1 FOREST RESOURCES, FOREST HEALTH AND VITALITY

FORESTS IN EUROPE ARE EXPANDING SINCE 1990

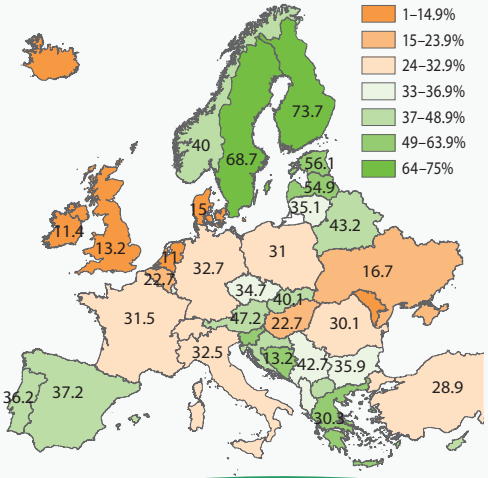
In **FOREST EUROPE** countries, the forest area has been expanding since 1990 and account in 2020 to 227.4 million ha – a result of afforestation and natural forest expansion. Over 34.8% of FOREST EUROPE's land area is forested.

In the **EU-28**, the forest area has been expanding since 1990 from 147.9 million ha to 161.4 million ha in 2020.

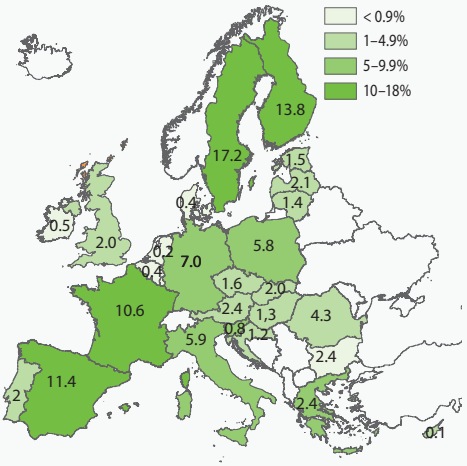
In **Finland**, forests according to the international forest definition, cover 22.8 million hectares (73.7% of land area) in 2020, representing 13.8% of the forest area in the EU-28. Finland's forest area has grown by more than 500 000 ha over the last 30 years.

Footnote: The FOREST EUROPE forest definition incudes the Finnish productive forest land, most of the poorly productive land and forestry roads. For trends only countries that have provided data for all periods are included.

Forest area share of total land area, by country in 2020



Share in percent of total EU-28 forest area, by country in 2020



GROWING STOCK IN EUROPE HAS INCREASED SINCE 1990

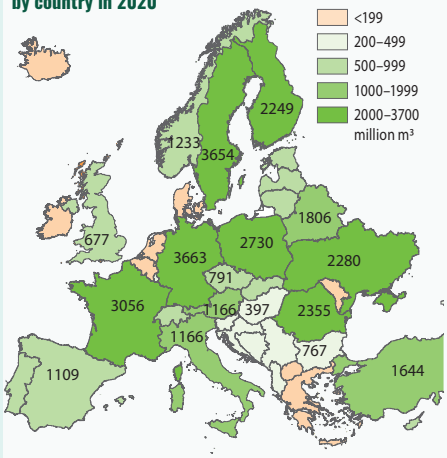
In **FOREST EUROPE** countries, the total growing stock of forests has increased since 1990, and accounted in 2020 to 34 983 million m^3, of which 84% is available for wood supply. The average growing stock accounted to 129m^3/ha in 1990 and 169m^3/ha in 2020.

In the **EU-28**, the total growing stock volume has been expanding since 1990 and accounted to 26 470 million m^3, in 2020 of which 88% was available for wood supply. The average growing stock accounted to 182m^3/ha in 2020.

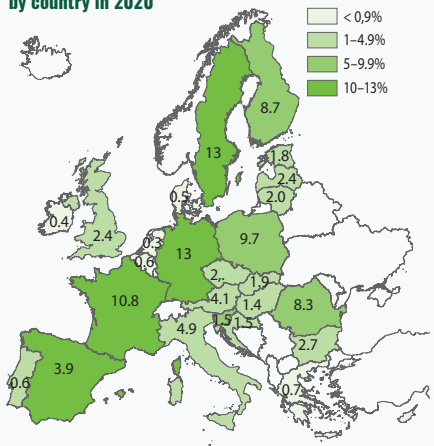
In **Finland**, the volume of growing stock has increased from 1 878 million m^3 in 1990 to 2 449 million m^3 in 2020. The average growing stock accounted to 86m^3/ha in 1990 and is according to latest estimations 109m^3/ha.

