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Forestry in the EU and the world

A statistical portrait

2011 edition

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Photos:
Cover photo (and page 4): Red-breasted flycatcher (Ficedula parva), a species that breeds in mature broadleaved or mixed forests in the temperate zones of Europe and across central Asia, wintering in India and Pakistan. The picture was taken at Almsee, Austria. (© Norbert Pühringer)
Chapter 1: Broadleaved forest and mature apple trees in early autumn. (© Phovoir)
Chapter 2: Poplar plantations are used to grow pulpwood and are common in the temperate zones of the EU. (© Phovoir)
Chapter 3: Office building in Walferdange, Luxembourg, designed by architects Ballini Pitt & Partners. The entire structure and the cladding is made of European larch (Larix decidua), a coniferous species. The building was finished in 2000. (© Marilise Wolf-Crowther)
Chapter 4: A stack of fuelwood logs. (© Phovoir)
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Foreword

Dear reader,

This publication presents our contribution to the International Year of Forests 2011.

Forests are an essential part of the natural environment. They have an impact on water resources by purifying water and influencing rainfall patterns, as well as protecting against extreme events such as floods, droughts and related phenomena, such as erosion. They act as a stabiliser for the Earth's climate, absorbing carbon dioxide that would otherwise be in the atmosphere, storing carbon and producing oxygen.

Forests provide shelter to an extraordinarily wide range of animal and plant life, much of which remains to be discovered and understood. This diversity is responsible for the many different kinds of forest ecosystems, their productivity, their capacity to recycle biomass and all the other services that we depend on.

From an economic standpoint, forests provide food, medicinal and cosmetic resources, as well as genetic breeding stock and seeds for cultivation. Most visibly, forests provide wood and similar materials to be used for the manufacture of furniture, toys, instruments, containers and construction products, as a raw material for paper, and as a fuel. Wood is currently the most important renewable source of energy in the world. The management of forest resources and the harvesting and extraction of wood and other forest products provides employment in many rural areas.

Cultural, spiritual and aesthetic needs are supported by forests. Scenic landscapes and areas of outstanding natural beauty are often forested, attracting tourists and providing diverse opportunities for outdoor recreation. Furthermore, a range of long-established activities rely on forests, for instance the collection of berries and mushrooms, or hunting.

The data presented in this publication cover various aspects of forests, including the activities of forestry, logging and wood-based manufacturing, as well as trade in wood and wood products, and finally the use of wood as a renewable source of energy. I hope that the presentation of this broad range of data contributes to the global interest in forests generated during this year.

Pedro Díaz Muñoz

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Data coverage, symbols and direct links to the database
The data presented within this publication were extracted during February 2011.
An *italic* font has been used in statistical tables to denote any data that may change in the future (estimates, provisional data and forecasts).
The colon (:) is used to denote information that is not available.
A dash (-) is used to denote information that is not applicable.
A data code has been inserted under each table and graph as part of the source – this can be used to obtain direct access to the most recent data on Eurostat's website at:
http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database

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The International Year of Forests 2011

The International Year of Forests 2011 is meant to celebrate both "forests for people" and "people for forests". It offers an opportunity to raise public awareness of the significant contributions of forests around the world to life on our planet, to highlight the challenges facing many of the world's forests and the people who depend on them, and to show what is being done to manage our forests sustainably. The year was officially launched at the ninth session of the United Nations Forum on Forests in New York on 2 February 2011.

The logo is designed to convey the theme of forests for people, depicting the central role that people play in the sustainable management, conservation and development of the world's forests. The design reminds us of some of the multiple values of forests and the need for a 360-degree perspective: forests provide shelter to people and habitat to diverse communities of plants and animals; they are a source of food, medicine and clean water; and they play a vital role in maintaining a stable global climate and environment. All of these elements taken together reinforce the message that forests are vital to the survival and well-being of people everywhere, all 7 000 million inhabitants of the planet.

The International Year offers an opportunity to raise public awareness of the significant contributions of forests around the world, but also to highlight the challenges facing many of the world's forests and the people who depend on them.

For more information: http://www.un.org/forests

Forestry in Europe

Forest objectives of the European Union

Some 56 % of the population in the 27 Member States of the European Union (EU) live in rural areas, which cover 91 % of the overall territory; as such, rural development is an important policy area. Farming and forestry remain crucial for land use and the management of natural resources in the EU's rural areas, and as a basis for economic diversification in rural communities. While the EU has no separate policy on forestry, it funds many different measures for rural development that directly benefit forest owners.

Rural development policy is part of the EU's common agricultural policy (CAP) which has been the main instrument for implementing forestry measures in recent years. In this context, financial support from the EU for forestry measures, not including direct funding by the Member States, amounted to EUR 4 800 million for the period 2000–2006 (almost 10 % of the rural development budget). It is estimated that spending on forest-related measures during the 2007-2013 period through the European Agricultural Fund for Rural Development will amount to between EUR 9 000 million and EUR 10 000 million.

In 2006 the EU underpinned its support for sustainable forest management and the multi-functional role of forests by adopting an EU Forest Action Plan. The plan is a framework for forest-related measures and is used to coordinate EU initiatives with the forest policies of the Member States. There are 18 key actions proposed to be implemented jointly with the Member States during the period 2007-2011. The plan focuses on four main objectives:

- improving long-term competitiveness;
- improving and protecting the environment;
- contributing to quality of life;
- fostering coordination and communication.

The EU promotes sustainable forest management with the following objectives:

- create and preserve jobs and otherwise contribute to rural livelihoods;
- protect the environment by preserving the soil, minimising erosion, purifying water, protecting aquifers, improving air quality, absorbing carbon, mitigating climate change, and preserving biodiversity;
- protect settlements, roads and other infrastructure from mudslides and avalanches;
- monitor the state of forests to meet environmental agreements;
- improve the competitiveness of wood-based manufacturing industries in the internal market;
- promote the use of wood and other forest products as environmentally friendly products;
- reduce poverty in developing countries by furthering forest law enforcement, fair trade conditions and halting deforestation and illegal logging.

For more information: http://ec.europa.eu/agriculture/fore/index_en.htm

Illegal logging is the harvesting of timber in contravention of the laws and regulations of the country of harvest. Illegal logging is a global problem with considerable negative economic, environmental and social impacts. In economic terms illegal logging results in lost revenues and other foregone benefits. In environmental terms it is associated with deforestation, climate change and a loss of biodiversity. In social terms it can be linked to conflicts over land and resources, the disempowerment of local and indigenous communities, corruption and armed conflicts.

In 2003, the EU established a Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan, targeting key regions and countries which together contain nearly 60 % of the world's forests and supply a large proportion of internationally traded timber. The FLEGT Action Plan covers both supply side and demand side measures to address illegal logging by helping producer countries implement their own laws.

In 2005 the FLEGT Regulation was adopted, allowing for the control of the entry of timber to the EU from countries entering into bilateral FLEGT Voluntary Partnership Agreements with the EU.

In October 2010 the European Parliament and the Council adopted a Regulation prohibiting illegally harvested timber products from being placed on the EU market – it will apply from March 2013. FLEGT timber will automatically be compliant with the Regulation, which has provisions to facilitate the traceability of wood products within the EU back to their first entry into the market, but not back to their forest of origin. It covers most wood products, including pulp and paper, and requires operators to have systems in place that assure that the timber is from

legal origin and that they have exercised 'due diligence' in checking suppliers. The legislation foresees that monitoring organisations will set up systems to assess risk; operators will likely find it useful to become members of these organisations. The Regulation is closely modelled on the US Lacey Act Amendment of 2008. It is hoped that together these acts will effectively reduce the use illegal timber in consumer countries and deforestation in producer countries. They are also expected to reduce illegal logging in certain Member States of the EU.

For more information: http://ec.europa.eu/environment/forests/illegal_logging.htm

Organisations working in the forestry domain in Europe

The EU collaborates with a range of organisations in the fields of forestry policy development and statistics. Eurostat contributes data on employment and the economics of forestry and wood-based manufacturing to these initiatives.

The Ministerial Conference on the Protection of Forests in Europe (MCPFE), also known as Forest Europe, is a pan-European policy process for the sustainable management of the continent's forests. Forest Europe develops common strategies for its 46 member countries, which include all of the EU Member States, other European countries and Russia. Founded in 1990, the cooperation between countries has produced guidelines, indicators and criteria for sustainable forest management.

SUSTAINABLE FOREST MANAGEMENT

'Sustainable management means the stewardship and use of forests and forest lands in such a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems."

The Ministerial Conference for Protection of Forests in Europe, Helsinki 1993

Every five years, Forest Europe launches a comprehensive questionnaire survey on the State of Europe's Forests (SoEF) among its members.

For more information: http://www.foresteurope.org

The UNECE/FAO (United Nations Economic Commission for Europe/Food and Agricultural Organization) Forestry and Timber Section has provided data and analyses for the forest sector in the UNECE region for more than 60 years, starting right after World War II.

UNECE/FAO is also a forum for policy discussions about issues that affect forestry. The section is unique in that it is a joint secretariat, servicing the UNECE Timber Committee and the FAO European Forestry Commission and working closely with other United Nations organisations and with interest groups. It operates to a mandate agreed by 56 countries, which include the EU Member States, other European countries, Canada, the United States and Russia. A large part of its work is devoted to helping its member countries build the capacity for managing their forests, marketing their products and reporting statistical data.

For more information: http://timber.unece.org/index.php

Forestry in the world

Given the global importance of forests, a range of international organisations have been founded in order to promote the role of forests and to assure their continued existence. Eurostat works together with the United Nations and its subsidiary bodies to harmonise and collate statistical data on production and trade in wood and wood products; a single joint questionnaire is used, with common definitions and formats. Data are exchanged, cross-checked and published by each organisation.

For more information:
http://epp.eurostat.ec.europa.eu/portal/page/portal/forestry/introduction

Global forest objectives

In its resolution declaring 2011 as the International Year of Forests, the General Assembly of the United Nations reaffirmed its commitment to a statement of principles for a global consensus on the management, conservation and sustainable development of all types of forests, also known as the Forest Principles. These principles were one of five outcomes of the 1992 United Nations Conference on Environment and Development (UNCED) – the Earth summit in Rio de Janeiro, Brazil.

The Non-Legally Binding Instrument on All Types of Forests was adopted by the UN General Assembly in December 2007, effectively replacing the Forest Principles. The overall purpose of this instrument is to:

- strengthen political commitment and action at all levels to implement effectively sustainable management of all types of forests and to achieve the shared global objectives on forests;
- enhance the contribution of forests to the achievement of the internationally agreed development goals, including the Millennium Development Goals, in particular with respect to poverty eradication and environmental sustainability;
- provide a framework for national action and international cooperation.

In October 2000, the Economic and Social Council of the United Nations established the United Nations Forum on Forests (UNFF), a subsidiary body whose main objective is to promote "… the management, conservation and sustainable development of all types of forests and to strengthen long-term political commitment to this end…", based on the Rio Declaration, the Forest Principles, Chapter 11 of Agenda 21 (combating deforestation) and the outcome of the IPF/IFF Processes (respectively, the Intergovernmental Panel on Forests and the Intergovernmental Forum on Forests) and other key milestones of international forest policy. The Forum has universal membership, and is composed of all Member States of the United Nations and specialised agencies.

For more information: http://www.un.org/esa/forests/about.html

The Forestry Department of the Food and Agricultural Organization (FAO) of the United Nations helps 198 nations manage their forests in a sustainable way. The organisation's approach balances social, economic and environmental objectives so that present generations can reap the benefits of the Earth's forest resources while conserving them to meet the needs of future generations. The

UNITED NATIONS GLOBAL OBJECTIVES ON FORESTS

Member States reaffirm the following shared global objectives on forests and their commitment to work globally, regionally and nationally to achieve progress towards their achievement by 2015:

Global objective 1 reverse the loss of forest cover worldwide through sustainable forest management, including protection, restoration, afforestation and reforestation, and increase efforts to prevent forest degradation;

Global objective 2 enhance forest-based economic, social and environmental benefits, including by improving the livelihoods of forest dependent people;

Global objective 3 increase significantly the area of protected forests worldwide and other areas of sustainably managed forests, as well as the proportion of forest products from sustainably managed forests;

Global objective 4 reverse the decline in official development assistance for sustainable forest management and mobilise significantly increased, new and additional financial resources from all sources for the implementation of sustainable forest management.

Department also carries out a five-yearly survey, the Global Forest Resources Assessment (Global FRA) – which covers similar topics to those included in the SoEF, but with a global perspective.

For more information: http://www.fao.org/forestry/en/

The International Tropical Timber Organization (ITTO) was established under the auspices of the United Nations in 1986. While the rate of deforestation in tropical forests was already alarming, tropical timber trade was seen as one of the keys to economic development and the ITTO tries to reconcile these two phenomena.

International trade in tropical wood and wood products is subject to International Tropical Timber Agreements (ITTA), the first of which was drafted in 1983 and revised in 1994 and 2006: at the time of writing the latest ITTA (2006) had not yet been ratified. The1994 agreement:

- provides a framework for cooperation and consultation among countries producing and consuming tropical timber;
- seeks to increase and diversify international trade in tropical timber and improve conditions in the tropical timber market;
- promotes and supports research to improve forest management and ways of using wood;
- encourages the development of national policies to protect tropical forests and maintain an ecological balance.

The ITTO currently has 59 member countries, both producers and consumers of tropical wood. As soon as ITTA 2006 is ratified, all the new Member States that joined the EU between 2004 and 2007 will become members of the ITTO.

For more information: http://www.itto.int

1 Forests

Forests and other wooded land cover more than 40 % of the EU's land area. Ecologically, the EU's forests belong to many different biogeographical regions and have adapted to a variety of natural conditions, ranging from bogs to steppes and from lowland to alpine forests. Socioeconomically, the EU's forests vary from small family holdings to state forests or large estates owned by companies, many as part of industrial wood supply chains. About 60 % of the wooded land in the EU is privately owned.

Expansion of the EU's forest area exceeds the loss of forest land to infrastructure and urban uses. Several Member States have expanded their forest cover by plantation programmes on agricultural land which is no longer cultivated. This positive development sets the EU apart from many other global regions, where deforestation continues to reduce forest area.

Forests are key ecosystems that fulfil a number of roles. They have important environmental functions, serving as a habitat for a variety of plant and animal species or protecting water and soil. They also safeguard our infrastructure and settlements by preventing landslides or avalanches in mountainous regions, as well as providing catchments and filtering for water supplies.

Alongside their environmental benefits, forests provide resources, most notably wood. Non-wood products from plants, fungi and animals include food (fruit, nuts, mushrooms, truffles, honey, game meat); spices and herbs; animal fodder; fibres (plaiting materials, rattan, bamboo); cork; resin and oils; medicinal or cosmetic ingredients; seeds and genetic breeding stock. Forests provide a range of services, including grazing and forage for animals, water purification, and opportunities for tourism, recreation or hunting.

Forest resources in the EU

The land area of a country is made up of its total area excluding the area of rivers, lakes and reservoirs. Forests are defined by the FAO as land with a tree canopy cover of more than 10 % and an area of more than 0.5 hectares, comprising trees able to reach a minimum height of 5 metres at maturity in situ. Other wooded land is land of more than 0.5 hectares not classified as a forest. It has a canopy cover of 5 % to 10 %, comprising trees able to reach a height of 5 metres at maturity in situ. Alternatively, it has a canopy cover of more than 10 % comprising shrubs, bushes and trees. Neither forests nor other wooded land include land that is predominantly under agricultural or urban use. Within this chapter, the terms 'wooded land' or 'wooded area' are used to cover the sum of forests and other wooded land. Otherwise, the term 'forest' is used to specifically refer to the definition given above.

Forests available for wood supply are forests where no legal, economic, or environmental restrictions have a bearing on the supply of wood; it is here that large volumes of commercial wood are generally harvested.

Private ownership refers to land owned by individuals, families, communities, private co-operatives, corporations and other business entities, non-governmental organisations, nature conservation associations and other private institutions. Public ownership refers to land owned by the State, administrative units of the public administration or institutions or corporations owned by the public administration. Other ownership refers to land that is neither 'public' nor 'private'. It includes land for which ownership is unknown, undefined or disputed.

Growing stock is the volume of all living trees and excludes smaller branches, twigs, foliage and roots. It is measured in cubic metres (m^3) over bark and includes trees of more than a given size (in terms of diameter) at breast height. Increment is the gross increase in the volume of the growing stock less natural losses over the reference period. Fellings are the volume of all trees – living or dead – measured over bark that are felled during the reference year as well as natural losses (for example, trees felled by windstorms) that are harvested.

Within the EU, just over two fifths of the land area was classified as wooded land (in other words, as 'forests' or 'other wooded land'), which was a similar proportion to that used for agricultural purposes; the total area of wooded land in the EU was 177.8 million hectares in 2010. The Member States with the largest proportions of wooded area were Finland and Sweden, where approximately three quarters of the land area was covered with forests or woods. These same two Member States recorded the highest areas of wooded land per inhabitant, approximately ten times the EU average; relatively high areas of wooded land per capita were also recorded in Estonia and Latvia. The least densely wooded Member States were Malta, the Netherlands, Ireland and the United Kingdom.

Sweden alone accounted for 17.6 % of all the wooded land in the EU in 2010, and the five largest wooded areas (in Sweden, Spain, Finland, France and Germany) collectively accounted for well over three fifths (62.4 %) of the wooded land in the EU. Focusing on the narrower concept of forests available for wood supply, Finland and Sweden each accounted for around 15 % of the EU total.

Between 2000 and 2010, wooded area in the EU increased through natural expansion and afforestation by a total of 3.5 million hectares, a rise of 2.0 %. Only four of the EU Member States recorded a fall in their areas of wooded land, with Denmark recording the largest reduction (-5.0 %) ahead of Portugal, Slovenia and Finland. In relative terms, the largest expansions in wooded area were recorded in Ireland (21.4 %), while Bulgaria and Latvia both recorded increases in excess of 10 %. In absolute terms, four Member States recorded an expansion in excess of 400 000 hectares, namely France, Bulgaria, Italy and Sweden, with the latter recording the highest increase (594 000 hectares).

Table 1.1: Forest area in the EU, EFTA and candidate countries

	Land area (1)	Forest and other wooded land		Forest available for wood supply		Forest and other wooded land	
	2008	2000	2010	2000	2010 (2)	2000	2010
	(1 000 ha)					(ha/capita)	
EU-27	430 340	174 235	177 757	128 125	132 605	0.36	0.35
EA-17	265 779	111 304	112 628	80 411	83 402	0.35	0.34
Belgium	3 028	694	706	663	672	0.07	0.07
Bulgaria	11 100	3 480	3 927	2 258	2 864	0.42	0.52
Czech Republic	7 725	2 637	2 657	2 561	2 330	0.26	0.25
Denmark	4 310	622	591	371	581	0.12	0.11
Germany	35 711	11 076	11 076	10 985	10 568	0.13	0.14
Estonia	4 343	2 337	2 350	2 103	2 013	1.70	1.75
Ireland	6 839	650	789	597	:	0.17	0.18
Greece	13 082	6 525	6 539	3 317	3 595	0.60	0.58
Spain	50 599	27 452	27 747	10 480	14 915	0.69	0.60
France	63 283	17 165	17 572	14 645	15 147	0.28	0.27
Italy	29 511	10 439	10 916	8 446	8 086	0.18	0.18
Cyprus	925	387	387	43	41	0.56	0.48
Latvia	6 220	3 097	3 467	2 777	3 138	1.30	1.54
Lithuania	6 268	2 103	2 240	1 756	1 875	0.60	0.67
Luxembourg	259	88	88	87	86	0.20	0.18
Hungary	9 303	1 866	2 029	1 622	1 726	0.18	0.20
Malta	32	0	0	0	:	0.00	0.00
Netherlands	3 376	360	365	290	295	0.02	0.02
Austria	8 244	3 955	4 006	3 341	3 343	0.49	0.48
Poland	31 269	9 059	9 337	8 342	8 532	0.23	0.24
Portugal	9 212	3 667	3 611	2 009	1 822	0.36	0.34
Romania	22 989	6 600	6 733	4 628	5 193	0.29	0.31
Slovenia	2 014	1 283	1 274	1 130	1 175	0.65	0.62
Slovakia	4 904	1 921	1 933	1 767	1 775	0.36	0.36
Finland	30 390	23 305	23 269	20 508	19 869	4.51	4.35
Sweden	41 034	30 653	31 247	21 076	20 554	3.46	3.35
United Kingdom	24 315	2 813	2 901	2 323	2 411	0.05	0.05
Iceland	10 025	142	116	34	29	0.51	0.37
Liechtenstein	16	7	8	4	4	0.22	0.22
Norway	30 547	12 000	12 768	6 519	6 419	2.68	2.63
Switzerland	4 000	1 263	1 311	1 165	1 200	0.18	0.17
Montenegro	1 382	744	744	386	386	1.21	1.18
Croatia	5 659	2 300	2 474	1 749	1 741	0.51	0.56
FYR of Macedonia	2 491	1 101	1 141	804	804	0.54	0.56
Turkey	76 960	20 780	21 702	8 648	7 313	0.31	0.30

(1) EU-27, EA-17 (estimated for this publication), Spain, Cyprus, Luxembourg, Malta, Poland, Liechtenstein and Croatia, 2006 instead of 2008; Bulgaria, Italy, Portugal, Slovenia and Turkey, 2007 instead of 2008; Montenegro, 2010 instead of 2008.
(2) EU-27 and EA-17, excluding Ireland and Malta.

Source: Eurostat (demo_r_d3area, for_area and demo_pjan), SoEF2011

Around 40 % of the forest area in the EU is publicly owned. Based on data for 24 EU Member States (incomplete data for Greece, Portugal and Sweden), the publicly owned forest area decreased by a total of 2.9 % between 2000 and 2010, whereas privately owned forest area increased by 8.6 %.

The publicly owned share of forest area decreased between 2000 and 2010 in ten Member States, most notably in Romania, Slovenia and Lithuania and to a lesser extent in Austria, Finland, Latvia, Estonia and the United Kingdom. Some of the decreases in the new Member States that joined the EU as of 2004 may be due to the restitution of land to former owners, while other countries sold their public forest assets.

Table 1.2: Forest ownership in the EU, EFTA and candidate countries

	Publicly owned		Private and other		Change 2000-2010			
	2000	2010	2000	2010	Pub. owned	Priv. & other	Pub. owned	Priv. & other
	(1 000 ha)				(1 000 ha/year)		(% annual average)	
Belgium	290	301	377	377	1.1	0.0	0.4	0.0
Bulgaria	3 041	3 408	334	519	36.8	18.4	1.1	4.5
Czech Republic	2 023	2 041	614	616	1.8	0.2	0.1	0.0
Denmark	138	139	348	448	0.1	10.0	0.1	2.6
Germany	5 846	5 708	5 230	5 368	-13.8	13.8	-0.2	0.3
Estonia	899	858	1 344	1 345	-4.1	0.1	-0.5	0.0
Ireland	399	400	236	337	0.1	10.1	0.0	3.6
Greece (1)	2 790	2 907	811	845	23.4	6.8	0.8	0.8
Spain	4 988	5 336	12 000	12 838	34.8	83.7	0.7	0.7
France	3 984	4 113	11 369	11 841	12.9	47.2	0.3	0.4
Italy	2 811	3 073	5 558	6 076	26.2	51.8	0.9	0.9
Cyprus	118	119	54	54	0.1	0.0	0.1	0.0
Latvia	1 749	1 655	1 493	1 696	-9.4	20.3	-0.6	1.3
Lithuania	1 562	1 366	458	784	-19.6	32.6	-1.3	5.5
Luxembourg	41	41	46	46	0.0	0.0	0.0	0.0
Hungary	1 155	1 178	753	861	2.4	10.9	0.2	1.4
Malta	0	0	0	0	-	-	-	-
Netherlands	184	184	176	181	0.0	0.5	0.0	0.3
Austria	928	858	2 332	2 482	-7.0	15.0	-0.8	0.6
Poland	7 535	7 661	1 524	1 658	12.6	13.4	0.2	0.8
Portugal (1)	54	54	3 366	3 382	0.1	3.2	0.1	0.1
Romania (2)	6 010	4 398	356	2 097	-161.2	174.1	-3.1	19.4
Slovenia	365	291	868	962	-7.4	9.4	-2.2	1.0
Slovakia	1 006	980	915	958	-2.6	4.3	-0.3	0.5
Finland	7 213	6 699	15 245	15 389	-51.4	14.4	-0.7	0.1
Sweden (3)	7 522	7 664	20 990	20 941	28.4	-9.8	0.4	0.0
United Kingdom	1 011	959	1 782	1 922	-5.2	14.0	-0.5	0.8
Iceland	7	8	12	22	0.2	1.0	2.3	6.2
Liechtenstein	6	6	1	1	0.0	0.0	0.0	0.0
Norway	1 299	1 450	8 002	8 800	15.1	79.8	1.1	1.0
Switzerland (3)	885	889	:	:	0.8	:	0.1	:
Montenegro	337	337	130	130	0.0	0.0	0.0	0.0
Croatia	1 398	1 396	487	524	-0.2	3.7	0.0	0.7
FYR of Macedonia (1)	864	881	94	94	3.4	0.0	0.4	0.0
Turkey (1)	10 131	10 730	15	10	119.7	-1.0	1.2	-7.4

(1) 2005 instead of 2010, change from 2000 to 2005 instead of from 2000 to 2010.
(2) Excluding other ownership.
(3) 2005 instead of 2000, change from 2005 to 2010 instead of from 2000 to 2010.

Source: SoEF2011

The growing stock provides information on available resources as well as the basis for estimating biomass and carbon stocks. Within the forest area available for wood supply, the growing stock in the EU reached an estimated 21 750 million m³ in 2010. The increment in the EU's growing stock was in excess of 700 million m³ in 2010, around 1.6 times as high as the volume of fellings; the latter was in excess of 485 million m³, which was equivalent to 2.2 % of the growing stock. However, since only approximately 63 % of the increment is felled and forest area is increasing, the EU is using its wood supplies in a more than sustainable manner.

Table 1.3: Commercial wood volume (forest available for wood supply) in the EU, EFTA and candidate countries

	Growing stock		Increment		Fellings		Grow. stock	Incre-ment	Fellings
	2000	2010	2000	2010	2000	2010	2010		
	(million m³ over bark)						(m³/ha)		
EU-27	19 394	*21750*	*752*	*768.3*	*463*	*484.1*	*163.3*	*5.8*	*3.6*
EA-17	12 021	*13033*	*468*	*464.9*	*286*	*278.7*	*155.1*	*5.5*	*3.3*
Belgium	142	164	5	5	4	4	244.4	7.9	5.7
Bulgaria	321	435	14	15	4	8	151.9	5.1	2.7
Czech Republic	678	738	20	23	16	18	316.6	9.9	7.7
Denmark	56	112	5	6	2	2	192.7	10.0	4.1
Germany	3 356	3 466	122	107	49	60	328.0	10.1	5.6
Estonia	427	398	11	11	13	6	197.8	5.6	2.8
Ireland	58	74	*3*	*4*	2	3	*119.4*	*5.8*	*4.5*
Greece (1)	157	170	*4*	*5*	2	2	47.4	*1.3*	0.5
Spain	617	784	29	46	18	17	52.6	3.1	1.1
France	2 119	2 453	98	94	63	64	162.0	6.2	4.2
Italy	1 153	1 285	32	33	11	13	159.0	4.0	1.6
Cyprus	3	3	0	0	0	0	79.0	0.9	0.2
Latvia	515	584	17	*18*	12	12	186.1	*5.8*	4.0
Lithuania (2)	320	408	9	11	6	9	217.6	5.7	4.6
Luxembourg (3)	13	*0*	1	1	*0*	*0*	*299.1*	7.5	*2.9*
Hungary	291	259	12	11	7	7	150.1	6.4	4.0
Malta	0	*0*	0	*0*	0	*0*	*0.0*	*0.0*	*0.0*
Netherlands	49	56	2	2	1	2	189.8	7.6	5.3
Austria	1 060	1 107	31	25	19	24	331.1	7.5	7.0
Poland (3)	1 584	2 092	38	68	33	41	245.2	8.0	4.8
Portugal (4)	210	154	13	19	11	14	84.5	10.5	7.9
Romania	697	*1*	35	*34*	14	17	*211.5*	*6.5*	3.3
Slovenia	305	390	7	9	3	3	331.9	7.8	2.9
Slovakia	437	478	12	13	7	10	269.1	7.4	5.9
Finland	1 916	2 024	79	91	67	59	101.9	4.6	3.0
Sweden	2 643	2 651	91	96	74	81	129.0	4.7	3.9
United Kingdom	267	340	21	21	9	11	141.0	8.6	4.4
Iceland	2	0	1	:	0	:	0.0	:	:
Liechtenstein	1	1	0	:	0	0	349.8	:	7.2
Norway	685	797	50	22	23	11	124.2	3.4	1.7
Switzerland	429	415	5	6	4	6	345.8	5.2	5.1
Montenegro	68	68	:	:	1	1	175.4	:	1.3
Croatia	333	371	:	:	4	5	213.3	:	3.0
FYR of Macedonia	66	66	:	:	:	:	82.1	:	:
Turkey	1 198	1 085	87	:	30	:	148.3	:	:

(1) Fellings, 2005 instead of 2010. (2) Increment and fellings, 2005 instead of 2000. (3) Increment, 2005 instead of 2010. (4) Increment and fellings, 2005 instead of 2010.

Source: Eurostat (for_vol), SoEF2011

Forest resources in the world

The FAO has undertaken an assessment of the world's forests every five to ten years since 1946. The most recent of these global forest resource assessments was completed in 2010, and provides information for 233 countries. More information can be found at the following website: http://www.fao.org/forestry/fra/fra2010/en/.

A selection of results from the FAO's 2010 assessment are presented in this publication, particularly (but not exclusively) in those sections that present the EU's forests and forestry in a global context. It should be noted that the data published by the FAO include Cyprus and Turkey within Asia in accordance with the FAO's standard regional breakdown; for the purposes of this publication the data for these two countries have been reallocated to Europe and so the European and Asian totals published here differ from those published by the FAO. There may also be a number of small differences in the data reported by Eurostat and the FAO. These may often be explained by minor revisions being applied to one or other of the data sets prior to the data extraction for this publication.

There were just over 4 000 million hectares of forest in the world in 2010, equivalent to approximately 31 % of the world's land area. This share reached 37.5 % in the EU and 44.3 % in Europe as a whole, the latter boosted by the 49.0 % share recorded for Russia. Among the other regions presented in Table 1.4 the lowest forest share in the total land area was recorded in Asia and the highest in South America, the latter largely due to the 62.0 % share recorded for Brazil. The largest national forest share in the world total was recorded in Russia which alone had one fifth of the world's forest area. With 12.9 % of the world's total, Brazil had the second largest forest area, followed by Canada, the United States and China. These five countries together provided more than half of the world's entire forest cover.

Table 1.4: Forest area in the world

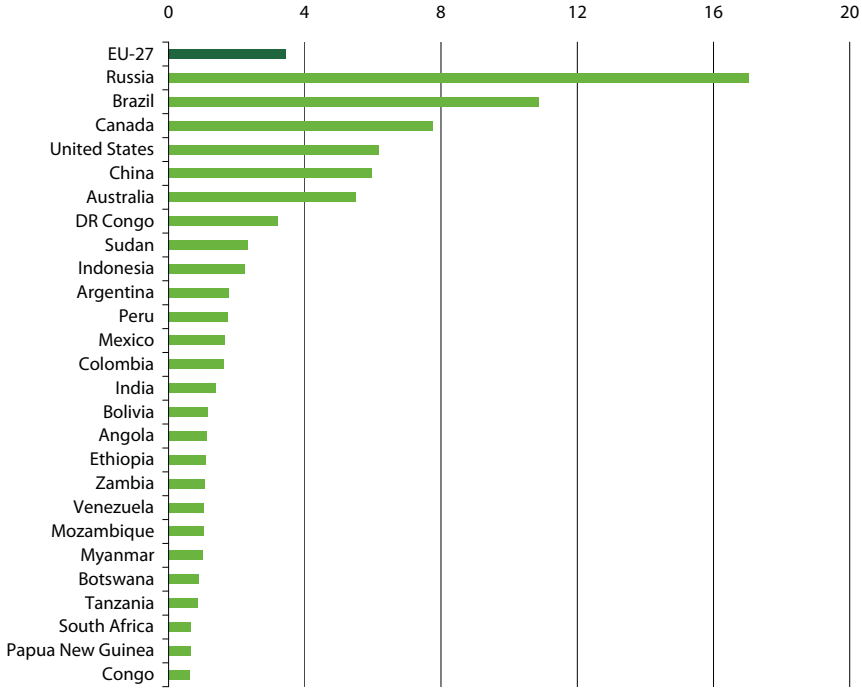
	Land area	Forest	Other wooded land	Forest share of:		Forest area: annual average change		
				Land area	World total	1990-2000	2000-2005	2005-2010
	2010							
	(million ha)			(%)		(%)		
World	13 010.5	4 033.1	1 144.7	31.0	100.0	-0.20	-0.12	-0.14
Europe	2 292.6	1 016.5	110.1	44.3	25.2	0.09	0.07	0.09
EU-27	418.6	156.9	20.9	37.5	3.9	0.50	0.35	0.32
Russia	1 638.1	809.1	73.2	49.0	20.1	0.00	-0.01	0.01
Africa	2 974.0	674.4	350.8	23.0	16.7	-0.56	-0.49	-0.50
Asia	3 013.5	581.0	226.0	19.3	14.4	-0.11	0.47	0.27
China	942.5	206.9	102.0	22.0	5.1	1.20	1.75	1.39
India	297.3	68.4	3.3	23.0	1.7	0.22	0.70	0.21
Indonesia	181.2	94.4	21.0	52.0	2.3	-1.75	-0.31	-0.71
North & Central America	2 135.0	705.4	134.7	33.0	17.5	-0.04	-0.01	0.00
Canada	909.4	310.1	92.0	34.0	7.7	0.00	0.00	0.00
United States	916.2	304.0	14.9	33.0	7.5	0.13	0.13	0.13
Oceania	849.1	191.4	143.5	23.0	4.7	-0.02	-0.17	-0.55
Australia	768.2	149.3	135.4	19.0	3.7	0.03	-0.13	-0.61
South America	1 746.3	864.4	179.7	49.0	21.4	-0.45	-0.49	-0.41
Brazil	832.5	519.5	43.8	62.0	12.9	-0.51	-0.57	-0.42

Source: FAO (Global FRA, 2010)

Figure 1.1 provides an analysis of the world share of the broader concept of forests and other wooded land. While the five largest countries were the same using this measure as they were for the narrower measure of forests, the share of the world total was several percentage points lower for Russia. By this measure, the Australian share of the world total was notably higher, 5.5 % compared with a 3.7 % share when restricted to forests alone.

