Wood and paper

In a Communication from the Commission to the Council and the European Parliament in June 2006 concerning an EU Forest Action Plan [1], a five-year (2007-2011) plan was established to support and enhance sustainable forest management and the multifunctional role of forests. Eighteen key actions were detailed under objectives to improve long-term competitiveness, improve and protect the environment, contribute to quality of life and foster co-ordination and communication. The parts of the Action Plan concerning competitiveness and environmental protection are perhaps of most importance for the wood and paper sector, in so far as they concern actions to examine the effects of globalisation on the economic viability and competitiveness of the EU forestry sector, to encourage research and development, to value and market non-wood forest goods and services, to promote the use of biomass for energy generation, to contribute towards the revised Community biodiversity objectives for 2010 and beyond [2] and to enhance the protection of EU forests. These actions could present business opportunities, such as the development of renewable energy from forest biomass or wood processing residues, which would be supported through instruments like the 7th Framework Programme, a possible Forest-based Technology Platform, LIFE+ and the European Agricultural and Rural Development Fund. However, as the European Confederation of Woodworking Industries noted at its General Assembly in March 2007, this could also create problems of access to affordable raw materials.

(1) COM(2006) 302.

(2) COM(2006) 216.

Table 4.1

Top ten enterprise (groups) in forest and paper activities, EU-27, 2006 (EUR million) (1)

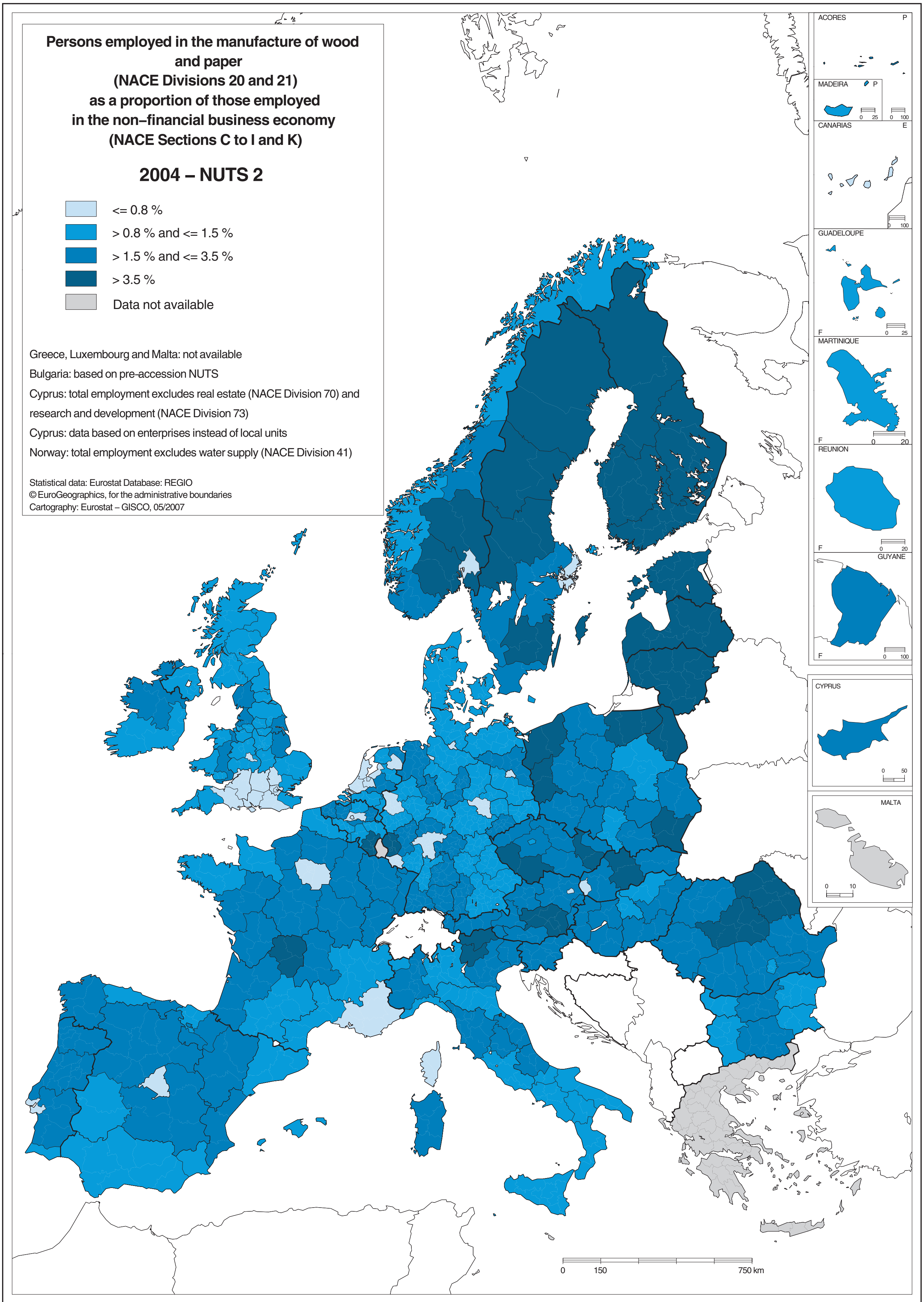
		World ranking (sales)	Sales	Net income	Return on capital employed (%) (2)
Stora Enso	FI	3	14 599	589	7.0
Svenska Cellulosa	SE	5	10 988	589	6.0
UPM	FI	6	10 025	340	3.8
Metsäliitto	FI	8	9 274	-259	0.7
Smurfit Kappa	IE	11	7 035	-272	4.0
Anglo American (Mondi)	UK	12	5 968	370	6.4
Sequana Capital	FR	19	3 981	958	0.9
DS Smith	UK	31	2 426	6	3.2
Cartiere Burgo	IT	33	2 382	22	2.1
Holmen	SE	38	2 014	158	6.4

(1) All figures reported for calendar year 2006, except DS Smith which is the year to 30 April 2006.
(2) Calculated as net income before unusual items, minority interest and interest expense, on an after-tax basis, divided by average total assets less average non-interest-bearing current liabilities.
Source: PricewaterhouseCoopers 2007 Global Forest and Paper Industry Survey, available at: http://www.pwc-global.com/forestry

This chapter covers only the forest-based activities regarding the manufacture of wood and wood products (classified under NACE Division 20) and the manufacture of pulp, paper and paper products (found under NACE Division 21). The former includes all stages of wood processing that follow on from the activity of forestry, while the latter covers downstream activities that use output from the initial processing of wood. Together, these activities are referred to, hereafter, as the wood and paper manufacturing sector. It is important to underline that this sector does not include other forestry activities that are not covered within this publication.

NACE

- 20: manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials;
- 20.1: sawmilling and planing of wood; impregnation of wood;
- 20.2: manufacture of veneer sheets; manufacture of plywood, laminboard, particle board, fibre board and other panels and boards;
- 20.3: manufacture of builders' carpentry and joinery;
- 20.4: manufacture of wooden containers;
- 20.5: manufacture of other products of wood; manufacture of articles of cork, straw and plaiting materials;
- 21: manufacture of pulp, paper and paper products;
- 21.1: manufacture of pulp, paper and paperboard;
- 21.2: manufacture of articles of paper and paperboard.


