

Criterion 3: Maintenance and Encouragement of Productive Functions of Forests (Wood and Non-Wood)

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Balancing net annual increment and annual fellings is important for the sustainability of the production of wood as a renewable raw material. This balance maintains an adequate growing stock and forest environment necessary for the provision of a range of ecosystem services and non-wood products.

Key messages

- More wood grows in European forests than is harvested. Therefore, Europe's forests continuously accumulate growing stock and provide a sustainable supply of wood.
- In some countries, the proportion of salvage cuttings to total fellings has increased.
- With over EUR 20 000 million (reference year 2015), roundwood represents substantial market value.
- The quantity and market value of non-wood goods is constantly increasing but remains far below the market value of wood production.
- The market value of plant non-wood products (e.g. Christmas trees) is about twice as high as that of animal products (e.g. wild meat and honey)
- The value of ecosystem services provided by European forests is underestimated. Only part of them is marketed, although their value could be significant if markets are developed on a larger scale.
- Policy achievements comprise increased motivation of forest owners to make more effective use of their forests and ensuring timber supply for the bioeconomy, as well as increased recognition of non-wood forest products and services. Innovations in wood-based products are contributing to increased use of timber. Three quarters of forests are under forest management plans, with over half the forest area certified by a third party certification scheme. Low economic performance of the forestry sector is seen as one of the challenges, next to a lack of entrepreneurial and innovative thinking, increasing competition for forest resources and their services, and untapped potential for the valuation of ecosystem services.

Indicator 3.1 Increment and fellings

Balance between net annual increment and annual fellings of wood on forest available for wood supply

Key findings

- In European forests, every year more wood grows than is harvested. About 73% of the net annual increment is utilised by fellings.
- The wood increment is higher than in earlier periods. Since 1990 it has increased by approximately 25%. Similarly, the volume of timber harvested has increased steadily since 1990. As timber stocks grow despite the higher volumes harvested, European forests provide a sustainable supply of wood as a renewable resource.

Introduction

The balance between the volume of annual increment and annual fellings has long been used to assess the sustainability of wood extraction from forests and is decisive for the current and future availability of wood. Fellings should not exceed increment in the long term. From a mid-term perspective, forest management may still be sustainable even if felling exceeds increment. As timber markets are volatile, growing stock surplus aggregated in periods of weak markets, can be utilised under prospering market conditions without harming the principle of sustainability.

Concerns about the emission of greenhouse gases and shortage of natural resources have led to increasing demand for woody biomass as renewable material and energy source. The transition to a market economy in Eastern Europe fostered wood utilization and timber processing. These developments have impacted on the amount of fellings; while felling was and still is smaller than increment, the proportion of increments that are utilised is likely to increase in the future. The assessment of increment and felling is, therefore, an important activity to monitor that fellings do not exceed the aggregated, not utilised increments from past decades and that increments and fellings are in a balance on the long run.

In order not to adulterate the proportion of increment extracted through fellings by forests that are not utilised for timber production, the following information refers to forests available for wood supply (FAWS) only. The increment is presented here as a net annual increment (NAI), which is defined as the average annual volume over the given reference period of the gross increment (i.e. the total increase of growing stock during a given time period) minus natural losses on all trees. The increment, natural losses and fellings are reported over bark, as well as the growing stock in indicator 1.2. If felling is lower than the net increment, the growing stock is increasing (Figure 3.1-1). A part of the fellings remains in the forest as logging losses (e.g. stem sections with defects) and is not utilised for energy or wood products.

Gross increment			
Natural losses	Net increment		
	Fellings		Net change
	Logging residues	Removals	

Figure 3.1-1: Components of gross increment

Status

23 countries reported data on both NAI and fellings for 2015, covering approximately 67% of FAWS area in EU-28 and 65% in Europe. The percentage of FAWS covered by reporting countries differs among regions from 34% (Central-East Europe) to almost 100% (Central-West Europe). None of the South-West European countries reported data for 2015.

In 2015, NAI of 652.3 million m³ was reported for Europe and ranged from 57.5 million m³ in South-East Europe to more than 259 million m³ in Central-West

Europe (Table 3.1-1). At the country level, the highest NAI was observed in Germany (more than 100 million m³). NAI per hectare was the highest in Central-East Europe (8.1 m³/ha) and lowest in North and South-East Europe (4.8 m³/ha).

Fellings reported for 2015 amount to 477.5 million m³ in Europe. The largest volume of fellings was reported in North Europe (205.8 million m³), followed by Central-West Europe (184.7 million m³).

A comparison of NAI and fellings provides Figure 3.1-2, where information is presented for those 23 countries that reported data for both, NAI and fellings.

Table 3.1-1 presents the utilisation rates in terms of fellings as a percent of NAI.

Table 3.1-1: Net annual increment and fellings, by region, 2015

Region	NAI		Fellings		Utilisation rate
	million m ³	m ³ /ha	million m ³	m ³ /ha	%
North Europe	249.1	4.8	205.8	3.9	82.6
Central-West Europe	259.1	7.3	184.7	5.2	71.3
Central-East Europe	86.6	8.1	53.6	5.0	61.9
South-West Europe	-	-	-	-	-
South-East Europe	57.5	4.8	33.3	2.8	58.0
EU-28	576.4	6.3	432.2	4.7	75.0
Europe	652.3	5.9	477.5	4.3	73.2

Note: Data coverage as % of total regional FAWS area: NE 94%, C-WE 100%, C-EE 34%, S-WE 0%, S-EE 61%, EU-28 67%, Europe 65% (23 countries).

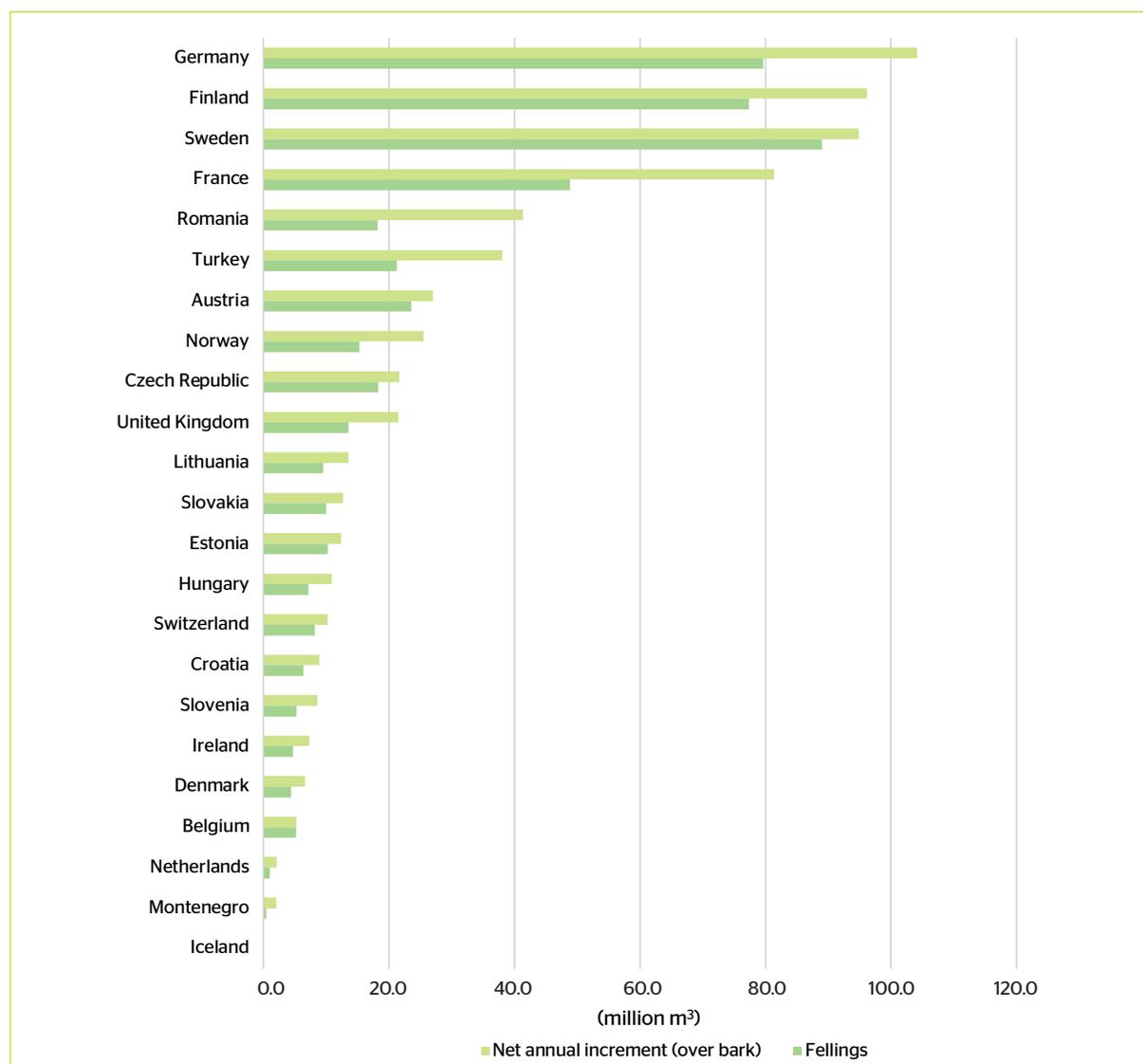


Figure 3.1-2: Annual fellings and net annual increment, by countries, 2015

Based on the reported data, approximately 73% of the NAI is utilised by fellings in Europe. The highest utilisation rates are reported for Belgium (98.7%) and Sweden (93.9%). In all other countries, utilisation rates were below 90%. Lowest utilisation rates were reported for Iceland (12.8%), Montenegro (24.9%), Romania (43.9%) and the Netherlands (47.6%). Sweden and Central European countries have faced catastrophic storms in the past decade, often followed by bark beetle infestation, which resulted in

high natural losses and consequently the increased removals of downed timber as well as in reductions in NAI. In addition, in several countries increment was not utilised over decades due to restrictions of cutting which led to aging of overmature stands with high growing stocks. Under these conditions, utilisation rates larger than 100% could still be sustainable. Even the high utilisation rates observed in some countries maintain the countries' outstanding high growing stocks.

