DETAILED TABLES

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Preface

This publication presents the results of Eurostat's first regular collection of integrated environmental and economic accounts for forests from EU and EFTA countries.

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The framework for the forest accounts was developed by the Eurostat Task Force on Forest Accounts and tested in pilot studies in several countries. The work in the Task Force and the pilot studies benefited from substantial financial support provided by the European Commission's Directorate General Environment.

The publication was prepared by Steinar Todsen of Eurostat B1, with contributions from Anton Steurer of Eurostat B1 and Gérard Gie of Planistat Europe. It is one of the outputs of Eurostat's Environmental Accounting work, and contributes to various EU-wide and international activities in the context of national accounts and of environmental accounting, including the implementation of the European System of Accounts (ESA 1995) and the new world-wide System of Environmental and Economic Accounting (SEEA 2000).

In the future, Eurostat is planning to expand the collection of forest accounts data to include environmental and recreational functions of forests. A set of tables for these functions has been proposed by the Task Force on Forest Accounts. For many of these services the basic data are not yet available, but the situation will probably improve in the future, because of the political and scientific interest in these topics. Accounts for the carbon binding functions of forests are the most developed, and will be included in the next round of data collection.

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1 Introduction

This publication presents the results of Eurostat's first regular collection of integrated environmental and economic forest accounts from EU and EFTA countries. The accounts presented are based on the European Framework for Integrated Environmental and Economic Accounting for Forests (IEEAF). The IEEAF was developed by the Eurostat Task Force on Forest Accounting, and has been documented in European Commission (2000a). It has been tested in pilot studies in several countries. The numerical results and methodological findings of the pilot studies are documented in European Commission (1999a) and (2000b).

The forest accounts are part of the development of integrated environmental and economic accounts, and are developed as satellite accounts to the ordinary national accounts, as described in the European System of Accounts (ESA)[1] and the System of National Accounts (SNA)[2]. The definitions and methodology used in the IEEAF are consistent with the world-wide System of Environmental and Economic Accounting[3] (SEEA 2000).

The IEEAF is a comprehensive system of accounts for wood-related as well as non-wood (environmental and recreational) functions of forests. The accounts presented in this publication focus on the wood supply function of forests, and may be called the IEEAF 'timber accounts' for short. The aim of these timber accounts is to describe forest–related assets, economic activities and products. Included are asset accounts for wooded land and timber in physical and monetary terms, parts of the production and capital accounts of the forestry and logging industry, as well as physical and monetary supply and use tables for different kinds of wood and wood products. The concepts, definitions and classifications used are generally consistent with those of the national accounts.

The non-wood part of the IEEAF focuses on the environmental and recreational functions of forests, such as carbon storage, recreation, biodiversity and protection of soil, water, etc. These services are not covered in this publication, but pilot studies have recently been completed in several EU countries. These studies will be documented in a separate Eurostat publication, see European Commission (forthcoming).

This timber accounts publication is divided into a summary section and three main sections. Section 3 presents the physical and monetary asset accounts, which show the stocks and changes in stocks of wooded land and of standing timber. Section 4 covers the output of forest-related products as well as economic accounts for the forestry and logging industry. Section 5 presents supply and use tables for wood and wood products, in physical as well as monetary terms. Each main section has three subsections. The first subsection gives an overview of the results, the second explains the sources and methods used and the third shows the detailed tables for each country.

[1] Commission of the European Communities (1996).
[2] Commission of the European Communities et al (1993).
[3] Commission of the European Communities et al (forthcoming).

2 Summary of the main results

- Forest and other wooded land cover around 135 million hectares, or 42%, of the EU-15 territory. In the four EFTA countries there is about 13 million ha of forest and other wooded land, which is 29% of the EFTA territory.

- About 70% of EU-15 forest and other wooded land, 95.5 million ha, is available for wood supply. The EU countries with the largest areas available for wood supply are Sweden, Finland, France, Spain and Germany. In the EFTA countries there are 7.7 million ha of forest and other wooded land available for wood supply, most of it in Norway.

- The volume of standing timber in the EU-15 can be estimated at 15.1 billion m^3, with 88%, or 13.3 billion m^3, available for wood supply. The EU countries with the largest standing volumes are Germany, Sweden, France, Finland and Austria. In the EFTA countries there are around 1.2 billion m3 of standing timber available for wood supply.

- The natural growth, or gross increment, of standing timber in the EU is about 0.5 billion m^3 per year, which corresponds to 3.6% of the standing volume or 5.0 m^3/ha.

- For the EU as a whole, only around 66% of the gross annual increment is currently being removed. The volume of standing timber is increasing at a rate of around 1% per year, both in the EU and in the EFTA countries.

- Converted to CO_2 equivalents, the gross annual increment of standing timber represents about 440 million tonnes of CO_2, or 13% of annual CO_2 emissions in the EU. With removals deducted, the net increase in the standing timber corresponds to 150 million tonnes of CO_2 or 4.5% of EU emissions.

- The combined value of wooded land and timber in the EU-15 can be estimated at 395 million euro in the late 1990s, with 35 billion euro for the EFTA countries. The value of standing timber makes up around 80% of the total in both the EU and EFTA.

- The total value added in forestry and logging in the EU can be estimated at around 13.5 billion euro in 1999. This is around 8% of the total value added in the industry group Agriculture, hunting, forestry and fishing, or 0.2% of the total gross domestic product (GDP). The EU countries with the largest value added in forestry are France, Finland, Sweden and Germany.

- The forests in the EU supply most of the domestic demand for wood and wood-related products.

- The total output of saw logs, pulp wood and fuel wood in the EU-15 was around 300 million m^3 in 1999. Imports from countries outside the EU increased total supply to about 334 million m^3. With exports of 3 million m^3, 331 million m^3 was available for domestic use. The countries with the largest output of wood were France, Sweden, Finland and Germany, and these countries were also the largest users. The wood is used as input in the production of wood products and pulp, and as fuel. The EFTA countries produced around 13 million m^3 of wood in 1999.

- For sawnwood and wood-based panels, total output in the EU-15 was 116 million m^3 in 1999, with Germany, Sweden, France and Finland as the largest producers. Net imports increased the volume available for domestic use to 132 million m^3. Output in the EFTA countries was 5 million m^3.

- Finland and Sweden are the EU's largest producers of pulp, with around 60% of the total output of 37 million tonnes. Net imports increase the amount available for domestic use in the EU to 44 million tonnes. Production in the EFTA countries was 2.6 million tonnes.

- Total output of paper (including paperboard) was about 83 million tonnes in the EU-15 in 1999, with Germany, Finland, Sweden and France as the major producers. The EU was a net exporter of around 5 million tonnes of paper. The EFTA countries produced about 4 million tonnes.

3 Asset accounts for wooded land and standing timber

3.1 Main results

3.1.1 Physical data for wooded land and standing timber

Forest and other wooded land cover around 135 million hectares (ha), or 42%, of the EU-15 territory, see Table 1. Of this total, about 113.5 million ha is classified as forest land, while the rest is other wooded land[4], which has a lower tree crown cover than forest land (see section 3.2 for details on the definitions). In the four EFTA countries there is about 13 million ha of forest and other wooded land.

For different reasons, some of the forest and other wooded land is not used for wood production. There may be legal restrictions on wood production in order to protect soil, water, biodiversity, landscape etc., or wood production may not be profitable because of low physical productivity, low wood quality or high harvesting or transport costs. Areas classified as other wooded land are normally not used for regular wood production, and some of the forest land is also classified as not available for wood supply. These areas are about 39.5 million ha in the EU.

Table 1: Area of wooded land, 1000 ha, EU and EFTA countries

	Forest and other wooded land			Total area	Forest and other wooded land in % of total area
	Available for wood supply	Not available for wood supply	Total		
EU-15 and EFTA	**103 247**	**45 283**	**148 530**	**370 779**	**40**
EU-15	**95 559**	**39 599**	**135 158**	**323 963**	**42**
Belgium	639	33	672	3 053	22
Denmark (1)	464	7	471	4 309	11
Germany	10 190	688	10 878	35 702	30
Greece	3 094	3 419	6 513	13 196	49
Spain	10 479	15 505	25 984	50 596	51
France	14 435	1 438	15 873	54 919	29
Ireland	580	11	591	7 029	8
Italy	6 013	4 829	10 842	30 132	36
Luxembourg	86	3	89	259	34
Netherlands	314	25	339	3 735	9
Austria	3 352	572	3 924	8 387	47
Portugal	1 897	1 570	3 467	9 204	38
Finland	20 672	2 096	22 768	33 814	67
Sweden	21 236	9 023	30 259	45 218	67
United Kingdom	2 108	381	2 489	24 410	10
EFTA	**7 688**	**5 684**	**13 372**	**46 816**	**29**
Iceland	15	116	131	10 295	1
Liechtenstein	4	3	7	16	44
Norway	6 609	5 391	12 000	32 376	37
Switzerland	1 060	174	1 234	4 129	30

Source: Forest accounts data supplemented with data from Eurostat Forestry Statistics.
The data refer to various years in the 1990s, but since wooded land changes only slowly, they can be regarded as representative of the situation in 1999.
(1) The data for Denmark does not include other wooded land.

This leaves 95.5 million ha, about 70% of EU-15 forest and other wooded land, as available for wood supply. The share that is available for wood supply is higher in the Northern European countries than in the Southern countries, where other wooded land is significant, and forests are important for protection of

[4] Source: Eurostat Forestry Statistics, see e.g. European Commission (1999b).

soil and water. The EU countries with the largest areas available for wood supply are Sweden, Finland, France, Spain and Germany, which together have around 80% of the EU-15 total. In the EFTA countries there are 7.7 million ha of forest and other wooded land available for wood supply, most of it in Norway.

Growing conditions (temperature, rainfall, soil type, etc.) and species composition vary considerably across Europe, which means that the area of forest and other wooded land available for wood supply is not necessarily a good indicator for potential wood production. It needs to be supplemented with data on the standing volume of timber, see Table 2.

Table 2: Volume of standing timber, 1000 m^3, EU and EFTA countries

	Standing volume on wooded land			Gross increment on wooded land available for wood supply	Removals on wooded land available for wood supply
	Available for wood supply	Not available for wood supply	Total		
EU-15 and EFTA	**14 536 172**	**1 842 575**	**16 378 747**	**513 488**	**334 096**
EU-15	**13 363 789**	**1 769 814**	**15 133 603**	**477 238**	**314 560**
Belgium	139 835	1 198	141 033	5 125	4 400
Denmark (1)	75 523	1 058	76 581	4 210	2 922
Germany	2 991 177	205 231	3 196 408	89 023	50 543
Greece	141 990	14 934	156 924	3 800	2 408
Spain	496 551	109 739	606 290	19 190	14810
France	2 494 300	:	2 494 300	107 700	66 200
Ireland	43 000	1 000	44 000	3 450	2 330
Italy	876 744	641 848	1 518 592	19 028	8 381
Luxembourg	20 517	0	20 517	667	360
Netherlands	53 352	12 663	66 015	2 409	1 219
Austria	1 055 307	75 000	1 130 307	28 933	19 521
Portugal	189 192	117 172	306 364	13 523	11 000
Finland	1 871 200	79 900	1 951 100	73 800	61 000
Sweden	2 621 601	449 571	3 071 172	91 670	61 266
United Kingdom	293 500	60 500	354 000	14 710	8 200
EFTA	**1 172 383**	**72 761**	**1 245 144**	**36 250**	**19 536**
Iceland	374	730	1 104	4	0
Liechtenstein	1 406	351	1 757	20	14
Norway	806 767	:	806 767	27 164	13 436
Switzerland	363 836	71 680	435 516	9 062	6 086

Source: Forest accounts data supplemented with data from Eurostat Forestry Statistics.
The data refer to various years in the 1990s.
(1) The data for Denmark does not include other wooded land.

The volume of standing timber in the EU-15 can be estimated at 15.1 billion m^3, with 88%, or 13.3 billion m^3, available for wood supply. The EU countries with the largest standing volumes are Germany, Sweden, France, Finland and Austria, which have over 80% of the EU standing timber available for wood supply. In the EFTA countries there are around 1.2 billion m3 of standing timber available for wood supply.

As shown in Table 3, the different growing conditions are reflected in large variations in the density of the forest across Europe. The average density of the standing timber is 140 m^3/ha for the EU and 152 m^3/ha for the EFTA countries. The highest densities are found in Liechtenstein, Switzerland and Austria, with over 300 m^3/ha, and the lowest in the Greece and Spain, with less than 50 m^3/ha. The Nordic countries also have below average densities.

The natural growth, or gross increment, of standing timber in the EU is about 0.5 billion m^3 per year, which corresponds to 3.6% of the standing volume or 5.0 m^3/ha. Again, it is the central EU and EFTA countries

that have the highest productivity, measured in m^3/ha, while it is considerably lower in the Nordic and in the Mediterranean countries.

For the EU as a whole, only around 66% of the gross annual increment is currently being removed. While there are some other reductions in the stock besides removals (e.g. natural losses and logging losses), the volume of standing timber in the EU is increasing at a rate of around 1% per year. This is also the case for the EFTA countries.

The volume data for standing timber can be converted into carbon, using a factor of 0.33 tonnes of carbon per m^3 of standing timber, an average for the EU calculated from data in the TBFRA 2000. To convert to CO_2 equivalents the factor is 0.92 tonnes of CO_2 per m^3 of timber (European Commission 2001b). This means that the EU-15 gross increment of close to 480 million m^3 corresponds to about 160 million tonnes of carbon or 440 million tonnes of CO_2. This is 13% of the total EU-15 emissions of 3300 million tonnes of CO_2 in 1999 (European Environment Agency 2002). With removals deducted, the net increase in the standing timber corresponds to 150 million tonnes of CO_2 or 4.5% of EU-15 emissions. The effect of removals on the CO_2 emissions depends on what the wood is used for. Wood used for construction may last for many years, while wood used to make paper may be burnt or decomposed after a short period.

Table 3: Main characteristics of wooded land available for wood supply, EU and EFTA countries

	Density of standing timber	**Gross increment**		**Removals**		
	m^3/ha	m^3/ha	% of standing volume	m^3/ha	% of standing volume	% of gross increment
EU-15 and EFTA	**141**	**5,0**	**3,5**	**3,2**	**2,3**	**65**
EU-15	**140**	**5,0**	**3,6**	**3,3**	**2,4**	**66**
Belgium	219	8,0	3,7	6,9	3,1	86
Denmark	163	9,1	5,6	6,3	3,9	69
Germany	294	8,7	3,0	5,0	1,7	57
Greece	46	1,2	2,7	0,8	1,7	63
Spain	47	1,8	3,9	1,4	3,0	77
France	173	7,5	4,3	4,6	2,7	61
Ireland	74	5,9	8,0	4,0	5,4	68
Italy	146	3,2	2,2	1,4	1,0	44
Luxembourg	239	7,8	3,3	4,2	1,8	54
Netherlands	170	7,7	4,5	3,9	2,3	51
Austria	315	8,6	2,7	5,8	1,8	67
Portugal	100	7,1	7,1	5,8	5,8	81
Finland	91	3,6	3,9	3,0	3,3	83
Sweden	123	4,3	3,5	2,9	2,3	67
United Kingdom	139	7,0	5,0	3,9	2,8	56
EFTA	**152**	**4,7**	**3,1**	**2,5**	**1,7**	**54**
Iceland	25	0,3	1,1	0,0	0,0	0
Liechtenstein	352	5,0	1,4	3,5	1,0	70
Norway	122	4,1	3,4	2,0	1,7	49
Switzerland	343	8,5	2,5	5,7	1,7	67

Source: See Tables 1 and 2.

3.1.2 Monetary data for wooded land and standing timber

In addition to the physical data on wooded land and standing timber, the IEEAF also includes estimates of the values of the forest assets. Standing timber and bare wooded land are to be valued separately. In the IEEAF, standing timber is valued by applying average stumpage prices to the volume data. The stumpage price is the price paid by the feller to the forest owner for standing timber that is ready to be felled. (For more details on valuation of forest assets, see section 3.2.) Based on this method, the value of the EU-15 standing timber available for wood supply can be estimated at about 310 billion euro in the late 1990s, see Table 4. Separate value estimates have been provided for six EU countries, covering 83% of the total volume of standing timber, and for the other EU countries the stumpage price is assumed to be the same as in France. (France is a country with large and varied forests, so it seems reasonable to use the French average price as an estimate for the other EU countries.)

For wooded land, the IEEAF suggests that the value should be estimated based on market transactions of bare forest land, if such data is available. Alternative data sources are transactions of forest estates (land with standing timber) or administrative data. As for standing timber, separate estimates are available for six EU countries, covering 74% of the total area that is available for wood supply. The total value of forest and other wooded land available for wood supply in the EU-15 can be estimated at 86 billion euro, again assuming that the value per ha in the other EU countries is the same as in France.

Table 4 shows that the value per ha varies a lot across countries. It is highest in Austria, Denmark and Germany, very low in Sweden and Finland, and relatively low also in France. The density and productivity of the forest clearly influence the price of forest land, but the price is also affected by other factors. These can be other types of income from the forest (e.g. hunting rights) and alternative uses of the land, such as farming or construction, which is related to population density. In Sweden and Finland, standing volume and growth per ha are relatively low, and the forest land has few alternative uses of economic significance, which can (at least partly) explain the low values per ha compared to the more productive and densely populated areas like Austria, Germany and Denmark. It is also possible that differences in data sources and estimation methods account for some of the differences.

The combined value of wooded land and timber in the EU-15 can be estimated at 395 million euro in the late 1990s. Adding an estimate for the EFTA countries increases this by about 10% to around 430 billion euro. In comparison, the value of the oil and gas reserves in the EU and EFTA has been estimated at 274 billion euro in 1999, with about 146 million in the EU and the rest in Norway, see European Commission (2002).

Table 4: Value of wooded land and standing timber, EU and EFTA countries

	Forest and other wooded land available for wood supply			**Standing volume available for wood supply**			**Total value**
	1000 ha	Euro/ha	Million euro	1000 m3	Euro/m3	Million euro	Million euro
EU-15 and EFTA	**103 247**	**897***	**92 629***	**14 536 172**	**23***	**340 064***	**432 693***
EU-15	**95 559**	**903***	**86 280***	**13 363 789**	**23***	**309 172***	**395 452***
Denmark	464	4 114	1 909	75 523	27	2 072	3 981
Germany	10 190	3 200p	32 608p	2 991 177	30	89 326	121 934
France	14 435	773	11 157	2 494 300	21	51 527	62 684
Austria	3 352	4 397	14 738	1 055 307	29	30 901	45 639
Finland	20 672	252	5 215	1 871 200	25	46 823	52 038
Sweden	21 236	55p	1 168p	2 621 601	16p	41 946p	43 114p
Total 6	**70 349**	**949**	**66 795**	**11 109 108**	**24**	**262 595**	**329 390**
Other EU	25 210	773*	19 485*	2 254 681	21*	46 577*	66 062*
EFTA	**7 688**	**826***	**6 349***	**1 172 383**	**26***	**30 892***	**37 241***

Source: Forest accounts data supplemented with pilot studies (p) and Eurostat estimates (*). It is assumed that the 'Other EU' countries have the same average values as France. For the EFTA countries, it is assumed that Iceland and Norway have the same average values as Finland, and that Liechtenstein and Switzerland have the same averages as Austria.