Persons employed in the manufacture of wood and paper
(NACE Divisions 20 and 21)
as a proportion of those employed
in the non–financial business economy
(NACE Sections C to I and K)
2004 – NUTS 2
<= 0.8 %
> 0.8 % and <= 1.5 %
> 1.5 % and <= 3.5 %
> 3.5 %
Data not available
Greece, Luxembourg and Malta: not available
Bulgaria: based on pre-accession NUTS
Cyprus: total employment excludes real estate (NACE Division 70) and research and development (NACE Division 73)
Cyprus: data based on enterprises instead of local units
Norway: total employment excludes water supply (NACE Division 41)
Statistical data: Eurostat Database: REGIO
© EuroGeographics, for the administrative boundaries
Cartography: Eurostat – GISCO, 05/2007
ACORES
MADEIRA
CANARIAS
GUADELOUPE
MARTINIQUE
REUNION
GUYANE
CYPRUS
MALTA
0 150 750 km

Multinational enterprises (groups) from the Nordic Member States and North America dominate the global pulp, paper and paper products subsector (see Table 4.1 for the ranking of the largest enterprises (groups) in the EU's forest-based activities). This contrasts with the wood and wood products subsector, which is characterised by relatively small-scale enterprises that are predominantly private-owned and serve local or national markets.

STRUCTURAL PROFILE

Across the EU-27, there were around 217 000 enterprises with wood and paper manufacturing (NACE Divisions 20 and 21) as their main activity in 2004, which generated EUR 77.2 billion of value added, contributing 1.5 % of the value added of the non-financial business economy (NACE Sections C to I and K), and which employed 2.1 million people (1.6 % of the non-financial business economy workforce).

The manufacture of pulp, paper and paper products (NACE Division 21) in the EU-27 was larger than the manufacture of wood and wood products (NACE Division 20) in terms of value added (EUR 42.6 billion compared with EUR 34.6 billion) but it was smaller in terms of employment, representing only 36.6 % of employment in the wood and paper manufacturing sector (see Table 4.2).

The wood and paper manufacturing sector in Germany generated the largest proportion (20.5 %) of value added in the EU-27 among the Member States in 2004, followed by Italy (12.5 %), the United Kingdom (11.8 %) and France (10.5 %). The contribution of the value added generated by the wood and paper manufacturing sector in these four countries to their respective non-financial business economies was generally (Italy apart), however, less than the EU-27 average. In these terms, Finland, Latvia, Estonia and Sweden were the most specialised Member States in wood and paper manufacturing (see Table 4.3), with the relative shares of the value added of the non-financial business economy that were generated by the sector being between four and a half and two and a half times the EU-27 average (1.5 %).

The map on page 88 shows the contribution of the wood and paper products manufacturing sector to employment within the non-financial business economy of each region. The most specialised regions (at the level of detail shown in the map) in the EU-27 were in Finland and Sweden. There was also strong specialisation in the Baltic Member States (each considered as one region at the level of detail in the map), as well as in several regions of Poland, the Czech Republic and Italy.

As shown in Figure 4.1, the production indices for wood and wood products manufacturing on the one hand, and pulp, paper and paper products manufacturing on the other, followed a broadly similar upward trend during the period between 1996 and 2006 (average increases of 2.2 % and 2.0 % per annum respectively), which was also similar to the trend for industry as a whole (NACE Sections C to E). For both of these activities, output growth was strongest in the period through until 2000 (average increases of 3.8 % per annum and 2.8 % per annum respectively). A decline in the output of both activities in 2001 was then followed by a relatively steady upswing (albeit with a temporary fall in the output of pulp, paper and paper products in 2005).

The development of the domestic output price index for the manufacture of wood and wood products during the period between 1996 and 2006 contrasted, however, with the development for pulp, paper and paper products. The output price index of wood and wood products increased relatively steadily (an average 1.1 % per annum), albeit with a small decline in 1999. There was a rollercoaster development in the output price index for the manufacture of pulp, paper and paper products, however, with a decline in 1997 to a low in 1999, before a sharp rebound in 2000 to a relative peak in 2001. There was a subsequent slip in the average price through until 2005 before an upturn in 2006, close to the level in 2000.

Table 4.2

Manufacture of wood and wood products; pulp, paper and paper products (NACE Divisions 20 and 21)
Structural profile, EU-27, 2004 (1)

	No. of enterprises		Turnover		Value added		Employment	
	(thousands)	(% of total)	(EUR million)	(% of total)	(EUR million)	(% of total)	(thousands)	(% of total)
Wood and wood products; pulp, paper and paper products	217.0	100.0	278 000	100.0	77 200	100.0	2 060.0	100.0
Wood and wood products	197.0	90.8	121 000	43.5	34 600	44.8	1 310.0	63.6
Pulp, paper and paper products	19.7	9.1	160 000	57.6	42 600	55.2	753.0	36.6

(1) Rounded estimates based on non-confidential data.
Source: Eurostat (SBS)

Table 4.3

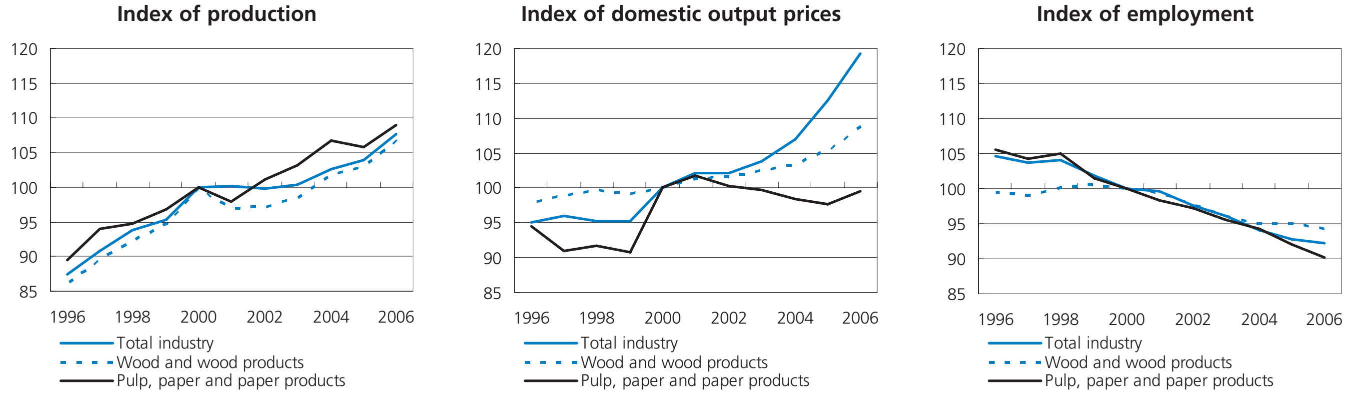
Manufacture of wood and wood products; pulp, paper and paper products (NACE Divisions 20 and 21)
Structural profile: ranking of top five Member States, 2004