The African share of the world total for other wooded land was particularly high, reaching 30.6 %, well above its 16.7 % share for forested land. This is reflected in the shares of forest and other wooded land shown in Figure 1.1, where ten African countries appear in the ranking.

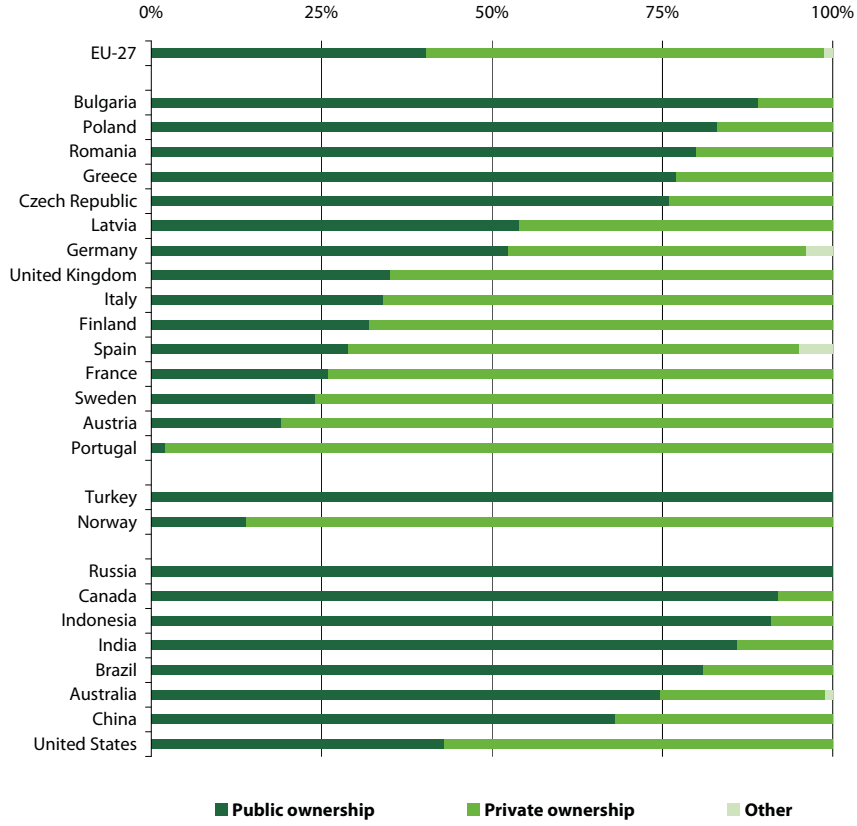
Figure 1.1: Forest and other wooded land area, 2010
(% of world total)



Source: FAO (Global FRA, 2010)

In 2005, approximately 40 % of the forest area in the EU was publicly owned, a share that was lower than in Russia or in any of the non-European countries shown in Figure 1.2. Practically the entire forest area in Russia was publicly owned and around three quarters or more of all forest areas in Australia, Brazil, India, Indonesia and Canada were also publicly owned. The share of public ownership was slightly lower in China, at just over two thirds, while the 43 % share in the United States was similar to the EU average. Among the EU Member States there was a wide range in the extent of public ownership in 2005, ranging from 2 % in Portugal to 89 % in Bulgaria (and 100 % in the very small Maltese forest sector).

Figure 1.2: Forest ownership in the world, 2005
(%)



Source: FAO (Global FRA, 2010)

As part of the 2010 Global Forest Resources Assessment (Global FRA), 180 countries (representing 93.6 % of the world's forests) reported the volume of growing stock in their forests, which summed to a total of 493 115 million m^3; the FAO has estimated the volume of the world's total growing stock at 527 203 million m^3. Brazil alone accounted for close to one quarter of this total, and Russia and the United States combined for another quarter; the EU's share was around 4.5 %.

The relatively high share for Brazil (compared with its share of the world's forest area) was reflected in Brazil's growing stock density, which averaged 243 m^3 per hectare of forest in 2010, close to three and a half times the density recorded in China, and close to two and a half times the density for Russia. It is remarkable that growing stock density in Brazil was more than double that in Indonesia, given that both have mostly tropical forests. The United States and the EU both recorded average growing stock densities of just over 150 m^3 per hectare. The values for individual countries (as shown in Table 1.3) show that growing stock densities well over 300 m^3 per hectare were normal in forests available for wood supply in temperate EU or EFTA countries with an intensive cultivation regime (for example, Liechtenstein, Switzerland, Slovenia, Austria, Germany and the Czech Republic). Coniferous species are used, which can be cultivated at much higher densities than broadleaved species.

The composition of forests varies greatly. Brazilian forests were exclusively broadleaved and Indian forests were also dominated by broadleaved species. In contrast, around three quarters of the growing stock in Russia, Canada and the United States was coniferous, while the composition of forests in China, and to a lesser extent the EU, was more evenly balanced between these two types. According to an FAO analysis (based on results for 117 countries), coniferous species accounted for 61 % of the global volume of growing stock; this is judged by the FAO to be an underestimate of the actual situation.

Table 1.5: Growing stock by volume and density (over bark) in the world, 2010

	Forest total	Density	Growing stock analysis	
			Coniferous	Broadleaved
	(million m^3)	(m^3/ha)	(%)	
EU-27	23 964	153	*62*	*38*
Russia	81 523	101	76	24
China	14 684	71	47	53
India	5 489	80	10	90
Indonesia	11 343	120	:	:
Canada	32 983	106	77	23
United States	47 088	155	73	27
Brazil	126 221	243	0	100

Source: FAO (Global FRA, 2010)

Forest products and services

The most common and visible type of resource extracted from forests is wood. The harvesting of wood can be done without compromising other forest functions if it is done in a sustainable manner, in other words, without compacting soil, causing soil erosion, or disturbing the reproductive cycle of plants or animals.

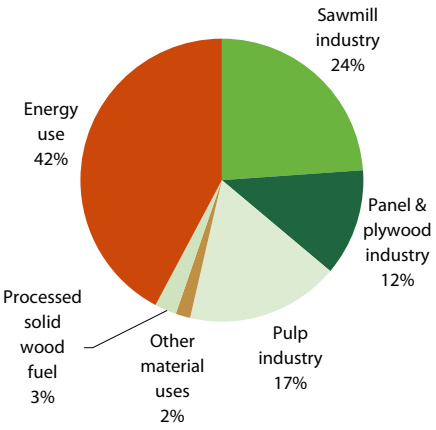
Figure 1.3 provides an overview of the use of wood from all wood sources (not just forests) in the EU. It should be noted that some of the wood resources used for energy come directly from forests (and similar primary sources) and the remainder from production residues that may result from industrial wood processing, including black liquor from paper production.

Forests offer other economic benefits, notably concerning opportunities for recreational and cultural activities, such as tourism, sports or hunting. As part of the work to develop environmental accounts, attempts have been made to assess the economic value of the recreational services of forests; for example, the market output of these services in France was valued at EUR 56 million in 2008. The extent to which forests provide social services can also be seen to some extent from the analysis of the designated function of forests, presented later in Table 1.7.

Besides wood, forests provide many other goods, referred to as non-wood forest products. These notably include foods, such as fruit, nuts, mushrooms, truffles, honey, game/bush meat, snails, as well as animal fodder. Among the products harvested from forests within the EU are regional specialities such as cork and sweet chestnuts in the Mediterranean countries. Many products are harvested or gathered in an informal manner, which makes their measurement and the extent of their use difficult to ascertain.

Table 1.6 and Figure 1.4 provide an overview of the valuation for some of these products as part of the 2010 Global FRA. The value of non-wood forest products was higher than the value of industrial roundwood in Russia and China, while among the EU Member States the same was true in Italy and Portugal.

Figure 1.3: Wood resources use in the EU-27, 2010
(% share of total volume in m^3)



Source: EUwood, 2010

Some non-wood products are in such demand that they are also planted and harvested for industrial use, such as bamboo and rattan. According to the FAO, China had 5 712 million hectares – or 18 % – of the world's bamboo forest area in 2010. Although bamboo species are technically non-wood plants belonging to the grass family, bamboo forests are included under the FAO definition of forests and these areas are included in the statistics presented (for example, Table 1.4)

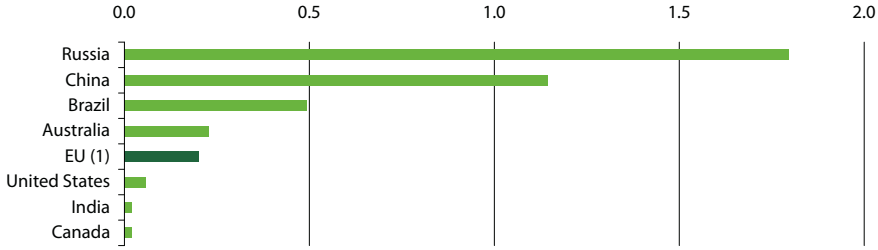
Table 1.6: Non-wood products in selected EU, EFTA and candidate countries, 2005 (1)

	Value of non-wood products / industrial roundwood	Plant products		Animal products		
		Food	Ornamental plants	Hides, skins and trophies	Wild honey and beeswax	Bush meat
	(ratio)	(tonnes)		(units)	(tonnes)	
Bulgaria	0.03	:	:	:	:	:
Czech Republic	0.19	40 960	:	216 570	0	9 578
Denmark	:	:	71 000	:	:	:
Germany	0.22	:	:	:	:	34 000
Estonia	:	:	2 000	37 500	:	913
Spain	0.56	12 018	:	3 040	39 114	21 723
France	:	:	:	:	6 300	:
Italy	1.57	79 155	:	:	:	:
Cyprus	:	:	:	:	811	:
Latvia	:	:	:	37 800	:	1 500
Lithuania	0.09	3 800	3 000	30 000	:	1 250
Netherlands	:	:	6 000	:	:	362
Austria	0.12	:	:	:	:	:
Poland	:	15 088	843	:	:	10 456
Portugal	1.10	:	:	:	:	:
Slovenia	0.11	550	1 200	20 000	2 300	1 000
Slovakia	0.04	1 155	255	22 470	:	1 688
Finland	0.05	47 000	309	355 000	:	9 279
Sweden	0.04	35 860	14	177 200	:	16 790
United Kingdom	0.30	162	162 545	:	183	3 500
Iceland	:	:	92	0	0	0
Norway	:	462	:	:	550	1 700
Switzerland	:	19 000	5 517	33 110	:	7 586
Croatia	0.01	400	:	:	:	:
Turkey	0.00	9 979	152	:	:	:

(1) No information available for those Member States that are not presented.

Source: FAO (Global FRA, 2005 and 2010)

Figure 1.4: Value of non-wood products from forests in relation to the value of industrial roundwood from forests in the world, 2005
(ratio)



(1) Average based on information for Bulgaria, the Czech Republic, Germany, Spain, Italy, Lithuania, Austria, Portugal, Slovakia, Slovenia, Finland, Sweden and the United Kingdom.

Source: FAO (Global FRA, 2010)

Forests and the environment

Natural forest types and their ecosystems are diverse across the EU, including, for example, boreal, alpine and Mediterranean. While natural forests are adapted to the prevalent climatic and soil conditions, there are also plantations in many parts of the EU where trees have been planted for commercial purposes.

Not all forest and other wooded land is available for wood supply, and this reflects the multi-functional aspect of forests: as well as providing economic resources, forests are key ecosystems. They fulfil important environmental functions, serving as a habitat for a variety of plant and animal species, as well as protecting water and soil. Furthermore, forests are a central part of the carbon cycle, transforming carbon dioxide from the atmosphere into carbon stored in biomass (cellulose and lignin, both above and below ground) and oxygen; this cycle impacts on the climate. As such, forests are generally considered to help attenuate the build-up of carbon dioxide in the atmosphere and so contribute towards efforts to mitigate climate change. Forests and other vegetation may also have an impact on more localised climates, for example on wind or air temperature.

In the EU around 20.4 million hectares (equivalent to 13.0 % of the total area) of forest were in protected areas in 2010, for example in national parks, where often the trees and the habitat they provide are protected. The Member States with the largest protected forest areas were Italy, Germany and Spain. Table 1.7 shows that protected forests make up a large share of the land area protected under the Habitats Directive in several countries.

An overview of the primary designated function of forests is presented in Table 1.7: it should be noted that most forests have many functions (the table indicates the primary function only) and may serve particular functions without being designated as such. Depending on the country, there can often be a large overlap between protected forests and forests with specific protective functions. For example, in Belgium the area of forests designated for the conservation of biodiversity was identical to the size of the protected area. Across the EU as a whole just under one tenth of all forest area was primarily designated for the protection of soil and water, and just over one tenth for the conservation of biodiversity. Around 2 % of the EU's forest area was specifically foreseen for social services, a share that was particularly high in Slovakia and Poland, where it exceeded 10 %.

The largest primary designated function of forests was production (notably for the harvesting of wood, but also non-wood products) which was the stated function of more than half of the forest area in the EU in 2010, a total of 88.6 million hectares. By far the largest forest areas designated for production were located in Sweden and Finland, each around 20 million hectares.

Around 20 % of the EU's forest area is foreseen for multiple uses. This proportion was close to three quarters in the Netherlands and in Germany, and was also over half in Luxembourg, Slovakia, the United Kingdom and Belgium.

Table 1.7: Function and designation in the EU, EFTA and candidate countries, 2010 (1 000 ha)

	Protected area	Primary designated function (selection)					Habitats Directive
		Production	Protective of soil and water	Conser-vation of bio-diversity	Social services	Multiple use	Protected land areas for biodiversity
EU (1)	20 356	88 586	13 880	17 443	2 904	30 993	58 609
EA (1)	14 283	49 213	8 048	12 082	913	24 396	37 238
Belgium	209	0	99	209	:	370	307
Bulgaria	313	2 864	469	22	253	319	3 284
Czech Republic	740	1 994	252	333	78	0	785
Denmark	40	299	0	40	0	146	317
Germany	2 754	0	0	2 897	0	8 179	3 457
Estonia	213	1 472	258	208	0	279	757
Ireland	58	317	:	83	1	:	755
Greece	164	3 595	0	164	0	0	2 147
Spain	2 499	3 716	3 583	2 100	399	8 375	12 351
France	313	11 904	245	202	57	3 546	4 672
Italy	3 265	4 073	1 791	3 265	20	0	4 306
Cyprus	95	41	0	3	13	49	75
Latvia	610	2 658	128	498	70	0	729
Lithuania	433	1 523	209	198	66	164	908
Luxembourg	:	28	0	0	0	59	40
Hungary	424	1 289	290	424	26	0	1 397
Malta	0	0	0	0	0	0	4
Netherlands	83	4	0	90	0	271	349
Austria	659	2 323	1 420	108	35	0	898
Poland	187	3 768	1 901	434	1 004	58	3 440
Portugal	700	2 026	234	171	0	1 025	1 601
Romania	1 746	3 169	2 543	317	374	0	3 148
Slovenia	241	387	76	575	75	140	636
Slovakia	1 104	129	342	81	236	1 145	574
Finland	1 925	19 197	0	1 925	77	958	4 309
Sweden	1 435	20 901	35	2 950	0	4 317	5 696
United Kingdom	145	908	5	145	120	1 593	1 666
Iceland	0	6	4	0	6	13	:
Liechtenstein	4	2	3	1	1	0	:
Norway	167	6 042	2 762	167	0	1 094	:
Switzerland	90	492	10	90	64	0	:
Montenegro	13	348	52	27	0	0	:
Croatia	54	1 581	82	54	38	165	:
FYR of Macedonia	:	804	0	0	0	0	:
Turkey	269	7 896	1 900	859	4	675	:

(1) Sum of available data for the Member States

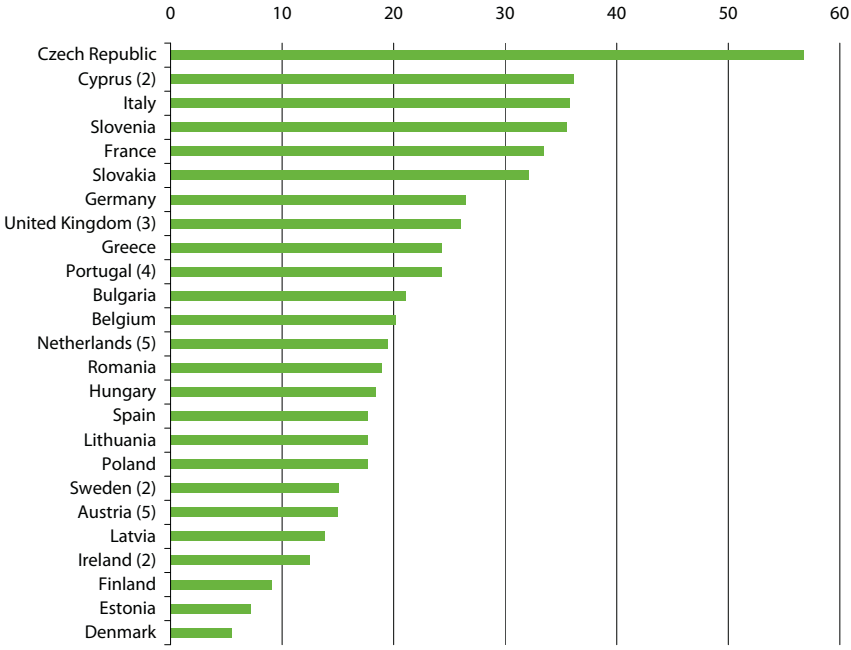
Source: FAO (Global FRA, 2010), Eurostat (env_bio1)

Forests face a number of threats, such as windstorms, droughts, fires, pests and diseases, as well as air pollution. Climate change (for example, global warming), changes in rainfall patterns and the frequency and intensity of extreme weather conditions may potentially impact on forest areas in many ways.

Measurement of some of these threats and their impact can pose methodological difficulties. Figure 1.5 shows the proportion of trees in the moderate, severe or dead classes of defoliation. The information collected on defoliation in the EU is based on the monitoring of fixed plots, where the health of the same trees is recorded each year. If a tree dies, it remains in the sample even though its condition cannot change and it will again be recorded as dead in future years. As no randomly selected sample is used, it may be that the overall health of forests is improving, but this will not be picked up by constantly observing the same forest plots. The results are therefore not representative for the forests of each country, but only for the selected monitoring plots.

Current forest areas may be lost through: desertification; the incidence of forest fires may be affected by changes in the frequency and severity of droughts; areas affected by diseases and pests may die off; the geographical areas suitable for the cultivation of particular tree species may shift as a result of changes in climatic and soil conditions.

Figure 1.5: Proportion of trees on selected plots with moderate to complete defoliation in the EU, 2009 (1)
(%)



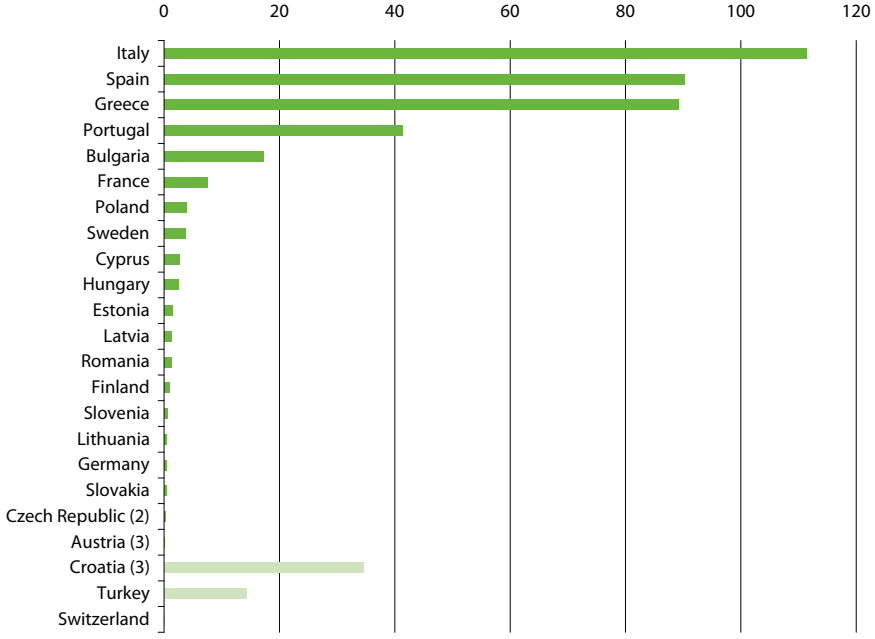
(1) Luxembourg and Malta, not available. (2) Only conifers assessed. (3) 2007. (4) 2005. (5) 5006.
Source: European Commission, Directorate-General for Agriculture and Rural Development

Like windstorms, forest fires are regarded as severe threats to forests in the EU, wreaking widespread damage in a short period of time. Figure 1.6 shows the annual average forest area lost during the period 2006 to 2008: an average is shown as data for individual years can be strongly influenced by a small number of very large fires. Note that for reporting these data, many countries do not use the FAO definition of forests as given on page 12.

By far the largest forest areas lost to fires in the EU were in the southern Member States: the Mediterranean countries of Italy, Spain, Greece and France, as well as in Portugal and Bulgaria; large areas were also lost to fires in Croatia and Turkey.

Relative to the overall forest area, Greece's forests were most severely hit by fires during the period from 2006 to 2008, as an average of 2.3 % of the forest area burnt each year, considerably higher than the 1.5 % proportion recorded for Cyprus and close to double the proportions recorded for Italy and Portugal (1.2 %); for comparison, the proportion in Croatia was 1.8 %. Although the areas burnt in Spain, France and Turkey were large, due to their considerable absolute forest areas, the proportions of forest area affected were below 1 %, approximately 0.5 % in Spain and 0.1 % in both France and Turkey.

Figure 1.6: Area burnt in forest fires in the EU, EFTA and candidate countries, annual average, 2006 to 2008 (1)
(1 000 ha)



(1) Belgium, Denmark, Ireland, Luxembourg, the Netherlands and the United Kingdom, not available.
(2) Average 2004 to 2006.
(3) Average 2005 to 2007.

Source: Eurostat (for_fire)

The role of forests in the carbon cycle and their importance as carbon sinks within the broader debate about climate change has already been noted. Forests also release carbon naturally through decomposition and forest fires; carbon dioxide is also released when wood that has been harvested is broken down, for example through combustion. Whether forests are overall carbon sources, neutral or sinks can be seen from the development of the carbon stock. Forest biomass in the EU contained 9 800 million tonnes of carbon in 2010, an increase of 5.1 % compared with 2005. A longer analysis from 1990 to 2010 (excluding Estonia and Portugal) shows an increase in carbon stock of 26.0 %.

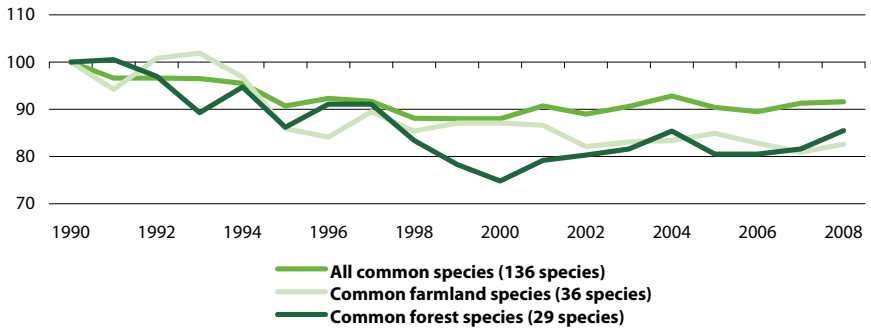
Table 1.8: Carbon stock in living forest biomass in the EU, EFTA and candidate countries

	Carbon stock in living forest biomass				Carbon stock per inhabitant	
	1990	2000	2005	2010	2005	2010
	(million tonnes carbon)				(tonne carbon/capita)	
EU-27	:	:	9 341	9 819	19.0	19.6
EA-17	:	:	5 418	5 680	16.8	17.2
Belgium	50	61	63	64	6.0	5.9
Bulgaria	127	161	182	202	23.5	26.7
Czech Republic	287	322	339	356	33.2	33.9
Denmark	22	26	36	37	6.7	6.7
Germany	981	1 193	1 283	1 405	15.6	17.2
Estonia	:	168	167	165	123.9	123.1
Ireland	16	18	20	23	4.9	5.1
Greece	67	73	76	79	6.9	7.0
Spain	289	396	400	422	9.3	9.2
France	965	1 049	1 165	1 208	18.6	18.7
Italy	375	467	512	558	8.8	9.2
Cyprus	3	3	3	3	4.0	3.7
Latvia	193	234	244	272	105.8	121.0
Lithuania	134	146	151	153	44.1	46.0
Luxembourg	7	9	9	9	19.5	17.9
Hungary	117	130	136	142	13.5	14.2
Malta	0	0	0	0	0.0	0.0
Netherlands	21	24	26	28	1.6	1.7
Austria	339	375	399	393	48.7	46.9
Poland	691	807	887	968	23.2	25.4
Portugal	:	:	102	102	9.7	9.6
Romania	600	599	601	618	27.7	28.8
Slovenia	116	141	159	178	79.6	87.0
Slovakia	163	190	202	211	37.5	38.9
Finland	721	802	832	832	158.9	155.5
Sweden	1 178	1 183	1 219	1 255	135.3	134.4
United Kingdom	120	119	128	136	2.1	2.2
Iceland	0	0	0	0	-	-
Liechtenstein	0	1	1	1	-	-
Norway	280	323	360	395	78.2	81.3
Switzerland	126	136	139	143	18.7	18.4
Montenegro	33	33	33	33	53.0	52.1
Croatia	190	221	237	253	53.3	57.2
FYR of Macedonia	60	62	60	60	29.5	29.2
Turkey	686	743	782	822	10.9	11.3

Source: FAO (Global FRA, 2010)

Alongside their productive and climatic functions, forests provide habitats for an enormous range of species. The extent to which a forest's ecosystem contributes to the conservation of biodiversity varies, depending, for example, on environmental conditions and management methods. One set of indicators used to evaluate biodiversity is based on population trends of common breeding birds — these are shown in Figure 1.7. Forest birds depend on forest ecosystems for nesting or feeding and this indicator covers 29 species. Likewise, farmland birds depend on agricultural land; this indicator covers 36 species. The index for all common birds was recently extended to cover 136 species. Between 1990 and 2000 there was a general downward trend in the abundance of both common farmland and common forest species of birds, as measured by these indices. Across the EU there was a relatively rapid reduction (-25 %) in numbers of common forest birds. However, in recent years forest bird numbers recovered somewhat, with the index (1990=100) rising from a relative low of 75 in 2000 to reach 86 by 2008. The index for all common bird species was relatively stable since 1995, some 10 % below its 1990 level, and stood at 92 in 2008.

Figure 1.7: Indicator for common birds in the EU (1)
(1990=100)



(1) Moving EU aggregate reflects the composition of the EU in each reference year: 1990-1994, EU-12; 1995-2004, EU-15; 2005-2006, EU-25; 2007-2008, EU-27.

Source: Eurostat (env_bio2)

2 The economics of forestry and wood processing

Forestry and downstream manufacturing activities provide employment to millions of people within the EU and generate wealth, particularly in rural areas. The statistical classification of economic activities used to classify these activities is NACE. Forestry data presented here is still based on NACE Rev. 1, while that for downstream manufacturing activities is based on NACE Rev. 2.

Forestry, logging and related service activities covers the production of standing timber, as well as the extraction and gathering of wild growing forest materials. Timber aside, forestry produces products that require little processing, such as wood for fuel. Forestry and logging includes:

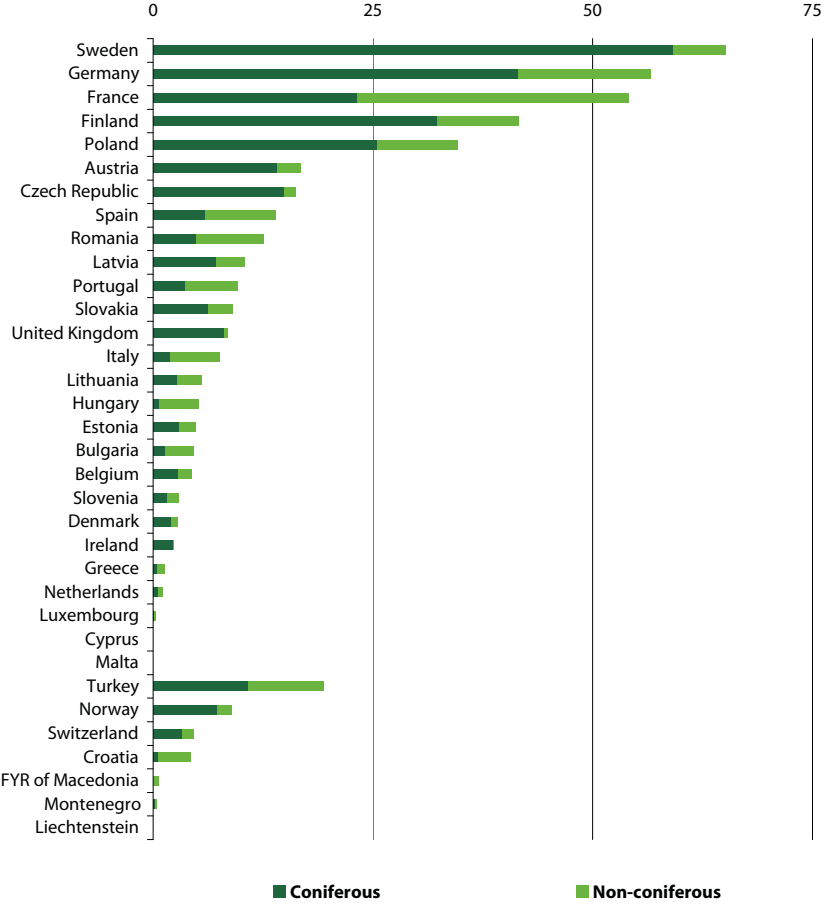
- growing of standing timber: planting, replanting, transplanting, thinning and conserving of forests and timber tracts;
- growing of coppice and pulpwood on wooded land;
- operation of forest tree nurseries;
- logging: felling of timber and production of wood in the rough such as pit-props, split poles, pickets or fuelwood;
- forestry service activities: forestry inventories, timber evaluation, fire protection;
- logging service activities: transport of logs within the forest.

Downstream manufacturing activities mainly concern the processing of wood, paper or recovered wood and paper. Three activities are presented in this publication under the heading of wood-based manufacturing – with products that are a mixture of intermediate goods used for example in construction, and consumer goods such as newspapers. Information is also presented in some cases for furniture manufacturing, which uses a wide range of materials, not exclusively wood. For this reason furniture is not included in the wood-based manufacturing aggregate.

Forestry and logging in the EU

The most common primary designated function of forests within the EU is production, essentially of wood but also of non-wood forest products. A common measure of the magnitude of the extraction of wood from forests is roundwood removals: this comprises all quantities of roundwood removed from the forest or other felling sites and stripped of the bark (under bark). Not all the wood felled is immediately removed, making removals lower than the fellings presented in Table 1.3, which in addition are measured including the bark.

Figure 2.1: Roundwood removals under bark in the EU, EFTA and candidate countries, 2009 (million m^3)



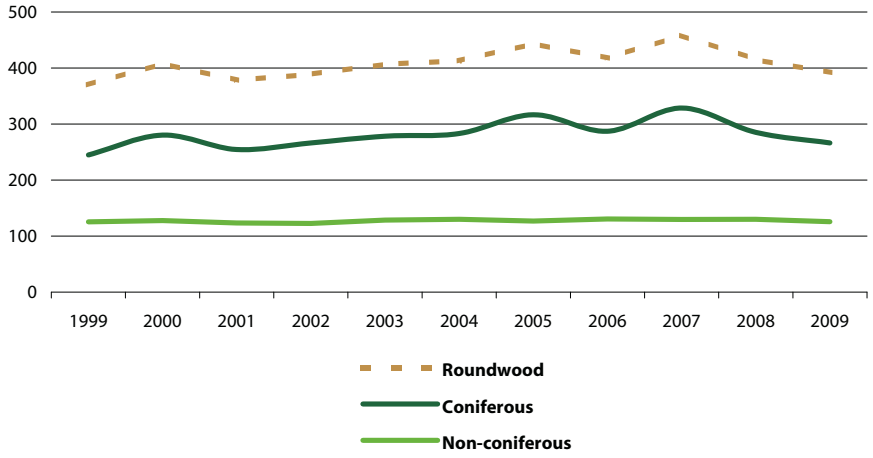
Source: Eurostat (for_remov)

Roundwood can be subdivided into two main botanical types, namely coniferous (mostly, but not exclusively softwood) and non-coniferous (broadleaved; mostly, but not exclusively hardwood) species. More detailed information on roundwood production is presented in Chapter 3.

