural areas have the best development potential. The residents are able to work in neighbouring towns. Agricultural and other entrepreneurs have a diverse immediate market. Urban-adjacent rural areas are located in southern and western Finland, which have the best conditions for agriculture and for the diversification of the rural economy. Many municipalities in these areas register a migration gain. Families with children, in particular, favour these areas. Because of their migration gain, many municipalities in urban-adjacent rural areas, including some smaller towns, are able to diversify their services and make investments, while preserving their economic room for manoeuvre. The level of well-being is one of the best in the country.

Rural heartland areas are mostly engaged in primary production. They also have a few industrial sector clusters and specialised primary production clusters, including pig, poultry and fur farming as well as greenhouse production. Several medium-sized centres are located near rural heartland areas. Regional municipality centres have diverse activities and most villages are viable. The municipalities of rural heartland areas are located in southern and western Finland.

Sparsely populated rural areas are in a vicious circle: the young move away, services are declining, agriculture decreases, new jobs are too few to offset the loss of traditional jobs, the number of elderly increases and the economic capacity of municipalities cannot cope with the change. The short growing period and other natural conditions restrict the development potential of primary production. Most of the municipalities in sparsely populated rural areas are located in eastern and northern Finland. A majority of sparsely populated rural areas in Finland have been either Objective 6 or Objective 1 areas ever since Finland gained EU membership.

### **3.1.2 Socioeconomic situation**

#### **Population**

The population of Finland is around 5.2 million. The country is extremely sparsely populated; the average population density is 17 inhabitants/km<sup>2</sup> (EU-25 = 117 inhabitants/km<sup>2</sup>). More than 80% of Finland's land area is uninhabited or very sparsely populated (0–5 inhabitants/km<sup>2</sup>), especially in the eastern and northern areas of the country. The population density in Lapland is 2 inhabitants/km<sup>2</sup> and in Kainuu 3.7 inhabitants/km<sup>2</sup>; however, the population density in Uusimaa is 193 inhabitants/km<sup>2</sup> (Statistics Finland).

The Sami people, the only indigenous people of the Community, are a special feature of the population in Lapland. There are around 7,000 Sami living in Finnish Lapland. Around 4,000 Sami live in the Sami home district (the Sami territory), which comprises the municipalities of Enontekiö, Utsjoki and Inari and the northern part of the municipality of Sodankylä in northernmost Lapland. The right of the Sami people to develop their own culture is laid down in the Constitution of Finland. Three Sami languages are spoken in Finland: North Sami, Inari Sami and Skolt Sami. Each language area has its own special features that differ from those of the other areas.

The population in sparsely populated rural areas and rural heartland areas has been decreasing for a long time, but the proportional decrease has now slowed down. The population is concentrated in regional growth centres and their surrounding rural areas. Migration away from rural areas is a major problem and threat to rural areas. The young are the largest group of people to move. The recent population loss from sparsely populated rural areas and rural heartland areas mainly results from the particularly significant migration of young people aged 15–29, which increases the birth rate in areas with a migration gain and reduces it in areas with a migration loss. In addition, men outnumber women in the population, so the gender structure in rural areas continues to be distorted. The problems resulting from sparse population and remote location have increased in the sparsely populated areas of eastern and northern Finland. The population growth in urban-adjacent rural areas has been even more rapid than in urban areas, because especially families with children want more living space than is possible in urban areas.

Table 3.1 Population and population change in 2000–2005 according to the division of Finnish rural areas into three types (Malinen et al., 2006).

Area classification	2005			Share of the population (%) of the whole country	2000–2005	
	Proportion (%) of the surface area	Inhabitants	Population density inhabitants/km <sup>2</sup>		Net migration (%)	Population change (%)
Sparsely populated rural areas (incl. the archipelago)	62.4	555,248	2.9	10.6	-0.60	-5.5
Rural heartland areas	19.6	792,255	13.3	15.1	-0.09	-1.6
Urban-adjacent rural areas	11.8	836,927	23.3	15.9	0.82	6.1
Urban areas	6.2	3,071,150	161.2	58.4	0.18	2.6
Whole Finland	100.0	5,255,580	17.3	100.0	0.16	1.5

The impacts of net migration in the country as a whole are insignificant (net migration rate 1.1/1,000 inhabitants in 2004). The net effects of migration on the population of the regions are diminishing and population growth based on the birth rate is slowing down. The population is growing in the regions of Uusimaa, Pirkanmaa, East Uusimaa, Varsinais-Suomi, North Ostrobothnia, Central Finland, Kanta-Häme and Päijät-Häme together with the Åland Islands. The growth is primarily the result of a migration gain, but in North Ostrobothnia also of a high birth rate. The population in eastern and south-eastern Finland and Kainuu is ageing and the population would continue to decline even if migration stopped altogether. The volume of population change over the last few years has evened out in both the subregions with the greatest migration gain and the greatest migration loss.

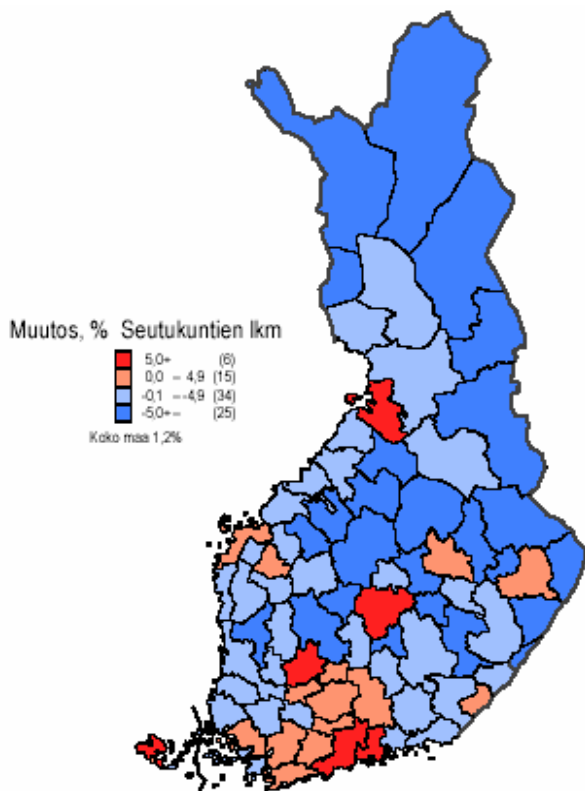


Figure 3.1 Population change (%) by subregion 1998–2003 (Association of Finnish Local and Regional Authorities, 2004). (Koko maa = The whole country)

The ageing of the population concerns the whole of Finland, but sparsely populated rural areas and rural heartland areas are in a less favourable position than the rest of the country as the population in these areas is older than the average. A quarter of the women in sparsely populated rural areas and rural heartland areas is

over 65-years-old. The age structure in small municipalities in particular is causing major problems in terms of providing services and safeguarding the continuation of economic activities. There are significantly fewer young people in rural areas than in urban areas, although no clear statistical differences are evident in the proportion of young people between rural areas.

Table 3.2 The proportion (%) of women and different age groups of the population on 31 December 2004 in Mainland Finland according to the division of Finnish rural areas into three types (Statistics Finland, 2005a).

Area classification	Women	Children (0-14 yrs.)	Young people (15-29 yrs.)	Working age (30-64 yrs.)	Elderly (65 yrs. - )
Sparsely populated rural areas	49.1	15.9	14.5	47.7	21.9
Rural heartland areas	49.9	17.9	16.0	46.5	19.6
Urban-adjacent rural areas	50.0	21.2	15.8	49.6	13.4
Urban areas	52.0	16.6	21.0	47.9	14.5
Mainland Finland	51.1	17.4	18.8	47.9	15.9

The age structure in rural areas is already distorted. Even if migration were to stop, the low number of young people and working-age women in relation to men would lower the birth rate. Those moving away from rural areas are on average better educated than those remaining. Therefore, skills are concentrated in certain areas in Finland, which will have an impact on the industrial structure in the future. The dramatic reduction in social welfare and health services and education services is a greater threat to rural areas than to other areas.

According to forecasts, regional differences will reach a critical point in the future, unless countervailing measures succeed in reversing the trends. The number of pensioners in rural areas will hardly change, but the number of children and working-age people will drop dramatically. The change in the age structure will also impact on the benefit-dependency ratio, which indicates the number of non-active and unemployed people for every employed person. The benefit-dependency ratio will remain almost the same in all areas until 2010, but after this the differences will start to increase, especially to the detriment of sparsely populated rural areas. Although the subregions with the greatest population loss in terms of net migration are located in northern Finland, there are areas with serious problems among the more southern subregions, too.

According to the Equality Barometer (2004), women are increasingly respected in society's top jobs. Likewise, unequal attitudes towards the sexes have decreased in all the environments studied by the Barometer. On the other hand, single men in rural areas living on their own or with their parents are a group that should be focused on in the future to prevent exclusion. The loss in agricultural and forestry jobs also affects men more than women. Equality concerns all population groups, including different ethnic groups, although it is still rare to find residents in rural areas who have a foreign background.

## Economy

The gross domestic product of Finland (GDP/capita=114, EU-25=100) has been growing at a slightly stronger pace than elsewhere in the Community over the last few years (3.5% in 2004 and 2.1% in 2005 from a year earlier). The total growth in the economy over the last few years has resulted from the dramatic increase in household consumption and private investments. The regional differences in economic development and welfare within Finland are reflected in the fact that in the Åland Islands and Uusimaa the GDP/capita is double (156) compared to that in Kainuu (78). The Finnish GDP is above the Community average only in southern Finland, parts of western Finland (Ostrobothnia and North Ostrobothnia) and in the Åland Islands. Measured by income, urban areas and urban-adjacent rural areas are almost at the same level, while the income level of residents in sparsely populated rural areas and rural heartland areas is below the average as a result of the age, education and occupational distribution. The gross value added per rural resident is also a third lower on average than for the whole country (Table 3.3).

Table 3.3 Gross value added at current prices in 2001 in Mainland Finland according to the division of Finnish rural areas into three types (Statistics Finland, 2005a).

Area classification	Gross value added at current prices/inhabitant in 2001 (whole country=100)
Sparsely populated rural areas	62.56
Rural heartland areas	66.28
Urban-adjacent rural areas	63.66
Urban areas	125.71
Mainland Finland	99.73

The total growth in the economy is reflected in the relatively good development in trade, the service sectors and construction. On the other hand, production and employment have dropped in nearly all industrial sectors. The structural change in the economy is also reflected in occupational structures.

Table 3.4 Gross domestic product by sector (%) in 2005 (Statistics Finland, 2005a).

	*2005	Change in % points 2000–2005
Agriculture, forestry, fishing and hunting	2.9	-0.7
Industrial plants	23.9	-4.3
Construction	5.7	0.2
Trade	11.1	1.4
Hotels and restaurants	1.4	0.1
Transport, storage and telecommunications	10.5	0
Financing and insurance activity	2.7	-1.6
Property and other business services	18.8	2.6
Administration, statutory social insurance	5.1	0.3
Education		
Health care and social services	17.9	2.0
Other services		
Gross domestic product at base price	100	0.0
Primary production	2.9	-0.7
Processing	29.6	-4.1
Services (other sectors)	67.5	4.8
– public sector (2004*)	18.0	0.7
– private sector (2004*)	47.4	1.9

\* preliminary figures

The significance of agriculture in the national economy of Finland has been decreasing, which is reflected in the reduction in the share of agriculture, forestry, hunting and fishing of GDP (Table 3.4). Primary production accounted for 3.5% of the gross value added in 2002, which included the 1.2% accounted for by agriculture. In terms of the regional economy, primary production is of most importance in eastern Finland (9.7% of the total gross value added) and of least importance in southern Finland (1.6% of the total gross value added). On the other hand, in terms of the national economy, western Finland is the most important area for primary production, with the gross value added almost double compared to that in northern Finland. The volume of outsourced agricultural products and services is increasing all the time, so a greater proportion of the value of agricultural production is being transferred outside agriculture. The amount of fixed capital (investments) in agriculture was EUR 959.3 million in 2003, of which 70% was invested in southern and western Finland. Agricultural investments have quantitatively increased along with the rapid structural change, but their share of total investments remained almost the same in 1998–2003 (Statistics Finland, 2005).



The regional economic importance of reindeer herding is focused on the northern areas of the country. Reindeer herding also has a significant position in northernmost Finland in terms of keeping remote areas of the country inhabited.

Processing accounted for 30.9% of the gross value added in 2002, which included the 1.7% accounted for by the food industry. In terms of the regional economy, processing is most important in western and northern Finland (36–37% of the total gross value added), but in terms of the total national economy, southern Finland is clearly the most significant, as the gross value added is more than half the gross value added for the whole country.

The food industry is the fourth largest industrial sector after the metals, forestry and chemicals industries. The gross value of production is EUR 8.7 billion and the value added is EUR 2.1 billion. The amount of fixed capital (investments) in the food industry was EUR 391 million in 2003. The most important sectors are the meat and milk processing industries, and the bakery, brewery and soft drinks industries.

Some of the biggest challenges for Finland's food industry, and similarly for the whole food chain, are food prices, small domestic markets, increasing production costs and strong competition from imports. Efforts are being made to improve competitiveness through structural changes and internationalisation and by developing technology and logistics. Quality and safety are seen as the sector's strengths, which is ensured by the continuous quality chain in the food industry from farm to fork.

The forest industry is divided into the pulp and paper industry and the wood products industry, or chemical and mechanical industry. The pulp and paper industry in particular is a large-scale industry that is centralised globally. The importance of the forestry sector for the Finnish national economy and rural residents is the greatest in Europe and in the world. The forest industry and forestry accounted for 7% of GDP in 2004. The forest industry accounted for 17% of industrial gross value added. The forest industry yielded around EUR 19.9 billion, of which the woodworking industry accounted for just under a third. The importance of the forest industry for the Finnish economy is highlighted especially in exports as forest industry products accounted for 24% of goods exported from Finland in 2004. The pulp and paper industry accounted for around 80% of the sector's exports. The significance of forestry and its great variation stand out most clearly when considered regionally and locally. The almost 200 industrial sawmills and other manufacturers of wood products are extremely important regional employers in rural areas, although the sector is extremely sensitive to economic fluctuations. The amount of fixed capital (investments) in forestry was EUR 344 million in 2003.

Services accounted for 65.6% of gross value added in 2002. The growth in services can also be seen regionally, with their share of total gross value added varying from 58% in western Finland to 69% in southern Finland. Southern Finland is the most important area for services when considered in terms of the national economy, as the gross value added is over 60% of Finland's total gross value added.

Growth in production slowed down in 2001–2003, although regional differences in growth declined during this period of slow economic growth. However, according to the regional accounts of Statistics Finland, the total turnover of enterprises grew faster in 2004 than in 2002 and 2003. According to the latest forecast from the Research Institute of the Finnish Economy, ETLA, regional differences in the growth in production will be insignificant in 2005–2009 and annual growth will vary between 2–4% (Ministry of the Interior, 2005).

Production, employment and population changes in the regions are compared to the trends for the whole country using the GEP indicator (Regional GDP, Employment and Population), which is used to measure general regional development by proportioning the changes in a region's production, employment and population to the development in the country as a whole. Of the large regions that were successful in the previous comparison in 2000–2004, North Ostrobothnia and Pirkanmaa have retained their position, while Varsinais-Suomi and Uusimaa have dropped from the top group (Figure 3.2). The number one spot for the whole country went to East Uusimaa as a result of the rapid growth in production. The figures for employment and population growth have been some of the best in the country in East Uusimaa. Kanta-Häme and the Åland Islands have also risen up the list. The development in production, employment and

population has been weakest in many industrial regions, such as South Karelia, Satakunta and Kymenlaakso. Traditional industries have had a strong position even in regions that have developed less well, such as in Lapland, Kainuu and Ostrobothnia.

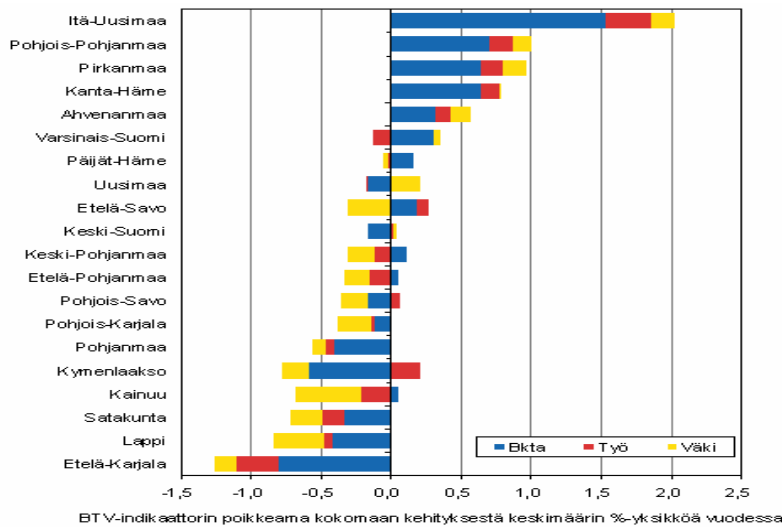


Figure 3.2 GEP indicator by region, 2000–2004 (Statistics Finland). (BTv-indikaattorin poikkeama kokonaan kehityksestä keskimäärin %-yksikköä vuodessa = Total GEP indicator deviation in development in % points on average per year; blue=regional GDP; red=employment; yellow=population)

## Employment

The structure of the Finnish economy is dominated by the service sector: today about 69% of the jobs are in services. Agriculture and forestry account for 4% of jobs and processing for 25%.

Table 3.5 Jobs by sector in 2004 according to the division of Finnish rural areas into three types (Malinen et al., 2006).

Area classification	Primary production	%	Processing	%	Services	%	Unknown	%	Jobs, total	%
Sparsely populated rural areas	29,195	16	41,543	23	105,218	58	6,799	4	182,755	8
Rural heartland areas	37,159	13	86,647	30	155,297	54	8,122	3	287,225	13
Urban-adjacent rural areas	14,341	6	82,707	33	150,831	60	5,675	2	253,554	11
Urban areas	10,958	1	362,207	23	1,165,028	75	22,186	1	1,560,379	68
Whole Finland	91,653	4	573,104	25	1,576,374	69	42,782	2	2,283,913	100

In recent years the industrial structure of rural areas has become increasingly diverse, but the number of jobs has decreased as a result of the growth in productivity of agriculture and forestry and structural change in the public sector, i.e. the State and municipalities, and the manufacturing industry. The total number of jobs grew by 2.5% on average during 2000–2004, but in sparsely populated rural areas the number of jobs dropped by 3%. During the same period of time, jobs in primary production dropped by 19% and jobs in processing by 4% (least of all in rural heartland areas, i.e. 20% in total), while correspondingly the share of jobs in the service sector increased by 6% (urban-adjacent rural areas 11% and sparsely populated rural areas 2%). Only around 32% of the jobs are located in urban-adjacent rural areas, rural heartland areas and sparsely populated rural areas. In 2004, of the nearly 724,000 jobs in rural areas, 11.2% were in primary production, 29.2% in processing and 56.9% in the service sector (Table 3.5). Primary production accounts for a significant number of jobs in sparsely populated rural areas and rural heartland areas, although even in these areas it only accounts for a third of the jobs compared with the service sector, of which a big part are in public-sector welfare services. Industrial jobs alongside jobs in the service sector are typical of urban-adjacent rural areas.

The changes in the employment rate have been insignificant (67.6% in 2004). The highest employment was in southern Finland (70.8%) and the lowest in eastern Finland (60.5%). The uneven distribution in the demand for labour in the different parts of the country increases migration. Although the total number of people employed did not change in 2004 compared with the previous year, there were changes in different sectors. The number of people employed decreased the most in industry, agriculture and forestry and increased most rapidly in private services and trade. Industry, services, trade, and financing and insurance were the most important employers in Finland (Table 3.6). A total of 1,921,000 people were employed in these sectors (81% of the total number of people employed) (Ministry of Labour, 2005a).

Table 3.6 The employed by sector in 2004 (Ministry of Labour, 2005a).

Sector	Employed	% of total number employed
Agriculture	93,000	3.9
Forestry	23,000	1.0
Industrial plants	458,000	19.4
Housing construction	115,000	4.9
Civil engineering	33,000	1.4
Trade	367,000	15.5
Transportation	172,000	7.3
Finance and insurance	315,000	13.3
Services	781,000	33.0
Unknown	8,000	0.3
Total, all sectors	2,365,000	100.0

There were 116,000 people employed in primary production in 2004 (123,900 in 2002). There have been dramatic changes in agricultural employment over the last few decades as the number of farms has decreased and they have specialised regionally or on a farm-specific basis, and as production has become mechanised and more efficient. Agriculture (including fishing and hunting) accounted for 3.9% of the total labour force in 2004 (Table 3.6).

Livestock production is very labour intensive, and the number of working hours of the people employed in agriculture is larger than their labour force participation rate. Agriculture is closely linked to other sectors, which is why the multiplier effects of agriculture are much greater than the share of agriculture alone. The productivity of labour in agriculture is the second lowest among the old EU Member States (EUR 13,545/Annual Working Unit (AWU), index 79, when EU-25=100). The regional differences in the productivity of labour in agriculture are significant (from EUR 7,400/AWU in northern Finland to EUR 23,500/AWU in western Finland), which reflects the differences in both the structure of agriculture and natural conditions between the regions.

Table 3.7 Annual Working Units in Finland (Annual Working Units<sup>1)</sup>, Eurostat, 2006).

	1998	1999	2000	2001	2002	2003	2004	2005
Finland	126.5	118.1	111.1	108.9*	106.6*	106.4*	103.3	100.7*

1) 1 AWU (Annual Working Unit) corresponds to 1,800 hours/year

\*) estimate

The number of people working in the food industry has been decreasing all the time, even though 100–150 new food processing enterprises have been set up every year in the 2000s. In 2004, 37,780 people were employed in the food industry, i.e. 1.6% of the total labour force (42,000 people in 2003, i.e. 1.8% of the total labour force). The biggest employers in the food industry are the meat processing, bakery and milk processing industries. The productivity of labour in the food industry is close to the Community average (EUR 50,200/employee).

The productivity of labour in forestry is the highest in the Community (EUR 119,300/employee). Employment in forestry, which accounted for 1% of the total labour force in 2004 (Table 3.6), has remained relatively stable during the 2000s, even though the rate of mechanical felling has increased significantly over

recent decades. The supply of a skilled labour force and the reduction in annual working units of forest owners are growing problems in forestry. The forest industry employed 65,300 people in 2004 (2.8% of the total labour force). The number of people employed in the forest industry has fallen dramatically as a consequence of increased productivity, the automation of industrial processes and outsourcing auxiliary tasks. Around 3,500 people in the forest industry were made redundant for profitability reasons in 2006. The wood products industry has also been a relatively good employer as the sawmill industry employed around 9,200 people in 2004 and the joinery industry 15,300.