			Share of non-financial business economy			
Rank	Value added (EUR million) (1)	Employment (thousands) (1)	No. of enterprises (2)	Turnover (3)	Value added (3)	Employment (3)
1	Germany (15 853)	Germany (315.0)	Czech Republic (3.5 %)	Finland (7.0 %)	Finland (7.0 %)	Latvia (5.9 %)
2	Italy (9 640)	Italy (256.1)	Lithuania (3.1 %)	Latvia (4.9 %)	Latvia (5.4 %)	Estonia (5.4 %)
3	United Kingdom (9 074)	Poland (183.9)	Estonia (3.1 %)	Estonia (3.8 %)	Estonia (4.5 %)	Finland (5.4 %)
4	France (8 091)	France (174.4)	Latvia (2.9 %)	Sweden (3.8 %)	Sweden (3.8 %)	Lithuania (4.0 %)
5	Spain (6 057)	United Kingdom (170.4)	Romania (2.1 %)	Austria (2.7 %)	Austria (2.8 %)	Sweden (3.3 %)

(1) Greece, Luxembourg and Malta, not available.
(2) Ireland, Greece, Cyprus and Malta, not available; Luxembourg, 2003.
(3) Ireland, Greece, Cyprus, Luxembourg and Malta, not available.
Source: Eurostat (SBS)

Figure 4.1

Manufacture of wood and wood products; pulp, paper and paper products (NACE Divisions 20 and 21)
Evolution of main indicators, EU-27 (2000=100)



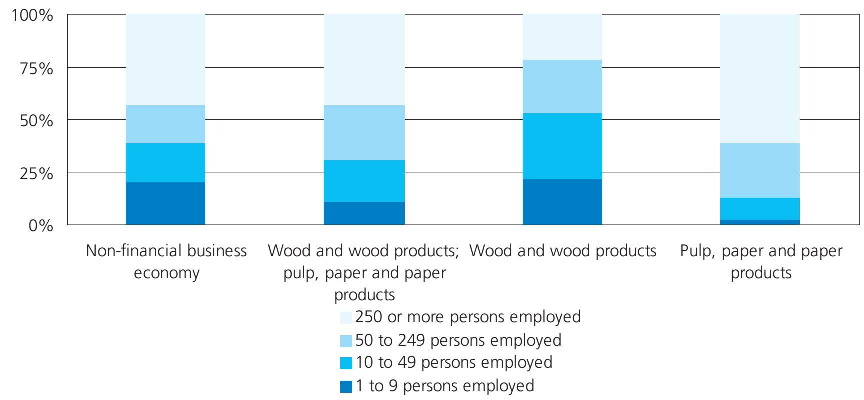
Source: Eurostat (STS)

There were distinct differences in the enterprise size structure between the two subsectors of the wood and paper manufacturing sector in the EU-27; the pulp, paper and paper products subsector is dominated by large enterprises (defined as having 250 or more persons employed) and the wood and wood products subsector by small and medium-sized enterprises (SMEs). SMEs in the pulp, paper and paper products subsector of the EU-27 generated 39.9 % of the total value added of the sector in 2004 (see Figure 4.2), a much lower proportion than that (78.3 %) generated by SMEs in the wood and wood products subsector, the second highest contribution of SMEs to the value added of any industrial NACE division [3] behind recycling (NACE Division 37) and considerably more than the average across the non-financial business economy (57.0 %). In terms of employment, SMEs in the wood and wood products subsector accounted for an even larger share (84.4 %), which was a much higher proportion than for the pulp, paper and paper products subsector (53.1 %) and also well above the non-financial business economy average (67.1 %).

[3] Mining of coal and lignite and the extraction of peat (NACE Division 10), the mining of uranium and thorium ores (NACE Division 12), not available.

Figure 4.2

Manufacture of wood and wood products; pulp, paper and paper products (NACE Divisions 20 and 21)
Share of value added by enterprise size class, EU-27, 2004



Source: Eurostat (SBS)

EMPLOYMENT CHARACTERISTICS

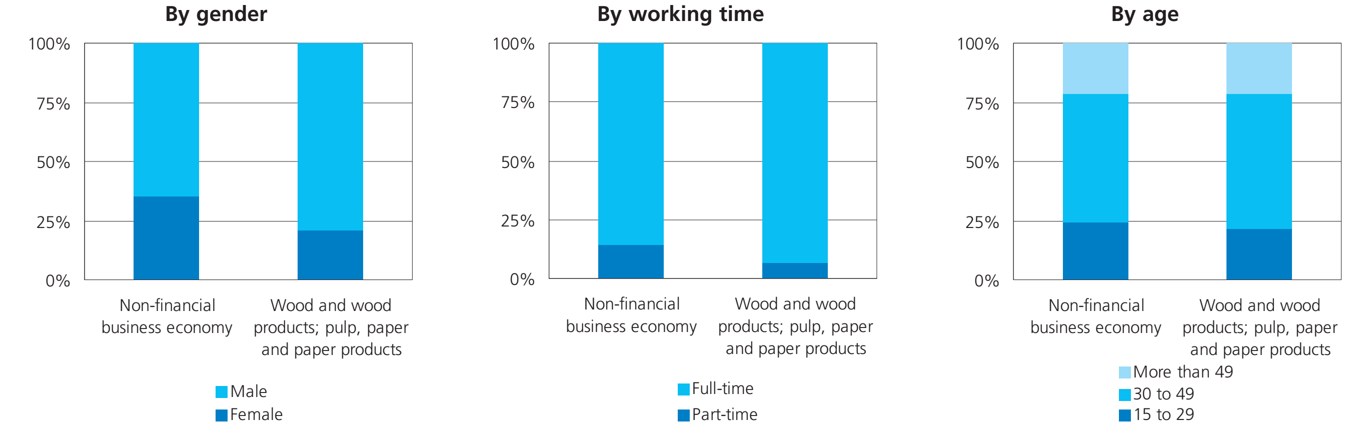
A significantly higher proportion of the workforce in the wood and paper manufacturing sector (NACE Divisions 20 and 21) of the EU-27 were male than was the case for the non-financial business economy (NACE Sections C to I and K) as a whole in 2006 (79.0 % compared with 65.0 %). This characteristic was common across all of the Member States for which data are available [4]. The proportion of the EU-27 workforce in wood and paper manufacturing working part-time (6.5 %) was less than half of the share (14.4 %) of those working across the non-financial business economy in 2006 (see Figure 4.3), with the clearest exception among the Member States being Hungary where the proportion of part-time workers in the sector (7.3 %) was almost double the proportion of part-time workers in the Hungarian non-financial business economy.

[4] Luxembourg and Malta, not available.