Footnote: For trends only countries are included that have provided data for all periods.

Growing stock (million m^3) on forests, by country in 2020



Share in percent of total EU-28 growing stock, by country in 2020



CARBON STOCK IN FORESTS IN EUROPE HAS INCREASED SINCE 1990

In **FOREST EUROPE** countries, the total carbon stock of forest biomass (above and below ground) account in 2020 to 13 240 million tonnes which equals to 64 tonnes/ha.

In the **EU 28,** the total carbon stock of forest biomass (above and below ground) account in 2020 to 9 802 million tonnes which equals to 67.4 tonnes/ha.

In **Finland**, the total carbon stock of forest biomass (above and below ground) increased over last 30 years from 633 million tonnes to 863.6 million tonnes in 2020. The annual net sink of forests varies annually mainly due to harvesting. Recently the forest sink has covered about 50% of the Finland's total emissions excluding the emissions and removals of land use and forestry.

FOREST DAMAGES

In **FOREST EUROPE** countries, damages (biotic, abiotic or human induced) are region-specific. Most of the damages in 2015 have been caused by storm, wind and snow (1.76 million ha), by insects and diseases (1.68 million ha), wildlife and grazing (948 400 ha), and fires (161 000 ha). Most recent data and information on development of disturbances in forests (insect outbreaks and storms) since 2015 have not been collected.

Footnote: Forest damage data are poorly harmonized. UNECE and FOREST EUROPE countries have started a joint project to improve the data for the next reporting cycle. For trends only countries that have provided data for all periods are included.

Authors: Markus Lier, Kari T. Korhonen, Luonnonvarakeskus.
Source: FOREST EUROPE, 2020: State of Europe's Forests 2020.

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2 PRODUCTIVE FUNCTION OF FORESTS

ANNUAL INCREMENT OF GROWING STOCK IS HIGHER THAN HARVESTS

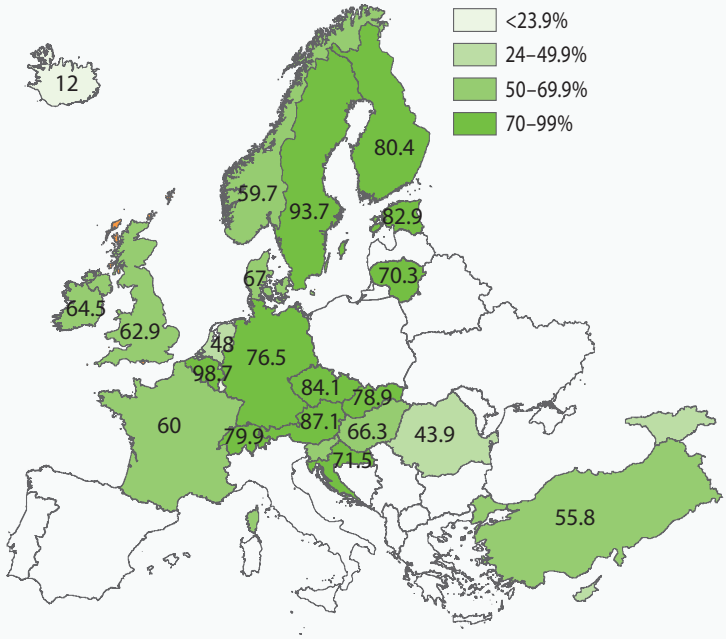
In **FOREST EUROPE** countries, the net annual increment has been increasing since 1990 by 25%, at the same time also the cuttings have increased, but at lower rate. Thus, the volume of growing stock and carbon storage in forests have increased. In 2015, about 73% of the net annual increment were cut.

In the **EU-28**, about 75% of the net annual increment were harvested in 2015.

In **Finland**, the net annual increment of growing stock was 96 million m³ in 2015. About 77 million m³ or 80% of the net annual increment were harvested in 2015. The sustained yield of Finnish forests is estimated as 81 million m³ per year for the years 2016 to 2025.