The share of men and women in the labour force in 2004 was 52% and 48%, respectively (Statistics Finland, 2005b). The share of women in the rural labour force has been growing. By international comparison, Finnish women living in rural areas have been quite actively involved in working life, although there have traditionally been more job opportunities available for men than for women in rural areas. Women in rural areas have largely been dependent on public sector jobs, the share of which as a source of employment has been continuously decreasing. The position of women working in agriculture is also relatively strong by international comparison. Both men and women have traditionally taken part in agricultural work in Finland and both have been considered independent entrepreneurs. Income inequalities have become less pronounced since the equal division of income was adopted in taxation. Progressive taxation has had an impact on this, as well. Most of the jobs for men outside farms are in various kinds of manufacturing industries.

Over the coming years, the rise in the average age of the population and the retirement of the baby boomers (people born between 1945–1948) will create problems for the availability of the labour force, with the key reasons being the reduction in the size of the new age cohorts entering the labour market and the increased amount of time spent studying.

Except for the positive trend in 2005, the number of jobs has increased very little in Finland since 2000, but unemployment has still been on the decrease, except in the southernmost parts of Finland. The unemployment rate for the whole country was 8.4% in 2005 (8.8% in 2004). Corresponding to the employment rate, the lowest unemployment rate in 2004 was in southern Finland (7.3%) and the highest was in eastern Finland (12.5%). It is more difficult for young people to find jobs in rural areas than in urban areas, which is why both studies and finding a position in the labour market take them away from rural areas. In 2004, 9.2% of men and 8.9% of women were unemployed, so there are no significant statistical differences between men and women in finding employment. The long-term unemployed accounted for 2.3% of the total active population in 2003. The region with the largest number of long-term unemployed was eastern Finland (3.2%). Unemployment has fallen throughout the country by 2% from 2000 to 2005. Unemployment in sparsely populated rural areas has fallen the most, but is still considerably higher than in other rural areas (Table 3.8).

Table 3.8 Unemployment (%) in 2000–2005 according to the division of Finnish rural areas into three types (Malinen et al., 2006).

Area classification	2005 %	2000–2005 Change (%)
Sparsely populated rural areas	14.8	-2.9
Rural heartland areas	9.5	-1.9
Urban-adjacent rural areas	9.0	-2.0
Urban areas	11.0	-1.8
Whole Finland	10.8	-2.0

The growth in employment in rural areas is founded on entrepreneurship. There were 290,800 self-employed people in Finland in 2004, 74% of whom were working in southern and western Finland. The share of women of all entrepreneurs in Finland is the highest in the Community (35% of rural entrepreneurs in 2000), if agriculture is not taken into consideration. Women accounted for 12.3% of farmers in 2004. Of all women entrepreneurs in rural areas, 60% work in primary production, 30% in the service sector and 5% in processing.

About 40% of Finnish enterprises are located in rural areas. Rural enterprises are often small and frequently operate on farms. 35% of farms engage in a secondary business activity alongside agriculture (Information Centre of the Ministry of Agriculture and Forestry, 2006). Services are the largest, and still growing, sector in rural areas (40% of rural enterprises), which provide opportunities especially for women and the young. The tradition of unpaid voluntary work by women is well established, especially in rural areas. Women living in rural areas are the most active in different kinds of work in the so-called third sector, such as voluntary work in organisations and associations as well as caring for other households in the rural community. The need for welfare and care services will increase in the future as the population gets older. Women living in rural areas also have a great deal of potential in production for household use, small-scale food processing, tourism and handicraft, and information work. Different cultural and business services and increased teleworking also create new employment opportunities. The operational requirements of many of the new and developing services in rural areas characteristically depend on the varied know-how and knowledge of entrepreneurs, which highlights the role of training and networking.

### Services in rural areas

The availability of services is central among the preconditions for living and entrepreneurship in rural areas. In Finland the supply of basic services is mainly the responsibility of municipalities. The decrease in the population and simultaneous weakening in municipal finances has resulted in or will soon result in the service structures of municipalities having to be reformed in the coming years. New solutions for safeguarding the availability of services have been developed, such as constructing multi-service centres or exploiting technology in organising mobile and peripatetic services and telematic services.

The decline in rural residents has resulted in a large number of village schools being closed down during the last few decades. During the 1990s, more than 500 primary schools were closed and a similar trend has continued in the 2000s. There were 634 village shops in rural areas in 2004, with sales of EUR 237 million. The number of village shops has dropped by 4.5% since 2003 (Finnish Food Marketing Association, 2005). Discretionary subsidies granted by the Government for village shop investment projects have been used to try and improve village shop services in sparsely populated rural areas. The number of post offices has reduced by a third over the last few years and currently there are around 560 of them. Agents providing postal services run by entrepreneurs and ancillary services to postal distribution have replaced post offices and service points that have been closed down.

In 2002, there were just under half a million holiday homes in Finland; the number increased by around 20% during the 1990s (Statistics Finland). Summer residents are extremely important for preserving services in rural areas because they are an important customer base for village shops, for example. There were over half a million summer residents throughout the country in 2002. The number of summer residents in the whole country rose by around 10% during the 1990s.

### Rural infrastructure

The rural infrastructure varies considerably regionally. The road network must be passable during all seasons as this is vital for production activities and for the services required by communities. The maintenance of the road network in the sparsely populated areas of northern Finland is difficult because of the great distances, while the roads in the densely populated areas of southern Finland can mainly be kept in good condition. Maintaining the extensive local road network in rural areas is especially challenging and there is a danger it will fall into disrepair in the absence of resources for repairs and maintenance.

The harvesting of timber throughout the year, transportation, forest management and land improvement measures require an adequate forest road network. In addition to the major forest roads, the maintenance of the smaller roads is essential for forest management, timber harvesting, different kinds of forest use and the

viability of rural areas. In 2004, 831 kilometres of new roads were constructed and 2,046 kilometres of existing roads were repaired (Finnish Forest Research Institute, 2005).

The reduction in public transport has meant that private car use has become essential for rural residents and the importance of the taxi network has increased. Taxi operations can replace services that have been lost. Special village transport services to village centres are a new and increasing form of transport. Taxi operations are a viable solution in municipalities with a sparse population base that do not have enough customers for a bus service or if bus timetables cannot be arranged to serve inhabitants.

There are unused buildings, plots of land and premises for rent or for sale in some places in rural areas. Different projects have collected information on these to speed up migration to rural areas and to make more efficient use of underutilised premises.

Sufficient communication networks are vital for both rural enterprises and private and public services. Compared to the other parts of the Community, there are already good opportunities for using broadband in Finland, as 92% of the country was covered by a broadband network in 2004, but the construction of broadband connections to villages is still under way (80% of the Finnish rural areas are covered by broadband). Regional Councils have a key role in developing the broadband network and, together with municipalities, they have drawn up regional broadband strategies. The available broadband connections give a similar picture of the coverage of data connections (in the whole country 12.7% of the population have a broadband connection, and in the rural areas 9.1%).

In February 2006, 62% of Finnish households had an Internet connection. Of this figure, 4/5 were broadband connections (in over 1.2 million households). Increasing wireless broadband connections is particularly important for people living in rural areas. In accordance with the target set by the Ministry of Transport and Communications, 90% of the Internet connections in Finland are broadband and the most common connection speed of broadband services is at least 8 Mbit/s. Future emphasis will be placed on developing the supply of services and the availability of connections.

The challenges for water supply and waste management in areas with scattered settlement include further depopulation, a decrease in the number of farms and a growth in the farm size. On the other hand, the number of holiday homes used year-round is growing and the time spent at holiday homes during the year is becoming longer. The availability of high-quality drinking water, the appropriate treatment of waste water and waste management are important factors in terms of the quality of life of those living in rural regions, as well as for industries and recreational activities.

### Knowledge and skills

Knowledge and skills are important competition factors in today's society. Regional competitiveness and the creation of new jobs are closely linked to individuals' educational level and the availability of services that increase skills. As a result of technological development and changes in working practices, rural areas have become more attractive locations for business.

In the Community perspective, the educational level of working-age Finns (77.6% have a medium-level or higher degree, EU-25=69.8%) and the level of continuous development of human resources (22.8% of the working-age Finns participate in life-long learning, EU-25=7.7%) are very high. Nevertheless, the share of the population with medium-level and higher degrees is below the average in sparsely populated rural areas and rural heartland areas.

The educational level of farmers is also reasonable, as 41% of farmers have completed at least basic agricultural training (Information Centre of the Ministry of Agriculture and Forestry, 2006). The network of educational institutions in the agriculture and natural resources sectors is still quite dense, which is important for primary production. In 2004, basic training in natural resources and the environment was available in 43 educational institutions in 64 locations (Finnish National Board of Education, 2005). The development of

the network of polytechnics and vocational schools in rural areas is of key importance. As yet, it has not been possible to exploit the expertise concentrated in educational institutions for developing rural areas. The contraction of the network of educational institutions along with the reduction in the birth rate will create problems in the future. The Educational Centre of the Sami Area operates in North Lapland and it has a clear role as a provider of upper secondary education.

Research in rural areas has increased considerably; rural research is conducted at about 30 research institutes in Finland. The research is characterised by the dramatic increase in the participation in provincial and regional development work. Nine professorships in rural research have also been established in Finland. The multidisciplinary Rural Studies (RS) programme has been running since 2002. Agricultural research is conducted in Finland at the University of Helsinki's Faculty of Agriculture and Forestry and by Agrifood Research Finland. The task of the Finnish Forest Research Institute (Metla) is to promote, through research, economically, environmentally and socially sustainable management and use of forests.

Centres of expertise bring together local, regional and national resources. Of these centres, the Centre of Expertise for the Food Processing Industry (ELO), the centre of expertise for the Seinäjoki area, the national centre of expertise for the timber sector and the network centre of expertise for the tourism sector have served rural enterprises, in particular, during 2000–2006.

The operations of several advisory organisations (rural advisory centres, fisheries centres, forestry centres and start-up centres) cover all the regions. Advisory organisations are actively involved in regional development work as providers of individual advisory services. Organisations help thousands of rural enterprises every year through individual consultancy and training. The strengths of these organisations are the closeness of their operations to clients, the large client base and extensive national networks. Around 40,000 clients ask for agricultural advice every year. Advice is important in attaining the programme's targets.

### Community spirit

The conditions of some areas are better than others within rural areas in terms of their ability to develop. Administrative and regional development measures have aimed at balancing these variations. Rural areas are also characterised by their community spirit and the activities of different sized organisations. Fundamental changes have taken place in this respect during the years. The increase in communication, occupational segregation, the ease of mobility, rise in the educational level and internationalisation have severed citizens from their immediate community. In addition, jobs that provide an income for rural residents have been transferred to a great extent from rural areas to growth centres. Although the number of people commuting between municipalities varies by region, those who go to work in growth centres form a large population group in all rural areas.

Community spirit has been reinvigorated by encouraging the organisation of citizens' activities into village associations or local action groups with economic responsibility. There are around 3,900 village and resident associations or committees in Finland. The number of village associations is constantly increasing, to the extent that at the start of the programming period there was an estimated 2,650.

Local action groups bring together municipalities, State administration, associations, enterprises and active citizens. The Leader approach came to Finland in connection with EU membership in 1995. During the programming period 1995–1999, there were 22 LEADER II action groups in Finland that started their work in 1997. In 1997, it was decided to mainstream the Leader approach beyond LEADER II activities. At the end of 1997, the 26 nationally financed (Agricultural Development Fund) POMO action groups (Local Initiative Programme) started their work. The LEADER II and POMO action groups covered two thirds of the Finnish rural areas.

During the programming period 2000–2006, the target was to extend the Leader approach to all Finnish rural areas. 25 action groups received funding from the LEADER+ Community Initiative Programme. Seven

action groups were funded from the national POMO+ programme. 19 action groups received funding from the RRDP programme and 5 action groups from the Objective 1 programmes. One action group was financed both from the RRDP and the Objective 1 programme.

In 2006, mainland Finland had 58 local action groups that have established their position in developing their area. The activities of the action groups cover nearly all of the 2.4 million rural residents, i.e. 47% of the country's population. The action groups cover 419 municipalities and have 1.8 employees on average. During the programming period 2000–2006, the action groups financed about 7,000 projects.

### Rural culture

Rural culture is a resource for rural development. Well maintained cultural environments and landscapes have a beneficial impact on the well-being of rural residents. Rural culture not only strengthens their identity but also creates opportunities for distinctive entrepreneurial activities and product development. This is especially apparent in tourism and arts and crafts, which have become important sources of income in rural areas.

The role and importance of culture is continually strengthening. It strengthens the social capital of communities, i.e. their ability, based on trust and social networks, to act in the interests of common objectives. The vitality and sense of togetherness of communities is strengthened through culture, which can also increase the region's economic success and create opportunities for entrepreneurs. Skills and knowledge, creativity and discovering a distinctive culture can help rural areas create new business activities and jobs and strengthen regional vitality. The important sectors for cultural entrepreneurship in rural areas include arts and crafts, organising events, cultural, nature and adventure tourism and content production. Both cultural skills and business activity are brought together in culturally bound entrepreneurship.

## **3.1.3 Environment**

### Water resources

The large number of watercourses and islands in Finland is unique in Europe. The surface area of inland waters, 33,500 km<sup>2</sup>, is around 10% of the total surface area. There are nearly 200,000 lakes and small lakes that are larger than five ares and about 56,000 that are larger than one hectare. The water resources are economically and socially important and they are particularly significant for leisure activities and tourism. The proportion of inland waters is greatest in central and eastern Finland. Most of the lakes are small and shallow and thus their water volume is small. In coastal regions there is very little water in the rivers in the summer, but in the spring when the snow melts and during the autumn rains the water flow is abundant and floods occur quite frequently. The rivers flow into shallow sea bays. The coastline is very long and the large archipelago area results in a closed coastline.

The general usability classification of waters describes the average quality of water and its suitability for water supply, as fishing waters and for recreational use. On the basis of water quality information for 2000–2003, the quality of 80% of the lake area and 73% of the sea area classified was either excellent or good (Figure 3.3). The quality of rivers was poorer than that of lakes. The water flow in several rivers is also quite small, making them very sensitive to the effects of loading. In addition to loading, the state of waters is affected by variations in weather conditions and water volumes. The early freezing over of lakes and the low water level under the ice in winter sometimes cause oxygen deficiency. The substantial growth in blue-green algae over the last few years has prevented watercourses from being used for water supply and recreation and has harmed fishing.



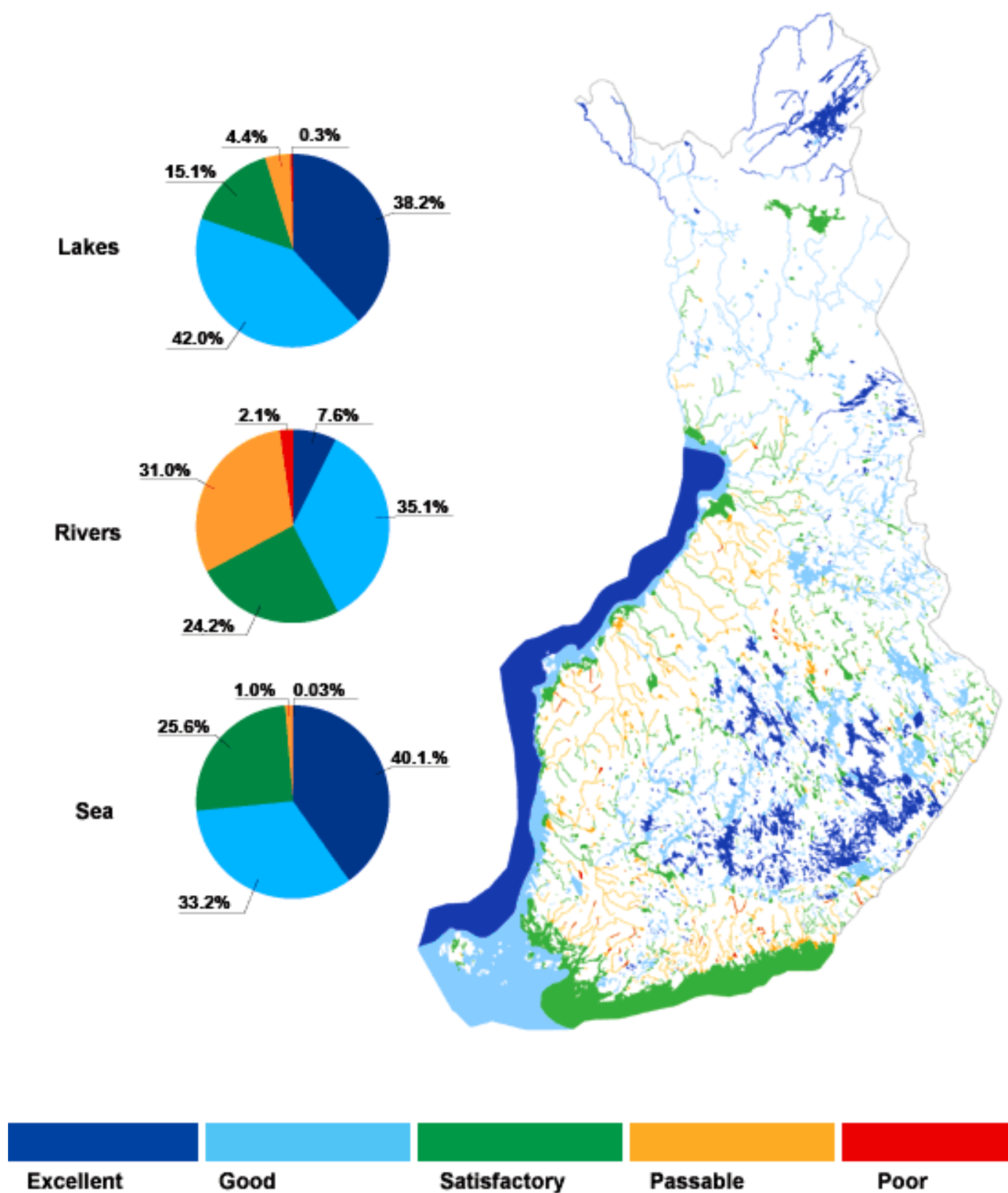


Figure 3.3 Water quality of lakes, rivers and sea areas in 2000–2003 (Finnish Environment Institute (SYKE), 2006).

Finland has a large amount of water resources; however, their quantity with respect to the need varies regionally. Outside population centres, water for household consumption is also obtained from residents' own wells, and their water quality varies. The maximum nitrate content in water permissible in Finland is 25 mg/l, while the Drinking Water Directive (Council Directive 98/83/EC) allows a content of twice that figure. The nitrate content of only 0.4% of the samples tested has been over the permissible 25 mg/l. Therefore, the number of cases of increased nitrate content is very small and the problems are local. Agriculture and forestry may have influenced the increase in the nitrate content, but they are not considered to be very important threats to the quality of classified groundwater resources in Finland.

The Baltic Sea is a virtually closed, shallow and cold brackish water basin. These features make the Baltic Sea vulnerable and its most serious problem in eutrophication. Emissions from neighbouring countries also fundamentally contribute to the loading in the Gulf of Finland, although the state of inland and coastal waters is affected by the particular region's own loading sources. The effects of agricultural loading can be most clearly seen in the Archipelago, rivers in southern Finland and the Gulf of Finland (Figure 3.3). The convoluted and shallow northern coastal waters of the Gulf of Finland are especially sensitive to eutrophication compared to the deep and open shores in the south, which can take ten times more eutrophication than the Finnish coastal waters. Reducing the nutrient load from agriculture and scattered settlement will be a major challenge in the coming years. Relatively extensive fish farming also affects the state of the Archipelago.

In addition to eutrophication there has occurred exceptionally acid waters causing e.g. the demise of fish in the catchment areas of rivers running into the Gulf of Finland, the Archipelago and the Bothnian Sea and in the lakes of catchment areas with agriculture as the main industry. The original cause is that the land areas along Finland's coastal zone contain high quantities of reducible sulphur (sulphate). This is a consequence from the sedimentation of soluble iron and sulphur in the form of sulfate in the coastal shallow waters of the Baltic Sea during the last centuries. These reducible ferrous sulphide sediments in the sedimented acid muddy clay are oxidised naturally by isostatic uplift when getting in contact with air and thus resulting in the development of severely acidic soils, commonly referred to as acid sulphate soils. Acidity and metals are leached from these soils when water runs through them. Artificial drainage, e.g. ditching, adds to this phenomena.

Agriculture is a significant cause of phosphorus and nitrogen loading in watercourses. Agriculture accounts for 63% of phosphorus loading and 51% of nitrogen loading stemming from human activities (Finnish Environment Institute, 2005). The situation is slowly improving in part as a result of the agri-environment measure. The number of headlands and filter strips has increased, and the significance of the agri-environment measure in establishing riparian zones has been very great indeed. However, nutrient flows in small catchment areas and rivers with agricultural loading have not decreased. Phosphorus contained in artificial fertilisers and livestock manure has accumulated on farming land ever since the 1980s because of increased fertilisation. The large quantities of phosphorus in livestock manure cause problems for farms in knowing how to use it.

The objective of the programme of Water Protection Targets for 2005 approved by the Finnish Government in 1998 was that the state of the Baltic Sea and of the surface waters is not going to deteriorate by human activities and that the state of the waters is not going to take a turn for the worse and the state of the waters changed harmfully is going to improve. The target was not reached for all parts. Eutrophication in many inland and coastal waters has increased, which causes harms especially for the use of waters of the Gulf of Finland and the Archipelago Sea and for the benthic nature. Besides the target programme mentioned earlier the Government approved the programme for the Protection of the Baltic Sea in 2002, to which is connected an action plan approved in 2005. Reducing nutrient loading from agriculture is one of the priority areas in the Government Resolution on the guidelines for water protection in Finland until 2015. It was prepared to supervise the water protection for achieving the fixed goals and to respond to the new challenges of water protection arisen after earlier programmes. The goal established in the Resolution is to reduce the loading from agriculture by a third from the loading in 2001-2005 by 2015. One of the most important means in this is the implementation of the agri-environmental scheme. Actions of the environmental scheme need to be targeted to the special problem areas as regards water protection better than has been done so far. Nutrient

emissions from arable farming are reduced through measures to prevent erosion and by developing the cultivation practices. The use of fertilisers is cut especially in arable areas where the nutrient level is high. Plant cover in farming areas and area of riparian zones and wetlands is increased in specific sites in a goal-oriented way. Utilisation of animal manure is promoted and efforts are made to improve the storage and handling of manure. Training and advice in support of best practices is continued and developed further. The needs relating to the application and targeting of the existing means and new regulatory instruments must be examined to complement the present means applied in the environmental scheme.