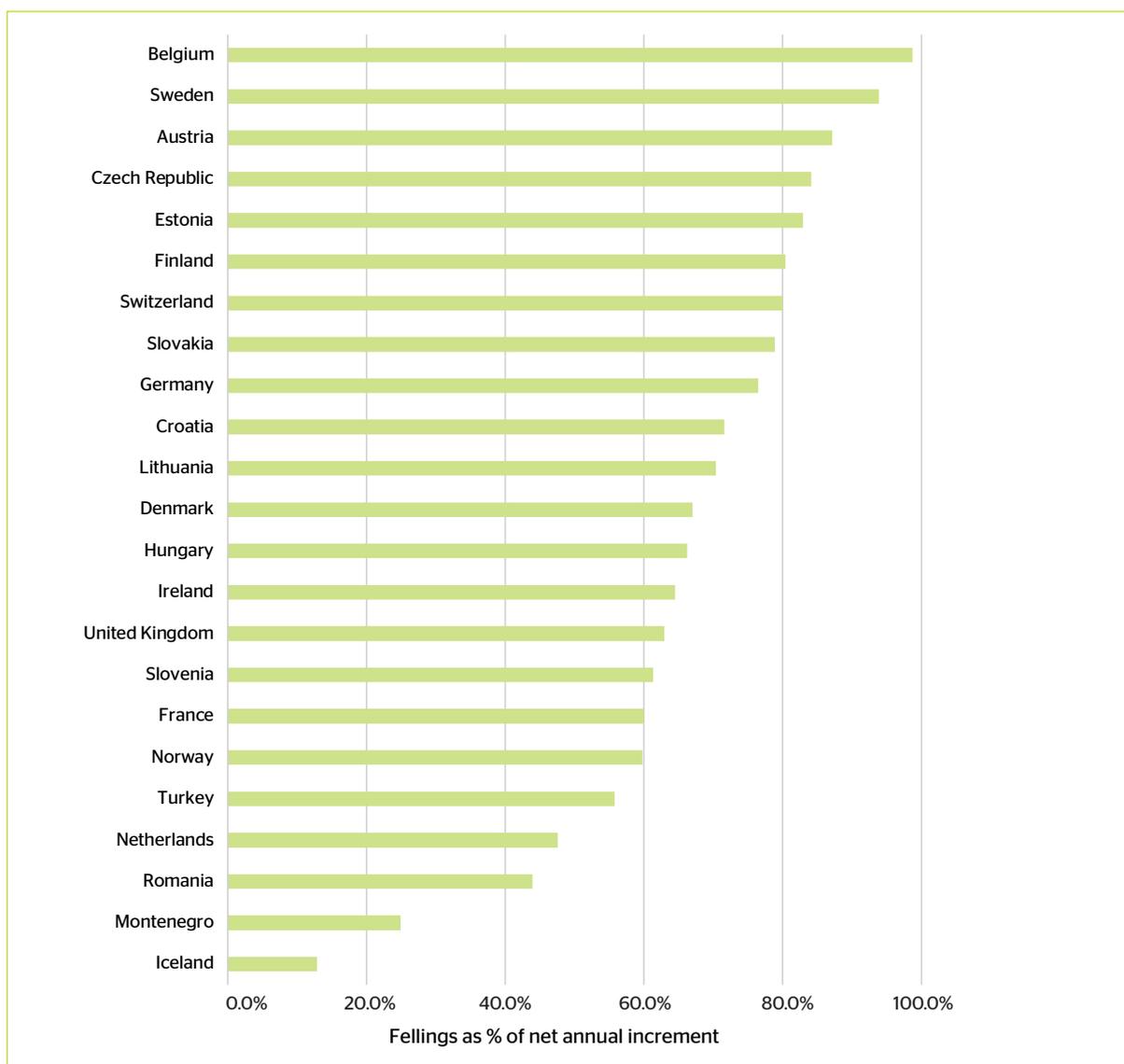


Figure 3.1-3: Fellings as a percentage of net annual increment, by countries, 2015

Trends

The analysis of the trend of NAI is based on the data from countries that reported a complete series for all reporting years (1990-2015). The information on NAI was provided by 19 countries and on fellings by 16 countries. Complete series provided no country in

South-West Europe region. In the reporting countries, NAI increased during the reporting period in all regions (Table 3.1-2). In Europe, the NAI increased by 0.89% annually between 1990 and 2015, i.e. by more than three million m³ per year. South-East Europe

experienced the strongest increase (by 1.23% annually), with Turkey contributing the most. Great variability was found among the countries, in

absolute figures the largest increase in total NAI was reported by Finland.

Table 3.1-2: Trend in net annual increment, by region, 1990-2015

Region	NAI								
	NAI (million m ³)					Annual change (million m ³ /year)			
	1990	2000	2005	2010	2015	1990-2000	2000-2005	2005-2010	2010-2015
North Europe	111.5	121.5	135.1	138.1	140.7	+1.00	+2.72	+0.60	+0.53
Central-West Europe	51.9	57.4	57.2	57.6	56.7	+0.54	-0.04	+0.08	-0.17
Central-East Europe	105.9	115.4	116.8	120.5	134.1	+0.95	+0.28	+0.74	+2.72
South-West Europe	-	-	-	-	-	-	-	-	-
South-East Europe	40.8	47.9	54.2	55.1	55.5	+0.71	+1.26	+0.18	+0.08
EU-28	222.1	236.1	252.1	260.7	275.9	+1.40	+3.22	+1.71	+3.04
Europe	310.2	342.1	363.3	371.2	387.1	+3.20	+4.23	+1.59	+3.17

Note: Data coverage as % of total regional FAWS area: NE 55%, C-WE 21%, C-EE 71%, S-WE 0%, S-EE 57% EU-28 32%, Europe 42%.

Change in fellings (Table 3.1-3) closely followed the trend in NAI when both NAI and fellings increased. The utilisation rate (fellings as a percent of NAI) increased from 62.4% in 1990 to 70% in 2015 (Table 3.1-4). In North Europe, utilisation rates increased from 65.9% in 1990 to around 76.2% in 2015. The increase

in utilisation rates was even more pronounced in Central-West Europe, reaching as much as 77.4% in 2015 compared to 59.6% in 1990 or 55.1% in 2000. The lowest utilisation rates were reported in South-East Europe.

Table 3.1-3: Trend in annual fellings, by region, 1990-2015

Region	Fellings								
	Subtotals (million m ³)					Annual change (1 000 m ³ /year)			
	1990	2000	2005	2010	2015	1990-2000	2000-2005	2005-2010	2010-2015
North Europe	73.4	93.1	89.4	90.4	107.3	+1.97	-0.73	+0.19	+3.38
Central-West Europe	30.6	31.3	38.8	40.1	43.3	+0.07	+1.51	+0.25	+0.64
Central-East Europe	43.0	43.3	50.5	52.3	53.6	+0.03	+1.44	+0.36	+0.25
South-West Europe	-	-	-	-	-	-	-	-	-
South-East Europe	23.7	20.3	22.8	25.8	33.3	-0.34	+0.51	+0.59	+1.51
EU-28	138.3	161.2	173.5	177.6	200.5	+2.28	+2.48	+0.82	+4.57
Europe	170.7	188.0	201.6	208.6	237.5	+1.72	+2.73	+1.39	+5.78

Note: Data coverage as % of total regional FAWS area: NE 55%, C-WE 21%, C-EE 34%, S-WE 0%, S-EE 61% EU-28 32%, Europe 36% (16 countries).

Table 3.1-4: Trend in the net annual increment utilisation rates, by region, 1990-2015

Region	Fellings				
	1990	2000	2005	2010	2015
North Europe	73.4	93.1	89.4	90.4	107.3
Central-West Europe	30.6	31.3	38.8	40.1	43.3
Central-East Europe	43.0	43.3	50.5	52.3	53.6
South-West Europe	-	-	-	-	-
South-East Europe	23.7	20.3	22.8	25.8	33.3
EU-28	138.3	161.2	173.5	177.6	200.5
Europe	170.7	188.0	201.6	208.6	237.5

Note: Data coverage as % of total regional FAWS area: NE 55%, C-WE 21%, C-EE 34%, S-WE 0%, S-EE 57% EU-28 32%, Europe 35% (15 countries).

