8

Other non-metallic mineral products

This chapter focuses on the manufacture of other non-metallic mineral products (NACE Division 26), which consists of glass manufacturing (NACE Group 26.1); the manufacture of ceramic and clay products (NACE Groups 26.2 to 26.4); the manufacture of cement and concrete (NACE Groups 26.5 and 26.6); and the working of stone and miscellaneous non-metallic mineral products (NACE Groups 26.7 and 26.8). Note that the quarrying of non-metallic mineral products is covered in Chapter 2.

The processes of transforming mineral raw materials such as clay, lime, sand or stone into other non-metallic mineral products (for use, among others, by construction, food and beverages manufacturing, or households in the form of consumer durables) tend to be energy-intensive. Indeed, energy costs accounted for 9.5 % of the purchases of goods and services in the EU's other non-metallic mineral products manufacturing sector in 2006, the second highest ratio after non-energy mining and quarrying (NACE Subsection CB) among the industrial activities presented in Chapters 2 to 15. Within this sector, the share of energy costs in purchases of goods and services reached 14.9 % for the EU-27's ceramic goods and clay products manufacturing subsector.

Current policy initiatives are focused on environmental impacts, energy strategies, and health and safety. Under the Competitiveness and Innovation Programme (CIP), independent consultants delivered studies to the European Commission's Directorate-General for Enterprise and Industry on the competitiveness of the ceramics and glass sectors in October 2008 [1]. Challenges were identified, including ensuring the availability of energy and raw materials at affordable prices, the need to minimise energy waste, reduce energy use, as well as maintaining emissions within targets and removing tariff and non-tariff international barriers to trade. Suggested areas of development were a focus on the high quality and high value products end of the market, investment in cleaner technologies and environmental management systems, investment in more efficient and flexible automation technologies, improved and more targeted skills training programmes and efforts at a policy level to establish EU environmental regulations on a global platform.

Structural profile

There were 106.6 thousand enterprises across the EU-27 for whom the manufacture of other non-metallic mineral products (NACE Division 26) was their principal activity in 2006. With a workforce of 1.6 million persons, the EU-27's other non-metallic mineral products sector accounted for 1.2 % of those working across all the non-financial business economies (NACE Sections C to I and K) of the Member States. From a turnover of EUR 242.2 billion in 2006, the enterprises in the EU-27's other non-metallic mineral products sector generated EUR 79.8 billion of value added, which was equivalent to 1.4 % of the EU-27's value added in the non-financial business economy.

The EU-27's cement and concrete manufacturing subsector (NACE Groups 26.5 and 26.6) generated EUR 35.4 billion of value added in 2006, the largest contribution (44.3 %) to the value added of the other non-metallic mineral products manufacturing

[1] For more information, see http://ec.europa.eu/enterprise/non_metallic_mineral_products/index_en.htm.

Table 8.1: Manufacture of other non-metallic mineral products (NACE Division 26)
Structural profile, EU-27, 2006

	Enterprises		Turnover		Value added		Persons employed	
	(thousand)	(% of total)	(EUR million)	(% of total)	(EUR million)	(% of total)	(thousand)	(% of total)
Other non-metallic mineral products	106.6	100.0	242 196	100.0	79 824	100.0	1 586.5	100.0
Glass and glass products (1)	17.7	16.6	48 458	20.0	16 683	20.9	371.6	23.4
Ceramic and clay products (2)	21.0	19.7	39 074	17.8	15 572	19.5	368.4	23.2
Cement and concrete	27.3	25.6	113 168	46.7	35 398	44.3	545.2	34.4
Stone and miscelleneous non-metallic mineral products (3)	40.6	38.1	38 627	15.9	11 102	15.1	301.3	19.0

(1) Number of enterprises, 2005.
(2) Rounded estimates based on non-confidential data; turnover, 2005.
(3) Rounded estimates based on non-confidential data; value added, 2005.

Source: Eurostat (SBS)

Table 8.2: Manufacture of other non-metallic mineral products (NACE Division 26)
Structural profile: ranking of top five Member States, 2006

	Highest value added (1)			Largest number of persons employed (1)			Most specialised: share in the non-financial business economy (%)	
	Country	(EUR million)	(% of EU-27)	Country	(thousand)	(% of EU-27)	Value added (2)	Persons employed (3)
1	Germany	13 892	17.4	Italy	245.3	15.5	Czech Republic (2.7)	Slovakia (2.2)
2	Italy	13 186	16.5	Germany	241.7	15.2	Cyprus (2.5)	Czech Republic (2.2)
3	Spain	11 803	14.8	Spain	200.4	12.6	Bulgaria (2.5)	Portugal (1.8)
4	France	9 352	11.7	France	138.4	8.7	Portugal (2.3)	Poland (1.8)
5	United Kingdom	7 867	9.9	Poland	134.1	8.4	Estonia (2.3)	Romania (1.6)

(1) Malta, not available; the Netherlands and Poland, 2005.
(2) Malta and the Netherlands, not available; Bulgaria, Cyprus, Poland and Romania, 2005.
(3) Malta, not available; Bulgaria, Cyprus, the Netherlands, Poland and Romania, 2005.

Source: Eurostat (SBS)

sector. Just over one fifth (20.9 %) of sectoral value added in 2006 came from the activities of glass manufacturing (NACE Group 26.1), with just under a fifth (19.5 %) coming from the ceramic goods and clay products manufacturing subsector (NACE Groups 26.2 to 26.4). The remaining share of sectoral value added came from the activities of stone and miscellaneous non-metallic mineral products (NACE Groups 26.7 and 26.8).

The other non-metallic mineral products manufacturing sectors in Germany and Italy were the largest among the Member States, generating EUR 13.9 billion and EUR 13.2 billion of value added respectively in 2006; together they contributed a little over one third (33.9 %) of the value added generated across the EU-27. However, the contribution made by the other non-metallic mineral products manufacturing sector to the total value added of the non-financial business economy was highest (2.7 %) in the Czech Republic, followed by Cyprus and Bulgaria (both 2.5 % in 2005). In the Czech Republic, this share was almost double the EU-27 average of 1.4 %.