The proportion of employees (paid workers) in persons employed in the wood and paper products manufacturing sector in the EU-27 was 90 % in 2004, which was a slightly higher share than among the non-financial business economy as a whole (86.2 %). Reflecting the importance of small enterprises, working owners, unpaid family workers and other unpaid workers accounted for nearly 15 % of the persons employed in the wood and wood products subsector, but only 3.5 % in pulp, paper and paper products

Figure 4.3

Manufacture of wood and wood products; pulp, paper and paper products (NACE Divisions 20 and 21)
Labour force characteristics, EU-27, 2006



Source: Eurostat (LFS)

Table 4.4

Manufacture of wood and wood products; pulp, paper and paper products (NACE Divisions 20 and 21)
Productivity and profitability, EU-27, 2004 (1)

	Apparent labour productivity (EUR thousand)	Average personnel costs (EUR thousand)	Wage adjusted labour productivity (%)	Gross operating rate (%)
Wood and wood products; pulp, paper and paper products	37.4	26.1	143.0	10.3
Wood and wood products	26.4	19.8	134.0	10.3
Pulp, paper and paper products	56.6	35.8	158.0	10.4

(1) Rounded estimates based on non-confidential data.
Source: Eurostat (SBS)

COSTS, PRODUCTIVITY AND PROFITABILITY

The proportion of total expenditure (gross operating and tangible investment expenditure) accounted for by personnel costs in the wood and paper manufacturing sector of the EU-27 was a little higher than the average across the non-financial business economy in 2004 (18.3 % compared to 16.4 %), although average personnel costs were a little lower (5.4 % lower at EUR 26 100 per employee). Within the sector, however, the average personnel cost of those working in the pulp, paper and paper products manufacturing subsector (EUR 35 800 per employee) was considerably higher (80.8 %) than the average in the wood and wood products manufacturing subsector (EUR 19 800 per employee) – see Table 4.4.

Despite the slightly lower average personnel costs in the wood and paper manufacturing sector compared to the average across the non-financial business economy, the wage adjusted labour productivity ratio of the wood and paper manufacturing sector of the EU 27 remained a little beneath (3.4 % lower) the average across the non-financial business economy (143 % compared to 148 %). This reflects the fact that the apparent labour productivity of the wood and paper manufacturing sector (EUR 37 400 per person employed) was even more beneath (8.6 %) the average for the non-financial business economy. Within the sector, the apparent labour productivity of the pulp, paper and paper products manufacturing subsector (EUR 56 600 per person employed) was more than double that of the wood and wood products manufacturing subsector (EUR 26 400 per person employed). In all of the Member States for which information is available [5], the apparent labour productivity of the pulp, paper and paper products manufacturing subsector was higher (generally, considerably so) than that for wood and wood products.

The gross operating rate of the wood and paper manufacturing sector of the EU-27 was 10.3 % in 2004, this measure of profitability being similar for both the wood and wood products manufacturing subsector and the pulp, paper and paper products manufacturing subsector.

(5) Greece, Luxembourg and Malta, not available.

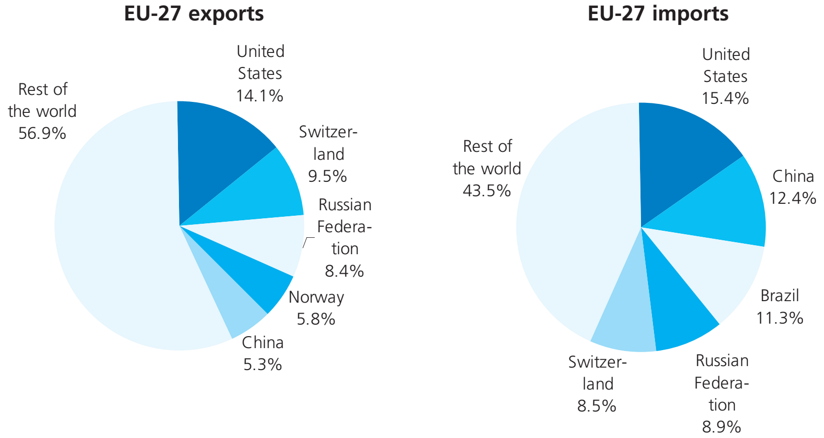
EXTERNAL TRADE

The EU-27 imported wood and paper products (CPA Divisions 20 and 21) to the value of EUR 21.4 billion in 2006, mainly from the United States (15.4 %), China (12.4 %), Brazil (11.3 %), Russia (8.9 %) and Switzerland (8.5 %) – see Figure 4.4. However, the EU-27 exported wood and paper products to non-member countries to the value of EUR 29.2 billion in 2006, representing 2.7 % of the value of all industrial exports (CPA Sections C to E). The principal export markets for these products were the United States (14.1 % of EU-27 exports), Switzerland (9.5 %) and Russia (8.4 %). It should be noted, however, that the exports to non-member countries represented only a quarter (26.3 %) of the total trade (intra and extra-EU) of the EU-27 Member States, underlining the importance of the internal market. Exports (intra and extra-EU) of wood and paper products were particularly important in Latvia and Finland, where they represented a little over one fifth (21.7 % and 21.5 % respectively) of the value of industrial exports, as well as in Sweden (12.2 %) and Estonia (11.5 %).

The EU-27 trade surplus in wood and paper products was EUR 7.8 billion in 2006 (see Table 4.5). This overall surplus, however, comprised a large surplus of EUR 8.9 billion for pulp, paper and paper products (CPA Division 21), and a trade deficit of EUR 1.0 billion in the wood and wood products (CPA Division 20). Among the Member States, Finland and Sweden had by far the largest trade surpluses in wood and paper products (EUR 11.1 billion and EUR 10.6 billion respectively), with Germany having the third highest surplus (EUR 5.3 billion). In contrast, the United Kingdom had by far the largest trade deficit in wood and paper products (EUR 8.8 billion in 2006).

Figure 4.4

Wood and wood products; pulp, paper and paper products (CPA Divisions 20 and 21)
Main destination of EU-27 exports and main origin of EU-27 imports, 2006



Source: Eurostat (Comext)

Table 4.5

Wood and wood products; pulp, paper and paper products (CPA Divisions 20 and 21)
External trade, EU-27, 2006

	Extra-EU exports		Extra-EU imports			
	(EUR million)	(% share of industrial exports)	(EUR million)	(% share of industrial imports)	Trade balance (EUR million)	Cover ratio (%)
Wood and wood products; pulp, paper and paper products	29 212	2.7	21 367	1.7	7 846	136.7
Wood and wood products	9 376	0.9	10 389	0.8	-1 013	90.2
Pulp, paper and paper products	19 837	1.8	10 978	0.9	8 859	180.7

Source: Eurostat (Comext)

4.1: WOOD AND WOOD PRODUCTS

The wood and wood products sector is classified as NACE Division 20. It is split into five groups that cover the initial processing stages of sawing and planing of wood (NACE Group 20.1), through semi-processed wood products, such as the manufacture of boards and panels (NACE Group 20.2) and builders' carpentry and joinery (NACE Group 20.3), towards finished products such as wooden containers (NACE Group 20.4) and other wood products, including household goods made from wood (NACE Group 20.5). Note that furniture manufacturing (NACE Group 36.1), whether from wood or other materials is not covered here, but in Subchapter 11.1.

The European Commission's Directorate-General for Enterprise [(6)], recognises that "EU wood-working industries face disadvantages vis-à-vis competing countries in most of the major quantitative competitiveness factors such as wood, labour and distribution costs" but that "qualitative factors, particularly the skills of the EU workforce and product and process innovation, often compensate for these disadvantages". The encouragement of greater training and knowledge transfer through research and development as well as of the use of new technology have been identified as important tools in maintaining a competitive edge.

(6) More information at http://ec.europa.eu/enterprise/forest_based/.