Figure 2.1 provides a snapshot of roundwood removals. The total level of removals in the EU in 2009 was 392 million m^3 under bark, of which just over two thirds (67.9 %) was from coniferous species. The largest volumes of wood removals were recorded in Sweden, Germany, France, Finland and Poland, which together accounted for close to two thirds of the EU total. France had by far the highest level of roundwood removals from non-coniferous species, alone accounting for one quarter of the EU total, double the next highest share which was recorded for Germany. Coniferous species provided the wood for more than half of the removals in 17 EU Member States, with the share exceeding 90 % in Ireland, the United Kingdom, the Czech Republic and Sweden. In contrast, around two thirds or more of all removals came from non-coniferous species in Hungary, Italy, Bulgaria and Greece.

Figure 2.2 provides an analysis of the development over time of the level of roundwood removals in the EU. Through until 2007, there was a relatively steady rise in the level of roundwood removals, both for coniferous and non-coniferous species. The recent peak levels, in 2000, 2005 and 2007, are due in part to removals from forests that were affected by severe storms. For example, the peak in 2007 reflects exceptional windthrows by storms in many parts of Europe – notably Germany and Sweden – after which many more trees had to be removed from forests than planned. The effects of the global financial and economic crisis led to the level of coniferous removals falling in 2008 and this was confirmed with a further reduction in 2009, when removals of non-coniferous roundwood also fell.

Figure 2.2: Volume of roundwood removals (under bark) in the EU-27 (million m^3)



Source: Eurostat (for_removv)

Indicators relating to the economic significance of the forestry and logging sector are presented in Tables 2.1 and 2.2; these are based on integrated environmental and economic accounting for forests which are compatible with national accounts concepts.

National accounts estimate that the value added at basic prices of the forestry and logging activity in the EU was EUR 21 000 million in 2008, an increase (in current prices) of 35 % over 2005. Based on the data available from the integrated accounts, only Spain and France recorded a small fall in their value added between 2005 and 2008, while value added increased by at least 50 % in Romania, Bulgaria, and Slovenia.

Combining the value added data with information on the commercial forest area shows a particularly high value added generated per hectare in Austria and Portugal, in both cases in excess of EUR 300 per hectare, around 20 times as high as the average value added per hectare in Greece.

Table 2.1: Forest and logging economic indicators in the EU and EFTA

	Gross output		Gross value added		Gross fixed capital formation		Value added / forest area available for wood supply (1)	
	2005	2008	2005	2008	2005	2008	2005	2008
	(EUR million)						(EUR/ha)	
Belgium	:	:	:	:	:	:	:	:
Bulgaria	199	309	58	97	11	20	23	38
Czech Republic	1 424	1 884	499	596	63	129	198	237
Denmark	:	:	:	:	:	:	:	:
Germany	4 141	5 566	1 738	2 262	168	231	158	206
Estonia	:	:	:	:	:	:	:	:
Ireland	:	:	:	:	:	:	:	:
Greece	71	78	54	58	4	15	16	17
Spain (2)	1 582	1 684	787	757	:	:	75	72
France	5 531	5 583	2 968	2 812	472	570	201	191
Italy	456	:	365	:	83	:	41	:
Cyprus	2	4	2	2	2	2	37	56
Latvia	:	:	:	:	:	:	:	:
Lithuania	172	:	102	:	10	:	55	:
Luxembourg	:	:	:	:	:	:	:	:
Hungary	339	407	132	193	24	33	79	115
Malta	:	:	:	:	:	:	:	:
Netherlands	133	:	46	:	10	:	156	:
Austria	2 048	2 551	1 037	1 227	156	243	309	366
Poland	1 991	3 947	1 110	1 486	137	168	132	177
Portugal	895	954	666	669	98	90	332	333
Romania	531	1 075	314	555	:	30	76	134
Slovenia	185	266	120	184	:	:	104	159
Slovakia	624	679	259	279	33	42	148	159
Finland	3 235	4 516	2 422	3 216	388	444	121	161
Sweden (2)	:	7 529	:	3 156	:	677	:	149
United Kingdom	741	796	303	373	18	52	128	157
Norway	:	1 144	:	690	:	71	:	106
Switzerland	505	579	187	276	83	89	158	232

(1) Data for the area is 2005.
(2) 2007 instead of 2008.

Source: Eurostat (for_ieeaf_cp and for_area)

The employment data presented in Table 2.2 are in annual work units (AWU). This means that the data are not simple head counts of persons employed, but are based on the labour input equivalent to the work performed by one person occupied on a full-time basis, working the annual average number of hours considered to be typical for the activity in the reporting country. For example, Eurostat recommends the use of 1 800 hours per year, but in Swiss forestry statistics, 2 400 hours per year are considered normal, because forestry work is mainly done by farmers in their own forests, regularly working much longer than 40 hours per week. Due to the fact that persons engaged in forestry work often have other activities, this conversion aims to provide a more realistic measure of the volume of work input in order to be able to calculate apparent labour productivity. Among those Member States with data available for 2008, the level of productivity (value added per annual work unit) ranged from EUR 146 200 in Finland to EUR 7 000 in Bulgaria. Some of the reasons for differences in productivity may include the level of mechanisation used, or the difficulties encountered when working in mountainous areas.

Table 2.2: Forestry and logging, employment in the EU and EFTA

	Employment		Employment / forest area available for wood supply (2)		Apparent labour productivity			
	2005	2008	2005	2008	2005	2008	2005	2008
	(1 000 AWU) (1)		(AWU/ 1 000 ha)		(1 000 m^3 removals/AWU)		(EUR 1 000 gross value added/AWU)	
Belgium	:	:	:	:	:	:	:	:
Bulgaria	10.3	13.9	4.0	5.4	0.6	0.4	5.6	7.0
Czech Republic	27.4	25.7	10.9	10.2	0.6	0.6	18.2	23.2
Denmark	:	:	:	:	:	:	:	:
Germany	47.4	42.9	4.3	3.9	1.2	1.3	36.6	52.7
Estonia	:	:	:	:	:	:	:	:
Ireland	:	:	:	:	:	:	:	:
Greece	4.7	5.5	1.4	1.6	0.3	0.2	11.4	10.5
Spain	:	:	:	:	:	:	:	:
France	30.8	29.4	2.1	2.0	1.7	1.8	96.4	95.6
Italy	:	:	:	:	:	:	:	:
Cyprus	0.1	0.1	2.8	3.0	0.2	0.2	13.1	18.5
Latvia	:	:	:	:	:	:	:	:
Lithuania	:	:	:	:	:	:	:	:
Luxembourg	:	:	:	:	:	:	:	:
Hungary	8.7	8.8	5.2	5.2	0.6	0.6	15.2	22.0
Malta	:	:	:	:	:	:	:	:
Netherlands	1.6	:	5.3	:	0.7	:	29.5	:
Austria	18.3	20.4	5.5	6.1	1.2	1.1	56.5	60.3
Poland	36.8	39.0	4.4	4.6	0.9	0.9	30.2	38.1
Portugal	12.0	12.0	6.0	6.0	0.8	0.8	55.3	55.6
Romania	:	34.7	:	8.4	:	0.4	:	16.0
Slovenia	6.0	6.2	5.2	5.3	0.5	0.5	20.0	29.8
Slovakia	13.4	12.2	7.7	6.9	0.7	0.8	19.4	22.9
Finland	20.0	22.0	1.0	1.1	2.5	2.3	121.1	146.2
Sweden	:	:	:	:	:	:	:	:
United Kingdom	12.0	12.0	5.1	5.1	0.7	0.7	25.2	31.1
Norway	7.1	:	1.1	:	1.5	:	:	:
Switzerland	7.2	7.1	6.1	6.0	0.7	0.7	25.9	38.9

(1) Annual work units.
(2) Data for the area is 2005.

Source: Eurostat (for_awu, for_area, for_remov and for_ieeaf_cp)

Forestry and logging in the world

According to the FAO, the annual global quantity of roundwood removals (average between 2003 and 2007) was 3 400 million m^3; this figure is considered to be an underestimate as informally and illegally removed wood is not usually recorded. The split between fuelwood and industrial roundwood was approximately equal.

The United States recorded the largest roundwood removals in the world, at 532 million m^3, compared with the 480 million m^3 over bark in the EU: note that these data from the FAO are provided over bark in contrast to the data in Figures 2.1 and 2.2 which are compiled under bark. India recorded the next largest production quantity (307 million m^3), followed by Brazil, Canada and Russia. The split between industrial roundwood and fuelwood varied considerably: the share for industrial roundwood was around 15 % in both India and Indonesia, nearer to 50 % in Brazil and China, 73 % in Russia and 80 % in the EU, while it reached 90 % in the United States and 99 % in Canada. It should be noted, however, that the relative importance of fuelwood is likely to be under-reported in the UNECE region, as it is often part of the informal economy.

Table 2.3: Average annual roundwood removals in the world

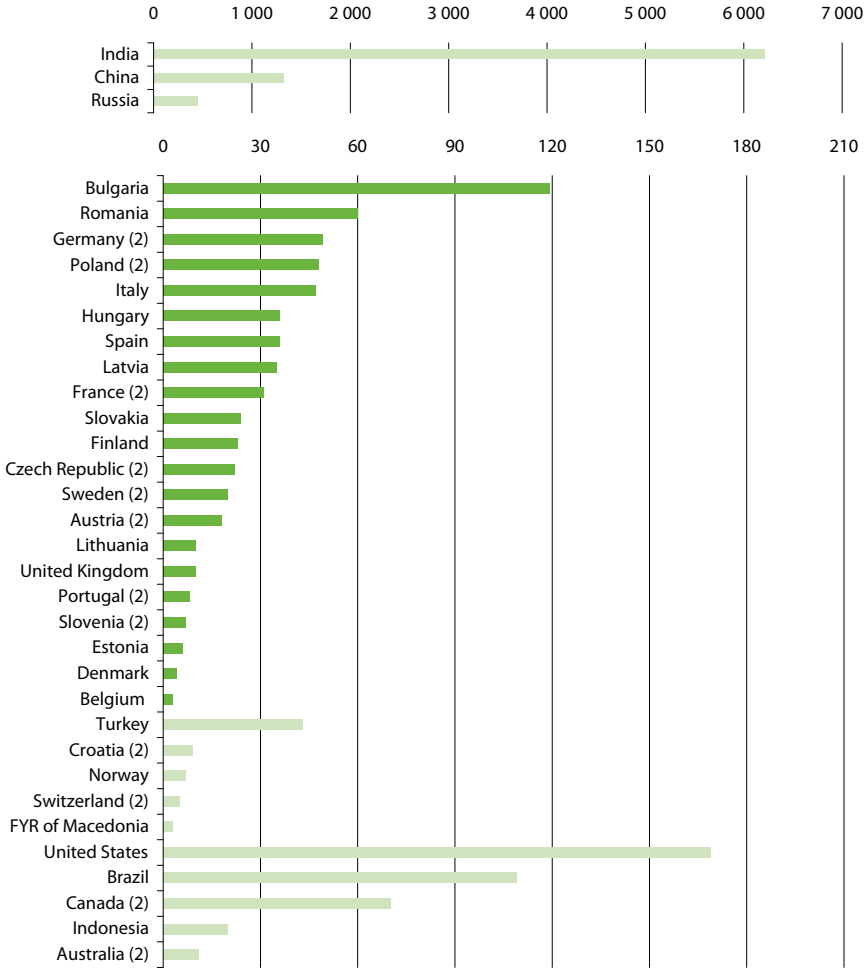
	Quantity				Value	
	Industrial roundwood		Fuel-wood		Industrial roundwood	Fuel-wood
	1998-2002	2003-2007	1998-2002	2003-2007	2003-2007	
	(1 000 m^3 over bark)				(EUR million) (1)	
EU-27 (2)	350 035	382 433	85 294	98 017	:	:
EA-17	207 352	218 357	66 259	70 074	:	:
Czech Republic	14 836	16 786	1 023	1 487	681	17
Germany	47 265	58 788	12 497	16 548	2 073	191
Spain	14 828	15 827	2 045	1 760	733	23
France	38 028	33 295	31 251	29 099	1 499	1 090
Latvia	12 288	13 129	2 194	3 230	:	:
Austria	12 019	15 488	3 316	4 414	987	238
Poland	29 598	35 572	3 382	4 635	1 012	53
Portugal	10 958	12 578	732	732	307	12
Finland	55 721	55 152	5 112	5 933	2 107	70
Sweden	64 729	75 539	6 726	10 826	2 348	219
Norway	8 854	8 877	1 450	1 582	315	42
Turkey	11 514	11 905	11 116	9 722	797	203
Russia	104 546	134 870	47 770	50 905	2 291	187
China	55 502	63 882	75 948	63 676	3 314	:
India	41 173	45 957	245 837	260 752	5 006	5 680
Indonesia	17 792	14 428	101 098	86 396	:	:
Canada	212 012	214 057	3 292	3 251	10 748	:
United States	495 740	481 006	51 779	51 101	18 093	250
Australia	23 035	26 672	5 547	:	1 005	:
Brazil	92 102	117 048	120 552	122 573	2 049	1 008

(1) Converted from USD at the average annual rate from 2003 to 2007 (USD 1.24906 = 1 EUR).
(2) Excluding Romania.

Source: FAO (Global FRA, 2010)

The FAO estimates that around ten million people were employed in the primary production of forest goods as well as in the management of protected areas in 2005, although it reported that in general this figure may be an underestimate, as a large part of forestry employment is outside the formal sector. The FAO also noted that the high reported figures for India may not have been converted into full-time equivalent units.

Figure 2.3: Employment in the primary production of forest goods and the management of protected areas in the world, 2005 (1)
(1 000 full-time equivalent units)



(1) Note that different scales have been used for the two parts of the figure; Ireland, Greece, Luxembourg, Malta and the Netherlands, not available; Cyprus and Iceland, not significant.
(2) Only covers employment in primary production of goods.

Source: FAO (Global FRA, 2010)

Wood-based manufacturing in the EU

Forests provide the renewable raw materials for wood-based manufacturing. Downstream from the forestry and logging activities there were 328 300 wood-based manufacturing (NACE Rev. 2 Divisions 16 and 17 and Group 18.1) enterprises in the EU in 2008, equivalent to 15.5 % of all manufacturing enterprises; together they employed almost 2.8 million persons (8.4 % of manufacturing employment). Wood-based manufacturing in the EU generated EUR 114 100 million of value added from EUR 413 300 million of turnover in 2008, 6.8 % and 5.8 % of the manufacturing total respectively.

Across the EU, wood and wood products manufacturing was the largest of the three subsectors in terms of its number of enterprises and number of persons employed, but had the smallest share

Table 2.4: Key indicators for wood-based manufacturing and furniture manufacturing in the EU-27, 2008

	Number of enterprises	Turnover	Value added at factor cost	Number of persons employed
	(units)	(EUR million)		(1 000)
Manufacturing	2 123 104	7 136 428	1 669 537	32 961
Wood-based manufacturing	328 327	413 250	114 103	2 771
Wood & wood products	180 941	131 406	34 919	1 157
Sawmilling & planing of wood	35 155	35 852	7 206	273
Products of wood, cork, straw & plaiting materials	145 785	95 554	27 713	884
Veneer sheets & wood-based panels	4 420	25 275	5 400	120
Assembled parquet floors	1 245	2 703	744	21
Other builders' carpentry & joinery	98 521	45 243	15 158	508
Wooden containers	9 952	11 364	3 174	95
Other wood products; articles of cork, straw & plaiting materials	31 647	10 969	3 238	139
Paper & paper products	20 688	*180 000*	40 674	706
Pulp, paper & paperboard	2 342	*80 000*	15 635	206
Pulp	185	:	1 564	16
Paper & paperboard	2 158	71 735	14 071	190
Articles of paper & paperboard	18 346	96 329	25 039	500
Corrugated paper & paperboard; paper & paperboard containers	7 815	47 729	13 216	273
Household & sanitary goods; toilet requisites	1 390	24 871	5 225	81
Paper stationery	4 290	10 092	2 738	67
Wallpaper	*100*	:	*300*	6
Other paper & paperboard articles	:	:	:	73
Printing & related services	126 698	101 844	38 510	908
Printing of newspapers	*1 000*	4 988	2 075	31
Other printing	78 043	80 366	29 213	682
Pre-press & pre-media services	38 415	11 819	5 014	130
Binding & related services	:	4 670	2 206	65
Furniture	*130 000*	115 178	35 046	*1 200*
Office & shop furniture	17 424	28 536	8 717	222
Kitchen furniture	15 943	16 962	5 262	135
Mattresses	*2 000*	5 976	1 569	:
Other furniture	91 734	63 704	19 498	789

Source: Eurostat (sbs_na_ind_r2)

of the whole sector's value added. Paper and paper products manufacturing generated a little over one third of the sector's value added with around one quarter (25.5 %) of its employment, but had by far the smallest number of enterprises (20 688, or 6.3 % of the total) and was therefore characterised by relatively large enterprises, both in terms of employment and output. Printing and related services had the smallest turnover share (24.6 %) of the three wood-based manufacturing subsectors but from this generated one third (33.7 %) of the sector's value added.

Germany contributed 20.3 % of the EU's value added in the whole sector in 2008, with the United Kingdom (12.8 %), Italy (12.0 %) and France (10.7 %) accounting for the next largest shares. The Baltic Member States were relatively specialised in wood and wood products manufacturing (compared with the total output of their sectors). Finland, Sweden and Slovakia were most specialised in the manufacture of paper and paper products. The United Kingdom was the only Member State where printing and related services accounted for more than half of the added value generated in wood-based manufacturing.

Table 2.5: Output of wood-based manufacturing activities in the EU and candidate countries, 2008
(EUR million)

	Turnover			Value added at factor cost		
	Wood & wood products	Paper & paper products	Printing & related services	Wood & wood products	Paper & paper products	Printing & related services
EU-27	131 406	180 000	101 844	34 919	40 674	38 510
EA-17	92 376	139 757	:	24 132	:	:
Belgium	3 763	6 083	3 636	934	1 275	1 250
Bulgaria	436	392	277	92	70	90
Czech Republic	*3 846*	*2 435*	:	*1 000*	*605*	:
Denmark	2 195	1 394	1 536	726	439	622
Germany	22 090	39 724	21 506	5 646	9 441	8 083
Estonia	1 141	190	188	248	41	65
Ireland	1 005	571	633	259	185	296
Greece	:	:	:	:	:	:
Spain	10 074	13 290	8 795	2 950	3 443	3 713
France	13 148	20 427	12 447	3 573	4 308	4 279
Italy	17 387	21 531	14 134	4 771	4 350	4 540
Cyprus	224	68	121	89	26	53
Latvia	1 259	99	179	301	31	72
Lithuania	820	191	171	201	55	61
Luxembourg	174	:	:	41	:	:
Hungary	1 140	1 283	1 087	252	320	284
Malta	:	:	:	:	:	:
Netherlands	3 352	6 070	5 382	1 017	1 482	1 921
Austria	7 374	6 206	2 326	2 031	1 601	998
Poland	7 411	5 448	2 804	1 987	1 586	928
Portugal	3 531	2 593	1 276	764	676	540
Romania	2 332	708	807	569	:	293
Slovenia	743	818	466	215	179	147
Slovakia	824	1 383	391	151	270	115
Finland	6 649	15 010	1 672	1 185	2 842	664
Sweden	9 408	14 631	2 858	1 928	3 446	1 016
United Kingdom	10 184	13 663	16 375	3 729	3 422	7 501
Croatia	713	:	564	192	:	199

Source: Eurostat (sbs_na_ind_r2)

Table 2.6 shows the wage-adjusted labour productivity ratio for wood-based manufacturing activities: this ratio is defined as value added divided by personnel costs expressed as a percentage, adjusted by the ratio of paid employees to the total number of persons employed, to take account of the fact that all persons employed contribute to value added, whereas only the costs of paid employees are included in personnel costs.

Among the EU's wood-based manufacturing subsectors in 2008 this ratio ranged from 110.2 % for wood and wood products manufacturing to 147.5 % for the manufacture of paper and paper products, either side of the manufacturing average (119.6 %). Particularly high ratios (in excess of 200 %) were recorded for paper and paper products manufacturing in Poland, Slovakia and Portugal, while high ratios were also recorded in Romania for wood and wood products manufacturing and Bulgaria and Romania for printing and related services.

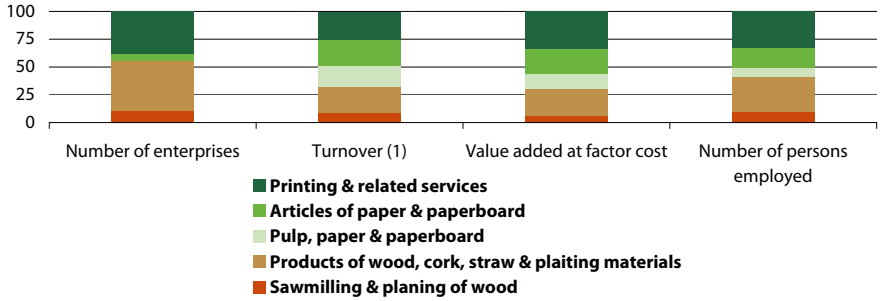
Table 2.6: Employment and productivity of wood-based manufacturing activities in the EU and candidate countries, 2008

	Number of persons employed			Wage-adjusted labour productivity		
	Wood & wood products	Paper & paper products	Printing & related services	Wood & wood products	Paper & paper products	Printing & related services
	(1 000)			(%)		
EU-27	1 156.8	706.0	907.9	110.2	147.5	131.0
EA-17	651.0	:	:	93.2	:	:
Belgium	14.0	15.2	21.1	157.7	156.9	123.8
Bulgaria	19.1	11.1	10.0	180.4	180.2	225.2
Czech Republic	*66.1*	*22.0*	:	*133.3*	*185.6*	:
Denmark	12.5	6.9	10.0	116.8	117.1	122.9
Germany	135.0	143.5	169.5	129.3	143.2	127.4
Estonia	17.1	1.7	3.0	134.2	166.4	160.6
Ireland	5.8	3.4	5.3	121.8	114.0	134.5
Greece	:	:	:	:	:	:
Spain	90.6	53.8	88.3	125.0	165.2	134.1
France	:	:	:	28.5	126.0	117.3
Italy	155.3	76.8	111.3	109.3	143.2	116.3
Cyprus	3.4	0.7	1.5	126.0	167.8	158.9
Latvia	25.7	1.6	4.4	169.4	197.2	192.8
Lithuania	27.5	3.3	4.4	107.7	168.8	156.6
Luxembourg	0.6	:	:	153.3	:	:
Hungary	22.0	12.1	18.8	151.7	182.5	145.4
Malta	:	:	:	:	:	:
Netherlands	21.4	19.8	42.1	123.4	150.4	114.1
Austria	36.3	18.5	14.9	150.5	162.7	141.9
Poland	138.0	49.1	47.1	172.3	254.3	176.3
Portugal	40.4	11.8	21.1	143.9	227.3	151.6
Romania	74.4	:	20.6	210.2	:	225.5
Slovenia	11.2	6.6	5.6	124.6	136.1	139.2
Slovakia	15.7	8.1	6.2	116.2	244.9	158.5
Finland	28.8	31.7	12.5	113.6	153.8	135.7
Sweden	41.3	47.5	20.6	110.9	121.5	106.7
United Kingdom	79.2	64.1	146.4	172.9	146.4	155.3
Croatia	19.8	:	10.3	126.4	:	151.1

Source: Eurostat (sbs_na_ind_r2)

Figure 2.5 provides a size class analysis for wood-based manufacturing (excluding printing and related services). The specialisation of Finland and Sweden in paper and paper products manufacturing is reflected in this analysis as these two Member States recorded the greatest value added contribution of large enterprises (with 250 or more persons employed).

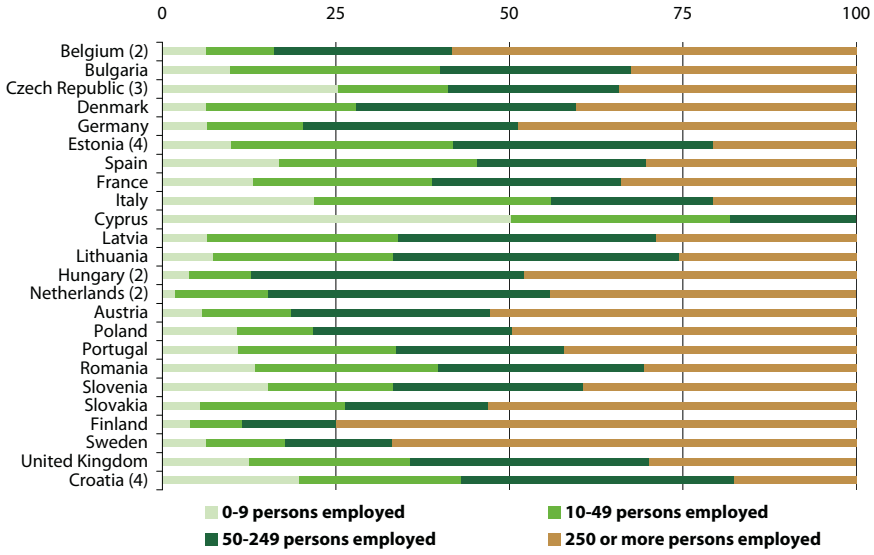
Figure 2.4: Wood-based manufacturing activities by subsector in the EU-27, 2008
(%)



(1) Including estimates.

Source: Eurostat (sbs_na_ind_r2)

Figure 2.5: Breakdown by enterprise size class of value added at factor cost from the manufacturing of wood and wood products, paper and paper products in the EU and candidate countries, 2008 (1)
(%)

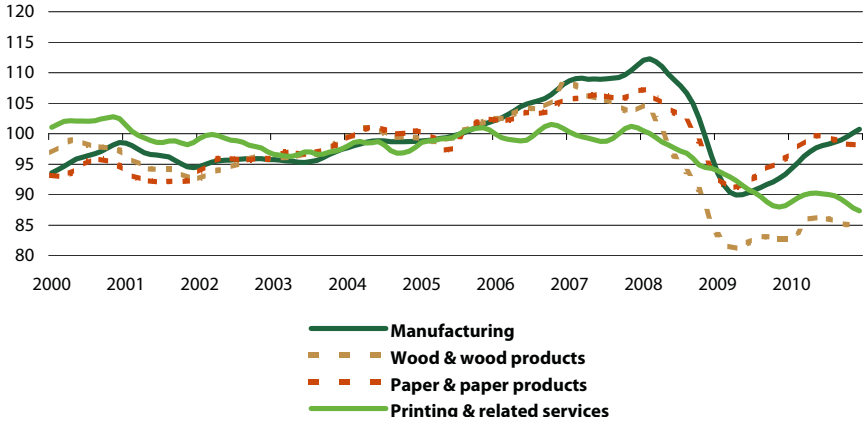


(1) Ireland, Greece, Luxembourg and Malta, incomplete or not available.
(2) Excluding wood and wood products manufacturing.
(3) Provisional.
(4) Excluding paper and paper products manufacturing.

Source: Eurostat (sbs_sc_ind_r2)

Figure 2.6 illustrates clearly the impact of the recent financial and economic crisis on wood-based manufacturing output. The volume index of production for wood and wood products manufacturing in the EU fell 25.2 % from a high at the end of 2006 to a low in April 2009 since when output stabilised and started to increase again. A similar development can be seen for paper and paper products manufacturing, although the fall started approximately one year later, was less severe (-14.9 % overall), and the subsequent recovery has so far been stronger. The development in output for printing and related services was quite different over many years, as the expansion prior

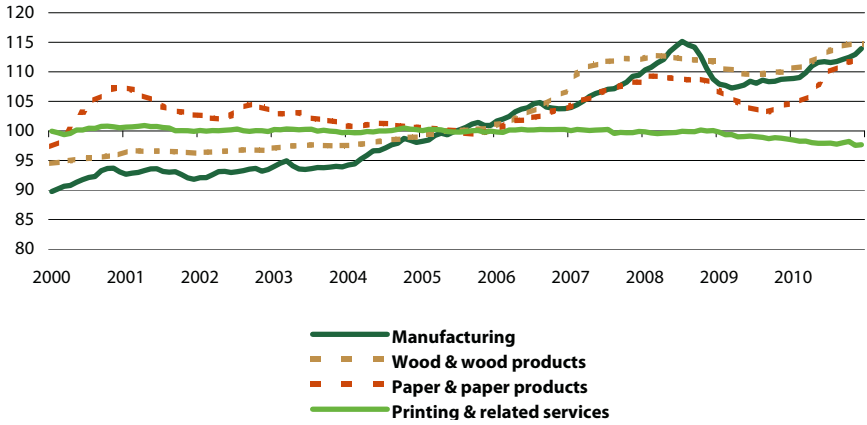
Figure 2.6: Volume of production index for the EU-27, trend series (1) (2005=100)



(1) Estimates.

Source: Eurostat (sts_inpr_m)

Figure 2.7: Domestic output price index for the EU-27, gross series (1) (2005=100)



(1) Estimates.

Source: Eurostat (sts_inppd_m)

to the crisis had been less apparent. The decline in the output of printing and related services during the recession was at a slower pace and the overall fall between November 2007 and December 2010 was 13.7 %; at the time of writing there has not yet been a sustained recovery in this activity's output in the EU.

A similar analysis can be made for the development of output prices across these wood-based manufacturing activities. Output prices for wood and wood products manufacturing had accelerated during 2005, 2006 and the first half of 2007, stabilised at the end of 2007 and early in 2008, fell until the middle of 2009, and then returned to their long-term upward trend. The development of the index for paper and paper products manufacturing was similar, with less growth prior to the crisis, a larger fall in prices during the crisis, and stronger price increases during the recovery. Output prices for printing and related services were stable for many years leading up to the crisis, and started a gentle, sustained and still on-going fall in the middle of 2007.

Table 2.7: Domestic output price index in the EU, EFTA and candidate countries, gross series (2005=100)

	Wood & wood products				Paper & paper products			
	2007	2008	2009	2010	2007	2008	2009	2010
EU-27	111.3	112.2	110.1	113.0	106.6	108.8	104.5	108.9
EA-17	110.6	111.2	107.9	110.1	107.2	109.1	103.3	107.9
Belgium	121.4	116.4	99.4	102.0	103.1	104.6	94.7	98.7
Bulgaria	112.0	125.5	122.5	115.7	107.4	116.4	117.2	121.1
Czech Republic	107.4	103.4	100.3	103.0	101.9	101.4	95.9	97.8
Denmark	112.4	118.3	116.0	120.5	102.3	105.6	103.7	104.8
Germany	114.7	111.8	106.9	112.2	105.6	107.5	102.7	105.6
Estonia	:	:	:	:	:	:	:	:
Ireland	110.9	112.8	115.9	118.6	101.4	102.5	98.9	97.9
Greece	109.8	115.3	117.0	118.6	105.5	114.4	114.7	115.9
Spain	108.8	112.9	111.6	111.0	106.6	109.4	105.7	109.6
France	109.4	111.2	107.1	*108.2*	108.7	110.6	102.5	*105.4*
Italy	107.6	108.6	107.7	*108.9*	109.8	111.0	106.6	*112.5*
Cyprus	:	:	:	:	:	:	:	:
Latvia	:	:	:	:	:	:	:	:
Lithuania	115.2	118.0	108.6	*111.7*	101.3	107.1	102.9	*101.9*
Luxembourg	:	:	:	:	:	:	:	:
Hungary	115.5	119.7	117.6	114.4	104.0	107.4	109.5	110.3
Malta	:	:	:	:	:	:	:	:
Netherlands	112.2	115.6	112.2	*110.3*	107.2	107.1	101.2	*105.6*
Austria	109.1	109.1	*109.7*	:	105.4	107.3	*103.3*	:
Poland	105.9	105.5	101.2	103.4	101.2	101.1	96.8	98.0
Portugal	101.9	103.5	101.1	100.7	103.7	106.2	99.2	111.8
Romania	118.0	130.7	133.9	*133.7*	108.9	127.5	133.7	*136.2*
Slovenia	108.9	113.7	116.7	117.2	108.4	112.9	113.3	119.3
Slovakia	:	:	:	:	:	:	:	:
Finland	113.6	114.5	109.2	113.5	107.1	109.3	98.9	118.7
Sweden	120.7	117.8	119.6	128.3	108.3	111.2	111.6	115.5
United Kingdom	111.5	116.3	118.9	125.0	104.6	107.9	109.6	114.6
Norway	116.9	120.7	119.6	123.5	102.6	105.3	111.5	118.6
Switzerland	104.9	109.9	110.1	109.5	109.6	115.2	109.2	108.5
Croatia	102.5	105.0	105.1	105.5	99.0	104.0	103.9	109.7
Turkey	*111.4*	*115.6*	*117.8*	*117.2*	*117.3*	*116.1*	*120.6*	*131.1*

Source: Eurostat (sts_inppd_a)

Wood-based manufacturing in the world

The data (other than for the EU) presented in Tables 2.8 to 2.10 are from the Indstat4 database of the United Nations Industrial Development Organization (UNIDO). The data is available using the ISIC Rev.3 industrial classification which is consistent with NACE Rev. 1.1: the wood-based manufacturing activities in NACE Rev. 1.1 include Divisions 20 and 21 and Group 22.2. The Indstat4 data for output and value added have been converted from United States dollars to euro using annual average exchange rates of the appropriate reference years. For the purposes of comparison, the EU data is shown for 2007, which is the last reference year for which NACE Rev. 1.1 data is available: note that 2008 data based on the NACE Rev. 2 classification is presented earlier in this chapter.