Indicator 3.2 Roundwood

Quantity and market value of roundwood

Key findings

- In 2015, roundwood production in Europe has reached a maximum of almost 550 million m³. North and Central Europe's forests are still the main producers; Sweden, Finland, Germany, France and Poland account for above 51% of the whole roundwood removals in Europe in terms of volume with a total of 279 million m³.
- The reported value of marketed roundwood is continuously increasing. In 2015, it reached EUR 20 533 million, corresponding to 416 million m³ in 2015. The reported roundwood volumes and values by the unit are highly variable between reporting countries.

Introduction

Roundwood comprises all wood obtained from removals from forests in its natural state (wood in the rough). It includes wood from planned harvesting operations and wood recovered from incidental fellings and does not include the felled wood left in forests in the form of logging residues. Roundwood can be sub-divided into industrial roundwood (used for further processing) and wood fuel (a source of renewable energy). Roundwood production acts as an interface between the forestry and the wood processing sector: it provides income for forest owners, serves as a resource for the wood processing sector and its added value, and contributes to the economy, especially in rural areas.

Only a few countries record the removal of wood fuel on a representative scale. It is widely accepted that a considerable amount of wood fuel is utilised

for self-consumption and enters neither markets nor statistical records. Thus, the figures presented below might underestimate the total removals of wood fuel from forests.

Status

The figures relate to total removals (marketed and non-marketed). 41 countries provided data on roundwood removals while only 20 countries provided data on roundwood value. The total volume of roundwood excludes roundwood harvested for self-consumption (subsistence) and other forms of uses without a market transaction. Figures were reported for individual years and here are presented for reference years as five years averages, i.e. for the year 2015 the average 2013-2017 is used.

For 2015, 542.5 million m³ production of roundwood has been reported, 177.1 million m³ of which is in North Europe, 147.6 million m³ in Central-West Europe and 129.6 million m³ in Central-East Europe (Table 3.2-1). The highest production of roundwood at the country level have been realised in Sweden (73 million m³), Finland (60 million m³), Germany (54 million m³), France (51 million m³) and Poland (42 million m³). Removals per hectare of forest available for wood supply (FAWS) ranged from 4.2 m³/ha in Central-West Europe to 1.3 m³/ha in South-West Europe.

20 countries reported data on the market value of removals in 2015 (see Table 3.2-1), representing 72% of FAWS in Europe. The value of roundwood removals amounts to EUR 20 533 million. The highest value was reported by Germany (EUR 4 114 million), Sweden (EUR 2 826 million) and France (EUR 2 788 million).

The value of wood removals per ha of FAWS varied between EUR/ha 43.1 (South-West Europe) and EUR/ha 268.0 (Central-West Europe).

Table 3.2-1: Volume and market value of roundwood, by region, 2015

Region	Roundwood volume		Market value	
	1 000 m ³	m ³ /ha FAWS	EUR million	EUR/ha FAWS
North Europe	177 083	3.2	5 860	116.6
Central-West Europe	147 574	4.2	8 820	268.0
Central-East Europe	129 616	4.1	4 054	214.5
South-West Europe	34 897	1.3	354	43.1
South-East Europe	53 328	2.1	1 446	129.8
EU-28	449 251	3.3	19 107	182.3
Europe	542 498	3.1	20 533	169.1

Note: Averages of years 2013-2017; Data coverage as % of total regional FAWS area:

Roundwood volume: 100% for all regions;

Market value: NE 90%, C-WE 93%, C-EE 60%, S-WE 30%, S-EE 57%, EU-28 77%, Europe 72%.

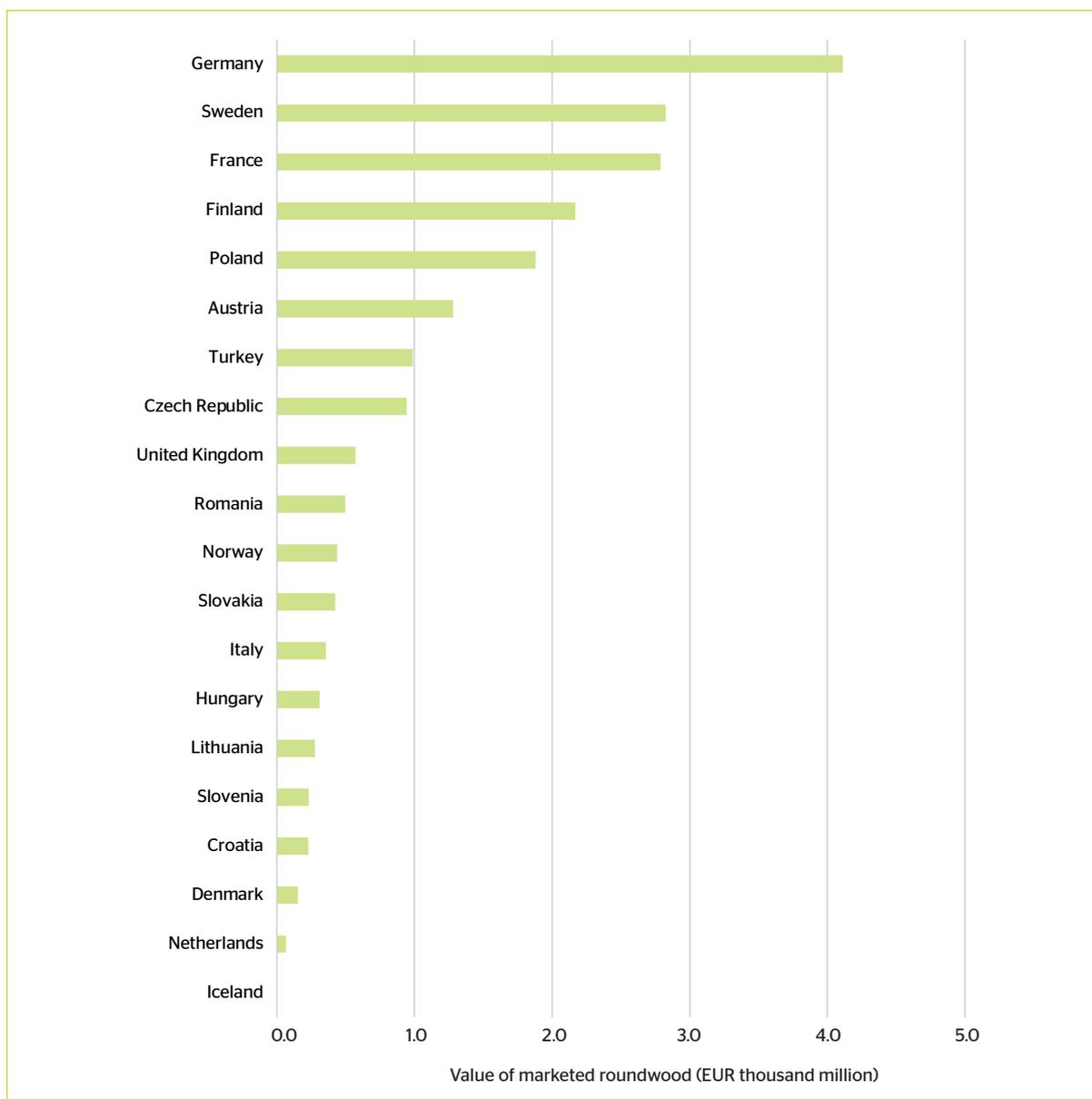


Figure 3.2-1: Market value of roundwood, by countries, 2015 (averages 2013-2017)

Table 3.2-2: Proportion of reported roundwood and fellings, by region, 2015

Region	Roundwood (under bark)	Fellings (over bark)	Proportion
	1000 m ³		%
North Europe	164 460	205 836	79.9
Central-West Europe	147 204	184 676	79.7
Central-East Europe	46 674	53 612	87.1
South-West Europe	-	-	-
South-East Europe	36 888	39 940	92.4
EU-28	351 948	432 240	81.4
Europe	395 226	484 064	81.6

Notes: Averages of years 2013-2017; fellings in FAWS;

Data coverage as % of total regional FAWS area: NE 94%, C-WE 100%, C-EE 34%, S-WE 0%, S-EE 69%, EU-28 67%, Europe 66%.