3.1.3 Defoliation

Defoliation is a reaction to several environmental factors that influence trees, in particular weather conditions, insect and fungi attacks, and air pollution. Table 4 shows the percentage of trees with needle or leaf loss of at least 25%, which is an important indicator of the health of the forests. In 1999, the share of damaged trees of all species was 18% for the EU as a whole. The EU/EFTA countries with the highest levels of defoliation were Italy and Norway, with 35% and 29%, respectively. This was around three times as high as in the countries with the lowest defoliation, Austria, Portugal and Finland. In most countries, the proportion of broadleaves that are damaged is somewhat higher than for conifers.

The development of defoliation varies considerably across countries and species. Compared to 1994, crown conditions improved most in Denmark and Luxembourg, while the largest deterioration was in Italy. For the EU as a whole, defoliation increased slightly from 1994 to 1999, with little change for conifers and an increase for broadleaves.

Table 5: Percentage of trees with needle or leaf loss of at least 25%, EU an EFTA countries

	All species		Conifers		Broadleaves	
	1994	1999	1994	1999	1994	1999
EU-15	**16***	**18**	**16***	**15**	**16***	**22**
Belgium	17	18	21	16	13	19
Denmark	37	13	39	10	32	19
Germany	24	22	22	19	30	27
Greece	23	17	13	14	35	20
Spain	19	13	19	10	20	16
France (1)	8	20	8	14	8	23
Ireland	20	13	20	13	:	:
Italy	20	35	15	23	21	39
Luxembourg	35	19	13	9	47	26
Netherlands	19	13	28	15	5	10
Austria	8	7	8	6	7	9
Portugal	6	11	5	6	6	14
Finland	13	11	13	12	12	9
Sweden	:	13	16	14	:	9
United Kingdom	14	21	15	20	17	23
EFTA						
Iceland						
Liechtenstein						
Norway	28	29	22	24	48	45
Switzerland	18	19	20	18	16	20

Source: ICP Forests, see UNECE and European Commission (2000) and (2001).
(1) For France, the 1994 and 1999 data are not directly comparable.
(*) The EU average for 1994 is a Eurostat estimate, and may not be fully comparable to the 1999 result.

3.2 Methodological notes

The IEEAF includes physical and monetary asset accounts for wooded land and for standing timber. The accounts show the opening stock, the changes during the accounting period and the closing stocks. The definitions used in the asset accounts are consistent with the SEEA 2000. They are to a large extent based on the UNECE/FAO Temperate and Boreal Forest Resource Assessment 2000 (TBFRA 2000), see UNECE and FAO (2000).

The IEEAF physical data on wooded land and standing timber are broadly consistent with the data presented in Eurostat's Forestry Statistics (European Commission 2001a and b), which are based on the TBFRA 2000. Differences may be due to more recent estimates used for the IEEAF or to different estimation methods, e.g. for the removal of fuel wood for own use. Another reason is that definitions in national statistical sources often differ, and while estimates were harmonised for the TBFRA 2000, such harmonised data may not be available for 1999.

3.2.1 Asset accounts for wooded land

The following definitions are used in the IEEAF asset accounts for wooded land:

Wooded land is divided first between forests and other wooded land. Both categories exclude land predominantly used for agricultural purposes.

Forest land is defined as land with tree crown cover (or equivalent stocking level) of more than 10 per cent and an area of more than 0.5 hectares. The trees should be able to reach a minimum height of 5 metres at maturity *in situ*. Forest land includes:

- young natural stands and all plantations established for forestry purposes which have yet to reach the crown density of 10 percent or tree height of 5 metres;
- areas normally forming part of the forest land area which are temporarily unstocked as a result of human intervention or natural causes but which are expected to revert to forest;
- forest roads, cleared tracts, firebreaks and other small open areas, as well as forest nurseries and seed orchards that constitute an integral part of the forest;
- forest land in national parks, nature reserves and other protected areas such as those of special environmental, scientific, historical, cultural or spiritual interest;
- windbreaks and shelter belts of trees with an area of more than 0.5 hectares and a width of more than 20 metres;
- rubber wood plantations and cork oak stands.

Other wooded land is defined as land with a tree crown cover (or equivalent stocking level) of either 5-10 percent of trees able to reach a height at least 5 metres at maturity *in situ* or a crown cover of more than 10 per cent of trees not able to reach a height of 5 m at maturity *in situ* (for example, dwarf or stunted trees) and shrub or brush cover. Areas having tree, shrub or bush cover that are less than 0.5 hectares in size and less than 20 metres in width are excluded and classified as "other land".

The next stage is to sub-divide forest land according to its availability for wood supply. (Other wooded land is normally not used for regular wood production.)

Forest land available for wood supply covers areas where legal, economic, or environmental restrictions do not have a significant impact on the supply of wood. It includes areas where harvesting of timber is not taking place, for example, because of long term utilisation plans or intentions.

Forest land not available for wood supply includes areas where legal, economic, or environmental restrictions prevent any significant wood production. Legal and/or environmental restrictions refer to protection for environmental and biodiversity conservation and other protection, including restrictions to ensure protection against soil erosion, avalanches and so on, and for special environmental, scientific, historical, cultural or spiritual interest. Economic restrictions appear in areas where physical productivity or wood quality is too low or harvesting and transport costs are too high to warrant wood harvesting, apart from occasional cuttings for own consumption.

The asset accounts for wooded land include the following categories of changes:

Changes due to economic activities: afforestation, i.e. the increase in the wooded land area (generally for wood production) due to human activity; and deforestation, i.e. the reduction in the area of wooded land due to human activity (for building use, agricultural activities, etc.)

Other changes: other changes in area due to natural, multiple or non-referable causes; e.g. natural colonisation or regression, etc.

Changes in use/status (wooded land): this category of changes includes all changes in classification within the wooded area (from available for wood supply to not available for wood supply, etc.).

The monetary data include two additional categories of changes:

Changes in classification records the transfer of the (initial) value of the land whose category has changed between the beginning and the end of the period, as an increase in the column corresponding to the final category, and a decrease in the column corresponding to the initial category.

Revaluation records the change in value of land due to changes in prices between the beginning and the end of the period. On the condition that flows are valued at the prices prevailing at the time when they occurred, the revaluation item is given by [value of the closing stock less value of the opening stock] less [value of all the other changes].

Data sources
Physical data for the area of wooded land can be found in the National Forest Inventories (NFIs), which are carried out on a regular basis in most EU and EFTA countries. The inventory cycle of the NFIs is usually several years, so the balances for a particular year will have to be estimated. The definitions used vary across countries, but internationally comparable data from NFIs have been collected by UNECE and FAO in the TBFRA 2000. Some data on changes in land use, such as afforestation, are usually available on an annual basis.

Valuation of wooded land
The IEEAF, like the SEEA 2000, recommends that forest land should be valued based on market transactions of bare forest land, if such data are available. Alternatively, the land value can be estimated as a share of the market value of forest estates (comprising both land and standing timber). Another possibility is to use administrative data, such as tax assessments, but these would need to be checked for possible bias. In some countries, tax values may be systematically lower than market values, for example.

Some problems need to be kept in mind when market transactions are used. The number of transactions per year is often very low, and many transactions that do take place may be influenced by hunting rights and questions of inheritance as much as by purely forestry motivations. Since forests are often not homogeneous, it is preferable, if the data are available, to classify forests according to their characteristics, to calculate a price for each category and to apply this price to the corresponding stock. Relevant classification criteria are the productivity of the land, and species and age structure of the standing timber, the existence of hunting rights and so on. Based on a sample of recorded transactions, the value of forest estates can also be estimated as a function of these characteristics using a hedonic pricing model. This method can be used to value forest land and standing timber separately by associating the characteristic used to one or the other underlying asset.

The land value integrates not only wood production values but also the value of other forest-related goods and services that may be sold by the owner. Wooded land not available for wood supply may thus receive a positive value.

For a detailed discussion of different valuation methods, including results of pilot studies in several EU countries, see European Commission (2000b).

3.2.2 Asset accounts for standing timber

Standing timber on wooded land is classified as available or not available for wood supply, according to the classification of the land it is located on. Some timber may also be removed from "other land". This category comprises: land that meets the definition of wooded land except that the area is less than 0.5 ha and the width is less than 20 m; scattered trees in permanent meadows and pastures, urban parks and

gardens, hedgerows etc. In the IEEAF tables, the stock of standing volume and the increment are not requested for this category of land.

The IEEAF, following the TBFRA 2000, defines the s*tanding volume* of timber as the volume of standing trees, living or dead, above stump measured over bark to the top. It includes all trees regardless of diameter, tops of stems, large branches and dead trees lying on the ground which can still be used for fibre or fuel. Small branches, twigs and foliage are not included in standing volume.

The asset accounts for standing timber include the following categories of changes:

Gross increment is the volume of natural growth during the period. It is generally calculated by modelling, based on opening stocks by age and species, biological parameters etc. Annual variations of natural growth may be high due to climatic variations – therefore averages over several years (e.g. 5 years) should be used.

Removals refer to those fellings that are removed from the wooded land and other felling sites during the period. Included are removals of trees felled during an earlier period, and removal of trees killed or damaged by natural causes.

Other changes: they cover all reductions in the volume of standing timber, which are not accounted for in removals. They include thinnings and cleanings left in the forest, and trees killed by natural causes (fire, insect attack, disease, wind-throw, landslide, flooding etc.) that are not removed. Other changes may also include a residual item, reflecting inconsistencies among the other data in the asset account.

Changes in use/status refer to changes in the standing volume due to 'changes in use/status' of the corresponding land area. They are recorded twice: as a decrease in the column corresponding to the initial category and as an increase in the column corresponding to the final category. An example is the timber on land that is reclassified from available for wood supply to not available for wood supply. Changes in use/status may also refer to the occasional removals of standing timber located on land 'not available for wood supply'. In this case a positive flow is recorded on the row 'changes in use/status', which is the counterpart of the negative flow recorded under removals.

The monetary data include two additional categories of changes:

Changes in classification records the transfer of the (initial) value of the standing timber whose category has changed between the beginning and the end of the period.

Revaluation records the change in value of standing timber due to changes in prices between the beginning and the end of the period. On the condition that flows are valued at the prices prevailing at the time when they occurred, the revaluation item is given by [value of the closing stock less value of the opening stock] less [value of all the other changes].

Data sources

As for the area of wooded land, the data sources for the volume of standing timber are National Forest Inventories (NFIs). The inventory cycle of the NFIs is usually several years, so the balances for a particular year will have to be estimated. Internationally comparable data from NFIs have been collected by UNECE and FAO in the TBFRA 2000.

Some data on changes, such as removals of timber, are usually available from forestry statistics on an annual basis.

Valuation of standing timber

The theoretical value of standing timber is equal to the discounted future stumpage price for mature timber after deducting the costs of bringing the timber to maturity. The stumpage price is the price paid by the feller to the owner of the forest for standing timber. The costs include thinning (net of any receipts), other forest management costs and rent on the forest land.

However, applying the present value method described above is relatively complicated and requires a lot of data, so the IEEAF and the SEEA 2000 suggest simplified valuation methods. For the IEEAF tables, it is recommended that standing timber should be valued using the stumpage value method. This is a simple

method which provides a good starting point for valuation of standing timber, and it can be used for all entries in the account for standing timber. The method involves multiplying the physical stock or flow with the average stumpage price of the timber removed. In some countries there is a market for standing trees, and the stumpage prices are directly available. In other countries, only the prices of the harvested timber (wood in the rough) are available. In this case, the price of the standing timber has to be estimated by deducting the costs of logging and transport from the price of wood in the rough. The simplest version of the stumpage value method uses the average stumpage price of all timber removed, other variants distinguish between the main species.

The stumpage value method can be seen as a special form of the net present value method, based on the assumption that the rate of discount is equal to the natural growth rate of the forest, which offsets the need for discounting. In most EU countries, standing timber grows at around 3-5% per year, and assuming a similar rate of discount seems quite reasonable. For a detailed discussion of different valuation methods, including results of pilot studies in several EU countries, see European Commission (2000b).

Some conclusions from the IEEAF pilot studies were:

- To ensure consistency with the economic transactions in the national accounts, removals should always be valued using the stumpage value method, even if another method (e.g. a net present value method) is used for the stocks and gross increment.
- A zero value should be given to the stocks of standing volume located in wooded land not available for wood supply. However, timber located on wooded land not available for wood supply may occasionally be harvested. In this case, a positive increase in value is recorded in the row 'changes in use/status', which is the counterpart of the decrease recorded in the row 'removals'.
- If it is likely that part of the standing timber on land that is available for wood supply will never be harvested or will not be recoverable, it may be necessary to take this into account by reducing the value of the stock and the gross increment.

Cultivated and non-cultivated timber

For timber, as well as other biological resources, the SEEA 2000 and the ESA95/SNA93 distinguish between cultivated and non-cultivated resources. A resource is classified as cultivated if its "natural growth and/or regeneration is under the direct control, responsibility and management of institutional units". For timber, "direct control, responsibility and management" could be seeding and planting, thinning and other kinds of forest management.

However, forest management in Europe represents a continuum from intensely managed to totally undisturbed, and a clear-cut division into a cultivated and a non-cultivated category will always be difficult. Often, the data that would be needed to separate the stocks and related flows are not available. It was therefore decided not to distinguish between cultivated and non-cultivated timber in the IEEAF asset account.

For the IEEAF, the classification of timber into cultivated and non-cultivated is most important for the tables showing output from forestry, see section 4 below. That is because, following the ESA95/SNA93, the growth of cultivated timber is recorded as output of the forestry and logging industry, while output of non-cultivated timber is recorded only at the time of removal. Given the difficulties of separating the timber into cultivated and non-cultivated, a practical solution is to assume that all the forest available for wood supply is either cultivated or non-cultivated. Inaccessible or low-productivity forests will usually not be managed intensively, and should be classified as not available for wood supply and thus non-cultivated.

3.2.3 Defoliation

Defoliation is an important indicator of the health of the forests. The tables in section 3.3.3 show the percentage of trees with needle or leaf loss of at least 25%. This corresponds to defoliation classes 2 (moderate), 3 (severe) and 4 (dead) of the UNECE and EU defoliation classification. Surveys on defoliation are conducted within the framework of the International Co-operative Programme on Assessment and Monitoring of Air Pollution Effects on Forests (ICP Forests) and the European Union Scheme on the Protection of Forests against Atmospheric pollution. See UNECE and European Commission (2001) or www.icp-forests.org for more details.

ICP Forests collects standardised defoliation data from monitoring plots spread over a 16 x 16 km grid throughout Europe. In addition to this so-called transnational survey, there are also national surveys which may use different methodologies, e.g. different grid sizes. If this is the case, countries are asked to report both the national and the transnational results. As far as possible, data on the level of defoliation for sample trees is to be transformed into areas of wooded land and volumes of standing timber.

3.3 Individual country tables

3.3.1 Area and value of wooded land

This section presents asset accounts for wooded land for six EU countries, Denmark, Germany, France, Austria, Finland and Sweden, as well as one EFTA country, Iceland. The six EU countries cover 74% of the total area that is available for wood supply in the EU-15.

Table 6: Area and value of forest land, Denmark, 1998

	Forest land					
	Available for wood supply		Not available for wood supply		Total	
	1000 ha	Million ECU	1000 ha	Million ECU	1000 ha	Million ECU
Opening area	461	1968	7	28	468	1996
Changes due to economic activities	3	2			3	2
Afforestation	3	2			3	2
Deforestation						
Other changes						
Natural colonisation						
Natural regression						
Other						
Changes in use/status (wooded land)						
Changes in classification						
Revaluation		-61		-1		-62
Closing area	464	1909	7	27	470	1936

Data sources: Areas are based on the National Forest Inventory, and do not include other wooded land. Values are estimated using a hedonic price model, based on tax assessments and sales prices for forest properties.

Table 7: Area of wooded land, 1000 ha, Germany, 1999

	Forest and other wooded land		
	Available for wood supply	Not available for wood supply	Total
Opening area	10 190	678	10 868
Changes due to economic activities	9		9
Afforestation	12		12
Deforestation	-3		-3
Other changes	1		1
Natural colonisation	1		1
Natural regression			
Other			
Changes in use/status (wooded land)	-11	11	0
Closing area	10 190	688	10 878

Table 8: Area and value of wooded land, France, 1999

	Forest and other wooded land					
	Available for wood supply		Not available for wood supply		Total	
	1000 ha	Million euro	1000 ha	Million euro	1000 ha	Million euro
Opening area	14 397	11 128	1 434	1 108	15 831	12 236
Changes due to economic activities	4	3	0	0	4	3
Afforestation	43	33	4	3	47	36
Deforestation	-39	-30	-4	-3	-43	-33
Other changes	35	26	3	3	38	29
Natural colonisation	42	32	4	3	46	35
Natural regression	-6	-5	-1	0	-7	-5
Other	-1	-1			-2	-1
Changes in use/status (wooded land)	:	:	:	:	:	:
Changes in classification		:		:		:
Revaluation						
Closing area	14 435	11 157	1 437	1 111	15 873	12 268

Data sources: Areas are based on the National Forest Inventory and the TERUTI land use survey. Values are based on a survey by Ecole Nationale du Génie Rural des Eaux et des Forêts (ENGREF).

Table 9: Area and value of wooded land, Austria, 1999

	Forest and other wooded land					
	Available for wood supply		Not available for wood supply		Total	
	1000 ha	Million euro	1000 ha	Million euro	1000 ha	Million euro
Opening area						
Changes due to economic activities						
Afforestation						
Deforestation						
Other changes						
Natural colonisation						
Natural regression						
Other						
Changes in use/status (wooded land)						
Changes in classification						
Revaluation						
Closing area	3 352	14 738	572	2 515	3 924	17 253

Data sources: Areas are based on the Austrian Forest Inventory, and represent the average of 1992-1996. Values are based on the market price for forest in 1999.

Table 10: Area and value of wooded land, Finland, 1998

	Forest and other wooded land					
	Available for wood supply		Not available for wood supply		Total	
	1000 ha	Million ECU	1000 ha	Million ECU	1000 ha	Million ECU
Opening area	20 675	5 180	2 093	524	22 768	5 704
Changes due to economic activities	0	0			0	0
Afforestation	7	2			7	2
Deforestation	-7	- 2			- 7	- 2
Other changes						
Natural colonisation						
Natural regression						
Other						
Changes in use/status (wooded land)	-3	- 1	3	1		
Changes in classification						
Revaluation		36		4		40
Closing area	20 672	5 215	2 096	529	22 768	5 744

Data sources: Area data are from the Finnish Forest Research Institute and TBFRA 2000. Value per ha is estimated by the Finnish Forest Research Institute, based on data on transactions of forest estates.

Table 11: Area of wooded land, 1000 ha, Sweden, 1994

	Forest and other wooded land		
	Available for wood supply	Not available for wood supply	Total
Opening area			
Changes due to economic activities	Probably close to 0	Probably close to 0	Probably close to 0
Afforestation	Probably<1	0	Probably<1
Deforestation	Probably<1	Probably<1	Probably<1
Other changes			
Natural colonisation	Probably 1-10	Probably 1-10	Probably 1-10
Natural regression	Probably <1	Probably <1	Probably <1
Other			
Changes in use/status (wooded land)	-32	32	
Closing area	21236	9023	30259

Data sources: National Board of Forestry, TBFRA 2000 data based on the Swedish National Forest Inventory 1992-1996 (average 1994).