STRUCTURAL PROFILE

The wood and wood products manufacturing sector (NACE Division 20) of the EU-27 consisted of around 197 000 enterprises, which generated EUR 34.6 billion of value added in 2004, representing a little over two fifths (44.8 %) of the value added generated by the wood and paper sector (NACE Division 20 and 21). In terms of employment, however, it was much more significant, employing 1.3 million people or the equivalent of a little less than two thirds (63.6 %) of all those employed in the activities of wood and paper manufacturing in the EU 27.

Within the wood and wood products manufacturing sector, the largest contribution (45.6 %) of value added came from the manufacture of builder's carpentry and joinery (NACE Group 20.3), which generated EUR 15.8 billion of value added in 2004 (see Table 4.6). This subsector produces a variety of wooden building components (such as doors, window frames, parquet panels and prefabricated wooden buildings). The second largest activity, in terms of value added, was sawmilling, planing and impregnation of wood (NACE Group 20.1), the first stage in the processing of wood, which generated EUR 7.3 billion of value added in 2004 (the equivalent of 21.0 % of the sectoral total). The manufacture of veneer sheets, plywood, laminboard, particle board, fibre board and other panels and boards (NACE Group 20.2) generated a further EUR 5.2 billion of value added in 2004. These are semi-finished products used predominantly as intermediate products in furniture manufacturing or construction.

Among the Member States, Germany had the largest wood and wood products manufacturing sector in terms of value added generated (18.6 % of the EU-27 total), followed by Italy (14.6 %) and the United Kingdom (12.3 %). However, the Baltic Member States were by far the most specialised Member States in this activity in 2004, the value added generated by the wood and wood products manufacturing sector contributing about seven and a half times as much to the value added of the non-financial business economy (NACE Sections C to I and K) than was the average across the EU-27 in Latvia, about six times as much in Estonia and about three times as much in Lithuania. These were also the Member States that were most specialised in terms of the relative numbers of people employed in their wood and wood products manufacturing activities in 2004.

Although there was a relatively steady upward trend in the output of the wood and wood products manufacturing sector in the period between 1996 and 2006, albeit with a temporary decline in 2001, there were some notable contrasts in the output of some of the wood and wood manufacturing subsectors. There was strong and sustained growth (an average increase of 4.1 % per annum) in the production index of the activities of veneer sheets, plywood, laminboard, particle board, fibre board and other panels and boards manufacturing but a sharp decline (an average 3.9 % per annum between 2000 and 2006) in the output of other wood products, articles of cork, straw and plaiting materials (NACE Group 20.5).

Table 4.6
Manufacture of wood and wood products (NACE Division 20)
Structural profile, EU-27, 2004

	No. of enterprises (thousands)	Turnover (EUR million)	Value added (EUR million)	Employment (thousands)
Wood and wood products (1)	197.0	121 000	34 600	1 310.0
Sawmilling and planing of wood, impregnation of wood (1)	35.1	31 000	7 270	321.0
Veneer sheets; plywood panels and boards (1)	2.6	22 000	5 200	130.0
Builders' carpentry and joinery (1)	110.0	46 148	15 786	584.1
Wooden containers	10.4	9 179	2 530	93.8
Other products of wood; cork, straw & plaiting materials (1)	37.0	12 528	3 806	179.6

(1) Rounded estimates based on non-confidential data.
Source: Eurostat (SBS)

Table 4.7

Production of selected products - wood and wood products (CPA Division 20), EU-27, 2006 (1)

	Prodcom code	Production value (EUR million)	Volume of sold production (thousands)	Unit of volume
Builders' joinery and carpentry of wood excluding windows, french-windows and doors, their frames/thresholds, parquet panels, shuttering for concrete constructional work - shingles, shakes	20.30.13.00	8 118	5 790 516	kg
Windows; French-windows and their frames of wood	20.30.11.10	7 464	50 830	units
Doors and their frames and thresholds of wood	20.30.11.50	7 449	115 494	units
Prefabricated buildings of wood	20.30.20.00	6 535	-	-
Particle board and similar board of wood surfaced with melamine resin impregnated paper (excluding waferboard or oriented strand board)	20.20.13.37	4 249	22 958	m³
Coniferous wood; sawn or chipped lengthwise; sliced or peeled; of a thickness > 6 mm; planed (excluding end-jointed or sanded)	20.10.10.34	3 670	18 981	m³
Pine wood: Pinus sylvestris L.	20.10.10.37	3 196	18 403	m³
Parquet panels of wood (excluding those for mosaic floors)	20.30.12.19	2 035	116 775	m²
Coniferous wood in chips or particles	20.10.23.03	1 352	c	kg

(1) Estimated.
Source: Eurostat (PRODCOM)

COSTS, PRODUCTIVITY AND PROFITABILITY

Personnel costs in the wood and wood products sector accounted for 19.4 % of total expenditure (gross operating and tangible investment expenditure) in 2004, a higher proportion than for the activities of wood and paper manufacturing as a whole (18.3 %), despite the fact that average personnel costs (EUR 19 800 per employee) were considerably (24.1 %) lower than the average in wood and paper manufacturing. Within the wood and wood products sector, average personnel costs were particularly low in the sawmilling, planing and impregnation of wood subsector (EUR 15 400 per employee) and the other wood products, articles of cork, straw and plaiting materials manufacturing subsector (EUR 16 700 per employee) – see Table 4.8. In the case of the other wood products, articles of cork, straw and plaiting materials manufacturing subsector, personnel costs nevertheless accounted for a little over one fifth (20.8 %) of gross operating and tangible investment expenditure, suggesting that it is a relatively low-wage and labour intensive subsector.

The apparent labour productivity of the wood and wood products manufacturing sector in the EU-27 was a third (35.5 %) lower than the level of the non-financial business economy as a whole in 2004. Despite the relatively low personnel costs in the sector, the wage adjusted labour productivity ratio of the wood and wood products subsectors therefore generally remained below both the average for the activities of wood and paper manufacturing (NACE Divisions 20 and 21) and of the non-financial business economy in 2004. One exception concerned the sawmilling, planing and impregnation of wood subsector, noted for its particularly low personnel costs, for which the wage adjusted labour productivity level was similar to the level for the non-financial business economy. The other exception was the veneer sheets, plywood, laminboard, particle board, fibre board and other panels and boards manufacturing subsector, noted for its high apparent labour productivity in comparison to the other subsectors, for which the wage adjusted labour productivity level was 170 %, about 15 % higher than the level of the non-financial business economy.

EXTERNAL TRADE

EU-27 exports of wood and wood products (CPA Division 20) reached EUR 9.4 billion in 2006. A little over half (52.9 %) of all such exports were to the United States, Japan, Switzerland and Norway. Nevertheless, with EU-27 imports of EUR 10.4 billion, the EU-27 ran a trade deficit of EUR 1.0 billion in wood and wood products in 2006.

Sawn, planed and impregnated wood (CPA Group 20.1) and other products of wood; articles of cork, straw and plaiting materials (CPA Group 20.5), recorded trade deficits of EUR 1.3 billion and EUR 1.1 billion respectively. The other three CPA product groups within wood and wood products all recorded trade surpluses in the range of about EUR 300 million to EUR 600 million (see Table 4.9).