The value added of wood-based manufacturing activities in 2006 was EUR 148 000 million in the United States, close to 20 % more than in the EU in 2007. A geographic aggregate for wood-based manufacturing value added, constructed using data for the remaining countries shown in Table 2.9, resulted in a total for value added that was approximately two thirds that recorded for the United States, although it should be noted that the data relate to various reference years and the measure of value added is based on a variety of valuation methods.

The first processing (sawmilling and planing) of wood accounted for 8 % of EU wood-based manufacturing value added in 2007. In comparison, Russia and Canada, and to a lesser extent Australia, generated a higher proportion of their value added from this first processing stage, over 10 % in all three cases – reaching 21 % in Russia. The share of this stage was particularly low in China (2 %) and India (less than 1 %), suggesting that such activities may to a large extent be vertically integrated with upstream logging and the availability of natural resources, or with other downstream manufacturing activities. Among the countries presented in the table, the least specialised (in value added terms) in the manufacture of wood products were India and Brazil, while the most specialised were Indonesia and Russia where this activity contributed 28 % and 30 % respectively of wood-based manufacturing value added.

The manufacture of paper and paper products in India, Indonesia, Brazil and China, contributed three fifths or more of wood-based manufacturing value added. This was approximately double the equivalent share in the EU, Australia and Russia. In Canada and the United States paper and paper products manufacturing contributed around two fifths of wood-based manufacturing value added.

Printing and related services generated around one third of wood-based manufacturing value added in Australia, the United States and the EU. In the remaining countries shown in Table 2.9 the relative importance of printing and related services ranged between 14 % and 22 %, except in Indonesia where the share was just 3 %, again possibly indicating an activity that was to some extent vertically integrated (possibly with publishing).

A similar analysis shows that the contribution of paper and paper products manufacturing to the wood-based manufacturing total was lower in employment terms than in value added terms in all of the countries shown; this underlines the relatively high apparent labour productivity of paper and paper products manufacturing. This characteristic was most notable in Indonesia, where the share of paper and paper products manufacturing in wood-based manufacturing was 65 % in terms of value added, but just 28 % in terms of employment.

Table 2.8: Output at producer prices of wood-based manufacturing activities in the world (EUR million)

	Year	Sawmilling and planing of wood	Products of wood, cork & straw	Paper & paper products	Printing & related services
EU-27	2007	39 642	95 841	166 000	105 150
Russia (1)	2007	3 752	5 489	8 395	3 493
China	2007	3 091	34 183	96 271	19 801
India	2005	135	762	4 536	1 260
Indonesia	2006	402	2 920	6 257	287
Canada	2003	11 733	7 833	21 058	7 264
United States (2)	2006	25 615	63 907	135 681	79 395
Australia (2)	2006	2 225	3 917	5 664	5 317
Brazil (3)	2007	2 247	3 854	16 250	3 162

(1) Output at basic prices.
(2) Valuation not defined.
(3) Output at factor cost.

Source: Eurostat (sbs_na_2a_dade) and UNIDO (indstat)

Table 2.9: Value added at factor cost of wood-based manufacturing activities in the world (million national currency)

	Year	Sawmilling and planing of wood	Products of wood, cork & straw	Paper & paper products	Printing & related services
EU-27	2007	9 894	31 112	42 000	41 538
Russia (1)	2007	1 523	2 177	2 311	1 227
China (2)	2007	960	10 061	26 474	6 464
India (2)	2005	7	153	983	321
Indonesia	2006	121	1 150	2 671	142
Canada (3)	2003	3 868	3 687	8 220	4 238
United States (3)	2006	7 848	27 539	64 193	48 088
Australia (1)	2006	907	1 434	1 954	2 255
Brazil	2007	1 134	1 692	7 579	1 758

(1) Value added at basic prices.
(2) Value added at producer prices.
(3) Valuation not defined.

Source: Eurostat (sbs_na_2a_dade) and UNIDO (indstat)

Table 2.10: Employees in wood-based manufacturing activities in the world (1 000)

	Year	Sawmilling and planing of wood	Products of wood, cork & straw	Paper & paper products	Printing & related services
EU-27	2007	246.5	753.6	682.8	807.2
Russia	2007	131.5	209.0	131.5	122.9
China	2007	104.8	1 146.9	2 085.7	712.3
India (1)	2005	10.1	46.3	177.7	77.4
Indonesia	2006	47.8	250.5	126.3	21.6
Canada	2003	72.2	54.9	92.2	76.0
United States	2006	104.0	432.1	414.0	620.3
Australia (1)	2005	15.5	37.6	24.9	54.4
Brazil (1)	2007	97.2	127.8	168.4	97.3

(1) Persons employed.

Source: Eurostat (sbs_na_2a_dade) and UNIDO (indstat)

3 Wood and wood products

Among the wide range of forest products, wood is the one that is most in demand worldwide. The production and trade of wood and wood products is the focus of this chapter. Production begins with the logging of roundwood, the skidding of logs to a road and the stripping off of their bark.

There are two categories of roundwood: industrial roundwood and fuelwood. Industrial roundwood commodities include logs, pulpwood and other industrial wood (the final use determines the commodity). Logs are usually large-diameter, good-quality timber used for the production of sawnwood (including railway sleepers) and veneer sheets. Pulpwood is generally lower-quality timber that is used for the manufacture of pulp, particle board and fibreboard. Other industrial roundwood includes timber for the manufacture of poles, piling, posts or fencing.

Fuelwood is wood of generally lower quality (from trunks and branches of trees), to be used as fuel for cooking, heating and energy production and includes wood used to produce charcoal; Chapter 4 of this publication looks in more detail at the use of wood as a source of energy.

For lower-quality wood, it is common to find a relatively high degree of substitution between different uses. For example, different kinds of processing residues, chips and particles are used either directly as a fuel or for making pulp, particle board, or pellets, briquettes and other solid fuel, such that there is very little waste.

Further downstream, a range of manufacturing processes take these basic and primary wood products and transform them into a range of wood and paper products, many of which are consumer goods – for example, furniture, brushes and brooms, newspapers, or household and sanitary papers.

A detailed explanation of the different wood and paper products that are covered within this chapter is provided in an annex that begins on page 100. These definitions are taken from the Joint Forest Sector Questionnaire, which is the basis for a data collection exercise conducted by the FAO, ITTO, UNECE and Eurostat.

Production of wood products in the EU

The opening two tables in this chapter provide an overview through the use of supply balances for wood products. These traditionally show the extent to which a country or a market is self-sufficient in a particular commodity, by taking domestic production and adjusting this by the trade balance (exports minus imports). The information presented is expressed in terms of tonnes of carbon; this is done through the application of conversion factors for each product (see page 107). These conversions allow the different wood and paper products to be compared with each other, even though the original data in quantity terms was collected using a variety of measures (tonnes, square metres or cubic metres).

Information on the carbon content of each wood and paper product can be used when developing models that identify the level and rate of carbon emissions over its lifetime. The carbon stored in long-lived wood products such as sawnwood used in construction or in panels used in finishing buildings or making furniture may, in future, become part of national carbon accounting.

Table 3.1: Supply balance for wood products in the EU-27, 2008 (1)
(1 000 tonnes of carbon)

	Production	Exports	Imports
Roundwood	93 404	857	4 121
Industrial roundwood	75 116	836	3 897
Fuelwood	18 289	21	224
Wood charcoal	154	13	250
Wood chips and particles	12 373	242	913
Wood residues including pellets	9 571	138	776
Sawnwood	22 345	3 187	2 161
Wood-based panels	13 952	1 701	1 752
Veneer sheets	337	54	277
Plywood	875	134	1 000
Particle board, OSB and others	9 298	831	186
Fibreboard	3 442	682	242
Wood pulp	19 930	1 003	4 200
Mechanical	5 487	63	134
Semi-chemical	656	53	83
Chemical	13 322	826	3 722
Dissolving grades	290	60	261
Other pulp	12 859	41	46
Pulp from fibres other than wood	662	13	38
Recovered fibre pulp	12 197	28	7
Recovered paper	26 577	5 556	603
Paper and paperboard	48 940	9 861	5 422
Graphic papers	22 878	5 863	3 081
Sanitary and household papers	3 313	368	102
Packaging materials	20 600	3 415	2 145
Other paper and paperboard n.e.s.	2 150	216	94

(1) Converted to tonnes of carbon using IPCC coefficients (see page 107); EU-27 exports and imports relate to extra-EU trade; excludes confidential information and those Member States for which data are not available.

Source: Eurostat (for_basic, for_swpan and for_pp)

Table 3.1 confirms that the EU tends to import a relatively high proportion of raw wood materials at the start of the production chain (roundwood, sawnwood and pulp), while it is a net exporter of downstream semi-finished and finished wood and paper products (particle board, fibreboard, graphic papers, or packaging materials).

The bulk of the 274.7 million tonnes of carbon contained in wood and paper products made in the EU in 2008 remained within the EU. Some 8.3 % of the total was exported, while imports amounted to only 7.3 % of apparent consumption. While the EU was close to being self-sufficient in wood and paper products in overall terms, there were a range of products for which much higher import penetration ratios were recorded (for example, veneer sheets, plywood, chemical and dissolving grades of wood pulp).

Table 3.2: Supply balance for wood products in the EU and EFTA (1) (million tonnes of carbon)

	2006			2007			2008		
	Production	Exports	Imports	Production	Exports	Imports	Production	Exports	Imports
EU-27	274.38	23.02	24.01	294.78	23.11	23.28	274.67	22.71	19.99
Belgium	4.08	4.86	4.97	4.04	5.06	6.04	4.09	5.10	5.70
Bulgaria	1.91	0.40	0.28	2.23	0.60	0.58	2.00	0.35	0.53
Czech Republic	7.17	2.32	1.32	7.55	2.46	1.30	6.66	2.30	1.30
Denmark	1.35	0.90	3.94	1.34	0.96	2.95	1.41	0.95	2.84
Germany	44.39	13.88	12.62	55.66	17.18	15.67	47.98	17.52	15.37
Estonia	2.51	1.08	0.73	2.21	0.94	0.68	2.18	0.87	0.39
Ireland	1.48	0.61	0.64	1.52	0.61	0.64	1.25	0.56	0.52
Greece	0.88	0.66	1.57	0.92	0.73	1.27	0.87	0.51	7.03
Spain	16.69	2.51	5.67	16.06	2.85	6.34	16.08	3.14	4.78
France	42.81	6.56	7.10	43.48	6.57	7.38	41.75	6.11	6.87
Italy	11.94	2.50	8.87	11.85	2.77	8.90	11.35	2.77	7.98
Cyprus	0.01	0.01	0.11	0.02	0.01	0.11	0.02	0.01	0.10
Latvia	5.21	2.33	0.51	4.69	2.18	0.67	4.09	1.89	0.32
Lithuania	2.35	0.61	0.46	2.46	0.74	0.59	2.18	0.59	0.65
Luxembourg	0.67	0.71	0.60	0.25	0.36	0.69	0.30	0.40	0.31
Hungary	2.06	0.69	0.93	2.04	0.73	0.98	1.88	0.52	0.77
Malta	0.00	0.00	0.03	0.00	0.00	0.03	0.00	0.00	0.03
Netherlands	3.55	3.89	5.16	3.36	3.98	5.28	3.20	3.83	5.28
Austria	14.55	4.97	4.82	15.65	5.55	4.76	15.37	5.29	4.38
Poland	13.72	1.83	2.46	15.45	1.91	2.82	14.67	1.94	2.92
Portugal	5.78	1.88	0.64	5.81	2.11	0.88	5.54	1.99	0.89
Romania	5.05	0.92	0.43	5.57	0.91	0.54	5.22	0.80	0.47
Slovenia	1.67	0.70	0.66	1.80	0.91	0.82	1.59	1.12	0.94
Slovakia	3.62	1.19	0.50	4.02	1.23	0.62	4.37	1.22	0.69
Finland	32.29	10.32	4.55	33.81	10.11	4.27	30.11	9.04	4.68
Sweden	36.06	11.25	3.61	40.08	11.08	3.76	38.01	10.77	4.04
United Kingdom	12.61	2.97	7.50	12.90	3.38	7.77	12.48	3.42	6.87
Iceland	0.01	0.01	0.05	0.01	0.01	0.06	0.00	0.01	0.07
Liechtenstein	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00
Norway	5.43	1.77	1.41	5.45	1.73	1.57	5.26	1.71	1.38
Switzerland	4.00	1.75	1.33	4.13	1.59	1.45	3.92	1.35	1.28

(1) Converted to tonnes of carbon using IPCC coefficients (see page 107); EU-27 exports and imports relate to extra-EU trade, while trade data for individual countries relates to total trade.

Source: Eurostat (for_basic, for_swpan and for_pp)

The production of roundwood in the EU reached an all-time high in 2007, peaking at 458.3 million m³ (see Figures 2.2 and 3.1); the harvest in 2007 was particularly high as a result of additional removals attributable to the large number of trees damaged in storms.

The global financial and economic crisis had a severe effect on wood-based manufactured products. With a downturn in industrial activity and a depressed construction sector, many wood and paper product markets slumped in 2008 and 2009. This, in turn, led to a lack of demand for raw wood materials which resulted in the output of roundwood falling to 391.9 million m³ (under bark) by 2009.

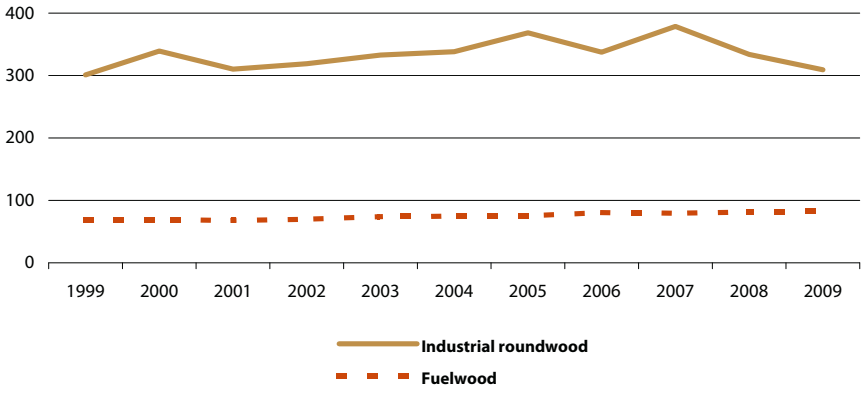
The production of roundwood in the EU in 2009 was, in the main, composed of industrial roundwood (accounting for 78.9 % of the total), while the production of fuelwood covered the remaining 21.1 %.

There was an 11.3 % reduction in EU industrial roundwood production between 2007 and 2008, which was followed by a further contraction of 7.3 % in 2009. As a result, industrial roundwood production stood in 2009 at 309.3 million m³, the lowest figure recorded since 1999.

Industrial roundwood production fell by more than 10 % between 2008 and 2009 in Spain, Italy, Lithuania, Hungary and the Netherlands and by more than 20 % in Luxembourg, Austria and Finland. However, the largest reductions were recorded in Bulgaria (-34.2 %) and Cyprus (-53.1 %); note that together these two Member States accounted for no more than 0.7 % of the EU's total industrial roundwood production in 2009. Latvia, Ireland, France, Germany and Denmark were exceptions to the general downward trend, each reporting an increase in industrial roundwood production between 2008 and 2009.

The production of fuelwood continued to rise within the EU during the financial and economic crisis. Among the possible reasons for this are: the increased importance given to these products by governments wishing to encourage the use of energy from renewable

Figure 3.1: Production of roundwood and fuelwood in the EU-27 (1) (million m³)



(1) Estimates, 1999-2001, 2005-2007 and 2009.

Source: Eurostat (for_basic)

sources such as biomass; consumers looking to use alternative fuels when faced with price increases for fossil fuels; consumers choosing renewable energy sources for environmental reasons. Production of fuelwood in the EU rose to 82.6 million m³ in 2009.

The production of wood pellets in the EU grew at a phenomenal rate, rising 41.3 % between 2008 and 2009; almost half of the EU's production was concentrated within Germany and Sweden in 2009.

Table 3.3: Production of roundwood, fuelwood and other basic wood products in the EU, EFTA and candidate countries, 2009
(1 000 m³)

	Roundwood					Wood chips & particles	Wood residues & pellets	
	Total	Industrial roundwood			Fuel-wood		Total	Pellets
		Total	Conifer-ous	Non-conif.				
EU-27	*391 923*	*309 334*	*241 867*	*67 467*	*82 590*	*47 533*	*38 790*	7 828
EA-17	*226 430*	*170 611*	*125 699*	*44 912*	*55 819*	*23 694*	*23 148*	3 930
Belgium	4 395	3 670	2 800	870	725	475	425	0
Bulgaria	4 599	2 224	1 077	1 147	2 375	*47*	*53*	*6*
Czech Republic	*16 187*	*14 307*	*13 487*	*820*	*1 880*	*1 380*	*1 140*	0
Denmark	2 812	1 706	*1 299*	*407*	*1 106*	*168*	*0*	0
Germany	56 634	48 073	37 050	11 023	*8 561*	*3 127*	*828*	*1 460*
Estonia	4 860	3 708	2 498	1 211	1 152	1 700	800	488
Ireland	2 349	2 262	2 259	3	87	516	167	*8*
Greece	*1 261*	*507*	*361*	*146*	*754*	*3*	*11*	0
Spain	13 980	11 900	5 349	6 551	2 080	1 747	2 231	242
France	54 108	28 643	20 708	7 935	25 465	*4 799*	*7 000*	554
Italy	7 581	2 600	1 369	1 232	4 981	*420*	*200*	0
Cyprus	10	6	5	1	4	2	0	0
Latvia	10 409	8 673	6 412	2 261	1 736	2 847	890	*671*
Lithuania	5 460	3 677	2 123	1 554	1 783	835	683	278
Luxembourg	274	257	113	144	17	*555*	*853*	*14*
Hungary	5 244	2 365	579	1 786	2 879	58	89	0
Malta	0	0	0	0	0	0	0	0
Netherlands	1 016	726	489	237	290	*107*	*728*	185
Austria	16 727	12 144	11 344	800	4 584	3 505	2 362	*222*
Poland	34 629	30 475	23 420	7 055	4 154	929	*5 500*	585
Portugal	9 564	8 964	3 419	5 545	600	198	1 507	*402*
Romania	12 557	8 587	4 228	4 359	3 969	*410*	*1 732*	200
Slovenia	2 930	1 948	1 468	479	983	118	*236*	*6*
Slovakia	9 087	8 501	5 924	2 577	586	620	809	90
Finland	41 653	36 701	30 543	6 158	4 952	5 803	4 990	260
Sweden	65 100	59 200	56 150	3 050	5 900	15 500	*5 000*	1 982
United Kingdom	8 497	7 509	7 392	116	988	1 665	555	175
Liechtenstein	25	10	9	1	15	15	0	0
Norway	8 884	6 631	6 528	103	2 253	0	*141*	*50*
Switzerland	4 577	3 252	2 857	395	1 325	0	0	0
Montenegro	364	208	177	31	156	0	0	:
Croatia	4 242	3 380	607	2 773	862	179	245	:
FYR of Macedonia	639	109	45	64	530	:	0	:
Turkey	19 430	14 382	8 806	5 576	5 048	*850*	*850*	:

Source: Eurostat (for_basic)

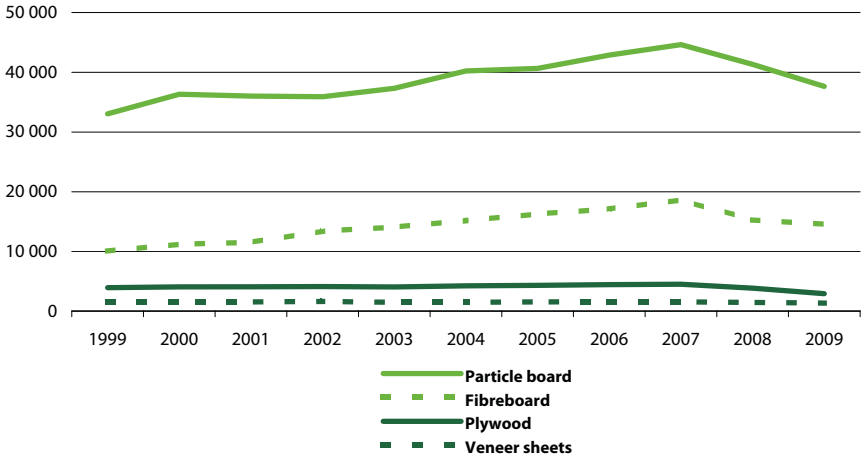
The biggest demand for sawnwood and wood-based panels stems from construction (including wooden flooring) and furniture markets, while lower grades of sawnwood are more often used for packaging (for example, as pallets).

Given both the construction sector and the furniture market were depressed as a result of the global financial and economic crisis, it is perhaps not surprising to find that EU production of sawnwood peaked in 2007 at 115.4 million m^3, before falling by 13.9 % in 2008 and an additional 8.3 % in 2009. The production of wood-based panels (comprising particle board, fibreboard, plywood and veneer sheets) reached 69.4 million m^3 in 2007, before retracting by 10.7 % in 2008 and by a further 8.8 % in 2009.

Among the various types of wood-based panels manufactured within the EU, the highest level of production was for particle board (37.6 million m^3 in 2009); this is a composite material often referred to as chipboard and made from wood particles, chips, shavings or sawdust that is generally combined with resin before being pressed and extruded. EU production of particle board was more than twice the level of the output recorded for fibreboard – such as hardboard, medium-density fibreboard (MDF) and softboard (also known as insulating board) – where production stood at 14.6 million m^3 in 2009. The level of EU production of plywood and of veneer sheets was considerably lower, at 3.0 million m^3 and 1.4 million m^3 respectively.

Since the most recent peaks in production (in either 2006 or 2007), the production of the various different types of wood-based panels in the EU fell consistently through to 2009. The largest overall contraction (-53.0 % between 2006 and 2009) was recorded for hardboard (a sub-category of fibreboard), while the production of plywood fell by 35.0 % between 2007 and 2009. The smallest reduction in output was recorded for oriented strandboard (OSB ; a sub-category of particle board made of larger shavings), with an overall decline of 5.8 % between 2007 and 2009.

Figure 3.2: Production of wood-based panels in the EU-27 (1)
(1 000 m^3)



(1) Estimates.
Source: Eurostat (for_swpan)

Germany was the largest producer of both sawnwood and wood-based panels among the Member States in 2009, accounting for 22.7 % and 26.2 % of the respective EU totals. For sawnwood, Sweden (17.8 %) was the only other Member State to record a double-digit share of total EU output, while Poland (13.6 %) was the only other Member State to record a share in excess of 10 % for wood-based panels.

Table 3.4: Production of sawnwood and wood-based panels, sheets and boards in the EU, EFTA and candidate countries, 2009
(1 000 m^3)

	Sawn-wood total	Wood-based panels							
		Total	Veneer sheets	Ply-wood	Particle board		Fibreboard		
					Total	OSB	Total	Hard-board	MDF
EU-27	*91 031*	*56 557*	*1 383*	*2 957*	*37 635*	*3 934*	*14 582*	*1 967*	*11 278*
EA-17	*55 753*	*38 317*	*1 026*	*2 148*	*24 796*	*2 074*	*10 346*	*1 519*	*8 149*
Belgium	1 255	2 113	25	13	1 850	225	225	0	225
Bulgaria	447	799	17	48	651	*200*	83	*71*	*12*
Czech Republic	*4 636*	*1 681*	*16*	*149*	*1 436*	*508*	*80*	*0*	*80*
Denmark	320	*446*	*83*	*13*	*343*	*18*	*7*	*2*	*5*
Germany	20 674	14 813	*393*	176	9 311	*1 100*	*4 933*	*1 033*	*3 800*
Estonia	1 150	260	40	60	130	0	30	0	0
Ireland	*774*	713	0	0	329	274	384	2	342
Greece	*106*	994	*0*	18	*910*	*0*	66	*4*	*59*
Spain	2 072	3 116	91	222	1 778	8	1 025	50	800
France	*7 886*	4 959	54	265	*3 680*	*300*	960	*120*	*770*
Italy	*1 220*	*4 154*	*317*	*337*	*2 700*	*0*	*800*	*0*	*800*
Cyprus	5	2	0	1	0	0	0	0	0
Latvia	2 500	643	7	154	482	*332*	0	0	0
Lithuania	1 011	611	51	15	480	0	65	44	0
Luxembourg	129	394	0	0	*167*	*167*	227	*46*	*181*
Hungary	102	284	12	2	113	0	158	113	45
Malta	0	0	0	0	0	0	0	0	0
Netherlands	210	46	0	0	0	0	46	0	0
Austria	8 455	3 013	0	163	2 100	0	750	100	650
Poland	3 594	7 699	76	315	4 704	462	2 603	195	*1 790*
Portugal	1 093	1 385	30	23	848	0	484	124	326
Romania	*3 598*	*2 247*	57	*48*	1 673	*0*	*470*	0	*470*
Slovenia	397	427	37	75	*117*	0	197	0	*196*
Slovakia	2 254	863	3	15	705	0	140	0	0
Finland	8 072	1 066	36	780	170	0	80	40	0
Sweden	16 200	800	38	65	587	*340*	*110*	*23*	*67*
United Kingdom	2 871	3 030	0	0	2 370	*0*	660	0	660
Liechtenstein	4	0	0	0	0	0	0	0	0
Norway	1 850	436	0	0	267	0	169	50	0
Switzerland	1 481	937	5	8	409	0	515	0	221
Montenegro	50	0	0	0	0	0	0	0	0
Croatia	653	143	19	0	124	0	0	0	0
FYR of Macedonia	2	0	0	0	*0*	*0*	0	*0*	*0*
Turkey	5 853	5 482	82	100	2 350	30	2 950	626	2 290

Source: Eurostat (for_swpan)

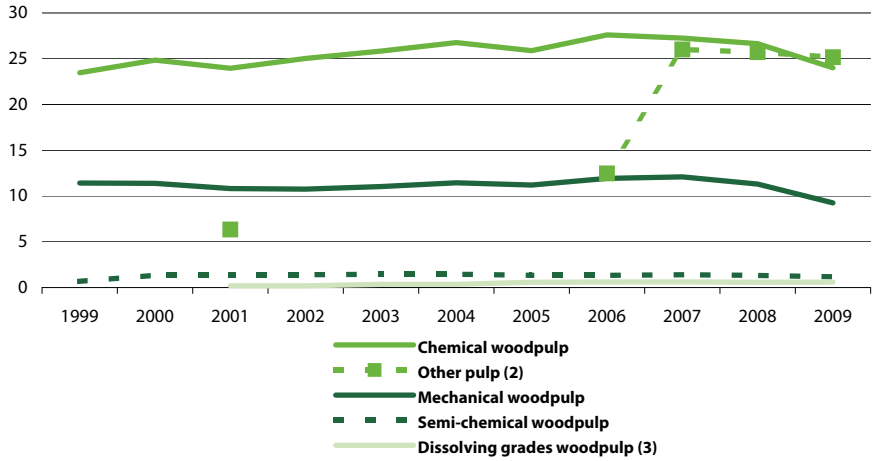
The raw materials used in the production of woodpulp can also be used as fuel. As it is likely that there will be a considerable expansion in the use of wood as a fuel in the coming years (as each country implements its national renewable energy action plan), pulp mills may expect to face added competition for their raw material inputs. Pulp may also be derived from other sources – principally, from fibres other than wood or from recovered fibres (labelled here as 'other pulp').

The production of woodpulp closely follows the pattern of demand for paper. Having seen output peak at 41.5 million tonnes in 2006 and remain very close to this level in 2007, EU pulp manufacturing activity faced a period of weak demand during 2008 and 2009 when production fell 3.6 % and 12.1 % respectively. Woodpulp production fell to 35.0 million tonnes in 2009, marking its lowest level since 1996 (32.7 million tonnes).

The overall figures for woodpulp production may be studied in more detail through the different processes that are commonly used to break down the fibres within wood. The largest reductions in EU output in 2009 were recorded for mechanical woodpulp (-18.2 %) and semi-chemical woodpulp (-11.9 %), while the production of chemical woodpulp fell by 9.9 %. The relatively low level of output recorded for dissolving grades woodpulp (0.6 million tonnes in 2009) saw its production rise by 1.9 % on 2008; this type of woodpulp is only used in the specialised production of synthetic cellulose fibres such as viscose/rayon and cellulose acetates.

Sweden and Finland are the primary pulp producers within Europe. In 2009 they accounted for 33.3 % and 24.9 % of the EU's production of woodpulp; none of the remaining Member States accounted for more than 7.3 % (Germany) of the total, while Portugal (6.2 %) and Austria (5.2 %) were relatively specialised in the production of woodpulp.

Figure 3.3: Production of pulp in the EU-27 (1)
(million tonnes)



(1) Estimates.
(2) 1999-2000 and 2002-2005, not available.
(3) 1999-2000, not available.

Source: Eurostat (for_pp)

The situation was quite different in relation to the production of other pulp, although output was again quite highly concentrated within relatively few Member States. Just over half (51.4 %) of the EU's production of other pulp was accounted for by Germany, while Spain (22.9 %), the United Kingdom (12.9 %) and Austria (8.0 %) were the only other Member States to report shares in excess of 1.4 % (Portugal).

Table 3.5: Production of pulp in the EU, EFTA and candidate countries, 2009 (1 000 tonnes)

	Woodpulp					Other pulp
	Total	Mechanical	Semi-chemical	Chemical	Dissolving grades	
EU-27	*35 018*	*9 247*	*1 171*	*24 009*	*591*	*25 160*
EA-17	*21 163*	*5 583*	*666*	*14 518*	*397*	*21 429*
Belgium	990	*180*	*0*	*810*	*0*	4
Bulgaria	137	*0*	*7*	*130*	0	0
Czech Republic	*698*	*46*	*0*	*652*	*0*	*4*
Denmark	*5*	*5*	*0*	*0*	*0*	*89*
Germany	2 547	*1 060*	*0*	*1 487*	*0*	*12 928*
Estonia	200	140	0	60	0	0
Ireland	0	0	0	0	0	0
Greece	*0*	*0*	*0*	*0*	*0*	*0*
Spain	1 746	90	0	*1 624*	*31*	5 750
France	1 641	*433*	*96*	*1 025*	*86*	83
Italy	376	260	117	0	0	213
Cyprus	0	0	0	0	0	0
Latvia	0	0	0	0	0	0
Lithuania	0	0	0	0	0	0
Luxembourg	0	0	0	0	0	0
Hungary	0	0	0	0	0	18
Malta	0	0	0	0	0	0
Netherlands	72	72	0	0	0	0
Austria	1 817	303	0	1 235	280	2 002
Poland	1 060	*20*	*214*	826	0	105
Portugal	2 182	0	0	2 182	0	354
Romania	*15*	*0*	*5*	10	0	0
Slovenia	172	*164*	*8*	0	0	94
Slovakia	689	0	112	576	0	0
Finland	8 732	*2 881*	*333*	5 518	0	1
Sweden	11 668	3 322	279	*7 873*	*194*	270
United Kingdom	271	271	0	0	0	3 246
Liechtenstein	0	0	0	0	0	0
Norway	1 822	1 072	0	*600*	*150*	0
Switzerland	132	132	0	0	0	700
Montenegro	0	:	0	:	0	0
Croatia	84	47	37	0	0	0
FYR of Macedonia	0	*0*	*0*	*0*	*0*	0
Turkey	56	0	56	0	0	53

Source: Eurostat (for_pp)

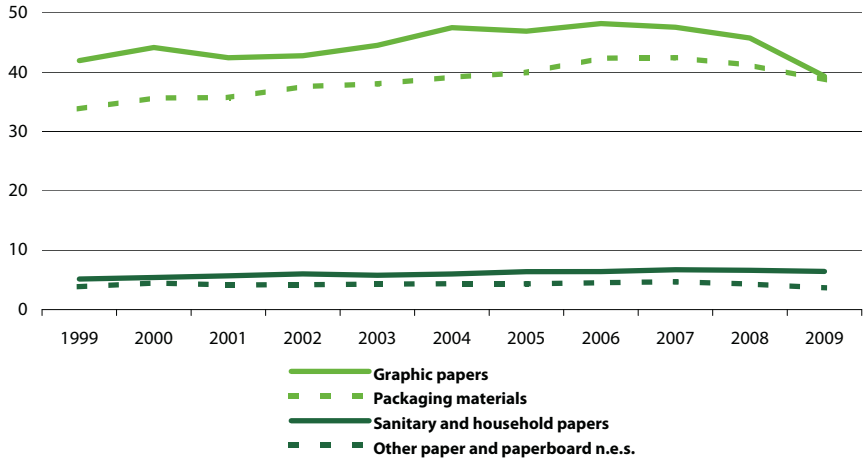
The production of paper and paperboard is closely linked to the general macro-economic situation, for example, the demand for packaging materials and print advertising from a wide range of industrial and service sector clients.

Overall production of paper and paperboard grew at a steady pace within the EU to peak in 2006 at 101.5 million tonnes and remained almost unchanged in 2007. However, with the onset of the financial and economic crisis, there was a 3.5 % decline in production in 2008, and this development accelerated in 2009 with a further loss of 10.0 %. By 2009 production had decreased to 88.1 million tonnes – a level not seen since 2001.