Footnote: The FOREST EUROPE reporting uses the Net Annual Increment (Gross Annual Increment minus Natural Losses) concept. In the Finnish national statistics, the Gross Annual Increment concept is used. For trends only countries that have provided data for all periods are included.

Fellings as percent of net annual increment (%), by country in 2015



ROUNDWOOD PRODUCTION INCREASED SINCE 1990 and NON-WOOD FOREST GOODS AND SERVICES HAVE GAINED IMPORTANCE SINCE 1990

In **FOREST EUROPE** countries, the level of roundwood production increased since 1990 and accounted to 542 million m³ in 2015 with a marketed value of 20 533 million EUR.

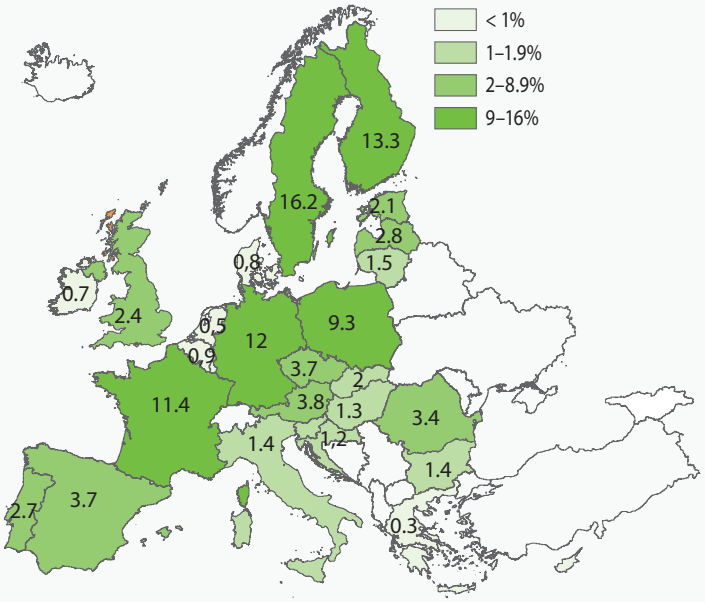
In the **EU-28**, the level of roundwood production increased since 1990 and accounted to 449 million m³ in 2015 with a marketed value of 19 107 million EUR.

In **Finland**, the level of roundwood production increased from 43 million m³ in 1990 to 59 million m³ in 2015.

The reported value of non-wood forest goods (wild berries, Christmas trees, wild mushrooms, lichen and moss, and medicine and aromatic plants) was in the FOREST EUROPE area about 2 802 million EUR. The reported value does not include products collected for own use. Other services like hunting and fishing were estimated in the FOREST EUROPE area to 1 201 million EUR in 2015.

Footnote: For trends only countries that have provided data for all periods are included.

Share in percent of total EU-28 quantity of total roundwood removals, by country in 2015



Authors: Markus Lier, Kari T. Korhonen, Luonnonvarakeskus.
Source: FOREST EUROPE, 2020: State of Europe's Forests 2020.