The agricultural load to watercourses can be examined by using the nitrogen balance and the phosphorus balance as indicators. These indicators first reflect the changes to agricultural production methods and the use of nutrients that affect the agricultural load to watercourses in the longer term.

The nitrogen balance is the difference between the nitrogen input and the nitrogen output in arable land. It shows the nitrogen left in the soil after the growing period, with a risk of leaching in watercourses. The nitrogen balance of arable land at the national level has reduced by 46% during the past decade. There have been regional variations in nitrogen balances during the past decade. Balances have reduced the most in areas involved in crop production and the least in those involved in livestock production, where the nitrogen included in livestock manure has a strong impact on the balance.

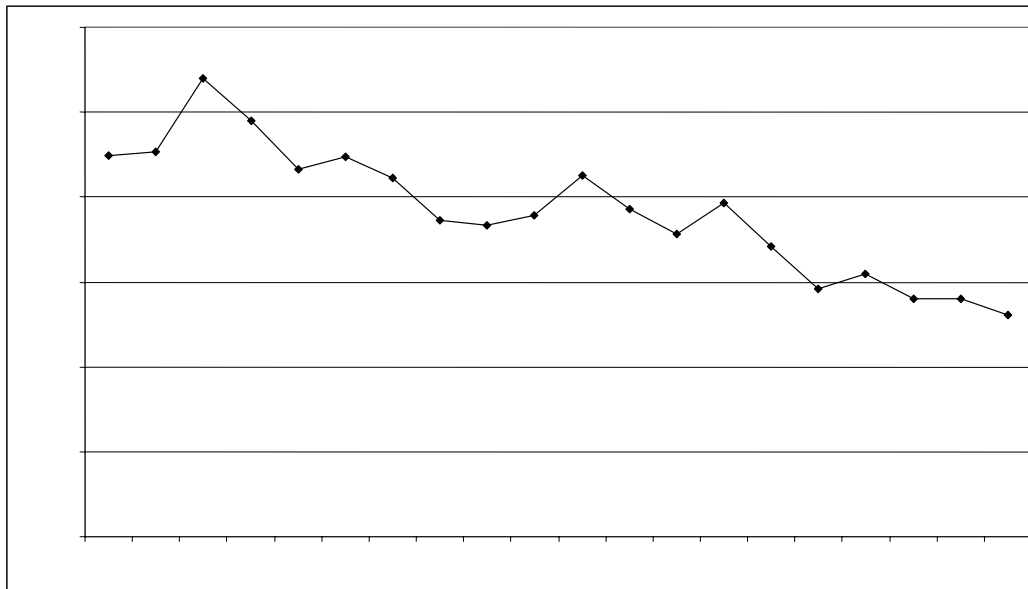


Figure 3.4 National nitrogen balance (field balance) 2005 (Agrifood Research Finland).

The content of easily soluble phosphorus in arable land and the erosion influence the risk of phosphorus loading. Measures to prevent erosion have reduced the leaching of phosphorus released from eroded material into watercourses.

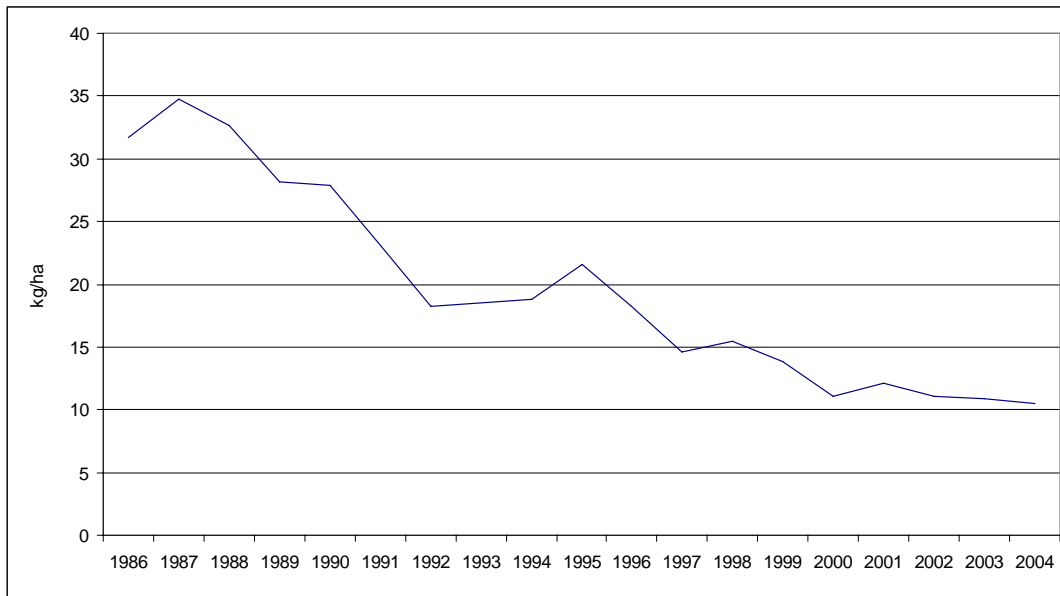


Figure 3.5 National phosphorus balance (field balance) 2005 (Agrifood Research Finland).

Forestry causes around 8% of phosphorus loading and 5% of nitrogen loading in watercourses. The phosphorus loading caused by the sector has fallen by 30–56% from the 1993 level and the figure for nitrogen loading 8–24%. Forestry has mainly stopped heavy tilling practices, but certain practices, such as controlled ploughing and mounding, may have effects on watercourses. Half of Finland's peatlands have been drained for forestry. The degree of drainage of forestland in the southern part of the Province of Oulu is around 80% (Hilden et al., 2005). Nowadays, drainage activity concentrates on restoring old drainage areas. Solid matters can be kept in restoration drainage areas with appropriate procedures. Such methods include, for example, sludge pits in drainage ditches, excavation and clearing rounds, sedimentation ponds, surface drainage fields, check weirs, bulkhead gates and wetlands that have been fitted on the basis of the size of the catchment area or the volume of runoff waters in the improvement drainage project. In addition, the sensitivity of the area to erosion and its topography are taken into consideration.

The objective of the EU's Nitrate Directive (91/676/EEC) is to protect waters against pollution caused by nitrates from agricultural sources. The whole of Finland has been classified as vulnerable zones in accordance with the directive. The Government issued a decree on 9 November 2000 (931/2000) to implement the requirements of the Nitrate Directive.

Plant protection products used in agriculture have been found in Finnish waters very rarely. According to research by Agrifood Research Finland, on average 0.1–1% of the substances used leach into watercourses in the surface runoff. Since most of the leaching occurs in the spring when water quantities are high, detecting small concentrations is difficult. The use of plant protection products decreased until 1999, after which sales have again increased. This has been due e.g. to the replacement of grass areas by cereals. In addition, reduced tilling and direct sowing have increased as a result of changes to cultivation methods, which has increased the occurrence of permanent weeds and the need to use pesticides. Similarly, there has been a switch from small-dose products to products with a dosage in litres/ha (small-dose products: gr/ha), e.g. MCPA products. The reduction in the prices of glyphosate products has increased their use. Likewise, if headlands and filter strips are not mown, weeds that spread by seeds will spread on the rest of the parcel. The quality requirements for feedingstuffs have increased the use of pesticides on fodder cereals during the years with unfavourable weather conditions, making it difficult to produce merchantable fodder cereals without pesticides. The use of crop rotation in control activities has been limited on ordinary crop production farms.

The purpose of Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for Community action in the field of water policy, which came into force in 2000, is to harmonise water protection in Europe. The aim is to achieve good ecological status in surface waters and good chemical and quantitative status in groundwaters throughout the EU by 2015. Five water management areas have been

set up in Finland in order to implement the Water Framework Directive, collect data, as well as for planning and reporting. The Åland Islands form a separate water management area. The Act on Water Resources Management (1299/2004) places new challenges on water protection in agriculture and forestry as part of water management planning at river basin scale. Water management plans and related action programmes will be drawn up for the water management areas by 2009.

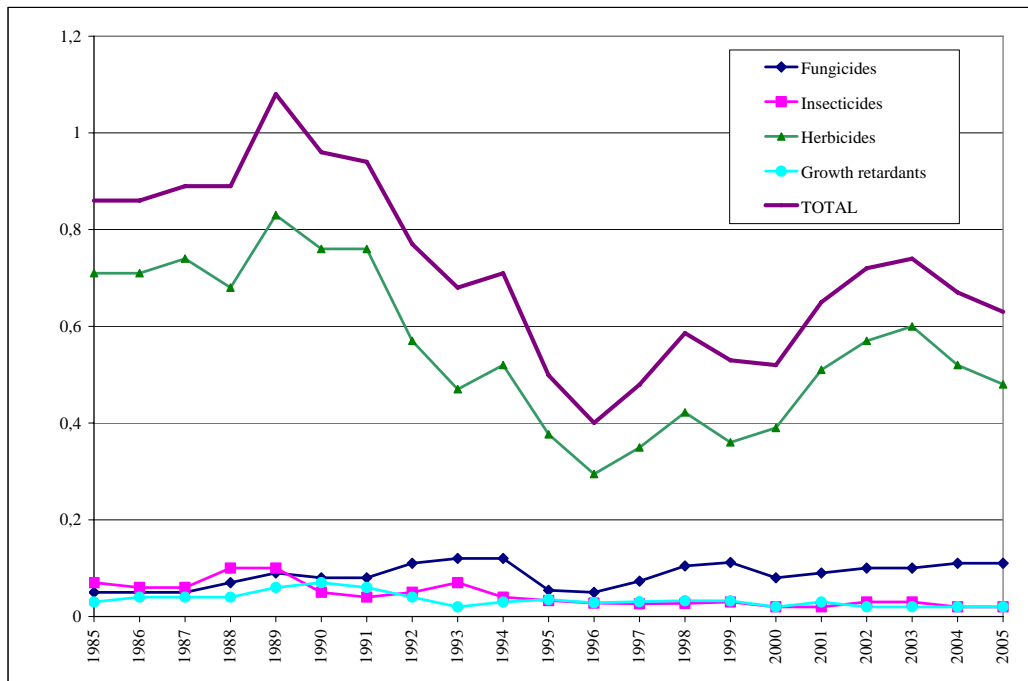


Figure 3.6. Use of plant protection products for the arable area (kg/ha) (Finnish Food Safety Authority 2006).

## Air

Agriculture affects local air quality through ammonia emissions. However, ammonia emissions have dropped over the last 25 years because of changes in the handling of animal manure and the decrease in the number of animals. The total volume of emissions is expected to drop further as a consequence of the decreasing number of animals. The total ammonia emissions in Finland in 2004 were around 33,000 tonnes, of which 32,000 tonnes were accounted for by agriculture. The emission ceiling for Finland in 2010 is 31,000 tonnes of which approximately 30,000 tonnes were accounted for by agriculture. In addition, the EU Thematic Strategy on air pollution from 2005 requires that ammonia emissions from agriculture be reduced by 27% relative to emissions in 2000 by 2020.

The most significant greenhouse gases in agriculture are nitrous oxide, methane and carbon dioxide. Emissions are produced in agricultural soils in the handling of manure and in the digestive tracts of livestock. The cultivation and liming of mineral and organic soils are sources of carbon dioxide emissions in agricultural land. It has been estimated that about one third of current Finnish agricultural emissions are from organic soils. Around 60,000 hectares of organic soils and around 240,000 hectares of mull soil areas are cultivated. The clearance of forests and peatlands for arable land contributes to carbon dioxide emissions on its parts.

According to calculations published by Statistics Finland (the spring of 2006), Finland's greenhouse gas emissions in 1990 totalled an amount corresponding to 71.1 million tonnes of carbon dioxide equivalent (CO<sub>2</sub> eq.), of which agriculture accounted for 7.1 Tg CO<sub>2</sub>, i.e. 10% (this figure does not include carbon dioxide emissions from agricultural land). Greenhouse gas emissions from agriculture have reduced over recent years. They amounted to 5.6 Tg CO<sub>2</sub> (this figure does not include carbon dioxide emissions from agricultural land) in 2005. Finland's total emissions in 2005 were 69.3 million tonnes of carbon dioxide equivalent (CO<sub>2</sub>

eq.). In 2005, agriculture was the third biggest source of greenhouse gases in Finland after the energy sector and industrial processes.

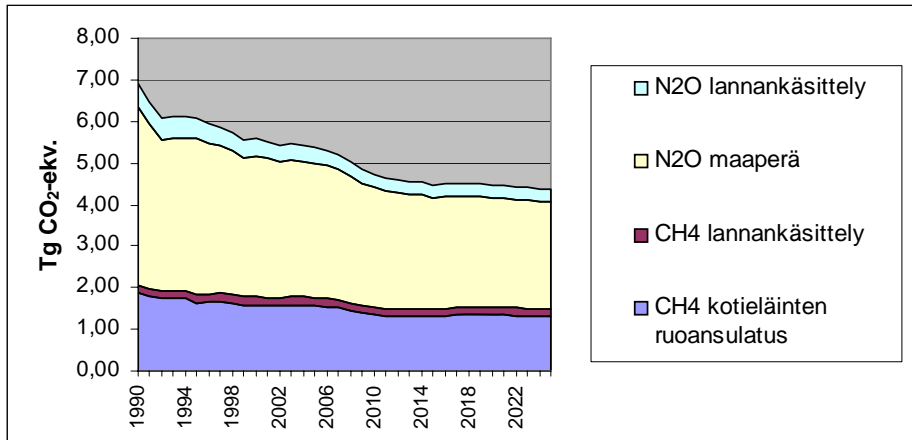


Figure 3.7 Estimated development of agricultural greenhouse gas emissions <sup>1</sup> (Tg CO<sub>2</sub> eq) (N<sub>2</sub>O lannankäsittely = N<sub>2</sub>O from manure processing; N<sub>2</sub>O maaperä = N<sub>2</sub>O from soil; CH<sub>4</sub> lannankäsittely = CH<sub>4</sub> from manure processing; CH<sub>4</sub> kotieläinten ruoansulatus = CH<sub>4</sub> from livestock digestion)

In Finland, the reduction of greenhouse gases and ammonia emissions is based on several action plans and initiatives. The implementation of these plans helps Finland attain international and EU objectives (the so-called transboundary agreement under the Convention on Long-range Transboundary Air Pollution, FTS 15/1983, and its good practices for ammonia emissions, as well as the commitments of the Kyoto Protocol).

The land-use, land-use change and forestry sector (LULUCF) acts as the net sink for greenhouse gases, as the removals of greenhouse gases from the atmosphere exceed the emissions. The largest part of greenhouse gas removals comes from forest growth, as the growth of the tree stand exceeds annual felling and natural loss. The growth of the tree stand has increased in Finland in the past few years. Annual variations are considerable, but the LULUCF sector currently accounts for approximately 20% of the annual greenhouse gas sequestration of other sectors.

#### Impacts of the climate change on agriculture

The climate change is expected to change agricultural activity. Rising temperatures and increased precipitation may change the nutrient economy and structure of the soil. As the temperature and humidity increase, the decomposition of organic matter speeds up. The risk of erosion and of the release and leaching of nutrients increases. A shorter period of frost in the ground may increase the compaction of the clay soil, which is particularly common in southern Finland, and hinder cultivation. Global warming may increase the drought and heat stress of plants during the growing period and the overwintering of plants in southern Finland may be reduced, as the snow cover becomes thinner.

Pest insects benefit from a warmer climate and a longer growing period. The risk of plant disease epidemics, particularly various fungi and moulds, as well as potato blight, may increase. Also the number of weeds may rise. The boundary of the area suitable for crop farming may move towards the north. The quality of cereal, grassland and root plant crops may drop because of precipitation in the harvest time, resulting in the ear sprouting and lodging of crops. Stagnant water in arable land may bring problems in threshing. Horticulture is expected to significantly benefit from the climate change.

<sup>1</sup> Estimated development of agricultural greenhouse gas emissions in “With Measures” scenarios up to 2025 (does not include CO<sub>2</sub> emissions from the soil) (Perälä et al., 2004). The so-called “With Measures” scenario for agriculture (CAP reform scenario) complies with the reform to the EU’s common agricultural policy that took place in June 2003.

The pasture season may become longer. This would improve animal welfare, if outdoor grazing were increased, but increased grazing might increase the loading of watercourses. The risk of animal diseases might rise.

Climate change is estimated to have an impact on biodiversity, as well. Global warming will mostly affect species that are able to migrate quickly. In Finland, changes have already been detected in areas of distribution e.g. for many butterfly species. Areas of distribution for many species that have until now been found in southern Finland are expanding towards the north and north-east. If the temperature continues to rise strongly enough, some species in northern Finland will inevitably decline as suitable habitats are reduced, and some species are in danger of disappearing altogether. Northern ecosystems are less varied in their biodiversity and species than many southern areas. They are less adaptable and simpler in their structure and diversity, with a smaller buffering capacity than southern ecosystems and their variety of species. The harsh climate also affects their adaptability, making them vulnerable to irregular variations in natural phenomena and to changes in species. The ability of ecosystems and species to adapt to climate change can be promoted, for example, by maintaining and restoring original diverse habitats.

It is necessary to support the adoption of new technologies and cultivation methods and the diversification of agriculture. To control the agricultural load to watercourses in changing circumstances, water protection methods should be assessed in terms of increased nutrient leaching and measures should be taken to prevent pests and plant diseases. The maintenance of the general growing condition of arable land is particularly important as the climate changes. The negative impacts of the climate change on the soil can be reduced by developing cultivation methods; for example, the leaching of nutrients from the soil can be prevented by the cultivation of perennial plants, the plant cover of arable land in winter and catch plants, and riparian zones. Soil structure can be improved by ploughing straw in the soil, by reducing tilling and by direct sowing.

## Soil

The special characteristics of Finnish agricultural land include the large quantity of organic matter, the low nutrient content and the acidity of the soil. Organic soil types, peat and mull soils are common in Finland. A third of the arable land under cultivation consists of clay soil types. The biggest soil-related threats include erosion, compaction and the loss of organic matter and biodiversity.

In Finland, wind erosion is not a major problem because a large part of the land area is permanently under vegetation. The proportion of arable areas of all land area is small (cf. the forest area is about 25–26 million ha; the arable area is 2.2 million ha, i.e. only 8.9% of all land area). Erosion is mainly caused by water and primarily affects agriculture. The average erosion rate on arable land is 600 kg/ha per year. The rate is influenced particularly by the slope of the arable area, the time and intensity of tilling, the existence of plant cover, the plant species and the soil type. Erosion is smallest in even arable areas covered by herbaceous plants (100 kg/ha per year) and greatest in steep arable areas that have been mown in the autumn (3,000 kg/ha per year). Erosion is a particular problem for water protection because solid matter includes nutrients, especially phosphorus. Coarse mineral soils, which are typical of Finland, are particularly vulnerable to leaching. The washout produced by the melting snow and the abundant autumn rains transports nutrients, calcium and magnesium, together with soil particles, away from arable areas and from the plough layer to lower soil layers, after which they are finally transported with drainage waters away from the soil profile. The erosion of the clay soil is a significant issue, even though the clay soil has not been considered to be as sensitive to erosion as coarser soils. The key practical measures to prevent erosion in agriculture include reduced tilling and increased plant cover outside the growing season (from the autumn until the spring), as well as the establishment of riparian zones and wetlands. The erosion of the clay soil particles can be reduced with liming. Liming also improves the availability of soil phosphorus for plants, transferring phosphorus in the soil to a more labile form and reducing emissions to watercourses.

In Finland, the soil is naturally acid. The topsoil pH is low throughout Finland and the subsoil pH is very low in southern Finland (Figures 3.8 and 3.9). The average pH of arable land in the soil fertility analysis is approximately 5.8, ranging between 4.28 and 4.98 in the plough layer. The soil naturally contains very little

limestone. The soil mainly consists of acid rock material crushed by the continental ice sheet, with very little dissolution of calcium and magnesium. Acidity depends on the soil type; the lowest pH levels are usually measured in sphagnum peat and the highest in sandy clay. There are a lot of areas with acid sulphate soil in the catchment area of watercourses flowing into the Gulf of Bothnia. Acid sulphate soil contains ferrous sulphide, which becomes oxidised into sulphuric acid when the land is drained and causes acidification of the soil and watercourses.

The content of organic matter in the soil is important for the growing condition of arable land. Recent studies have indicated that the content of organic matter in arable land is dropping. The content of organic carbon fell by 8% and the bulk density of the soil material rose by 5% in the more than 700 parcels subject to long-term monitoring by Agrifood Research Finland in 1987–1998. According to the study, these signs of the loss of organic matter and the compaction of the soil are particularly common in the clay soil and southern areas. Arable land has become compacted also because of the increased weight of agricultural machinery. One reason to the loss of organic matter is the reduced regional diversity of agricultural production. Livestock production focuses on fewer farms and the spreading of livestock manure is concentrated on smaller areas. Crop production farms do not produce their own organic soil improvement material or cultivate grasses that produce a larger root mass in the soil than cereals. Changes in tilling and set-aside methods may also influence the amount of organic matter. In addition, agricultural cultivation practices, the weight of the agricultural machinery used, grazing practices and a plant cover to reduce the leaching of nutrients can prevent erosion and the compaction of arable land.