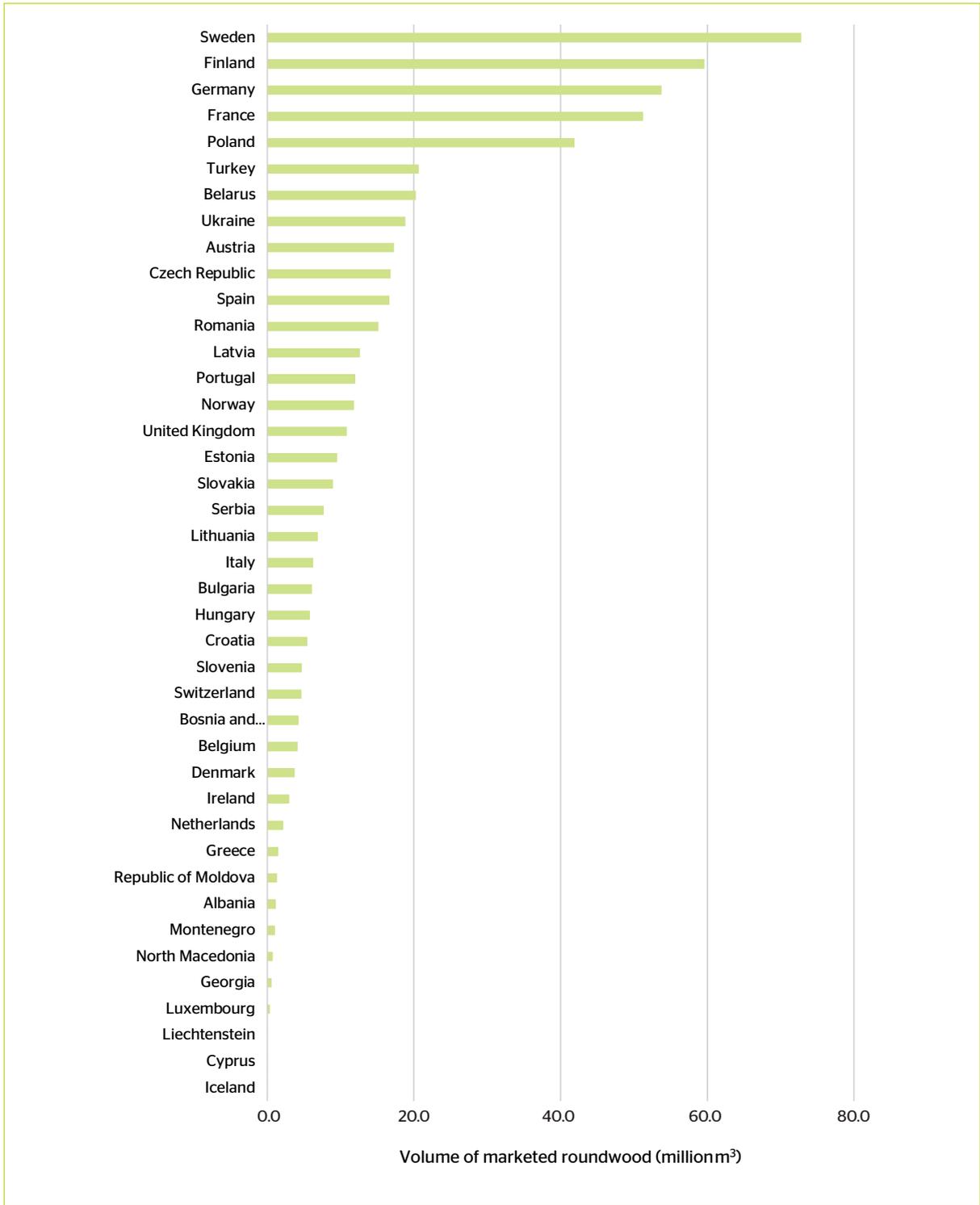


Figure 3.2-2: Volume of marketed roundwood, by countries, 2015 (averages 2013-2017)

Differences between roundwood and fellings volumes are mainly attributable to the fact that fellings are reported in the volume over bark, while roundwood removals are reported under bark and exclude logging residues.

When interpreting figures, it should be noted that the share of marketed roundwood in the total roundwood removals cannot be clearly determined and that the removals of wood fuel are underestimated because they are not monitored consistently in the countries.

Trends

The trend of roundwood volume is based on 32 countries, representing approximately 95% of the whole European FAWS area (see Table 3.2-3).

In Europe, roundwood production increased

between 1990 and 2015 by approximately 114 million m³, reflecting an increase in the net annual increment (Indicator 3.1).

Between 1990 and 2015 the level of roundwood production per ha was maintained or increased almost in all European regions. North and Central-East Europe reported a consistent increase from 2.0 m³/ha and 2.6 m³/ha in 1990 to 3.2 m³/ha and 4.2 m³/ha in 2015, respectively. In the same period, the roundwood production per ha decreased from 2.1 m³/ha to 1.8 m³/ha in South-West Europe.

The value of marketed roundwood increased steadily in almost all regions with a resulting increase for the Europe of more than EUR 5 628 million or 53.1% between 1990 and 2015. Also, the value of marketed roundwood per ha of FAWS increased steadily in Europe from EUR/ha 106.0 to EUR/ha 161.5.

Table 3.2-3: Trend in roundwood volume, by region, 1990-2015

Region	Roundwood									
	1 000 m ³					m ³ /ha FAWS				
	1990	2000	2005	2010	2015	1990	2000	2005	2010	2015
North Europe	117 706	155 480	167 211	157 163	177 078	2.0	2.7	3.0	2.8	3.2
Central-West Europe	141 948	136 524	153 891	148 441	147 218	4.3	4.0	4.4	4.2	4.1
Central-East Europe	68 592	77 274	93 280	97 821	109 435	2.6	2.9	3.5	3.7	4.2
South-West Europe	34 333	33 329	34 687	33 837	34 897	2.1	1.9	1.9	1.8	1.8
South-East Europe	30 187	27 899	30 583	34 009	38 335	2.0	1.6	1.7	1.9	2.1
EU-28	343 457	382 116	427 318	414 126	443 440	2.8	3.1	3.5	3.4	3.6
Europe	392 765	430 506	479 651	471 270	506 964	2.6	2.9	3.2	3.2	3.4

Note: Five years averages are presented; Data coverage as % of total regional FAWS area:

Roundwood volume: NE 100%, C-WE 100%, C-EE 82%, S-WE 100%, S-EE 85%, EU-28 99%, Europe 95%;

Roundwood volume per hectare of FAWS: NE 100%, C-WE 98%, C-EE 82%, S-WE 38%, S-EE 83%, EU-28 86%, Europe 84%.

Table 3.2-4: Trend of the value of marketed roundwood, by region, 1990-2015

Region	Total roundwood									
	EUR million					EUR/ha FAWS				
	1990	2000	2005	2010	2015	1990	2000	2005	2010	2015
North Europe	4 610	4 691	4 890	5 215	5 584	88.2	93.6	99.4	107.9	115.6
Central-West Europe	4 543	5 712	6 400	7 318	8 755	148.8	181.7	199.7	226.5	268.4
Central-East Europe	169	149	223	289	311	96.9	81.0	118.9	150.3	163.1
South-West Europe	454	444	437	594	354	67.7	60.0	56.5	74.4	43.1
South-East Europe	818	556	706	1 112	1 217	94.1	62.7	78.9	123.4	129.5
EU-28	9 353	10 651	11 622	13 096	14 797	111.5	127.6	138.9	157.0	176.4
Europe	10 594	11 552	12 656	14 529	16 222	106.0	116.0	126.8	145.9	161.5

Note: five years averages are presented;

Data coverage as % of total regional FAWS area: NE 87%, C-WE 92%, C-EE 6%, S-WE 30%, S-EE 48%, EU-28 61%, Europe 59%.

Indicator 3.3 Non-wood goods

Quantity and market value of non-wood goods from forest and other wooded land

Key findings

- Non-wood goods from forests and other wooded land represent an essential source of food and materials such as cork, Christmas trees, chestnuts, fruits, mushrooms, wild meat and honey. In financial terms these goods represent a source of additional income from forests.
- The value of marketed non-wood goods in Europe is more than twice as high for plant products as for animal products.

Introduction

Non-wood goods (NWGs) are defined as goods of biological origin other than wood derived from forests and other wooded land (FOWL). They may be produced in natural or planted forests, agroforestry systems or trees outside forests. These products can be used as food and food additives (edible nuts, mushrooms, fruits, herbs, spices and condiments, aromatic plants, game, roots, seeds, honey), fibres (used in construction, furniture, clothing or utensils), resins, gums, and plant and animal products used for medicinal, cosmetic or cultural purposes.

In recent years, NWGs have attracted considerable global interest due to the increasing recognition of their contribution to meeting environmental objectives, including the conservation of biological diversity. NWGs are produced in a wide range of land-use types and habitats from forests to urban greenspace. Furthermore, they are derived from a wide range of production systems from wild to domesticated and intensively cultivated. This means NWGs provide a myriad of opportunities to enhance the personal well-being of citizens and entrepreneurial culture.

Even if there is a strong NWGs collecting culture in Europe, the associated knowledge is vanishing as uses related to traditional, subsistence lifestyles are not passed on to younger generations. At the same time, there is increasing interest in natural foods,

artisanal crafts and back-to-nature lifestyles. Besides, Europe has the second largest area of land under organic certification, but it produces a relatively small amount of certified wild products.

The NWGs sector has many products and services that are not accounted for in the present and could significantly increase the whole value of the forestry sector regarding the overall bioeconomy outlook. The inclusion of NWGs values and volumes into strategic national planning would be crucial as follow up action for wider expansion of the forest-based sector bioeconomy.