Paper and paperboard can be broken down into four main sub-categories. Among these, the highest level of EU production (in quantity terms) was recorded for graphic papers (composed of newsprint, printing and writing papers, see Table 3.6) and for packaging materials (case materials, carton, wrapping papers, see Table 3.7), at 39.3 million tonnes and 38.7 million tonnes respectively in 2009. The output of sanitary and household papers (6.4 million tonnes) and that of other paper and paperboard (3.7 million tonnes) was considerably lower. The downturn in EU production of graphic papers (-14.1 %) was particularly marked between 2008 and 2009, with output falling 2.3 times as fast as the decline recorded for packaging materials.

Germany was the largest producer of paper and paperboard in 2009, accounting for 23.7 % of the EU's output. Looking in more detail, the vast majority of the EU's production of newsprint was centred in Sweden, Germany, the United Kingdom and France, while the production of printing and writing papers was concentrated in Germany and Finland. Among the diverse range of packaging materials produced within the EU, Germany and France were specialised in the production of case materials, Germany, Finland and Sweden in the production of cartonboard, and Sweden in the production of wrapping papers.

Figure 3.4: Production of paper and paperboard in the EU-27 (1)
(million tonnes)



(1) Estimates.
Source: Eurostat (for_pp)

Table 3.6: Production of paper and paperboard; graphic papers; sanitary and household papers in the EU, EFTA and candidate countries, 2009
(1 000 tonnes)

	Paper & paper-board total	Graphic papers						Sanitary & house-hold papers
		Total	News-print	Printing & writing papers				
				Total	Uncoated mech-anical	Uncoated wood-free	Coated	
EU-27	*88 134*	*39 320*	*8 440*	*30 880*	*6 717*	*8 518*	*15 645*	*6 431*
EA-17	*67 071*	*30 906*	*4 685*	*26 221*	*5 302*	*6 500*	*14 419*	*4 941*
Belgium	1 990	1 450	*250*	*1 200*	*150*	*50*	*1 000*	*100*
Bulgaria	318	3	0	3	0	3	0	23
Czech Republic	*932*	*220*	*53*	*167*	*48*	*111*	*8*	*20*
Denmark	419	*158*	*2*	*156*	*1*	*151*	*4*	*0*
Germany	20 902	9 291	2 126	7 165	1 754	1 624	3 787	*1 368*
Estonia	62	0	0	0	0	0	0	0
Ireland	45	0	0	0	0	0	0	0
Greece	522	*0*	*0*	*0*	*0*	*0*	*0*	*68*
Spain	5 700	1 678	*323*	*1 355*	*764*	*0*	*591*	696
France	8 332	3 290	873	*2 417*	*124*	*900*	*1 393*	733
Italy	8 404	2 846	211	2 635	96	495	2 044	1 319
Cyprus	0	0	0	0	0	0	0	0
Latvia	*45*	*1*	*0*	*1*	*0*	*1*	*0*	*0*
Lithuania	86	0	0	0	0	0	0	15
Luxembourg	12	0	0	0	0	0	0	*11*
Hungary	461	19	*0*	*19*	1	*18*	*0*	6
Malta	0	0	0	0	0	0	0	0
Netherlands	2 609	926	273	653	15	208	430	120
Austria	4 606	2 548	299	2 248	678	449	1 122	126
Poland	3 275	1 075	*166*	*908*	*177*	705	*26*	333
Portugal	1 634	1 088	0	1 088	0	1 088	0	76
Romania	*238*	41	*25*	*16*	0	*16*	0	*20*
Slovenia	732	393	*119*	*274*	0	*80*	194	*41*
Slovakia	921	539	0	539	0	539	0	139
Finland	10 602	6 856	*210*	*6 646*	*1 721*	*1 067*	*3 858*	*143*
Sweden	10 996	5 289	2 405	*2 884*	*1 187*	*793*	904	338
United Kingdom	4 293	1 609	1 104	*505*	*1*	*220*	*284*	736
Liechtenstein	0	0	0	0	0	0	0	0
Norway	1 577	1 173	436	737	583	42	112	17
Switzerland	1 524	935	244	691	94	123	474	66
Montenegro	227	0	0	:	0	0	0	227
Croatia	526	228	2	226	226	0	0	2
FYR of Macedonia	20	0	*0*	*0*	*0*	*0*	*0*	*0*
Turkey	4 442	461	*0*	*461*	*188*	*188*	*86*	*897*

Source: Eurostat (for_pp)

Table 3.7: Production of paper and paperboard; packaging materials; other paper and paperboard in the EU, EFTA and candidate countries, 2009
(1 000 tonnes)

	Paper & paper-board total	Packaging materials					Other paper & paper-board
		Total	Case materials	Carton-board	Wrapping papers	Other papers for packaging	
EU-27	*88 134*	*38 712*	*22 406*	*8 626*	*4 104*	*3 577*	*3 670*
EA-17	67 071	28 014	*17 077*	*5 377*	*2 266*	*3 294*	*3 211*
Belgium	1 990	370	*250*	*100*	*10*	*10*	*70*
Bulgaria	318	*292*	*74*	*28*	*190*	0	0
Czech Republic	*932*	*652*	*278*	*33*	*292*	*49*	*40*
Denmark	419	260	*211*	*41*	*6*	*3*	*1*
Germany	20 902	8 979	6 154	1 580	216	1 029	1 264
Estonia	62	62	0	0	60	2	0
Ireland	45	45	45	0	0	0	0
Greece	522	453	*152*	*3*	*148*	*150*	*0*
Spain	5 700	2 658	*2 144*	*282*	*78*	*154*	669
France	8 332	3 898	*3 014*	*403*	*216*	*265*	410
Italy	8 404	3 877	2 169	578	419	711	361
Cyprus	0	0	0	0	0	0	0
Latvia	*45*	*41*	*31*	*2*	*3*	*5*	*3*
Lithuania	86	71	71	0	0	0	0
Luxembourg	12	0	0	0	0	0	*1*
Hungary	461	436	349	0	85	2	0
Malta	0	0	0	0	0	0	0
Netherlands	2 609	1 563	760	103	51	649	0
Austria	4 606	1 798	1 046	487	251	14	134
Poland	3 275	1 822	*1 139*	*485*	*188*	*10*	*46*
Portugal	1 634	466	388	33	15	31	4
Romania	*238*	170	*58*	0	*26*	*87*	*7*
Slovenia	732	296	0	*189*	*77*	*30*	*3*
Slovakia	921	242	218	0	24	0	0
Finland	10 602	3 307	737	1 619	*701*	*250*	*296*
Sweden	10 996	5 252	1 892	2 376	984	0	117
United Kingdom	4 293	1 702	*1 227*	*283*	*64*	*128*	246
Liechtenstein	0	0	0	0	0	0	0
Norway	1 577	327	275	0	25	27	60
Switzerland	1 524	400	269	87	13	31	124
Montenegro	227	0	*0*	*0*	*0*	*0*	0
Croatia	526	280	145	109	20	6	16
FYR of Macedonia	20	20	10	0	10	0	*0*
Turkey	4 442	2 799	*834*	*308*	*0*	*1657*	*285*

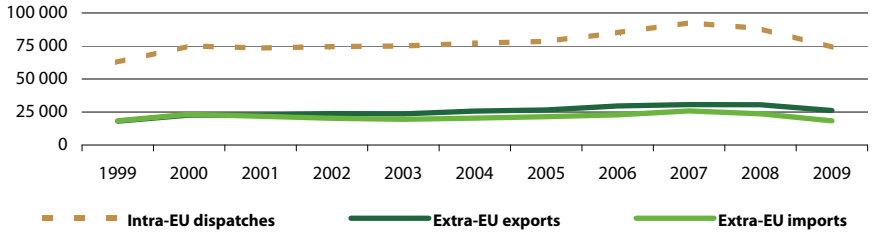
Source: Eurostat (for_pp)

Trade in wood products in the EU

The statistics in this section are based on the Standard International Trade Classification (SITC), which does not distinguish between furniture made of wood and that made of other materials; as such, furniture is excluded from the analysis. 'Dispatches' and 'arrivals' are terms used for trade between the EU Member States (intra-EU trade). Dispatches are used, as Eurostat considers these more reliable for a number of reasons, including: the application of thresholds; late or non-response by certain businesses; statistical confidentiality; misapplication of the rules and delays; different methods for calculating transactions. Tables 3.9 to 3.16 present data for extra-EU trade, which treats the EU as a single market.

The value of intra-EU dispatches of wood-based products between Member States was EUR 73 858 million in 2009; this was 2.8 times as high as the value of extra-EU exports. The EU recorded an extra-EU trade surplus of EUR 7 854 million for wood-based products in 2009.

Figure 3.5: Extra-EU and intra-EU trade of wood-based products for the EU-27 (1) (EUR million)



(1) Wood-based products defined as the sum of SITC Divisions 24, 25, 63 and 64.

Source: Eurostat (DS-018995)

Table 3.8: Extra-EU and intra-EU trade of wood-based products for the EU-27, 2009 (1)

	Value (EUR million)		Quantity (1 000 tonnes)	
	1999	2009	1999	2009
Intra-EU dispatches				
Wood-based products	62 692	73 858	126 446	133 268
Cork and wood	8 353	9 069	47 734	45 675
Pulp and waste paper	3 898	4 861	14 526	18 318
Cork and wood manufactures (excluding furniture)	10 485	13 404	16 290	16 162
Paper, paperboard and articles thereof	39 956	46 524	47 897	53 113
Extra-EU exports				
Wood-based products	18 078	26 145	28 929	50 339
Cork and wood	2 631	3 245	8 796	11 549
Pulp and waste paper	806	2 090	5 158	15 756
Cork and wood manufactures (excluding furniture)	2 925	4 505	2 681	5 703
Paper, paperboard and articles thereof	11 717	16 305	12 294	17 331
Extra-EU imports				
Wood-based products	18 374	18 291	47 255	42 485
Cork and wood	5 240	4 075	27 022	20 790
Pulp and waste paper	3 906	3 486	9 236	9 351
Cork and wood manufactures (excluding furniture)	3 485	4 080	3 719	4 531
Paper, paperboard and articles thereof	5 744	6 649	7 278	7 813

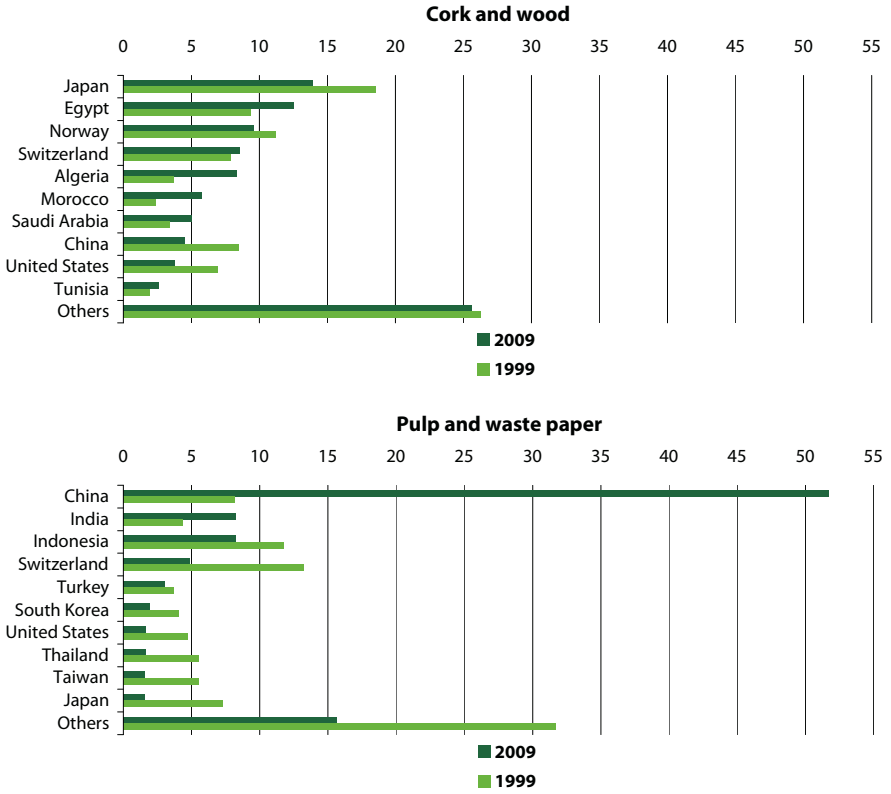
(1) Wood-based products defined as the sum of SITC Divisions 24, 25, 63 and 64.

Source: Eurostat (DS-018995)

The quantity of extra-EU exports of wood-based products rose by 74.0 % between 1999 and 2009. By far the most important product group was that of paper and paperboard and articles thereof, which recorded exports of 17.3 million tonnes, or EUR 16 305 million in 2009.

The EU's exports of wood-based products varied considerably as a function of the product category. China, Switzerland and the United States were the only countries to consistently feature among the EU's ten most important markets for exports across the four main categories of wood-based products – as covered by Figure 3.6. As such, wood-based products did not diverge from overall trade patterns, as China, Switzerland and the United States were the three most important destination markets for EU exports of all goods.

Figure 3.6a: Top ten trading partners, exports from the EU-27 (1)
(% share of EU-27 exports, based on export values)

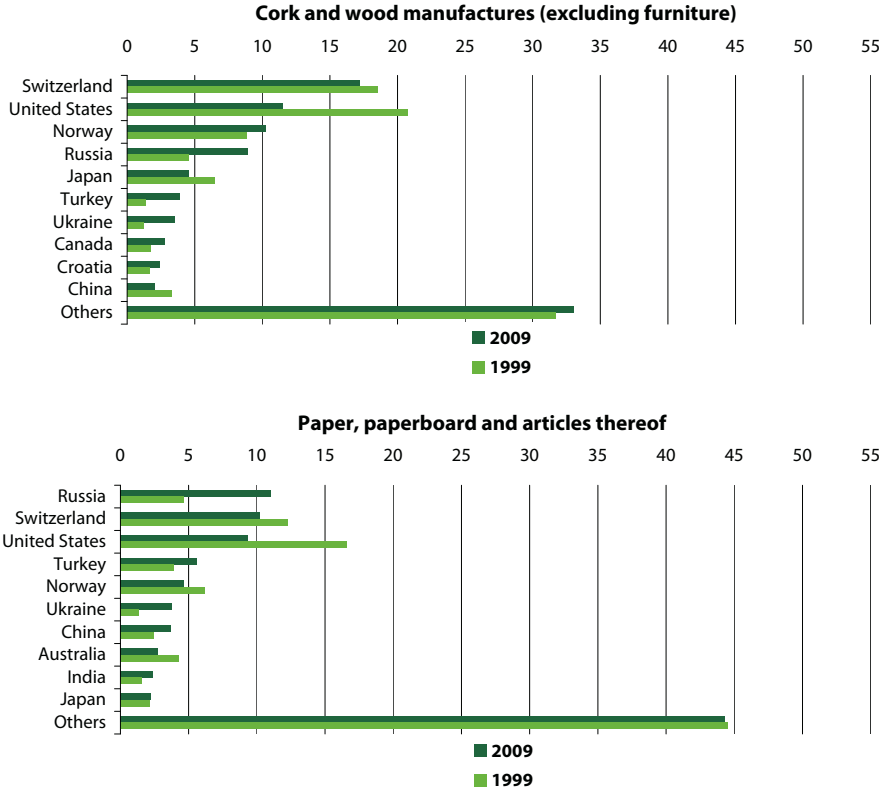


(1) Cork and wood, SITC Division 24; pulp and waste paper, SITC Division 25; the figure is based on the top ten partners for 2009.
Source: Eurostat (DS-018995)

China accounted for more than half (51.7 %) of the EU's exports of pulp and waste paper in 2009. Exports of pulp and waste paper from the EU to China rose by 1 553 % between 1999 and 2009; the growing number of waste paper shipments to China is largely attributed to a lack of domestic resources within the rapidly expanding Chinese economy. Indeed, most commentators agree that Chinese demand will continue to draw on imports of waste paper, even after new forests that have been planted in China reach maturity. In recent years, China invested in a number of large de-inking plants and paper mills.

Japan was the most important destination market (13.9 %) for EU exports of non-manufactured cork and wood. Switzerland, the United States, Russia and Norway were among the most important EU export markets for products manufactured from wood, paper and paperboard.

Figure 3.6b: Top ten trading partners, exports from the EU-27 (1)
(% share of EU-27 exports, based on export values)



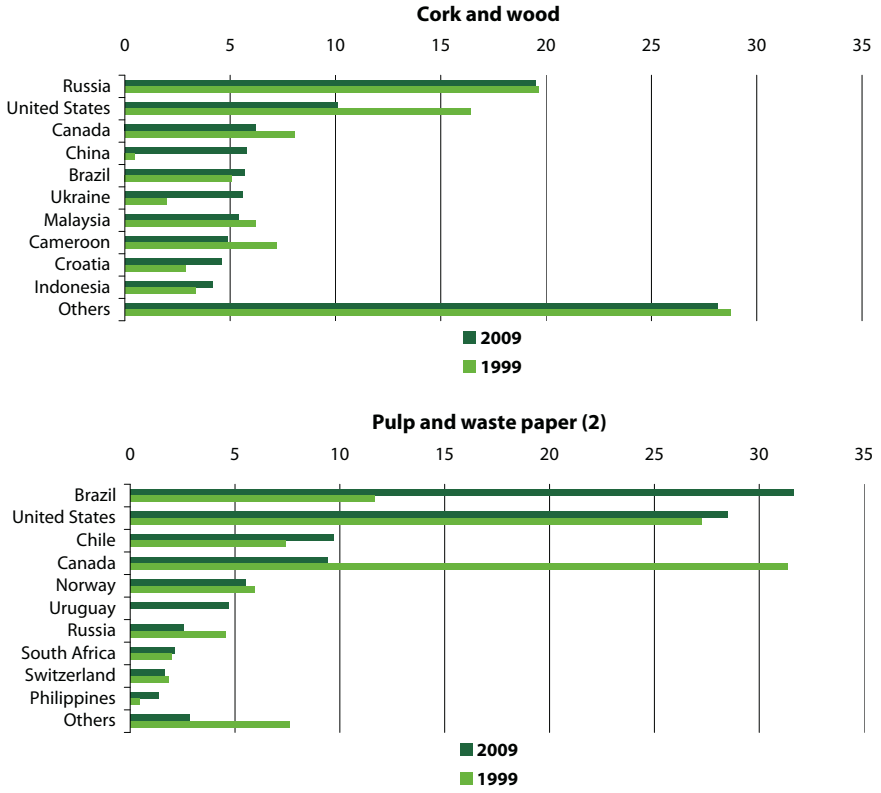
(1) Cork and wood manufactures (excluding furniture), SITC Division 63; paper, paperboard and articles thereof, SITC Division 64; the figure is based on the top ten partners for 2009.

Source: Eurostat (DS-018995)

Extra-EU imports of wood-based products were valued at EUR 18 291 million and 42.5 million tonnes in 2009. The largest share, in value terms, was accounted for by articles of paper and paperboard (36.4 %), while the remaining three categories in Table 3.8 each had shares of between 19 % and 22 %.

The most important partners for EU imports of non-manufactured wood-based materials (cork and wood, pulp and waste paper) included the United States, Canada, Brazil and Russia. Outside of these main trading partners, there were a number of countries that were relatively specialised in supplying cork and wood or pulp and waste paper – for example, Indonesia, Malaysia, the Philippines, Chile and Cameroon, the latter having signed a FLEGT Voluntary Partnership Agreement with the aim of exporting only legal timber.

Figure 3.7a: Top ten trading partners, imports into the EU-27 (1)
(% share of EU-27 imports, based on import values)



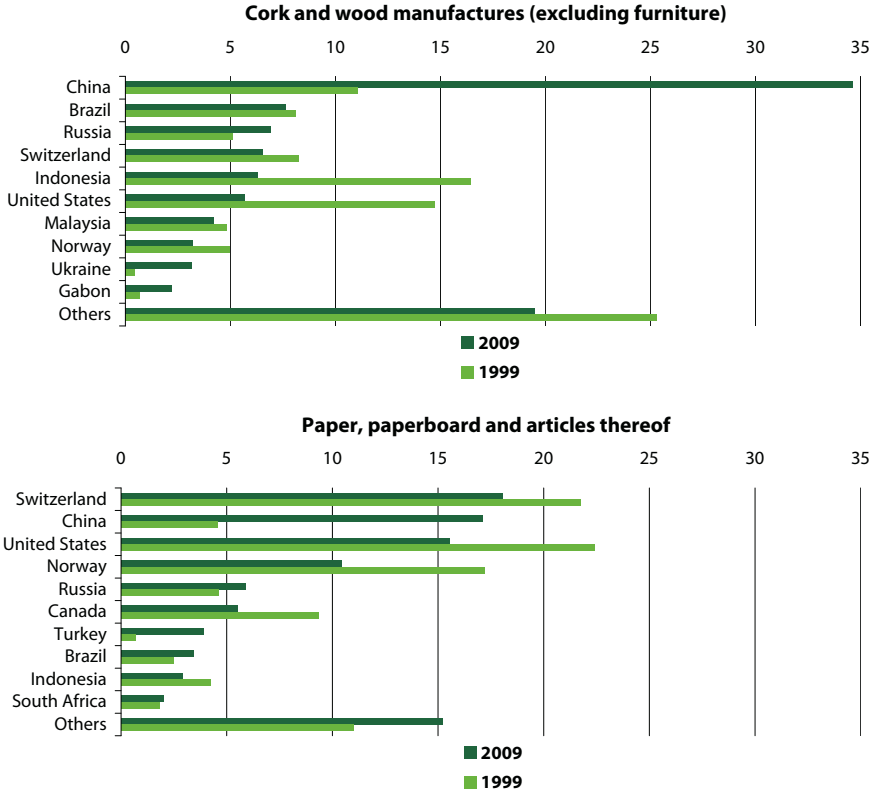
(1) Cork and wood, SITC Division 24; pulp and waste paper, SITC Division 25; the figure is based on the top ten partners for 2009.
(2) Uruguay, not available for 1999.

Source: Eurostat (DS-018995)

As of May 2011, eight tropical countries have signed or are about to sign a FLEGT agreement. The imports of wood and articles of wood from these countries made up 36 % in quantity and 35 % in value of all tropical wood imports (Chapter 44 of the Combined Nomenclature) to the EU in 2010.

There was a rapid expansion (142.6 %) in the value of EU imports of pulp and waste paper from Brazil between 1999 and 2009. A similar pattern was observed with respect to imports from China of downstream manufactured articles. China accounted for 34.6 % of the EU's imports of articles of cork and wood, and 17.1 % of the EU's imports of articles made from paper and paperboard. Between 1999 and 2009, the former grew overall (in value terms) by 265.7 %, while imports from China of articles made from paper and paperboard grew by 334.4 %.

Figure 3.7b: Top ten trading partners, imports into the EU-27 (1)
(% share of EU-27 imports, based on import values)



(1) Cork and wood manufactures (excluding furniture), SITC Division 63; paper, paperboard and articles thereof, SITC Division 64; the figure is based on the top ten partners for 2009.

Source: Eurostat (DS-018995)

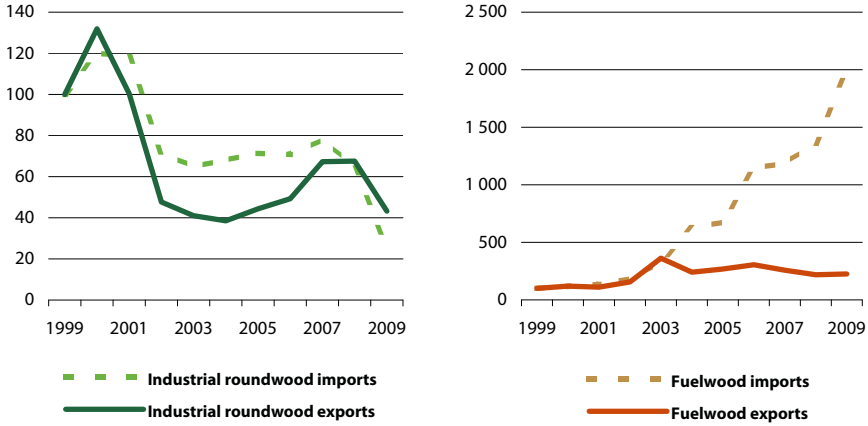
Detailed analysis of trade in wood products

The external trade data included in this section is based on a detailed list of products (aggregated from the Combined Nomenclature). Note that the extra detail available makes it possible to identify trade in wooden furniture in this analysis. Some of the data is presented in the form of indices, which focus on developments over time with respect to a base year (1999=100).

The EU is a net importer of basic wood products, with an extra-EU trade deficit for roundwood of 14.5 million m^3 in 2008. Despite the rapid growth of fuelwood imports into the EU (see Figure 3.8), the trade deficit for fuelwood was less than one million m^3 in 2009, which was four to five times less than the respective deficits posted for industrial roundwood, wood chips and particles, and wood residues and pellets.

Intra-EU trade accounted for a particularly high proportion of total trade among upstream, non-manufactured wood products, as intra-EU dispatches accounted for at least 90 % of exports in most EU Member States.

Figure 3.8: Extra-EU trade in value terms for the EU-27 (1999=100)



Source: Eurostat (COMEXT)

Table 3.9: Exports of roundwood and other basic wood products for the EU, EFTA and candidate countries, 2009
(1 000 m³)

	Roundwood						Wood chips & particles	Wood residues & pellets
	Total	Industrial roundwood				Fuel-wood		
		Total	Conifer-ous	Non-coniferous				
				Total	Tropical			
EU-27 (1)	3 807	*2 996*	*1 861*	*1 135*	*58*	*92*	*787*	*219*
Belgium	719	700	441	259	17	18	281	579
Bulgaria	278	205	92	113	:	73	48	26
Czech Republic	4 191	4 074	3 822	147	0	117	496	463
Denmark	1 075	1 021	480	541	39	53	143	32
Germany	4 336	4 205	3 121	1 084	8	131	4 466	505
Estonia	1 275	1 080	581	499	0	195	230	583
Ireland	285	281	271	10	0	5	11	45
Greece	115	113	111	1	0	2	0	17
Spain	868	807	208	599	1	61	18	177
France	*4 513*	*4 023*	*2 718*	*1 305*	*3*	*490*	*409*	*1 004*
Italy	27	27	18	8	2	1	3	10
Cyprus	0	0	0	0	0	0	0	0
Latvia	3 546	2 500	1 333	1 167	0	1 045	1 675	762
Lithuania	778	673	399	274	0	105	69	457
Luxembourg	298	298	261	37	0	0	176	184
Hungary	1 019	799	384	415	0	220	77	61
Malta	0	0	0	0	0	0	0	0
Netherlands	440	388	323	65	0	52	168	400
Austria	805	729	648	80	0	77	200	649
Poland	1 089	971	899	72	0	118	90	557
Portugal	617	602	20	582	2	14	47	575
Romania	*198*	141	42	99	0	57	26	196
Slovenia	767	507	306	201	0	260	178	336
Slovakia	2 686	2 538	*2 116*	*422*	*0*	*147*	90	153
Finland	539	534	505	29	0	6	309	143
Sweden	1 212	1 177	1 165	12	0	35	325	214
United Kingdom	410	345	341	4	0	65	186	73
Iceland (2)	0	0	0	0	0	0	0	0
Liechtenstein	8	7	6	1	0	1	0	0
Norway	873	868	843	25	2	5	104	*392*
Switzerland	979	954	575	379	0	25	402	720
Croatia	752	440	17	423	0	312	124	336
FYR of Macedonia	1	1	0	1	0	0	0	0
Turkey	2	2	1	1	0	0	0	1

(1) Extra-EU trade: roundwood, non-coniferous tropical roundwood and fuelwood, 2008.
(2) 2008.

Source: Eurostat (for_basic)

Table 3.10: Imports of roundwood and other basic wood products for the EU, EFTA and candidate countries, 2009
(1 000 m^3)

	Roundwood						Wood chips & particles	Wood residues & pellets
	Total	Industrial roundwood				Fuel-wood		
		Total	Conifer-ous	Non-coniferous				
				Total	Tropical			
EU-27 (1)	18 313	*8 116*	*3 956*	*4 160*	*732*	*994*	*4 713*	*4 656*
Belgium	3 099	3 031	1 424	1 606	27	68	475	3 729
Bulgaria	45	42	11	30	:	3	1	2
Czech Republic	1 575	1 553	1 758	137	14	22	158	86
Denmark	517	291	157	134	2	226	438	1 298
Germany	7 477	7 199	6 831	368	35	278	1 399	1 861
Estonia	285	264	167	97	0	21	28	94
Ireland	194	192	167	25	0	2	22	12
Greece	1 334	1 136	941	194	13	198	3	6
Spain	1 871	1 868	865	1 003	31	3	542	38
France	*1 486*	*1 453*	*1 085*	*369*	*161*	*32*	*378*	*604*
Italy	3 657	2 703	1 337	1 366	47	954	1 146	1 417
Cyprus	1	0	0	0	0	1	0	3
Latvia	127	120	51	69	0	6	8	19
Lithuania	208	163	97	67	0	44	225	212
Luxembourg	718	703	584	119	2	14	519	46
Hungary	305	218	152	67	0	86	74	96
Malta	0	0	0	0	0	0	0	18
Netherlands	261	229	207	22	7	32	298	1 772
Austria	8 600	8 036	6 924	1 112	0	564	1 173	792
Poland	1 889	1 874	751	1 123	1	15	130	275
Portugal	473	473	103	369	37	0	653	37
Romania	*395*	380	365	16	0	14	1	3
Slovenia	261	163	59	105	3	98	125	318
Slovakia	565	506	*204*	*302*	*16*	*59*	2	16
Finland	4 650	3 761	1 962	1 799	0	888	2 820	624
Sweden	4 712	4 175	2 020	2 155	1	537	1 500	1 587
United Kingdom	318	303	236	68	8	15	278	108
Iceland (2)	2	1	1	0	0	0	4	2
Liechtenstein	0	0	0	0	0	0	0	0
Norway	1 050	933	929	4	1	117	974	*251*
Switzerland	313	300	266	34	1	12	392	195
Croatia	11	7	6	1	0	4	2	95
FYR of Macedonia	125	83	16	67	0	42	0	0
Turkey	983	922	794	128	60	61	2 468	1

(1) Extra-EU trade: roundwood, non-coniferous tropical roundwood and fuelwood, 2008.
(2) 2008.

Source: Eurostat (for_basic)

Table 3.11: Intra-EU dispatches of roundwood for the EU (1 000 m³)

	Roundwood, 1999				Roundwood, 2009			
	Total	Industrial round-wood	Fuel-wood	Intra-EU share of total exports (%)	Total	Industrial round-wood	Fuel-wood	Intra-EU share of total exports (%)
Belgium	1 172	1 150	22	92.3	478	460	18	66.5
Bulgaria	141	115	27	62.3	178	121	57	63.9
Czech Republic	2 508	2 336	172	89.6	4 189	4 072	117	100.0
Denmark	143	142	1	49.3	838	785	53	78.0
Germany	3 578	3 532	46	77.8	3 633	3 507	*127*	83.8
Estonia	3 132	3 058	74	78.0	1 193	1 025	168	93.6
Ireland	176	176	1	100.0	285	280	5	99.9
Greece	232	3	229	99.9	115	112	2	99.9
Spain	323	260	63	83.4	817	760	57	94.1
France	*2 859*	*2 859*	:	*92.4*	*3 973*	*3 490*	*483*	*88.0*
Italy	5	5	0	34.8	20	20	0	72.9
Cyprus	0	0	*0*	:	0	0	0	:
Latvia	3 614	2 844	770	96.3	3 506	2 468	1 038	98.9
Lithuania	223	222	2	23.8	775	671	104	99.6
Luxembourg	290	290	0	99.5	298	298	0	100.0
Hungary	1 186	937	249	89.1	1 018	798	220	99.9
Malta	:	:	*0*	:	0	0	0	:
Netherlands	287	259	28	98.6	434	382	52	98.5
Austria	999	985	11	94.8	767	691	76	95.3
Poland	154	130	24	39.4	1 078	964	114	99.0
Portugal	555	541	14	99.6	550	536	14	89.2
Romania	600	599	1	99.4	*96*	*38*	57	48.2
Slovenia	170	111	59	72.6	751	491	260	98.0
Slovakia	884	852	32	71.8	2 683	2 536	*147*	99.9
Finland	526	519	7	68.5	424	424	0	78.5
Sweden	96	93	3	7.2	508	501	6	41.9
United Kingdom	162	30	133	97.6	377	312	65	91.9

Source: Eurostat (for_basic)

EU external trade for sawnwood and wood-based panels saw exports grow steadily up to 2007 before tailing off in the face of the global financial and economic crisis, while imports remained below their 1999 level for practically the whole of the period under consideration.