Table 12: Area of wooded land, 1000 ha, Iceland, 1999

	Forest and other wooded land		
	Available for wood supply	**Not available for wood supply**	**Total**
Opening area	14	116	130
Changes due to economic activities	1	0	1
Afforestation	1	0	1
Deforestation	0	0	0
Other changes			
Natural colonisation			
Natural regression			
Other	0	0	0
Changes in use/status (wooded land)	0	0	
Closing area	15	116	131

Data source: Iceland Forest Service

3.3.2 Volume and value of standing timber

This section presents asset accounts for wooded land for eight EU countries, Belgium, Denmark, Germany, Spain, France, Austria, Finland and Sweden, as well as two EFTA countries, Iceland and Norway. The eight EU countries cover 88% of the total volume of standing timber available for wood supply in the EU-15.

Table 13: Volume of standing timber, 1000 m^3, Belgium, 1997

	Standing volume on wooded land			On other land	Total
	Available for wood supply	Not available for wood supply	Total		
Opening stocks	139 110	1 147	140 257		140 257
Gross increment	5 125	51	5 176		5 176
Total removals	-4 400	0	-4 400		-4 400
Other changes					
Changes in use/status					
Closing stocks	139 835	1 198	141 033		141 033

Data source: TBFRA 2000

Table 14: Volume and value of standing timber, Denmark, 1998

	Standing volume on forest land				On other land	Total
	Available for wood supply		Not available for wood supply	Total		
	1000 m3	Million ECU	1000 m3	1000 m3	1000 m3	1000 m3
Opening stocks	74 234	1 957	1 047	75 281		75 281
Gross increment	4 210	115	11	4 221		4 221
Total removals	-2 922	-80		-2 922		-2 922
Other changes						
Changes in use/status						
Changes in classification						
Revaluation		80				
Closing stocks	75 523	2 072	1 058	76 581		76 581

Data sources: Volume data are based on National Forest Inventory. Values are calculated using the stumpage value method.

Table 15: Volume and value of standing timber, Germany, 1999

	Standing volume on wooded land				On other land	Total
	Available for wood supply		Not available for wood supply	Total		
	1000 m3	Million euro	1000 m3	1000 m3	1000 m3	1000 m3
Opening stocks	2 955 829	84 073	196 545	3 152 373		3 152 373
Gross increment	89 023	2 658	5 555	94 577		94 577
Total removals	-50 543	-1 509		-50 543		-50 543
Other changes						
Changes in use/status	-3 131	- 94	3 131			
Changes in classification						
Revaluation		4 197				
Closing stocks	2 991 177	89 326	205 231	3 196 407		3 196 407

Table 16: Volume and value of standing timber, Spain, 1999

	Standing volume on wooded land				On other land	Total
	Available for wood supply		Not available for wood supply	Total		
	1000 m3	Million euro	1000 m3	1000 m3	1000 m3	1000 m3
Opening stocks						
Gross increment	19 190	640	10 898	30 089		30 089
Total removals	-14 810	-494		-14 810		-14 810
Other changes						
Changes in use/status						
Changes in classification						
Revaluation						
Closing stocks						

Provisional data

Table 17: Volume and value of standing timber, France, 1999

	Standing volume on wooded land				On other land	Total
	Available for wood supply		Not available for wood supply	Total		
	1000 m3	Million euro	1000 m3	1000 m3	1000 m3	1000 m3
Opening stocks	2 464 600	50 914				
Gross increment	107 700	2 225				
Total removals	-66 100	-1 368				
Other changes	-11 800	-243				
Natural losses	-5 200	-107				
Logging losses	-6 600	-137				
Changes in use/status	0	0				
Changes in classification						
Revaluation		0				
Closing stocks	2 494 300	51 527				

Data sources: Volume data are based on the National Forest Inventory. Values are calculated using the stumpage value method.

Table 18: Volume and value of standing timber, Austria, 1999

	Standing volume on wooded land						On other land		Total	
	Available for wood supply		Not available for wood supply		Total					
	1000 m3	Million euro	1000 m3	Million euro	1000 m3	Million euro	1000 m3	Million euro	1000 m3	Million euro
Opening stocks										
Gross increment	28 933	847	500	15	29 433	862	300	9	29 733	871
Total removals	-19 521	-565	-300	-9	-19 821	-574	-220	-6	-20 041	-580
Other changes										
Changes in use/status										
Changes in classific.										
Revaluation		405		25		430		4		434
Closing stocks	1 055 307	30 901	65 000	1 903	1 120 307	32 804	10 000	293	1 130 307	33 097

Data sources: Volume data are based on the Austrian Forest Inventory, and represent averages of 1992-1996. Removals are from 1999. Values are calculated using the stumpage value method, with price data for 1999 (and 1998 for the estimate of revaluation).

Table 19: Volume and value of standing timber, Finland, 1998

	Standing volume on wooded land					On other land	Total
	Available for wood supply		Not available for wood supply		Total		
	1000 m3	Million ECU	1000 m3	Million ECU	1000 m3	1000 m3	1000 m3
Opening stocks	1 867 000	45 543	78 500		1 945 500	16 600	1 962 100
Gross increment	73 800	1 820	1 500		75 300		
Total removals	-61 000	-1 743			-61 000		
Other changes	-8 400	-150	-200		-8 600		
Changes in use/status	-100	-3	100	3	0		
Changes in classification							
Revaluation		1 356					
Closing stocks	1 871 200	46 823	79 900		1 951 100	16 600	1 967 700

Data sources: Volume data are from the Finnish Forest Research Institute and TBFRA 2000. Values are calculated using the stumpage value method.

Table 20: Volume of standing timber, 1000 m^3, Sweden, 1994

	Standing volume on wooded land			On other land	Total
	Available for wood supply	Not available for wood supply (1)	Total		
Opening stocks					
Gross increment	91 670	10 779	102 449	966	103 415
Total removals	-61 266	-706	-61 972	-652	-62 624
Other changes	4 849	217	5 066	76	5 142
Changes in use/status	-3 200	3200			
Closing stocks	2 621 601	449 572	3 071 172		3 071 172

Data sources: National Board of Forestry, TBFRA figures based on the Swedish National Forest Inventory 1992-1996 (average 1994).
(1) Closing stock also includes standing volume on other land.

Table 21: Volume and value of standing timber, Iceland, 1999

	Standing volume on wooded land				On other land	Total
	Available for wood supply		Not available for wood supply	Total		
	1000 m3	Million euro	1000 m3	1000 m3	1000 m3	1000 m3
Opening stocks	370		730	1100		1100
Gross increment	4	0	0	4		4
Total removals	0	0	0	0		0
Other changes	0	0	0	0		0
Changes in use/status	0		0	0		0
Changes in classification			0			
Revaluation						
Closing stocks	374		730	1104		1104

Data sources: TBFRA-2000, Iceland Forest Service

Table 22: Volume of standing timber, 1000 m^3, Norway, 1999

	Standing volume on wooded land			On other land	Total
	Available for wood supply	Not available for wood supply	Total		
Opening stocks	793 034		793 034		793 034
Gross increment	27 164		27 164		27 164
Total removals	-13 436		-13 436		-13 436
Other changes					
Changes in use/status					
Closing stocks	806 767		806 767		806 767

Data sources: Statistics Norway and the Norwegian Institute for Land Inventory

Note: In Norway, all forest areas that are not protected are usually considered available for wood supply. TBFRA-2000 has estimates of areas not available, based on distance to forest roads or low productivity.

3.3.3 Defoliation

Table 23: Defoliation, % of sample trees, Denmark

	1		2		3	
	Transnational survey data Defoliation % > 25		National survey data Defoliation % > 25%		Corresponding area (1000 ha)	
			1998		1998	
Conifers			17		29	
Broadleaves			30		87	
Total			25		117	

Data source: Danish Forest and Nature Agency

Table 24: Defoliation, % of sample trees, Germany

	1		2		3	
	Transnational survey data Defoliation % > 25		National survey data Defoliation % > 25%		Corresponding area (1000 ha)	
		1999		1999		1999
Conifers		19,2		19,1		6 869
Broadleaves		26,9		27,8		3 395
Total		21,7		22,0		10 264

Data sources: ICP Forests and Bundesministerium für Ernährung, Landwirtschaft und Forsten

Table 25: Defoliation, % of sample trees, Spain

	1		2		3	
	Transnational survey data Defoliation % > 25		National survey data Defoliation % > 25%		Corresponding standing volume (1000 m3)	
			1998	1999	1995	1999
Conifers			12,9	9,8		
Broadleaves			14,4	16,1		
Total			27,3	25,9		

Table 26: Defoliation, % of sample trees, France

	1		2		3	
	Transnational survey data Defoliation % > 25		National survey data Defoliation % > 25%		Corresponding standing volume (1000 m3)	
			1995	1999	1995	1999
Conifers			9,2	14,2	78 820	121 180
Broadleaves			14,2	22,9	189 040	308 850
Total			12,5	19,8	267 860	430 030

Data source: Forest Health Service

Table 27: Defoliation, % of sample trees, Italy

	1		2		3	
	Transnational survey data Defoliation % > 25		National survey data Defoliation % > 25%		Corresponding standing volume (1000 m3)	
			1999	2001		
Conifers			23,1	19,1		
Broadleaves			39,3	46,3		
Total			35,3	38,4		

Data source: Ministry for Agricultural and Forest Policy

Table 28: Defoliation, % of sample trees, Austria

	1		2		3	
	Transnational survey data Defoliation % > 25		National survey data Defoliation % > 25%		Corresponding area (1000 ha)	
	1999	2001	1999	2001	1999	2001
Conifers	5,8	7,3	6,4	9,6	27350	27350
Broadleaves	8,3	8,1	9,7	11,9	7970	7970
Total	6,1	7,4	6,8	9,8	35320	35320

Data source: Austrian Federal Forest Research Centre. Areas are based on transnational survey data.

Table 29: Defoliation, % of sample trees, Finland

	1		2		3	
	Transnational survey data Defoliation % > 25		National survey data Defoliation % > 25%		Corresponding area (1000 ha)	
	1998	2000				
Pine	3,4	3,2				
Spruce	26,1	26,3				
Broadleaves	5,6	9,5				
Total	11,6	11,4				

Data source: Finnish Forest Research Institute

Table 30: Defoliation, % of sample trees, Sweden

	1		2		3	
	Transnational survey data Defoliation % > 25		National survey data Defoliation % > 25%		Corresponding area (1000 ha)	
	1999	2000	1999	2000	Transnat. 2000	National 2000
Conifers	15,8	14,0	13,6	14,5	17300	13090
- Norway spruce	23,2	20,8	21,6	22,1	5548	4687
- Scots pine	7,5	6,5	6,1	7,1	7763	5882
Broadleaves	10,2	6,8	8,7	7,5	1102	844
Total	14,7	12,6	13,2	13,7	20600	16150

Data source: National Forest Inventory and Forest damage inventory Level I (Swedish University of Agricultural Sciences, Dept of forest resource management and geomatics, Umeå, Sweden)

Table 31: Defoliation, % of sample trees, Norway

	1		2		3	
	Transnational survey data Defoliation % > 25		National survey data Defoliation % > 25%		Corresponding area (1000 ha)	
	1999	2001	1999	2001	1999	2001
Conifers	23,1	22,4	26,1	24,8	6800	6800
Broadleaves	34,3	28,3	44,8	33,6	5200	5200
Total	27	24,5	30,8	26,9	12000	12000

Data source: The Norwegian Institute of Land Inventory. Transnational survey data comes from permanent plots located in 16x16 km grid net. National survey data comes from permanent plots located in 3x3 km grid net.

4 Output related to wooded land and economic accounts for forestry and logging

4.1 Main results

4.1.1 Output related to wooded land

Table 32 presents details on the output of products that are related to wooded land, for six EU countries and Norway. As can be expected, it is the characteristic products of forestry and logging, in particular wood in the rough and growth of cultivated timber, that are most important. (Not all countries include growth of timber as output, see section 4.1.2 for more on this topic.) In a country like Spain, other forestry products, such as cork, is also important. Output of the forestry and logging industry also includes some services that are related to forestry and logging, for example afforestation and protection against forest fires.

There are also some agricultural and animal products that are related to forests, such as mushrooms, berries, game meat and furs. The available data show that the output value of these products is relatively small compared to the wood.

Data on recreational services in forests, such as hunting as a sport and the operation of national parks are only available for Spain, but in this case, the value is significant at 500 million euro.

Table 32: Output of products related to wooded land, million euro, EU and EFTA countries, 1999

	Belgium	Spain	France	Austria	Finland (1998)	Sweden	Norway
Products of forestry and logging							
Natural growth			1 982	797		1 573	220
Wood in the rough	170	750	2 534	897	1 743	2 151	366
Other forestry products (1)		182	24	60	8	34	27
Forestry and logging-related services	12		281	130		224	133
Afforestation and reafforestation	12	103	14		87	205	
Other forestry contract work			122		108	13	
Forests inventories and evaluation			17			6	
Protection of forest against fires, etc.			128				
Other products related to wooded land							
Agricultural products growing in forests (2)		79	34		40	30	
Growing of animals in forests					10	19	
Meat, fur, skin from hunting and trapping			111		36	59	77
Recreational services in forests (3)		502					
Other products (4)					93		

(1) natural gum, cork, other forestry products
(2) mushrooms, truffles, other forest growing products (berries, nuts, etc.)
(3) hunting as a sport or recreation, operation of reserves, national parks and other recreational services in forests
(4) peat, charcoal, etc

4.1.2 Economic accounts for forestry and logging

Table 33 shows output, production costs, gross value added and capital formation in the forestry and logging industry in 11 EU and two EFTA countries. Gross value added, which equals output less intermediate consumption, is often used as an indicator for the importance of an industry in the economy, since it shows the industry's contribution to gross domestic product (GDP). The total gross value added in forestry and logging in the 11 EU countries for which data are available is 12.8 billion euro. These countries have 93% of the EU-15 output of saw logs, pulp wood and fuel wood in physical terms, see Table 49 in section 5, so the total value added in forestry and logging in the EU can be estimated at around 13.5 billion euro in 1999. This is around 8% of the total value added in the industry group Agriculture, hunting, forestry and fishing, or 0.2% of GDP, see also Table 57 in section 5. The EU countries with the largest value added in forestry in absolute terms are France, Finland, Sweden and Germany, which all had a value added of around 2.5 billion euro.

When the data for output, intermediate consumption and gross value added are compared across countries, one needs to be aware that the growth of standing timber is treated differently in different countries. The IEEAF follows the SEEA 2000 and the ESA95/SNA93, and recommends that the growth of cultivated timber should be treated as output of the forestry and logging industry. (See section 3.2.2 for a definition of cultivated timber.) The IEEAF also treats forestry and logging as two separate activities, with the value of growth (gross increment adjusted for natural and logging losses) of cultivated timber recorded as output of forestry, and the stumpage value of the cultivated timber removed recorded as intermediate consumption in the logging activity. The difference between growth and removals is recorded as changes in inventories of work-in-progress. These principles are used in the accounts for Denmark, Germany, France, Austria and Sweden that are presented in table 33.

The accounts for Norway also treat growth of cultivated timber as output, but (following the normal principles of the national accounts) forestry and logging are not seen as separate activities, so the value of output of cultivated timber is recorded net of the value of the timber removed. This results in lower values for output and intermediate consumption in forestry and logging than in the IEEAF treatment, but value added and changes in inventories of work-in-progress will be the same in both cases.

For the other countries in the table, growth of timber is not recorded as output. This is suggested for practical reasons in the guidelines of Eurostat's Economic Accounts for Agriculture and Forestry (European Commission 2000c), in cases where the volume of standing timber does not fluctuate substantially from one year to the next, i.e. when the net growth is small. It is consistent with the IEEAF and ESA95 only if all the country's forests are regarded as uncultivated. The effect on value added compared to the IEEAF recording depends on the value of growth compared to the value of removals. The data presented in Table 3 in section 3.1 show that growth is higher than removals in physical terms in all EU and EFTA countries, so it is likely that using the IEEAF treatment would lead to an increase in value added for these countries. The impact on the EU gross value added in forestry and logging should be relatively small however, since all the major EU forest countries, except Finland, record growth of timber as output.

Table 33: Economic accounts for forestry and logging, million euro, EU and EFTA countries

	Belgium 1999	Denmark 1998	Germany 1999	Greece 1998	Spain 1999	France 1999	Italy 1999
Current transactions							
Output (basic prices)	182	379	4 718	131	759	4 820	560
Standing timber (1)	0	115	2 565	0	0	1 982	0
Other products	182	265	2 153	131	759	2 838	560
Intermediate consumption	18	211	2 343	12	107	2 014	75
Standing timber (1)	0	80	1 509	0	0	1 368	0
Other products	18	131	833	12	107	646	75
Gross value added	164	168	2 375	119	652	2 806	485
Compensation of employees	11	74	971	66	170	654	:
Other taxes less subsidies on production	2	7	-112	0	-138	16	6
Consumption of fixed capital	34	24	327	:		288	91
NOS/mixed income	117	62	1 189	53	:	1 848	:
Capital formation							
Gross fixed capital form.	27	13	256	:	:	245	110
Construction	0	1	123	:	:	57	23
Equipment	0	9	133	:	:	102	86
Other GFCF	27	3	0	6	:	87	1
Changes in inventories	:	:	1 056	:	:	613	:
of which work-in-progress (1)	0	35	1 056	0	0	613	0

	Nether-lands 1999	Austria 1999	Finland 1998	Sweden 1999	Iceland 1999	Norway 1999
Current transactions						
Output (basic prices)	98	1 885	2 765	3 964	5	787
Standing timber (1)	0	797	0	1 573	0	220
Other products	98	1088	2765	2 390	0	567
Intermediate consumption	60	893	244	1 523	1	197
Standing timber (1)	0	582	0	1 115	0	0
Other products	60	311	244	407	1	197
Gross value added	38	992	2 521	2 441	4	590
Compensation of employees	39	229	425	449	3	98
Other taxes less subsidies on production	3	5	41	39	1	-15
Consumption of fixed capital	6	137	418	:	0	78
NOS/mixed income	-10	621	1 719	:	1	429
Capital formation						
Gross fixed capital form.	7	156		370	0	66
Construction	3	89	27	32	0	35
Equipment	4	60	144	164	0	31
Other GFCF	0	7	140	175	0	0
Changes in inventories	:	215	:	448	0	:
of which work-in-progress (1)	0	215	0	458	0	220

Source: IEEAF Forest accounts data supplemented with data from Eurostat's Economic Accounts for Forestry.
(1) The treatment of the growth of standing timber in the accounts still varies across countries. See the text for more details.

4.2 Methodological notes

4.2.1 Output related to wooded land

This table is intended to record all output from activities that take place on wooded land. This output and corresponding activities are classified according to the CPA classification of products (in rows) and the NACE rev.1 classification of industries and type of output according to the market/non-market distinction (in columns).