3 FOREST BIODIVERSITY

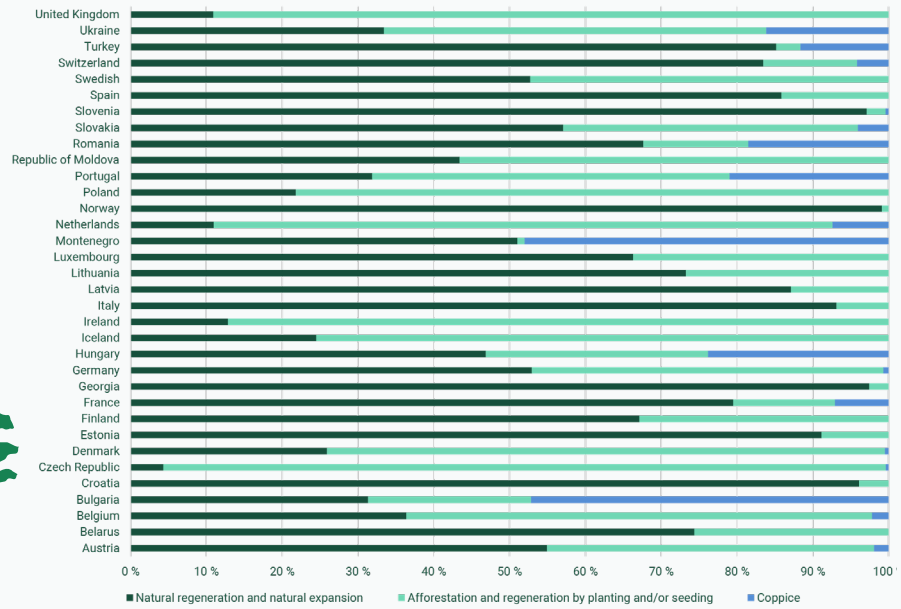
TWO-THIRDS OF FOREST AREA ARE NATURAL REGENERATED

In **FOREST EUROPE** countries, naturally regenerated and natural expanded forests cover 142.7 million ha (66% of forest area), afforestation and regeneration by planting or direct seeding cover 62.3 million ha (29% of forest area), and coppice 10.4 million ha (5% of forest area) in 2015.

In the **EU-28**, naturally regenerated and natural expanded forests cover 98.2 million ha (62% of forest area), afforestation and regeneration by planting direct seeding cover 53.9 million ha (34% of forest area), and coppice 5.9 million ha (4% of forest area) in 2015.

In **Finland**, the area of naturally regenerated and natural expanded forests cover 15 million ha and afforestation and regeneration by planting direct seeding cover 7.3 million ha in 2015.

Forest area by stand of origin, by country in 2015



SHARE OF FOREST UNDISTURBED BY MAN

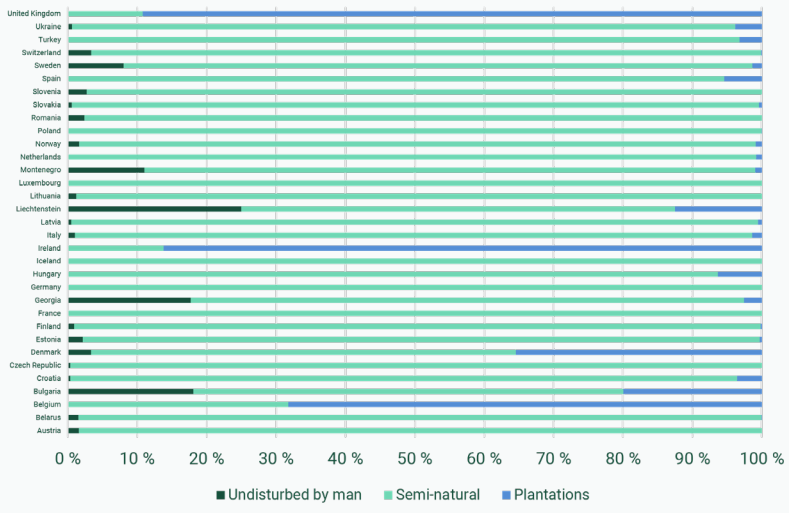
In **FOREST EUROPE** countries, the area of forests undisturbed by man account in 2020 to 4.7 million ha (or 2.2%), semi-natural to 199.6 million ha (or 94%) and plantations to 8 million ha (or 3.8%).

In the **EU-28**, forests undisturbed by man account in 2020 to 3.6 million ha (or 2.4%), semi-natural to 144,1 million ha (or 93.2%) and plantations to 6.8 million ha (or 4.4%).

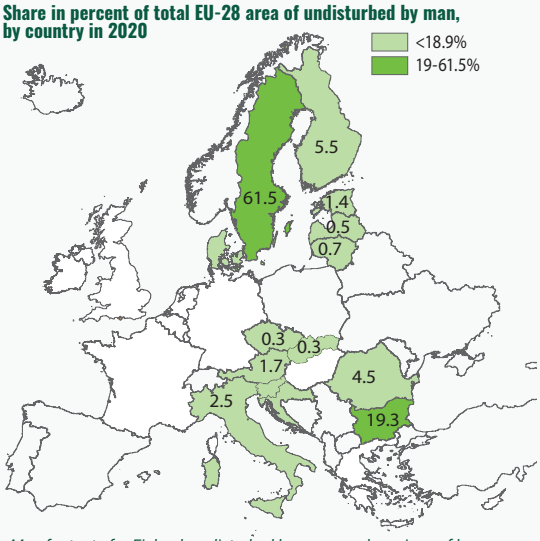
In **Finland**, forests undisturbed by man account in 2020 to 203 thousand ha, semi-natural to about 22 million ha, and plantations to 33 thousand ha.