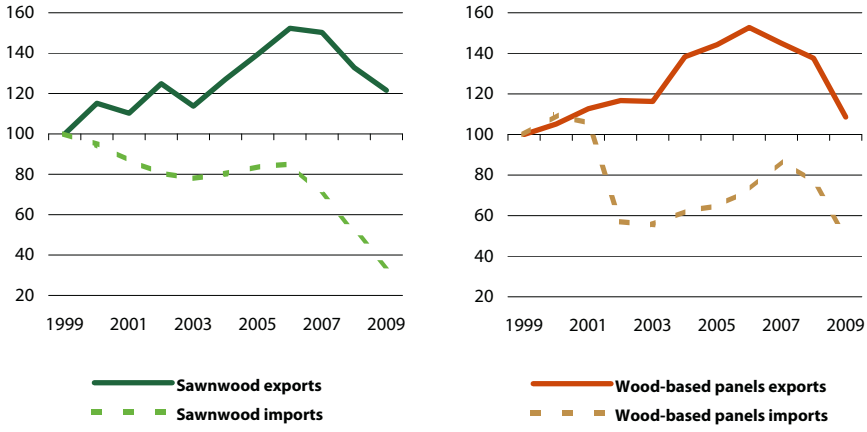
As a result, the EU's trade balance for sawnwood switched from a considerable deficit in 1999 to a modest trade surplus by 2009. A deficit was also recorded at the start of the period for wood-based panels (between 1999 and 2001), before relatively small surpluses were recorded thereafter (punctuated by a deficit in 2007 that was driven by a rapid increase in wood-based panel imports that year).

The EU recorded a trade surplus for the majority of sawnwood and wood-based panel products in 2009. This was particularly true for sawnwood, particle board and fibreboard, whereas trade deficits were recorded for veneer sheets, and in particular, plywood.

Sweden was the largest exporter of sawnwood (12.3 million m^3 in 2009) among the EU Member States; Germany, Austria and Finland were the next largest exporters. Germany and Austria were also among the leading exporters of wood-based panels, and were joined by Spain and Belgium.

Intra-EU trade generally accounted for the majority of the wood-based panel exports made by each of the Member States in 2009. Extra-EU trade relations were rather limited and the EU's main trading partners tended to be found around the perimeter of the EU (for example, Turkey or the Ukraine). In turn, the EU Member States with the lowest shares of intra-EU trade in total exports tended to be those on the periphery (for example, Greece, Romania and Slovenia).

Figure 3.9: Extra-EU trade in value terms for the EU-27 (1999=100)



Source: Eurostat (COMEXT)

Table 3.12: Exports of sawnwood and panels for the EU, EFTA and candidate countries, 2009 (1 000 m³)

	Sawn-wood total	Wood-based panels							
		Total	Veneer sheets	Ply-wood	Particle board		Fibreboard		
					Total	OSB	Total	Hard-board	MDF
EU-27 (1)	*14 262*	*7 353*	*181*	*476*	*3 650*	*726*	*3 047*	*755*	*2 090*
Belgium	1 639	2 078	19	379	1 210	175	470	95	370
Bulgaria	195	721	11	24	577	133	110	82	28
Czech Republic	1 871	941	25	93	*717*	*324*	106	*7*	*57*
Denmark	928	186	23	89	54	1	20	5	7
Germany	9 810	6 496	109	256	4 063	577	2 069	*786*	*1 202*
Estonia	598	196	19	39	104	0	35	2	2
Ireland	564	580	0	1	186	169	393	9	384
Greece	229	620	111	34	423	2	53	1	51
Spain	111	2 082	39	122	760	4	1 160	45	973
France	*815*	*1 972*	*14*	*174*	*1 244*	*115*	*540*	*145*	*344*
Italy	194	798	30	148	279	29	341	10	312
Cyprus	0	0	0	0	0	0	0	0	0
Latvia	1 613	664	5	165	491	335	3	1	1
Lithuania	429	217	54	7	93	8	63	24	8
Luxembourg	84	449	0	1	211	211	237	53	184
Hungary	161	339	20	25	186	3	108	26	82
Malta	0	0	0	0	0	0	0	0	0
Netherlands	292	301	6	49	151	6	95	2	90
Austria	5 799	2 569	23	278	1 701	7	567	67	496
Poland	417	1 898	18	117	567	237	1 197	286	434
Portugal	235	707	25	40	279	1	364	13	301
Romania	*2 259*	*1 100*	35	40	545	55	479	78	395
Slovenia	1 069	293	20	78	92	1	103	8	94
Slovakia	405	477	4	14	324	2	134	0	68
Finland	5 109	818	44	683	49	0	43	33	2
Sweden	12 271	282	30	48	70	1	134	13	116
United Kingdom	203	451	3	66	246	139	136	18	112
Iceland (2)	1	0	0	0	0	*0*	0	0	0
Liechtenstein	0	0	0	0	0	0	0	0	0
Norway	463	187	0	1	141	0	45	6	24
Switzerland	469	6	2	2	:	0	:	:	:
Montenegro	52	1	0	0	1	0	0	0	0
Croatia	447	117	14	5	96	1	2	1	0
FYR of Macedonia	19	3	0	0	2	1	0	0	0
Turkey	39	783	18	21	254	5	491	23	456

(1) Extra-EU trade.
(2) 2008.

Source: Eurostat (for_swpan)

Table 3.13: Imports of sawnwood and panels for the EU, EFTA and candidate countries, 2009 (1 000 m^3)

	Sawn-wood total	Wood-based panels							
		Total	Veneer sheets	Ply-wood	Particle board		Fibreboard		
					Total	OSB	Total	Hard-board	MDF
EU-27 (1)	*8 034*	*5 924*	*886*	*3 553*	*868*	*48*	*617*	*151*	*341*
Belgium	2 315	1 545	28	530	390	105	597	160	425
Bulgaria	24	503	47	69	268	23	118	18	94
Czech Republic	614	609	23	58	*252*	*48*	276	*121*	*126*
Denmark	1 248	1 560	360	487	401	33	313	30	212
Germany	5 649	4 599	156	1 038	2 900	280	506	*161*	*270*
Estonia	499	130	3	51	31	15	46	30	12
Ireland	232	181	9	64	60	5	49	7	42
Greece	21 061	9 026	3 095	3 285	2 515	1 263	131	15	97
Spain	1 509	874	63	64	308	3	440	54	364
France	*3 143*	*2 043*	*79*	*416*	*657*	*64*	*892*	*155*	*611*
Italy	5 567	2 298	191	417	550	152	1 140	99	771
Cyprus	63	96	2	6	68	12	20	2	16
Latvia	113	123	52	33	27	3	11	3	6
Lithuania	209	372	15	21	202	44	134	35	59
Luxembourg	1 238	538	18	51	430	395	38	7	7
Hungary	524	402	9	40	271	53	83	40	37
Malta	16	32	0	8	12	0	11	2	6
Netherlands	2 575	1 495	34	457	573	48	431	68	284
Austria	1 776	699	42	116	402	127	140	32	89
Poland	651	1 494	33	120	979	237	363	156	202
Portugal	129	629	30	76	125	3	398	24	358
Romania	*50*	*631*	11	13	311	98	296	80	196
Slovenia	1 013	230	10	18	153	10	49	15	30
Slovakia	75	435	15	47	231	35	141	17	66
Finland	521	333	21	91	61	3	160	33	101
Sweden	357	867	16	144	439	75	268	101	130
United Kingdom	5 240	2 500	16	1 164	632	198	688	103	560
Iceland (2)	86	17	0	6	7	5	3	1	3
Liechtenstein	0	0	0	0	0	0	0	0	0
Norway	911	308	4	51	86	50	167	19	140
Switzerland	436	323	5	53	:	65	:	:	:
Montenegro	4	27	0	2	16	1	9	0	5
Croatia	258	230	6	22	146	27	56	21	0
FYR of Macedonia	218	81	0	2	60	4	19	8	4
Turkey	457	690	22	128	244	154	297	125	172

(1) Extra-EU trade.
(2) 2008.

Source: Eurostat (for_swpan)

Table 3.14: Intra-EU dispatches of sawnwood and wood-based panels for the EU

	1999				2009			
	Sawn-wood	Wood-based panels	Sawn-wood	Wood-based panels	Sawn-wood	Wood-based panels	Sawn-wood	Wood-based panels
	(1 000 m³)		Intra-EU trade, share of total exports (%)		(1 000 m³)		Intra-EU trade, share of total exports (%)	
Belgium	983	2 448	98.4	89.7	1 471	1 886	89.8	90.8
Bulgaria	127	110	46.0	64.9	133	178	68.3	24.7
Czech Republic	1 329	291	86.1	46.7	1 385	733	74.0	77.9
Denmark	131	160	74.9	77.3	752	83	81.1	44.8
Germany	1 969	1 875	82.6	62.1	8 012	5 008	81.7	77.1
Estonia	687	288	76.4	75.5	441	155	73.7	79.1
Ireland	234	465	99.9	90.1	563	542	100.0	93.5
Greece	:	25	:	:	101	157	44.1	25.3
Spain	28	206	35.7	25.1	78	1 411	70.1	67.8
France	1 064	2 094	85.3	90.4	536	1 865	65.8	94.6
Italy	62	468	29.4	53.5	86	409	44.5	51.2
Cyprus	8	:	97.6	:	0	0	:	:
Latvia	2 582	153	91.6	60.0	1 206	501	74.8	75.5
Lithuania	640	47	89.0	33.9	385	149	89.6	68.9
Luxembourg	50	95	99.9	67.7	83	448	99.4	99.8
Hungary	265	56	87.5	23.1	151	224	93.4	66.2
Malta	:	:	:	:	0	0	:	:
Netherlands	376	268	88.1	93.1	281	284	96.3	94.3
Austria	4 473	1 274	75.9	75.3	4 896	1 938	84.4	75.5
Poland	865	:	84.0	:	407	1 239	97.6	65.3
Portugal	296	615	87.5	91.6	200	465	85.1	65.8
Romania	1 911	80	99.7	80.2	233	430	10.3	39.1
Slovenia	:	:	:	:	102	172	9.6	58.7
Slovakia	352	100	33.2	57.1	392	352	96.7	73.8
Finland	5 513	1 089	66.5	85.4	2 489	685	48.7	83.7
Sweden	8 283	285	74.7	58.5	8 465	169	69.0	60.1
United Kingdom	147	367	96.5	95.8	190	395	93.7	87.5

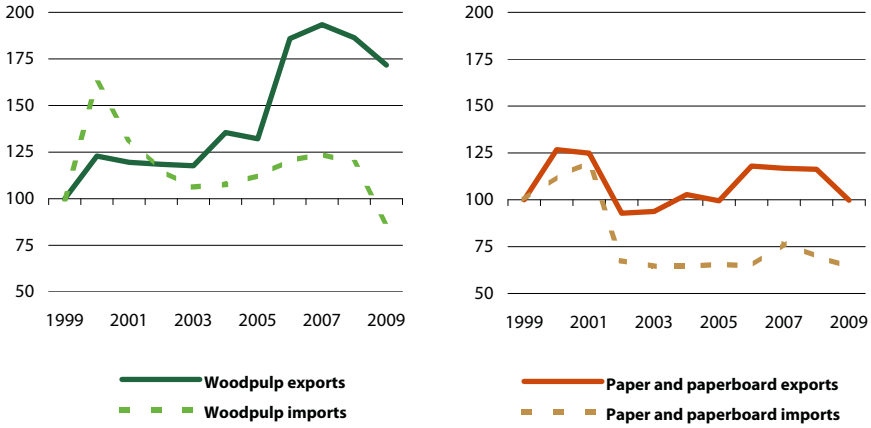
Source: Eurostat (for_swpan)

The development of EU external trade in pulp, paper and paperboard followed the general economic cycle, with a peak in 2000/2001, followed by two or three years of relatively depressed activity, renewed growth through to 2007 and then a downward movement associated with the global financial and economic crisis. Demand for pulp and paper products tends to be cyclical, being linked to advertising/marketing activity and to the demand for packaging materials.

The EU ran a trade deficit for woodpulp and a trade surplus for paper and paperboard throughout the last decade. The deficit for woodpulp fluctuated with overall economic activity, widening during periods of economic growth and contracting when economic growth slowed; it stood at 6.4 million tonnes in 2008. The EU trade surplus for paper and paperboard also fluctuated with global economic fortunes, with an increase in the surplus during times of economic growth; the trade balance for paper and paperboard stood at 7.4 million tonnes in 2009. The surplus for paper and paperboard products was largely due to printing and writing papers and packaging materials.

Sweden, Finland, Portugal and Germany were the leading exporters of woodpulp among the EU Member States in 2009, with each of these countries reporting in excess of one million tonnes of exports (to intra- and extra-EU partners). Germany had the highest quantity of exports for paper and paperboard in 2009, at 12.3 million tonnes, while Sweden and Finland each exported in excess of 9 million tonnes of paper and paperboard.

Figure 3.10: Extra-EU trade in value terms for the EU-27 (1999=100)



Source: Eurostat (COMEXT)

Table 3.15: Exports of pulp, paper and paperboard for the EU, EFTA and candidate countries, 2009
(1 000 tonnes)

	Wood-pulp	Other pulp	Paper & paperboard				
			Total	Newsprint	Printing & writing	Sanitary & house-hold	Packaging
EU-27 (1)	*2 007*	82	*17 330*	1 368	*8 396*	609	*6 651*
Belgium	30	6	3 071	369	1 523	17	1 099
Bulgaria (2)	68	0	51	5	3	7	36
Czech Republic	416	9	759	1	122	3	598
Denmark	13	0	239	4	138	0	94
Germany	1 049	106	12 295	765	5 795	85	5 379
Estonia	134	1	87	0	16	0	71
Ireland	0	0	45	0	6	0	37
Greece	1	0	82	3	8	19	51
Spain	874	16	2 836	353	936	73	1 408
France	403	*65*	4 004	557	1 719	77	1 639
Italy (3)	28	0	3 147	18	1 347	632	1 102
Cyprus	0	0	0	0	0	0	0
Latvia	0	0	30	2	5	1	19
Lithuania	16	0	76	0	9	3	63
Luxembourg	0	0	21	0	6	12	2
Hungary	0	16	453	1	5	2	445
Malta	0	0	0	0	0	0	0
Netherlands	561	17	2 007	272	880	22	823
Austria	300	9	3 799	200	2 352	8	1 239
Poland	22	2	1 582	12	544	27	996
Portugal	1 149	7	1 360	4	1 041	5	309
Romania	*0*	*0*	*90*	2	8	25	55
Slovenia	0	0	544	118	242	1	184
Slovakia	137	0	780	0	524	13	243
Finland	1 458	1	9 644	79	6 733	38	2 698
Sweden	3 332	0	9 867	1 641	3 038	128	5 041
United Kingdom	16	6	896	258	157	10	340
Iceland (4)	0	0	0	0	0	0	0
Liechtenstein	0	0	0	0	0	0	0
Norway	538	0	1 296	391	546	5	354
Switzerland	24	37	768	185	220	24	333
Montenegro	0	0	0	*0*	*0*	*0*	0
Croatia	46	0	139	0	1	0	134
FYR of Macedonia	0	0	8	0	2	0	5
Turkey	1	0	230	0	21	60	143

(1) Extra-EU trade: woodpulp and other pulp, 2008.
(2) Woodpulp and other pulp, 2008.
(3) Other pulp, 2008.
(4) 2008.

Source: Eurostat (for_pp)

Table 3.16: Imports of pulp, paper and paperboard for the EU, EFTA and candidate countries, 2009
(1 000 tonnes)

	Wood-pulp	Other pulp	Paper & paperboard				
			Total	Newsprint	Printing & writing	Sanitary & house-hold	Packaging
EU-27 (1)	8 400	:	*9 904*	1 874	3 525	*226*	*4 151*
Belgium	783	9	3 710	250	1 680	34	1 695
Bulgaria (2)	14	0	256	46	78	15	115
Czech Republic	172	3	1 206	113	447	12	627
Denmark	66	8	981	219	337	2	414
Germany	4 543	46	9 742	1 020	4 416	173	3 960
Estonia	0	0	120	8	70	3	36
Ireland	32	0	379	83	110	25	138
Greece	132	1	722	118	306	27	266
Spain	923	3	3 878	281	1 345	67	2 108
France	*1 259*	*55*	5 033	375	2 729	105	1 788
Italy (3)	3 001	7	4 578	490	1 740	68	2 216
Cyprus	0	0	67	11	26	9	20
Latvia	0	0	109	13	38	2	56
Lithuania	19	0	148	12	62	0	71
Luxembourg	0	0	168	12	87	1	66
Hungary	91	1	697	99	256	60	279
Malta	0	0	24	3	14	2	5
Netherlands	921	76	2 923	313	1 252	27	1 264
Austria	609	21	1 145	109	510	13	496
Poland	648	13	2 714	98	969	51	1 579
Portugal	92	0	804	90	239	32	436
Romania	*67*	*4*	*468*	69	193	13	184
Slovenia	222	0	225	9	114	2	99
Slovakia	156	0	372	27	172	9	148
Finland	351	2	408	76	87	4	238
Sweden	365	10	866	34	346	4	473
United Kingdom	912	28	7 018	1 208	3 358	338	1 963
Iceland (4)	4	45	33	8	14	1	9
Liechtenstein	0	0	0	0	0	0	0
Norway	58	1	432	73	217	2	135
Switzerland	445	9	875	119	422	7	320
Montenegro	0	0	7	*3*	*2*	*0*	1
Croatia (3)	0	1	236	51	107	4	68
FYR of Macedonia (3)	1	0	62	6	18	3	29
Turkey (3)	618	2	2 170	549	541	9	1 031

(1) Extra-EU trade: woodpulp, 2008.
(2) Woodpulp and other pulp, 2008.
(3) Other pulp, 2008.
(4) 2008.

Source: Eurostat (for_pp)

Table 3.17: Intra-EU dispatches of woodpulp, paper and paperboard for the EU (1 000 m³)

	1999				2009			
	Wood-pulp	Paper & paper-board	Wood-pulp	Paper & paper-board	Wood-pulp	Paper & paper-board	Wood-pulp	Paper & paper-board
	(1 000 tonnes)		Intra-EU trade, share of total exports (%)		(1 000 tonnes)		Intra-EU trade, share of total exports (%)	
Belgium	437	2 071	95.4	90.6	14	2 332	47.4	75.9
Bulgaria	39	2	65.9	5.9	:	16	:	31.7
Czech Republic	155	176	60.1	37.8	359	638	86.2	84.1
Denmark	1	209	100.0	82.3	13	224	99.2	93.8
Germany	214	5 426	64.7	67.8	754	9 686	71.9	78.8
Estonia	0	16	:	31.1	76	33	57.1	37.3
Ireland	1	62	68.0	93.7	0	44	100.0	97.4
Greece	1	8	94.9	18.4	0	51	25.4	62.6
Spain	585	901	90.4	70.4	779	1 995	89.1	70.3
France	323	3 774	84.1	81.6	330	3 308	82.0	82.6
Italy	6	1 141	33.3	55.5	4	929	12.9	29.5
Cyprus	0	1	:	45.2	0	0	:	100.0
Latvia	:	:	:	:	0	25	100.0	84.4
Lithuania	4	:	98.5	:	16	30	100.0	39.8
Luxembourg	0	21	:	84.1	0	19	:	94.8
Hungary	0	138	100.0	59.2	0	373	:	82.5
Malta	0	:	:	:	0	0	:	100.0
Netherlands	341	2 135	96.9	82.6	387	1 386	69.0	69.0
Austria	260	2 314	67.4	71.0	270	2 833	90.0	74.6
Poland	35	319	87.3	50.2	21	1 201	97.5	75.9
Portugal	984	620	85.9	90.6	860	933	74.9	68.6
Romania	9	65	92.5	78.5	0	78	:	86.6
Slovenia	40	55	73.8	14.8	0	312	80.0	57.3
Slovakia	90	:	70.9	:	122	682	88.6	87.4
Finland	1 546	7 796	82.1	69.6	905	5 276	62.1	54.7
Sweden	2 307	6 835	77.7	77.6	2 514	7 429	75.5	75.3
United Kingdom	5	1 372	17.5	77.1	13	601	79.7	67.1

Source: Eurostat (for_swpan)

Tables 3.18 to 3.21 cover external trade for a number of downstream, secondary wood and paper products. The main secondary wood products (in value terms) include wooden furniture and builder's joinery and carpentry, while the highest levels of trade among secondary paper products were recorded for printed articles, household and sanitary paper, and packaging cartons and boxes.

Table 3.18: Exports of secondary wood products for the EU, EFTA and candidate countries, 2009
(EUR million)

	Secondary wood products						
	Total	Further processed sawnwood	Wrapping & packing equip.	Domestic/ decorative use	Builder's joinery & carpentry	Furniture	Pre-fabricated buildings
Belgium	1 178	55	105	51	116	729	71
Bulgaria	91	6	8	2	4	69	1
Czech Republic	691	61	120	13	148	271	33
Denmark	1 534	16	18	12	393	1 053	9
Germany	5 271	177	169	71	763	3 691	112
Estonia	456	35	21	4	137	154	91
Ireland	45	0	5	1	13	24	2
Greece	35	0	3	1	5	23	0
Spain	843	47	69	23	117	526	5
France	1 561	39	304	41	115	989	8
Italy	3 300	116	70	57	294	2 645	19
Cyprus	5	0	0	0	1	3	0
Latvia	323	24	53	2	97	116	11
Lithuania	593	12	40	6	95	387	37
Luxembourg	23	5	7	0	4	6	0
Hungary	421	14	35	0	112	237	12
Malta	5	0	0	0	1	4	0
Netherlands	732	39	60	37	94	389	45
Austria	1 564	97	30	13	840	498	38
Poland	3 851	134	199	47	486	2 664	29
Portugal	402	13	24	1	81	278	2
Romania	755	17	20	17	52	564	24
Slovenia	306	7	7	4	61	183	15
Slovakia	648	25	32	5	109	452	5
Finland	421	33	10	1	179	72	121
Sweden	134	5	3	2	26	86	8
United Kingdom	457	18	23	18	52	311	15
Iceland (1)	:	0	0	:	0	0	:
Norway	259	3	3	1	71	171	5
Switzerland	289	5	7	21	58	167	17
Croatia	179	29	5	0	26	86	0
FYR of Macedonia	17	0	1	0	1	14	0
Turkey	629	16	20	3	70	370	1

(1) 2008.

Source: Eurostat (for_secwp)

Poland and Italy recorded by far the largest trade surpluses for secondary wood products in 2009, at EUR 3 394 million and EUR 1 986 million respectively. Indeed, the Italian surplus was 3.5 times as high as the next largest surplus that was recorded in Denmark. In each of these three Member States (Poland, Italy and Denmark), wooden furniture accounted for the vast majority of the trade surplus. At the other end of the range, France (EUR -2 554 million) and the United Kingdom (EUR -3 234 million) recorded the largest trade deficits, largely as a result of considerable imports of wooden furniture.

Table 3.19: Imports of secondary wood products for the EU, EFTA and candidate countries, 2009
(EUR million)

	Secondary wood products						
	Total	Further processed sawnwood	Wrapping & packing equip.	Domestic/ decorative use	Builder's joinery & carpentry	Furniture	Pre-fabricated buildings
Belgium	1 777	92	129	58	197	1 182	15
Bulgaria	95	5	6	1	14	64	0
Czech Republic	507	46	26	12	80	314	7
Denmark	969	20	37	21	288	530	11
Germany	5 060	166	256	188	530	3 327	85
Estonia	56	5	6	2	12	27	1
Ireland	302	16	12	21	68	177	5
Greece	429	24	15	14	40	315	4
Spain	1 181	53	70	65	175	725	10
France	4 116	162	199	116	379	2 878	81
Italy	1 314	170	90	58	405	414	38
Cyprus	106	2	0	2	11	85	1
Latvia	85	3	5	2	20	52	1
Lithuania	71	7	6	2	17	35	1
Luxembourg	229	10	9	3	53	138	8
Hungary	214	14	23	6	35	118	2
Malta	38	0	1	1	2	33	0
Netherlands	1 641	108	77	63	185	1 068	22
Austria	1 512	64	66	28	217	1 007	31
Poland	457	39	34	15	80	255	2
Portugal	256	12	12	6	41	178	6
Romania	224	17	16	4	56	118	1
Slovenia	141	11	9	1	27	79	0
Slovakia	230	17	25	3	39	134	3
Finland	336	14	11	11	45	218	25
Sweden	85	2	2	3	15	58	1
United Kingdom	3 691	152	100	113	486	2 602	38
Iceland (1)	:	3	1	:	1	1	:
Norway	1 051	48	31	17	255	544	115
Switzerland	1 791	65	53	58	372	1 118	161
Croatia	105	14	9	3	43	16	4
FYR of Macedonia	25	4	1	0	4	15	0
Turkey	213	6	3	9	24	144	0

(1) 2008.

Source: Eurostat (for_secwp)

Germany was the leading exporter (EUR 10 844 million) of secondary paper products among the EU Member States, and also recorded the highest trade surplus (EUR 6 104 million) for these products in 2009. There was also a relatively high trade surplus in Italy (EUR 2 202 million). Trade deficits for secondary paper products were registered in 12 of the Member States, with the largest being recorded in France (EUR -1 649 million).

Table 3.20: Exports of secondary paper products for the EU, EFTA and candidate countries, 2009
(EUR million)

	Secondary paper products							
	Total	Compo-site papers & board	Special coated papers	Carbon & copying papers	House-hold & sanitary papers	Pack-aging cartons & boxes	Printed articles	Other
Belgium	2 759	3	206	35	681	474	1 028	511
Bulgaria	41	0	0	0	7	15	10	6
Czech Republic	1 510	1	26	1	363	201	900	620
Denmark	690	0	46	0	154	182	213	92
Germany	10 844	63	1 190	35	2 055	2 106	3 965	2 099
Estonia	97	0	1	0	6	6	56	19
Ireland	*184*	0	0	0	5	43	123	56
Greece	171	0	7	0	27	19	100	27
Spain	2 020	16	286	41	357	304	760	157
France	3 544	17	454	4	694	415	1 537	502
Italy	3 647	15	124	2	816	744	1 222	615
Cyprus	10	0	0	0	3	1	5	0
Latvia	74	0	8	0	4	20	37	6
Lithuania	158	0	5	0	18	39	47	12
Luxembourg	343	0	286	0	1	2	42	13
Hungary	442	0	10	0	241	83	108	48
Malta	98	0	0	0	0	0	97	90
Netherlands	2 884	250	75	12	668	552	967	487
Austria	1 238	1	59	0	142	484	414	303
Poland	1 984	1	224	2	807	307	480	180
Portugal	268	2	17	0	62	88	55	15
Romania	92	1	1	0	20	21	30	21
Slovenia	259	0	23	1	75	30	109	59
Slovakia	552	0	2	1	299	47	167	68
Finland	*602*	*25*	*152*	*0*	*105*	*22*	171	*72*
Sweden	109	2	5	0	53	22	23	13
United Kingdom	4 257	13	289	6	367	296	2 719	404
Iceland (1)	2	0	0	0	0	1	0	0
Norway	122	0	1	0	9	24	50	23
Switzerland	1 570	18	103	0	116	216	513	603
Croatia	62	0	11	0	1	29	47	14
FYR of Macedonia	5	0	0	0	1	4	3	2
Turkey	143	*0*	*3*	*0*	*64*	*45*	15	*8*

(1) 2008.

Source: Eurostat (for_secpp)

Table 3.21: Imports of secondary paper products for the EU, EFTA and candidate countries, 2009
(EUR million)

	Secondary paper products							
	Total	Compo-site papers & board	Special coated papers	Carbon & copying papers	House-hold & sanitary papers	Pack-aging cartons & boxes	Printed articles	Other
Belgium	2 502	40	158	5	513	503	917	266
Bulgaria	158	1	15	0	44	30	29	12
Czech Republic	1 208	8	62	1	272	202	651	440
Denmark	1 051	5	113	5	234	184	398	221
Germany	4 740	47	412	6	1 046	791	1 750	790
Estonia	91	1	4	0	32	17	22	11
Ireland	732	1	3	3	108	140	394	77
Greece	606	3	37	4	225	92	173	55
Spain	1 766	13	207	15	383	339	555	147
France	5 193	16	408	14	1 052	1 122	1 861	718
Italy	1 445	15	147	21	250	246	545	221
Cyprus	93	0	2	0	24	9	46	6
Latvia	123	2	12	0	47	23	37	10
Lithuania	190	1	15	1	49	49	21	10
Luxembourg	266	0	67	0	34	32	104	19
Hungary	459	3	27	6	153	123	141	63
Malta	44	0	1	0	12	8	18	6
Netherlands	2 116	7	110	10	339	524	724	319
Austria	1 681	5	94	2	252	245	848	262
Poland	1 100	17	156	6	236	284	215	96
Portugal	553	4	42	3	214	57	163	39
Romania	490	1	25	2	106	125	135	65
Slovenia	190	1	15	1	61	38	48	25
Slovakia	*386*	3	*21*	2	86	109	104	35
Finland	*459*	*4*	*44*	*1*	*97*	*80*	179	*53*
Sweden	83	1	7	0	27	14	29	12
United Kingdom	4 091	37	269	30	671	588	1 808	633
Iceland (1)	50	0	2	0	13	14	15	4
Norway	919	5	23	1	273	120	378	173
Switzerland	2 768	8	93	2	305	366	1 282	712
Croatia	188	2	15	1	120	26	59	26
FYR of Macedonia	40	0	3	0	18	13	8	4
Turkey	160	*2*	*54*	*4*	*17*	*22*	58	*31*

(1) 2008.

Source: Eurostat (for_secpp)

Production of wood products in the world

Global roundwood production was 3 275 million m³ in 2009, which was 2.0 % less than a decade before. There was a 7.7 % reduction in the world's industrial roundwood production between 1999 and 2009, while the output of fuelwood increased by 3.0 % over the same period.

Asia accounted for the highest share (30.3 %) of the world's roundwood production in 2009, although its share was 0.7 points lower than in 1999. The relative importance of roundwood production in Africa and South America grew during the last decade.

The world's sawnwood production totalled 362 million m³ in 2009, which was 6.7 % lower than a decade before. Europe accounted for more than one third (35.2 %) of global output in 2009, while production in China and India doubled between 1999 and 2009 (albeit from relatively low levels).

The emergence of China as a global producer was more evident when studying the production of wood-based panels, as China's share of the world's output reached 36.3 % in 2009, some 27.7 points higher than a decade before; production (in volume terms) growing more than six-fold during the period under consideration.

Northern and Central America produced more than half (51.5 %) of the world's woodpulp in 1999; however, this region's share of global production fell to 40.2 % by 2009. In contrast, the relative contributions of Brazil and China doubled, such that they produced 8.4 % and 4.4 % of the world's woodpulp by 2009.

Table 3.22: Production of roundwood and fuelwood in the world (million m³)

	Roundwood							
	Total		Industrial roundwood				Fuelwood	
			Total		Coniferous	Non-conif.		
	1999	2009	1999	2009	2009	2009	1999	2009
World	3 341.3	3 275.1	1 543.9	1 424.4	852.3	572.1	1 797.5	1 850.7
Europe	574.1	615.4	435.9	469.0	358.7	110.3	138.1	146.5
EU-27	374.9	392.9	301.2	309.7	242.5	67.2	73.8	83.2
Russia	143.6	151.4	94.6	112.9	85.3	27.6	49.0	38.5
Africa	596.4	674.1	68.0	71.6	11.5	60.1	528.4	602.4
Asia	1 034.4	991.3	227.5	225.6	82.2	143.4	806.9	765.6
China	331.8	285.5	100.0	93.1	59.6	33.5	231.8	192.4
India	296.6	331.7	19.2	23.2	2.9	20.3	277.4	308.5
Indonesia	130.2	98.7	39.8	36.4	0.2	36.1	90.4	62.3
North & Central America	755.3	548.0	626.6	420.5	287.5	133.1	128.7	127.5
Canada	193.9	107.3	191.0	105.1	88.2	16.9	2.9	2.2
United States	469.3	344.8	423.3	304.4	192.5	111.9	46.0	40.4
Oceania	55.6	61.0	42.9	50.3	33.3	17.0	12.7	10.7
Australia	27.7	30.1	20.8	25.3	13.0	12.3	6.8	4.8
South America	325.6	385.4	142.9	187.4	79.2	108.2	182.6	198.0
Brazil	231.6	264.1	100.4	122.2	45.6	76.6	131.2	142.0

Source: FAOSTAT (http://faostat.fao.org/site/626/default.aspx#ancor)

Global paper and paperboard production reached 376.8 million tonnes in 2009, which was almost 20 % higher than in 1999. Over the last decade, Asia moved from having the third highest (28.5 %) share of the world's output to occupy the position of global leader (41.5 % of output in 2009), this was largely a result of China overtaking the United States as the largest paper and paperboard producer in the world.