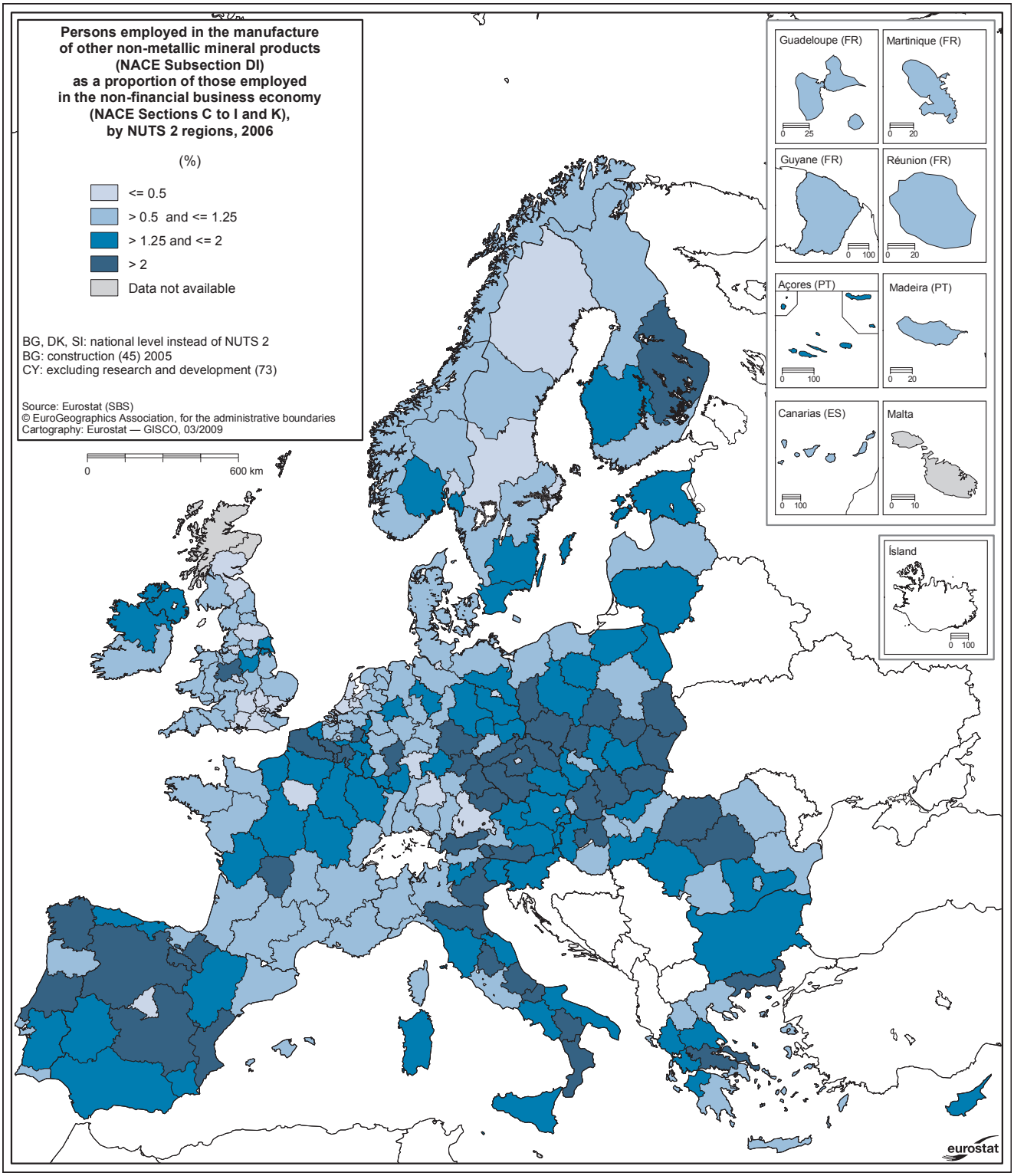
There were many regions in Poland, Italy, Germany, the Czech Republic, Slovakia, Spain and Belgium in which employment in other non-metallic mineral products manufacturing represented at least 2.0 % of the non-financial business economy workforce in 2006. There were also regional pockets in a number of other Member States with relatively high employment in the sector. One of these was the Centro region of Portugal, which was one of only three regions across the EU-27, behind the Province of Namur (Belgium) and Świętokrzyskie (Poland), in which just over 5.0 % of the non-financial business economy workforce was engaged in other non-metallic mineral products manufacturing.

Between 1997 and 2007 the production index of other non-metallic mineral products developed in a similar way to the corresponding index for industry as a whole (NACE Sections C to E); in both cases, relatively strong growth in output came to an end in 2000 before resuming in 2003 through to 2007. Where the production indices of the two differed was in 2001 and 2002; whereas industrial output changed only slightly, the output of other non-metallic mineral products contracted.

The domestic output price index for the manufacture of other non-metallic mineral products rose continuously and remarkably steadily (at an average 2.1 % per annum) during the ten years through to 2007. In these respects, it differed from the development of the domestic output price index for industry as a whole, for which periods of steep price increases (2000 and 2001, and again from 2003) were preceded by one or more years of relative price stagnation.

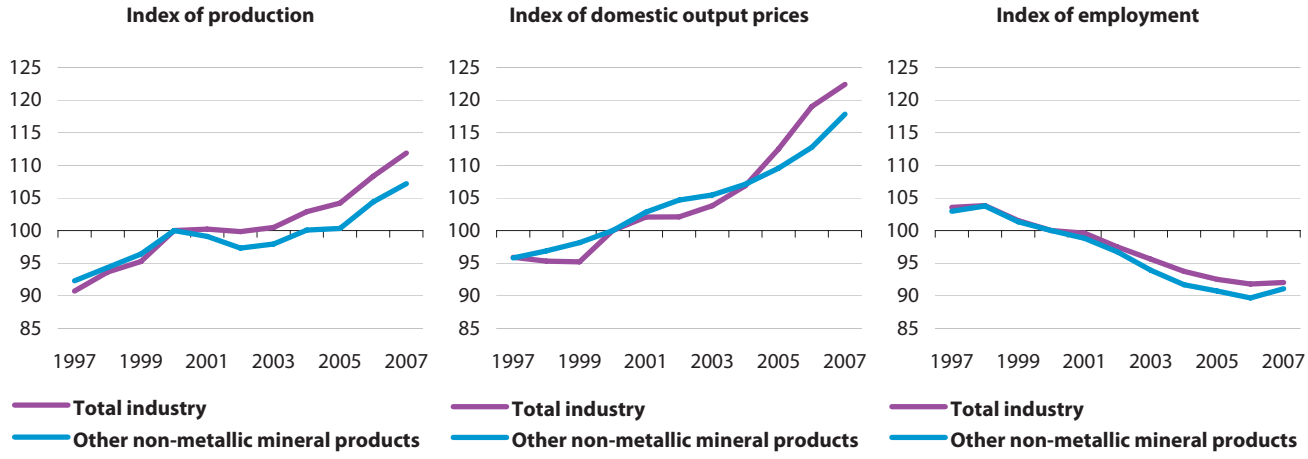
A small majority (52.6 %) of the value added generated within the EU-27's other non-metallic mineral products manufacturing sector in 2006 came from small and medium-sized enterprises (SMEs, employing less than 250 people). This majority was less than that (57.9 %) across the EU-27's non-financial business economy, but contrasted with the situation within industry as a whole, where a minority (42.5 %) of value added was from SMEs. Romania and France stood apart from the other Member States, in that SMEs made a particularly small contribution within their other non-metallic mineral products manufacturing sectors, as they contributed closer to one third (32.6 % and 37.8 % respectively) of sectoral value added in 2006.