Though information on NWGs is available, it usually is not harmonised, so it is difficult to compare. On the other hand, the collection of NWGs data is expensive, the number of products is very large and no commonly accepted classification and a priority list of NWGs are used by national statistical offices. These reasons pose difficulties to obtain an overview and comparable data for all types of NWGs across Europe. This indicator covers the value and quantity of marketed NWGs from FOWL. For reasons of consistency, even if they could represent a substantial part of the total, NWGs harvested for self-consumption and informal use at the local level are excluded from the analysis (only some EU research projects have surveyed this component).

Status

Plant products

Quantities and/or values of marketed plant NWGs were provided by 34 countries.

Figure 3.3-1 shows the share of total marketed values accounted for by marketed plant products. Table 3.3-1 presents the quantity and value of different types of marketed plant products by region. The highest reported values of marketed plant products were for ornamental plants and food, which amounts to 49.6% and 38.7% respectively, followed by other plants products (9.1%). The reported values for these NWGs represented 97.4% of the total value of NWGs as the reported values for all other categories of NWGs are far smaller.

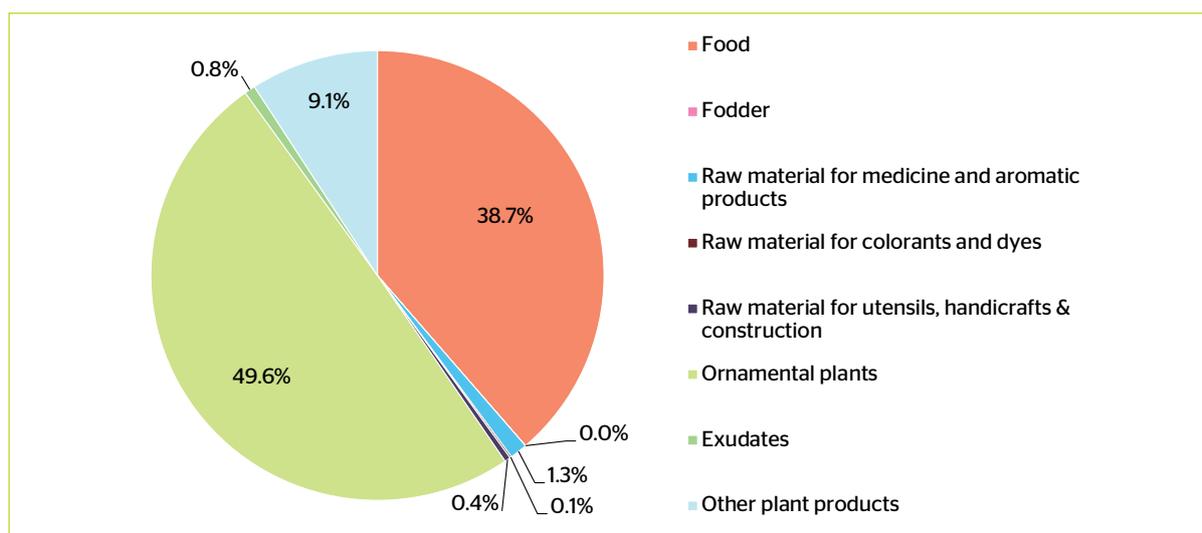


Figure 3.3-1: Shares (%) of the total reported value of plant-related marketed non-wood goods, 2015

Note: Data coverage as % of total regional forest area: Food 79%, Fodder 5%, Raw material for medicine and aromatic products 22%, Raw material for colourants and dyes 4%, Raw material for utensils, handicrafts and construction 12%, Ornamental plants 60%, Exudates 10%, Other plants products 43%.

Table 3.3-1: Quantity and value of different types of marketed plant products, by region, 2015

Region	Food	Fodder	The raw material for medicine and aromatic products	The raw material for colourants and dyes	The raw material for utensils, handicrafts & construction	Ornamental plants		Exudates	Other products
	Market value EUR 1 000					Market value	Quantity	Market value EUR 1 000	Market value EUR 1 000
	Quantity tonnes					EUR 1 000	1 000 pcs	Quantity tonnes	Market value EUR 1 000
						EUR 1 000	tonnes	Quantity tonnes	
North Europe	332 080	-	-	-	-	188 908	7 229	-	-
	254 666	-	-	-	-	2 483	853	-	-
Central-West Europe	19 041	-	5 582	-	550	1 192 127	39 470	-	145 124
	5 763	-	5 041	-	1 610	2 350	1 410	-	-
Central-East Europe	239 489	-	14 677	3 579	-	2 539	15 329	-	977
	72 272	-	3 817	3 010	-	1 192	30	-	-
South-West Europe	381 323	-	-	-	-	-	-	21 724	105 536
	93 978	-	-	-	-	-	-	20 211	-
South-East Europe	9 309	0.1	10 853	-	-	369	48	-	4 453
	39 787	1.8	5 368	-	-	-	-	-	-
EU-28	925 980	0.1	20 277	-	550	1 363 193	60 186	21 724	251 774
	394 987	1.8	10 179	-	1 610	3 682	1 633	20 211	-
Europe	981 241	0.1	31 112	3 579	550	1 383 944	62 076	21 724	256 091
	466 466	1.8	14 226	3 010	1 610	6 025	2 293	20 211	-

Note: Data coverage as % of total regional forest area:

Food: NE 93%, C-WE 57%, C-EE 63%, S-WE 70%, S-EE 73%, EU-28 76%, Europe 74%;

Fodder: NE 0%, C-WE 0%, C-EE 0%, S-WE 0%, S-EE 5%, EU-28 1%, Europe 1%;

The raw material for medicine and aromatic products: NE 0%, C-WE 54%, C-EE 42%, S-WE 0%, S-EE 17%, EU-28 22%, Europe 20%;

The raw material for colourants and dyes: NE 0%, C-WE 0%, C-EE 19%, S-WE 0%, S-EE 0%, EU-28 0%, Europe 4%;

Raw material for utensils, handicrafts & construction: NE 0%, C-WE 44%, C-EE 0%, S-WE 0%, S-EE 0%, EU-28 10%, Europe 7%;

Ornamental plants: NE 100%, C-WE 95%, C-EE 42%, S-WE 0%, S-EE 17%, EU-28 67%, Europe 59%;

Exudates: NE 0%, C-WE 0%, C-EE 0%, S-WE 70%, S-EE 0%, EU-28 14%, Europe 10%;

Other products: NE 0%, C-WE 85%, C-EE 26%, S-WE 70%, S-EE 75%, EU-28 43%, Europe 43%;

Only data provided on both quantity and volume of products are presented, except for Other products expressed in value.



Data on “ornamental plants” were provided by 22 countries. The total value of this category was almost EUR 1 400 million. Among the reporting countries, the highest values were generated in Germany (EUR 700 million), the United Kingdom (EUR 386 million) and Denmark (EUR 117 million). The main product in this category is Christmas trees.

Information on the quantity of food category was reported by 21 countries. In the overall NWGs reporting, food accounted for a total of 473 thousand tonnes in weight and EUR 1 084 million in value in these countries. The main producers in quantitative terms were Finland (156 thousand tonnes), Latvia (51 thousand tonnes), Portugal (50 thousand tonnes) and Spain (44 thousand tonnes). In terms of value, the main producers were Finland (EUR 214 million), Czech Republic (EUR 202 million), Portugal (EUR 197 million), Spain (EUR 184 million), Italy (EUR 88 million) and Latvia (EUR 64 million).

The total value that was reported for plant-product NWGs is about EUR 2 802 million. The highest shares in the value were reported by the Central-West Europe (EUR 1 365 million), South-West Europe (EUR 608 million) and North Europe (EUR 523 million) regions. The lowest shares are reported for the South-East (EUR 43 million) and Central-East (EUR 263 million) Europe regions (Table 3.3-3).

Animal products

Quantities and/or values for marketed animal NWGs were reported by 24 countries.

Figure 3.3-2 shows the share of total marketed values accounted for by marketed animal products. Table 3.3-2 presents the quantity and value of different

types of marketed animal products by region. The highest reported values were for wild meat (73.9%) and wild honey and bee-wax (24.4%).

Wild meat comprises all hunted birds and mammals, such as partridge, pheasant, hare, deer, wild boar and chamois. The data include main game species whose habitats of which are forest-related. The game that roams on farms is excluded. 16 countries in relation to the quantity and 20 countries in relation to the value reported data on wild meat. Among the reporting countries, France (EUR 294 million), Germany (EUR 190 million) and Spain (EUR 89 million) were by far the highest producers of wild meat in terms of total value. Wild meat accounted for EUR 888 million (73.9% of NWGs related to animal products) for all responding countries (Figure 3.3-2).

Honey and bee-wax production were mentioned by 12 countries in relation to value and ten countries in relation to quantity. The total value of marketed honey and bee-wax (which includes farmlands) amounted to EUR 293 million, being the highest producers Germany (EUR 71 million), France (EUR 55 million) and Switzerland (EUR 49 million). The other categories of marketed animal products contributed less than 2% of the total value generated by NWGs related to animal products.