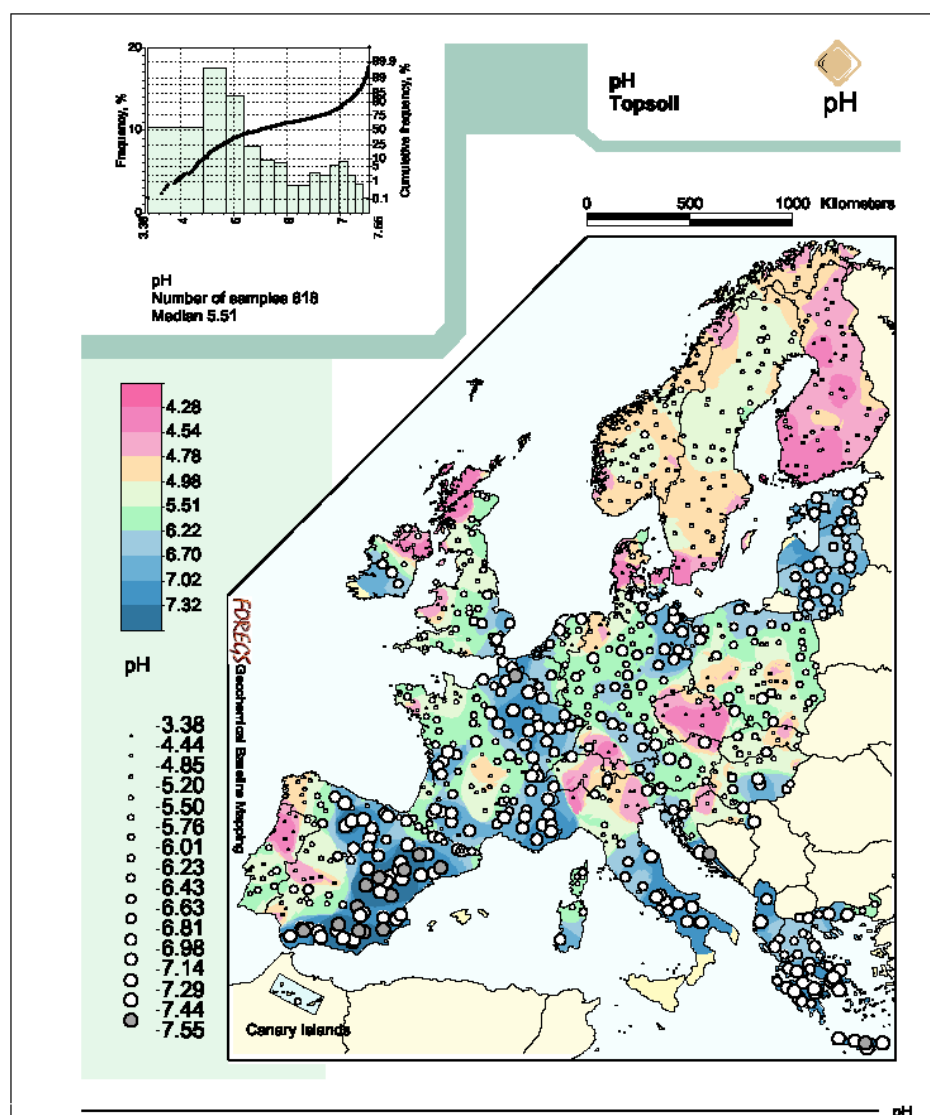


Figure 3.8 The topsoil pH is low throughout Finland.  
[http://www.gtk.fi/publ/foregsatlas/maps/Topsoil/t\\_ph\\_edit.pdf](http://www.gtk.fi/publ/foregsatlas/maps/Topsoil/t_ph_edit.pdf)

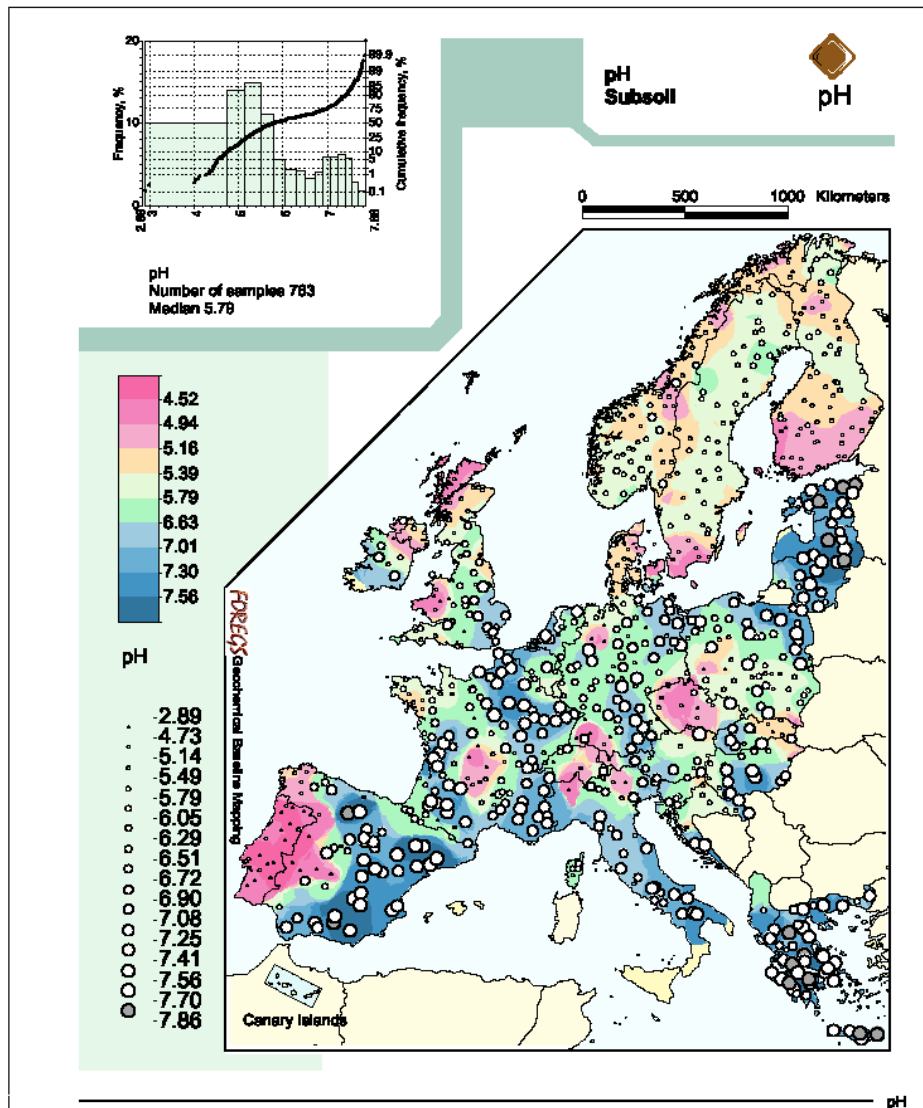


Figure 3.9 The subsoil pH is low in southern Finland.  
[http://www.gtk.fi/publ/foregsatlas/maps/Subsoil/c\\_ph\\_edit.pdf](http://www.gtk.fi/publ/foregsatlas/maps/Subsoil/c_ph_edit.pdf)

According to soil fertility analyses, the contents of easily soluble heavy metals, cadmium, lead, chromium and nickel are low by international standards. Cadmium contents have remained stable since the early 1980s, when fertilisers containing large amounts of cadmium were abandoned. In the last few years, decreasing lead emissions from traffic have lead to decreased lead contents in arable land.

### Biodiversity

Biodiversity has declined over the last few decades as a result of settlement and economic activities. The decline in biodiversity is being felt especially by species in old-growth forests, groves, traditionally farmed and grazed habitats, nutrient-rich types of peatland and small watercourses in their natural state. According to the latest Evaluation of Threatened Species in Finland report (2000), about 10% of Finnish living organisms are threatened. 37.5% of the endangered species live in forests and 28% in traditional biotopes.

A large number of animal and plant species live in agricultural environments. Of the permanent species of swallowtail butterflies, around 70% live in agricultural environments and about two-fifths are partially

dependent on it. As for birds, around one sixth nest only or to a great extent in agricultural environments. The number of wild species in agricultural environments has declined over the last few decades and some species are endangered. There has been a significant decline in the number of bird species in arable land. Since 1981, the national bird index, which is one indicator for biodiversity, has decreased for species living in arable areas, margins and farmyards, while the bird index for forest species in arable land has risen. The regional specialisation of agricultural production is one of the biggest threats to the preservation of biodiversity in agriculture. There has been an alarming decline in habitats, especially traditional biotopes, i.e. meadows, cutover pastures and forest pastures created by traditional land use, mowing and grazing. According to the inventory of traditional landscapes (1998) undertaken by Finland's environmental administration, the estimated area of valuable traditional biotopes in the whole country, excluding the Åland Islands, was put at around 20,000 hectares. Traditional biotopes have been cleared for arable land or they have become afforested either through active measures or naturally. Artificial fertilisation of meadows has increased, leading to a decline in the range of species and disappearance of traditional vegetation. According to the studies of Birdlife Finland, the reduction in grazing particularly in southern Finland and the coast is the biggest single threat to the diversity of birdlife, as crop cultivation is concentrated in southern Finland.

Production has become less diverse and more commercialised and production technologies have become standardised, as a result of which the plant species grown and the livestock species reared on farms have been reduced. The genetic diversity of crops and livestock is the basic resource for breeding; without this, it would be impossible to produce plant species or breeds of animal that are capable of adjusting to new conditions and changing requirements. The main problem is the disappearance of the alleles carried by varieties or species that are no longer used or that are used very little. These alleles cannot be maintained by the gene bank activity alone, but their preservation requires adequate populations used in practical production. In Finland, agriculture and horticulture constitute an important part of biodiversity, because they use more than 3,000 species or varieties of plants and dozens of species or breeds of livestock animals.

Finland drew up a national action plan for biodiversity for 1997–2005 to promote the protection and sustainable use of biodiversity. On 21 December 2006, the Government adopted a Resolution on a strategy for the protection and sustainable use of biodiversity in Finland 2006–2016. Biodiversity in agricultural environment is enhanced by continuing to develop the protection of traditional biotopes and their species and maintenance and by drawing attention also to maintaining and protection of everyday agricultural biodiversity and to potentials to develop the maintenance of substitutive environments such as verges of roads. The strategy is complemented by an action plan drawn up, in cooperation, by the ministries.

### Forests

At present, 11.2 % of the land area of Finland is protected. 7.6% of the forest area is strictly protected, and in addition to this forestry use is restricted in about 4.5% of the forest area. In order to maintain biodiversity in commercial forests, habitats of special importance in terms of safeguarding biodiversity in commercial forests are specified in the Forest Act. The Nature Conservation Act safeguards on its parts biotopes in forests and threatened and endangered species in forest habitats.

The impact of forestry on biodiversity primarily centres on felling, tilling and restoration drainage. The impacts of these activities have reduced biodiversity in some areas. The decline in habitats supporting life mainly focuses on species that are dependent on natural forests, the special conditions in old-growth forests and dying wood, and on species that require extensive undisturbed forest areas. The majority of forest areas in southern Finland, for example, have been in agricultural and forestry use for hundreds of years, and there are no extensive natural forests in the area.

Forest areas and their sustainable use have been of major economic and cultural importance. This can be seen in the fact that forests must have been regenerated at the final felling either naturally through seed tree and shelterwood fellings or by sowing or planting. The current Forest Act (1093/1996) lays down provisions on the regeneration obligation and safeguarding diversity. In order to preserve the diversity of forest nature and to promote nature management in commercial forests, the Forest Act defines habitats of special

importance in commercial forests that must be safeguarded. According to the survey of habitats specified in the Forest Act, which was completed in 2004, there are 75,000 hectares of habitats of special importance in private forests, which corresponds to around 0.5% of the surface area of private forests. In addition to safeguarding habitats of special importance, commercial forest owners have invested in voluntary conservation methods in accordance with the Forest Biodiversity Programme for Southern Finland (METSO), such as natural values trading, competitive tendering and cooperation networks. Different nature management projects have been implemented to try and promote regional diversity.

### Natura 2000

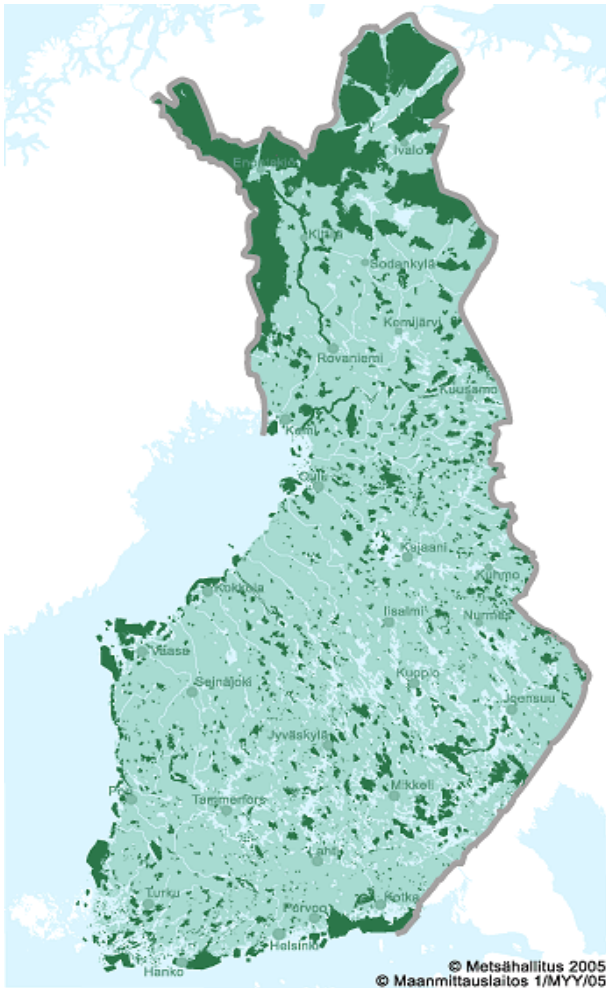
In the protection of biodiversity, the EU's most important tool is the body of legislation formed by the nature conservation directives, i.e. the Habitat Directive (92/43/EEC) and the Bird Directive (79/409/EEC), on which the Natura 2000 network is based

The main aim of the Habitat Directive is to promote the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements. Member States have to set up a coherent European ecological network of special areas of conservation (so-called SAC areas), Natura 2000, which consists of sites of Community importance (so-called SCI sites). This network shall enable the natural habitat types and the species' habitats defined in the Directive to be maintained or, where appropriate, restored at a favourable conservation status in their natural range. The Natura 2000 network also includes the special protection areas (so-called SPA areas) classified by the Member States in accordance with the provisions of the Bird Directive.

Finland's Natura areas are mainly previous nature conservation areas, wilderness areas and sites that are part of protection programmes. The network also protects those types of natural environments that have previously been less well protected, for example underwater environments in the archipelago and coastal areas, lakes, large rivers, small watercourses, cliffs and cultural environments. The Government made the first decision on Finland's Natura 2000 proposal that was submitted to the European Union in 1998. The proposal was supplemented in years 1999, 2002, 2004 and 2005. Natura areas are subject to special provisions on the Natura 2000 network in the Nature Conservation Act (1096/1996), according to which projects and plans must not have a significant adverse effect on the ecological values for which the site has been included in the Natura 2000 network. The projects include, for example, various buildings, roads, railways, airports, harbours and power line construction projects, mine projects, altering water courses and draining of ditches. The plans refer to both land use plans in accordance with the Building Act and other plans such as, for example, road plans and plans relating to forestry. However, in exceptional circumstances the project or plan can be implemented through a Government decision, if the project or plan has to be implemented for compelling reasons on the grounds of the importance to the public interest and there is no alternative solution. However, if the area hosts a priority natural habitat type as referred to in Annex I of the Habitat Directive or a priority species as referred to in Annex II, it is also a prerequisite that a reason relating to people's health, general safety or extremely significant beneficial effects on the environment elsewhere or some other extremely compelling reason in terms of an important public interest requires a positive decision. In the aforementioned instance, an opinion from the Commission must be sought.

Finland's Natura 2000 areas are described in figure 3.10. The majority of the Natura areas (97%) are already nature conservation areas established under national decisions, or they are part of national protection programmes or areas protected in some other way. The area covered by the Natura network is around 4.9 million hectares, of which around 75%, i.e. 3.6 million hectares, are land areas. The State owns 78% of Finland's Natura areas and 22% of the area is in private ownership. In addition fully preserved forest areas, safeguarding the ecological values in Natura 2000 sites that remain in forestry use can be based on the Forest Act, the Extractable Land Resources Act or the Land Use and Building Act. There is a total of around 100,000 hectares of these areas, of which 30,000 hectares are in privately-owned areas. Securing the diversity values of these areas is financed nationally under the Sustainable Forestry Financing Act. The nature and biodiversity component of the LIFE+ funding programme supports the implementation of the Community's nature and biodiversity policy and legislation, particularly as regards the Bird Directive, the Habitat

Directive and the Natura 2000 network. These measures support the Natura 2000 measures aimed at the agricultural areas, which are funded with agri-environmental payments. There are around 5,500 hectares of Natura 2000 areas in agricultural land in 2,900 sites (estimate, Ministry of Environment 2005) which is 0.35 % of the utilised agricultural land (Eurostat).



Kuvio 3.10. Finland's Natura 2000 areas.

### High nature value farmland

High nature value farmland (so-called HNV areas) is a concept that has appeared a great deal in recent times in statements and conclusions on agriculture and biodiversity. High nature value farmland mainly means areas of high biodiversity value and extensive farming. In Finland, such areas could be, for example, traditional biotopes classified as valuable in agricultural environments, but the issue still requires further clarification. The determination of HNV areas in Finland has started with a research project that will assess the applicability of the selection criteria used elsewhere in Europe to conditions in Finland and create national selection criteria. The management of HNV areas will mainly be arranged through the agri-environment measure.

### Rural landscapes

Farming is a basic prerequisite for preserving open and managed rural landscapes. The diverse landscapes and biodiversity in rural areas have been shaped through centuries of human activity. Agriculture has created open agricultural landscapes and traditional landscapes in addition to shaping marginal zones by forests as

well as various patches of trees and bushes. Traditional land use, such as grazing and mowing, has created the diverse plant and animal species characteristic of these areas. Traditional landscapes, meadows, cutover pastures and forest pastures enrich the cultural landscape of rural areas and play an important role in the preservation of biodiversity, too. If left unmanaged, they will close and important natural, landscape and cultural values will be lost. During the past few decades, landscapes have become less diverse and there has been a loss in biodiversity.

The reduction of open agricultural landscapes will have the greatest impact on Finnish rural landscapes. Therefore, it is essential to maintain arable areas, pastures and meadows in diverse use. The environment shaped by traditional land use has its own cultural value in terms of landscape. The cultural landscape created and shaped by rural industries with its cultivated areas, pastures, individual houses and villages constitutes a key part of Finnish landscapes.

Different agricultural production lines and farming methods together with environmental management techniques can be seen in rural landscapes. The economic situation of the farm may be evident in the condition of the buildings of the farm's production centre and in the level of environmental management. In addition to agricultural production, agricultural landscapes are valuable as providers of intangible benefits, such as outdoor and recreational services. As the price obtained by farmers for their products drops, many agricultural policy forecasts expect the public good valuation of rural landscapes to rise even further.

The utilised agricultural area (UAA) in Finland is only 8.9% of the country's total area, so every open cultivated arable land, set-aside or pasture area is valuable for the rural landscape. The majority of the arable area is in the south and west of Finland. As a result of the different climatic and soil conditions in different parts of the country, production has diverged regionally, roughly speaking, into cereal and special crop production in southern and western Finland and dairy husbandry in eastern and northern Finland.

Because of factors relating to arable land maintenance, subsurface drainage has had a significant impact on Finnish rural landscapes since the 1950s by unifying arable areas. However, measures that permanently alter land use, such as afforestation, new construction and the construction of roads, have and continue to have the greatest impact on rural landscapes. The concentration of production both by region and by farm and the reduction of production especially in remote areas have been characteristic of the Finnish EU membership. The cessation of farming causes serious problems for rural landscapes in eastern and northern Finland where there are naturally very few arable areas. In addition to traditional landscapes, natural pastures, meadows and forest pastures become overgrown by trees and bushes unless they are grazed or mown and unless young trees and bushes are regularly removed. If farming ends completely, production buildings may become redundant.

The forests are the most characteristic element of the Finnish landscape. Forests, together with arable land, watercourses, islands and peatlands, create a distinctive combination of cultural and natural landscapes in each region. Forestry takes account of forest areas close to settlements and farming areas, along with faraway landscapes visible in the distance.

### Waste management

The recycling and recovery of waste are undergoing rapid development. The problems in Finland include long distances in transportation and an inadequate collection network, especially in sparsely populated areas. There are significant problems in the collection of metal, energy, plastic and hazardous waste. Plastic waste, in particular, accumulates in agriculture, including plastic sheeting and fertiliser sacks. Additional development actions should focus on increasing the recycling of paper and paperboard and glass. The recycling of used building elements should also be organised in rural areas.

### 3.1.4 Agriculture

#### Natural conditions and agriculture in the north

Finnish agriculture is characterised by northern climatic conditions and a remote location compared to the core areas of the European market.

Finland is a relatively even and flat country, except for the fells in Lapland and rows of rocky hills in eastern Finland. The average gradient of arable areas (m/100m) is 1.6%, and in only 10% of arable areas is the gradient more than 5%, although there is some regional variation. The natural handicaps for agriculture do not result from topography but from the unfavourable production conditions caused by the country's northern location. The vegetation varies from the coastal regions in southern Finland dominated by deciduous trees through a coniferous forest belt to the treeless fells in the north.

Finland is located between the maritime and continental climates, and the considerable annual variation in the length and thermal conditions of the growing season is a serious problem in crop production. In southern Finland, the growing season is 160–180 days and in northern Finland 110–150 days (Annexes 2a and 2b, Table 3.9). The maximum pasture season is 120 days. Considering Finland's northern location, the thermal conditions are better than the location implies due to the effect of the Gulf Stream coming from the Atlantic and the mild south-westerly winds, which raise the temperature in Finland by about 3–4 °C compared to what is typical in these latitudes (Figure 3.11.). The annual variation in temperatures ranges on average from +30 to -30 °C.

Table 3.9 Information on the thermal growing period for the reference period 1971–2000 (Meteorological Institute, Climate Service, 2005).

	Length of thermal growing period (days)	Effective temperature sum (°C days)	Precipitation (mm)
Southern Finland	160–180	1,250–1,400	350–450
Central Finland	145–165	1,000–1,250	320–420
Northern Finland	110–150	500–1,000	250–370

The effective temperature sum of the growing season varies between 500 °C and 1,400 °C (Figure 3.11 and Table 3.9). However, at the end of the growing season the effective temperature sum can only be exploited in sugar beet farming. During the growing period, the accumulation of the effective temperature sum may be considerable on individual days as a result of the long light period in summer. However, plants cannot make use of all the effective temperature sum accumulated during the day.