Map 8.1: Manufacture of other non-metallic mineral products (NACE Division 26)
Persons employed in the manufacture of other non-metallic mineral products (NACE Subsection DI) as a proportion of those employed in the non-financial business economy (NACE Sections C to I and K) (%)



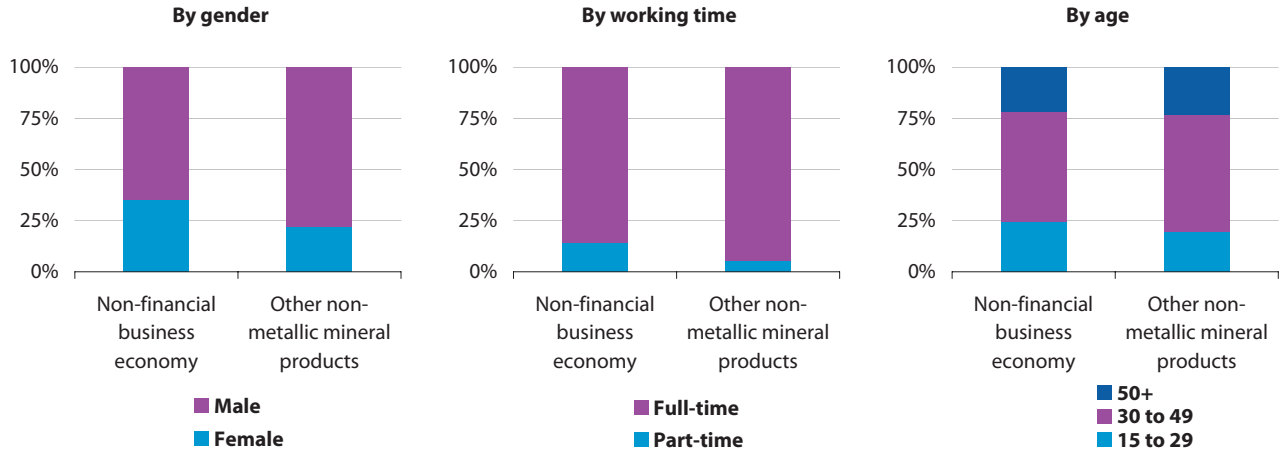
Source: Eurostat (SBS)

Figure 8.1: Manufacture of other non-metallic mineral products (NACE Division 26)
Evolution of main indicators, EU-27 (2000=100)



Source: Eurostat (STS)

Figure 8.2: Manufacture of other non-metallic mineral products (NACE Division 26)
Employment characteristics, 2007



Source: Eurostat (LFS)

Employment characteristics

The profile of workers within the EU-27's other non-metallic mineral products manufacturing sector was rather different to that of the non-financial business economy in terms of gender breakdown, part-time status and age profile.

There was a much higher proportion of men in the EU-27's other non-metallic mineral products manufacturing workforce than across the non-financial business economy workforce (78.1 % compared with 64.9 %) in 2007. This characteristic was common across almost all of the Member States, but was particularly evident in Estonia, the Netherlands and Greece. It was only in the Czech Republic that the proportion of men working in this sector was relatively similar (albeit 2.8 percentage points higher) to that of its non-financial business economy.

Full-time employment within the EU-27's other non-metallic mineral products manufacturing workforce (94.5 % in 2007) was also much more common than it was across the non-financial business economy as a whole (85.7 %).

The proportion of workers in the EU-27's other non-metallic mineral products manufacturing sector under the age of 30 (19.7 %) was notably smaller than the proportion (24.3 %) within the non-financial business economy. This characteristic was particularly pronounced in Denmark, where the share of young workers was almost one half of that for young workers across its non-financial business economy, and was also quite pronounced in the Netherlands, the United Kingdom and Ireland.

Expenditure, productivity and profitability

Personnel costs in the EU-27's other non-metallic mineral products manufacturing sector accounted for 21.6 % of operating expenditure in 2006, a notably higher share than that (16.1 %) for the non-financial business economy as a whole. Personnel costs in the glass manufacturing subsector (NACE Group 26.1) and the ceramic goods and clay products manufacturing subsector (NACE Groups 26.2 to 26.4) accounted for even higher proportions of operating expenditure (24.9 % and 28.7 % in 2005).

Tangible investment in the EU-27's other non-metallic mineral products manufacturing sector was EUR 15.3 billion in 2006. This investment was the equivalent of 19.1 % of the value added generated by the sector in 2006, which was a slightly higher investment rate than that (18.4 %) across the EU-27's non-financial business economy. The level of tangible investment in other non-metallic mineral products manufacturing activities was almost the same as the value added generated by the sector in Romania (a corresponding investment rate of 109.2 %) and Lithuania (96.6 %), these investment rates being much higher than those of their non-financial business economies.

The apparent labour productivity of the EU-27's other non-metallic mineral products manufacturing sector was EUR 50.3 thousand per person in 2006, which was about EUR 6.8 thousand per person more than the average for the non-financial business economy. This average amount of value added generated by each person within the EU-27's other non-metallic mineral products manufacturing sector was also substantially more than average personnel costs (EUR 30.6 thousand per employee); the resulting wage adjusted labour productivity ratio was 164.5 % in 2007, which was higher than the average ratio (151.1 %) for the EU-27's non-financial business economy. This characteristic was common to most of the Member States and was most notable in Bulgaria where the wage adjusted labour productivity ratio for the non-metallic mineral products manufacturing sector was 108 percentage points higher than the non-financial business economy average in 2005. Differences of between 40 and 60 percentage points were also noted for Hungary, Cyprus (2005), Greece, Estonia, Luxembourg and Spain. In contrast, the wage adjusted labour productivity ratio for the other non-metallic mineral products manufacturing sector was notably lower than that of the non-financial business economy in Denmark and the United Kingdom.