In principle, the industry part of the table follows the format of the supply table of the national accounts, and shows output by product and by industry at basic prices (see also section 5). In the right-hand part of the table, the output is distributed according to its type:

Market output includes products that are sold at 'economically significant' prices (see Chapter 3 of the ESA 1995 for the precise definition). It also includes changes in inventories of finished products and work-in-progress intended for sale at economically significant prices. In forestry, the *natural growth* of the trees that are considered to be cultivated, according to the country's national accounts, is recorded as output. The value of natural growth may be estimated using the stumpage value method, and should include the stumpage value of cultivated timber felled, as well as changes in inventories of work-in-progress. Since it would be impossible to separate that part of natural growth which relates to own final use, by convention all natural growth is classified as market output.

Output for own final use covers the total value of goods and services that are retained either for final consumption or for gross fixed capital formation by the same institutional unit. In the forest context, it applies to wood in the rough removed for own final use (e.g. fuel wood), a part of other forestry products, a part of agricultural products, etc.

Other non-market output covers output that is provided free, or at prices that are not economically significant, to other units. In the forest context, it refers exclusively to services, in particular to forest inventories, protection of forest against fires and recreational services.

Classification of products and industries

In addition to the main forestry products, i.e. growth of timber and wood in the rough, a number of other products are also related to wooded land. Some are produced by the forestry and logging industry, e.g. natural cork and forestry and logging-related services. Products produced by other industries include mushrooms, berries and game meat, as well as recreational services such as hunting as a sport. The tables below give an overview of the products and industries included in this part of the IEEAF, with a link to the corresponding official EU statistical classifications, CPA and NACE.

Products of forestry and logging	**CPA 1996**
Natural growth	02.01.5 Standing timber 02.01.6 Forest trees nurseries services
Wood in the rough	02.01.1 Wood in the rough
Other forestry products	02.01.2 Natural gums 02.01.3 Natural cork, raw or simply prepared 02.01.4 Other forestry products
Forestry and logging-related services	02.02.1 Services incidental to forestry and logging
Afforestation and reafforestation	Part of 02.02.1
Other forestry contract work	Part of 02.02.1
Forests inventories and evaluation	Part of 02.02.1
Protection of forest against fires, etc.	Part of 02.02.1

Other products related to wooded land	CPA 1996
Agricultural products growing in forests	Part of 01.12.13 Other vegetables n.e.c. (includes mushrooms). Part of 01.13.23 Other fruit, locust beans (includes berries). Part of 01.13.24 Olives and other nuts
Growing of animals in forests	Part of 01.25.10 Other live animals
Meat, fur, skin from hunting and trapping	Part of 01.5 Hunting, trapping, game propagation and related services.
Recreational services in forests	Part of 01.5 Hunting, trapping, game propagation and related services. Part of 92.53.12 Nature reserve services, including wildlife preservation services. Part of 92.62.13 Other services related to sports events n.e.c. (Includes services of hunting guides).
Other products	Part of 10.30 Peat 24.14.72 Wood charcoal

Industries in IEEAF	NACE Rev.1
Agriculture	01 Agriculture, hunting and related service activities
Forestry and logging	02 Forestry, logging and related services
Other	All other positions of NACE Rev.1

4.2.2 Economic accounts for forestry and logging

This table is based on the transactions of the forestry and logging industry, as they are recorded in the national accounts and/or the Economic Accounts for Forestry. Separate data for the forestry and logging activities are generally not available in these sources, and have to be estimated. Natural growth of cultivated timber is to be included in the output (of forestry). The stumpage value of the timber withdrawn by logging from the stock of standing volume is to be added to the intermediate consumption of logging. The value of the 'changes in inventories (work-in-progress)' is given by the difference between the value of natural growth of cultivated timber and the stumpage value of the cultivated timber withdrawn from the forest by logging.

For the compilation of harvesting costs and rate of return for forestry, two imputed transactions are introduced: unpaid labour and return to fixed capital. The net operating surplus/mixed income is thus decomposed into three elements: unpaid labour, return to fixed capital and a residual item that represents the rent for land (actual or imputed) and a return to the capital represented by the standing timber.

The IEEAF monetary data for forestry and logging are broadly consistent with the data presented in Eurostat's Economic Accounts for Forestry (available in Eurostat's database New Cronos). Differences may be due to different treatment of the growth of standing timber, to different estimation methods, e.g. for the removal of fuel wood for own use, or because updates have been made at different points in time.

4.3 Individual country tables

4.3.1 Output related to wooded land

Table 34: Output related to wooded land by industry and type of output, million euro, Spain, 1999

Products	Industries			Total output by product	Type of output		
	Agri-culture	Forestry & logging	Other industries		Market output	Output for own final use	Other non-market output
Products of forestry and logging							
Natural growth							
Wood in the rough	235	516		750			
Other forestry products (1)	57	125		182			
Forestry and logging-related services							
Afforestation and reafforestation	32	71		103			
Other forestry contract work							
Forests inventories and evaluation							
Protection of forest against fires, etc.							
Other products related to wooded land							
Agricultural products growing in forests (2)	21	48		79			
Growing of animals in forests							
Meat, fur, skin from hunting and trapping							
Recreational services in forests (3)	482		20	502			
Other products (4)							
Other products							
Total output		759					

(1) natural gum, cork, other forestry products
(2) mushrooms, truffles, other forest growing products (berries, nuts, etc.)
(3) hunting as a sport or recreation, operation of reserves, national parks and other recreational services in forests. In Spain it also includes the value of the animals hunted.
(4) peat, charcoal, etc

Table 35: Output related to wooded land by industry and type of output, million euro, France, 1999

Products	Industries			Total output by product	Type of output		
	Agri-culture	Forestry & logging	Other industries		Market output	Output for own final use	Other non-market output
Products of forestry and logging							
Natural growth		1 982		1 982	1 982		
Wood in the rough		2 534		2 534	1 649	884	
Other forestry products (1)		24		24	24		
Forestry and logging-related services		281		281	136		145
Afforestation and reafforestation		14		14	14		
Other forestry contract work		122		122	122		
Forests inventories and evaluation		17		17			17
Protection of forest against fires, etc.		128		128			128
Other products related to wooded land							
Agricultural products growing in forests (2)	34			34	34		
Growing of animals in forests							
Meat, fur, skin from hunting and trapping	111			111			
Recreational services in forests (3)							
Other products (4)							
Other products							
Total output							

(1) natural gum, cork, other forestry products
(2) mushrooms, truffles, other forest growing products (berries, nuts, etc.)
(3) hunting as a sport or recreation, operation of reserves, national parks and other recreational services in forests
(4) peat, charcoal, etc
Data sources: ENGREF, ONF, IFN, DSF, FFN, DERF, Ministry of Agriculture

Table 36: Output related to wooded land by industry and type of output, million euro, Austria, 1999

Products	Industries			Total output by product	Type of output		
	Agri-culture	Forestry & logging	Other industries		Market output	Output for own final use	Other non-market output
Products of forestry and logging							
Natural growth		797		797	797		
Wood in the rough		897		897	744	153	
Other forestry products (1)		60		60	60		
Forestry and logging-related services		130		130	130		
Afforestation and reafforestation							
Other forestry contract work							
Forests inventories and evaluation							
Protection of forest against fires, etc.							
Other products related to wooded land							
Agricultural products growing in forests (2)							
Growing of animals in forests							
Meat, fur, skin from hunting and trapping							
Recreational services in forests (3)							
Other products (4)							
Other products							
Total output		1 885		1 885	1 732	153	

(1) natural gum, cork, other forestry products
(2) mushrooms, truffles, other forest growing products (berries, nuts, etc.)
(3) hunting as a sport or recreation, operation of reserves, national parks and other recreational services in forests
(4) peat, charcoal, etc
Data source: Preliminary Economic Accounts for Forestry

Table 37: Output related to wooded land by industry and type of output, million ECU, Finland, 1998

Products	Industries			Total output by product	Type of output		
	Agri-culture	Forestry & logging	Other industries		Market output	Output for own final use	Other non-market output
Products of forestry and logging							
Natural growth							
Wood in the rough		1 743		1 743	1 743		
Other forestry products (1)		8		8	8		
Forestry and logging-related services							
Afforestation and reafforestation		87		87	87		
Other forestry contract work		108		108	108		
Forests inventories and evaluation							
Protection of forest against fires, etc.							
Other products related to wooded land							
Agricultural products growing in forests (2)	40			40	12	29	
Growing of animals in forests	10			10	10		
Meat, fur, skin from hunting and trapping	36			36	..	36	
Recreational services in forests (3)							
Other products (4)			93	93	93		
Other products							
Total output							

(1) natural gum, cork, other forestry products
(2) mushrooms, truffles, other forest growing products (berries, nuts, etc.)
(3) hunting as a sport or recreation, operation of reserves, national parks and other recreational services in forests
(4) peat, charcoal, etc

Table 38: Output related to wooded land by industry and type of output, million euro, Sweden, 1999

Products	Industries			Total output by product	Type of output		
	Agri-culture	Forestry & logging	Other industries		Market output	Output for own final use	Other non-market output
Products of forestry and logging							
Natural growth		1 573		1 573	1 573		
Wood in the rough		2 101	50	2 151	2 080	71	
Other forestry products (1)		21	13	34	24		10
Forestry and logging-related services		204	20	224	216		8
Afforestation and reafforestation		204	2	205	204		2
Other forestry contract work			13	13	13		
Forests inventories and evaluation			6	6			6
Protection of forest against fires, etc.							
Other products related to wooded land							
Agricultural products growing in forests (2)	30			30	8	22	
Growing of animals in forests	19			19	15	4	
Meat, fur, skin from hunting and trapping	59			59	15	44	
Recreational services in forests (3)							
Other products (4)							
Other products		64					
Total output		3 964					

(1) natural gum, cork, other forestry products
(2) mushrooms, truffles, other forest growing products (berries, nuts, etc.)
(3) hunting as a sport or recreation, operation of reserves, national parks and other recreational services in forests
(4) peat, charcoal, etc

Table 39: Output related to wooded land by industry and type of output, million euro, Norway, 1999

Products	Industries			Total output by product	Type of output		
	Agri-culture	Forestry & logging	Other industries		Market output	Output for own final use	Other non-market output
Products of forestry and logging							
Natural growth		220		220	220		
Wood in the rough		366		366	349	17	
Other forestry products (1)		27		27	27	0	
Forestry and logging-related services		133		133	133		
Afforestation and reafforestation							
Other forestry contract work							
Forests inventories and evaluation							
Protection of forest against fires, etc.							
Other products related to wooded land							
Agricultural products growing in forests (2)							
Growing of animals in forests							
Meat, fur, skin from hunting and trapping	77			77		77	
Recreational services in forests (3)		40					
Other products (4)							
Other products							
Total output		787					

(1) natural gum, cork, other forestry products
(2) mushrooms, truffles, other forest growing products (berries, nuts, etc.)
(3) hunting as a sport or recreation, operation of reserves, national parks and other recreational services in forests
(4) peat, charcoal, etc.

4.3.2 Economic accounts for forestry and logging

Table 40: Economic accounts for forestry and logging, million euro, Belgium, 1999

	Forestry and logging industry		
	Total	**of which forestry**	**of which logging**
Current transactions			
Output (basic prices)	182		
Market output			
Own account output			
Other non market			
Intermediate consumption	18		
Standing timber	0		
Other products			
Seeds and plants	2	2	
Energy	4		
Fertilisers and soil improvers	0	0	
Materials, small tools etc.			
Services	0		
Other and adjustment	12		
Gross value added	164		
Compensation of employees	11		
Other taxes less subsidies on production	2		
Consumption of fixed capital	34		
NOS/mixed income	117		
Imputed unpaid labour			
Imputed return to fixed capital			
Return to land and standing volume			
Capital formation			
Gross fixed capital formation	27		
Construction	0		
Equipment	0		
Other gross fixed formation	27		
Changes in inventories			
of which work-in-progress			
Net acquisition of land			
Public financing			
Other non market output			
Subsidies	0		
Investment grants	0		
Other transfers	0		
Supplementary data			
Labour inputs			
Net fixed capital stock			
Inventories of work-in-progress			
Land area			

Data source: Economic Accounts for Forestry

Table 41: Economic accounts for forestry and logging, million ECU, Denmark, 1998

	Forestry and logging industry		
	Total	**of which forestry**	**of which logging**
Current transactions			
Output (basic prices)	379		
Market output			
Own account output			
Other non market			
Intermediate consumption	211		
Standing timber	80		80
Other products	131		
Seeds and plants			
Energy			
Fertilisers and soil improvers			
Materials, small tools etc.			
Services			
Other and adjustment			
Gross value added	168		
Compensation of employees	74		
Other taxes less subsidies on production	7		
Consumption of fixed capital	24		
NOS/mixed income	62		
Imputed unpaid labour	0		
Imputed return to fixed capital	15		
Return to land and standing volume			
Capital formation			
Gross fixed capital formation	13		
Construction	1		
Equipment	9		
Other gross fixed formation	3		
Changes in inventories			
of which work-in-progress	35		
Net acquisition of land			
Public financing			
Other non market output			
Subsidies			
Investment grants			
Other transfers			
Supplementary data			
Labour inputs			
Net fixed capital stock	379		
Inventories of work-in-progress	1 957		
Land area	1 968		

Table 42: Economic accounts for forestry and logging, million euro, Germany, 1999

	Forestry and logging industry		
	Total	**of which forestry**	**of which logging**
Current transactions			
Output (basic prices)	4 718	2 565	2 153
Market output			
Own account output			
Other non market			
Intermediate consumption	2 343		
Standing timber	1 509		1 509
Other products	833		
Seeds and plants			
Energy			
Fertilisers and soil improvers			
Materials, small tools etc.			
Services			
Other and adjustment			
Gross value added	2 375		
Compensation of employees	971		
Other taxes less subsidies on production	- 112		
Consumption of fixed capital	327		
NOS/mixed income	1 189		
Imputed unpaid labour			
Imputed return to fixed capital			
Return to land and standing volume			
Capital formation			
Gross fixed capital formation	256		
Construction	123		
Equipment	133		
Other gross fixed formation	0		
Changes in inventories	1 056		
of which work-in-progress	1 056		
Net acquisition of land			
Public financing			
Other non market output			
Subsidies			
Investment grants			
Other transfers			
Supplementary data			
Labour inputs (number of employees)	34 000		
Net fixed capital stock			
Inventories of work-in-progress	89 326	89 326	
Land area (wooded land, 1000 ha)	10 878	10 878	

Table 43: Economic accounts for forestry and logging, million euro, France, 1999

	Forestry and logging industry		
	Total	**of which forestry**	**of which logging**
Current transactions			
Output (basic prices)	4 820	2 286	2 534
Market output	3 791	2 141	1 649
Own account output	884	0	884
Other non market	145	145	0
Intermediate consumption	2 014	350	1 664
Standing timber	1 368		1 368
Other products	646	350	296
Seeds and plants	0		0
Energy	79	39	39
Fertilisers and soil improvers	28	28	0
Materials, small tools etc.	62	21	41
Services	46	46	0
Other and adjustment	430	215	215
Gross value added	2 806	1 936	870
Compensation of employees	654	480	174
Other taxes less subsidies on production	16	16	
Consumption of fixed capital	288	288	
NOS/mixed income	1 848	1 152	696
Imputed unpaid labour			
Imputed return to fixed capital			
Return to land and standing volume			
Capital formation			
Gross fixed capital formation	245	245	
Construction	57	57	
Equipment	102	102	
Other gross fixed formation	87	87	
Changes in inventories	613	613	
of which work-in-progress	613	613	
Net acquisition of land	32	32	
Public financing			
Other non market output			
Subsidies	11		
Investment grants	12		
Other transfers			
Supplementary data			
Labour inputs			
Net fixed capital stock			
Inventories of work-in-progress			
Land area	12 268		

Data sources: INSEE, ONF, ENGREF, MSA, DERF, FFN

Table 44: Economic accounts for forestry and logging, million euro, Austria, 1999

	Forestry and logging industry		
	Total	**of which forestry**	**of which logging**
Current transactions			
Output (basic prices)	1 885	865	1 021
Market output			
Own account output			
Other non market			
Intermediate consumption	893		
Standing timber	582		582
Other products	311		
Seeds and plants	13	13	
Energy	35		
Fertilisers and soil improvers	1		
Materials, small tools etc.	67		
Services	130		
Other and adjustment	63		
Gross value added	992		
Compensation of employees	229		
Other taxes less subsidies on production	- 5		
Consumption of fixed capital	137		
NOS/mixed income	631		
Imputed unpaid labour			
Imputed return to fixed capital			
Return to land and standing volume			
Capital formation			
Gross fixed capital formation	156		
Construction	89		
Equipment	60		
Other gross fixed formation	7		
Changes in inventories	215		
of which work-in-progress	215		
Net acquisition of land			
Public financing			
Other non market output			
Subsidies	19		
Investment grants	12		
Other transfers	0		
Supplementary data			
Labour inputs (full time equivalents)	18 940		
Net fixed capital stock			
Inventories of work-in-progress	33 097		
Land area (1000 ha)	3 924		

Table 45: Economic accounts for forestry and logging, million ECU, Finland, 1998

	Forestry and logging industry		
	Total	**of which forestry**	**of which logging**
Current transactions			
Output (basic prices)	2 765	264	2 501
Market output	2 765	264	2 501
Own account output			
Other non market			
Intermediate consumption	244	103	141
Standing timber	0		
Other products	244		
Seeds and plants			
Energy			
Fertilisers and soil improvers			
Materials, small tools etc.			
Services			
Other and adjustment			
Gross value added	2 521	161	2 361
Compensation of employees	425	178	248
Other taxes less subsidies on production	41	35	6
Consumption of fixed capital	418	0	418
NOS/mixed income	1 719	18	1 701
Imputed unpaid labour			
Imputed return to fixed capital			
Return to land and standing volume			
Capital formation			
Gross fixed capital formation			
Construction	27	..	..
Equipment	144	..	..
Other gross fixed formation	140	140	
Changes in inventories			
of which work-in-progress			
Net acquisition of land			
Public financing			
Other non market output			
Subsidies	41		
Investment grants			
Other transfers			
Supplementary data			
Labour inputs (100 000 hours)	434	144	290
Net fixed capital stock			
Inventories of work-in-progress			
Land area (1000 ha)			507

Table 46: Economic accounts for forestry and logging, million euro, Sweden, 1999

	Forestry and logging industry		
	Total	**of which forestry**	**of which logging**
Current transactions			
Output (basic prices)	3 964		
Market output	3 893		
Own account output	71		
Other non market			
Intermediate consumption	1 523		
Standing timber	1 115		
Other products	407		
Seeds and plants	25		
Energy	106		
Fertilisers and soil improvers	8		
Materials, small tools etc.	80		
Services	75		
Other and adjustment	113		
Gross value added	2 441		
Compensation of employees	449		
Other taxes less subsidies on production	39		
Consumption of fixed capital			
NOS/mixed income			
Imputed unpaid labour			
Imputed return to fixed capital			
Return to land and standing volume			
Capital formation			
Gross fixed capital formation	370		
Construction	32		
Equipment	164		
Other gross fixed formation	175		
Changes in inventories	448		
of which work-in-progress	458		
Net acquisition of land			
Public financing			
Other non market output			
Subsidies			
Investment grants			
Other transfers			
Supplementary data			
Labour inputs (persons employed)	29 800		
Net fixed capital stock			
Inventories of work-in-progress			
Land area			

Table 47: Economic accounts for forestry and logging, million euro, Iceland, 1999