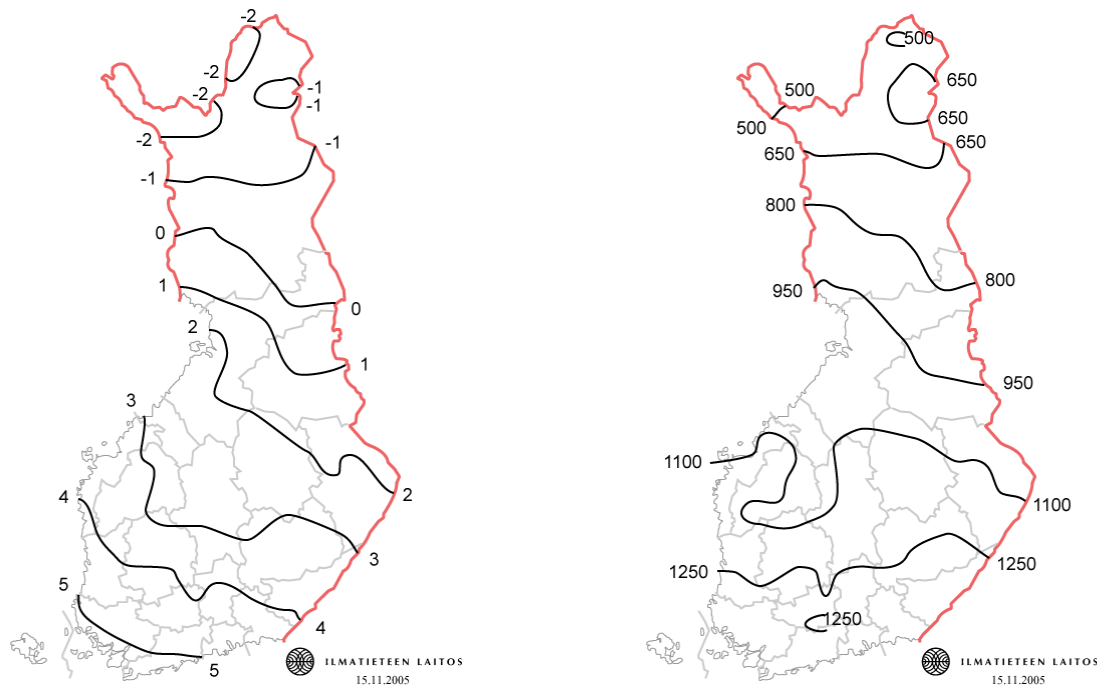


Figure 3.11. Average annual temperature ( $^{\circ}\text{C}$ ) and the effective temperature sum ( $^{\circ}\text{C day}$ ) during the reference period 1971–2000 (Meteorological Institute, 2005). <sup>2</sup>

Precipitation in the growing period is 340–370 mm in southern Finland and 220–280 mm in northern Finland (Figure 3.12.). The annual precipitation clearly exceeds the evaporation, and the evaporation is higher only at midsummer. Because arable areas are relatively even, they require efficient drainage. However, the timing of the rains is unfavourable for most of the crops. A small amount of rainfall during the early part of the growing season causes problems especially in the south-western parts of the country. In spring, during the most critical time in terms of plant growth, it only rains an average of 45% of the optimal total rainfall and in the best areas an average of 63%. In the autumn, it commonly rains too much during harvesting and other autumn work, and a lot of harvesting and drying equipment is needed.

<sup>2</sup> The effective temperature sum is based on the regional interpolation method, which takes into account the effect of the coast, watercourses and the height of the terrain.



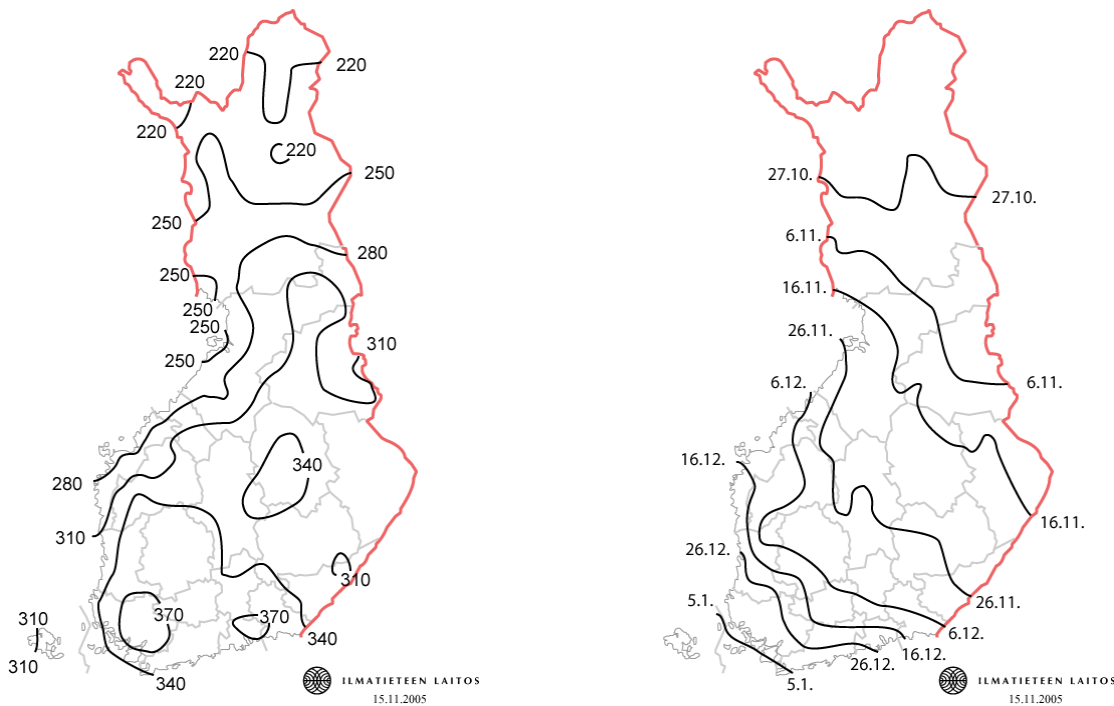


Figure 3.12. Precipitation in the thermal growing period (mm) and the start of the permanent snow cover (date) in Finland during the reference period 1971–2000, on average (Meteorological Institute, 2005).<sup>3</sup>

In the winter, snow forms a protective layer on arable land and melting water keeps the soil humid in the spring, but it also has negative effects on farming. In southern Finland, the land is covered with snow for an average of 110–150 days and in northern Finland, around Rovaniemi, for 190–200 days a year. Permanent snow cover usually settles in southern Finland around the turn of the year, in central Finland at the end of November and in northern Finland at the beginning of November (Figure 3.12.). However, the first snowfall may occur much earlier. In southern Finland the land is usually frozen for 2–5 months and in northern Finland for about 8 months of the year, which makes cultivation more difficult and shortens the growing period.

The climatic conditions in the north increase production costs (Annexes 3a, 3b and 3c). All the work in arable land during spring and autumn must be done in a short time because of the climate. Nearly all the plant species are sown in the spring, which causes a dramatic peak in the amount of work. In almost all cases, cereals have to be dried before storage. On the clay soil of southern Finland, spring sowing has to be completed very quickly in order to preserve its humidity. In the autumn, harvesting must often be done during the few days when it does not rain. This requires efficient machinery capacity and increases costs. The northern location does not affect livestock production as much as crop production, but the lack of production alternatives in northern and eastern Finland and the success of grasses compared to cereals restrict livestock production mainly to cattle husbandry. The arctic climate with its long, cold winter significantly increases the construction costs of production buildings, storage buildings and manure stores.

Because of the short growing period in Finland, demanding and highly productive species or varieties cannot be cultivated. These can be cultivated mainly in southern Finland due to the length of the growing period and thermal conditions. Towards the north, cultivation becomes firstly dominated by fodder cereals and then by grasses. The average yields of arable farming are smaller than those in the rest of Europe, which reduces the weak competitiveness of Finnish agriculture further still compared to other countries.

<sup>3</sup> The analysis of the amount of precipitation in the thermal growing period uses the regional interpolation method, which takes into account the effect of the coast, the lake percentage and the height of the terrain. As a result of the method, the regional variation in the amount of rainfall has become more even and the largest values are excluded.

Arable crops generally yield one crop per year, and in good summers grasses may yield 2–3 crops per year in southern Finland, but there is only one decent crop in northern Finland. The production conditions are the most favourable for grasses. However, winter damage is also a problem for the cultivation of grasses. Grasses have to be resown every 3–4 years.

The pasture season is very short and animals have to be fed indoors most of the year. The profitability of livestock production compared to other countries is weakened by the high costs of building cow and pig houses required by the northern climate as well as the short pasture season and long indoor feeding period (Annexes 3a, 3b and 3c). Making foundations for pens is also expensive in Finland primarily because the ground freezes. Heating production buildings also creates major costs, especially in pig and poultry farms, and fodder has to be stored for the long indoor feeding period.

In some parts of the country, it is not unusual to have night frosts in the summer. Frost in the autumn may stop the development of the plants and prevent the ripening of the crop. In North Ostrobothnia and Lapland, the risk of frost is very high and it considerably restricts the range of species and varieties suitable for such conditions. In practice, there are few methods available for preventing frost.

Through production methods and a range of species and varieties developed specifically for the northern conditions, Finland has managed to alleviate the handicap to agricultural production due to adverse production conditions. Yet, the adverse production conditions constitute a permanent handicap for Finland, which is reflected in the production structure and methods and especially in high production costs and low yield levels. To safeguard farming and to maintain rural landscapes, all of Finland is covered by the natural handicap payments measure (Table 3.10).

Table 3.10 The number and area of farms covered by the natural handicap payments measure in mainland Finland in 2004 (Information Centre of the Ministry of Agriculture and Forestry, 2005).

	Number of farms	Supported hectares (ha)	Share of the total area (%)
Mountain areas	39,726	1,153,000	53
Other less favoured areas	14,392	465,000	21
Areas with special handicaps	14,108	559,000	26
Total	68,226	2,177,000	100

### Farm and production structure

Finnish agriculture is based on family farms, and the structure of agriculture is dominated by a large number of small farms. This is a result of various historical and social factors. The national agricultural policy has included regional policy objectives. The number of farms was at its highest in the early 1960s, about 330,000. After that a large number of people migrated mainly from small farms to the urban areas in southern Finland as well as to Sweden, which resulted in a rapid reduction in the number of farms.

In Finland, there were 72,054 farms engaged in production in 2004, and their average arable area was 31.40 hectares. The average size of dairy farms was 17.9 cows per farm. The average economic size of farms in 2003 was 22.2 ESUs (Economic Size Unit). 8.1% of farms had under 2 ESUs, 90% had 2–99.9 ESUs and 1.9% of all farms had 100 ESUs or more. In 2004, the utilised agricultural area totalled 2,253,300 hectares, of which 2,022,800 hectares was cultivated (89.8% of the agricultural area), 28,400 hectares was perennial grasses (1.3% of the agricultural area) and the area of perennial horticultural crops was 4,300 hectares (0.2% of the agricultural area). There were 195,900 hectares of set-aside, i.e. 8.7% of the agricultural land (Yearbook of Farm Statistics, 2004).

The fragmented nature of arable land in Finland significantly restricts agricultural productivity and the potential for increasing the size of farms in remote areas. There are large, uniform arable areas only in southern Finland as well as along the rivers in Ostrobothnia. The average size of all base parcels in Finland is 2.4 ha and the size of uniform agricultural parcels is only 1.92 ha, although there is considerable regional

variation. The size of base parcels varies from 3.4 ha in the southernmost support area A to 1.6 ha in the northernmost support area C4, and the sizes of agricultural parcels are 2.7 ha and 1.4 ha, respectively. In regions split up by watercourses there are no large uniform arable areas, but the parcels are small and scattered. The average size of parcels decreases towards the north and their shape becomes even more irregular. High transportation costs as a result of the scattered farm structure and long distances increase the burden on agriculture especially in eastern and northern Finland. The rapid centralisation in the processing of agricultural products has created benefits through rationalisation, but it increases transportation costs.

Table 3.11 Changes in the number of farms and in average arable area in mainland Finland in 1998–2002 according to the division of Finnish rural areas into three types (Statistics Finland, 2005).

	1998		2002		1998–2002	
	Farms	Average arable area (ha)	Farms	Average arable area (ha)	Change in the number of farms (%)	Change in average arable area (%)
Sparsely populated rural areas	20,237	19.65	16,794	23.94	-17	+22
Rural heartland areas	45,388	26.52	38,739	31.64	-15	+19
Urban-adjacent rural areas	15,280	27.42	12,923	32.52	-15	+19
Urban areas	6,371	26.19	5,392	30.73	-15	+17
Average		24.95		29.71	-16	+19

The average arable area of farms in sparsely populated rural areas has increased more than in other areas in the country.

Only a proportion of farms are full-time farms. Many farmers work outside the farm or engage in supplementary activities on their farm. An involvement in a number of sectors is more common on farms run by couples than on farms run by a single entrepreneur (Peltola, 1999, 2000). There were 24,294 farms engaged in a number of sectors in 2005 (35% of all farms) (Information Centre of the Ministry of Agriculture and Forestry, 2006).

Most farms are in the small size classes and there are relatively few large farms. The restructuring in the past few decades has mainly been caused by the cessation of farming on small farms. Agricultural productivity has been at a low level because of the small size of farms. In 1980, there were about 69,444 farms of less than 5 hectares, i.e. 31% of the total number of farms at that time. By 2004, this number had dropped to 5,971, i.e. 8% of the total number of farms. In 2004, there were 12,685 farms of more than 50 hectares, i.e. 18% of the total number of farms. 74% of farms had 5–49.99 hectares (Table 3.12).

Table 3.12 The number of farms by arable area for the whole country (Yearbook of Farm Statistics, 2005).

Arable area (ha)	1995	2000	2004
-4.99	9,988	6,873	5,971
5.00–49.99	83,471	62,013	53,398
50.00–	6,505	10,897	12,685
Total	99,964	79,783	72,054

The number of dairy farms has decreased the most both in number and proportion. The number of crop production farms has increased in 2000–2004, which is explained by farms abandoning livestock production and transferring to crop production (Table 3.13).

Table 3.13 The number of farms according to their main production line in 1990, 1995, 2000 and 2004 and the change in 2000–2004 (Farm Register, 2004).

Number of farms	1990	1995	2000	2004	Change 2000–2004	
					no.	%
Dairy husbandry	43,564	32,480	22,913	17,490	-5,423	-23.7
Pig husbandry	7,081	6,249	4,316	3,401	-915	-21.2
Poultry husbandry	2,552	2,239	1,231	1,034	-197	-16.0
Cattle husbandry	11,500	9,394	5,349	4,768	-581	-10.9
Sheep and goat husbandry	1,282	1,358	890	1,006	116	13.0
Horse husbandry	955	2,025	2,080	2,144	64	3.1
Crop production	47,482	42,287	38,886	41,681	2,795	7.2
Other	14,698*	3,932	4,118	530	-3,588	-87.1
Total	129 114*	99,964	79,783	72,054	-7,729	-9.7

In 2004, crop production was the main production line for 58% of farms (41,681) and dairy husbandry for 24% of farms (17,490). The share of other cattle husbandry was 7% and that of pig and poultry husbandry was 6%. 4,482 farms were engaged in organic production under a total area of 147,588 hectares, i.e. 6.7% of the utilised agricultural area (Plant Production Inspection Centre, 2005). About 400 farms are engaged in raising livestock according to the rules on organic production. The first agri-environmental special measure contracts on organic production were made in 2005, 348 contracts being in force. Payments were granted for 4272 milking cows, 13 208 pieces of cattle and suckler cows, 2559 pigs, 68 072 hens, 3974 sheep and 54 goats, which makes altogether 18 551 livestock units. The area of cultivation of crops for bioenergy was 9,196 hectares, i.e. 0.4% of the total arable area. 8.7% of the arable area was set-aside (Farm Register, 2004). Horse husbandry is a growing sector.

The cultivation of bread cereals, especially wheat, and also of malting barley and sugar beet is mainly concentrated in support areas A and B. Because of the production conditions, the cultivation of pasture is more common in the northern support areas, and these areas also concentrate quite strongly on dairy husbandry and beef production. 77% of milk, 72% of beef and 55% of mutton is produced in area C. About two-thirds of the production of poultry meat, eggs and pig meat is located in support areas A and B (Farm Register, 2003). The average yield of wheat, rye and fodder cereals in 2004 was 3,470 kg/ha, 2,320 kg/ha and 3,170 kg/ha, respectively (Information Centre of the Ministry of Agriculture and Forestry, 2005).

Regionally the most strongly concentrated sectors are e.g. greenhouse production and fur farming. In 2004, the total area under horticulture was 17,173 hectares and the greenhouse area was 4,703,100 m<sup>2</sup>. Vegetable production in the open is concentrated in Varsinais-Suomi, South Satakunta, Uusimaa and Kymenlaakso. The main crops produced in the open are carrot, onion and different kinds of cabbages, and the most important greenhouse products are cucumber, tomato as well as flowers. Berry production is mainly located in central and eastern Finland. The most important berries are strawberries and currants. Climatic conditions restrict the production of apples to the Åland Islands and south-western Finland.

### Restructuring in agriculture

A dramatic structural change has been taking place in agriculture for over 40 years. During 1995–2004, 24,000 farms abandoned livestock production. The annual decline in farms for all livestock production has been 6–7% and in poultry husbandry 9–10%. The number of cereal farms has only dropped by 0.1% a year. The number of farms is estimated to drop from 72,054 in 2004 to around 53,000 by 2013.

A major change took place in the agricultural operating environment when Finland became a member of the EU in 1995. The steep fall in producer prices was compensated for through direct payments. The reduction in prices and income payments may speed up restructuring in agriculture.

The payment of income payments mainly on a per hectare basis and the minimum requirements concerning the area for spreading manure have resulted in a dramatic increase in the purchase and rental price of arable land. Farms continuing production increase the arable area size mainly by leasing arable land. The area of leased arable land on farms in 2004 was well over 746,000 hectares, i.e. around 33% of the utilised agricultural area. The average leased area per farm was 17.6 ha. A third of additional arable land is leased. Livestock production has increased most of all in areas where it has been strong before. Cereals have accounted for a greater area of production in eastern and northern Finland with the structural change in cattle husbandry.

The development in production methods has been dramatic, for example in production cooperation between farms in pig husbandry. There have been investments in automatic milking equipment in dairy husbandry. Direct sowing has become common in cereal production.

The number of farms transferred to descendants is estimated to be under 1,000 a year. The number has dropped significantly from the period preceding Finland's EU membership. Part-time farming has increased in areas close to employment areas and population centres.

The average age of farmers has risen from 46.4 years in 1996 to nearly 49 years in 2004 (Figure 3.13). The rise in the average age illustrates the rapid structural development in agriculture. If there are no descendants to continue farming, farmers continue practising farming until they are elderly. In 2003, there were 8,729 farmers under the age of 35 and 24,560 farmers aged 55 and over, i.e. the ratio of young farmers to older ones was 0.36 (Yearbook of Farm Statistics, 2005). The age of farmers decreases as the size of farms increases, which means that large farms find someone to continue farming more frequently than smaller farms and young farmers are more enthusiastic about increasing the size of farms than older farmers.



Figure 3.13. The average age of farmers 1991–2004. \*) estimate

### Common agriculture policy influence on the income development and prices in agriculture

Nominal agricultural income has fallen by around 35% from 1994 to 2005. During EU membership it fell until 1998 when the drop in agricultural income was greatest for the period of EU membership primarily as a result of crop failure. Agricultural income increased evenly during 1999–2002 and it started to decrease in 2003. Agricultural income in nominal prices in 1994 was EUR 1,407 million, and the prediction for 2005 is EUR 918 million (Agrifood Research Finland, 2006). The geographical distribution of the production sectors influences the agricultural income per farm. In southern Finland where cereal cultivation is the dominant

sector both the agricultural income and profitability coefficient are lower than in the livestock production regions (Tables 3.14 and 3.15).

Table 3.14 The profitability coefficient and agricultural income of bookkeeping farms for different production lines in 2004 (Agrifood Research Finland/Economics, 2006).

Production line	Profitability coefficient	Agricultural income (€/farm)
Dairy farms	0.52	32,000
Other cattle husbandry farms	0.51	20,800
Pig farms	0.51	28,200
Cereal farms	0.30	6,820
Other crop production farms	0.52	14,000
Horticultural farms	0.49	22,900

Table 3.15 The profitability coefficient and agricultural income of bookkeeping farms by FADN region (Farm Accountancy Data Network) in 2004 (Agrifood Research Finland/Economics, 2006).

FADN region	Profitability coefficient	Agricultural income (€/farm)
Southern Finland	0.45	16,900
Inland Finland	0.52	23,500
Ostrobothnia	0.56	20,400
Northern Finland	0.66	31,800
All Finland	0.47	19,800

The producer prices of agricultural products fell dramatically when Finland joined the EU. The average drop in prices of the most important agricultural products was about 50% compared with the average prices of the previous year. The producer prices of unsubsidised products fell by 38% compared with the previous year. The producer prices of several products (e.g. pig meat, beef, cereals) have continued to fall during the period of EU membership due to the decrease in world market prices, market problems and oversupply (Table 3.16).

Table 3.16 Producer prices of the most important agricultural products without production subsidies in 1994 and 2004 (Yearbook of Farm Statistics, 2000; Monthly Review of Agricultural Statistics (Tietokappa) 10/2005).

Product	Price 1994 (€/kg)	Price 2004 (€/kg)	Change 1994–2004 (%)
Pig meat	2.70	1.2	-56
Beef	4.10	1.9	-54
Poultry meat	2.03	1.23	-39
Mutton	3.61	1.99	-45
Eggs	1.44	0.74	-48
Bread wheat	0.36	0.12	-67
Rye	0.42	0.121	-71
Fodder barley	0.26	0.107	-59
Fodder oats	0.25	0.087	-65
Potato	0.22	0.226	2
Milk (€/l)	0.48	0.344	-28

As a result of the EU membership, input prices fell by about 20%, yet less than producer prices. Input prices have increased by 14%, while producer prices have continued to fall. If this trend continues, the position of producers will weaken as fewer inputs will be able to be purchased using cash flow financing.

The Single Payment Scheme (SPS) with decoupled payments in accordance with the CAP reform of 2003 was introduced in Finland in 2006. In Finland, the SPS is implemented by using the hybrid model (the regional model), where the farmer's payment entitlement consists of a flat-rate payment and a farm-specific top-up. Part of the national ceiling is reserved for coupled payments. Since the SPS has only been in use in Finland since last year, its effects cannot yet be analysed at this stage. In 2006, there were no significant changes in the use of arable land or production volume that could be assumed to result from the introduction of decoupled aid. Before the reform was introduced it was believed that it would lead to a reduction of production volumes and an increase in set-asides. These potential effects will only become evident in the longer term.