Thresholds that are used to define forests undisturbed by man vary between the reported countries.

Forest area by classes of naturalness, by country in 2020



Share in percent of total EU-28 area of undisturbed by man, by country in 2020



Map footnote for Finland: undisturbed by man: no clear signs of human activity, at least 160 (South Finland) or 200 (North) year age, part of protected area.

Authors: Markus Lier, Kari T. Korhonen, Luonnonvarakeskus. Source: FOREST EUROPE, 2020: State of Europe's Forests 2020.

3 FOREST BIODIVERSITY

SHARE OF DEADWOOD HAS INCREASED

In **FOREST EUROPE** countries, the amount of standing and lying deadwood has increased between 1990 and 2015 from 7.7 m³/ha to 10 m³/ha.

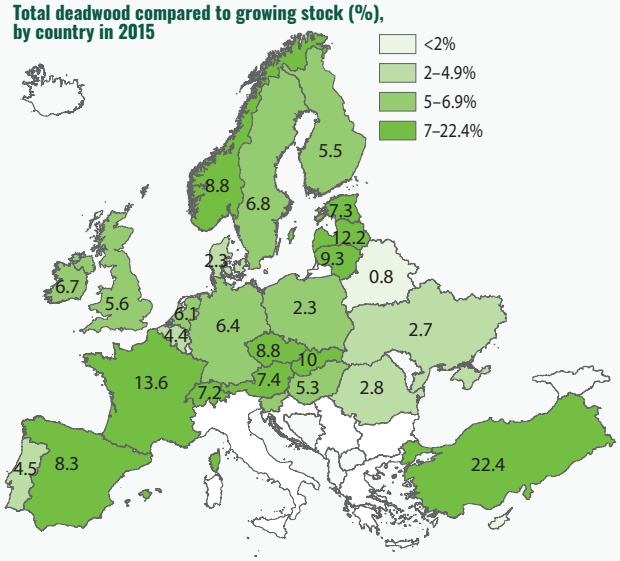
In the **EU-28**, the amount of standing and lying deadwood has increased between 1990 and 2015 from 8.1 m³/ha to 11.8 m³/ha.

In **Finland**, the amount of standing and lying deadwood has increased between 2000 and 2015 from 5.6 m³/ha to 6 m³/ha.

The total deadwood compared to growing stock was in 2015 in the **FOREST EUROPE** area 7.1%, in the **EU-28** 6.9%, and in **Finland** 5.5%.

Footnote: For trends only countries that have provided data for all periods are included.

Total deadwood compared to growing stock (%), by country in 2015



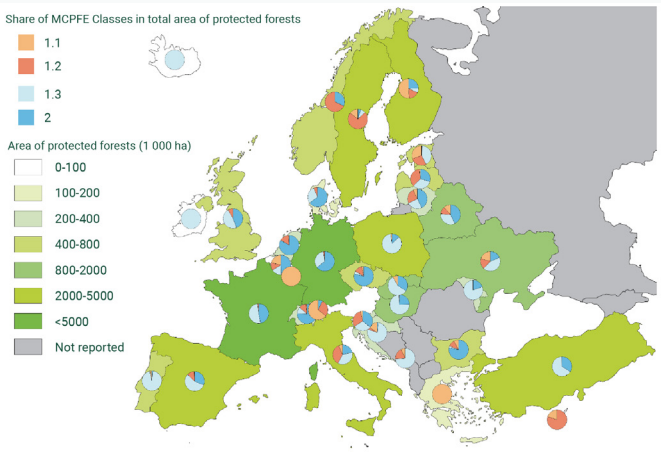
SHARE OF PROTECTED FORESTS ABOUT 24% OF FOREST AREA

In **FOREST EUROPE** countries, the area of forests protected for biodiversity and landscape has increased between 2000 and 2020 by 418 thousand ha/year, and account in 2015 to 49.3 million ha or 23.6% of the forest area. About 31.2 million ha of forests or 15% of the forest area are protected with the main objective of *protecting biodiversity*, and about 18.2 million ha are aimed at the *protection of landscapes and specific natural elements*.

In the **EU-28**, forests protected for biodiversity and landscape account in 2015 to 40.4 million ha. About 25.1 million ha of forests are protected with the main objective of *protecting biodiversity*, and about 15.2 million ha aim at the protection of landscapes and specific natural elements.