Table 3.23: Production of sawnwood and panels in the world (million m^3)

	Sawnwood					
	Total		Wood-based panels			
			Total		Fibreboard	
	1999	2009	1999	2009	1999	2009
World	388.5	362.4	171.4	259.9	30.7	75.5
Europe	127.9	127.4	57.4	75.9	11.7	20.4
EU-27	94.1	92.2	48.6	57.2	10.1	14.7
Russia	19.1	19.0	4.1	8.6	0.8	1.6
Africa	7.4	8.3	2.2	2.7	0.2	0.2
Asia	66.5	83.3	39.9	122.3	7.0	40.4
China	16.6	32.8	14.7	94.5	3.9	34.5
India	8.4	14.8	0.3	2.6	0.1	0.1
Indonesia	6.6	4.3	8.2	4.3	0.4	0.4
North & Central America	147.6	99.2	61.0	40.8	8.8	7.9
Canada	50.4	32.8	14.6	11.0	1.7	1.3
United States	92.6	62.0	45.8	29.1	7.0	6.4
Oceania	7.6	8.6	3.1	3.7	1.2	1.3
Australia	3.7	4.7	1.6	1.8	0.5	0.7
South America	31.5	35.7	7.8	14.5	1.7	5.3
Brazil	20.5	25.0	5.2	8.3	1.0	2.9

Source: FAOSTAT (http://faostat.fao.org/site/626/default.aspx#ancor)

Table 3.24: Production of pulp, paper and paperboard in the world (million tonnes)

	Pulp for paper				Paper & paperboard			
	Total		Woodpulp		Total		Newsprint	
	1999	2009	1999	2009	1999	2009	1999	2009
World	177.7	174.1	163.6	162.3	314.6	376.8	38.1	32.7
Europe	43.9	44.6	44.1	45.2	96.0	106.9	12.7	11.4
EU-27	35.7	35.9	35.9	35.2	85.0	89.4	9.8	8.6
Russia	5.0	6.6	5.1	6.8	4.5	7.4	1.6	2.0
Africa	2.4	2.3	2.7	2.7	2.9	3.9	0.4	0.3
Asia	34.9	38.8	19.7	25.9	89.5	156.5	7.6	12.0
China	17.2	17.6	3.6	7.1	33.3	90.2	1.1	4.9
India	2.5	4.0	1.6	2.3	3.8	7.6	0.5	0.8
Indonesia	1.7	4.9	1.6	5.2	7.0	11.5	0.5	0.6
North & Central America	83.4	64.4	84.2	65.3	113.1	90.5	16.0	7.6
Canada	25.2	17.1	25.4	17.2	20.3	12.8	9.2	4.4
United States	57.6	47.0	58.4	47.7	88.7	72.1	6.5	3.0
Oceania	2.3	2.7	2.3	2.7	3.4	4.2	0.8	0.7
Australia	0.9	1.2	0.9	1.2	2.6	3.3	0.4	0.4
South America	10.7	21.3	10.5	20.6	9.7	14.8	0.6	0.6
Brazil	7.1	13.6	7.1	13.7	6.3	9.4	0.2	0.1

Source: FAOSTAT (http://faostat.fao.org/site/626/default.aspx#ancor)

Trade in wood products in the world

External trade data for the EU in this section is based upon world trade flows and is labelled 'EU-27 Member States'; it covers the sum of total exports/imports and includes trade between the Member States. This data is comparable to that presented for the continents: for example, North and Central American trade data includes exports and imports between Canada and the United States.

Table 3.25: Exports of roundwood, fuelwood and other basic wood products in the world, 2009 (1 000 m^3)

	Roundwood					Wood chips & particles
	Total	Industrial roundwood			Fuelwood	
		Total	Coniferous	Non-conif.		
World	101 585	95 507	63 471	32 036	6 078	39 877
Europe	62 493	56 780	43 142	13 638	5 713	14 099
EU-27 Member States	32 008	28 648	20 704	7 944	3 360	9 683
Russia	22 289	21 700	18 300	3 400	589	3 470
Africa	2 710	2 693	48	2 645	17	3 183
Asia	6 063	6 036	404	5 632	27	4 211
China	100	98	7	91	2	10
India	10	8	8	1	1	0
Indonesia	12	10	10	0	2	608
North & Central America	12 820	12 512	9 973	2 538	308	5 328
Canada	2 761	2 692	2 443	249	69	709
United States	9 742	9 511	7 410	2 101	231	4 558
Oceania	13 074	13 062	9 741	3 321	13	6 808
Australia	1 152	1 141	971	170	11	6 495
South America	4 425	4 425	163	4 262	0	6 248
Brazil	101	101	92	9	0	1 570

Source: FAOSTAT (http://faostat.fao.org/site/626/default.aspx#ancor)

Table 3.26: Imports of roundwood, fuelwood and other basic wood products in the world, 2009 (1 000 m^3)

	Roundwood					Wood chips & particles
	Total	Industrial roundwood			Fuelwood	
		Total	Coniferous	Non-conif.		
World	96 353	91 558	64 895	26 663	4 795	44 033
Europe	47 768	43 225	29 526	13 698	4 544	16 955
EU-27 Member States	44 863	40 578	27 278	13 300	4 285	12 844
Russia	60	60	60	0	0	1
Africa	767	761	315	446	7	5
Asia	41 744	41 702	30 964	10 738	42	24 378
China	28 657	28 653	20 424	8 229	4	4 966
India	1 836	1 823	1 167	656	13	20
Indonesia	53	42	2	40	12	8
North & Central America	6 002	5 801	4 070	1 731	201	2 504
Canada	4 647	4 555	3 109	1 446	92	2 377
United States	1 019	914	666	248	105	91
Oceania	17	14	7	7	2	22
Australia	2	1	0	1	0	21
South America	54	54	12	42	0	168
Brazil	27	27	1	26	0	0

Source: FAOSTAT (http://faostat.fao.org/site/626/default.aspx#ancor)

At the upstream end of the wood-based products chain, external trade largely reflects natural resource endowments. As such, Russia imported almost no roundwood in 2009 but exported 22.3 million m³ to other countries. In contrast, China exported almost no roundwood, but imported 28.7 million m³.

Table 3.27: Exports of sawnwood and panels in the world, 2009 (1 000 m³)

	Sawnwood					
	Total	Wood-based panels				
		Total	Veneer sheets	Ply-wood	Particle board	Fibre-board
World	102 889	64 237	2 382	19 950	22 057	19 848
Europe	67 572	31 921	811	4 598	16 091	10 420
EU-27 Member States	46 482	26 682	570	2 998	14 216	8 898
Russia	16 200	2 433	113	1 334	575	411
Africa	1 710	490	161	265	28	36
Asia	4 379	19 718	510	11 866	1 855	5 487
China	662	8 512	122	5 441	127	2 823
India	17	47	21	11	2	13
Indonesia	51	2 982	50	2 205	17	710
North & Central America	22 673	6 434	608	677	3 686	1 463
Canada	19 001	4 649	403	305	3 266	675
United States	3 498	1 706	195	350	377	784
Oceania	2 270	1 133	216	100	99	717
Australia	325	344	91	37	15	201
South America	4 286	4 542	76	2 444	298	1 724
Brazil	1 394	1 799	33	1 496	59	211

Source: FAOSTAT (http://faostat.fao.org/site/626/default.aspx#ancor)

Table 3.28: Imports of sawnwood and panels in the world, 2009 (1 000 m³)

	Sawnwood					
	Total	Wood-based panels				
		Total	Veneer sheets	Ply-wood	Particle board	Fibre-board
World	94 254	61 716	3 111	17 683	21 641	19 282
Europe	39 337	30 463	1 452	6 118	13 330	9 563
EU-27 Member States	36 239	25 998	1 385	5 595	11 278	7 740
Russia	16	853	15	53	445	340
Africa	7 210	1 276	50	642	205	379
Asia	25 654	17 782	1 126	6 837	4 171	5 649
China	11 006	2 628	194	825	699	910
India	63	229	20	25	90	94
Indonesia	211	530	20	57	272	181
North & Central America	21 155	10 852	436	3 775	3 553	3 088
Canada	1 683	2 179	164	904	335	776
United States	15 428	7 141	185	2 441	3 071	1 444
Oceania	650	397	19	211	43	124
Australia	531	331	15	179	31	106
South America	248	947	28	100	339	479
Brazil	100	231	10	4	40	177

Source: FAOSTAT (http://faostat.fao.org/site/626/default.aspx#ancor)

A similar pattern was observed for sawnwood, as Canada and Russia had considerable trade surpluses of 17.3 million m³ and 16.2 million m³ respectively, while the United States and China recorded trade deficits of 11.9 million m³ and 10.3 million m³. China recorded the largest trade deficit concerning pulp for paper in 2009 (14.4 million tonnes), with relatively high trade surpluses for Brazil and Canada. The EU-27 Member States were the largest exporters of paper and paperboard in 2009 (just over 60 % of the world total); they also recorded the highest trade surplus for paper and paperboard (9.1 million tonnes). China, Indonesia and Malaysia were among the most important exporters of bamboo and cane furniture.

Table 3.29: Exports of pulp, paper and paperboard in the world (million tonnes)

	Pulp for paper				Paper and paperboard			
	Total		Woodpulp		Total		Newsprint	
	1999	2009	1999	2009	1999	2009	1999	2009
World	37.10	46.24	35.72	44.31	92.84	105.22	18.50	12.89
Europe	11.30	13.19	11.00	12.77	54.81	63.48	7.67	6.66
EU-27 Member States	9.15	10.86	9.04	10.61	49.23	57.94	5.55	4.66
Russia	1.39	1.72	1.35	1.71	2.00	2.72	1.13	1.42
Africa	1.11	0.99	0.63	0.47	0.60	1.17	0.15	0.06
Asia	1.69	3.16	1.69	3.11	12.16	14.81	1.26	1.36
China	0.04	0.05	0.04	0.09	3.44	4.90	0.03	0.21
India	0.00	0.00	0.00	0.00	0.09	0.33	0.00	0.01
Indonesia	1.20	2.73	1.18	2.62	2.92	3.57	0.30	0.18
North & Central America	17.15	13.87	16.66	13.28	23.32	21.37	9.00	4.50
Canada	11.65	7.02	11.45	6.76	14.40	9.53	8.26	3.94
United States	5.50	6.82	5.21	6.50	8.64	11.28	0.70	0.54
Oceania	0.63	0.90	0.63	0.90	0.84	1.36	0.24	0.07
Australia	0.00	0.02	0.00	0.02	0.39	0.79	0.01	0.01
South America	5.21	14.13	5.12	13.78	1.11	3.03	0.19	0.24
Brazil	3.11	8.59	3.01	8.24	0.53	1.92	0.02	0.00

Source: FAOSTAT, extracted December 2010 (http://faostat.fao.org/site/626/default.aspx#ancor)

Table 3.30: Imports of pulp, paper and paperbaord in the world (million tonnes)

	Pulp for paper				Paper and paperboard			
	Total		Woodpulp		Total		Newsprint	
	1999	2009	1999	2009	1999	2009	1999	2009
World	36.70	46.75	35.39	44.69	96.87	102.60	18.69	13.34
Europe	16.91	17.09	16.36	16.66	49.12	55.16	7.03	6.24
EU-27 Member States	15.70	15.33	15.25	14.88	45.73	48.85	6.39	5.20
Russia	0.06	0.04	0.04	0.06	0.31	1.09	0.00	0.00
Africa	0.26	0.44	0.25	0.48	2.42	3.79	0.29	0.48
Asia	11.54	21.91	10.84	20.37	19.73	19.71	3.11	2.66
China	3.99	14.42	3.74	13.55	10.95	5.01	1.07	0.54
India	0.25	0.66	0.19	0.49	0.77	1.28	0.50	0.74
Indonesia	0.96	1.13	0.76	0.79	0.14	0.40	0.00	0.00
North & Central America	6.91	6.07	6.84	5.96	21.10	18.34	7.22	2.99
Canada	0.26	0.13	0.26	0.16	2.48	2.65	0.04	0.06
United States	6.07	4.58	6.04	4.49	15.73	10.45	6.80	2.40
Oceania	0.30	0.30	0.30	0.30	1.65	1.75	0.28	0.19
Australia	0.28	0.27	0.29	0.28	1.31	1.31	0.28	0.18
South America	0.79	0.94	0.79	0.93	2.86	3.85	0.76	0.78
Brazil	0.34	0.38	0.34	0.37	0.72	1.01	0.38	0.37

Source: FAOSTAT, extracted December 2010 (http://faostat.fao.org/site/626/default.aspx#ancor)

Waste and recycling of wood products in the EU

Environmental statistics provide information on the quantity of wood waste and paper and cardboard waste that was treated within Europe (see Table 3.31). Almost 25 million tonnes of wood waste were treated in the EU in 2008, while the figure for paper and cardboard was 13.3 million tonnes higher. Waste treatment operations distinguish between five different treatment types: recovery, energy recovery, incineration, disposal on land, and land treatment/release into water; more information on the use of wood waste as an energy source is provided in Chapter 4.

Table 3.31: Waste treatment in the EU, EFTA and candidate countries (1 000 tonnes)

	Wood waste			Paper & cardboard waste		
	2004	2006	2008	2004	2006	2008
EU-27	*30 910*	*36 180*	*24 970*	*37 550*	*34 920*	*38 260*
Belgium	989	440	565	1 581	630	574
Bulgaria	0	0	19	169	125	196
Czech Republic	226	120	113	152	201	246
Denmark	721	862	891	677	788	782
Germany	2 221	2 502	2 642	6 054	5 922	5 908
Estonia	180	398	319	0	6	35
Ireland	155	180	159	118	26	6
Greece	24	63	88	263	425	440
Spain	279	573	1 737	2 217	3 346	5 060
France	4 261	3 727	4 583	7 550	6 050	5 659
Italy	4 248	4 378	1 790	3 335	4 143	4 450
Cyprus	0	2	2	6	29	23
Latvia	2	0	0	15	18	19
Lithuania	17	34	60	68	141	146
Luxembourg	70	172	69	0	0	18
Hungary	183	174	135	287	344	354
Malta	1	1	0	2	3	3
Netherlands	944	644	1 422	2 670	2 656	2 268
Austria	2 935	2 282	3 565	1 156	1 425	1 401
Poland	930	419	2 194	1 157	212	1 326
Portugal	1 109	681	981	345	781	303
Romania	80	109	761	344	335	325
Slovenia	75	150	165	349	373	380
Slovakia	126	421	151	45	108	102
Finland	3 472	4 122	115	424	734	468
Sweden	4 948	10 916	178	1 677	1 846	2 339
United Kingdom	2 715	2 747	2 272	6 891	4 174	5 430
Norway	384	348	418	531	670	683
Croatia	35	:	19	4	:	7
FYR of Macedonia	:	:	0	:	:	16
Turkey	78	0	117	417	23	1 040

Source: Eurostat (env_wastrt)

The same source of information provides a breakdown of the origin of waste streams – as presented in Table 3.32 – with details of the waste created by wood manufacturers, paper manufacturers and households. As may be expected, the highest share of wood waste in the EU was produced by wood manufacturers in 2008 (some 39.0 % of all wood waste), while paper manufacturers accounted for 13.5 % of the total and households for 4.8 %. Households accounted for the highest share of waste paper and cardboard, some 29.8 % of the total generated in the EU in 2008. Both wood manufacturing and paper manufacturing accounted for only a tiny fraction of the total waste generated by all activities, while households accounted for 8.4 %.

Table 3.32: Waste generated by wood and paper manufacturing and by households in the EU, EFTA and candidate countries, 2008
(% share of waste from all NACE activities and households)

	Wood manufacturing			Paper manufacturing			Households		
	Total waste	Wood waste	Paper & card-board waste	Total waste	Wood waste	Paper & card-board waste	Total waste	Wood waste	Paper & card-board waste
EU-27	1.1	39.0	0.1	1.2	13.5	16.9	8.4	4.8	29.8
Belgium	0.9	23.3	0.1	1.4	3.8	9.5	9.2	15.0	18.9
Bulgaria	0.1	60.0	0.0	0.1	16.5	20.8	1.0	0.0	0.0
Czech Republic	0.7	54.6	0.1	1.1	0.9	18.7	12.5	4.1	19.3
Denmark	0.2	1.1	0.4	1.3	0.0	17.4	16.6	26.5	12.4
Germany	0.8	20.9	0.1	1.1	2.4	16.1	9.5	7.0	61.4
Estonia	5.4	79.9	0.1	0.6	4.1	12.5	2.2	0.3	6.6
Ireland	0.0	52.9	0.9	1.8	4.1	19.9	7.1	0.0	0.0
Greece	0.1	9.7	0.0	0.2	0.2	10.8	5.8	0.0	0.0
Spain	0.2	12.0	0.2	1.4	2.3	19.9	16.4	6.3	23.2
France	1.4	54.2	0.1	0.8	4.4	20.5	8.5	0.0	18.1
Italy	0.8	33.1	0.2	1.2	3.7	19.3	18.1	19.8	56.9
Cyprus	0.4	38.2	0.0	0.7	0.3	6.3	23.5	0.0	74.2
Latvia	4.3	66.2	1.5	0.7	0.1	57.6	40.5	0.0	0.0
Lithuania	1.5	40.5	0.3	0.6	6.4	14.9	19.9	1.2	45.3
Luxembourg	0.4	40.8	0.1	0.2	0.7	16.5	2.9	5.9	14.3
Hungary	*1.3*	73.3	0.0	*0.9*	0.2	19.3	*17.0*	0.4	20.7
Malta	0.0	0.0	0.0	0.4	0.0	0.0	11.3	0.0	23.4
Netherlands	0.3	10.0	0.1	0.9	1.3	18.6	9.5	14.8	42.6
Austria	7.8	69.4	0.1	1.5	5.8	11.3	6.8	2.6	46.2
Poland	1.5	55.6	0.3	0.9	14.7	17.0	4.9	0.0	6.0
Portugal	1.9	27.3	0.1	2.3	5.9	9.0	14.1	0.0	0.0
Romania	0.7	73.0	0.1	0.1	2.4	9.1	4.5	7.2	40.2
Slovenia	5.4	53.7	0.1	3.4	5.4	41.0	14.2	2.0	16.9
Slovakia	2.2	38.3	0.0	5.0	44.2	15.5	15.5	0.2	20.5
Finland	7.4	47.4	0.1	5.5	23.7	20.1	2.0	0.5	28.2
Sweden	0.3	3.7	0.1	7.8	85.9	64.5	5.1	0.5	22.6
United Kingdom	0.5	29.2	0.1	0.7	0.8	8.7	9.4	12.6	14.1
Liechtenstein	0.0	0.0	0.0	0.3	0.0	14.3	0.0	0.0	0.0
Norway	3.9	32.6	0.1	3.1	15.1	2.1	22.7	16.5	42.4
Croatia	3.5	70.7	0.0	0.9	0.4	19.7	0.0	0.0	0.0
FYR of Macedonia	0.1	63.7	0.1	0.2	0.2	5.9	:	0.0	0.0
Turkey	0.1	9.4	0.1	0.2	8.2	8.3	43.9	8.9	76.9

Source: Eurostat (env_wasgen)

Looking in more detail at the recycling of packaging (see Table 3.33), some 5.1 million tonnes of wooden packaging and 25.2 million tonnes of paper and cardboard packaging were recycled in the EU Member State where the waste was produced in 2008; an increasing share of paper and cardboard packaging was dispatched to other Member States for recovery. Quantities treated in other countries count towards national recycling targets as long as the EU's standards are respected.

Table 3.33: Material recycling of packaging waste in the EU and EFTA, 2008 (1 000 tonnes)

	All packaging		Wooden packaging		Paper & cardboard packaging	
	Domestic	Dispatches	Domestic	Dispatches	Domestic	Dispatches
EU-27 (1)	*49 121*	*11 587*	*5 089*	:	*25 221*	*8 278*
Belgium	1 333	*439*	114	*8*	575	*222*
Bulgaria	152	0	3	0	74	0
Czech Republic	649	325	31	0	351	*227*
Denmark	539	371	36	:	311	259
Germany	11 172	2 392	710	90	6 046	1 860
Estonia	89	47	0	:	45	30
Ireland	*634*	1	*85*	0	*318*	0
Greece	*460*	62	20	0	*324*	54
Spain	4 729	496	450	:	2 602	496
France	7 071	1 643	500	:	3 712	1 432
Italy	7 255	728	1 443	:	3 323	656
Cyprus	30	24	2	:	16	16
Latvia	123	60	18	0	55	39
Lithuania	170	48	26	0	75	13
Luxembourg	61	61	2	2	29	29
Hungary	510	58	51	0	316	23
Malta (2)	5	2	0	0	1	0
Netherlands	2 012	*578*	192	160	1 040	338
Austria	801	42	14	0	430	0
Poland	1 787	1 125	262	126	826	506
Portugal	1 076	253	77	:	630	253
Romania	392	30	18	:	217	7
Slovenia (3)	100	26	3	0	53	0
Slovakia	155	34	3	0	69	33
Finland	394	39	43	0	238	0
Sweden	825	115	50	0	482	111
United Kingdom	6 598	2 588	939	0	3 061	1 675
Liechtenstein	17	17	0	0	2	2
Norway	372	0	7	:	244	:

(1) Sum of data for the 27 Member States, including values for 2007 (see other footnotes for more details).
(2) 2007.
(3) All packaging, 2007.

Source: Eurostat (env_waspac)

The production of recovered pulp fibre and recovered paper in the EU was 23.0 million tonnes and 50.1 million tonnes respectively in 2009. Germany alone accounted for more than half (56.2 %) of the recovered fibre pulp in 2009 and the addition of Spain and the United Kingdom led to a cumulative share for these three Member States of 87.8 %. The production of recovered paper was somewhat more diversified across the Member States, although Germany remained the leading producer (29.5 % of the EU total). Together with the United Kingdom, France, Italy and Spain, these five Member States together accounted for 74.5 % of the EU total.

The two largest producers of recovered fibre pulp in the world are China and the EU. Whereas China relies on imports of recovered paper to feed its recovered fibre pulp mills, the EU is a net exporter of recovered paper. European enterprises have also been engaged in exporting to China much of the technology for processing recovered fibre pulp, in the form of de-inking and pulping plants.

Table 3.34: Production of recovered pulp and paper in the EU, EFTA and candidate countries (1 000 tonnes)

	Recovered fibre pulp			Recovered paper		
	2007	2008	2009	2007	2008	2009
EU-27	*24 699*	*24 393*	*22 987*	*53 641*	*53 154*	*50 101*
Belgium	*3*	*2*	*2*	*1 011*	*1 018*	*1 018*
Bulgaria	0	*0*	*0*	*80*	21	*27*
Czech Republic	0	0	*0*	468	428	*428*
Denmark	*89*	89	*89*	*592*	592	*654*
Germany	13 167	*12 928*	*12 928*	15 822	15 493	14 776
Estonia	0	0	0	55	58	58
Ireland	0	0	0	*454*	448	471
Greece	*0*	0	*0*	*191*	*196*	*353*
Spain	4 969	5 046	4 000	4 922	4 999	4 625
France	*1*	*1*	*1*	5 947	5 677	4 998
Italy	0	*0*	*0*	5 580	5 329	4 752
Cyprus	0	0	0	23	26	29
Latvia	0	0	0	80	80	*80*
Lithuania	117	119	0	89	98	72
Luxembourg	0	0	0	*118*	*125*	*77*
Hungary	0	0	0	407	387	*390*
Malta	0	0	0	*1*	*5*	*5*
Netherlands	0	0	0	2 307	2 233	2 002
Austria	2 127	2 050	2 002	1 514	1 400	1 552
Poland	0	0	*0*	1 567	*1 600*	*1 730*
Portugal	349	328	354	729	704	774
Romania	0	0	0	295	*331*	*300*
Slovenia	*160*	*160*	*94*	180	*183*	*198*
Slovakia	0	0	0	257	208	168
Finland	*0*	*0*	*1*	737	724	544
Sweden	*276*	276	*270*	*1 598*	2 022	1 864
United Kingdom	3 440	3 394	3 246	8 617	8 768	8 155
Iceland	0	:	:	*20*	:	:
Liechtenstein	0	0	0	0	0	0
Norway	0	0	0	462	469	477
Switzerland	777	764	700	1 324	1 353	1 317
Montenegro	*0*	0	0	:	0	0
Croatia	0	0	0	0	0	0
FYR of Macedonia	1	3	0	7	2	2
Turkey	*0*	*0*	*0*	*1 016*	*1 016*	*1 016*

Source: Eurostat (for_pp)

Pulp and paper recovery in the world

The Confederation of European Paper Industries (CEPI) provides information in relation to recovered paper for European countries – see Table 3.35. The recovered paper utilisation rate refers to the percentage of recovered paper utilisation compared with total paper production.

The majority of the EU Member States achieved a recovered paper utilisation rate of more than 50 % in 2009. Most recovered paper came from one of two streams – either old newspapers and magazines, or corrugated and solid paper containers and sacks.

Information is available for a number of other countries, where recovered paper utilisation rates were also frequently above the threshold of 50 %. The composition of recovered paper in the rest of the world was generally less based on the recovery of old newspapers and magazines. Instead, corrugated and solid paper containers and sacks often accounted for more than half of the total volume of recovered paper.

Table 3.35: Recovered paper in the world, 2009 (1)

	Recovered paper utilisation rate (%)	Composition of recovered paper (% share of total recovered paper)			
		Old newspapers, magazines etc	Corrugated, solid containers & kraft sacks	Wood-free printing & writing paper & other high-grade qualities	Mixed grades
Belgium	61	53	35	0	11
Germany	71	29	34	12	24
Spain	81	22	52	8	19
France	60	25	53	10	12
Italy	57	14	48	10	28
Netherlands	77	17	35	8	40
Austria	50	32	38	12	17
Poland	38	18	68	7	8
Sweden	17	54	29	8	10
United Kingdom	89	39	36	18	7
Australia	60	11	49	13	26
Brazil	41	5	64	14	18
Chile	44	2	64	25	10
Colombia	70	6	66	28	1
Israel	67	11	59	27	3
Japan	65	31	44	12	13
Malaysia	110	20	70	5	5
Mexico	100	10	60	28	2
Norway	26	51	39	8	2
Russia	18	13	50	14	23
South Africa	43	10	56	24	9
Switzerland	56	46	27	11	16
United States	37	13	60	13	14

(1) The ten EU Member States with the highest volume of recovered paper are shown.

Source: FAO and CEPI (http://www.fao.org/forestry/industries/9531/en/)

Table 3.36: Production and trade in recovered pulp and paper in the world, 2009 (million tonnes)

	Recovered fibre pulp			Recovered paper		
	Production	Exports	Imports	Production	Exports	Imports
World	77.39	0.25	0.38	181.59	55.75	54.93
Europe	26.38	0.15	0.29	55.79	25.61	13.77
EU-27 Member States	24.03	0.11	0.24	50.25	24.33	13.14
Russia	1.65	0.00	0.00	2.30	0.22	0.00
Africa	0.00	0.01	0.00	1.61	0.09	0.08
Asia	46.06	0.01	0.07	65.70	7.11	35.76
China	44.40	0.00	0.02	25.55	1.09	28.19
India	1.20	0.00	0.00	0.85	0.00	2.16
Indonesia	:	:	0.01	3.93	0.02	2.08
North & Central America	2.94	0.08	0.02	48.56	21.28	4.89
Canada	0.02	0.00	0.00	3.20	1.70	1.32
United States	0.03	0.08	0.00	42.15	19.07	0.30
Oceania	1.99	0.00	0.00	3.46	1.59	0.01
Australia	1.99	0.00	0.00	3.20	1.34	0.00
South America	0.02	0.00	0.00	6.48	0.07	0.42
Brazil	:	:	:	3.90	0.00	0.01

Source: FAOSTAT (http://faostat.fao.org/site/626/default.aspx#ancor)

4 Wood as a source of energy

Wood has been used for centuries as a source of heat or for cooking in domestic environments. It was also used at the outset of the industrial revolution as a primary source of energy, until it was supplanted by coal.

Today, fuelwood, wood pellets and wood chips are often used for space heating and power generation within the developed world. In contrast, many developing countries continue to rely almost exclusively on fuelwood as a source of energy for domestic cooking and heating, for the generation of electricity, and across various manufacturing activities (for example, within food processing for baking, brewing, smoking or curing).

Security of supply and sustainability are two major issues concerning energy supply and demand that fit within the broader context of externalities linked to the production of energy – greenhouse gas emissions, air pollution and waste. The use of wood as a fuel is largely carbon neutral if wood resources are cultivated in a sustainable way. Although carbon dioxide is released into the atmosphere when wood is burnt, this is converted into carbon and oxygen as trees grow, and hence the cycle of tree growth and wood burning is often referred to as being carbon neutral. The inefficient burning of wood may however result in smoke and fine particles being emitted into the atmosphere (which has the potential to lead to negative health impacts).

Energy is also required for the processing and/or the transportation of wood that is used for energy supply. Technological developments have led to biomass feedstocks being processed in advance of their transportation (for example, as wood pellets) so they become more dense. Furthermore, such transformations generally make the resulting products more practical for transportation and more convenient when used by the consumer.

Wood consumption as a source of energy in the EU

Renewable sources of energy include wind, solar, hydro-electric and tidal power, geothermal energy and biomass (including wood). Their use reduces dependence on fossil fuel markets, is generally carbon neutral and often diversifies energy supply. As noted above, burning biomass returns to the atmosphere the carbon dioxide that was absorbed as plants/trees grew – there is no net release of carbon dioxide if the cycle of growth, harvest and combustion is sustained.

In April 2009, the European Parliament and Council adopted a Directive (2009/28/EC) on the promotion of the use of energy from renewable sources, while the Europe 2020 strategy (approved in June 2010) confirmed an EU target such that 20 % of energy should come from renewable sources by 2020 (see Table 4.1). The Directive set mandatory national targets for the overall share of energy from renewable sources and for the share of transportation fuels from renewable sources. It also established sustainability criteria for liquid biofuels derived from agricultural crops (such as sugar cane or maize), in order to dissuade producers from clearing forest land in order to grow biofuel crops. In February 2010, the European Commission published a paper (COM(2010)11) on sustainability requirements for the use of biomass in electricity, heating and cooling, promoting the sustainable production and use of biomass, as well as an internal market in biomass trade.

Table 4.1: Renewable energy targets for the EU-27

	2010	2020
All renewables	12 % indicative	20 % binding
Biofuels	5.75 %	10 %
Green electricity	21 %	
Biomass	150 million toe	195 million toe
Wood biomass	27 million toe	35 million toe
Roundwood equivalent	108-149 million m^3	140-194 million m^3

Source: European Commission

Table 4.2: Sources and users of wood as an energy source in the EU and EFTA, 2007 (1) (1 000 m^3)

	Wood used as an energy source			Users of wood as an energy source		
	Direct	Indirect	Recovered	Power & heat	Industrial	Private households
Czech Republic	5 036	2 903	:	538	2 270	5 131
Germany	13 023	10 231	7 017	15 364	1 696	13 211
France	34 787	4 979	1 500	514	3 825	36 927
Lithuania	1 484	1 724	:	775	422	2 012
Netherlands	313	1 387	263	1 400	150	412
Austria	6 929	7 025	488	2 051	3 855	8 538
Slovenia	1 591	596	26	28	531	1 655
Finland	6 803	25 808	303	8 594	18 596	5 724
Sweden	6 923	31 760	694	10 995	19 458	8 923
United Kingdom	580	532	450	708	235	620
Norway	3 128	2 387	258	595	2 011	3 167
Switzerland	1 935	1 250	600	2 268	224	1 293

(1) No information available for other Member States.

Source: Joint Wood Energy Enquiry (JWEE)

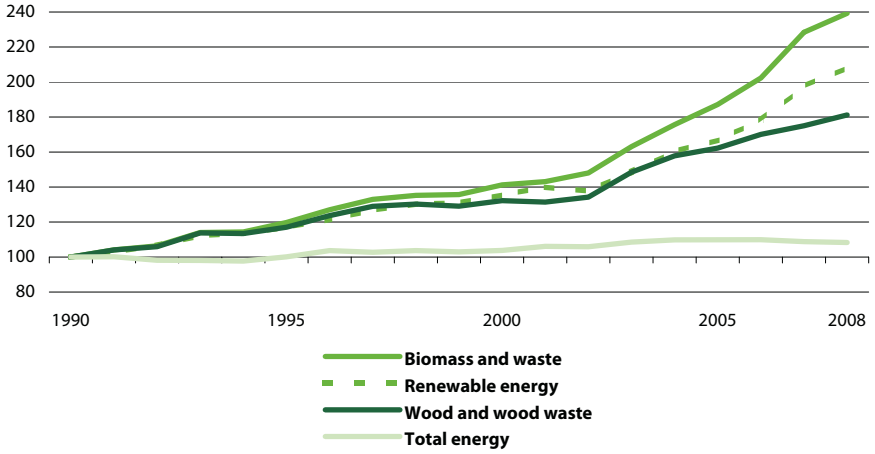
Wood for use as an energy source (a fuel) comes not only from tree felling, but also from selective thinning of managed forests and other forestry practices (direct sources). Wood for energy use may also be derived as a by-product from downstream processing in wood-based manufacturing, for example, as off-cuts, trimmings, sawdust, shavings, wood chips or black liquor (indirect sources). End-of-life wood and paper products may also be used as a source of energy (recovered wood).

Information collected by the Joint Wood Energy Enquiry (JWEE) shows that direct sources accounted for some 84.3 % of total wood used as an energy source in France in 2007 (see Table 4.2), which was in stark contrast to the relatively high proportion of wood used for energy coming from indirect sources in both Sweden (80.7 %) and Finland (78.4 %). The share of recovered wood rose to above one fifth of the total in Germany (23.2 %) and the United Kingdom (28.8 %), likely reflecting new landfill legislation that encourages wood waste to be used or traded, as well as the promotion of biomass energy production.

Private households were generally the main users of wood as a source of energy, accounting for almost half (47.5 %) of the wood used for energy purposes in 2007 across the ten Member States for which data are presented in Table 4.2; these figures for households are likely to be under-reported. Nevertheless, private households in France accounted for almost 90 % of the wood used for energy in 2007. These data come from household surveys that include detailed questions, highlighting the potential benefits that could be gained by carrying out similar surveys in other countries.

Wood and paper manufacturing enterprises supply much of their own energy needs and this was reflected in Finland and Sweden where industrial users accounted for around half of all the wood used for energy in 2007. The third main use of wood as an energy source is for power and heat generation; the share of this category rose to upwards of 50 % of the total wood used as an energy source in Germany and the Netherlands, and also in Switzerland.