### Reindeer husbandry

Reindeer husbandry is a special feature of rural areas in the north of Finland. The practise of reindeer herding is founded on the Reindeer Husbandry Act (848/1990), according to which reindeer husbandry can be practised in the reindeer herding area that is 122,936 km<sup>2</sup> in area. The reindeer herding area comprises nearly the whole of the Province of Lapland and most of the Province of Oulu. The right to practise reindeer herding is a universal right for those living in the reindeer herding area. Citizens of the European Economic Area living permanently in the reindeer herding area are entitled to own reindeer. Reindeer owners living permanently in the reindeer herding area have the right to practise reindeer husbandry in the reindeer herding area irrespective of land ownership or possession rights. This means in practice that a person can practise reindeer herding on land owned by someone else without a separate permission from the owner. The keeping of reindeer in areas other than the reindeer herding area is considered as normal livestock husbandry without the right to free grazing or to the payment and compensation schemes relating to reindeer husbandry.

Reindeer owners have a statutory right and obligation to belong to the reindeer herding co-operative in whose territory their reindeer are being kept. Every reindeer owner must belong to one reindeer herding co-operative. The basic obligation of the shareholder of a reindeer herding co-operative is to take part in the reindeer herding work of the co-operative either personally or by paying the costs in accordance with the decisions of the co-operative. The basic principle is that the reindeer herding co-operative is responsible for the reindeer herding work that is carried out in its territory and that reindeer owners act in accordance with the decisions of the co-operative. The territorial boundaries of reindeer herding co-operatives are determined by the State Provincial Office. Finland currently has 56 reindeer herding co-operatives and just over 5,200 reindeer owners. Reindeer ownership is divided so that several members of the same family can be reindeer owners (Reindeer Herders' Association, 2005).

On the basis of the Reindeer Husbandry Act, the Ministry of Agriculture and Forestry determines the maximum number of living reindeer that a reindeer herding co-operative may keep in its territory and the number of such reindeer that individual reindeer owners may own. By virtue of the Decision of the Ministry of Agriculture and Forestry currently in force, the maximum number of living reindeer allowed in the whole reindeer herding area is 203,700 (Reindeer Herders' Association, 2005).

Reindeer husbandry generates income through sales of reindeer meat, hides and antlers, for example, as well as from compensation and payments for reindeer losses. There have been few changes in reindeer meat production. Under the terms of the current decision on the maximum permissible number of living reindeer, around 2.0–2.5 million kilos of reindeer meat have been produced every year from about 100,000 slaughter reindeer. The financial situation among reindeer meat producers has weakened over the last few years because the producer price paid for meat has declined significantly; the producer price dropped to around 4 euro a kilo, although since then there has been a slight increase in the producer price (Reindeer Herders' Association, 2005).

### Fur farming

Fur farming developed in Finland at the same time as fur hunting as a livelihood declined at the start of the 1900s. There are currently around 1,500 fur farms and their impact on employment as a whole is calculated to be in the region of 22,000 jobs (Rekilä et al., 2005). The number of fur farms has dropped by over a fifth during the last decade. The production volume of fox furs has remained at practically the same level, but it has reduced for mink pelts. Currently around 2 million foxes, just under 2 million mink, 100,000 raccoon dogs and a small number of polecats are farmed in Finland. The income received from Finnish furs has varied over the last few years between EUR 200–300 million. Furs are primarily exported (99%).

Regulations on environmental protection govern the setting up of fur farms. Environmental officials of municipalities make decisions on environmental permits for smaller fur farms and monitor compliance with provisions. The provisions required for larger farms will be decided on by Regional Environment Centres. Fur farms comply with the Animal Welfare Act drawn up by the Ministry of Agriculture and Forestry in 1996 and the animal welfare requirements on keeping fur animals laid down by the Council of Europe that came into force in 1999. The farming conditions, behaviour, welfare, breeding, feeding and health care of fur animals have been researched and developed for over 70 years. To support sustainable fur animal production, an updated quality system was drawn up in 2002 and has now been expanded into a certification system for fur farms. A certified farm has to fulfil the criteria set out for it in order to obtain and keep its certification. The certification comprises the following sub-sections: animal health and welfare, farming conditions, fodder management, breeding, environmental management, farm hygiene, training, advice and preparing for exceptional conditions. As with the rest of agriculture, there is a structural change taking place in the fur industry, as a result of which the number of farms is declining and the size of farms is increasing.

### Welfare of production animals

Member States of the European Community are obligated to monitor compliance with the directives concerning the welfare of production animals by inspecting a representative number of farms every year and to report on the inspections carried out to the Commission at two-year intervals. During 2005, a total of 751 calf and pig farms, henhouses and fur farms were inspected. 35.3% of the calf farms inspected were found to have unsatisfactory animal welfare conditions. In most cases, the problems concerned too small group pens, problems with the calves' water supply, deficiencies in the compulsory bookkeeping on the treatment of illnesses and the number of dead animals, keeping calves tethered and failings concerning lying areas. 25.6% of the pig farms inspected were found to have unsatisfactory animal welfare conditions. The majority of the failings were linked to a lack of stimulation, such as straw, a failure to check the functioning of automatic watering equipment on a daily basis, the absence of a warning system for mechanical ventilation and too small pig pens used for breeding.

National coordination of health care for production animals began in 2001 with the aim of improving the profitability of livestock production by promoting animal health and welfare. There is no independent national health care organisation for production animals, but the coordination of this Animal Health Care service (ETU) is managed in cooperation with existing organisations, including the Association for Animal Disease Prevention (ETT) and the Finnish Food Safety Authority (Evira). The ETU service is directed and defined by a steering committee, which includes representatives from the industry, the authorities, education and research, producer organisations and the Finnish Veterinary Association. ETU expert groups have been working on an extensive range of issues to be introduced as concrete measures on farms.

Animal health care is part of the national quality strategy and it reinforces the strengths of the food production chain, such as good animal health, the limited use of medicines and food safety, and improves monitoring, transparency and documentation at the farm level. In addition, content for health care training has been prepared for producers, veterinarians and other stakeholders in livestock production. The implementation of the national health strategy has advanced furthest in pig husbandry: around 70% of pig farms are involved in the online health classification register for pig farms, i.e. in regular health care work.



According to the environmental indicator for cattle farms designed by the advisory organisation ProAgria, the welfare of production animals in Finland is quite good. Controlling relative humidity of lairages was identified as a particular area for development in terms of animal welfare on the assessed farms. There should be improvements to ventilation in lairages in a third of the farms assessed with the environmental indicator. Animal stalls are often too small or their structure is dangerous. Greater attention is now paid to animal welfare than before, with a fourth of the farms assessed using a farm-specific health care plan in their daily operations. A special problem for pig farms and henhouses is the large density of animals and a lack of stimulation.

In summer 2005, the Ministry of Agriculture and Forestry appointed a working group to draw up a strategy on the welfare of production animals. The working group's task is to draw up a strategy that will specify, for example, the objectives to be set for the welfare of production animals with regard to the keeping, care, treatment and handling of animals. The strategy will examine different forms of keeping animals, the possible benefits and drawbacks of different production lines and important measures to be carried out on animals.

The fire safety of older lairages in particular is not very good, since modern fire alarm systems are used in only a few old lairages. If a fire breaks out, it usually totally destroys the lairage. Aid for agricultural investments has been granted since 2004 only to farms that fulfil the fire safety requirements of the Ministry of Agriculture and Forestry.

Supporting the renovation of livestock buildings has led to an improvement in the design of premises for animals and the quality of ventilation. It has been possible to grant agricultural investment aid for construction projects for sow farms that exceed the Community's minimum requirements, for replacing chicken cages with enriched cages with production remaining at the same level, and for replacing mink and fox cages with larger cages. Investment aid has never been granted for sow farms. During 2004–2005, five projects have been granted aid for investing in enriched cages, 41 projects since 1996 for investing in deep-litter houses and six projects since 2004 for investing in aviary houses.

### **3.1.5 Food production and the food industry**

The food industry is divided into a total of 33 different sub-sectors, the largest of which in terms of the value added are the meat processing, bakery and biscuit industries, milk processing, malting and soft drinks industries. The majority of Finnish enterprises in the food sector are very small. Only the few largest enterprises have developed significant international operations. Because of the small domestic markets, even the largest Finnish enterprises are small by international comparison. The enterprises and markets in the food industry are clearly divided into two groups. One group is made up of national and international enterprises, of which the enterprises that are linked to primary production are mainly cooperatives, whereas the other group comprises private enterprises, the majority of which are small.

The food industry is mainly a domestic industry. In the entire food industry, domestic sales represented about 89% of the gross value of production in 2004. Annual changes in the food market are quite small, because food consumption is stable. Changes in the market are thus a kind of zero sum game, in which the growth in consumption in a certain product group is reflected by contracting sales in another product group.

The number of jobs in the food industry has decreased quite rapidly during the 2000s, as the sector has adjusted to the opening up of the market and tightening competition. The number of people working in the food industry in 2004 was 37,780, whereas at the start of the 1990s there were well over 55,000 people working in the sector.

In companies processing staple foodstuffs, exports may account for as much as 30–60% of their turnover. Most of the exports of the Finnish food industry are directed at adjacent markets. More than 80% of the exports go to Europe, and in recent years Russia, Sweden and Estonia taken together have accounted for more than half of Finnish food exports. Therefore, the decisive factors for food exports are how the

competitiveness of the export industry in adjacent markets and the demand in these markets develop. The results of the WTO's Doha Round are also expected to decisively change agricultural and food markets. The abolishment of export subsidies is expected to have the greatest impact on markets for milk products, fodder cereals and meat products. However, the most important market for Finnish enterprises is the domestic market. The significance of the origin of staple foodstuffs for Finnish consumers has increased with the opening up of the market and the decrease in price levels.

Automation will become more widespread in the future, which will require increased IT skills in small enterprises, too. Developing different models of cooperation will be especially important for reducing risks, increasing company resources and increasing the efficiency of the operations. The high quality and safety of products are extremely important in terms of the competitive advantage of small enterprises. The importance of environmental issues is also increasingly significant, so SMEs must be able to demonstrate the cleanliness and environmentally friendly nature of their food production. Safety will become extremely important in the future and small enterprises must be able to employ the best technology and skills in this area, as well. Many small enterprises still need help and resources in implementing and maintaining self-monitoring systems and in developing quality management.

Cooperation between enterprises in the food industry has traditionally been less common than in other industries. Forms of cooperation between small enterprises that save costs could be established in areas such as logistics, part delivery and marketing. Cooperation with large enterprises can provide development opportunities in logistics, for example. Enterprises must develop their capacity to introduce new technology in production, in managing logistics and customer information and in cooperation between enterprises. Investments in development work for new product groups, such as products that produce added value to consumers, are needed. The limited amount of research and development resources of small enterprises can be improved by establishing cooperation with research institutes and other expert organisations. Functional food is considered to be an area with the greatest potential in the future, and in Finland relatively large amounts have been invested into research and development in this field. Successful innovations have not, however, led to sustainable business operations without problems, which are caused, for example, by a lack of clarity in the legislation and expensive product development.

### The quality of food

The quality of food is based on its sensory and nutritional characteristics, safety, user friendliness and the operations of the food production chain. Some of the quality factors can clearly be measured, i.e. they are objective, while others are experienced at a personal level, i.e. they are subjective. In Finland, food quality means quality especially relating to food hygiene – and thus the safety of consumers, in particular – and to nutrition.

The health of citizens is promoted through the nutritional content of food together with food safety. The technical quality of food, however, is concerned with managing the quality characteristics of raw materials and intermediate products in terms of food technology at the different stages of production and processing. The quality of a product is also reflected in its suitability for its purpose, including the appropriateness of packaging for consumers. The quality of food is increasingly associated with foods having an exceptional taste and flavour and a connection to the local culture. Locally produced raw materials and taking the environment into consideration, for example through reduced transportation journeys, will be the criteria for an ever increasing number of consumers in constructing an impression of the quality of the product.

Food that is free of contaminants impacts on food safety. Finland takes a strong stand against giving growth hormones and antibiotics for growth promoting purposes to animals for primary production, which also supports ethically acceptable primary production. Finland does not have any animal diseases classified as contagious or dangerous which would have significant implications for keeping animals and the international trade of products derived from them. Several other infectious animal diseases that commonly occur in the EU are rare or are not found at all in Finland. As a result of the good animal disease status, Finland has received additional guarantees or an official disease-free status from the EU with regard to several animal diseases.

Compared internationally, the incidence of plant diseases and pests in Finland is at a low level. The aim is to preserve the good status of plant diseases and pests in Finland and to prevent new plant diseases and pests from entering the country.

Quality work in the Finnish food sector takes the form of the National Quality Strategy for the Food Sector, which was drawn up in 1997 and updated in 2004 and which has the commitment of the whole Finnish food chain. The aim of the National Quality Strategy for the Food Sector is to develop the strengths of the domestic food chain, such as the competitive advantage based on consumer trust and competitiveness based on making joint operations more efficient. The strategy also aims to strengthen the operational approach of the Finnish food industry in terms of its social responsibility and to improve consumers' awareness of the activities and overall impacts of the domestic food industry.

The implementation of the "from farm to fork" approach to quality work belongs to the input industry and trade, primary production, the food industry, transportation, trade and catering services down to consumer organisations. This work is strongly supported by the authorities, research and advisory organisations and teaching activity. The strategy is implemented through projects and is included in the work programmes of the different actors in the food chain. Measures have focused, for example, on improving skills in the various parts of the chain, establishing environmental responsibility, creating common practices and self-monitoring practices for different sectors and supply chains, developing competitiveness especially in primary production, promoting communication with consumers and developing the quality information system network. During the early years, a lot of quality work focused on primary production, but the priorities now have been the balanced development of the entire chain and the systematic management of the production chains.

The business skills of farms have increased partially as a result of the increase in farm sizes and the change in the nature of their activities in a more entrepreneurial direction. Changing the emphasis of advice from quality systems to measuring and systematically influencing the results and activities of farms has increased business skills. Contracting with the industry that buys the products increases competence especially in the product chain. Around 21,000 farms had taken part in quality training aimed at farm entrepreneurs by 2005, which is one fourth of all farms. In addition to this, enterprises in the dairy, abattoir, malting, oil milling, cereals and fodder sectors have come up with their own training and advice for farms concerning contract production.

### **3.1.6 Forestry**

Finland has 26.3 million hectares of forest, i.e. 86% of the land area, of which 20 million hectares is forest well suited to timber production, thanks to the growth in the tree stand. The area of forest hardly changes year by year. The tree stand volume of forests has increased nearly by 40% since the beginning of the 1970s and nowadays stands at around 2 billion cubic metres. The annual growth of forests is 97 million cubic metres a year. There has been a clear increase over the last few decades. The total loss of forest (felling drain and natural loss) was 70 million cubic metres in 2004 (Finnish Forest Research Institute, 2005).

Of the forest area, 60% is privately owned, companies own 9%, the State owns 24% and others, such as municipalities and parishes, own 5%. The number of private forest owners in Finland is 440,000, and the average area of a forest holding is 20–30 ha. 22% of forest owners are farmers and they own 33% of the private forest area (Karppinen et al., 2002). Farms have on average 50 ha of forest (Farm Register, 2004). Of family forest holdings, just under a half are owned by one person.

Forest-based industries create welfare for rural areas in the form of income from timber sales and employment opportunities. The role of forestry, which provides both additional income and employment, has become even more important especially in eastern and northern Finland, where forestry is vital in terms of the continuation of agriculture. Forests provide opportunities and raw materials for small-scale entrepreneurship within traditional forest management work and especially in mechanical wood processing and the increasing use of domestic energy. Forests have an important role as natural ecosystems and habitats

for wild organisms and as recreational areas. Forests are a significant part of the Finnish rural landscape and are an important factor in tourism and recreational services.

The Finnish forest industry yielded around EUR 19.9 billion in 2004, of which the wood products industry accounted for just under a third. The forest sector and forestry accounted for 7% of Finland's GDP. The forest industry accounted for 17% of the total industrial value added. The importance of the forest industry to the Finnish economy can be seen in exports: forest industry products accounted for 24% of the goods exported from Finland in 2004. The importance of the forest industry is also underlined by the fact that the sector requires fewer production inputs than other export sectors.

Since 1998, the regional objective programmes for forestry drawn up by each forestry centre have been the foundation for the economically, socially and environmentally sustainable use of forests. The National Forest Programme 2010, which was approved by the Government to direct national forestry policy, was drawn up on the basis of these programmes and it implements the objectives set out in the EU Forestry Strategy. The programme promotes environmental sustainability by reducing the harmful effects of forestry measures to the natural environment and by promoting the preservation of biodiversity of forest nature in commercial forests. Social sustainability is supported by slowing down the reduction in employment in rural areas and by promoting the creation of new jobs linked to the management and use of forests. In addition, the opportunities for families to engage in forestry are enhanced through training and advice for forest owners.

### Promoting the management and use of forests

The use of timber and the forest industry have increased the value added for timber, which has made it profitable for forest owners to invest in the management and use of forests. Investments in forestry have increased the growth of the tree stand and the felling possibilities, which has increased the use of domestic raw timber. The growth of the tree stand exceeds the felling, and thus the commercial use of forests and nature conservation are compatible with each other. The outlook for the future development of the Finnish forests is good, if we continue to maintain the high standards in the management of forests.

Forest owners are getting older and their goals in owning forests are becoming more diverse. In addition, the importance of the income from forests in the total income of forest owners is decreasing. Although the number of farms has decreased, it has not led to an increase in forest ownership by urban residents. Around 60% of forest owners still live in sparsely populated rural areas and one in every five in village centres or small towns. A major structural change in the ownership of forests can be expected, once the old forest owners give up their forests.

In forestry dominated by family ownership, the training and advising of forest owners is of primary importance in terms of forest management, environmental sustainability and functioning of the timber market. Forest owners are supported in their decision-making and interest in managing forest-related issues through training and advice. High-quality and professional measures that promote the sector ensure that forest owners can base their decisions on forestry matters on a high level of information and skills.

Finland has public right of access allowing people to walk in forests and to pick berries and mushrooms. In addition to timber production and diversity values, forests provide a recreational environment for about four million Finns who enjoy outdoor activities. Nearly 80% of households pick berries or mushrooms. There are 300,000 hunters, and about 2 million people enjoy fishing in their free time (Finnish Forest Research Institute, 2005). Multifunctional entrepreneurship, including picking and processing natural products, as well as services related to tourism and outdoor activities, such as hiking and camping, offer new opportunities for entrepreneurial activities that diversify the use of forests in business and create new jobs.

### Development of forestry on farms

Forestry is a traditional rural industry, which has often played an important role in the farm economy, and it is a natural alternative for farms reducing or terminating agricultural production. Farm production equipment, such as tractors and other implements, can also be used to a certain extent in forestry. The development of forestry in connection with farms improves their viability and provides employment and additional income, and thus helps to keep the rural areas inhabited. An entrepreneur specialising in forestry may offer expertise and services to other forest owners as a so-called village or professional forest worker.

Almost 242,000 hectares of agricultural land have been afforested partly by means of State support since 1969. In addition to this, some uncultivated land has become naturally afforested. Based on the programme for forestry measures in agriculture according to Council Regulation (EEC) No 2080/92, 27,600 hectares of land were afforested during 1995–1999. Afforestation was not supported at all during the programming period 2000–2006. Afforestation measures financed by land owners alone have been quite rare (Finnish Forest Research Institute, 2005).

### **3.1.7 Bioenergy**

Finland is a significant user of bioenergy. In 2003, 23% of the total consumption of primary energy in Finland was produced using renewable energy sources, primarily wood and wood-based fuels and hydropower. This makes Finland one of the leading developed countries in the use of bioenergy. Maintaining this position in the future was set as an objective in the Government's climate and energy policy report (2005).

The report set out national measures and objectives for implementing the Kyoto Protocol to the UN's climate convention. Achieving a minimum increase of 25% in the total use of renewable energy by 2015 and 40% by 2025 was set as the target. Biogas, arable biomass and chips made from logging waste were especially emphasised as sources of bioenergy. The aim is for bioenergy's share of primary energy to rise from around 2% in 2004 to over 6% during the next 15–20 years.

The basic principle of Finland's national climate strategy is that the country will prepare to achieve the aims of the Kyoto Protocol to limit greenhouse gas emissions through domestic actions that are as cost effective as possible. These include, for example, developing research and technology, economic control measures (e.g. taxation and different investment aids), regulations, guidelines, information and advice. The most important factors include promoting the production of renewable energy, saving energy and taking into account the costs of emissions trading.

The most fundamental socioeconomic problem in rural areas is the reduction in entrepreneurship, employment opportunities and, thus, well-being. In order to promote viable and diverse economic activities in rural areas, an effort is being made to approve projects concerned with the production of arable crop-base bioenergy, alongside wood processing and energy use and the processing of foodstuffs.

### The use of energy from arable biomass

The most common arable crop-based material for burning used in the production of heat or electricity is currently reed canary grass, the area of which being cultivated for energy in 2005 was almost 9,000 hectares. Other potential burnable plant masses include cereal straw and husks, the straw from oil-seed and fibre crops and willow. The plant mass produced on arable land can also be used in the production of biogas and biofuels for transport. Interest in using arable biomass for energy has increased with the start of emissions trading and EU support for cultivating energy crops. The working group on the use of arable land (2005) estimated that by 2012 the total area of arable land under production for bioenergy would probably be around 200,000 hectares.

The most common form of using arable biomass for energy is the mixed combustion of reed canary grass in power plants together with chips or peat. The Ministry of Agriculture and Forestry's division on arable biomass, biofuels for transport and biogas put forward a target of 100,000 hectares of cultivated land for reed canary grass by 2010. Attaining this goal will, however, require investments in research and development to solve the problems in production and the use of this technique that have come to light in connection with increasing cultivation. Alternative crop treatment methods, such as pelleting, should also be developed. The production and use of other crops or parts of crops suitable for direct combustion should be promoted and developed alongside reed canary grass, paying particular attention to the possibility of replacing fossil fuels and reducing greenhouse gas emissions.

As regards the environmental impacts, the annual energy plants do not in practice differ from the annual plants cultivated for food because the same cultivation technique is used independent of the use of the crop. Substituting annual crops by perennial bioenergy crops such as reed canary grass can however promote the biological biodiversity of cultivated areas. The diversity and appearance of soil microbes and organisms, e.g. earthworms, is richer in energy grass cultivation plots than in plots with annual food crops (Börjesson 1999). This is mainly result of less tilling and lower use of plant production products. Perennial energy crops give also much better protection to animals than annual crops. The reed canary grass which is left on the ground for winter and is harvested not until spring give specially good shelter.

### Biofuels for transport

The ministerial group on climate and energy policy outlined the target level for Finland in line with the goals of the EU's Biofuels Directive, according to which 5.75% of the combined energy content of all fuels for transport must be biocomponents by 2010. The main method for reaching the target may be the requirement to mix in biocomponents with fuel for transport.