In **Finland**, forests protected for biodiversity and landscape account in 2015 to 3.7 million ha or 16% of forest area, of which 2.8 million ha of forests (or 12.6% of forest area) were protected with the main objective of *protecting biodiversity*, and 922 thousand ha aimed at the *protection of landscapes and specific natural elements*.

Area of protected forests and the share of MCPFE Classes, by country in 2015



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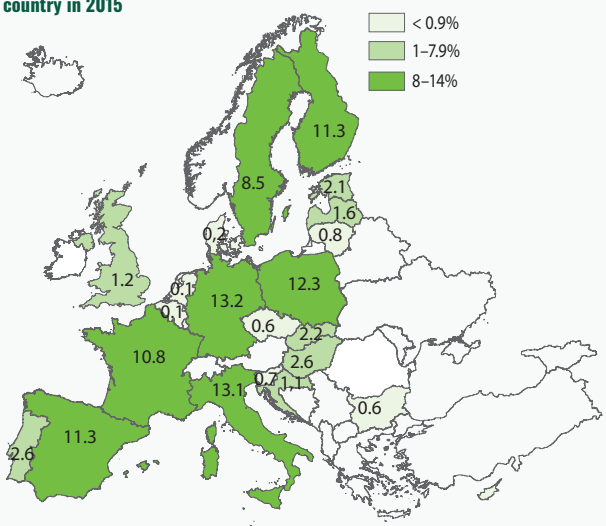
Share in percent of total EU-28 forests protected for biodiversity (MCPFE 1.1-1.3), by country in 2015



Footnote: Map footnote for Finland: Class 1.1 No active intervention: Includes nature reserves, protected old-growth forests, and other protected forests where forestry operations are prohibited in forests owned by Metsähallitus, excluding national parks. 1.2 Minimum intervention: National parks, forest protected with the decision of Metsähallitus, other protected forests. 1.3 Conservation trough active management: Other legally protected forests where operations are possible to maintain the natural elements, other protected forests (with owners decision or land use planning) where forestry operations are prohibited). 2 Management objective: Protection of Landscapes and Specific Natural Elements.
For trends only countries that have provided data for all periods are included.

Authors: Markus Lier, Kari T. Korhonen, Luonnonvarakeskus. Source: FOREST EUROPE, 2020: State of Europe's Forests 2020.

4 SOCIO-ECONOMIC FUNCTIONS OF FORESTS

PRIVATE FOREST OWNERSHIP HAS INCREASED

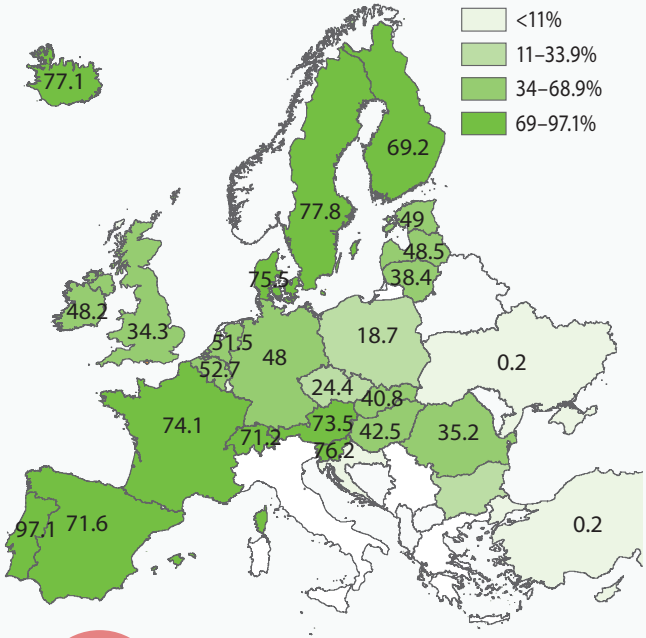
In **FOREST EUROPE** countries, the share of private forest ownership has increased between 1990 and 2015 by 22%, and account in 2015 to 89.9 million ha. Public forests were in 2015 103 million ha.

In the **EU-28**, the share of private forest ownership account in 2015 to 87.8 million ha. Public forests accounted in 2015 to 56.9 million ha.

In **Finland**, in 2015 about 15.4 million ha of forests are in private ownership, and about 6.8 million ha in public ownership. Forests ownership has been more or less stable since 1990.

Footnote: For trends only countries that have provided data for all periods are included.