	Forestry and logging industry		
	Total	**of which forestry**	**of which logging**
Current transactions			
Output (basic prices)	5	5	0
Market output	0	0	0
Own account output	0	0	0
Other non market	0	0	
Intermediate consumption	1	1	0
Standing timber	0		0
Other products	0	0	0
Seeds and plants	1	1	
Energy	0	0	0
Fertilisers and soil improvers	0	0	0
Materials, small tools etc.	0	0	0
Services	0	0	0
Other and adjustment	0	0	0
Gross value added	4	4	0
Compensation of employees	3	3	0
Other taxes less subsidies on production	1	1	0
Consumption of fixed capital	0	0	0
NOS/mixed income	1	1	0
Imputed unpaid labour	1		
Imputed return to fixed capital	0		
Return to land and standing volume	0		
Capital formation			
Gross fixed capital formation	0	0	0
Construction	0	0	0
Equipment	0	0	0
Other gross fixed formation	0	0	0
Changes in inventories	0	0	0
of which work-in-progress	0	0	
Net acquisition of land	0	0	
Public financing	4	4	0
Other non market output	0	0	
Subsidies	0	0	0
Investment grants	2	2	0
Other transfers	2	2	0
Supplementary data			
Labour inputs	:	:	:
Net fixed capital stock	:	:	:
Inventories of work-in-progress	:	:	
Land area	:	:	

Data source: Iceland Forest Service

Table 48: Economic accounts for forestry and logging, million euro, Norway, 1999

	Forestry and logging industry		
	Total	**of which forestry**	**of which logging**
Current transactions			
Output (basic prices)	787		
Market output			
Own account output			
Other non market			
Intermediate consumption	197		
Standing timber	0		
Other products	197		
Seeds and plants			
Energy			
Fertilisers and soil improvers			
Materials, small tools etc.			
Services			
Other and adjustment			
Gross value added	590		
Compensation of employees	98		
Other taxes less subsidies on production	-15		
Consumption of fixed capital	78		
NOS/mixed income	429		
Imputed unpaid labour			
Imputed return to fixed capital			
Return to land and standing volume			
Capital formation			
Gross fixed capital formation	66		
Construction	35		
Equipment	31		
Other gross fixed formation			
Changes in inventories			
of which work-in-progress	220		
Net acquisition of land			
Public financing			
Other non market output			
Subsidies			
Investment grants	14		
Other transfers			
Supplementary data			
Labour inputs			
Net fixed capital stock			
Inventories of work-in-progress			
Land area			

Data source: National accounts

5 Supply and use of forest-related products

5.1 Main results

The supply and use tables for forest-related products show the transformation of wood from output of standing timber in forestry to the use of the final products. Output of (cultivated) standing timber is used either as intermediate consumption in the logging activity (the trees that are removed in the accounting period) or as capital formation, in the form of additions to work-in-progress on standing timber. The logging activity produces different kinds of roundwood (saw logs, pulp wood and fuel wood). The saw logs and pulp wood are then further processed to wood products or pulp and paper. Fuel wood is mainly used for final consumption in households.

The tables below present a summary of the supply and use of the various products. The data provided for the forest accounts have been supplemented with physical data from Eurostat's Forestry statistics, in order to estimate totals for the EU and EFTA. Separate tables present monetary and physical data together, for the countries where both sets of data are available. Average prices per physical unit are also calculated. When these are compared across categories and countries, some rather large differences can be observed. This is to be expected, since the products presented in the tables are actually aggregates of many rather heterogeneous products, and the detailed composition will vary. In some cases there may also be inconstancies between the monetary and physical data. A final table shows value added in forest and wood-related industries.

5.1.1 Saw logs, pulp wood and fuel wood

The total output of saw logs, pulp wood and fuel wood in the EU-15 was around 300 million m^3 in 1999, see Table 49. Imports from countries outside the EU increased total supply to about 334 million m^3. With exports of 3 million m^3, 331 million m^3 was available for domestic use. The countries with the largest output of wood were France, Sweden, Finland and Germany, and these were also the largest users.

Table 49: Summary supply-use table for saw logs, pulp wood and fuel wood, 1000 m^3, 1999

	Supply			Use		
	Output	Imports	Total supply	Domestic use (2)	Exports	Total use
EU-15 and EFTA	313 462					
EU-15 (1)	300 301	33 988	334 289	331 037	3 252	334 289
Belgium	4 400	3 410	7 810	6 541	1 269	7 810
Denmark (1998)	2 552	1 134	3 686	3 079	605	3 684
Germany	37 630	2 942	40 572	35 939	4 633	40 572
Greece	2 215	515	2 730	2 498	232	2 730
Spain	18 680	3 603	22 283	21 722	560	22 282
France	66 231	2 177	68 408	65 133	3 275	68 408
Ireland	2 593	322	2 915	2 739	176	2 915
Italy	11 138	5 320	16 458	16 443	15	16 458
Luxembourg	260	459	719	428	291	719
Netherlands	1 044	490	1 534	1 243	291	1 534
Austria	19 773	7 154	26 927	25 933	994	26 927
Portugal	8 978	1 433	10 411	9 854	557	10 411
Finland (1998)	58 625	10 789	69 414	71 940	814	72 754
Sweden	58 700	10 427	69 127	67 592	1 535	69 127
United Kingdom	7 482	316	7 798	7 508	290	7 798
EFTA	13 161					
Iceland	0	21	21	18	0	18
Liechtenstein						
Norway	8 424	3 085	11 509	10 926	583	11 509
Switzerland	4 737	377	5 114	3 875	1 239	5 114

Source: Forest accounts data supplemented with data from Eurostat's Forestry statistics.
(1) For the EU-15 as a whole, imports and exports refer to trade with countries outside the EU.
(2) Intermediate consumption, final consumption and capital formation (including changes in inventories).

Table 50 and the detailed tables in section 5.3 show that most of the roundwood is used as intermediate consumption, in particular in the wood products industry, where it is processed to sawnwood, panels and boards, containers, prefabricated buildings etc. The pulp industry is also an important user of wood, in particular in countries like Finland and Sweden. Some roundwood is also used as final consumption of households, as fuel wood. It should be noted that, since much of the fuel wood is collected by households for their own use, the data for this type of wood may be less reliable than for saw logs and fuel wood.

Table 50: Summary supply-use table for saw logs, pulp wood and fuel wood, 1999

		Supply				Use				
		Output (basic prices)	Im-ports	Taxes and mar-gins (1)	Total supply	Int. cons.	Final cons.	Capital form-ation	Ex-ports	Total use
Denmark (1998)	Mill. euro	124	64	50	238	129	65	7	36	237
	1000 m^3	2 552	1 134		3 686	2 087	872	120	605	3 684
	Euro/m^3	49	56		65	62	75	58	60	64
Germany	Mill. euro	2 046	298		2 344	1 935	40		367	2 342
	1000 m^3	37 630	2 942		40 572	31 988	3 951		4 633	40 572
	Euro/m^3	54	101		58	60	10		79	58
Spain (2)	Mill. euro	749	231	385	1365	911	50		21	1365
	1000 m^3	18 680	3 603		22 283	18 841	2 881		560	22 282
	Euro/m^3	40	64		44	48	17		38	44
France	Mill. euro	2 533	289		2 822	1 649	884		289	2 822
	1000 m^3	66 231	2 177		68 408	36 704	28 429		3 275	68 408
	Euro/m^3	38	133		41	45	31		88	41
Austria	Mill. euro	1 290	439		1 729	1 541	111		78	1 730
	1000 m^3	19 773	7 154		26 927	23 809	2 124		994	26 927
	Euro/m^3	65	61		64	65	52		78	64
Finland (1998)	Mill. euro		376						77	
	1000 m^3	58 625	10 789		69 414	66 955	4 640	345	814	72 754
	Euro/m^3		35						95	
Sweden	Mill. euro	2 147	458	296	2 901	2 777	88	- 32	69	2 902
	1000 m^3	58 700	10 427		69 127	61 741	5 851		1 535	69 127
	Euro/m^3	37	44		42	45	15		45	42
Iceland	Mill. euro	0	1		1	1				1
	1000 m^3	0	21		21	18				18
	Euro/m^3		48		48	56				56

(1) Taxes less subsidies on products, and trade and transport margins. These items make up the difference between basic and purchasers' prices. For several countries there is no data on taxes and margins, so both supply and use are measured at basic prices.
(2) For Spain, total use is measured at purchasers' prices, while the components are at basic prices.

5.1.2 Wood and wood products

In addition to sawnwood and wood-based panels, the IEEAF product 'Wood and wood products' includes a number of secondary processed wood products (builder's joinery and carpentry, wooden containers, etc.). These secondary processed products are not covered in the Forestry Statistics, and in many EU and EFTA countries there seem to be little volume data available for these products. For this reason, the data provided for the IEEAF include mainly sawnwood and wood-based panels, with the exception of Denmark, Spain and Sweden. The data presented in Table 52 and in the detailed tables in section 5.3 are therefore not fully comparable across countries, and it has not been possible to estimate the EU and EFTA totals.

For sawnwood and wood-based panels, Eurostat's Forestry Statistics show that total output in the EU-15 was 116 million m^3 in 1999, with Germany, Sweden, France and Finland as the largest producers, see Table 51. Production in the EFTA countries was 5 million m^3. Net imports increases the volume available for domestic use in the EU to 132 million m^3. As illustrated by Table 52 and the detailed tables in section 5.3, most of this is used as intermediate consumption, partly for further processing in other establishments in the wood and wood products industry, and partly in other industries, such as construction and furniture making.

Table 51: Summary supply-use table for sawnwood and wood-based panels, 1000 m^3, 1999

	Supply			Use		
	Output	Imports	Total supply	Domestic use (2)	Exports	Total use
EU-15 and EFTA	121 214					
EU-15 (1)	116 131	28 177	144 308	132 242	12 066	144 308
Belgium	4 260	3 253	7 513	3 849	3 664	7 513
Denmark (1998)	696	5 780	6 476	6 094	382	6 476
Germany	28 863	7 864	36 727	31 324	5 403	36 727
Greece	550	1 386	1 936	1 714	222	1 936
Spain	6 953	4 570	11 523	10 621	902	11 523
France	15 485	4 739	20 224	16 660	3 564	20 224
Ireland	1 570	839	2 409	1 659	750	2 409
Italy	6 860	9 052	15 912	14 826	1 086	15 912
Luxembourg	283	105	388	197	191	388
Netherlands	423	5 466	5 889	5 174	715	5 889
Austria	11 667	2 327	13 994	6 408	7 586	13 994
Portugal	2 675	436	3 111	2 102	1 009	3 111
Finland (1998)	14 519	447	14 966	5 399	9 567	14 966
Sweden	15 819	853	16 672	5 102	11 570	16 672
United Kingdom	5 508	9 955	15 463	14 922	541	15 463
EFTA	5 083			5 481		
Iceland						
Liechtenstein						
Norway	2 847	1 018	3 865	2 822	1 043	3 865
Switzerland	2 236	990	3 226	2 659	567	3 226

Source: Eurostat's Forestry statistics.
(1) For the EU-15 as a whole, imports and exports refer to trade with countries outside the EU.
(2) Intermediate consumption, final consumption and capital formation (including changes in inventories).

Table 52: Summary supply-use table for wood and wood products, 1999

		Supply				Use				
		Output (basic prices)	Im-ports	Taxes and mar-gins (1)	Total supply	Int. cons.	Final cons.	Capital form-ation	Ex-ports	Total use
Belgium	Mill. euro	1 326	1 408		2 734	1 248			1 486	2 734
	1000 m^3	4 329	2 584		6 913	3 867			3 045	6 912
	Euro/m^3	306	545		395	323			488	396
Denmark	Mill. euro	1 299	440	672	2 411	1 603	148	110	548	2 409
(1998)	1000 m^3	6 500	2 202		8 702	5 789	536	397	1 980	8 702
	Euro/m^3	200	200		277	277	276	277	277	277
Germany	Mill. euro	5 906	2 139		8 045	6 359			1 686	8 045
	1000 m^3	28 378	9 118		37 496	31 899			5 597	37 496
	Euro/m^3	208	235		215	199			301	215
Spain (2)	Mill. euro	6 565	1 431	1656	9 652	7 028	253	107	608	9 652
	1000 m^3	26 550	4 998		31 548	28 828	977	471	1 318	31 594
	Euro/m^3	247	286		306	244	259	227	461	306
France	Mill. euro	5 664	1 881		7 545	5 882			1 663	7 545
	1000 m^3	13 017	3 490		16 507	13 812			2 695	16 507
	Euro/m^3	435	539		457	426			617	457
Austria	Mill. euro	2 873	632		3 505	1 570			1 935	3 505
	1000 m^3	11 667	2 327		13 994	6 408			7 586	13 994
	Euro/m^3	246	272		250	245			255	250
Finland	Mill. euro		278						2 551	
(1998)	1000 m^3	12 917	332		13 249	3 664			9 472	13 136
	Euro/m^3		837						269	
Sweden	Mill. euro	6 138	570	570	7 278	4 026	174	2	3 075	7 277
	1000 m^3	26 219	1 620		27 839	14 889			12 950	27 839
	Euro/m^3	234	352		261	270			237	261
Iceland	Mill. euro	0	32	4	36	14			1	15
	1000 m^3	0	313		313	313			1	314
	Euro/m^3		102		115	45			1 000	48

Note: The product definitions used are not fully comparable across countries. See the text for details.
(1) Taxes less subsidies on products, and trade and transport margins.
(2) For Spain, total use is measured at purchasers' prices, while the components are at basic prices.

5.1.3 Pulp

Finland and Sweden are the EU's largest producers of pulp, with around 60% of the total output of 37 million tonnes, see Table 53. Net imports increase the amount available for domestic use to 44 million tonnes. Pulp is used as intermediate consumption in the paper industry, with Sweden and Finland as the largest users. Output in the EFTA countries was 2.6 million tonnes in 1999, most of it in Norway.

Table 53: Summary supply-use table for pulp, 1000 tonnes, 1999

	Supply			Use		
	Output	Imports	Total supply	Domestic use (2)	Exports	Total use
EU-15 and EFTA	39 831					
EU-15 (1)	37 232	8 487	45 719	44 124	1 595	45 719
Belgium	416	755	1 171	714	457	1 171
Denmark (1998)	36	125	161	129	32	161
Germany	1 907	3 976	5 883	5 581	302	5 883
Greece	5	140	145	144	1	145
Spain	5 670	621	6 291	:	:	6 291
France	2 591	2 212	4 803	4 372	431	4 803
Ireland	0	34	34	33	1	34
Italy	444	3 335	3 779	3 761	18	3 779
Luxembourg	0	0	0	0	0	0
Netherlands	117	1 144	1 261	909	352	1 261
Austria	1 726	625	2 351	2 011	340	2 351
Portugal	1 755	99	1 854	708	1 146	1 854
Finland (1998)	11 355	52	11 407	9 953	1 634	11 587
Sweden	10 693	306	10 999	8 030	2 969	10 999
United Kingdom	517	1 760	2 277	2 248	29	2 277
EFTA	2 599					
Iceland	0	0	0	0	0	0
Liechtenstein						
Norway	2 354	156	2 510	1 948	562	2 510
Switzerland	245	478	723	602	121	723

Source: Forest accounts data supplemented with data from Eurostat's Forestry statistics.
(1) For the EU-15 as a whole, imports and exports refer to trade with countries outside the EU.
(2) Intermediate consumption, final consumption and capital formation (including changes in inventories).

Table 54: Summary supply-use table, pulp, 1999

		Supply				Use				
		Output (basic prices)	Im-ports	Taxes and mar-gins (1)	Total supply	Int. cons.	Final cons.	Capital form-ation	Exports	Total use
Denmark	Mill. euro	8	29	6	43	34			9	43
(1998)	1000 t	36	125		161	128			32	160
	Euro/t	222	232		267	266			281	269
Germany	Mill. euro	962	1 779		2 741	2 589			152	2 741
	1000 t	1 907	3 976		5 883	5 581			302	5 883
	Euro/t	504	447		466	464			503	466
Spain	Mill. euro	815	266	94	1 175					1 175
	1000 t	5 670	621		6 291					6 291
	Euro/t	144	428		187					187
France	Mill. euro	1 046	956		2 002	1 814			188	2 002
	1000 t	2 591	2 212		4 803	4 372			431	4 803
	Euro/t	404	432		417	415			436	417
Austria	Mill. euro	911	330		1 241	1 062			180	1 242
	1000 t	1 726	625		2 351	2 011			340	2 351
	Euro/t	528	528		528	528			529	528
Finland	Mill. euro		57						630	
(1998)	1000 t	11 355	52		11 407	9 953			1 634	11 587
	Euro/t		1 096						386	
Sweden	Mill. euro	1 797	164	142	2 103	836			1 268	2 104
	1000 t	10 693	306		10 999	8 030			2 969	10 999
	Euro/t	168	536		191	104			427	191

(1) Taxes less subsidies on products, and trade and transport margins.

5.1.4 Paper

Table 55 shows that total output of paper (including paperboard) was about 83 million tonnes in the EU-15 in 1999, with Germany, Finland, Sweden and France as the major producers. The EFTA countries produced about 4 million tonnes in the same year. The EU was a net exporter of paper, so the amount available for domestic use was 78.5 million tonnes. The main use of paper is as intermediate consumption in printing and other industries, see Table 56. Some paper is also used as final consumption in households, but many of the paper products used by households are further processed and not included in the IEEAF product called paper. Not surprisingly, the use of paper is more closely related to the size of the economy than was the case for the other wood-related products presented above, with Germany, the United Kingdom, France and Italy as the biggest users in the EU.

Table 55: Summary supply-use table for paper, 1000 tonnes, 1999

	Supply			Use		
	Output	Imports	Total supply	Domestic use (2)	Exports	Total use
EU-15 and EFTA	87 350					
EU-15 (1)	83 353	7 234	90 587	78 500	12 087	90 587
Belgium	1 889	3 285	5 174	2 776	2 398	5 174
Denmark (1998)	2 836	2 654	5 490	4 635	855	5 490
Germany	16 742	8 700	25 442	17 642	7 800	25 442
Greece	72	584	656	612	44	656
Spain	5 693	3 337	9 030			9 030
France	9 602	5 612	15 214	11 047	4 167	15 214
Ireland	42	454	496	430	66	496
Italy	8 568	3 849	12 417	10 236	2 181	12 417
Luxembourg	0	76	76	51	25	76
Netherlands	3 256	3 494	6 750	4 164	2 586	6 750
Austria	4 141	1 232	5 373	1 840	3 533	5 373
Portugal	1 163	573	1 736	1 052	684	1 736
Finland (1998)	12 703	292	12 995	1 600	11 347	12 947
Sweden	10 071	605	10 676	1 867	8 809	10 676
United Kingdom	6 575	7 108	13 683	11 870	1 813	13 683
EFTA	3 997					
Iceland	0	44	44	42	2	44
Liechtenstein						
Norway	2 242	490	2 732	729	2 003	2 732
Switzerland	1 755	1 423	3 178	1 736	1 442	3 178

Source: Forest accounts data supplemented with data from Eurostat's Forestry statistics.
(1) For the EU-15 as a whole, imports and exports refer to trade with countries outside the EU.
(2) Intermediate consumption, final consumption and capital formation (including changes in inventories).