Table 8.3: Manufacture of other non-metallic mineral products (NACE Division 26)
Expenditure, productivity and profitability, EU-27, 2006

	(EUR million)			(EUR thousand per person)		(%)	
	Personnel costs	Purchases of goods & services	Investment in tangible goods	Apparent labour productivity	Average personnel costs	Wage adjusted labour productivity	Gross operating rate
Other non-metallic mineral products	45 514	165 255	15 250	50.3	30.6	164.5	14.2
Glass and glass products	10 655	32 218	3 095	44.9	30.2	148.7	12.4
Ceramic and clay products (1)	9 583	24 838	2 698	42.3	27.3	154.7	12.5
Cement and concrete (2)	17 669	79 131	5 560	64.9	33.9	191.4	15.7
Stone and miscelleneous non-metallic mineral products (3)	7 585	26 944	2 051	37.3	28.7	130.2	11.7

(1) Rounded estimates based on non-confidential data; purchases of goods and services and gross operating rate, 2005.
(2) Investment in tangible goods, 2005.
(3) Personnel costs, apparent labour productivity, average personnel costs and wage adjusted labour productivity, 2005.

Source: Eurostat (SBS)

The gross operating rate of the EU-27's other non-metallic mineral products manufacturing sector was 14.2 % in 2006, higher than the average for the non-financial business economy (10.8 %). This characteristic was noted for most of the Member States [2], the only exception being in Germany where it was fractionally lower.

External trade

Just over two thirds (68.4 %) of the value of exports of other non-metallic mineral products (CPA Division 26) by EU-27 Member States was as a result of trade with other Member States (so-called intra-EU trade) in 2007. EU-27 exports of other non-metallic mineral products to non-member countries (extra-EU-27 trade) were valued at EUR 18.4 billion in 2007, representing 1.6 % of the value of industrial (CPA Sections C to E) exports. With imports of other non-metallic mineral products into the EU-27 valued at EUR 12.3 billion in 2007, this resulted in the EU-27 having a trade surplus of EUR 6.1 billion in these products. Just over one half (EUR 3.2 billion) of this trade surplus came from ceramic goods and clay products (CPA Groups 26.2 to 26.4) and about one third (EUR 1.9 billion) from glass and glass products (CPA Group 26.1). The EU-27 also recorded relatively small trade surpluses for the two other CPA aggregates within other non-metallic mineral products in 2007.

The overall trade surplus for other non-metallic mineral products in 2007 represented, however, a further narrowing of the surplus from its relative peak of EUR 8.4 billion in 2002. In the five years that followed, the value of imports grew much more strongly than exports (total growth of 73.0 % compared with 18.7 %). Much of this growth in imports was from other non-metallic mineral products from China. By 2007, just under two fifths (38.8 %) of all extra-EU-27 imports other non-metallic mineral products came from China. Although the value of EU-27 exports of other non-metallic mineral products grew by 4.4 % between 2006 and 2007, exports to the United States (the EU-27's principal partner, accounting for a fifth of the market) declined by about one tenth.

Among the Member States, the largest exporters (intra- and extra-EU trade) of other non-metallic mineral products in 2007 were Germany (EUR 12.1 billion) and Italy (EUR 9.9 billion), both of whom recorded significant trade surpluses (EUR 4.2 billion and EUR 6.3 billion respectively). The largest trade deficits in other non-metallic mineral products were recorded for the United Kingdom (EUR 1.8 billion) and France (EUR 1.5 billion).

(2) Bulgaria, Cyprus, Poland and Romania, 2005; Ireland, Malta and the Netherlands, not available.

Table 8.4: Other non metallic mineral products (CPA Division 26)
External trade, EU-27, 2007

	Value (EUR million)			Share of	Share of
	Extra-EU exports	Extra-EU imports	Trade balance	industrial exports (%)	industrial imports (%)
Other non metallic mineral products	18 433	12 319	6 115	1.6	0.9
Glass and glass products	6 036	4 076	1 960	0.5	0.3
Cement and concrete	1 700	1 469	231	0.1	0.1
Ceramic and clay products	6 784	3 570	3 214	0.6	0.3

Source: Eurostat (Comext)

8.1: Glass

NACE Group 26.1 covers the manufacture of glass and glass products, such as flat glass, container glass, glass fibres or specialised glass.

Glass comes in a range of forms for a range of functions. The majority of EU-27 glass production in 2007 was in the form of container glass (bottles and jars used for preserving and packaging drinks, food and perfumes among other products), the production of flat glass (principally float glass for buildings and automotive vehicles in the form of windows and windscreens) being about one half of that of container glass. The combined production of domestic tableware glass (for example, drinking glasses and oven dishes), special glass (for example, optical glass, electrical equipment screens and lighting glass) and filament glass fibre (principally for the reinforcement of composite materials) was about one third of that of flat glass in 2007.

Structural profile

There were 17.7 thousand enterprises in the EU-27 for whom the manufacture of glass and glass products (NACE Group 26.1, hereafter referred to as glass manufacturing) was their main activity in 2005. These glass manufacturing enterprises employed 371.6 thousand persons in the Member States in 2006, about one in four (23.4 %) of all those working in other non-metallic mineral products manufacturing activities. The EU-27's glass manufacturing sector had a turnover of EUR 48.5 billion in 2006, of which EUR 16.7 billion was added value, representing one fifth (20.9 %) of the value added generated by all other non-metallic mineral product activities.

The two largest subsectors within the EU-27's glass manufacturing sector were the manufacture of hollow glass (NACE Class 26.13) and the shaping and processing of flat glass (NACE Class 26.12), which were of similar size and together generated about three fifths (60.4 %) of the total value added of the glass manufacturing sector in 2006. The manufacture and processing of other glass, including technical glassware (NACE Class 26.15) subsector and the slightly smaller manufacture of flat glass (NACE Class 26.11) subsector accounted together for a further three tenths of the value added of the sector, with the remainder (one tenth) coming from the glass fibres manufacturing (NACE Class 26.14) subsector.

Among the Member States, Germany had the largest glass manufacturing sector in 2006, contributing just over one fifth (20.9 %) of the value added generated in the EU-27, followed by France and Italy. However, it was in the Czech Republic that the value added created by the glass manufacturing sector contributed most [3] to the value added of the non-financial business economy (NACE Sections C to I and K) in 2006, almost three and a half-times the EU-27 average.

During the period between 1997 and 2007, the development of the EU-27's production index for glass manufacturing activities was very similar to the development in output already described for other non-metallic mineral products as a whole, albeit with notably stronger growth in three years

(3) Belgium, Bulgaria, Cyprus, Poland and Romania, 2005; Malta, the Netherlands and Portugal, not available.

Table 8.5: Manufacture of glass and glass products (NACE Group 26.1)
Structural profile, EU-27, 2006

	Enterprises (thousand)	Turnover (EUR million)	Value added (EUR million)	Persons employed (thousand)	Share in total (%)	
					Value added	Persons employed
Glass and glass products (1)	17.7	48 458	16 683	371.6	100.0	100.0
Flat glass	1.7	7 039	2 188	30.4	13.1	8.2
Shaping and processing of flat glass (2)	8.3	15 767	4 851	121.0	29.1	32.6
Hollow glass	2.7	14 205	5 232	127.3	31.4	34.3
Glass fibres	0.5	4 882	1 618	24.1	9.7	6.5
Other glass, including technical glassware	4.5	6 564	2 794	68.7	16.7	18.5

(1) Number of enterprises, 2005.
(2) Rounded estimates based on non-confidential data.