Share of private forest ownership in percent, by country in 2015



FOREST SECTOR AND THE CONTRIBUTION TO GDP AND TO EMPLOYMENT

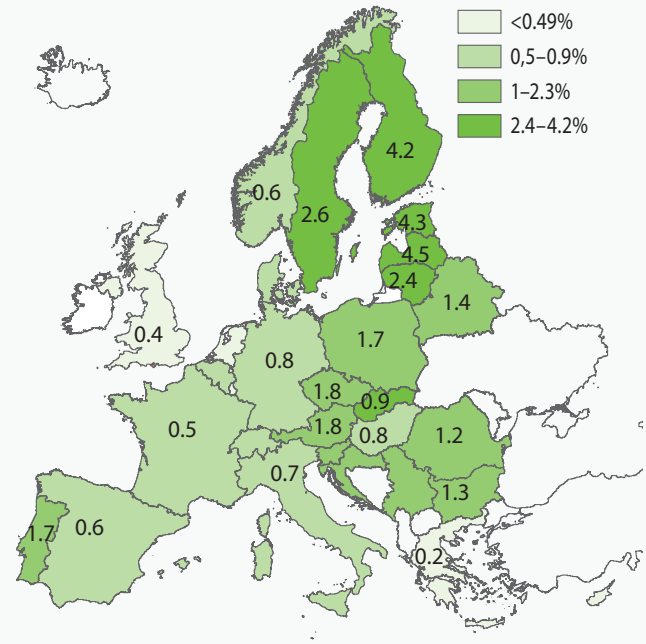
In **FOREST EUROPE** countries, the forest sector (forestry and manufacturing of wood and paper products) contributed 0.7%, and in the EU-28 to 0.8% to the GDP in 2015.

In **Finland**, the forest sector (forestry and manufacturing of wood and paper products) contributed 4.2% to the GDP in 2015.

In **FOREST EUROPE** countries, the employment in the forest sector decreased between 2000 and 2015 by 33% and was 2.6 million people in 2015.

In **Finland**, the employment in the forest sector accounted to 124 thousand people in 1990 and to 64 thousand people in 2015.

Contribution of forest sector to GDP in percent, by country in 2015



Authors: Markus Lier, Kari T. Korhonen, Luonnonvarakeskus.
Source: FOREST EUROPE, 2020: State of Europe's Forests 2020.

5 MAIN TRENDS FOR FINLAND

FOREST EUROPE indicator name	Unit	1990	2000	2010	Recent
Forest area as proportion of total land area	%	72.0	73.9	73.2	73.7*
Forest area annual net change rate	%	n/a	0.26	-0.09	0.08*
Growing stock	miillion m³ o.b.	1 881	2 085	2 343	2 449
Growing stock per ha	m³	86	93	105	109*
Annual average change in above ground biomass stock in forest	%	n/a	1.2	0.9	1.2*
Carbon stock in harvested wood products	million tonnes	72	85	94	97
Proportion of forest area with damage	%	n/a	n/a	0.2	0.1
Fellings as % of net annual increment on forest available for wood supply	%	68.6	81.1	68.5	80.4
Total industrial roundwood removals	1 000 m³	43 230	54 262	50 952	63 279
Natural regeneration or natural expansion	1 000 ha	17 748	17 346	15 334	15 040
Plantations	1 000 ha	4 149	5 112	6 908	7 368
Area of forest undisturbed by man	1 000 ha	n/a	n/a	234	203
Dead wood	m³/ha	n/a	5.6	5.8	6
Proportion of forest and other wooded land included in MCPFE Classes 1 and 2 - forests protected for biodiversity	%	n/a	13.2	18.8	18.3
Proportion of forest and other wooded land included in MCPFE Class 3- protection forests	%	n/a	3.1	0.9	1.1
Employment in forest sector: forestry, wood processing, pulp and paper (ISIC/NACE 02. 16. 17)	1 000 persons	124	93	69	64
Energy supply from wood as % of total primary energy supply (2007, 2009, 2011 ja 2015)	%	25.1	22.2	25.8	29.3
Source: National reply to pan-European enquiries (quantitative and qualitative indicators) "Most recent" data are data for the year 2015 or forecasts for the year 2020 (marked with "*"), prepared in 2019, unless otherwise indicated.					

Source: FOREST EUROPE, 2020: State of Europe's Forests 2020.