Biofuels for transport, such as biodiesel and bioethanol, are liquids processed from plant or animal-based raw materials, which can be used as fuel for vehicles, usually mixed in with other fuels. Oil-seed crops, such as rape, are used as the raw material in traditional biodiesel (rape methyl ester, RME), whereas other plant and animal-based materials are used in new generation biodiesels. The production of ethanol mainly uses starch and sugar-based plants, such as grain or sugar beet, but development work is under way on increasing the use of straw or wood-based materials, for instance. In addition to fuels, refined biogas can be used as fuel for vehicles, although its use places greater requirements on vehicles and refuelling equipment than the use of liquid fuels.

Both new generation biodiesel and bioethanol are manufactured primarily in large factory-sized plants. When planning methods to increase the use of biofuels for transport, an attempt must be made to ensure that as great a volume of these fuels as possible is produced in Finland using Finnish raw materials. The production will significantly increase the demand for cereal to be cultivated for energy use and it may impact on the demand for raw materials of oil-seed crops. In addition to the energy component, this production creates protein-based waste suitable for use as fodder.

In addition to the large-scale production of biofuels for transport, especially traditional RME biodiesel and biogas can be produced on a small scale for transport, heating and power tools. This fragmented production of fuel should be promoted alongside large-scale production, because it will create opportunities for local energy entrepreneurship. Actions that promote the sector should, however, take into account the quality, profitability and environmental factors of production.

### Biogas

Biogas is produced and collected in biogas reactors based on the process of decomposition, using such raw materials as manure, plant masses or animal and plant waste. The biogas produced in the process can be used in the production of heat and electricity and as a fuel for transport. The size of biogas production plants

varies from plants using animal waste and plant masses of one or several farms to large plants operating in conjunction with landfill sites or sewage treatment plants.

Interest in constructing biogas plants on farms is increasing all the time. The trend has been influenced not only by the sector's pioneers but also, for example, by the rise in energy costs, the need to treat and deposit manure and the search for additional sources of income for farms. There are more than ten plants in operation on farms and many new plants are currently being planned or under construction. Biogas production has a great deal of potential. In addition to energy production, biogas plants could be used to treat biowaste (e.g. food industry waste) and sewage sludge from sparsely populated areas, although the regulations concerning the treatment of waste and animal by-products restrict the potential for waste treatment. Establishing and supporting local biogas plants should take into account not only the impacts of these plants on the total finances of the farm but also their positive environmental impacts.

### Energy saving on farms

Detailed information or guidelines on the energy use or energy saving opportunities on farms are not available. However, it is known that there may be a difference of several dozen per cent in the use of energy between farms, or even between farms operating in the same production line. Directive 2006/32/EC on energy end-use efficiency and energy services requires Member States to increase agricultural energy saving measures and to measure their impact. Therefore, the energy auditing model familiar from households and other enterprises is being developed to establish the energy consumption of farms and possible energy conservation measures, and the potential for increasing the use of renewable energy sources on farms will also be examined. In order to promote the energy saving measures required by the Directive and their monitoring and to increase the use of bioenergy, energy auditing on farms must be promoted in different ways.

### Energy from forests

Wood-based fuels account for 20% of the total Finnish energy consumption, and 85% of this is used by heat and power plants and 15% by small-sized dwellings. The number of heat and power plants using wood increased during the 2000s from around 250 to about 490 (Finnish Forest Research Institute, 2005)

Table 3.17 The share of different types of wood fuels of the total consumption of wood energy in 2004 (Finnish Forest Research Institute, 2005).

Type of fuel	Share of the total consumption of wood energy
black liquor	52%
forest industry by-products (chips, dust, bark)	26%
fuel wood consumed by small-sized dwellings (without forest chips)	14%
forest chips	6%
recycled wood	1%

A total of 2.7 million cubic metres of forest chips were burned in 2004, mostly in heat and power plants (Table 3.17). The use of forest chips has increased annually by around one third during the 2000s. The aim of the National Forest Programme is to increase the use of forest chips every year by 5 million cubic metres up to 2010. The technical and economic harvesting potential of forest chips is estimated to be around 12 million cubic metres a year.

The increase in the use of wood for energy will promote forest management and create a demand for small-diameter thinned trees. Harvesting felling residue makes forest regeneration easier. According to the recommendations for harvesting felling residue, when choosing felling sites and methods it is important to ensure, however, that no damage is caused to the nutrient economy of the forest area. The felling and

transportation of wood for energy and the production of bioenergy create employment and promote the creation of small-scale business activities.

The whole bioenergy sector must be developed with national, regional and local solutions. The production and use of bioenergy must be promoted in a sustainable manner and through programmes across administrative boundaries, and development work must be coordinated between regions and administrative sectors. Development work must focus on the entire network for producing and using bioenergy. The development of the sector will create opportunities for small rural enterprises both in connection with wide-ranging energy solutions and in local energy production.

### 3.1.8 Other economic activities in rural areas

The industrial structure of rural areas is diverse. The largest number of jobs is in the service sector (56.9%) and the second largest in processing (29.2%). Micro-enterprises have a more important role as a source of income in rural areas than in urban areas because there are fewer alternative employment opportunities in rural areas. Enterprises located in rural areas differ from those operating in population centres in terms of their line of business and size. There are, naturally, more enterprises involved in primary production than in urban areas, while the number of service enterprises is smaller. The share of enterprises in the trade, restaurant and hotel and service sectors is smaller in rural areas than in urban areas.

The metal and forest industries are particularly strong and diverse and the potential to increase subcontracting is good. There are good opportunities for developing mechanical wood processing and food processing, and they are important sources of income and employers in rural areas. General enterprise development projects are often closely linked to the ongoing business projects of each region and area, and they may produce added value as enterprises develop and expand their activities.

Around 40% of the enterprises registered in the Business Register in 2002 operated in rural areas. There was a total of 63,890 micro-enterprises (under 10 AWUs) in rural areas. The combined turnover of these enterprises was EUR 9.8 billion and they employed a total of 86,873 people. During 1997–2002, the number of these enterprises<sup>4</sup> increased by 1.4%, the number of employees by 3% and their turnover by 9% (Rantamäki-Lahtinen, 2004). Around 14% of rural enterprises were in industry in 2003, 17% in construction and trade and 40% in services.

Maintaining and increasing industrial jobs in rural areas is considered important in terms of the competitiveness and development of rural areas. The development of wood processing and the food sector have received particular emphasis. 55% of enterprises in the food sector and 67% of the small enterprises engaged in downstream wood processing are located in rural areas. The service sector is the largest individual sector also in rural areas, and it has grown rapidly over the last few years.

Although the number, turnover and staff of small rural enterprises have grown evenly at the level of the whole country, regional differentiation has been rapid. Migration from sparsely populated areas has increased, speeding up the migration of enterprises to populated areas. In some remote areas, even the number of enterprises located in densely populated areas has started to decrease.

There are 8,200 small enterprises located on farms. The average size of small enterprises located in rural areas is 1.35 persons/enterprise, whereas the corresponding figure in urban areas is 2.5 persons/enterprise. Around one third of rural enterprises are linked to primary production. The sectors considered to be linked to primary production included, for example, machinery contracting, tourism and recreational services and the production of timber and wood products (Secondary agricultural business activities, 2004; Farm Structure Survey, 2003).

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<sup>4</sup> According to the classification of the Rural Small Enterprise Register, which takes into account single-unit enterprises in areas with rural postcodes (population density of under 50 inhabitants/km<sup>2</sup>; enterprises with less than 20 person years with a turnover of more than EUR 8,235).



In 2005, 24,294 farms were actively engaged in secondary business activities, which was 35% of all active farms (Information Centre of the Ministry of Agriculture and Forestry, 2006). The most important sectors are machinery subcontracting (9,040 farms), the provision of tourism and recreational services (2,047), the processing of timber (1,132), energy production (968), food processing (846) and handicraft (342). If the abovementioned approximately 8,200 farms in the Rural Business Register, which engage in a secondary business activity as a separate enterprise in accordance with the Act on the Taxation of Business Profits and Income from Professional Activity, are excluded from the results of the agricultural census, there are about 15,350 farms with small enterprises that come under farm taxation.

### Small-scale food production

There are nearly 3,000 enterprises employing fewer than 20 employees in the food sector in Finland. They are micro-enterprises with an average of 2.8 employees/enterprise and an average turnover of around EUR 210,000. The most important sectors are bakery business, the processing of vegetables, berries and fruit, and slaughtering and meat processing. The greatest number of enterprises is in the provinces of Uusimaa and Varsinais-Suomi in southern Finland. A great many small enterprises have been created in the food processing sector during the 2000s; every year, 100–150 new enterprises have started in the food sector. The picture looks similar in different provinces. In spite of their small size, these enterprises are important rural employers and users of local raw materials.

Finland has a rich regional and local food culture, which has been invigorated with the general rise in the appreciation of domestic food and through strong regional development activity. Small enterprises are also important for maintaining and developing the Finnish food culture. Domestic small enterprises are the idea bank for Finnish food culture. The interest towards organic and locally produced food creates opportunities especially for small enterprises that serve local markets with distinctive products produced using raw materials and other inputs from their own area. Small enterprises firmly believe in the competitiveness of their own products specifically because of their special characteristics and in continuously developing skills and ideas for new products. Production by SMEs is mainly marketed in areas within their own province. The key commercial strengths of SMEs in the food sector are based on their knowledge of local markets, the use of raw materials obtained from their own province and their operations being close to the customer. The most important competitive factors include skilled employees, the good reputation of the enterprise, and the speed and flexibility of their service. The key factors in restricting the success of enterprises include the lack of bargaining power to enter the market, official regulations and an insufficient customer base in the market. Inadequate financing and an insufficient risk taking ability are also felt to be a hindrance to business operations in several enterprises.

### Mechanical wood processing

There are more than 6,000 enterprises engaged in mechanical wood processing in Finland, and many of them are sawmills and planing mills. These enterprises employ about 25,000–30,000 people.

Wood processing is mainly concentrated in the regions of the Employment and Economic Development Centres of North and South Ostrobothnia, Pirkanmaa and Central Finland. Other important regions in terms of joinery products are Uusimaa and Varsinais-Suomi. Elsewhere, the enterprises are quite evenly distributed in different parts of the country. The enterprises are often quite small, and the share of enterprises employing fewer than four people is almost 80%. The share of these small enterprises of the jobs in the sector is less than 10% and of the total turnover 5%.

The most serious problem in the wood processing sector is the dependence on the domestic market, which is very limited and sensitive to economic fluctuations, resulting in considerable variations in the demand and price level. The logistics costs are high and the activity is relatively underdeveloped. In terms of logistics, data processing and transfer, efforts are being made to exploit the potential offered by information

technology and to develop and introduce various kinds of quality systems, as well as to improve the level of quality in both the operations and the products.

In the future, increasing emphasis will be placed on customer orientation and understanding the needs of customers, improving marketing skills and expanding the markets. This requires raising the skills level of employees, for example, to the level required for export as well as the introduction and development of modern production technology.

Brisk construction activity in Finland has kept the demand and production of timber products at a relatively high level, and in the near future the volume of orders and production are expected to continue their positive development. The domestic market is expected to maintain its dominant position with moderate growth in exports. In recent years, efforts have been made to increase the use of timber in Finland, which is expected to be reflected as an increase in the demand and production of timber products. Development projects are directed at, e.g., improving the image of timber in construction, searching for new uses and improving the degree of processing.

#### Metals, electronics and plastics industries

Industrial enterprises have been encouraged to move to rural areas through municipal measures, such as constructing industrial areas in municipalities. Another significant feature has been the creation of regional sector-based concentrations of enterprises, i.e. clusters. These include, for example, the metals industry in several municipalities in South Ostrobothnia and Varsinais-Suomi, the carpet industry in Ostrobothnia and the wood products and plastics industries in Päijät-Häme. A third feature that has arisen over recent years has been the establishment of small enterprises in old iron works and other industrial communities in rural areas. New types of skills clusters in design, handicraft and the information business are being created in this way in former manufacturing industry areas.

The metals industry is divided into the manufacturing of metal products and the manufacturing of machines and equipment. 41,300 people are employed in the metals industry throughout the country. The majority of both jobs and enterprises are in the provinces of Uusimaa, Pirkanmaa and Varsinais-Suomi. The manufacturing of metal industry products is a significant employer in Satakunta and south-eastern Finland, too.

The majority of jobs in machinery and equipment manufacturing are in Uusimaa, Varsinais-Suomi, Pirkanmaa and Häme. The sector is also a significant employer in Central Finland, Satakunta and Ostrobothnia. It is notable that industry dependent on traditional agriculture is also an important employer; for example, the manufacturing of agricultural machinery is a significant employer in Varsinais-Suomi.

The majority of enterprises that manufacture metal products, machinery and equipment are small enterprises employing less than five people. New enterprises have been established mainly to satisfy the increasing need for subcontracting in the metals industry. In small and medium-sized enterprises manufacturing metal products, subcontracting work accounts on average for over half of production. These enterprises are mainly located in southern Finland. A significant number of new enterprises manufacturing metal products have also been established in Ostrobothnia, South Ostrobothnia and Central Finland. The market for these enterprises rarely extends beyond the economic area, so the structure of the local business activity provides the basis for the profitability of the operations.

The electronics industry can be divided into contract manufacturing of electronics and the manufacture of electronic measuring and analysis equipment. The electronics industry needs regional skills clusters to be able to develop and grow, which is why enterprises in the electronics industry have concentrated in certain areas. There are electronics industry clusters in Uusimaa, Varsinais-Suomi (Turku-Salo) and North Ostrobothnia (the Oulu region).

Enterprises in the electronics industry employ a total of 120,000 people. The electronics industry is a major employer in Uusimaa, Varsinais-Suomi, North Ostrobothnia, Ostrobothnia and Central Finland. The majority of enterprises in the electronics sector are small; over half of them employ fewer than five people. The positive growth trend in production in the electronics industry is expected to continue in the near future.

Enterprises in the plastics sector are mainly located in southern Finland, although there is a relatively large number of enterprises in Ostrobothnia. The plastics industry is also a major employer in Uusimaa, Häme, Satakunta and North Karelia. The plastics industry is made up of over 680 enterprises employing nearly 13,000 people. Over 90% of the enterprises in the sector employ fewer than 50 people and nearly 70% are units employing fewer than 10 people. There were 11 enterprises employing a minimum of 250 people in 2003. The average turnover/unit in the sector was around EUR 2.75 million. Enterprises manufacturing other plastic products comprise over 370 units employing nearly 4,800 people.

### Private service sectors in rural areas

There were approximately 172,000 jobs in the private service sector in rural areas in 2001. The majority of jobs in the rural service sector are public. Private services and the jobs created continue to be highly concentrated in urban areas. The most concentrated services in these areas include knowledge-intensive business services and financial services, the least concentrated are the hotel and restaurant sectors.

The concentration of private service sectors in urban areas is problematic for rural business and employment policies. However, there is potential within the service sectors to expand to rural areas. Possible areas include especially rural and nature tourism, other services for leisure activities, developing private welfare and care services, and business services. Local services, such as shops, garages and kiosks, must adapt to developments in local markets.

Teleworking has been the anticipated solution for the viability of rural areas since the 1980s. In spite of individual examples and regional call centres being established, teleworking has not taken off with the speed that was expected. More interest in teleworking and advanced broadband connections would encourage greater uptake, but this is still being hampered by attitudes and organisational factors.

The greatest increase in rural areas has been in entrepreneurial activity regarding machinery and contracting services, often as a secondary occupation alongside farming and using farm machinery. The demand and supply of different contracting services increases in rural areas as the size of farms and specialisation increase. The diverse development in the bioenergy sector is also increasing the need for contracting services.

Services in the care sector are rapidly developing in rural areas and providing women with jobs that are in short supply. An ageing population increases the demand for homely care services for the elderly, but rural areas can, to an increasing extent, provide other care services to residents in populated and urban areas. Various recreational and leisure services in urban-adjacent rural areas, such as looking after horses, the provision of training and riding opportunities, have expanded very rapidly. The key to developing the service sector is the interaction between rural and urban areas.

### Rural tourism

Tourism, from a global perspective, is one of the fastest growing sectors. Given its potential, the development of the tourism industry is in its infancy in Finland. Finland's attractiveness in terms of travel is based on its rural nature, tranquillity, watercourses and forests. Reindeer herding and the Sami culture are important tourist attractions in Lapland. The importance of tourism as a rural livelihood has significantly increased over recent years. However, the number of full-time travel enterprises has increased slowly.

There were 3,607 small enterprises in sparsely populated rural areas providing accommodation, restaurant or recreational services in the Business Register of Statistics Finland in 2002, their turnover was EUR 435 million a year, and they employed around 5,700 people. Of these enterprises, 820 were actual tourism enterprises, such as those providing accommodation, and their total turnover was around EUR 111 million. The number of people employed in these enterprises totalled around 1,400 annual jobs (Agrifood Research Finland/Economics, Business Register). The rest of the enterprises were mainly restaurants, cafes, catering enterprises and enterprises providing recreational services, which provide services not only to local people but also to travellers, and they are, in terms of developing tourism, an important part of the rural service provision. There are also micro-enterprises in rural areas producing tourism services that are not in the register maintained by Statistics Finland. In the autumn of 2002, there were 2,165 such enterprises in the business register compiled by the working group on rural tourism of the Rural Policy Committee, which examined the number and capacity of these enterprises.

Of farms involved in secondary business activities, 2,047 farms offered tourism, accommodation or recreational services (Information Centre of the Ministry of Agriculture and Forestry, 2003). Business activity practised in the same taxation unit with farming is taxed according to the Act on the Taxation of Farm Income. Statistics Finland does not collect information on these types of business activities in its business statistics.

Accommodation is the most important offering of rural tourism, and it is also this sector's problem. The seasonal nature of holiday travel is still a problem, even though Finland would have every opportunity to exploit tourism all year round. The low occupancy rates of accommodation reduce the profitability of enterprises as large amounts of capital are invested in buildings. Enterprise-specific variations are large, since the best rural tourism enterprises have occupancy rates even higher than hotels.

The service provision of enterprises is developing rapidly and the fastest growing types of services include different types of activities and programmes, and conference, function and recreational services targeted at groups and enterprises. The organising of conferences, company events and family celebrations in urban-adjacent rural areas has made year-round entrepreneurship possible. Reindeer farm tourism and services for providing activities and programmes have increased especially in Lapland over recent years. However, the demand in rural areas is generally based only on holiday tourism.

Rural tourism enterprises are mainly family enterprises, which means services can be tailored flexibly in accordance with the customers' wishes. The small size of rural tourism enterprises is both a weakness and a strength, but what is required of entrepreneurs is not amateurish entrepreneurship but cooperation and networking skills to provide services for large groups of customers in an organised and financially profitable way. There is a large amount of underused capacity in rural tourism, which can be used to create new jobs without major new investments in buildings. By specialising and networking with other rural enterprises and other businesses in tourism, rural tourism enterprises can create their own opportunities for success, while simultaneously maintaining the high quality of their products. Quality management is an essential part of rural tourism. In the future, the most important factor for success in rural tourism will also be environmental responsibility, as customers' awareness of the environment continues to grow. Cooperation with larger enterprises will be important for succeeding in the sector in the future.

The rural infrastructure is declining all the time, which is a threat to the whole tourism sector. As agriculture reduces and people move away, basic services in rural areas, such as shops, postal services and public transport, are lost. All these services are necessary for rural tourism enterprises and their customers, as well. In addition, a good network of tracks facilitates hiking, horse trekking, cycling, canoeing, rowing and many other forms of outdoor activities, which can be made into successful tourism products for markets outside Finland.

One of the success factors for rural tourism is the efficient exploitation of rapidly developing information technology in marketing tourism. The part played by the Internet in tourism-related communication is not yet very significant, but its importance is growing all the time. Special groups, in particular, can be reached effectively using electronic media. New cooperation is also needed in marketing for the domestic market.

The visibility of services provided by small enterprises in tourism offerings in the domestic market and especially abroad is not possible without country-wide cooperation.

### 3.1.9 Strengths and weaknesses

Strengths and opportunities	Weaknesses and threats
<ul style="list-style-type: none"> <li>▪ pleasant, high-quality living and working environment</li> <li>▪ improvement of the state of the waters</li> <li>▪ emphasis on the environmental and landscape values of rural areas</li> <li>▪ forests are a valuable natural resource</li> <li>▪ the purity, safety and high quality of foods and consumer confidence</li> <li>▪ modern food production, quality thinking internalised in the whole chain</li> <li>▪ increased demand for bioenergy</li> <li>▪ positive entrepreneurial attitude and commitment to rural development</li> <li>▪ increased local voluntary activity</li> <li>▪ strong local culture</li> <li>▪ extensive expert and training system and good development skills</li> <li>▪ comprehensive communication networks</li> <li>▪ increasing interaction between rural and urban areas</li> </ul>	<ul style="list-style-type: none"> <li>▪ natural conditions restricting agriculture and fragmented farm structure</li> <li>▪ sparse population, distorted age structure, long distances</li> <li>▪ weak profitability of the food industry and SMEs</li> <li>▪ the environmental impact of agriculture and impacts of environmental protection measures are slow to show</li> <li>▪ limited employment opportunities especially in sparsely populated rural areas</li> <li>▪ limited exploitation of R&amp;D activity</li> <li>▪ complexity, unpredictability and bureaucratic nature of agricultural policy</li> <li>▪ capitalisation of support in prices and rent for arable land</li> <li>▪ weak development in productivity and capital intensity</li> <li>▪ payments account for large share of farmers' income</li> <li>▪ workload of farmers, entrepreneurs and development parties and the resulting exhaustion</li> </ul>

#### Exploiting strengths and opportunities

A pleasant environment, natural landscapes and well-managed cultural landscapes are factors that can be used to tempt new inhabitants, people with second homes, entrepreneurs and employees to rural areas and also to reduce the desire to move away from rural areas. Finns greatly value environmental and landscape values: farming creates and maintains the managed agricultural landscape and the historical, cultural and scenic values associated with it. The forests are a source of raw materials for wood processing and energy production. In addition, the forests give work for local entrepreneurs providing forest services and those who gather products from the natural environment, and they are an important recreational environment.

Farmers know their responsibility towards the rural environment and are widely committed to the agri-environment scheme. High production costs have been offset with technology in all production activity in agriculture and forestry. This has facilitated the work and reduced the need for labour. Quality thinking has been internalised in the entire food production chain. Consumers consider Finnish food to be of high quality and safe. The welfare of production animals is quite good, and consumers also believe this to be the case. Likewise, the plant and animal disease status is good. Replacing imported energy with renewable energy is the most important new opportunity for rural business. There is a positive attitude in rural areas towards entrepreneurship and a commitment to development work.