Table 56: Summary supply-use table, paper, 1999

		Supply				Use				
		Output (basic prices)	Im-ports	Taxes and margins (1)	Total supply	Int. cons.	Final cons.	Capital form-ation	Exports	Total use
Denmark	Mill. euro	1 399	1 309	744	3 452	2 537	391	- 14	538	3 452
(1998)	1000 t	2 836	2 654		5 490	4 036	621	- 23	855	5 489
	Euro/t	493	493		629	629	630	609	629	629
Germany	Mill. euro	13 782	5 938		19 720	13 299			6 421	19 720
	1000 t	16 742	8 700		25 442	17 642			7 800	25 442
	Euro/t	823	683		775	754			823	775
Spain	Mill. euro	3 080	2 243	462	5 785					5 785
	1000 t	5 693	3 337		9 030					9 030
	Euro/t	541	672		641					641
France	Mill. euro	5 685	3 697		9 382	6 559			2 824	9 383
	1000 t	9 602	5 612		15 214	11 047			4 167	15 214
	Euro/t	592	659		617	594			678	617
Austria	Mill. euro	3 144	935		4 079	1 397			2 682	4 079
	1000 t	4 141	1 232		5 373	1 840			3 533	5 373
	Euro/t	759	759		759	759			759	759
Finland	Mill. euro		218						7 485	
(1998)	1000 t	12 703	292		12 995	1 600			11 347	12 947
	Euro/t		747						660	
Sweden	Mill. euro	8 397	883	1405	10 685	3 607	925	- 208	6 360	10 684
	1000 t	10 071	605		10 676	1 867			8 809	10 676
	Euro/t	834	1 460		1 001	1 932			722	1 001
Iceland	Mill. euro	0	38	4	42	20	19		3	42
	1000 t	0	44		44	29	13		2	44
	Euro/t		864		955	690	1 462		1 500	955

(1) Taxes less subsidies on products, and trade and transport margins.

5.1.5 Gross value added in forest and wood-related industries

Table 57 presents data for gross value added in industries which can be seen as being related to forest and wood. The industries selected are forestry and logging, which was presented in more detail in section 3, manufacture of wood and wood products and manufacture of pulp and paper; publishing and printing.

For the EU as a whole, the gross value added in these industries was around 180 billion euro in 1999, or about 2.3% of the EU-15 gross domestic product (GDP). Most of this was related to the manufacture of pulp and paper; publishing and printing. While publishing and printing is a large user of paper, it is perhaps debatable if it should be seen as a "wood-related" industry. Separate data for pulp and paper (NACE 21) and publishing and printing (NACE 22) is only available in Eurostat for a few EU countries (see section 5.3), but it is likely that for the EU-15, value added in NACE 22 is considerably higher than for NACE 21. This means that a more restrictive interpretation of wood-related industries, which does not include publishing and printing, would have a share of GDP that is significantly lower than 2.3%, possibly around 1.3%.

Table 57: Value added in forest and wood-related industries, EU and EFTA countries, 1999

	Forestry and logging (NACE 02)		Wood and wood products (NACE 20)		Pulp, paper and printing (NACE 21-22)		Gross domestic product
	Million euro	% of GDP	Million euro	% of GDP	Million euro	% of GDP	Million euro
EU-15 *	13 500	0,2	32 267	0,4	135 940	1,7	8 029 646
Belgium	164	0,1	671	0,3	3 451	1,5	235 632
Denmark	168	0,1	921	0,6	2 708	1,7	163 216
Germany	2 375	0,1	8 170	0,4	32 740	1,7	1 978 600
Greece	119	0,1	318	0,3	855	0,7	118 000
Spain	652	0,1	2 582	0,5	7 856	1,4	565 199
France	2 806	0,2	3 705	0,3	19 487	1,4	1 355 102
Ireland	:	:	:	:	:	:	89 770
Italy	485	0,0	5 809	0,5	13 976	1,3	1 108 497
Luxembourg	:	:	34	0,2	157	0,8	18 586
Netherlands	38	0,0	799	0,2	7 181	1,9	374 070
Austria	992	0,5	1 847	0,9	3 411	1,7	197 154
Portugal	:	:	897	0,8	1 686	1,6	107 741
Finland	2 521	2,1	1 262	1,0	5 816	4,8	120 485
Sweden	2 441	1,1	1 899	0,8	6 507	2,9	227 607
United Kingdom	:	:	3 353	0,2	30 109	2,2	1 369 988
EFTA							
Iceland	4	0,0	:	:	:	:	8 077
Liechtenstein	:	:	:	:	:	:	:
Norway	590	0,4	1 430	1,0	4 035	2,7	148 373
Switzerland	:	:	:	:	:	:	242 771

Source: Data for GDP and NACE 20-22 are national accounts data from New Cronos, data for NACE 02 are from section 3.
(*) The EU-15 total for NACE 02 is a Eurostat estimate and the totals for NACE 20 and 21-22 exclude Ireland.

5.2 Methodological notes

The supply and use tables for forest-related products are similar to the standard supply and use tables of the national accounts. They describe the flows of forest-related goods and services produced within the economy as well with the rest of the world, in physical and monetary terms.

The supply table shows the supply of goods and services by product and by type of supplier, distinguishing output by domestic industries and imports.

The use table shows the use of goods and services by product and by type of use, i.e. as intermediate consumption (by industry), final consumption, gross capital formation or exports. The monetary table also shows the components of gross value added, i.e. compensation of employees, other taxes less subsidies on production, net mixed income, net operating surplus and consumption of fixed capital.

For each product, total use should be equal to total supply. In the monetary tables, supply (domestic output and imports) is recorded at basic prices, while use is recorded at purchasers' prices. In order to balance supply and use, columns for taxes less subsidies on products and for trade and transport margins are included in the supply table, allowing total supply to be calculated at purchasers' prices as well.

In the monetary table an additional identity applies: The output of each industry should be equal to the sum of intermediate consumption and gross value added.

The tables below show the products and industries used in the IEEAF supply and use tables, with a link to the corresponding CPA and NACE classifications.

Products in IEEAF	**CPA 1996**
Standing timber	02.01.5 Standing timber
Saw logs	Part of (02.01.11 to 02.01.13) Logs (*)
Fuel wood	02.01.14 Fuel wood
Pulp wood	Rest of (02.01.11 to 02.01.13) Logs and 02.01.15 Other wood in the rough (*)
Wood and wood products	20 Wood and products of wood and cork (except 20.10.4 Saw dust and wood waste and scrap and 20.52 Articles of cork, straw and plaiting materials)
Pulp	21.11 Pulp (includes pulp made of other materials than wood)
Paper	21.12 Paper and paper board (except 21.12.6 Waste and scrap of paper and paper board)
Wood waste as a product	20.10.4 Saw dust and wood waste and scrap
Paper waste as a product	21.12.6 Waste and scrap of paper and paper board
Other	All other positions of CPA 1996

(*) The CPA classification does not distinguish between saw logs and pulpwood.
The Forestry Statistics makes the distinction, but only for removals, not for external trade.
The distinction between saw logs and pulp wood is based on what the wood will be used for.
The IEEAF uses the same distinction as the Forestry Statistics.

Industries in IEEAF	**NACE Rev.1**
Forestry and logging	02 Forestry, logging and related services
Manufacture of wood products	20
Manufacture of pulp	21.11
Manufacture of paper	21.12 and 21.2
Printing	22
Recycling and waste management	37.2 and part of 90
Other	All other positions of NACE Rev.1

Data sources

Physical data for production and trade of different types wood and wood products are available annually from forestry statistics. Internationally comparable data are collected by Eurostat, in collaboration with UNECE and FAO, see European Commission (2001a and b). Another source for the production of wood products is the Prodcom survey, while data on imports and exports are available from foreign trade statistics.

The Prodcom survey and the foreign trade statistics also provide data in monetary terms. The Economic Accounts for Forestry is a source for inputs and outputs of the forestry and logging industry. These data, supplemented with other information, are also the basis for the supply and use tables which are compiled by many EU and EFTA countries as part of the national accounts.

The IEEAF physical data on wood and wood products are broadly consistent with the data presented in Eurostat's Forestry Statistics. There are some differences in product definitions in the two systems, in particular for pulp (IEEAF follows CPA and includes pulp made of other materials than wood) and for wood products. There may also be differences in estimates made, e.g. for output of fuel wood for own use.

Tables for wood content

The tables records the wood content (in 1000 tonnes of dry matter) of the outputs and the uses by industries of selected wood products. These tables are derived from the physical supply and use tables in m^3 or tonnes, using conversion factors.

5.3 Individual country tables

Table 58: Supply-Use table, physical terms, Denmark, 1998

Supply

Products (units)	Output of industries						Total	Imports	Total
	Forestry & logging	Wood products	Pulp and paper	Printing	Recycling	Other			
Standing timber (1 000 m^3 over bark)	4 221						4 221		4 221
Saw logs (1 000 m^3)	1 163						1 163	880	2 043
Fuel wood (1 000 m^3)	1 272						1 272	95	1 367
Pulp wood (1 000 m^3)		117					117	159	276
Wood and wood products (1 000 m^3)		6 253				246	6 500	2 202	8 702
Pulp (1 000 t)		36					36	125	161
Paper (1 000 t)		1	2 633	127		75	2 836	2 654	5 490
Wood waste as a product (1 000 t)	12	3 518				40	3 682	9 954	13 636
Paper waste as a product (1 000 t)			37			14	50	56	107

Use

Products (units)	Intermediate consumption by industries						Total	Final consum-ption	Capital formation	Exports	Total
	Forestry & logging	Wood products									
Standing timber (1 000 m^3 over bark)	2 922						2 922		1 300		4 221
Saw logs (1 000 m^3)	14	906				571	1 491		15	536	2 042
Fuel wood (1 000 m^3)		69				352	422	872	65	7	1 367
Pulp wood (1 000 m^3)		166				8	174		40	62	276
Wood and wood products (1 000 m^3)	59	1 677	5	3		4 045	5 789	536	397	1 980	8 702
Pulp (1 000 t)			76			52	128			32	160
Paper (1 000 t)		73	567	463		2 933	4 036	621	- 23	855	5 490
Wood waste as a product (1 000 t)	114	3 247	9	6		7 834	11 210	989	324	1 113	13 636
Paper waste as a product (1 000 t)			88				88		1	18	107

Table 59: Supply-Use table, physical terms, Germany, 1999

Supply

Products (units)	Output of industries							Total	Imports	Total
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling	Other			
Standing timber (1 000 m^3 over bark)	85 892							85 892		85 892
Saw logs (1 000 m^3)	29 179						0	29 179	2 905	32 084
Fuel wood (1 000 m^3)	4 955						0	4 955	37	4 992
Pulp wood (1 000 m^3)	3 496							3 496	0	3 496
Wood and wood products (1 000 m^3)		28 378						28 378	9 118	37 496
Pulp (1 000 t)			1 907					1 907	3 976	5 883
Paper (1 000 t)				16 742				16 742	8 700	25 442
Wood waste as a product (1 000 t)		22 743					0	22 743	1 220	23 963
Paper waste as a product (1 000 t)				0	0	14 123	0	14 123	1 130	15 253

Use

Products (units)	Intermediate consumption by industries							Total	Final consum-ption	Capital formation	Exports	Total
	Forestry & logging	Wood products					Other					
Standing timber (1 000 m^3 over bark)	50 543							50 543		35 349		85 892
Saw logs (1 000 m^3)		27 504						27 504			4 580	32 084
Fuel wood (1 000 m^3)							988	988	3 951		53	4 992
Pulp wood (1 000 m^3)			3 496					3 496			0	3 496
Wood and wood products (1 000 m^3)							31 899	31 899	0	0	5 597	37 496
Pulp (1 000 t)				5 581				5 581			302	5 883
Paper (1 000 t)					8 717	0	8 925	17 642	0		7 800	25 442
Wood waste as a product (1 000 t)		17 735	2 479					20 214			3 749	23 963
Paper waste as a product (1 000 t)			11 526			0		11 526			3 727	15 253

Data sources: Foreign trade statistics, production statistics, wood and wood product statistics, and the Association of German paper industries

Table 60: Supply-Use table, physical terms, Spain, 1999

Supply

Products (units)	Output of industries						Total	Imports	Total
	Forestry & logging	Wood products	Pulp and paper	Printing	Recycling	Other			
Standing timber (1 000 m^3 over bark)	0						0		
Saw logs and pulp wood (1 000 m^3)	10 660					4 849	15 509	3 584	19 093
Fuel wood (1 000 m^3)	2 180					991	3 171	19	3 190
Wood and wood products (1 000 m^3)		26 094				456	26 550	4 998	31 548
Pulp (1 000 t)			5 670				5 670	621	6 291
Paper (1 000 t)			5 671	22			5 693	3 337	9 030
Wood waste as a product (1 000 t)		2 361	71				2 432	47	2 479
Paper waste as a product (1 000 t)							0	717	717

Use

Products (units)	Intermediate consumption by industries						Total	Final consum-ption	Capital formation	Exports	Total
	Forestry & logging	Wood products	Pulp and paper	Printing	Recycling	Other					
Standing timber (1 000 m^3 over bark)	0						0		0		
Saw logs fuel wood, pulp wood (1 000 m^3)		10 685	7 934			222	18 841	2 881		560	22 282
Wood and wood products (1 000 m^3)	2	8 596	213	126	3	19 888	28 828	977	471	1 318	31 594
Pulp and paper (1 000 t)		29	7 446	5 201		673	13 349		- 174	2 145	15 320
Wood waste as a product (1 000 t)		2 244			213		2 457			23	2 480
Paper waste as a product (1 000 t)			564		89		653			64	717

Preliminary data

Table 61: Supply-Use table, physical terms, France, 1999

Supply

Products (units)	Output of industries							Total	Imports	Total
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling	Other			
Standing timber (1 000 m^3 over bark)	95 920							95 920		95 920
Saw logs (1 000 m^3)	23 162							23 162	1 451	24 613
Fuel wood (1 000 m^3)	31 200							31 200	27	31 227
Pulp wood (1 000 m^3)	11 869							11 869	699	12 568
Wood and wood products (1 000 m^3)		13 017						13 017	3 490	16 507
Pulp (1 000 t)			2 591					2 591	2 212	4 803
Paper (1 000 t)				9 602				9 602	5 612	15 214
Wood waste as a product (1 000 t)		8 152						8 152	686	8 838
Paper waste as a product (1 000 t)					5 066			5 066	1 238	6 304

Use

Products (units)	Intermediate consumption by industries							Total	Final consum-ption	Capital formation	Exports	Total
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling	Other					
Standing timber (1 000 m^3 over bark)	66 232							66 232		29 688		95 920
Saw logs (1 000 m^3)		23 337						23 337			1 276	24 613
Fuel wood (1 000 m^3)							2 423	2 423	28 429		375	31 227
Pulp wood (1 000 m^3)			10 944					10 944			1 624	12 568
Wood and wood products (1 000 m^3)		7 736					6 076	13 812			2 695	16 507
Pulp (1 000 t)				4 372				4 372			431	4 803
Paper (1 000 t)					6 582		4 465	11 047			4 167	15 214
Wood waste as a product (1 000 t)		2 265	2 162				3 431	7 858			980	8 838
Paper waste as a product (1 000 t)				5 276				5 276			1 028	6 304

Data sources: ENGREF/IFN, ENGREF/SCEES/Ministry of Agriculture, SESSI, COPACEL, DGDDI

Table 62: Supply-Use table, physical terms, Austria, 1999

Supply

Products (units)	Output of industries							Total	Imports	Total
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling	Other			
Standing timber (1 000 m^3 over bark)	27 337							27 337		27 337
Saw logs (1 000 m^3)	8 067						3 490	11 557	5 469	17 026
Fuel wood (1 000 m^3)	3 096						0	3 096	115	3 211
Pulp wood (1 000 m^3)	2 921						2 199	5 120	1 570	6 690
Wood and wood products (1 000 m^3) (1)		11 667						11 667	2 327	13 994
Pulp (1 000 t)			1 688				38	1 726	625	2 351
Paper (1 000 t)				4 141				4 141	1 232	5 373
Wood waste as a product (1 000 t)		5 096					0	5 096	743	5 839
Paper waste as a product (1 000 t)				0	0	0	1 304	1 304	625	1 929

Use

Products (units)	Intermediate consumption by industries							Total	Final consum-ption	Capital formation	Exports	Total
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling	Other					
Standing timber (1 000 m^3 over bark)	20 120							20 120		7 217		27 337
Saw logs (1 000 m^3)		16 041						16 041			985	17 026
Fuel wood (1 000 m^3)							1 078	1 078	2 124		9	3 211
Pulp wood (1 000 m^3)		3 200	3 490					6 690			0	6 690
Wood and wood products (1 000 m^3) (1)							6 408	6 408			7 586	13 994
Pulp (1 000 t)				1 841			170	2 011			340	2 351
Paper (1 000 t)					980	0	860	1 840			3 533	5 373
Wood waste as a product (1 000 t)		1 896	2 830				498	5 224			615	5 839
Paper waste as a product (1 000 t)			1 787			0		1 787			142	1 929

Data sources: HEM 1999, FAO, external trade statistics, statistics from the paper industry

(1) Includes sawnwood and wood based panels, but not more processed wood products.