Figure 4.1: Increase in gross inland consumption of energy from renewables since 1990 in the EU-27 (1990=100, based on tonnes of oil equivalents)

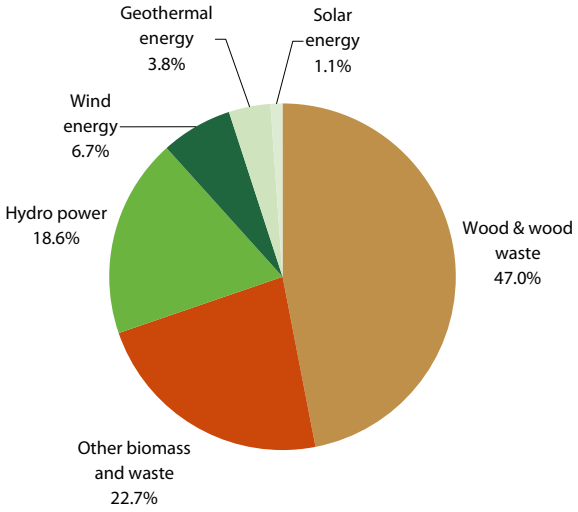


Source: Eurostat (nrg_100a and nrg_1071a)

Renewable energy sources accounted for 8.4 % of the EU's gross inland consumption of energy in 2008; this share was four percentage points higher than in 1990 (4.4 %). There was a rapid expansion in the use of renewable energy (from a relatively low starting point) between 1990 and 2008 and nowhere was this pattern more apparent than for biomass and waste (up 139 %) – see Figure 4.1.

EU gross inland energy consumption of wood and wood waste was 71.0 million tonnes of oil equivalents in 2008. Wood and wood waste was the leading renewable energy resource in the EU in 2008, accounting for almost half (47.0 %) of all gross inland energy consumption from renewable energy sources (see Figure 4.2) and for just over two thirds (67.5 %) of the total for biomass and waste, the remainder being split between municipal solid waste (14.1 %), biofuels (11.2 %) and biogas (7.2 %).

Figure 4.2: Gross inland consumption of renewable energy sources in the EU-27, 2008 (% share of tonnes of oil equivalents)

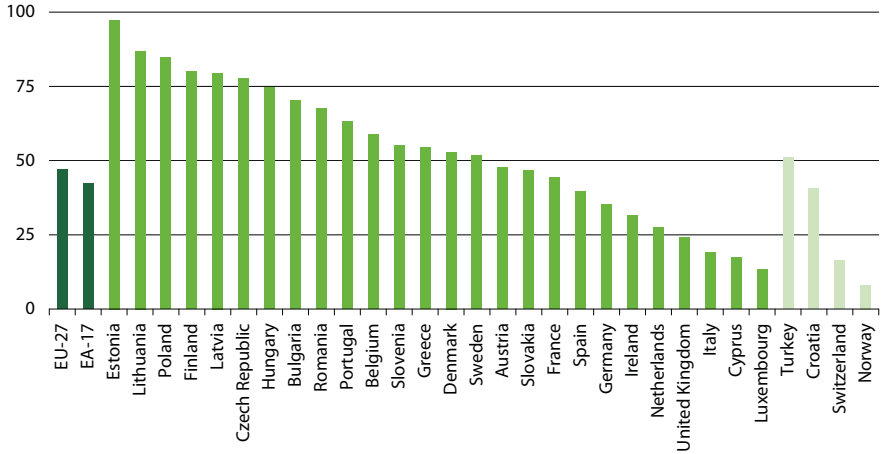


Source: Eurostat (nrg_1071a and nrg_1072a)

Wood and wood waste accounted for as much as 23.9 % of gross inland energy consumption in Latvia in 2008, with relatively high shares also recorded in Finland (20.2 %) and Sweden (16.6 %); Austria, Portugal and Estonia were the only other EU Member States to record double-digit shares. Wood and wood waste was the principal source of renewable energy consumed in the majority of EU Member States (see Figure 4.3), its relative importance ranging from a high of 97.4 % in Estonia to just 13.2 % in Luxembourg (Malta, not available).

Biomass energy may be directly stored and drawn upon for use at any time, unlike many other renewable energy sources such as wave, solar or wind power that need to be consumed directly or converted in order to be stored. Aside from its conversion into heat through combustion, biomass energy sources may also be transferred into electricity, gas, or liquid fuel. Biomass is increasingly used in complex installations, for example, the production of combined heat and power (CHP) or co-combustion technologies for power generation (together with coal), whereby existing power stations may be converted at relatively low cost to run partly on biomass.

Figure 4.3: Share of wood and wood waste in total renewable energy in the EU, EFTA and candidate countries, 2008 (1)
(% of gross inland consumption of renewable energy)

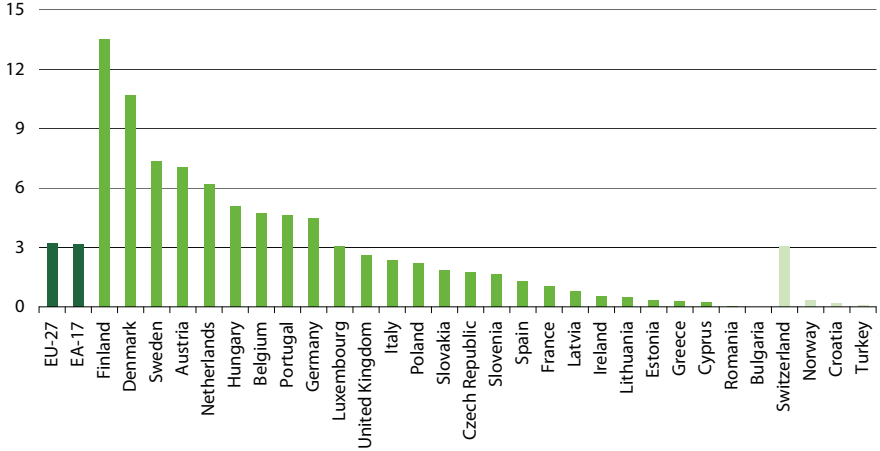


(1) Malta, not available.
Source: Eurostat (nrg_1071a)

Within the EU, energy from biomass has become increasingly important in recent years, as policymakers seek to ensure diverse and secure energy supplies while at the same time considering the impact of energy policy on climate change. The introduction within the EU of national targets for 2020 concerning the share of renewable energy in gross inland energy consumption, will likely have a significant impact on the forest sector, given that wood and wood waste is currently the largest source of renewable energy in the EU. Indeed, the use of biomass from both forests and agriculture is forecast to increase sharply in the coming decades. As such, investment in using wood as a source of energy across the EU is on-going, with each Member State following its own national biomass action plan.

Net electricity generation from biomass-fired power stations accounted for 3.2 % of the EU's electricity generation in 2008 (see Figure 4.4). While the relative importance of biomass-fired power stations was generally still quite low – the majority of the Member States reported net electricity generation from biomass accounting for less than 3 % of total electricity generated – double-digit shares were recorded in Finland (13.5 %) and Denmark (10.7 %).

Figure 4.4: Net electricity generation from biomass-fired power stations in the EU, EFTA and candidate countries, 2008 (1)
(% share of total net electricity generation in gigawatt hours)

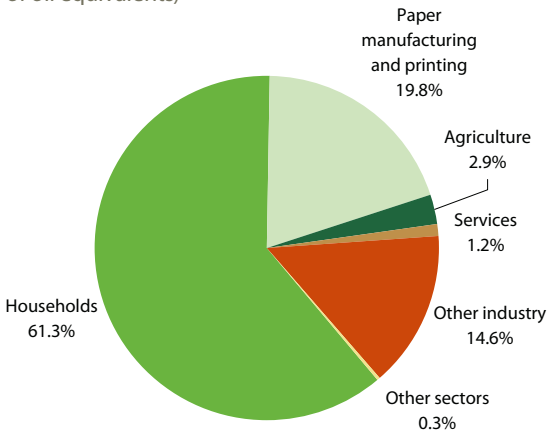


(1) Malta, not available.
Source: Eurostat (nrg_105a)

Figure 4.5 shows that households accounted for the largest share (61.3 %) of the EU's final energy consumption of wood and wood wastes in 2008, some 32.3 million tonnes of oil equivalents. The other main use of energy derived from wood and wood waste was within industrial activities – in particular, for paper manufacturing and printing.

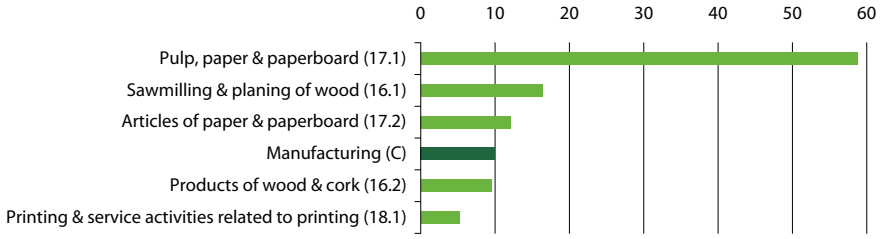
Figure 4.6 presents structural business statistics (at the NACE Rev. 2 group level) relating to the purchases of energy products that are made by different industrial activities (expressing these as a share of total value added at factor cost); this ratio summarises the energy-intensiveness of each wood-based manufacturing activity.

Figure 4.5: Breakdown of gross final energy consumption of wood and wood wastes in the EU-27, 2008
(% share of tonnes of oil equivalents)



Source: Eurostat (nrg_1071a and nrg_1072a)

Figure 4.6: Purchases of energy products as a share of gross value added at factor cost, EU average, 2008 (1)
(%, based on values in EUR million)



(1) Based on the information available for each NACE activity (NACE code given in parenthesis); the calculation is made using a list of different Member States depending upon the activity under consideration, Poland and Slovenia are never available, Czech Republic, provisional.

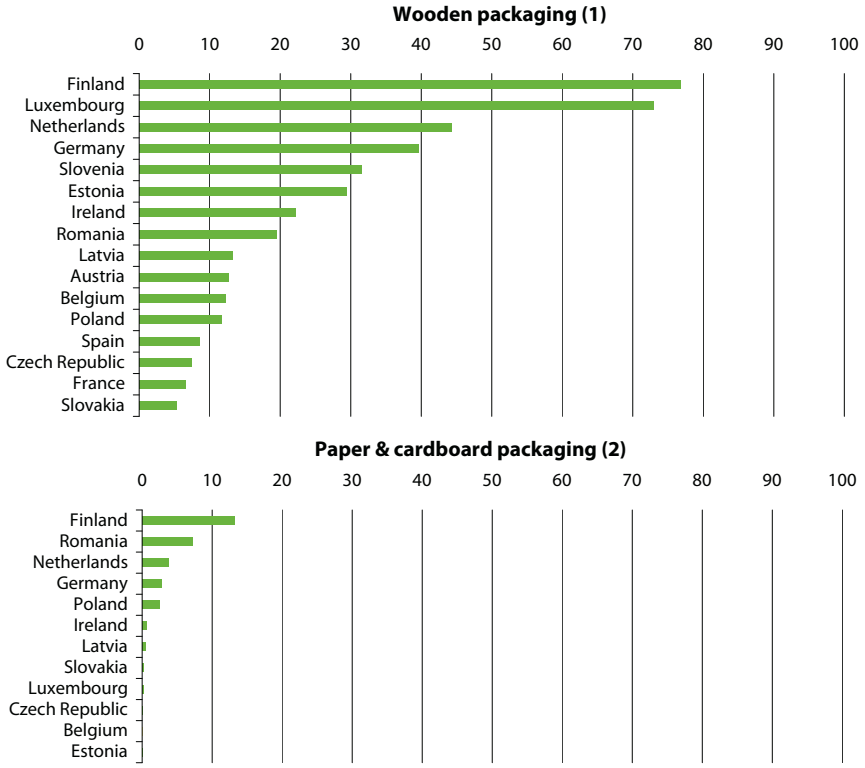
Source: Eurostat (sbs_na_ind_r2)

Using this measure, the manufacture of pulp, paper and paperboard was the most energy-intensive activity (almost six times as high as the manufacturing average), and energy purchases accounted for a relatively high share of value added for sawmilling and the planing of wood, as well as the manufacture of articles made from paper and paperboard.

It is important to bear in mind however that many wood-based manufacturing activities increasingly recover energy from their waste streams and that their energy costs may be reduced by switching to renewable biomass sources that are by-products of their own production processes.

Figure 4.7 provides information on the proportion of energy recovered from waste wooden packaging and waste paper and cardboard packaging; this varies considerably between Member States and across the different waste streams.

Figure 4.7: Energy recovery relative to waste generated in the EU, 2008
(%, based on tonnes)



(1) Denmark, Greece, Malta, Portugal, Sweden and the United Kingdom, not available; those Member States that are not shown in the figure reported shares of less than 5 %.
(2) Bulgaria, Denmark, Greece, Spain, France, Italy, Malta, Portugal, Sweden and the United Kingdom, not available; Ireland and Slovenia, 2006; those Member States that are not shown in the figure reported shares of less than 0.1 %.

Source: Eurostat (env_waspac)

Production and trade of fuelwood in the world

Although fuelwood accounts for a relatively low share of the world's total energy supply, it constitutes the major source of energy in many developing countries. The FAO estimates that developing countries consumed around three quarters of the world's fuelwood in 2009.

More than half (56.5 %) of the world's total roundwood production in 2009 was accounted for by fuelwood; the share of fuelwood in removals was considerably higher in Africa (89.4 %) and Asia (77.2 %), falling to 23.8 % in Europe. Asia accounted for 40.3 % of the world's total output of fuelwood in 2009 (see Tables 3.22 and 4.3), while the addition of Africa and South America resulted in this proportion more than doubling to 84.2 %. In contrast, Europe produced 8.1 % of the world's fuelwood in 2009, a somewhat higher share than that recorded for North and Central America (6.9 %), where the majority of fuelwood production was outside of Canada and the United States.

A high proportion of global fuelwood production is from broad-leaved (non-coniferous) species (88.6 % in 2009); these accounted for almost the totality of fuelwood production in Africa, India and Indonesia. In contrast, the production of coniferous fuelwood was more important (but remained less than 50 % of the fuelwood total) in the EU, Russia and China.

External trade of fuelwood is of minor significance when compared with overall global production: less than 1 % of the world's fuelwood production was exported in 2009. In the EU (where there is considerable amount of trade between the Member States), extra-EU exports accounted for no more than 3.9 % of total fuelwood production, while the share of imports was somewhat higher, at 5.1 %.

Table 4.3: Production and external trade of fuelwood in the world

	Fuelwood production				Exports of fuelwood		Imports of fuelwood	
	Total		Coni-ferous	Non-coni-ferous				
	1999	2009	2009	2009	1999	2009	1999	2009
	(million m^3)				(1 000 m^3)			
World	1 815	1 860	211	1 648	3 444	6 114	1 761	4 864
Europe	138	150	47	102	3 185	5 771	1 568	4 615
EU-27 Member States	74	86	25	62	2 411	3 399	1 269	4 415
Russia	49	39	15	23	680	589	0	105
Africa	521	616	14	602	11	7	4	7
Asia	833	750	96	654	26	26	25	40
China	232	196	79	117	9	2	3	14
India	277	308	9	299	0	1	10	13
Indonesia	90	65	0	65	5	1	0	0
North & Central America	129	128	34	93	220	308	161	201
Canada	3	2	0	2	35	69	44	92
United States	46	40	8	33	177	231	115	105
Oceania	13	16	0	16	1	2	2	2
Australia	7	8	0	8	0	0	0	0
South America	183	201	20	181	2	0	0	0
Brazil	131	141	14	127	0	0	0	0

Source: FAOSTAT (http://faostat.fao.org/site/626/default.aspx#ancor)

Annexes

List of wood and paper products

1 *ROUNDWOOD*

All roundwood harvested and removed. It comprises all wood removed from forests and from trees outside the forest, including wood recovered from natural, felling and logging losses. It includes all wood removed with or without bark, including wood removed in its round form, or split, roughly squared or in other form (for example, branches, roots, stumps and burls). It is an aggregate comprising fuelwood, including wood for charcoal and industrial roundwood (wood in the rough).

1.1 *FUELWOOD (INCLUDING WOOD FOR CHARCOAL)*

Roundwood that will be used as fuel for purposes such as cooking, heating or power production. It also includes wood chips to be used for fuel that are made directly (in other words, in the forest) from roundwood. It excludes wood charcoal.

1.2 *INDUSTRIAL ROUNDWOOD (WOOD IN THE ROUGH)*

All roundwood except fuelwood.

1.2.1 *SAWLOGS AND VENEER LOGS*

Roundwood that will be sawn (or chipped) lengthways for the manufacture of sawnwood or railway sleepers (ties) or used for the production of veneer (mainly by peeling or slicing).

1.2.2 *PULPWOOD, ROUND AND SPLIT*

Roundwood that will be used for the production of pulp, particle board or fibreboard.

1.2.3 *OTHER INDUSTRIAL ROUNDWOOD*

Industrial roundwood (wood in the rough) other than sawlogs, veneer logs and/or pulpwood. It includes roundwood that will be used for poles, piling, posts, fencing, pitprops, tanning, distillation and match blocks, etc.

2 *WOOD CHARCOAL*

Wood carbonised by partial combustion or the application of heat from external sources. It includes charcoal used as a fuel or for other uses, for example, as a reduction agent in metallurgy or as an absorption or filtration medium.

3 *CHIPS AND PARTICLES*

Wood that has been reduced to small pieces and is suitable for pulping, for particle board and/or fibreboard production, for use as a fuel, or for other purposes.

4 *WOOD RESIDUES*

The volume of roundwood that is left over after the production of wood products in the wood processing industry (in other words, processing residues) and that has not been reduced to chips or particles. It includes sawmill rejects, slabs, edgings and trimmings, veneer log cores, veneer rejects, sawdust, residues from carpentry and joinery production and agglomerated products such as logs, briquettes, pellets or similar forms.

5 SAWNWOOD

Wood that has been produced from both domestic and imported roundwood, either by sawing lengthways or by a profile-chipping process and that exceeds 6 mm in thickness. It includes planks, beams, joists, boards, rafters, scantlings, laths, boxboards and lumber, etc., in the following forms: unplaned, planed, end-jointed, etc. It excludes sleepers, wooden flooring, mouldings (sawnwood continuously shaped along any of its edges or faces, like tongued, grooved, rebated, v-jointed, beaded, moulded, rounded or the like).

6 WOOD-BASED PANELS

An aggregate comprising veneer sheets, plywood, particle board, and fibreboard.

6.1 VENEER SHEETS

Thin sheets of wood of uniform thickness, not exceeding 6 mm, rotary cut (in other words, peeled), sliced or sawn. It includes wood used for the manufacture of laminated construction material, furniture, veneer containers, etc.

6.2 PLYWOOD

A panel consisting of an assembly of veneer sheets bonded together with the direction of the grain in alternate plies generally at right angles. The veneer sheets are usually placed symmetrically on both sides of a central ply or core that may itself be made from a veneer sheet or another material. It includes veneer plywood (plywood manufactured by bonding together more than two veneer sheets, where the grain of alternate veneer sheets is crossed, generally at right angles); core plywood or blockboard (plywood with a solid core (in other words, the central layer, generally thicker than the other plies) that consists of narrow boards, blocks or strips of wood placed side by side, which may or may not be glued together); cellular board (plywood with a core of cellular construction); and composite plywood (plywood with the core or certain layers made of material other than solid wood or veneers). It excludes laminated construction materials (for example, glulam), where the grain of the veneer sheets generally runs in the same direction.

6.3 PARTICLE BOARD, ORIENTED STRANDBOARD (OSB) AND SIMILAR BOARD

A panel manufactured from small pieces of wood or other ligno-cellulosic materials (for example, chips, flakes, splinters, strands, shreds, shives, etc.) bonded together by the use of an organic binder together with one or more of the following agents: heat, pressure, humidity, a catalyst, etc. The particle board category is an aggregate category. It includes oriented strandboard (OSB), waferboard and flaxboard. It excludes wood wool and other particle boards bonded together with inorganic binders.

6.3.1 ORIENTED STRANDBOARD (OSB)

A structural board in which layers of narrow wafers are layered alternately at right angles in order to give the board greater elasto-mechanical properties. The wafers, which resemble small pieces of veneer, are coated with, for example, waterproof phenolic resin glue, interleaved together in mats and then bonded together under heat and pressure. The resulting product is a solid, uniform building panel having high strength and water resistance. It excludes waferboard.

6.4 FIBREBOARD

A panel manufactured from fibres of wood or other ligno-cellulosic materials with the primary bond deriving from the felting of the fibres and their inherent adhesive properties (although bonding materials and/or additives may be added in the manufacturing process). It includes fibreboard panels that are flat-pressed and moulded fibreboard products. It is an aggregate comprising hardboard, medium-density fibreboard (MDF) and other fibreboard.

6.4.1 HARDBOARD

Wet-process fibreboard of a density exceeding 0.8 g/cm^3. It excludes similar products made from pieces of wood, wood flour or other ligno-cellulosic material where additional binders are required to make the panel; and panels made of gypsum or other mineral material.

6.4.2 MEDIUM-DENSITY FIBREBOARD (MDF)

Dry-process fibreboard. When density exceeds 0.8 g/cm^3, it may also be referred to as high-density fibreboard (HDF).

6.4.3 OTHER FIBREBOARD

Wet-process fibreboard of a density not exceeding 0.8 g/cm^3. This includes medium board and softboard (also known as insulating board).

7 WOOD PULP

Fibrous material prepared from pulpwood, wood chips, particles or residues by mechanical and/or chemical process for further manufacture into paper, paperboard, fibreboard or other cellulose products. It is an aggregate comprising mechanical wood pulp; semi-chemical wood pulp; chemical wood pulp; and dissolving wood pulp.

7.1 MECHANICAL WOOD PULP

Wood pulp obtained by grinding or milling pulpwood or residues into fibres, or through refining chips or particles. Also called groundwood pulp and refiner pulp, it may be bleached or unbleached. It includes chemi-mechanical and thermo-mechanical pulp. It excludes exploded and defibrillated pulp.

7.2 SEMI-CHEMICAL WOOD PULP

Wood pulp obtained by subjecting pulpwood, wood chips, particles or residues to a series of mechanical and chemical treatments, none of which alone is sufficient to make the fibres separate readily. It may be bleached or unbleached. It includes chemi-groundwood pulp, chemi-mechanical wood pulp, etc. (named in the order and importance of the treatment during the manufacturing process).

7.3 CHEMICAL WOOD PULP

Wood pulp obtained by subjecting pulpwood, wood chips, particles or residues to a series of chemical treatments. It includes sulphate (kraft) wood pulp; soda wood pulp and sulphite wood pulp. It may be bleached, semi-bleached or unbleached. It excludes dissolving grades of wood pulp. It comprises unbleached sulphite pulp; bleached sulphite pulp; unbleached sulphate pulp; and bleached sulphate pulp.

7.4 DISSOLVING GRADES

Chemical pulp (sulphate, soda or sulphite) made from wood of special quality, with a very high alpha-cellulose content (usually 90 % or over). This type of pulp is always bleached and is readily adaptable for uses other than papermaking. It is used principally as a source of cellulose in the manufacture of products such as synthetic fibres, cellulose plastic materials, lacquers and explosives.

8 OTHER PULP

Pulp manufactured from waste paper or from fibrous vegetable materials other than wood and used for the manufacture of paper, paperboard and fibreboard. It is an aggregate comprising pulp from fibres other than wood and recovered fibre pulp.

8.1 PULP FROM FIBRES OTHER THAN WOOD

Pulp manufactured from fibrous vegetable materials other than wood and used for the manufacture of paper, paperboard and fibreboard. It excludes pulp made from recovered paper. It includes pulp made from: straw; bamboo; bagasse; esparto; other reeds or grasses; cotton fibres; flax; hemp; rags; and other textile wastes.

8.2 RECOVERED FIBRE PULP

Pulp manufactured from recovered paper or paperboard and used for the manufacture of paper, paperboard and fibreboard. It excludes pulp made from straw; bamboo; bagasse; esparto; other reeds or grasses; cotton fibres; flax; hemp; rags; and other textile wastes.

9 RECOVERED PAPER

Waste and scraps of paper or paperboard that have been collected for re-use or trade. It includes paper and paperboard that has been used for its original purpose and residues from paper and paperboard production.

10 PAPER AND PAPERBOARD

This is an aggregate category. It covers the sum of graphic papers; sanitary and household papers; packaging materials and other paper and paperboard. It excludes manufactured paper products such as boxes, cartons, books and magazines, etc.

10.1 GRAPHIC PAPERS

This is an aggregate category. It covers the sum of newsprint; uncoated mechanical; uncoated woodfree and coated papers. Products in this category are generally manufactured in strips or rolls of a width exceeding 15 cm or in rectangular sheets with one side exceeding 36 cm and the other exceeding 15 cm in the unfolded state. It excludes manufactured paper products such as books and magazines, etc.

10.1.1 NEWSPRINT

Paper mainly used for printing newspapers. It is made largely from mechanical pulp and/or recovered paper, with or without a small amount of filler. Products in this category are generally manufactured in strips or rolls of a width exceeding 36 cm or in rectangular sheets with one side exceeding 36 cm and the other exceeding 15 cm in the unfolded state. Weights usually range from 40 to 52 g/m^2 but can be as high as 65 g/m^2. Newsprint is machine finished or slightly calendered, white or slightly coloured and is used in reels for letterpress, offset or flexo printing.

10.1.2 UNCOATED MECHANICAL

Paper suitable for printing or other graphic purposes where less than 90 % of the fibre furnish consists of chemical pulp fibres. This grade is also known as groundwood or wood-containing paper and magazine paper, such as heavily filled supercalendered paper for consumer magazines printed by the rotogravure and offset methods. It excludes wallpaper bases.

10.1.3 UNCOATED WOODFREE

Paper suitable for printing or other graphic purposes, where at least 90 % of the fibre furnish consists of chemical pulp fibres. Uncoated woodfree paper can be made from a variety or furnishes, with variable levels of mineral filler and a range of finishing processes such as sizing, calendering, machine glazing and watermarking. This grade includes most office papers, such as business forms, copier, computer, stationery and book papers. Pigmented and size press coated papers (coating less than 5 g per side) are covered by this heading. It excludes wallpaper bases.

10.1.4 COATED PAPERS

All paper suitable for printing or other graphic purposes and coated on one or both sides with carbon or minerals such as china clay (kaolin), calcium carbonate, etc. Coating may be by a variety of methods, both on-machine and off-machine, and may be supplemented by supercalendering. It includes raw carbon and self-copy paper in rolls or sheets. It excludes other copying and transfer papers.

10.2 SANITARY AND HOUSEHOLD PAPERS

This covers a wide range of tissue and other hygienic papers for use in households or commercial and industrial premises. Products in this category are generally manufactured in strips or rolls of a width exceeding 36 cm or in rectangular sheets with one side exceeding 36 cm and the other exceeding 15 cm in the unfolded state. Examples are toilet paper and facial tissues, kitchen towels, hand towels and industrial wipes. Some tissue is also used in the manufacture of baby napkins, sanitary towels, etc. The parent reel stock is made from virgin pulp or recovered fibre or mixtures of these.

10.3 PACKAGING MATERIALS

Paper or paperboard mainly used for wrapping and packaging purposes. Products in this category are generally manufactured in strips or rolls of a width exceeding 36 cm or in rectangular sheets with one side exceeding 36 cm and the other exceeding 15 cm in the unfolded state. It excludes unbleached kraft paper and paperboard that are not sack kraft paper or kraftliner and weighing more than 150 g/m² but less than 225 g/m²; felt paper and paperboard; tracing papers; not further processed uncoated paper weighing 225 g/m² or more.

10.3.1 CASE MATERIALS

Papers and boards mainly used in the manufacture of corrugated board. They are made from any combination of virgin and recovered fibres and can be bleached, unbleached or mottled. It includes kraftliner, testliner, semi-chemical fluting, and waste-based fluting (Wellenstoff).

10.3.2 CARTONBOARD

Sometimes referred to as folding boxboard, it may be single- or multi-ply, coated or uncoated. It is made from virgin and/or recovered fibres, and has good folding properties, stiffness and scoring ability. It is mainly used in cartons for consumer products such as frozen food and for liquid containers. It includes paper and paperboard covered or coated with plastics (excluding adhesives) and coated multi-ply.

10.3.3 WRAPPING PAPERS

Wrappings (up to 150 g/m^2): papers whose main use is wrapping or packaging made from any combination of virgin or recovered fibres, bleached or unbleached. They may be subject to various finishing and/or marking processes. It includes sack kraft, other wrapping krafts, sulphite and greaseproof papers as well as coated paper and paperboard not uniformly bleached throughout the mass, except multi-ply. It excludes tracing papers.

10.3.4 OTHER PAPERS MAINLY FOR PACKAGING

This category embraces all papers and boards mainly for packaging purposes other than those listed above. Most are produced from recovered fibres, for example, greyboards, and go for conversion, which in some cases may be for end-uses other than packaging.

10.4 OTHER PAPER AND PAPERBOARD N.E.S.

Other papers and boards for industrial and special purposes. It includes cigarette papers and stock of filter papers, as well as gypsum liners and special papers for insulating, roofing, and other specific applications or treatments; wallpaper base; unbleached kraft paper and paperboard that are not sack kraft paper or kraftliner and weighing more than 150 g/m^2 but less than 225 g/m^2; felt paper and paperboard; tracing papers; not further processed uncoated paper weighing 225 g/m^2 or more; and raw copying and transfer papers, in rolls or sheets except carbon or self-copy paper. It excludes all composite, not coated, paper and paper board of flat layers stuck together; coated paper and paperboard not uniformly bleached throughout the mass; and paper and paperboard covered or coated with plastics (excluding adhesives).

Statistical symbols, abbreviations and acronyms

AWU	annual work units
CEPI	confederation of European paper industries
CHP	combined heat and power
CIF	cost, insurance and freight
DR	Democratic Republic (of Congo)
EA	euro area
EA-17	euro area of 17 Member States including Belgium, Germany, Estonia, Ireland, Greece, Spain, France, Italy, Cyprus, Luxembourg, Malta, the Netherlands, Austria, Portugal, Slovenia, Slovakia and Finland; note that unless otherwise stated, the euro area (EA) aggregate in this publication refers to 17 countries, as if all 17 of these had been part of the euro area in periods prior to 1 January 2011.
equip.	equipment
EU	European Union
EU-27	European Union of 27 Member States including Belgium, Bulgaria, the Czech Republic, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, the Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden and the United Kingdom; note that unless otherwise stated, the EU aggregate in this publication refers to 27 countries, as if all 27 of these had been part of the EU in periods prior to 1 January 007
FLEGT	Forest Law Enforcement Governance and Trade
FAO	Food and Agriculture Organization (of the United Nations)
FOB	free on board
FRA	Forest Resources Assessment
FYR ([1])	former Yugoslav Republic (of Macedonia)
grow.	growing
IPCC	Intergovernmental Panel on Climate Change
ISIC	International Standard Industrial Classification
ITTO	International Tropical Timber Organization
JWEE	Joint Wood Energy Enquiry
MCPFE	Ministerial Conference on the Protection of Forests in Europe
MDF	medium-density fibreboard
NACE	statistical classification of economic activities in the European Community
n.e.s.	not elsewhere specified
OSB	oriented strand board

([1]) The name of the former Yugoslav Republic of Macedonia is shown in tables as FYR of Macedonia – this does not prejudge in any way the definitive nomenclature for this country, which is to be agreed following the conclusion of negotiations currently taking place on this subject at the United Nations.

priv.	privately (owned)
pub.	publicly (owned)
Rev.	Revision
SITC	Standard International Trade Classification
SoEF2011	State of Europe's Forests 2011
toe	tonnes of oil equivalents
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization

Carbon conversion factors

The following table provides default factors used to convert from various product units (cubic metres, tonnes, etc.) into a single harmonised unit of carbon – for example, as used when calculating supply balances (see the start of Chapter 3).

Default factors to convert from product units to carbon

	Roundwood, industrial roundwood, sawnwood, other industrial roundwood, pulpwood, chips, particles, fuelwood, wood residues		**Charcoal**	**Average for wood panels**	**Paper & paperboard, pulp, recovered fibre, recovered paper**
1. Density (oven-dry tonnes per m^3 of solid wood product or oven-dry per air-dry tonne of pulp or paper product)	Temperate species	Tropical species	0.9 oven-dry tonne (air-dry tonne)$^{-1}$	0.628 oven-dry tonne m^{-3}	0.9 oven-dry tonne (air-dry tonne)$^{-1}$
	0.45 oven-dry tonne m^{-3}	0.59 oven-dry tonne m^{-3}			
2. Carbon fraction (tonnes carbon per oven-dry tonne of wood material)	0.5	0.5	0.85	0.468	0.5
3. Carbon factor (tonnes carbon per m^3 of product or per air-dry tonne of product) (row 1) x (row 2)	A = 0.225 tonne C m^{-3}	A = 0.295 tonne C m^{-3}	B = 0.765 tonne C (air-dry tonne)$^{-1}$	C = 0.294 tonne C m^{-3}	D = 0.450 tonne C (air-dry tonne)$^{-1}$

Source: IPCC guidelines, 2006

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Forestry in the EU and the world

A statistical portrait

The International Year of Forests 2011 is a UN initiative reinforcing the message that forests are vital to the survival and well-being of mankind. This Eurostat publication supports the UN initiative by statistically depicting forests in their various dimensions.

Forests have a variety of ecological functions, serving as habitats for plant and animal species, helping to protect water and soil resources, as well as contributing to the fight against climate change. On the other hand, forests are an important economic factor as suppliers of wood and other forest products.

Forests and other wooded land cover more than 40 % of the EU's land area, and the EU is set apart from many other global regions insofar as it is one of the few regions of the world where forest area is currently expanding. This publication presents information for the EU and its Member States, as well as comparisons with countries that have considerable forest resources.

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