Source: Eurostat (SBS)

through until 2000. Over the ten years through until 2007, growth in the output of glass manufacturing in EU-27 was on average 2.2 % per annum, a very similar rate of growth to the industrial average (2.1 % per annum). Within glass manufacturing, the development in the output of hollow glass stood apart from the broadly upward growth recorded for other activities; there was a relatively gentle but steady decline in the EU-27's production index of hollow glass at an average -0.6 % per annum.

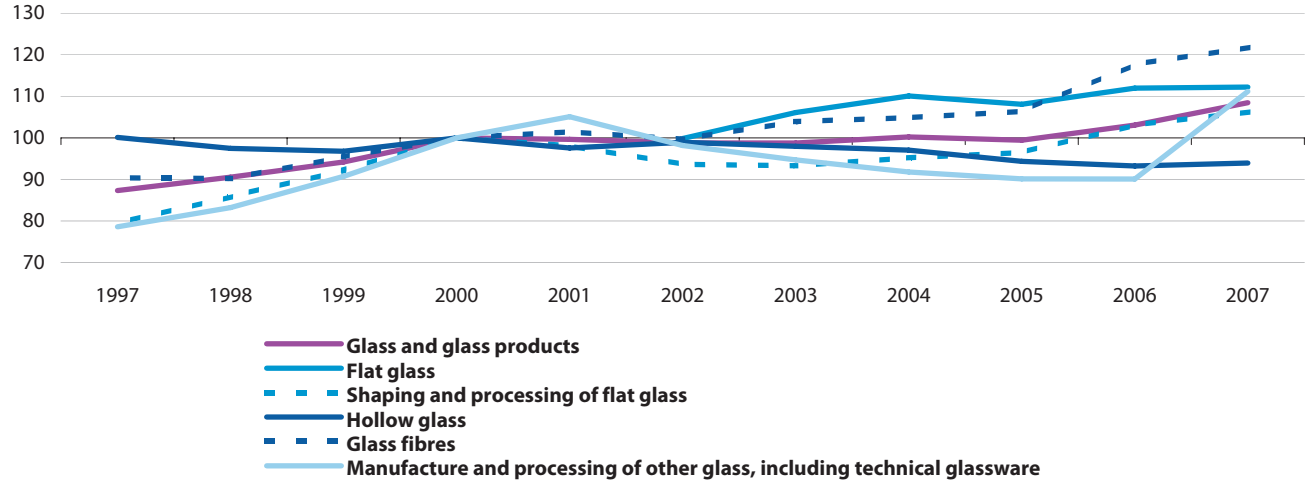
Table 8.6: Glass (CPA Group 26.1)
Production of selected products, EU-27, 2007 (1)

	Prodcom code	Production value (EUR million)	Volume of sold production (million)	Unit of volume	Rounding base (million)
Multiple-walled insulating units of glass	26.12.13.30	4 943	147	m^2	3
Bottles of coloured glass of a nominal capacity < 2.5 litres, for beverages and foodstuffs (excluding bottles covered with leather or composition leather; infant's feeding bottles)	26.13.11.34	2 903	29 294	units	-
Bottles of colourless glass of a nominal capacity < 2.5 litres, for beverages and foodstuffs (excluding bottles covered with leather or composition leather; infant's feeding bottles)	26.13.11.28	2 246	17 840	units	-
Non-wired sheets of float glass and surface ground/polished glass, having an absorbent/reflecting layer, not otherwise worked, thickness >3.5mm excluding horticultural sheet glass	26.11.12.17	1 595	349	m^2	-
Toughened safety glass for use in motor vehicles	26.12.12.15	1 344	66	m^2	-
Glass containers for beverages and foodstuffs of capacity < 2.5 litres (excluding bottles; flasks covered with leather or composition leather; domestic glassware; vacuum flasks & vessels)	26.13.11.40	1 321	14 395	units	-
Laminated safety glass for use in motor vehicles	26.12.12.55	1 172	400	kg	-
Nonwoven glass fibre webs; felts; mattresses and boards	26.14.12.50	1 048	581	kg	-

(1) Excluding products of a generic nature (other), sales of services such as repair, maintenance and installation; estimates; threshold of production value set at EUR 1 billion; the rounding base indicates the magnitude of the rounding employed to protect confidential cells (in the case of PRODCOM code 26.12.13.30, the volume of production lies within the range +/- 3 million m^2 of the reported value).

Source: Eurostat (PRODCOM)

Figure 8.3: Manufacture of glass and glass products (NACE Group 26.1)
Index of production, EU-27 (2000=100)



Source: Eurostat (STS)

Table 8.7: Manufacture of glass and glass products (NACE Group 26.1)
Expenditure, productivity and profitability, EU-27, 2006

	(EUR million)			(EUR thousand per person)	
	Personnel costs	Purchases of goods & services	Investment in tangible goods	Apparent labour productivity	Average personnel costs
Glass and glass products	10 655	32 218	3 095	44.9	30.2
Flat glass	1 149	4 958	319	72.0	40.0
Shaping and processing of flat glass	3 190	11 123	793	40.1	28.4
Hollow glass	3 523	8 881	1 171	41.1	28.4
Glass fibres	952	3 339	271	67.1	39.8
Other glass, including technical glassware	1 841	3 916	541	40.7	28.7

Source: Eurostat (SBS)

Expenditure and productivity

There was tangible investment of EUR 3.1 billion in the EU-27's glass manufacturing sector in 2006. This represented about one fifth (20.3 %) of the tangible investment across all the other non-metallic mineral products manufacturing activities, a very similar share to the relative contribution made by this sector to value added (20.9 %). The investment rate in the EU-27's glass manufacturing sector (18.6 %) was similar, therefore, to the investment rate noted across all other non-metallic mineral products manufacturing activities (19.1 %) in 2006.

About one quarter (24.9 %) of the glass manufacturing sector's operating expenditure went on personnel costs in 2006, a higher share than the average (21.6 %) across all of the other non-metallic mineral products manufacturing activities, despite average personnel costs in the sector (EUR 30.2 thousand per employee) being marginally lower.