The highest share of the total value of marketed NWGs accounted for by animal products is reported by Central-West Europe (EUR 749 million) and North Europe (EUR 213 million), with a total value of EUR 1 201 million in the animal product market. The lowest shares are reported for the South-East (EUR 48 million) and Central-East (EUR 51 million) Europe regions (Table 3.3-3). However, data coverage in these regions is exceptionally low.

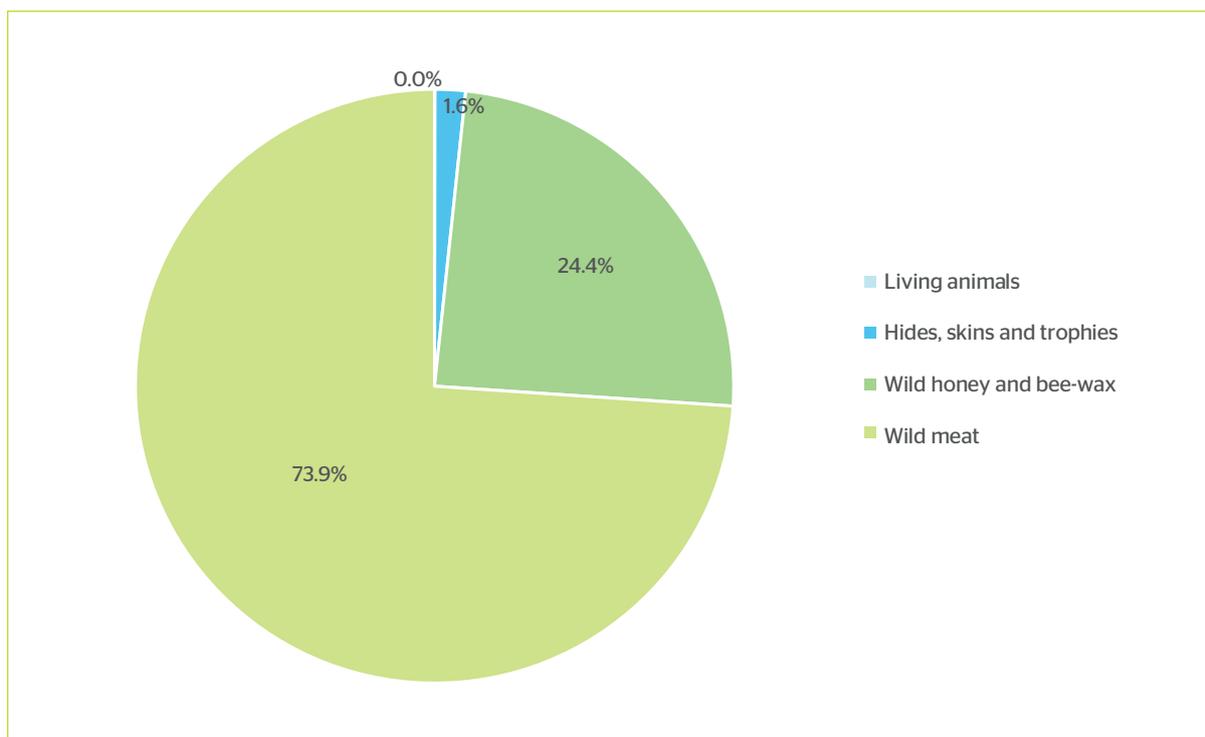


Figure 3.3-2: Shares (%) of the total reported value of animal-related marketed non-wood goods, 2015

Note: Data coverage as % of total regional forest area: Living animals 1%, Hides, skins and trophies 16%, Wild honey and bee-wax 31%, Wild meat 65%.

Table 3.3-2: Quantity and value of different types of marketed animal products, by region, 2015

Region	Living animals		Hides, skins and trophies		Wild honey and bee-wax		Wild meat	
	EUR 1 000	Quantity 1 000 pcs	EUR 1 000	Quantity 1 000 pcs	EUR 1 000	Quantity tonnes	EUR 1 000	Quantity tonnes
North Europe	-	-	3 187	67	554	141	208 929	22 708
Central-West Europe	-	-	7 248	276	202 385	19 858	348 814	48 006
Central-East Europe	287	18	-	-	10	5	26 431	13 922
South-West Europe	-	-	-	-	51 020	47 866	89 932	47 930
South-East Europe	-	-	43	1	3 324	554	148	42
EU-28	287	18	10 359	340	205 241	65 654	599 459	124 267
Europe	287	18	10 478	344	257 293	68 423	674 253	132 609

Notes: Data coverage as % of total regional forest area:

Living animals: NE 0%, C-WE 0%, C-EE 4%, S-WE 0%, S-EE 0%, EU-28 1%, Europe 1%;

Hides, skins and trophies: NE 25%, C-WE 10%, C-EE 0%, S-WE 0%, S-EE 2%, EU-28 6%, Europe 10%;

Wild honey and bee-wax: NE 5%, C-WE 87%, C-EE 16%, S-WE 70%, S-EE 2%, EU-28 40%, Europe 30%;

Wild meat: NE 99%, C-WE 68%, C-EE 26%, S-WE 60%, S-EE 2%, EU-28 70%, Europe 57%;

Raw material for medicine: NE 0%, C-WE 0%, C-EE 0%, S-WE 0%, S-EE 0%, EU-28 0%, Europe 0%;

Raw material for colorants: NE 0%, C-WE 0%, C-EE 0%, S-WE 0%, S-EE 0%, EU-28 0%, Europe 0%;

Other edible and non-edible animal products: NE 0%, C-WE 0%, C-EE 0%, S-WE 0%, S-EE 0%, EU-28 0%, Europe 0%;

Only data provided on both quantity and volume of products are presented.

Table 3.3-3: Value of marketed non-wood products, by region, 2015

Region	Plant	Animal
	EUR 1 000	
North Europe	523 471	212 670
Central-West Europe	1 365 137	748 891
Central-East Europe	262 465	50 646
South-West Europe	607 919	140 952
South-East Europe	43 383	48 003
EU-28	2 686 891	1 031 042
Europe	2 802 375	1 201 160

Notes: Data coverage as % of total regional forest area:

Plant: NE 100%, C-WE 98%, C-EE 95%, S-WE 100%, S-EE 82%, EU-28 96%, Europe 96%;

Animal: NE 99%, C-WE 98%, C-EE 48%, S-WE 70%, S-EE 14%, EU-28 86%, Europe 70%.

Trends

Based on the collected data, there is a clear upward trend in NWGs production and value from data provided for previous SoEF report. The reported value of marketed NWGs in Europe (Table 3.3-3) is more than twice higher for plant products (EUR 2 802 million) than for animal products (EUR 1 201 million) when e.g. payments for hunting licenses are reported in Indicator 3.4 - Services.

There has been an improvement on the reporting and response rates compared to previous reports, but still, the presented figures cannot be considered as representative for the entire Europe or for the particular categories of products and users and must be interpreted as minimum values for the financial benefits generated from NWGs.

The wide variety of NWGs, the diversity in the final uses with the relevant role of self-consumption, and

the non-homogeneous market organisation have prevented the sector from being clearly defined and also prevented the development of a European statistical information service related to production, trade and consumption of NWGs.

Apart from some mass products like cork, Christmas trees, chestnuts and a few other NWGs, for many non-wood forest products there is a lack of data on stocks, harvesting, prices, operators, and even detailed trade flows. By comparing statistics published in different years by FAO, FOREST EUROPE and the UN Economic Commission for Europe there is a clear problem regarding the availability of data. This is not related to the economic, social and environmental importance of NWGs, but rather to a problem of data collection and coordination by national statistical agencies.

Indicator 3.4 Services

Value of marketed services on forest and other wooded land

Key findings

- Social and biospheric services dominate in marketed services of the forest ecosystems.
- The total reported value for marketed services was around EUR 495 million, only 14 countries reported the value of market realisation of ecosystem services. Large variations persist in the monitoring and reporting value of marketed forest services.

Introduction

Europe's forests provide numerous ecosystem services for benefit of the public. Besides provisioning of wood and other products, in fact, soil protection, water and air purification and climate regulation are crucial forest ecosystem services, to some extent representing the basis for marketed products and services. They could generate financial revenues but still not reflected in market transactions. Forests have clear market effects in surface-water purification, tourism, landscape amelioration (as water and land prices can show), but these effects are usually not associated with any payment for the providers.

In this section, we address the marketed ecosystem services that are forest-dependent or mainly forest-related and were marketed by forest owners, public agencies or other entities, to the extent to which they have been reported on by European countries, related to the year of 2015.

There are five categories linked to this indicator in the FOREST EUROPE framework. Marketed **ecological services** include those related to Indicator 5.1 (protective forests in terms of environmental functions related to soil and water as well as infrastructures and other assets).

Marketed **biospheric services** include services related to Indicator 4.6 (*in-situ* or *ex-situ* gene conservation of genetic resources) and Indicator 4.9 (protected forests), e.g. nature protection on a voluntary contractual basis with compensation or other payments from private or public bodies, that may include some payments in NATURA 2000 sites. Nature protection contract schemes are increasingly discussed and applied as a measure for the promotion of ecological/biospheric services of forests.