Among the Member States, Sweden, Finland and Austria had the largest (intra- and extra-EU) trade surpluses (between EUR 2.8 billion and EUR 2.2 billion) for wood and wood products. However, Germany was both the principal exporter (16.6 % of EU trade) of wood and wood products in 2006 and its principal importer (13.8 %).

Table 4.8

Manufacture of wood and wood products (NACE Division 20)
Productivity and profitability, EU-27, 2004

	Apparent labour productivity (EUR thousand)	Average personnel costs (EUR thousand)	Wage adjusted labour productivity (%)	Gross operating rate (%)
Wood and wood products (1)	26.4	19.8	134.0	10.3
Sawmilling and planing of wood, impregnation of wood (1)	22.6	15.4	147.0	8.8
Veneer sheets; plywood panels and boards (1)	40.0	24.0	170.0	9.7
Builders' carpentry and joinery	27.0	22.2	121.8	11.5
Wooden containers	27.0	20.6	131.3	8.8
Other products of wood; cork, straw & plaiting materials	21.2	16.7	127.0	11.1

(1) Rounded estimates based on non-confidential data.
Source: Eurostat (SBS)

Table 4.9

Wood and wood products (CPA Division 20)
External trade, EU-27, 2006

	Extra-EU exports		Extra-EU imports			
	(EUR million)	(% share of industrial exports)	(EUR million)	(% share of industrial imports)	Trade balance (EUR million)	Cover ratio (%)
Wood and wood products	9 376	32.1	10 389	48.6	-1 013	90.2
Wood, sawn, planed or impregnated	3 508	12.0	4 775	22.3	-1 267	73.5
Veneer sheets; plywood, panels and boards	2 765	9.5	2 341	11.0	424	118.1
Builders' joinery and carpentry, of wood	1 852	6.3	1 237	5.8	614	149.6
Wooden containers	412	1.4	119	0.6	293	347.2
Other products of wood; cork, straw & plaiting materials	839	2.9	1 916	9.0	-1 078	43.8

Source: Eurostat (Comext)

4.2: PULP, PAPER AND PAPER PRODUCTS

The pulp, paper and paper products sector is broken down in the NACE classification into two groups. The first, NACE Group 21.1, covers the manufacture of pulp, paper and paperboard, through mechanical and chemical processes. These products often require further processing, as covered by the second activity, NACE Group 21.2, which includes the manufacture of corrugated, household and sanitary paper products, as well as newsprint, wallpaper and stationery.

Pulp is the basic material for the manufacture of paper and board and can be made from woodchips (a by-product of sawmills), fresh wood, recovered paper and from some agricultural products (natural textiles or industrial crops). According to the European Commission, the paper and board sector's raw material mix has developed constantly towards a more intensive use of recovered fibre (7). According to the European Recovered Paper Organisation (EPRA), a total of 46.6 million tonnes of paper and board were recycled in the EU-27, Switzerland and Norway in 2005 (8). In September 2006, a European Declaration on Paper Recycling was signed for the period 2006 to 2010 at which the European paper and board manufacturing industry as a whole agreed to take "measures to ensure that by 2010, 66 % of paper and board products consumed in Europe will be recycled". Among other agreements in the Declaration signed by twelve different sectors in the paper value chain (from newspaper and magazine publishers to printing ink manufacturers), paper and board packaging would be designed to better help recycling and improved inks or "deinking" processes would be developed to aid recycling.

(7) More information at http://ec.europa.eu/enterprise/forest_based/.
(8) More information at http://www.erpa.info/.

Table 4.10

Manufacture of pulp, paper and paper products (NACE Division 21)
Structural profile, EU-27, 2004 (1)

	No. of enterprises (thousands)	Turnover (EUR million)	Value added (EUR million)	Employment (thousands)
Pulp, paper and paper products	19.7	160 000	42 600	753.0
Pulp, paper and paperboard	2.4	74 000	18 800	249.5
Pulp	0.2	7 000	:	:
Paper and paperboard	2.1	67 000	:	:
Articles of paper and paperboard	17.3	83 000	23 800	500.0
Corrugated articles and containers	8.5	41 100	12 400	280.0
Household and sanitary goods	:	22 000	5 180	82.0
Paper stationery	3.2	7 860	2 320	56.0
Wallpaper	0.2	1 190	362	7.6
Other articles	4.1	11 500	3 600	77.0

(1) Rounded estimates based on non-confidential data.
Source: Eurostat (SBS)

STRUCTURAL PROFILE

The pulp, paper and paper products (NACE Division 21) sector consisted of about 20 000 enterprises across the EU-27, which generated EUR 42.6 billion of value added in 2004 (55.2 % of the value added of all the activities in wood and paper manufacturing) and employed 753 000 persons (see Table 4.10). Within the sector, the manufacturing of articles of paper and paperboard (NACE Group 21.2) subsector was larger than the manufacturing of pulp, paper and paperboard (NACE Group 21.1) subsector in terms of both the value added generated (55.9 % of the total for the sector) and employment (66.4 %). The main activity within the manufacturing of articles of paper and paperboard (NACE Group 21.2) subsector was the manufacture of corrugated paper and paperboard and of containers of paper and paperboard (NACE Class 21.21), which accounted for a little over half of value added and employment. The manufacturing of pulp, paper and paperboard (NACE Group 21.1) subsector was dominated by the manufacture of paper and paperboard (NACE Class 21.12).

A little over half (54.9 %) of the value added generated by the pulp, paper and paper products manufacturing sector in the EU-27 came from Germany (22.1 %), the United Kingdom (11.3 %), France (10.8 %) and Italy (10.7 %). However, Sweden and particularly Finland were the most specialised Member States in this activity, with the value added generated by pulp, paper and paper products manufacturing contributing 2.6 % and 5.2 % respectively of the value added of the whole of their non-financial business economies (NACE Sections C to I and K), a little more than three times and six times respectively the average share across the EU-27 (see Table 4.11).

Table 4.11

Manufacture of pulp, paper and paper products (NACE Division 21)
Structural profile: ranking of top five Member States, 2004

Rank	Share of EU-27 value added (%) (1)	Share of EU-27 employment (%) (1)	Value added specialisation ratio (EU-27=100) (2)	Employment specialisation ratio (EU-27=100) (2)
1	Germany (22.1)	Germany (19.7)	Finland (624.4)	Finland (508.5)
2	United Kingdom (11.3)	France (11.2)	Sweden (306.5)	Sweden (278.0)
3	France (10.8)	United Kingdom (11.0)	Austria (155.7)	Slovenia (171.2)
4	Italy (10.7)	Italy (10.9)	Slovakia (151.2)	Slovakia (146.8)
5	Finland (8.9)	Spain (7.4)	Slovenia (138.9)	Austria (125.8)

(1) Greece, Luxembourg and Malta, not available.
(2) Ireland, Greece, Cyprus, Luxembourg and Malta, not available.
Source: Eurostat (SBS)

Table 4.12

Production of selected products - pulp, paper and paper products (CPA Division 21), EU-27, 2006 (1)