Each person employed in the EU-27's glass manufacturing sector generated an average of EUR 44.9 thousand of added value in 2006, which was about 10 % less than the corresponding level of apparent labour productivity among those working within other non-metallic mineral products manufacturing, while the corresponding ratio for average personnel costs showed that employees within glass manufacturing received, on average, EUR 14.7 thousand more than their counterparts across all other non-metallic mineral products manufacturing activities. The resulting wage adjusted labour productivity ratio for the EU-27's glass manufacturing sector was 147.8 % which was, by way of comparison, below the ratio (164.5 %) for other non-metallic mineral products manufacturing as a whole. Among the glass manufacturing activities, wage adjusted labour productivity ratios varied from just under 142 % for the shaping and processing of flat glass and for the manufacture and processing of other glass, including technical glassware to a high of 179.8 % for the manufacture of flat glass.

8.2: Ceramic and clay products

This subchapter includes information on three NACE groups: the manufacture of non-refractory ceramic goods other than for construction purposes and of refractory ceramic products (NACE Group 26.2) hereafter called ceramic goods other than for construction; the manufacture of ceramic tiles and flags (NACE Group 26.3); the manufacture of clay bricks and tiles, as well as other construction products made of clay (NACE Group 26.4) hereafter called clay construction products.

The market for ceramic and clay products is principally driven by the construction sector, for which bricks and tiles are used during the general construction phase and as wall and floor coverings, as well as sanitary ware in completion and installation stages.

Structural profile

The manufacture of ceramic and clay products (NACE Groups 26.2 to 26.4) was the main activity of about 21.0 thousand enterprises within the EU-27 in 2006. These enterprises employed 368.4 thousand people in the Member States, a little less than one in every four (23.2 %) of the other non-metallic mineral products manufacturing (NACE Division 26) workforce. The EU-27's ceramic and clay products manufacturing sector generated EUR 15.6 billion of value added in 2006 (one fifth of the value added across the activities of other non-metallic mineral products manufacturing), the largest contribution (42.4 %) of which came from the ceramic goods other than for construction (NACE Group 26.2) manufacturing subsector, the remainder coming relatively evenly from the manufacture of ceramic tiles and flags (NACE Group 26.3) and the manufacturing of clay construction products (NACE Group 26.4) subsectors.

The value added generated by the ceramic and clay products manufacturing sector in Italy was EUR 3.7 billion in 2006, a little less than one quarter (23.9 %) of the value added generated by the ceramic and clay products manufacturing sectors in the EU-27. The next largest contributions of value added came from Spain (18.6 %) and Germany (16.1 %). Among those Member States with available data [4], Italy, Hungary and Spain were the countries that were most specialised in ceramic and clay products manufacturing in value added terms.

There were contrasting developments in the production indices of the three NACE groups that comprise ceramic and clay products manufacturing. After rises in 1997 and 1998, there was then a relatively steady downward trend in the EU-27's output of ceramic tiles and flags through until 2007, the average rate of decline over the ten years being -1.0 % per annum. There was also a clear downward trend in the EU-27's output of ceramic goods other than for construction purposes during the same period, despite upturns in 2000, 2004 and 2007, the average rate of decline being -1.5 % per annum. The development of the production index for clay construction products, however, was similar to the development for other non-metallic mineral products as a whole, albeit with more exaggerated rises from 1998 through to 2000 and again after 2002, and steeper falls in 2001 and 2002.

(4) Belgium, Bulgaria, Cyprus and Poland, 2005; the Czech Republic, Denmark, Estonia, Latvia, Luxembourg, Malta, the Netherlands, Austria, Portugal, Romania, Slovenia and Sweden, not available.

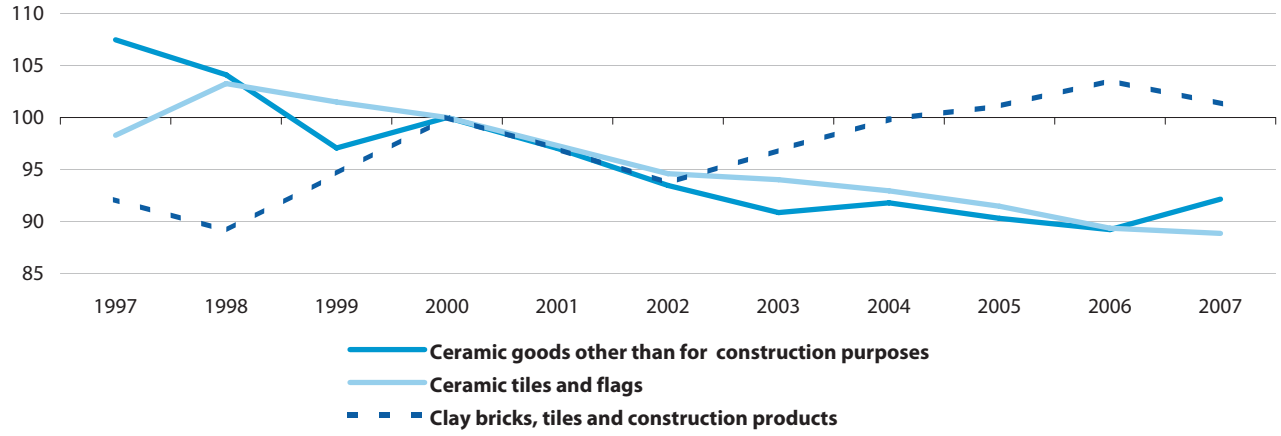
Table 8.8: Manufacture of non-refractory ceramic goods other than for construction purposes; manufacture of refractory ceramic products; manufacture of ceramic tiles and flags; manufacture of bricks, tiles and construction products (NACE Groups 26.2, 26.3 and 26.4)
Structural profile, EU-27, 2006 (1)

	Enterprises (thousand)	Turnover (EUR million)	Value added (EUR million)	Persons employed (thousand)	Share in total (%)	
					Value added	Persons employed
Ceramic and clay products (2)	21.0	39 074	15 572	368.4	100.0	100.0
Ceramic goods other than for construction purposes	16.2	17 273	6 600	191.9	42.4	52.1
Ceramic tiles and flags (2)	1.8	13 076	4 602	93.5	29.5	25.4
Clay bricks, tiles and construction products	3.0	10 657	4 371	83.0	28.1	22.5

(1) Rounded estimate based on non-confidential data.
(2) Turnover, 2005.