Marketed **social services** include hunting and fishing licenses, the renting of huts and houses, forest-

based recreation, sports, and outdoor activities, and educational activities that are not free of charge to the users. The value of recreational services that are not exchanged via market transactions is not reported, however, it represents a very significant amount. A recent remarkable development has been seen in initiatives related to forest therapy and forest bathing (known also as Shinrin-Yoku, that could also be seen as social services, like recreation is).

Several **cultural services** (sometimes called amenity services) include those related to spiritual, cultural and historical functions, e.g. sacred spaces, religious or other forms of spiritual inspiration, sites of worship, landscape features (mountains and waterfalls), 'memories' in the landscape from past cultural ties, aesthetic enjoyment and inspiration, forests used for nature art museum, concerts, theatre and historical artefacts; burial forest is also recognised in many European countries.

Other marketed services include payments to woodland owners for licenses that regulate land use for gravel extraction, telecommunication masts, wind farms and electricity distribution, among others. Depending on countries national laws, these marketed services of the forest may add directly to the income of owners and thus contribute to the economic viability of sustainable forest management.

Status and trends

Information regarding the values of marketed services in the five categories is still scarce in country reports. Data for 2015 were reported only by 14 countries, which represents 53% of the European forest area. Although the marketed forest-related services are well identified, the volume of income derived from these services is not known or registered, thus covering only part of the forest sector (e.g. private versus public ownership). In most cases, countries reported values of marketed services for only some of the categories, mostly for social services, or reported the value without describing the amount of the service and the respective units. Figure 3.4-1 presents the proportion of marketed forest services provided in the reporting countries. The values of social and biospheric services dominate the reported data, representing about 86% of the marketed services in all categories.

The higher values were reported on social services with around EUR 289 million, Austria, Norway and France being the countries with the highest values

(about 68.9% of the total). The large contribution (that comes from various land uses embedded with forests) for the total value was done by hunting licenses and other hunting-related incomes like rights of shooting and buying ancillary products like hides and meat. Even if hunting-related services constitute one of the most important traditional income-generating services for private and public landowners, data are missing from several countries. The rates and demand vary considerably across Europe and may depend, among other factors, on the location and attractiveness of the hunting grounds and on local food consumption traditions.

After social services, the biospheric services represent the second second-highest reported value accounting around EUR 139 million. These services are mainly connected to the provision of payments for nature protection and forest habitat protection through conservation agreements. Sweden, Austria and Slovakia are the countries that contribute more to the final value on these services with around 98.4% of the reported total value for Europe (moreover, the provision of compensation - the public incentive for

Natura 2000 - are available for all the EU countries on the Rural Network web site).

Amenity services like preservation of historical and biological cultural heritage were only reported by Sweden with a value of EUR 275 thousand.

The total reported value for all five marketed services, considering the relatively few responding countries, was around EUR 495 million. Many countries did not report marketed services related to forest ecosystems, indicating gaps in national monitoring and reporting systems for these services.

Due to the incompleteness of the data, all the figures presented for this indicator are very conservative and likely to underestimate the true gross values considerably - perhaps by an order of magnitude. The total sum of EUR 495 million per year reported by countries suggests that the average income from all of these services is around EUR 4 per hectare and year across Europe. By focusing on the countries that reported information on different marketed services, Table 3.4-1 provides the average marketed value of the recorded services per hectare and year by regions.

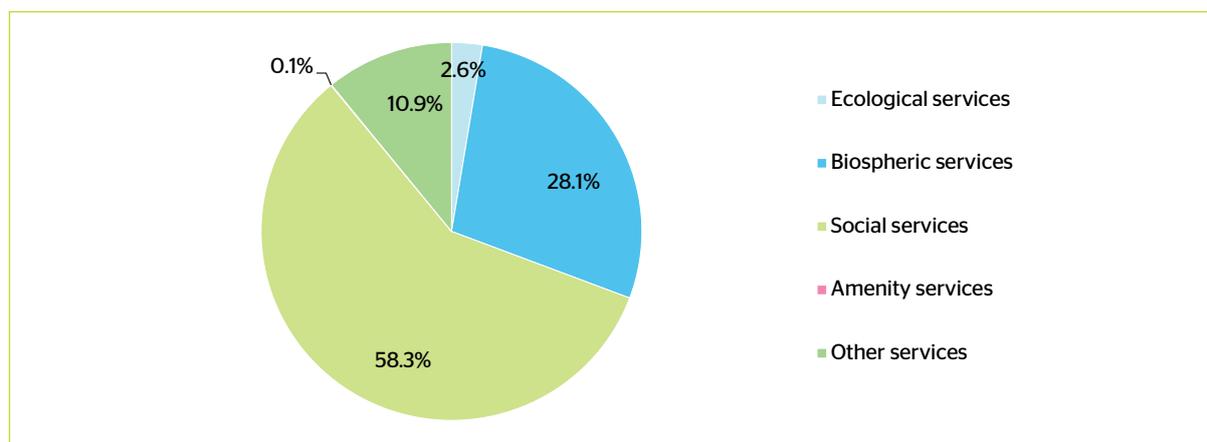


Figure 3.4-1: Proportion of values of marketed services, 2015

Notes: Data coverage as % of total regional forest area: Ecological services 12%, Biospheric services 27%, Social services 52%, Amenity Services 12%, Other services 20%.

Table 3.4-1: Value of reported marketed forest services, by region, 2015

Region	Total reported value	
	EUR 1 000	EUR/ha per year
North Europe	206 598	3
Central-West Europe	232 239	11
Central-East Europe	14 988	8
South-West Europe	10 246	3
South-East Europe	30 579	1
EU-28	403 654	5
Europe	494 650	4

Note: Data coverage as % of total regional forest area: NE 96%, C-WE 56%, C-EE 4%, S-WE 11%, S-EE 57%, EU-28 52%, Europe 52%.

Indicator C.3: Policies, institutions and instruments to maintain and encourage the productive functions of forests

Key findings

Nearly all countries have specific **policy objectives** for the productive functions of forests. About one-quarter of the reporting countries have **quantitative targets** for the maintenance and encouragement of the productive forest functions mainly focusing on additional timber supply through better utilisation of the increment and on accumulated timber volumes. **Institutional measures** taken to achieve the objectives focus on marketing and promotion of sustainable forest resources mobilisation. Efforts in the valuation of forest ecosystem services were also mentioned. Legal, financial and communication **policy tools** include amendments to forest law and new regulations, Rural Development Programmes and public financial support for forest owners for harvesting, management plans and certification as well as the promotion of preferences for forest products. **Achievements** over the past five years comprise an increased motivation of forest owners to make more effective use of their forests and seeking to meet the timber supply for the bioeconomy as well as increased recognition of non-wood forest products and services. Wood-based innovations contributed to increased use of timber. Forest areas under management plans and certified forest areas increased. Three-quarters of forests are under a forest management plan, which is often, but by no means always, obligatory. Over half the forest area is certified by a third-party certification scheme, FSC, PEFC or both. The major **challenges** and **obstacles** to achieve the policy objectives are occasionally seen in low economic efficiency and performance of the forestry sector, a lack of entrepreneurial, innovative thinking, increasing competition for forest resources and their services within the bioeconomy sectors and untapped potential for the valuation of ecosystem services.

Nearly all countries have specific policy objectives for the productive functions of forests.

The national policy objectives related to the maintenance and encouragement of the productive

functions of forests (as reported by 26 countries) focus on the following topics ranked according to the occurrence in national reports:

- ensuring and increasing the sustainable timber supply,
- maintaining and enhancing non-wood forest products supply,
- enhancing the valuation and marketing of timber, non-wood products and ecosystem services and being a major guarantor of rural development,
- provision of ecosystem goods and services and developing innovative financial support mechanisms for the valuation of forest ecosystem services to increase the economic viability of forest management,
- enhancing the long-term competitiveness of the forest sector on an international scale,
- diversifying the products and services and finding markets for new wood and non-timber products as well as services particularly with regard to innovations for the bioeconomy,
- increasing the forest area under forest management plans,
- encouraging a certification process and support the use of wood from certified sources,
- supporting the development of the biomass-based industry while ensuring a continued supply of raw material.

About one-quarter of the reporting countries have quantitative targets for the maintenance and encouragement of the productive forest functions, mainly focusing on additional timber supply through better utilisation of the increment and on accumulated timber volumes.

Although most countries have policy objectives related to Criterion 3, only seven countries reported on a variety of related quantitative targets (see Table C.3-1).