	Prodcom code	Production value (EUR million)	Volume of sold production (thousands)	Unit of volume
Cartons; boxes and cases of corrugated paper or paperboard	21.21.13.00	18 802	c	kg
Folding cartons; boxes and cases of non-corrugated paper or paperboard	21.21.14.00	11 617	c	kg
Coated paper, for writing, printing, graphic purposes (excluding coated base, weight <= 150 g/m²)	21.12.53.37	5 684	7 652 069	kg
Newsprint in rolls or sheets	21.12.11.50	5 389	10 717 485	kg
Graphic paper, paperboard : mechanical fibres <= 10 %, weight <= 40 g/m² but <= 150 g/m², sheets	21.12.14.39	4 835	5 947 552	kg
Napkins and napkin liners for babies and similar sanitary articles of paper pulp, paper, cellulose wadding or webs of excluding toilet paper, sanitary towels, tampons and similar articles	21.22.12.30	4 634	1 951 993	kg
Light-weight coated paper for writing, printing, graphic purposes, m.f. > 10 %	21.12.53.60	4 449	6 581 361	kg
Graphic paper, paperboard : mechanical fibres > 10 %	21.12.14.70	3 973	6 308 032	kg
Semi-bleached or bleached coniferous chemical wood pulp; soda or sulphate (excluding dissolving grades)	21.11.12.15	3 755	8 184 365	kg 90% sdt
Multi-ply paper and paperboard, coated, with 1 bleached outer layer	21.12.54.55	1 293	1 909 645	kg

(1) Estimated.
Source: Eurostat (PRODCOM)

Between 1996 and 2006, the output of the pulp, paper and paperboard manufacturing subsector increased (an average 2.9 % per annum) at about three times the rate of increase (an average 1.0 % per annum) in the output of articles of paper and paperboard manufacturing subsector. Much of this difference in growth was based on developments between 1996 and 1998, when the output of articles of paper and paperboard remained flat and the output of pulp, paper and paperboard rose sharply.

The domestic output price for the manufacture of pulp, paper and paperboard in the EU-27 declined to a low in 1999, rose very sharply (15.8 %) in 2000 and then fell steadily through until 2005 before a small rise in 2006 to a level that remained significantly below (9.2 %) the relative peak level of 2000. In contrast, after 2001 the domestic output price index for the manufacture of articles of paper and paperboard remained relatively unchanged.

COSTS, PRODUCTIVITY AND PROFITABILITY

Average personnel costs in the pulp, paper and paper products manufacturing sector of the EU-27 were EUR 35 800 per employee in 2004, much higher (80.8 %) than the average personnel costs in the wood and wood products manufacturing sector. Despite these relatively high personnel costs, the proportion of gross operating and tangible investment expenditure accounted for by personnel costs (17.6 %) was lower than the share in the wood and wood products subsector (19.4 %). Average personnel costs in the pulp, paper and paperboard subsector were particularly high (EUR 42 800 per employee) but the share of gross operating and tangible investment expenditure accounted for by personnel costs was relatively low (15.0 %).

The apparent labour productivity of the pulp, paper and paper products manufacturing sector of the EU-27 was EUR 56 600 per person employed in 2004. The apparent labour productivity level in the pulp, paper and paperboard subsector (EUR 75 400 per person employed) was considerably higher, however, than the level (EUR 48 000 per person employed) for the manufacture of articles of paper and paperboard subsector, only the level (EUR 62 800 per person employed) for the manufacture of household and sanitary goods and of toilet requisites (NACE Class 21.22) coming close among its five NACE classes.

Among the Member States, the highest wage adjusted labour productivity ratios for the pulp, paper and paper products manufacturing sector were recorded for the Czech Republic (232.5 %), Slovakia (254.3 %) and Poland (278.9 %), which were all considerably more than the average of 158 % across the EU-27. The wage adjusted productivity ratio of the pulp, paper and paperboard subsector of the EU-27 (176.0 %) was notably higher than the ratio (146.0 %) for the manufacture of articles of paper and paperboard subsector.

The gross operating rate of the pulp, paper and paper products manufacturing sector in the EU-27 was 10.4 % in 2004. Among the Member States for which information is available [9], the highest rate of profitability in the sector by this measure was in Poland (18.8 %). The gross operating rate of the EU'27's pulp, paper and paperboard subsector (11.2 %) was higher than the rate for the articles of paper and paperboard manufacturing subsector (9.6 %).

[9] Greece, Luxembourg and Malta, not available.

EXTERNAL TRADE

The value of EU-27 exports of pulp, paper and paper products (CPA Division 21) in 2006 was EUR 19.8 billion and the value of imports was EUR 11.0 billion, resulting in a trade surplus of EUR 8.9 billion. In closer detail, paper and paperboard (CPA Class 21.12), had a surplus of EUR 9.9 billion while five of the other six CPA classes within this CPA division had trade surpluses of EUR 1.2 billion or less. In contrast to the other CPA classes, however, there was a trade deficit of EUR 3.6 billion for pulp (CPA Class 21.11).

Exports (intra- and extra-EU) of pulp, paper and paper products from Germany (22.4 %), Finland (12.7 %) and Sweden (12.5 %) accounted for a little under a half of all EU-27 Member State exports of these goods. Almost three quarters (73.7 %) of the export by Member States was to other Member States. The largest external export markets for these products were the United States, Russia and Switzerland. Germany, along with France and the United Kingdom were the main importers of pulp, paper and paper products, accounting for 45 % of the total. Over two thirds (70.2 %) of the EU-27's imports from non-Community countries came from North America, Brazil, Switzerland and Norway.

Table 4.13

Manufacture of wood and wood products (NACE Division 20)
Main indicators, 2004

	EU-27 (1)	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT
No. of enterprises (thousands)	197.0	1.7	1.9	29.8	0.7	16.1	1.1	0.3	:	16.9	11.1	44.3	1.1	1.6	1.6
Turnover (EUR million)	121 000	3 370	299	2 508	1 894	21 116	882	1 086	:	10 101	12 777	18 952	183	1 126	602
Production (EUR million)	115 000	3 286	274	2 312	1 865	19 982	859	1 068	:	9 648	12 019	18 252	182	1 043	582
Value added (EUR million)	34 600	880	64	689	715	6 428	206	388	:	2 851	3 503	5 063	73	273	150
Gross operating surplus (EUR million)	12 400	411	35	376	179	1 624	91	198	:	956	845	2 368	22	153	55
Purchases of goods & services (EUR million)	87 000	2 480	252	1 853	1 228	14 613	690	715	:	7 420	9 110	14 016	116	886	463
Personnel costs (EUR million)	22 200	469	29	318	537	4 804	115	191	:	1 894	2 658	2 696	51	119	94
Investment in tangible goods (EUR million)	5 481	190	35	134	110	550	67	40	:	432	612	705	14	133	46
Employment (thousands)	1 310	14	19	76	15	167	19	6	:	106	90	174	3	33	30
Apparent labour prod. (EUR thousand)	26.4	62.0	3.3	9.1	49.3	38.6	10.9	60.5	:	27.0	38.9	29.1	21.8	8.2	5.0
Average personnel costs (EUR thousand)	19.8	37.2	1.6	7.0	37.6	32.2	6.2	30.5	:	20.3	30.7	24.1	18.6	3.7	3.2
Wage adjusted labour productivity (%)	134.0	166.8	202.4	128.9	131.1	119.8	176.4	198.5	:	133.0	126.8	120.9	117.2	223.4	155.0
Gross operating rate (%)	10.3	12.2	11.8	15.0	9.4	7.7	10.4	18.2	:	9.5	6.6	12.5	12.2	13.6	9.2
Investment / employment (EUR thousand)	4.2	13.4	1.8	1.8	7.6	3.3	3.5	6.2	:	4.1	6.8	4.1	4.1	4.0	1.6