Civic activity and work by organisations together with a community spirit are the strengths of the Finnish rural areas. Village activity and action group work, for example, are an indication of this. Advisory organisations, regional business advice services, adult education centres, the numerous upper secondary level vocational institutions, a comprehensive university network, increasing rural research, and strength agricultural and forestry research provide a stable skills base for developing rural areas and a firm foundation to respond to the challenges of the changing operating environment. Regional differences manifest

themselves as local cultures, which can be exploited in many business projects. Finland has comprehensive communication networks, which helps in the introduction of technology, for example, in developing new types of services and in the decentralisation of work and production. Increasing interaction between rural and urban areas creates new opportunities for earning an income in rural areas, such as in the production of energy and locally produced food, as well as opportunities for strengthening skills and for producing and exploiting leisure and cultural experiences.

### Controlling weaknesses and threats

Finnish agriculture is characterised by northern climatic conditions resulting from its geographical location and a remote location compared to the core areas of the European market. The northern climate with its long, cold winters means high construction costs for production buildings, storage buildings and manure stores. New, innovative solutions for production methods and construction will be developed through the programme's measures to reduce both the need for construction and costs.

The number of jobs in primary production and the public sector will continue to decline in future and the population in rural areas will also decline. Primary production and public sector jobs can only be replaced with private sector jobs provided mainly by micro-enterprises.

The age structure is becoming distorted because the young are leaving after jobs. Measures that increase the number of jobs will provide young people with the opportunity to stay in/return to their home districts. Promoting migration to rural areas will also improve the age structure.

The disadvantages caused by long distances can be prevented, for example, with good communication networks and by investing in the efficiency of distribution networks. The drawbacks of long distances must be better taken into account in developing rural businesses.

An increase in productivity is a requirement for developing agriculture and the entire food sector. It requires the introduction of modern technology and skills, such as increasing cooperation between agriculture, industry, research, advisory services and training.

Farmers are very committed to measures that improve the state of the environment, and farming practices are more environmentally friendly. In some areas, structural changes in agriculture and regional specialisation have reduced biodiversity and, consequently, the number of threatened animal and plant species in agricultural environments has increased. Over the last decade, direct runoff from manure stores has been mainly stopped and the focus has turned to arable farming. At the same time, farming has reached a point where changes in loading happen slowly. The impact of the agri-environment scheme can currently be seen as a reduction in the volume of nutrients used and a decline in the increase of nutrient contents in arable land. The mid-term evaluation of the Horizontal Rural Development Programme observed that, in the long term, the agri-environmental support measures implemented during the first programming period will reduce the nitrogen and phosphorus load. The objectives of the programming period that ends in 2006 (a reduction of about 30% in the phosphorus load and of 40% in the nitrogen load) cannot be achieved quickly or without enhanced measures.

There has been investment in research into biodiversity in Finland over recent years. The results of research projects and evaluations and implementation experiences have been used in preparing the programming period 2007–2013 and in advising farmers. Similar research projects and evaluations will also be launched in beginning of this programming period, and their results will be used to further strengthen the existing agri-environment measures, as well as to develop new agri-environmental measures with regard to biodiversity during 2007–2013 programming period. Also, practical solutions, etc. for managing biodiversity at the farm level will be looked for. Further, financial allocation to biodiversity related agri-environmental measures will be increased during the programming period within the existing financial frame of the measure, if the currently envisaged financial allocations for biodiversity measures are proven insufficient.

The large volume of phosphorus in livestock manure causes major problems locally, because the spreading area located at a suitable distance is not sufficient considering the volume of manure produced. To solve the problems, it will be necessary to develop new ways of using manure, including biogas solutions, using manure for energy and processing methods, and to assess through research the usability of nutrients in manure. This will require channelling development resources into a separate research programme during 2008–2010.

As an industry, agriculture is heavily dependent on agricultural policy and on the rapid changes, complexity and bureaucratic nature of its objectives. As a result of the recent reforms to agricultural policy, the share of supports in farmers' incomes has dramatically increased. The price of arable land has continued to rise, which weakens the productivity of farms. Efforts must be made to steer agricultural production towards new production sectors where markets are not dependent, as they currently are, on international, extremely competitive food markets. The production of bioenergy, for example, has such opportunities.

The various rural actors, farmers, entrepreneurs and action groups involved with development measures together with project leaders often have a heavy workload. The programme's measures must create means for preventing burnout and for involving new people in development work, which, in turn, will strengthen civic society and its smooth functioning. The administrative practices linked to the programme must not be too bureaucratic, so that the programwork does not become too heavy for the practical actors.

### 3.2 The strategy chosen on the basis of strengths and weaknesses

The main objectives of Finland's rural development strategy are to preserve a viable and active countryside, improve the state of the environment and promote the sustainable use of renewable natural resources. To achieve this, the strategy needs to respond to the permanent challenge created by the northern and remote location and adverse climate, abundance of water bodies and low population density in respect of preserving and improving the viability of rural areas. The strategy aims to reinforce the position of Finnish countryside to keep up with the regional, national and international development as the globalisation proceeds.

The operations in Council Regulation (EC) No 1698/2005 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) (hereinafter EAFRD Regulation) are of vital importance for the whole country in safeguarding the operating environment of agriculture in Finland's northern conditions. Alongside agriculture, many rural businesses and jobs that are not dependent on a particular location are creating opportunities for keeping rural areas populated and viable in the future, as well.

To implement the strategy, the following three key areas together with their common principles have been specified and will be applied in the preparation and implementation of the programme:

1. *Agriculture and forestry are practised in a way that is economically and ecologically sustainable as well as ethically acceptable in all parts of the country:* Ensuring the preconditions for the operation and continuity of multifunctional agriculture in the northernmost country of Europe. Preserving the active and sustainable use of agricultural land with special attention to maintaining the open, cultivated rural landscape. Promotion of environmental protection in agriculture and forestry, biodiversity and welfare of production animals. Improvement of the structure and productivity of agricultural production by introducing new production technologies that compensate for work input and reduce production costs per unit. Improvement of productivity also by increasing the farmers' business skills. Production and processing of pure, high-quality products which meet the consumer expectations. Promoting the production and use of bioenergy.
2. *Action favouring and furthering the competitiveness of businesses, new enterprise and networking among entrepreneurs to diversify rural economies and improve employment:* Encouraging innovation in the development and introduction of production methods and processing of raw materials. Improving the opportunities of farmers to earn living from other rural industries. Improving the employment opportunities of especially women and young people. Contributing to the development of

basic services and the complementary private service sector both to take care of the ageing population and to attract new residents.

3. *Strengthening local initiatives to improve the viability and quality of life of the rural areas:* Activating rural residents to participate in the development of their own living environment through the local action groups whose work covers the whole of Finland and strengthening village action. Promoting cooperation between different actors through regional, national and international networks.

The following principles apply to all key areas: local initiative and action, cooperation and networking, equal opportunities for participation and economic activities for different population groups; human capacity and skills and utilisation of research information, innovation and introduction of good practices; sustainable development and especially environmental protection.

According to the Finland's Rural Development Strategy, the key areas are promoted in the programme by improving the competitiveness of agriculture and forestry (minimum of 11% of EAFRD contribution), by improving the environment and the countryside (maximum of 76% of EAFRD contribution) and by diversifying economic activities and improving the quality of life in rural areas (minimum of 11% of EAFRD contribution). The Leader approach is applied in all priority areas (at least 5% of the EAFRD contribution).

The preliminary financing plan (Section 6.2) in the programme allocates 12.1% of EAFRD funding to axis 1, 72,5% to axis 2, 13,9% to axis 3 and 5,7% to axis 4. Modulation funds is used by axis 2.

The strategy is supported by the following forms of nationally funded support, which are not included in the programme or are available in the programme as additional national financing:

- the majority of agricultural investments and a part of setting-up aid for young farmers;
- forestry investments;
- early retirement scheme (except for the programming period 1995–1999);
- agricultural and forestry advisory services, study grant for farmers and actions promoting the National Quality Strategy for the Food Sector;
- environment support for forestry, including subsidies for Natura 2000 forest areas, and forest nature management projects;
- additional national payment to natural handicap payments; and
- research and development projects linked to national rural policy.

As part of the regional preparation of the programme, every Employment and Economic Development Centre has drawn up a rural development plan for its own area, which will guide the strategic priorities and regional choices in order to take into account the regional problems of very different rural areas and to strengthen the development work for these areas. A summary of the special characteristics of regions and the priorities of regional rural development plans is given in Annex 4. As part of the selection procedure for Leader action groups, the local action groups have drawn up local development plans for their own area. A summary of the application procedure of the Leader action groups and preparation of the development plans at the local level is given in Annex 5. Regional and local rural development plans are linked to provincial development plans, which are part of Finland's regional policy system.

The differences between the regions and actors and their strengths, opportunities, weaknesses and threats, together with the resulting objectives, are taken into account when selecting rural development measures and allocating resources to ensure balanced regional development. Development in sparsely populated rural areas and rural heartland areas is also supported through financial priorities in the programme. In addition, in eastern and northern Finland, where the rural development challenges are the greatest, there is more funding under the European Regional Development Fund (ERDF) and European Social Fund (ESF) available than in other regions, which also supports the development work in rural areas.



### 3.3 Ex-ante evaluation

The programme's ex-ante evaluation aimed to assess the appropriateness of the Community's strategic guidelines and the national rural development strategy and the programme drawn up in accordance with EU regulations in meeting current rural development needs. Particular attention was paid to ensuring that the key areas and the different actions and goals of the programme were defined sufficiently well. However, the most important focus of the evaluation was the feasibility of the programme, i.e. how well the programme's aims and methods would be able to attain the state of the rural areas defined in the national strategy and programme. For the ex-ante evaluation, an estimate of the available EAFRD contribution and the public contribution was made on 1 February 2006 on the basis of the financial perspective agreed by the European Council on 17 December 2005. An estimate of the percentage allocation of these contributions and the level of cofinancing by programme axis was also made. As a whole, the estimate gave a sufficient idea of how the public funding would be allocated between the axes. The relevance and importance of the indicators used in terms of implementing and monitoring the programme were assessed in the ex-ante evaluation. At the same time, the possibility of introducing new indicators for monitoring the implementation of the programme was examined. The aim of the programme's ex-ante evaluation was to improve the preparation and implementation of the programme, together with its quality, efficiency and effectiveness. The ex-ante evaluation was an interactive process between the evaluation group and those preparing the programming.

The ex-ante evaluation was arranged through an open competition. The Ministry of Agriculture and Forestry published the call for tenders for the ex-ante evaluation in May 2005. Five tenders were received for the ex-ante evaluation by the agreed date and one additional late tender. The most economically advantageous tender was chosen in accordance with the evaluation criteria. The Ministry of Agriculture and Forestry chose the tender coordinated by the University of Helsinki's Ruralia Institute for the ex-ante evaluation. The tender was submitted in conjunction with the Economics Research Department of Agrifood Research Finland, the Pellervo Economic Research Institute (PTT) and the Department of Applied Biology of the University of Helsinki. The Ministry of Agriculture and Forestry appointed a steering committee for the ex-ante evaluation to guide, monitor and support the implementation of the evaluation. The steering committee had representatives from the Ministry of Agriculture and Forestry, the Ministry of the Environment, the regional Employment and Economic Development Centre and from organisations representing agricultural producers. The mid-term report of the ex-ante evaluation was submitted to the steering committee in December 2005, and the final report in March 2006.

Directive 2001/42/EC of the European Parliament and of the Council on the assessment of the effects of certain plans and programmes on the environment (the so-called SEA Directive, Special Environmental Assessment) has been implemented in Finland by the Act on the Environmental Impact Assessment of Authorities' Plans and Programmes (200/2005; hereinafter the IAPP Act).

On 14 December 2005, the persons in charge of preparing the programme took part in the seminar arranged by the Ministry of the Environment on the environmental impact assessment under the IAPP Act. The environmental impact assessment was carried out as part of the ex-ante evaluation. Before starting their work, the persons in charge of preparing the programme in the Ministry of Agriculture and Forestry and the ex-ante evaluators arranged a consultation with the representatives of the Ministry of the Environment on 16 February 2006. They discussed the requirements of the IAPP Act and examples of how the environmental impact assessment had been carried out in various plans and programmes.

A consultation on the environmental impact assessment of the programme for was held on 17 March 2006. Environmental authorities were consulted on the extent and level of detail of the information provided in the environmental impact assessment. In this consultation, environmental authorities were represented by the representatives of the Ministry of the Environment, Regional Environment Centres and the Finnish Environment Institute. A memo was drafted on the consultation, which included the most important issues and opinions that were raised in the consultation.

The environmental impact assessment as part of the ex-ante evaluation, together with the draft programme, was available for comment on the Internet for 30 days in accordance with section 9 of the IAPP Act.

The ex-ante evaluation also included an assessment of the impact of the programme's preparation and content on equality. Equality means equality between men and women as well as between different age groups.

The ex-ante evaluation is included in Annex 6.

### **3.4 Impacts of the previous programming periods and other information**

Rural areas were successfully developed during Finland's first programming period 1995–1999 through seven different Structural Fund programmes, in addition to the common agricultural policy and its accompanying measures. Development based on programmes was new to all concerned, but in spite of this, the implementation of the programmes was quite successful and they achieved the expected results.

In Finland, during the programming period 2000–2006, the rural development measures that were carried out in projects co-financed by the European Agricultural Guidance and Guarantee Fund (EAGGF) were agri-environmental support and compensatory allowances in the Horizontal Rural Development Programme and measures for developing rural areas, such as diversifying business activity, developing villages and improving basic services in rural areas, contained in the Objective 1 programmes for North and East Finland and the Regional Rural Development Programme (RRDP). Structural development measures in agriculture were also supported, which included, for example, aid for investment and aid for young farmers. Local rural development projects have been funded by the Leader+ Community Initiative Programme and implemented by local action groups, comprising inhabitants of rural areas, local associations and representatives from municipalities. The Leader approach was mainstreamed in Finland during the programming period 2000–2006 in the RRDP, Objective 1 and nationally funded POMO+ programme. On the basis of evaluations of the first (1995–1999) and second programming period (2000–2006), the key strategic areas and selected measures have been judged to be successful.

The Community agricultural and rural development policies are complemented by national agricultural aid schemes, which aim to safeguard the operating conditions of Finnish agriculture in different production sectors and regions, develop the structure of agricultural production and promote the preservation of a viable countryside and good living environments. The most important national schemes are the national aid for agriculture and horticulture, structural aid and early retirement schemes.

Investment aid in agriculture has been one of the key structural policy instruments in Finland, with a crucial impact on the continuity of agriculture based on family farms. Investment aid has allowed, particularly for young entrepreneurs, access to the capital required in setting up on a farm and developing the farm. Investment aid has been used on Finnish farms to construct progressive family farm-scale production buildings which, according to research findings, would have been too unprofitable to build without investment aid. Investment aid has had a key role in helping family farms on a growth track and out of the low productivity trap caused by their small size. With the help of new investments, it has been possible to maintain a satisfactory productivity growth on farms, in spite of their small average size, and thus uphold the competitive position of Finnish agriculture on the EU common market.

The co-financed rural development policy of the programming period 2000–2006 has been complemented by the POMO+ programme and the Rural Development Programme for Southern and Western Finland (ELMA) both financed through national funds. The POMO+ programme complemented local rural development work with those local action groups that were not involved in rural development work undertaken through other programmes. The ELMA programme that continued the work of the co-financed ALMA programme particularly ensured the financing of business aid outside the Objective 1 areas also in 2006 during the switch to the new programming period.

Most of the funding intended for rural development has been allocated to area-based payments to farmers due to the importance of agri-environment payments and natural handicap payments. Natural handicap

payments have been important for maintaining agricultural production throughout the country for farmers who practise farming in unfavourable conditions and who take environmental aspects into consideration as well as maintain the rural landscape, and similarly for safeguarding a basic income for farmers. The environmental impacts of agriculture are significant and an attempt has been made to significantly minimise these through agri-environment payments.

The impacts of compensatory allowances and agri-environmental support were assessed in the mid-term report, completed in 2003, on the Horizontal Rural Development Programme. According to the evaluation, compensatory allowances have formed a significant part of farmers' income and have partly enabled a total level of income for the farming population throughout most of the country that corresponds to the average for the region's reference groups. Compensatory allowances have also meant that, despite the low level of agricultural income and profitability, nearly the entire area of agricultural land has remained in cultivation. The comprehensive nature of the compensatory allowance scheme has resulted in compliance with usual good farming practices, which are a prerequisite of the scheme, becoming established and in concepts of usual good farming practices becoming more consistent.

Agri-environmental measures have been able to establish a basic level for reducing fertilisation that applies to nearly all farmers. The impact of agri-environmental support can currently be seen as a reduction in the volume of nutrients used and a decline in the increase of nutrient concentrations in arable land. The number of headlands and filter strips has increased, and the significance of the agri-environmental measure in establishing riparian zones has been very great indeed. The aim of the agri-environmental measure has been to raise plant cover outside the growing period, but there has been no increase in the cultivation of perennial crops. Southern Finland, in particular, would need an increase in actual plant cover in winter, for example with the help of grass and green set-asides. Farmers have become more aware of pesticides and their impacts on the environment. Farmers now take the environmental restrictions of these products and the obligation to follow them better into account. Nevertheless, the past few years have seen an increase particularly in the use of herbicides. Reasons include the spread of reduced tilling, an increase in headlands and filter strips, and a reduction in grass areas. During the past ten years, the agri-environmental measure, environmental regulations in agriculture and a general increase in environmental awareness have clearly reduced the risk of groundwater pollution by nutrients, microbes and chemical pesticides. Currently, the agri-environmental scheme and the measures on farms do not adequately reflect differences between areas and farms. Particularly southern Finland and the coastal zone should be more efficiently targeted by measures with water protection as the primary aim, because the state of the waters affected by agricultural loads has not improved despite the reduced loading potential of arable land. However, the agri-environmental scheme in the programming period 2000–2006 has not in itself been the solution for safeguarding biodiversity in rural areas or for reducing the agricultural nutrient load, especially to the extent required by the goals in the Programme for the Protection of the Baltic Sea. In order to develop the measures, monitoring studies on the agri-environment measures (the so-called MYTVAS and MYTVANA studies) were launched, the results of which were used in the preparation of the agri-environment measures for 2007–2013.

During the programming period 2000–2006, promoting the welfare of production animals was an additional agri-environmental measure for livestock farms in the Horizontal Rural Development Programme. The aim of this measure was to promote the care of livestock according to the breed and to raise farmers' awareness of factors affecting animal welfare. Support for organic livestock production was introduced as a special agri-environmental measure in 2005.

According to the mid-term evaluations of regional rural development programmes in the programming period 2000–2006, the programmes have had a significant impact on maintaining the viability of rural areas. The programmes' investment aids have had an impact on developing business activity, increasing turnover, creating jobs and reorienting farm activities as well as on other business activities. The farm-related business aid and development operations in the RRDP and Objective 1 programmes have achieved good results in terms of employment, as they have helped support a slowing down in the negative population and employment trends in the areas concerned and even reverse these trends. However, the evaluations stated that the programmes' measures can only have a limited impact on general economic and population trends.

In addition to impacts on employment and the population, measures that have an impact on strengthening skills and networking are particularly important for rural areas. According to the evaluations, projects funded by the programmes have promoted the setting up of clusters and networks, increased cooperation between educational institutions, research institutes and enterprises, created human capital and skills for the benefit of enterprises and improved the position of enterprises in networks and their use of networks. These factors have strengthened people's opportunities for safeguarding their own careers, for developing within a profession or for finding a new job. Strengthening skills has also ensured the potential for creating new jobs, starting up new enterprises and diversifying rural activities. According to the evaluations, measures should, however, be more directed towards the opportunities created by internationalisation. Improving strategic considerations, programming and project activity should be mentioned separately in developing skills, as this has strengthened and improved the quality of development measures.

Action group activities have proven to be a suitable and efficient development tool for the Finnish rural areas. This way of working has carved out a niche for itself in developing rural areas, and the input of action groups has been felt to benefit the target areas in many ways. According to the evaluations, the implementation of the Leader+ programme contains examples of all the special Leader characteristics: local orientation, a bottom-up principle, local partnerships, a pilot nature, an integrated strategy, networking and different types of cooperation, including international cooperation. The special Leader+ characteristics distinguish the programme from other programmes. The characteristics best implemented in Finland are the bottom-up principle, networking and local partnership in decision-making, in line with the principle of tripartition. Of the special characteristics, the pilot nature has been the least concrete and most difficult parameter to measure during the programming period.

Many evaluations have observed that, in relation to strengthening skills in rural areas and improving innovation, action groups have some valuable characteristics: people trust them and they are considered to be equal development partners, i.e. they are a central part of the social capital in their territory. Leader activities have clearly improved the identity of regions, people's commitment to the region and their confidence in its future. The Leader+ programme can be said to have created social capital at different levels within local rural communities (e.g. the village level) and between development parties (action groups, other associations and different authorities). The latter is evident in particular in smoother cooperation, increased trust and pulling together, both locally and regionally. Socially and culturally sustainable development is an important sustainability dimension of the Leader+ programme. Numerous Leader+ projects promoting ecological sustainability have also been implemented by action groups, for example those relating to recycling and environmental education. There are only a few projects in the Leader+ programme in which environmental sustainability is a critical factor. As a whole, the Leader programme clearly has a positive impact on sustainable development, especially as a result of measures promoting socially and culturally sustainable development.

The impact on equality of the programmes has also been examined separately in the evaluations. The programmes' measures have been found in the main to be gender neutral, i.e. they have not been observed to contain any gender-specific aspects. In spite of the equal opportunities for taking part in project activity, there are differences, however, in each programme. The Leader+ programme spent most funding on measures aimed at women. The RRDP programme did not contain these types of specific measures aimed at women at all and funding directed at women in the Objective 1 programmes has been very limited. According to information from the monitoring system, projects for women have, nevertheless, been implemented in practice and improvements in the position and employment of women have been achieved. The Leader+ programme has been strongest in this regard, but other programmes have succeeded relatively well in focusing their activities on women.

However, the evaluations of the programmes have found that regional rural development operations have been left mainly to the European Agricultural Guidance and Guarantee Fund (EAGGF), especially in southern and western Finland. The attempt to promote rural development through other Structural Funds has not had the expected results, and national and regional authorities and local action groups must pay attention to this during the programming period 2007–2013 in their own negotiations on cooperation and in preparing and implementing programmes.