Table C.3-1: Country specific targets on the productive functions of forests

Country	Target	Specification	
Estonia	Increase of the annual increment	From 12.1 mil m ³ in 2015 up to 12.6 mil m ³ in 2020	
Finland		In commercial forests from 100 mil m ³ in 2013 to 110 mil m ³ in 2025 and 120-130 mil m ³ in 2050	
Finland		In all forests from 105 mil m ³ in 2013 to 115 mil m ³ in 2025	
Estonia	Increase volume of fellings	From 5.58 mil m ³ in 2015 up to 10.1 mil m ³ in 2020	
France		12 mil m ³ in 2026	
Slovenia		6.8 mil m ³ per year	
Austria		18.5 mil m ³ per year	
Lithuania		+15% for 2019-2023	
Austria		Increase of timber utilisation	85% of the increment
Lithuania		The utilisation of cutting residues for biofuel production	0.25 mil m ³ in 2018 up to 0.5 mil m ³ in 2020
Slovenia	Increase the market value of game and hunting	2 mil EUR annually	
Austria	Increase of marketed non-timber products and services	20% by 2020, (the reference year 2005)	
Estonia	Increase of forest area under management plan or equivalent	From 70% in 2015 up to 90% in 2020	
Austria		General increase	
Austria	Increase of certified forest area	General increase	
Slovakia	Increase the area of certified forests and number of chain of custody certificates	General increase	

Institutional measures focus on marketing and promotion of forest resources mobilisation. Valorisation of forest ecosystem services was also highlighted.

To maintain and encourage the productive function of forests, measures were taken in 19 reporting countries. These comprise additional institutional support for enhancement of valuation, marketing and promotion of wood and non-wood forest products in two Central European countries. Five European countries coordinated with related sectors and made strategic alignments with future growth or economy strategies and action programmes for mobilisation of forest resources. The exploitation of sustainable wood utilisation potential was reported by four countries from Central and South-East Europe. Promoting the social acceptance for the economic use of the forests

and encouraging the use of wood was undertaken by five countries. One Central-West European country developed and established instruments to increase the resilience of the forest and wood-based sector in case of ecological and economic crises. The development of a system for the valorisation of forest ecosystem services (e.g. for recreation, drinking water, CO₂ sink services) was reported by three countries.

Legal, financial and communication policy tools were applied by 22 countries to reach the objectives. They include amendments to forest law and new regulations, Rural Development Programmes and public financial support for forest owners for harvesting, management plans and certification as well as the promotion of increased consumption of forest products.

Legal: Forest and related law (e.g. tax law) are the main legal instrument for regulating the utilisation of timber, non-wood forest products and ecosystem services. The majority of the countries reported on updates and amendments of respective laws to better facilitate the productive functions. New regulations on the collection and marketing of non-wood forest products were reported by one South-West European country. The elaboration and adoption of national C&I for SFM were reported by a Central-East European country. The implementation of the EU Timber Regulation was also mentioned.

Financial: Public financial support for forest management planning and for investments that will enhance the forestry potential or relate to the mobilising wood use, transport, processing and adding value to wood products was reported by nine countries. To facilitate the mobilisation of timber as a renewable resource, financial support for forest owners through Rural Development Programme (RDP) Funds (e.g. for equipment, forest roads, saplings) was reported by five European countries. Financial support was provided by two countries for certification activities.

Communication: Nine countries reported on communication tools (flyers, publications, information campaigns) put in place mainly for the promotion of wood utilisation by private forest owners and to stimulate wood and non-wood products consumption. NFI based forest reports to inform domestic forest policy about sustainable forest management, to support forest research and fulfil national and international reporting commitments were mentioned by two countries.

Achievements over the past five years comprise an increased motivation of forest owners to make more effective use of their forests and seeking to meet the timber supply demands of the bioeconomy as well as increased recognition of non-wood forest products and services. Wood-based innovations contributed to increased use of timber. Forest areas under management plans and certified forest areas increased.

20 countries reported on achievements in the area of Criterion 3. This comprises: Six countries from all over Europe reported that the share of fellings as a percent of net annual increment has been increased considerably but remains below the sustainable harvesting maximum in reflecting an increased motivation of forest owners to make better use of their forests and seeking to meet the timber supply demands of the bioeconomy.

Five countries reported that wood-based innovations have contributed to increasing the use of wood, particularly in construction. In four countries increased promotion and marketing activities were conducted. Six countries reported that particularly through the RDP measure "Marketing of Wood and Non-Wood Forest Products" the potential of non-wood forest products and services in rural areas was increasingly recognised and that volumes collected and related revenues for forest owners increased, reflected in recently available forest inventory data. New possibilities to financially sustain the equipment and infrastructure for forest management including timber harvesting and transport were reported by four countries. An increase in forest area under management plans was reported by three countries. Two countries reported on achieving their internal goals related to forest certification.

The major challenges and obstacles to achieve the policy objectives are occasionally seen in low economic efficiency and performance of the forestry sector, a lack of entrepreneurial, innovative thinking, increasing competition for forest resources within the bioeconomy sectors and untapped potential for the valuation of ecosystem services.

15 countries reported on major challenges in the area of Criterion 3 and major obstacles in achieving the policy objectives. The improvement of the economic efficiency and performance of the forestry sector is seen challenging by four, mainly Central-West European countries. The price pressure arising from increasing costs for the forest management, increasingly scarce public funding and the problem of volatile wood prices render significant organisational adaptations necessary in five mainly Central-West European countries. The short-term nature of current economic and political considerations and actions and the lack of entrepreneurial, innovative thinking and action have made it more difficult to make the necessary changes in five Central-West and Central-East European countries. Efficient forest management was mentioned by seven countries a precondition for the provision of numerous forest services desired by the economy (e.g. wood production) and society (e.g. protective forest service, biodiversity, recreation) and for success on wood markets. However, production potential is usually not being fully exploited due to diverse reasons and the volume of wood being harvested is lower than increment, particularly in private and mountain forests. Hence, three countries have reported high standing volumes. The valuation of ecosystem services is not utilised in any country in

the region. To create favourable conditions and opportunities for establishing markets for non-wood forest products is seen challenging in three countries. Ensuring that biomass and mainstream forest industries can co-exist around timber supply is also seen challenging in three countries. A best possible compromise for conflicts between rising demand for renewable raw materials and the requirements of nature conservation was mentioned challenging by four countries.

Forest management plans⁶

Nearly 150 million ha of forest are under management plans and their equivalents as reported by 21 countries, accounting between them for 85% of Europe's forest area. Between 75% and 100% of the forest area are under management plans, nearly 100% in South-East Europe. In general, the percentage is rather high and 76% of the forest area in reporting countries is under a management plans.

In 18 countries, these plans are obligatory, in thirteen not obligatory or only partially so. In 26 countries, the plans are reported to an official body. The differences between the country groups, which reflect political choices and administrative traditions, are briefly summarised below (percentages apply to reporting countries only):

- in North Europe, 88% of forests are under management plans, but in most countries of this

region (six out of seven reporting), these plans are not obligatory,

- in Central-West Europe, 53% of forests are under management plans, which are obligatory in only two countries,
- in Central-East Europe, 86% of forests are under management plans, which are, with specific exceptions, obligatory in all countries,
- in South-West Europe, data were only available for the Iberian Peninsula, where 36% of forest area is under a management plan, although such plans are obligatory in both countries. However, small holdings and many private forests are exempt from this obligation,
- in South-East Europe, nearly all the forest in the reporting countries is under a management plan.

The measures of forest management plans are compulsory in 12 countries and partially compulsory in 15 countries. They are not compulsory in 3 North European countries. Issues as the volume of harvest, regeneration systems, reforestation species composition, tending and other silvicultural operations and deadwood volume do not have the same focus of regulation in the forest management plans of the 29 or 30 responding countries (see Table C.3-2). The main focus is on the measures of harvest and regeneration.

Table C.3-2: Issues regulated in forest management plans

Issues	Regulated in the forest management plan		
	Yes	Partially	No
Regeneration systems	23	5	2
Volume of harvest	21	8	1
Tending and other silvicultural operations	20	8	1
Reforestation species composition	17	10	2
Deadwood volume	7	10	13

⁶For this section, data reported through the qualitative indicators enquiry were reviewed and supplemented with information supplied during the preparation of the country profiles in chapter 4. National information is summarised in Annex Table 57.

Certification⁷

Certification is an important tool to communicate and demonstrate to stakeholders and final wood-product consumers the sustainability of forest management and its products, and for this reason is included as one subcomponent in SDG indicator 15.2.1. For this report, data on certified area were available for 33 countries, accounting for nearly 90% of the forest area in Europe.

Nearly 105 mil ha, 52% of the forest area in reporting countries, is certified. About 80 mil ha is certified by PEFC and 52 mil ha by FSC. Over 28 mil ha is certified by both schemes. Four countries reported that no certification scheme was active in their country.

The differences between and within the subregions reflect many factors, but, above all, the the increasing wood-product-consumers' awareness of the importance of sustainable forest management. The

situation in the country groups is briefly summarised below (percentages apply to reporting countries only):

- in North Europe, 69% of forests are certified, with about a fifth of the certified area under dual certification,
- in Central-West Europe, 58% of forests are certified, with 12% of this area certified to both schemes,
- in Central-East Europe, 72% of forests are certified. In two countries, Belarus and Poland, nearly all certified forests are under dual certification,
- in South-West Europe, 12% of forests are certified,
- in South-East Europe, 20% of forests are certified, although one country, Croatia, has 93%, the highest share among countries.

⁷ For this section, data reported through the qualitative indicators enquiry have been supplemented with information supplied during the preparation of the country profiles in chapter 4. National information is summarised in Annex Table 58.