	LU (2)	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	NO
No. of enterprises (thousands)	0.0	5.4	:	2.0	3.5	22.0	8.4	7.3	1.6	0.5	2.7	6.8	8.5	2.1
Turnover (EUR million)	144	981	:	2 754	6 186	4 565	3 504	1 450	586	466	5 868	7 980	10 989	2 666
Production (EUR million)	144	786	:	2 612	5 998	4 435	3 302	1 381	539	427	5 679	7 883	10 156	2 476
Value added (EUR million)	37	223	:	877	1 856	1 304	835	312	180	93	1 319	1 864	4 258	743
Gross operating surplus (EUR million)	16	78	:	247	698	785	307	167	41	34	388	459	1 796	199
Purchases of goods & services (EUR million)	107	764	:	1 888	4 455	3 405	2 669	1 216	408	371	4 615	6 254	6 636	1 962
Personnel costs (EUR million)	21	145	:	630	1 158	520	528	145	139	60	931	1 405	2 462	544
Investment in tangible goods (EUR million) (3)	1	67	:	85	322	426	181	236	28	25	224	361	389	83
Employment (thousands)	1	32	:	19	38	142	51	91	12	12	28	41	88	15
Apparent labour prod. (EUR thousand)	63.6	7.1	:	46.0	48.4	9.2	16.5	3.4	14.8	7.5	47.5	45.8	48.4	49.3
Average personnel costs (EUR thousand)	36.6	5.1	:	37.5	33.0	4.5	11.4	1.6	12.6	4.8	34.2	37.8	31.1	38.4
Wage adjusted labour productivity (%)	173.7	137.9	:	122.8	146.9	203.0	145.1	211.1	117.9	155.8	138.8	121.0	156.0	128.5
Gross operating rate (%)	10.9	7.9	:	9.0	11.3	17.2	8.7	11.5	7.0	7.2	6.6	5.8	16.3	7.5
Investment / employment (EUR thousand) (3)	1.8	2.1	:	4.5	8.4	3.0	3.6	2.6	2.3	2.0	8.1	8.9	4.4	5.5

(1) Rounded estimates based on non-confidential data, except investment in tangible goods. (2) 2003. (3) Slovenia, 2003.
Source: Eurostat (SBS)

Table 4.14

Manufacture of pulp, paper and paper products (NACE Division 21)
Main indicators, 2004

	EU-27 (1)	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT
No. of enterprises (thousands)	19.7	0.3	0.4	0.7	0.2	1.6	0.0	0.1	:	2.1	1.6	4.4	0.0	0.1	0.1
Turnover (EUR million)	160 000	5 118	275	1 840	1 455	32 478	95	789	:	11 152	19 380	18 546	71	56	97
Production (EUR million)	150 000	4 442	252	1 675	1 398	30 211	93	764	:	10 834	17 766	17 698	63	56	93
Value added (EUR million)	42 600	1 139	48	432	509	9 425	24	311	:	3 206	4 588	4 576	26	14	23
Gross operating surplus (EUR million)	16 300	415	20	255	131	2 975	10	142	:	1 421	1 051	1 961	11	7	11
Purchases of goods & services (EUR million)	115 000	3 913	227	1 378	980	22 904	71	470	:	8 065	14 333	13 909	46	42	74
Personnel costs (EUR million)	26 300	725	28	178	378	6 450	13	169	:	1 785	3 537	2 615	15	7	12
Investment in tangible goods (EUR million)	8 400	150	21	109	84	2 193	15	23	:	711	800	699	8	10	8
Employment (thousands)	753	17	12	20	8	148	2	4	:	55	84	82	1	2	2
Apparent labour prod. (EUR thousand)	56.6	68.6	3.9	21.4	64.7	63.5	14.2	78.7	:	57.9	54.3	55.7	29.9	8.6	11.0
Average personnel costs (EUR thousand)	35.8	47.1	2.3	9.2	48.2	43.7	8.0	43.0	:	32.8	41.9	34.5	17.1	4.5	6.0
Wage adjusted labour productivity (%)	158.0	145.5	169.0	232.5	134.1	145.3	177.3	182.8	:	176.5	129.6	161.4	174.2	193.2	185.3
Gross operating rate (%)	10.4	8.1	7.3	13.8	9.0	9.2	11.0	18.0	:	12.7	5.4	10.6	15.3	12.4	11.3
Investment / employment (EUR thousand)	11.2	9.0	1.7	5.4	10.7	14.8	8.8	5.9	:	12.8	9.5	8.5	9.5	6.2	3.9

	LU (2)	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	NO
No. of enterprises (thousands)	0.0	0.5	:	0.4	0.2	2.3	0.5	0.7	0.2	0.1	0.2	0.5	2.3	0.1
Turnover (EUR million)	:	1 160	:	5 894	5 151	3 376	2 265	500	628	917	14 331	12 413	18 218	2 175
Production (EUR million)	:	944	:	5 487	4 847	3 215	2 293	495	610	814	13 679	12 448	16 742	2 150
Value added (EUR million)	:	251	:	1 657	1 597	952	678	95	157	167	3 795	3 790	4 816	566
Gross operating surplus (EUR million)	:	92	:	597	722	635	381	46	62	102	1 822	1 737	1 543	185
Purchases of goods & services (EUR million)	:	926	:	4 231	3 652	2 517	1 640	408	471	743	10 922	9 057	13 226	1 662
Personnel costs (EUR million)	:	160	:	1 060	875	317	297	49	95	65	1 973	2 053	3 273	381
Investment in tangible goods (EUR million)	:	91	:	326	402	217	221	48	37	131	572	813	693	95
Employment (thousands)	:	19	:	23	18	42	13	17	6	8	37	43	83	8
Apparent labour prod. (EUR thousand)	:	13.3	:	72.6	89.5	22.8	52.3	5.5	26.8	21.1	102.1	87.8	58.3	74.0
Average personnel costs (EUR thousand)	:	8.5	:	46.6	49.2	8.2	23.2	2.9	16.6	8.3	53.1	51.1	40.3	49.9
Wage adjusted labour productivity (%)	:	156.4	:	155.8	182.1	278.9	225.3	192.0	161.5	254.3	192.2	171.8	144.6	148.3
Gross operating rate (%)	:	7.9	:	10.1	14.0	18.8	16.8	9.2	9.8	11.1	12.7	14.0	8.5	8.5
Investment / employment (EUR thousand)	:	4.8	:	14.3	22.5	5.2	17.1	2.8	6.4	16.5	15.4	18.8	8.4	12.4

(1) Rounded estimates based on non-confidential data, except no. of enterprises. (2) 2003.
Source: Eurostat (SBS)