Source: Eurostat (SBS)

Figure 8.4: Manufacture of non-refractory ceramic goods other than for construction purposes; manufacture of refractory ceramic products; manufacture of ceramic tiles and flags; manufacture of bricks, tiles and construction products (NACE Groups 26.2, 26.3 and 26.4)
Index of production, EU-27 (2000=100)



Source: Eurostat (STS)

Table 8.9: Ceramic and clay products (CPA Groups 26.2 to 26.4)
Production of selected products, EU-27, 2007 (1)

	Prodcom code	Production value (EUR million)	Rounding base (EUR million)	Volume of sold production (million)	Unit of volume	Rounding base (million)
Non-refractory clay building bricks (excluding of siliceous fossil meals or earths)	26.40.11.10	5 700	300	123	m^3	-
Glazed stoneware flags and paving; hearth or wall tiles; with a face of > 90 cm^2	26.30.10.73	4 384	-	572	m^2	-
Glazed ceramic flags and paving, hearth or wall tiles excluding double tiles of the spaltplatten type, stoneware, earthenware or fine pottery flags, paving or tiles with a face of not > 90 cm^2	26.30.10.79	2 644	-	318	m^2	-
Non-refractory clay roofing tiles	26.40.12.50	2 541	-	4 236	units	-
Glazed earthenware or fine pottery ceramic flags and paving; hearth or wall tiles; with a face of > 90 cm^2	26.30.10.75	2 065	-	377	m^2	-
Ceramic sinks and other sanitary fixtures, of porcelain of china	26.22.10.30	1 844	-	45	units	-
Unglazed stoneware flags and paving; hearth or wall tiles (excluding double tiles of the Spaltplatten type)	26.30.10.53	1 600	20	169	m^2	1
Porcelain or china tableware and kitchenware (excluding electro-thermic apparatus, coffee or spice mills with metal working parts)	26.21.11.30	1 334	-	277	kg	-
Refractory cements; mortars; concretes and similar compositions (including refractory plastics, ramming mixes, gunning mixes) (excluding carbonaceous pastes)	26.26.13.00	1 100	100	3 021	kg	-

(1) Excluding products of a generic nature (other), sales of services such as repair, maintenance and installation; estimates; threshold of production value set at EUR 1 billion; the rounding base indicates the magnitude of the rounding employed to protect confidential cells (in the case of PRODCOM code 26.40.11.10, the value lies within the range +/- EUR 300 million of the reported value).

Source: Eurostat (PRODCOM)

Expenditure and productivity

Tangible investment in the EU-27's ceramic goods and clay products sector was valued at EUR 2.7 billion in 2006, corresponding to 17.7 % of tangible investment across all the activities of other non-metallic mineral products manufacturing. In comparison to the value added generated by the ceramic goods and clay products sector in 2006, this level of tangible investment corresponded to an investment rate of 17.3 %, somewhat lower than the average rate (19.1 %) for other non-metallic mineral products manufacturing.

Average personnel costs across the EU-27's ceramic goods and clay products sector were EUR 27.3 thousand per employee in 2006, about 10 % less than the average for other non-metallic mineral products manufacturing activities. However, personnel costs accounted for a relatively high proportion (28.7 % in 2005) of operating expenditure. Personnel costs accounted for a slightly higher share (29.3 %) of operating expenditure in the ceramic goods other than for construction subsector, despite lower average personnel costs (EUR 25.2 thousand per employee), suggesting that this subsector was relatively labour-intensive.

The average added value generated by each person employed within the EU-27's ceramic goods and clay products sector was EUR 42.3 thousand in 2006, which was the equivalent of EUR 8.0 thousand less per person than the average for all workers within other non-metallic mineral products manufacturing. Although average personnel costs were also lower, the wage adjusted labour productivity ratio of 154.7 % for the EU-27's ceramic goods and clay products sector remained below the average ratio (164.5 %) for all other non-metallic mineral products manufacturing in 2006. Within the ceramic goods and clay products sector, there was a wide spread in wage adjusted labour productivity ratios, ranging from 136.6 % for the ceramic goods other than for construction manufacturing subsector to 196.3 % for the manufacturing of clay construction products subsector.

8.3: Cement and concrete

This subchapter covers the manufacture of cement, lime and plaster (NACE Group 26.5), as well as the manufacture of articles made from concrete, plaster and cement (NACE Group 26.6).

The production of cement is a two-step process that involves producing a clinker from raw materials (mainly limestone and clay) that is heated within a kiln at an intense heat, before being cooled at 100ºC – 200ºC. In a second step, gypsum and sometimes additions like coal fly ash are added to the clinker and ground to a fine cement powder. Concrete is a solid material that is made of cement, mixed with water, aggregates, sand and usually some admixtures.

Structural profile

The EU-27's cement and concrete manufacturing sector (NACE Groups 26.5 and 26.6) comprised 27.3 thousand enterprises in the Member States in 2006, which employed 545.2 thousand persons or the equivalent of about one person in every three (34.4 %) of those working in the activities of other non-metallic mineral products manufacturing (NACE Division 26). From a turnover of EUR 113.2 billion in 2006, the cement and concrete manufacturing sectors of the Member States together generated a total added value of EUR 35.4 billion, which represented 44.3 % of the value added created by all the activities of other non-metallic mineral products manufacturing in the EU-27. The cement, lime and plaster subsector was the smallest of the two subsectors in cement and concrete manufacturing, as it generated 29.9 % of sectoral value added and employed 15.0 % of the workforce.

Among the Member States for which data are available [5], the cement and concrete manufacturing sector in Spain was the largest, contributing 15.7 % of EU-27 value added in 2006. It was marginally bigger than in Germany (14.9 % of EU-27 value added) and Italy (14.0 %), with France (12.3 %) and the United Kingdom (10.6 %) a little smaller still. Cyprus, Bulgaria, Romania (all 2005) and Greece were relatively specialised [6] in the manufacture of cement and concrete, the contribution of this sector to the value added generated across their respective non-financial business economies being between two and three times the EU-27 average.

(5) Belgium and Poland, 2005; Denmark, Estonia, Latvia, Luxembourg, Malta, the Netherlands and Austria, not available.

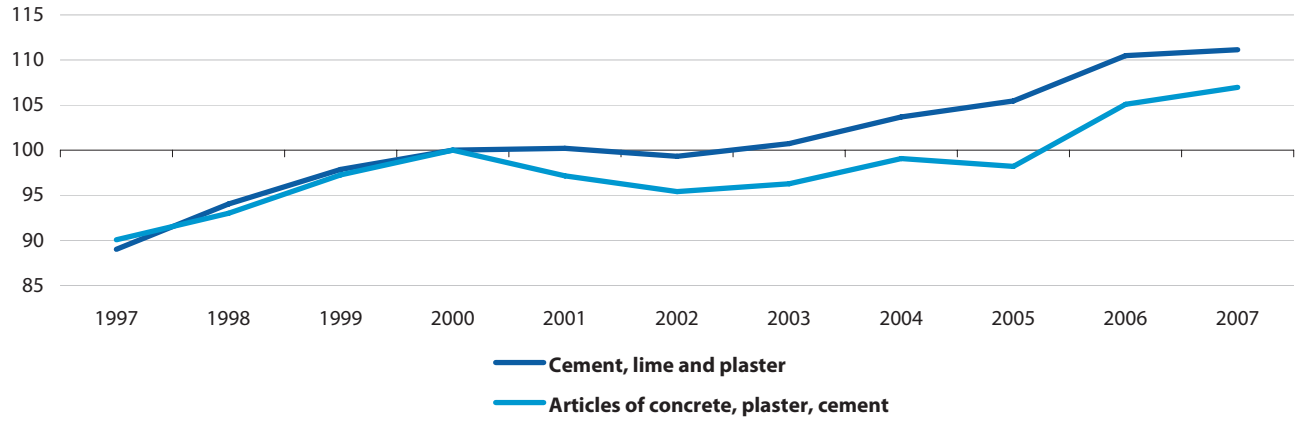
(6) Belgium, Bulgaria, Cyprus, Poland and Romania, 2005; Denmark, Estonia, Latvia, Luxembourg, Malta, the Netherlands and Austria, not available.