Table 63: Supply-Use table, physical terms, Finland, 1998

Supply

Products (units)	Output of industries							Total	Imports	Total
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling	Other			
Standing timber (1 000 m^3 over bark)	58 970							58 970		58 970
Saw logs (1 000 m^3)	26 780						177	26 957	1 400	28 357
Fuel wood (1 000 m^3)	4 750							4 750	130	4 880
Pulp wood (1 000 m^3)	27 440						- 522	26 918	9 259	36 177
Wood and wood products (1 000 m^3)		12 917						12 917	332	13 249
Pulp (1 000 t)			11 355					11 355	52	11 407
Paper (1 000 t)				12 703				12 703	292	12 995
Wood waste as a product (1 000 t)		16 976	3 280				500	20 756	1 245	22 001
Paper waste as a product (1 000 t)						665		655	38	693

Use

Products (units)	Intermediate consumption by industries							Total	Final consum-ption	Capital formation	Exports	Total
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling	Other					
Standing timber (1 000 m^3 over bark)	58 970							58 970				58 970
Saw logs (1 000 m^3)		29 540	730				130	30 400		- 177	670	30 893
Fuel wood (1 000 m^3)									4 640		6	4 646
Pulp wood (1 000 m^3)		1 533	34 990				32	36 555		522	138	37 215
Wood and wood products (1 000 m^3)		875					2 789	3 664			9 472	13 136
Pulp (1 000 t)				9 861			92	9 953			1 634	11 587
Paper (1 000 t)				780	750		70	1 600			11 347	12 947
Wood waste as a product (1 000 t)		1 761	12 220				9 632	23 613		186	207	24 006
Paper waste as a product (1 000 t)			82	521				603			76	679

Data sources: Finnish Forest Research Institute and Statistics Finland

Table 64: Supply-Use table, physical terms, Sweden, 1999

Supply

Products (units)	Output of industries							Total	Imports	Total
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling	Other			
Standing timber (1 000 m^3 over bark)										
Saw logs (1 000 m^3)	31 300							31 300	2 370	33 670
Fuel wood (1 000 m^3)	5 900							5 900	148	6 048
Pulp wood (1 000 m^3)	21 500							21 500	7 909	29 409
Wood and wood products (1 000 m^3)		26 219						26 219	1 620	27 839
Pulp (1 000 t)			10 693					10 693	306	10 999
Paper (1 000 t)				10 071				10 071	605	10 676
Wood waste as a product (1 000 t)		4 350						4 350	275	4 625
Paper waste as a product (1 000 t)						1 384		1 384	720	2 104

Use

Products (units)	Intermediate consumption by industries							Total	Final consum-ption	Capital formation	Total domestic use	Exports	Total
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling	Other						
Standing timber (1 000 m^3 over bark)	70 440												
Saw logs (1 000 m^3)		33 032						33 032			33 032	638	33 670
Fuel wood (1 000 m^3)									5 851		5 851	197	6 048
Pulp wood (1 000 m^3)			28 709					28 709			28 709	700	29 409
Wood and wood products (1 000 m^3)											14 889	12 950	27 839
Pulp (1 000 t)				8 030				8 030			8 030	2 969	10 999
Paper (1 000 t)											1 867	8 809	10 676
Wood waste as a product (1 000 t)		910	871				2 792	4 573			4 573	52	4 625
Paper waste as a product (1 000 t)				1 922				1 922			1 922	182	2 104

Data sources: Statistics from The National Board of Forestry

Table 65: Supply-Use table, million ECU, Denmark, 1998

Supply

	Output of industries						Total (basic prices)	Imports	Taxes less subsidies on products	Trade and transport margins	Total (purchasers' prices)
	Forestry & logging	Wood products	Pulp and paper	Printing	Recycling	Other					
Standing timber	115						115				115
Saw logs	55	10					66	54	- 2	13	130
Fuel wood	51	5					56	7	13	26	101
Pulp wood		2					2	3			5
Wood and wood products		1 249				49	1 299	440	37	635	2 410
Pulp		8					8	29	0	6	43
Paper		1	1 298	62		37	1 399	1 309	148	596	3 452
Wood waste as a product	7	198	0	0		2	207	559	18	512	1 296
Paper waste as a product			3	0		1	4	5		89	98
Other products	151										
Total	379	1 685	1 380	1 892		246 696	252 077	52 018	23 306		327 561

Use

	Intermediate consumption by industries						Total	Final consumption	Capital formation	Exports	Total use
	Forestry & logging	Wood products	Pulp and paper	Printing	Recycling	Other					
Standing timber	80						80		35		115
Saw logs	1	58				36	95		1	34	130
Fuel wood		5				26	31	65	5	1	101
Pulp wood		3					3	0	1	1	5
Wood and wood products		86	2			1 515	1 603	148	110	548	2 410
Pulp		0	20			14	34	0	0	9	43
Paper		46	357	291		1 844	2 537	391	- 14	538	3 452
Wood waste as a product	11	309	1	1		745	1 065	94	31	106	1 296
Paper waste as a product			80				80		1	16	98
Other	120										
Total intermediate consumption	211	1 020	853	984		118 255	121 406	117 574	32 113	55 126	327 561
Gross value added	168	681	554	910							
Consumption of fixed capital	24	69	74	157							
Net value added	144	611	479	753							
Compensation of employees	74	486	376	599							
Other taxes less subsidies	7	- 1	- 1	- 1							
NOS/mixed income	62	126	104	154							
Output (basic prices)	379	1 701	1 386	1 894							

Table 66: Supply-Use table, million euro, Germany, 1999

Supply

	Output of industries							Total (basic prices)	Imports	Taxes less subsidies on products	Trade and transport margins	Total supply
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling	Other					
Standing timber	2 565							2 565				2 565
Saw logs	1 918						0	1 918	297			2 214
Fuel wood	51						0	51	1			52
Pulp wood	77							77				77
Wood and wood products		5 906						5 906	2 139			8 045
Pulp			962					962	1 779			2 741
Paper				13 782				13 782	5 938			19 720
Wood waste as a product		182					0	182	27			209
Paper waste as a product				0	0	639	0	639	117			756
Other products	107							107				107
Total	4 718											

Use

	Intermediate consumption by industries						Total	Final consumption	Capital formation	Exports	Total use
	Forestry & logging	Wood products	Pulp and paper	Printing	Recycling	Other					
Standing timber	1 509						1 509		1 056		2 565
Saw logs		1 848					1 848			366	2 214
Fuel wood						10	10	40		1	52
Pulp wood			77				77				77
Wood and wood products						6 359	6 359			1 686	8 045
Pulp			2 589				2 589			152	2 741
Paper				6 517	0	6 783	13 299			6 421	19 720
Wood waste as a product		110	15				125			84	209
Paper waste as a product		0	561				561			195	756
Other	833	12 957	14 491	21 906	1 248						
Total intermediate consumption	2 343	14 654	17 721	28 423	1 248						
Gross value added	2 375	8 114	9 663	23 064	588						
Consumption of fixed capital	327	910	1 718	3 318	123						
Net value added	2 048	7 204	7 945	19 746	465						
Compensation of employees	971	4 970	6 192	13 529	337						
Other taxes less subsidies	- 112	118	205	578	15						
NOS/mixed income	1 189	2 117	1 549	5 640	112						
Output (basic prices)	4 718	22 768	27 385	51 487	1 836						

Table 67: Supply-Use table, million euro, Spain, 1999

Supply

	Output of industries						Total (basic prices)	Imports	Taxes less subsidies on products	Trade and transport margins	Total supply
	Forestry & logging	Wood products	Pulp and paper	Printing	Recycling	Other					
Standing timber											
Saw logs and pulp wood	478					217	695	231	4	360	1 290
Fuel wood	37					17	54		0	21	75
Wood and wood products		6 447				118	6 565	1 431	55	1 601	9 652
Pulp			815				815	266	2	92	1 175
Paper			3 068	12			3 080	2 243	10	452	5 785
Wood waste as a product		70	2				72	3	1	15	91
Paper waste as a product								53	0	4	57
Other products	243	877	5 458	13 236	5 114	975 845	1 000 773	158 615	54 296		1 211 142
Total	758	7 394	9 343	13 248	5 114	976 197	1 012 054	162 842	54 368		1 229 267

Use

	Intermediate consumption by industries						Total	Final consumption	Capital formation	Exports	Total use
	Forestry & logging	Wood products	Pulp and paper	Printing	Recycling	Other					
Standing timber											
Saw logs, fuel wood, pulp wood		551	356			4	911	50		21	982
Wood and wood products		2 017	55	33		4 923	7 028	253	107	608	7 996
Pulp and paper		16	2 158	2 811		364	5 349		- 59	1 115	6 405
Wood waste as a product		67			7		74			2	76
Paper waste as a product			35		7		42			12	54
Other (incl. taxes less subsidies on products)	107	2 161	3 570	5 718	2 981	473 000	487 537	434 053	138 445	153 718	1213 754
Total intermediate consumption	107	4 812	6 174	8 562	2 995	478 291	500 941	434 356	138 493	155 476	1 229 267
Gross value added	651	2 582	3 170	4 686	2 120	497 907	511 116				
Consumption of fixed capital	:										
Net value added	:										
Compensation of employees	170	1 748	1 590	3 613	1 173	274 747	283 041				
Other taxes less subsidies	- 138	- 7	- 6	- 15	52	3 119	3 005				
NOS/mixed income	:										
Output (basic prices)	759	7 394	9 344	13 247	5 115	976 198	1 012 057				

Preliminary data

Table 68: Supply-Use table, million euro, France, 1999

Supply

	Output of industries							Total (basic prices)	Imports	Taxes less subsidies on products	Trade and transport margins	Total supply
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling	Other					
Standing timber	1 982							1 982	-			1 982
Saw logs	1 311							1 311	219			1 530
Fuel wood	977							977	3			980
Pulp wood	245							245	67			313
Wood and wood products		5 664						5 664	1 881			7 544
Pulp			1 046					1 046	956			2 002
Paper				5 685				5 685	3 697			9 383
Wood waste as a product		75						75	41			115
Paper waste as a product				381				381	77			457
Other products	305			0	8 063			8 063				
Total	4 820	5 739	1 046	6 066	8 063			25 733				

Use

	Intermediate consumption by industries							Total	Final consumption	Capital formation	Exports	Total use
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling	Other					
Standing timber	1 368							1 368		613		1 982
Saw logs		1 390						1 390			140	1 530
Fuel wood							86	86	884		9	980
Pulp wood			173					173			140	313
Wood and wood products		3 294					2 587	5 882	0		1 663	7 544
Pulp				1 814				1 814			188	2 002
Paper					6 559			6 559			2 824	9 383
Wood waste as a product		21	20				31	71			44	115
Paper waste as a product				375				375			82	457
Other	646											
Total intermediate consumption	2 014											
Gross value added	2 806											
Consumption of fixed capital	288											
Net value added	2 518											
Compensation of employees	654											
Other taxes less subsidies	16											
NOS/mixed income	1 848											
Output (basic prices)	4 820											

Data sources: ENGREF/IFN, Ministry of Agriculture, SESSI, COPACEL, DGDDI, Fédération de l'imprimerie et de la communication graphique, ENGREF

Table 69: Supply-Use table, million euro, Austria, 1999

Supply

	Output of industries							Total (basic prices)	Imports	Taxes less subsidies on products	Trade and transport margins	Total (purchasers' prices)
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling	Other					
Standing timber	797							797				797
Saw logs	643						320	963	392			1 355
Fuel wood	165							165	4			169
Pulp wood	90						72	162	43			206
Wood and wood products (1)		2 873						2 873	632			3 505
Pulp			891				20	911	330			1 241
Paper				3 144				3 144	935			4 079
Wood waste as a product		136						136	28			165
Paper waste as a product							120	120	57			177
Other products	191											
Total	1 885											

Use

	Intermediate consumption by industries							Total	Final consumption	Capital formation	Exports	Total use
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling	Other					
Standing timber	582							582		215		797
Saw logs		1 277						1 277			78	1 355
Fuel wood							58	58	111		0	169
Pulp wood		98	107					206				206
Wood and wood products (1)							1 570	1 570			1 935	3 505
Pulp				972			90	1 062			180	1 241
Paper					744		653	1 397			2 682	4 079
Wood waste as a product		52	77				14	143			22	165
Paper waste as a product			164					164			13	177
Other	311							311				
Total intermediate consumption	893											
Gross value added	992											
Consumption of fixed capital	137											
Net value added	855											
Compensation of employees	229											
Other taxes less subsidies	- 5											
NOS/mixed income	631											
Output (basic prices)	1 885											

(1) Includes sawnwood and wood based panels, but not more processed wood products.

Table 70: Supply-Use table, million ECU, Finland, 1998

Supply

	Output of industries						Total (basic prices)	Imports	Taxes less subsidies on products	Trade and transport margins	Total (purchasers' prices)
	Forestry & logging	Wood products	Pulp and paper	Printing	Recycling	Other					
Standing timber											
Industrial roundwood								375			
Fuel wood								1			
Wood and wood products								278			
Pulp								57			
Paper								218			
Wood waste as a product								8			
Paper waste as a product								4			
Other products											
Total											

Use

	Intermediate consumption by industries						Total	Final consumption	Capital formation	Exports	Total use
	Forestry & logging	Wood products	Pulp and paper	Printing	Recycling	Other					
Standing timber											
Industrial roundwood										77	
Fuel wood											
Wood and wood products										2 551	
Pulp										630	
Paper										7 485	
Wood waste as a product										0	
Paper waste as a product										9	
Other											
Total intermediate consumption	244	3 468	8 973	2 321							
Gross value added	2 521	1 268	4 207	1 575							
Consumption of fixed capital	418	201	1 174	276							
Net value added	2 103	1 067	3 033	1 299							
Compensation of employees	425	782	1 645	1 043							
Other taxes less subsidies	41	6	8	12							
NOS/mixed income	1 719	291	1 395	268							
Output (basic prices)	2 765	4 736	13 180	3 895							

Data source: Statistics Finland

Table 71: Supply-Use table, million euro, Sweden, 1999

Supply

	Output of industries							Total (basic prices)	Imports	Taxes less subsidies on products	Trade and transport margins	Total (purchasers' prices)
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling	Other					
Standing timber	1 573							1 573				1 573
Saw logs	1 319						16	1 335	42		176	1 554
Fuel wood	79	4	2					85	2	2		89
Pulp wood	703	9					16	727	414		118	1 260
Wood and wood products	61	5 876	2	4			195	6 138	570	83	487	7 278
Pulp			1 641	156				1 797	164		142	2 103
Paper		2	75	8 256	8		57	8 397	883	137	1 268	10 685
Wood waste as a product		330						330	21			351
Paper waste as a product						105		105	55			160
Other products	228	269	59	387	7 203	135	364 595	372 877	83 326	24 744	29 400	510 347
Total	3 964	6 489	1 779	8 803	7 210	240	364 879	393 365	85 477	24 967	31 591	535 400

Use

	Intermediate consumption by industries							Total	Final consump-tion	Capital formation	Exports	Total use
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling	Other					
Standing timber	1 115							1 115		458		1 573
Saw logs		1 657					- 96	1 562		- 10	2	1 554
Fuel wood									88		1	89
Pulp wood		22	238	818			137	1 215		- 22	66	1 260
Wood and wood products		708	236	231	2		2 850	4 026	174	2	3 075	7 278
Pulp			13	782			41	836			1 268	2 103
Paper	1	21	23	881	625		2 057	3 607	925	- 208	6 360	10 685
Wood waste as a product		41	129	177				347			4	351
Paper waste as a product				146				146			14	160
Other	406	2 141	672	2 884	3 429	178	199 750	209 461	173 747	38 877	88 262	510 347
Total intermediate consumption	1 523	4 590	1 311	5 918	4 056	178	204 740	222 316	174 935	39 097	99 051	535 400
Gross value added	2 441	1 899	468	2 884	3 155	62	191 731	202 640				
Consumption of fixed capital								31 686				
Net value added								170 954				
Compensation of employees	449	1 150	239	1 439	1 932	27	120 638	125 873				
Other taxes less subsidies	39	72	20	118	- 34	2	8 721	8 938				
NOS/mixed income							0	36 143				
Output (basic prices)	3 964	6 489	1 779	8 803	7 210	240	396 470	424 956				

Table 72: Material balance of wood content, 1000 tonnes of dry matter, France, 1999

Supply

Products	Output of industries					
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling
Standing timber	46 041					
Saw logs	11 118					
Fuel wood	14 976					
Pulp wood	5 697					
Wood and wood products		12 565				
Pulp			2 332			
Paper				8 450		
Wood waste as a product		4 865				
Paper waste as a product				4 458		
Other products	3 179				2 808	
Wood content of total output	80 912	17 429	2 332	12 908	2 808	

Use

Products	Intermediate consumption by industries					
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling
Standing timber	31 791					
Saw logs		11 202				
Fuel wood						
Pulp wood			5 253			
Wood and wood products		13 644				
Pulp				3 935		
Paper					5 792	
Wood waste as a product		1 359	1 297			
Paper waste as a product				4 643		
Other products						
Wood content of intermediate cons.	31 791	26 205	6 550	8 578	5 792	
Of which used as fuel			2 018			

Data sources: ENGREF, CTBA/ADEME/EDF, ARMEF

Table 73: Material balance of wood content, 1000 tonnes of dry matter, Austria, 1999

Supply

Products	Output of industries					
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling
Standing timber	15 719					
Saw logs	4 639					
Fuel wood	1 780					
Pulp wood	1 680					
Wood and wood products		6 709				
Pulp			1 521			
Paper				4 141		
Wood waste as a product		3 399				
Paper waste as a product				0	0	0
Other products						
Wood content of total output	23 818	10 108	1 521	4 141	0	0

Use

Products	Intermediate consumption by industries					
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling
Standing timber	11 569					
Saw logs		9 224				
Fuel wood						
Pulp wood		1 840	2 007			
Wood and wood products						
Pulp				1 657		
Paper					883	:
Wood waste as a product		1 265	1 888			
Paper waste as a product			1 610			:
Other products						
Wood content of intermediate cons.	11 569	12 329	5 505	1 657	883	
Of which used as fuel	2 542					

Table 74: Material balance of wood content, 1000 tonnes of dry matter, Finland, 1998

Supply

Products	Output of industries							Imports
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling	Other	
Standing timber	25 200							
Saw logs, pulp wood, fuel wood	25 200							5 472
Wood and wood products		5 787						174
Pulp			10 683					48
Paper				9 273				213
Wood waste as a product		6 710	1 312				352	498
Paper waste as a product				..	..	480		28
Other products (waste liquors)			8 530					
Wood waste		714	623	57			..	
Wood content of total output	25 200	13 211	21 148	9 330	540	480	352	6 433

Use

Products	Intermediate consumption by industries							Exports
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling	Other	
Standing timber	25 200							
Saw logs, pulp wood, fuel wood		12 612	15 343				2 192	325
Wood and wood products		164					1 682	4 115
Pulp				9 125			72	1 534
Paper				504	540		159	8 283
Wood waste as a product		428	4 888				3 770	80
Paper waste as a product			59	305			96	55
Other products (waste liquors)							8 100	
Wood waste								
Wood content of intermediate cons.	25 200	13 204	20 290	9 934	540	0	30 178	
Of which used as fuel		230					13 835	

Data sources: Finnish Forest Research Institute and Statistics Finland

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Annex: The IEEAF set of annual tables

The forest accounts data was collected using the following set of tables:

Table 1a Forest balance: area of wooded land (1000 ha)

Table 1b Forest balance: value of wooded land (million national monetary units)

Table 2a Forest balance: volume of standing timber (1000 m3)

Table 2b Forest balance: value of standing timber (million national monetary units)

Table 2c Defoliation (% of sample trees)

Table 3a Output related to wooded land by industry and type of output (million national monetary units)

Table 3c Economic accounts for forestry and logging (million national monetary units)

Table 4a and 4b Supply-Use physical table

Table 5a and 5b Supply-Use monetary table (million national monetary units)

Table 6a and 6b Material balance of wood content (1000 tonnes of dry matter)

Table 1a Forest balance: area of wooded land (1000 ha)

	Forest and other wooded land		
	Available for wood supply	**Not available for wood supply**	**Total**
Opening area			
Changes due to economic activities			
Afforestation			
Deforestation			
Other changes			
Natural colonisation			
Natural regression			
Other			
Changes in use/status (wooded land)			0
Closing area			

Notes on the table

The table applies to wooded land, i.e. to forest and other wooded land as defined in UN-ECE/FAO TBFRA-2000. Except otherwise indicated, terms and definitions of the UN-ECE/FAO TBFRA-2000 apply.

Changes
Changes due to economic activities: afforestation, i.e. the increase in the wooded land area (generally for wood production) due to human activity; and deforestation, i.e. the reduction in the area of wooded land due to human activity (for building use, agricultural activities, etc.)
Other changes: other changes in area due to natural, multiple or non-referable causes; e.g. natural colonisation or regression, etc.
Changes in use/status (wooded land): this category of changes includes all changes in classification within the wooded area (from available for wood supply to not available for wood supply, etc.).

Data on changes may not be available on an annual basis and may have to be estimated.

Annual data on afforestation and deforestation from administrative sources may be incomplete (only subsidised afforestation, only registered deforestation) but may provide useful indicators to which grossing factors can be applied.

Table 1b Forest balance: value of wooded land (million national monetary units)

	Forest and other wooded land		
	Available for wood supply	**Not available for wood supply**	**Total**
Opening area			
Changes due to economic activities			
Afforestation			
Deforestation			
Other changes			
Natural colonisation			
Natural regression			
Other			
Changes in use/status (wooded land)			
Changes in classification			
Revaluation			
Closing area			

Notes on the table

The rows and columns of Table 1b strictly correspond to the rows and columns of Table 1a, with the only exception of the addition of the rows "changes in classification" and "revaluation".

Valuation
In general, land is valued on the basis of market transactions, either directly (e.g. using market prices for bare forest land) or as a ratio of the value of exchanged forest real estates. Hedonic analysis may be used in this context. The land value integrates all ESA/SNA values, as revealed by market transactions, except the standing timber, which is recorded as a separate asset in table 2b. Wooded land not available for wood supply may thus receive a positive value. When forests are bought for environmental protection purposes, and thus felling of standing timber is prohibited, the value of standing timber is integrated within the value of land.

Classification of changes
Changes in value due to changes due to economic activities (afforestation, deforestation), other changes (natural colonisation or regression, other changes) and changes in use/status are recorded on the respective rows, in the column corresponding to the final category

The row changes in classification records the transfer of the (initial) value of the land whose category has changed between the beginning and the end of the period, as an increase in the column corresponding to the final category, and a decrease in the column corresponding to the initial category.

Revaluation records the change in value of land due to changes in prices between the beginning and the end of the period. On the condition that flows are valued at the prices prevailing at the time when they occurred, the revaluation item is given by [value of the closing stock less value of the opening stock] less [value of all the other changes].

Table 2a Forest balance: volume of standing timber (1000 m^3)

	Standing volume on wooded land			On other land	Total
	Available for wood supply	Not available for wood supply	Total		
Opening stocks				0	
Gross increment				0	
Total removals					
Other changes					
Changes in use/status					0
Closing stocks				0	

Notes on the table

The table describes the changes in the volume of standing timber between the beginning and the end of the period, due to gross increment and removals, as defined in the UN-ECE/FAO TBFRA-2000, and to other changes and changes in use/status. Unit is 1000 m^3. Volume is measured to a minimum diameter breast height of 0 cm, over bark. Opening and closing stocks refer to the "standing volume" as defined in TBFRA-2000 terms and definitions: volume of standing trees, living or dead, including tops of stem, large branches, dead trees lying on the ground, which can still be used. The standing volume on wooded land corresponds to the volume located on the categories of land of Table 1a.

Given the definition of removals, some timber may be removed from "other land". This category comprises: land that meets the definition of wooded land except that the area is less than 0.5 ha and the width is less than 20 m; scattered trees in permanent meadows and pastures, urban parks and gardens, hedgerows etc. The stock of standing volume and the increment are not requested for this category of land.

Changes

Gross increment: volume of gross biological growth during the period. Gross increment (or natural growth) is generally calculated by modelling (based on opening stocks by age and species, biological parameters etc.). Annual variations of natural growth may be high due to climatic variation – therefore averages over several years (e.g. 5 years) should be used.

Removals refer to those fellings that are removed from the wooded land and other felling sites during the period. Included are removals of trees felled during an earlier period, and removal of trees killed or damaged by natural causes.

Other changes: they cover all reductions in the volume of standing timber, which are not accounted for in removals. They include that part of the timber burnt by forests fires, flooded in dam construction, destroyed by landslides or avalanches, that is unrecoverable (i.e. not accounted for in the stocks). This item may include a "reconciliation" item.

Changes in use/status: they refer to changes in the standing volume due to "changes in use/status" of (corresponding) land area in Table 1a. They are recorded twice: as a decrease in the column corresponding to the initial category and, as an increase in the column corresponding to the final category. They may also refer to the occasional removals of standing timber located on land "not available for wood supply". In this case a positive flow is recorded on the row "changes in use/status", which is the counterpart of the negative flow recorded under "removals".

Table 2b Forest balance: value of standing timber (million national monetary units)

	Standing volume on wooded land			On other land	Total
	Available for wood supply	Not available for wood supply	Total		
Opening stocks				0	
Gross increment				0	
Total removals					
Other changes					
Changes in use/status					
Changes in classification					
Revaluation					
Closing stocks				0	

Notes on the table

The rows and columns of Table 2b strictly correspond to the rows and columns of Table 2a, with the only exception of the addition of the rows "changes in classification" and "revaluation".

Valuation
The stumpage value method is a simple method which provides a good starting point for valuation of standing timber. It can be used for all entries in the physical forest account.

Removals must be valued consistently with economic transactions in the national accounts; therefore the value of removals has to be consistent with the total value of raw wood output (CPA 02.01.1), as assessed either directly (through stumpage prices when they are available) or as a residual (the full harvesting costs being deducted from the total value of raw wood output (CPA 02.01.1), whatever the nature of this output and the classification of its producer.

Other conclusions from the IEEAF pilot studies are:

- a zero value should be given to the stocks of standing volume located in wooded land not available for wood supply. However, timber located on wooded land not available for wood supply may be occasionally harvested. In this case, a positive increase in value is recorded in the row "changes in use/status", which is the counterpart of the decrease recorded in the row "removals".
- in some conditions an allowance has to be made when valuing stocks and gross increment on wooded land available for wood supply in order to account for the part of the standing timber that will probably never be harvested or will not be recoverable.

Changes
The row "Changes in classification" records the transfer of the (initial) value of the standing volume of timber whose category has changed between the beginning and the end of the period, as an increase in the column corresponding to the final category, and a decrease in the column corresponding to the initial category.

Revaluation records the change in the value of the volume of standing timber due to changes in prices between the opening and the end of the period. On the condition that flows are valued at the prices prevailing at the time they occurred, the revaluation item is given by [value of the closing stock less value of the opening stock] less [value of all the other changes].

Table 2c Defoliation (% of sample trees)

	1		2		3	
	Transnational survey data Defoliation % > 25		National survey data Defoliation % > 25%		Corresponding area and/or standing volume	
	Reference year	Current year	Reference year	Current year	Reference year	Current year
Conifers						
Broadleaves						
Total						

Notes on the table

Although the development of Geographical Information Systems linked to National Forests Inventories allows for extending the cross-classification of data, it is generally admitted that data on defoliation cannot be presented according to the Table 1a format. A specific table on defoliation is proposed. The table should be based on data collected under the aegis of the International Co-operative Program (ICP Forests) of the Executive Committee for the Convention on Long-range Transboundary Air Pollution in Europe.

As far as possible, data on the % level of defoliation for sample trees have to be transformed into areas of wooded land and volumes of standing timber.

Columns
Column 1 records the % of trees in the defoliation classes 2 to 4 of the UN-ECE and EU classifications, i.e. with needle/leaf loss of more than 25%, according to the transnational survey. Defoliation is recorded for the reference year (ideally the year corresponding to the closing year of the last available forest balance) and to the current year.

Column 2 records the % of trees in the defoliation classes 2 to 4 of the UN-ECE and EU classifications, i.e. with needle/leaf loss of more than 25%, according to the national survey. Defoliation is recorded for the reference year (ideally the year corresponding to the closing year of the last available forest balance) and to the current year.

Column 3 records an estimate of the area and/or standing volume corresponding to trees in the defoliation classes 2 to 4 of the UN-ECE and EU classifications. As far as they are statistically more significant, area and standing volume should be based on national data. Area and standing volume refer first to a reference year (ideally the year corresponding to the closing year of the last available forest balance) and to the current year.

Rows
Only main species are considered in the rows. If necessary more species may be distinguished. Data by age class may also be judged useful.

Table 3a Output related to wooded land by industry and type of output (million national monetary units)

Products	Industries				Total output by product	Type of output		
	Agriculture	Forestry & logging	Recreational, cultural and sporting activities	Other industries		Market output	Output for own final use	Other non-market output
	01	02	92					
Products of forestry and logging								
Natural growth								
Wood in the rough								
Other forestry products (1)								
Forestry and logging-related services								
Afforestation and reafforestation								
Other forestry contract work								
Forests inventories and evaluation								
Protection of forest against fires, etc.								
Other products related to wooded land								
Agricultural products growing in forests (2)								
Growing of animals in forests								
Meat, fur, skin from hunting and trapping								
Recreational services in forests (3)								
Other products (4)								
Other products								
Total output								

(1) natural gum, cork, other forestry products
(2) mushrooms, truffles, other forest growing products (berries, nuts, etc.)
(3) hunting as a sport or recreation, operation of reserves, national parks and other recreational services in forests
(4) peat, charcoal, etc.

Notes on the table

This table is intended to record all output that may be related to wooded land, i.e. all output from activities that take place on wooded land. This output and corresponding activities are classified according to the CPA classification of products (in rows) and the NACE rev.1 classification of industries and type of output according to the market/non-market distinction (in columns).

In principle, the industry part of the table follows the format of the "Make" matrix of the national accounts (output by product and by industry at basic prices). As far as possible the table must be entirely filled in (including the row and the column "total output"). Some estimation may be necessary for products that are not regularly followed in economic statistics and national accounts. Additions to the standard national accounts aggregates have to be specified.

In the right part of the table, the output is distributed according to its type:

- market output covers in particular the total value of the changes in inventories of finished products and work-in-progress intended for sale at economically significant prices (including natural growth of vegetable products). By convention, as it would be impossible to separate that part of natural growth, which relates to market output, natural growth is always classified as market output.
- output for own final use covers the total value of goods and services that are retained either for final consumption or for gross fixed capital formation by the same institutional unit. In the forest context, it applies to wood in the rough removed for own final use (e.g. fuel wood), a part of other forestry products, a part of agricultural products, etc.
- other non-market output: this type of output exclusively refers to services, in particular to forest inventories, protection of forest against fires and recreational services.

Natural growth: For those trees considered to be cultivated (i.e. produced), according to the country's national accounts, the value of natural growth is to be recorded as output. The value of net growth may be estimated using the stumpage value method. The value of natural growth should include the stumpage value of cultivated timber felled, see Table 3c.

Classification of products and industries

For characteristic products of forestry and logging see the Eurostat Manual on Economic Accounts for Forestry Rev.1.1, Appendix II.A, as well as NACE Rev.1 classes 02.01 and 02.02. EAF Rev.1.1 § 1.43 states that "It should be noted that the product of other production activities may be attached to the forestry activity industry as other inseparable non-forestry secondary activity (game, wild mushrooms, berries, fish caught in forest lakes and watercourses, non-energy minerals without ores, peat, products from quarries located in forests)".

Other products related to wooded land are first all agricultural products and animals (see NACE rev.1 classes 01.12 and 01.50). They also cover recreational services, for that part that takes place in forests (hunting, operation of "wooded" natural reserves, etc.). Also, some products, like peat, may be extracted from forest soils.

Classification of products

Products of forestry and logging	**CPA 1996**		**Other products related to wooded land**	**CPA 1996**
Natural growth	02.01.5 Standing timber 02.01.6 Forest trees nurseries services		Agricultural products growing in forests	Part of 01.12.13 Other vegetables n.e.c. (includes mushrooms). Part of 01.13.23 Other fruit, locust beans (includes berries). Part of 01.13.24 Olives and other nuts
Wood in the rough	02.01.1 Wood in the rough		Growing of animals in forests	Part of 01.25.10 Other live animals
Other forestry products (1)	02.01.2 Natural gums 02.01.3 Natural cork, raw or simply prepared 02.01.4 Other forestry products		Meat, fur, skin from hunting and trapping	Part of 01.5 Hunting, trapping, game propagation and related services.
Forestry and logging-related services	02.02.1 Services incidental to forestry and logging		Recreational services in forests	Part of 01.5 Hunting, trapping, game propagation and related services. Part of 92.53.12 Nature reserve services, including wildlife preservation services. Part of 92.62.13 Other services related to sports events n.e.c. (Includes services of hunting guides).
Afforestation and reafforestation	Part of 02.02.1		Other products	Part of 10.30 Peat 24.14.72 Wood charcoal
Other forestry contract work	Part of 02.02.1			
Forests inventories and evaluation	Part of 02.02.1			
Protection of forest against fires, etc.	Part of 02.02.1			

Table 3c Economic accounts for forestry and logging (million national monetary units)

	Forestry and logging industry		
	Total	of which **forestry**	of which **logging**
Current transactions			
Output (basic prices)			
Market output			
Own account output			
Other non market			
Intermediate consumption			
Standing timber			
Other products			
Seeds and plants			
Energy			
Fertilisers and soil improvers			
Material, small tools etc.			
Services			
Other and adjustment			
Gross value added			
Compensation of employees			
Other taxes less subsidies on production			
Consumption of fixed capital			
NOS/mixed income			
Imputed unpaid labour			
Imputed return to fixed capital			
Return to land and standing volume			
Capital formation			
Gross fixed capital formation			
Construction			
Equipment			
Other gross fixed capital formation			
Changes in inventories			
of which work-in-progress			
Net acquisition of land			
Public financing			
Other non market output			
Subsidies			
Investment grants			
Other transfers			
Supplementary data			
Labour inputs			
Net fixed capital stock			
Inventories of work-in-progress			
Land area			

This table is to be drawn up on the basis of a functional analysis of the forestry and logging industry transactions, as they are recorded in national accounts and/or Eurostat EAF. Separate data for forestry and logging will often have to be estimated. Natural growth of cultivated timber is to be added to the output (of forestry). Stumpage value of the timber withdrawn by logging from the stock of standing volume is to be added to the intermediate consumption of logging. The value of the "changes in inventories (work-in-progress)" is given by the difference between the value of natural growth of cultivated timber and the stumpage value of the cultivated timber withdrawn from forest by logging.

For the compilation of harvesting costs and rate of return for forestry, two imputed transactions are introduced: unpaid labour and return to fixed capital. In the table, the net operating surplus/mixed income is thus decomposed into three elements: unpaid labour, return to fixed capital and a residual item that represents the rent for land (actual or imputed) and a return to the capital represented by the standing timber.

Table 4a Supply-Use physical table: use

Products (units)	Intermediate consumption by industries							Total	Final consumption	Capital formation	Exports	Total
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling	Other					
Standing timber (1 000 m^3 over bark) Saw logs (1 000 m^3) Fuel wood (1 000 m^3) Pulp wood (1 000 m^3) Wood and wood products (1 000 m^3) Pulp (1 000 t) Paper (1 000 t)												
Wood waste as a product (1 000 t) Paper waste as a product (1 000 t)												

Note on the table

The table is the standard "use" table of national accounts but in physical units.
Final consumption is net, i.e. that physical quantities corresponding to sales of existing products by households are deducted.
For a given product, the total of uses should be equal to the total of supply as recorded in Table 4b.
Only wood waste and paper waste which are accounted for in the intermediate consumption of industries, i.e. that give rise to transactions, are recorded in the table.

Classifications

Products	**CPA**
Standing timber (1 000 m^3 over bark)	02.015
Saw logs (1 000 m^3 without bark)	02.01.11 to 02.01.13
Fuel wood (1 000 m^3)	02.01.14
Pulp wood (1 000 m^3)	02.01.15
Wood and wood products (1 000 m^3)	20.1 to 20.5 (except 20.10.4 & 20.52)
Pulp (1 000 t)	21.11
Paper (1 000 t)	21.12 except 21.12.6
Wood waste as a product (1 000 t)	20.10.4
Paper waste as a product (1 000 t)	21.12.6

Industries	**NACE rev.1**
Forestry and logging	02
Manufacture of wood products	20.01 to 20.5
Manufacture of pulp	21.11
Manufacture of paper	21.12 & 21.2
Printing	22
Recycling and waste management	37.2 & 90 part
Other	All other positions of NACE rev.1

Table 4b Supply-Use physical table: supply

Products (units)	Output of industries							Total	Imports	Total
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling	Other			
Standing timber (1 000 m^3 over bark) Saw logs (1 000 m^3) Fuel wood (1 000 m^3) Pulp wood (1 000 m^3) Wood and wood products (1 000 m^3) Pulp (1 000 t) Paper (1 000 t)										
Wood waste as a product (1 000 t) Paper waste as a product (1 000 t)										

Notes on the table

The table is the standard "supply" table of national accounts, however in physical units.
It describes the supply of products by industries and imports.
Only wood waste and paper waste which are accounted for as output of industries, i.e. that give rise to transactions, are recorded in the table.
For a given product total supply should be equal to the total uses as recorded in Table 4a.

Table 5a Supply-Use monetary table: use (million national monetary units)

	Intermediate consumption by industries							Total	Final consumption	Capital formation	Exports	Total use
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling	Other					
Standing timber Saw logs Fuel wood Pulp wood Wood and wood products Pulp Paper Waste wood Waste paper Other												
Total intermediate consumption												
Gross value added Consumption of fixed capital Net value added Compensation of employees Other taxes less subsidies NOS/mixed income												
Output (basic prices)												

Notes on the table

The monetary use table records the intermediate consumption of specified products by industries, as well as final uses (final consumption, capital formation and exports). This table is merely the specification for forest-related products of the ESA/SNA use table.
Final consumption and capital formation are net of sales of existing goods. Thus sales of existing goods are not accounted for in the supply table.
Classifications of products and industries are the same as in Table 4 except that a row for other products has been added. Totals in rows and columns are thus equal to the corresponding totals for the whole economy.

Uses are recorded at purchasers' prices.
Final consumption may be separated into durable and non-durable.
Total uses by products must correspond to total supply (Table 5b). Output by industry must correspond to the supply by industry (Table 5b).

Table 5b Supply-Use monetary table: supply (million national monetary units)

	Output of industries							Total (basic prices)	Imports	Taxes less subsidies on products	Trade and transport margins	Total (purchasers' prices)
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling	Other					
Standing timber Saw logs Fuel wood Pulp wood Wood and wood products Pulp Paper												
Wood waste (product) Paper waste (product)												
Other products												
Total												

Notes on the table

The monetary supply table records the output (at basic prices) of industries in specified products, as well as imports. This table is merely the specification for forest-related products and industries of the ESA supply table.
Columns for taxes less subsidies on products and trade and transport margins allow calculating the supply at purchasers' prices.
Classifications of products and industries are the same as in Table 5a.

Table 6a Material balance of wood content (1000 tonnes of dry matter): use table

	Intermediate consumption by industries					
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling
Standing timber Saw logs Fuel wood Pulp wood Wood and wood products Pulp Paper						
Wood waste as a product Paper waste as a product						
Other products						
Wood content of intermediate consumption						
Of which used as fuel						

Notes on the table

The table records the wood content (in 1000 tonnes of dry matter) of the uses by industries of selected wood products.
The total in columns by industry indicates the total content in wood of the products used as intermediate consumption by industries (including that part of wood and paper waste which is accounted for in intermediate consumption).

Table 6b Material balance of wood content (1000 tonnes of dry matter): make table

	Output of industries					
	Forestry & logging	Wood products	Pulp	Paper	Printing	Recycling
Standing timber Saw logs Fuel wood Pulp wood Wood and wood products Pulp Paper						
Wood waste as a product Paper waste as a product						
Other						
Wood content of total output						

Notes on the table

The table records the wood content (in 1000 tonnes of dry matter) of the output of selected products of selected industries.
Totals in columns by industry indicate the total content in wood of the products produced by the industries and recorded in the output.