Table 8.10: Manufacture of cement, lime and plaster; manufacture of articles of concrete, plaster, cement (NACE Groups 26.5 and 26.6)
Structural profile, EU-27, 2006

	Enterprises (thousand)	Turnover (EUR million)	Value added (EUR million)	Persons employed (thousand)	Share in total (%)	
					Value added	Persons employed
Cement and concrete	27.3	113 168	35 398	545.2	100.0	100.0
Cement, lime and plaster	1.3	26 723	10 586	81.6	29.9	15.0
Articles of concrete, plaster, cement	26.0	86 445	24 811	463.6	70.1	85.0

Source: Eurostat (SBS)

Figure 8.5: Manufacture of cement, lime and plaster; manufacture of articles of concrete, plaster, cement (NACE Groups 26.5 and 26.6)
Index of production, EU-27 (2000=100)



Source: Eurostat (STS)

Table 8.11: Cement and concrete (CPA Groups 26.5 and 26.6)
Production of selected products, EU-27, 2007 (1)

	Prodcom code	Production value (EUR million)	Volume of sold production (million)	Unit of volume
Ready-mixed concrete	26.63.10.00	26 024	943 628	kg
Grey Portland cement (including blended cement)	26.51.12.30	16 992	225 144	kg
Prefabricated buildings of cement	26.61.12.00	14 082	-	-

(1) Excluding products of a generic nature (other), sales of services such as repair, maintenance and installation; estimates; threshold of production value set at EUR 10 billion.

Source: Eurostat (PRODCOM)

Table 8.12: Manufacture of cement, lime and plaster; manufacture of articles of concrete, plaster, cement (NACE Groups 26.5 and 26.6)
Expenditure, productivity and profitability, EU-27, 2006

	(EUR million)			(EUR thousand per person)	
	Personnel costs	Purchases of goods & services	Investment in tangible goods	Apparent labour productivity	Average personnel costs
Cement and concrete (1)	17 669	79 131	5 560	64.9	33.9
Cement, lime and plaster (1)	3 595	17 001	1 660	129.7	44.6
Articles of concrete, plaster, cement	14 074	62 129	5 271	53.5	32.0

(1) Investment in tangible goods, 2005.

Source: Eurostat (SBS)

Between 1997 and 2007, the EU-27's production index for cement, lime and plaster closely followed the development for industry (NACE Sections C to E) as a whole, including a temporary levelling off in output in 2001 and 2002. This short period of stability in the production index for cement, lime and plaster contrasted with cutbacks in the output of articles of concrete, plaster and cement in the same two years and explains much of the difference in the rate of growth in the two indices over the ten years through to 2007 (an average 2.2 % per annum compared with 1.7 % per annum).

Expenditure and productivity

A little over two fifths (42.8 %) of the tangible investment made within other non-metallic mineral products manufacturing activities of the EU-27 in 2005 was invested within the cement and concrete sector. Tangible investment in the sector of EUR 5.6 billion in 2005 was the equivalent of 17.8 % of the added value generated in this sector, an almost identical investment rate to that for other non-metallic mineral products manufacturing as a whole in 2005.

Although average personnel costs of EUR 33.9 thousand per employee within the EU-27's cement and concrete manufacturing sector were just over one tenth higher than the average for other non-metallic mineral products manufacturing in 2006, they accounted for a lower share of operating expenditure (18.3 % compared with 21.6 %).

On average, each person employed within the EU-27's cement and concrete manufacturing sector generated EUR 64.9 thousand of added value in 2006, almost 30 % more than the average for the manufacture of other non-metallic mineral products. Even when adjusting productivity for personnel costs, the resulting wage adjusted labour productivity ratio (191.4 %) of the EU-27's cement and concrete manufacturing sector remained much higher than the corresponding ratio (164.5 %) for the manufacture of other non-metallic mineral products in 2006. The wage adjusted labour productivity ratio (290.9 %) of the EU-27's cement, lime and plaster manufacturing subsector was significantly higher than that for the manufacture of articles of concrete, plaster and cement subsector (167.5 %), and was the third highest ratio among all of the manufacturing NACE groups in 2006, lower only than the reproduction of recorded media (NACE Group 22.3) and the manufacture of refined petroleum products (NACE Group 23.2).

8.4: Stone and miscellaneous non-metallic mineral products

This subchapter covers separately the activities of cutting, shaping and finishing stone (NACE Group 26.7), hereafter referred to as the working of stone, and the manufacture of other non-metallic mineral products (NACE Group 26.8), hereafter referred to as the manufacture of miscellaneous non-metallic mineral products; this latter group includes the production of abrasive products, non-metallic mineral yarns, and mineral insulating materials (be they for heat or sound insulation).

Working of stone

There were 37.0 thousand enterprises in the Member States for whom the working of stone (NACE Group 26.7) was their main activity in 2006. These enterprises employed 203.4 thousand persons, about one in every eight people (12.8 %) within the total EU-27 workforce of other non-metallic mineral products manufacturing (NACE Division 26). From a turnover of EUR 17.0 billion, the EU-27's working of stone subsector created EUR 6.4 billion of added value, which represented 8.0 % of the value added generated by the other non-metallic mineral products manufacturing sector as a whole.

Just over one half (51.2 %) of the value added generated by the EU-27's working of stone subsector in 2006 was generated in Italy and Spain, two countries that were also amongst the most specialised in this activity. Among the Member States for which information is available [7], Portugal was the most specialised in this activity, the relative contribution of the working of stone subsector to non-financial business economy (NACE Sections C to I and K) value added being almost three times the EU-27 average in 2006.

The cumulative fall in the EU-27's production index for the working of stone in the period between 2001 and 2004 took output back close to its level recorded for 1997. In the three years through to 2007, however, the production index for the working of stone rose at a similar rate to the index for other non-metallic mineral products, resulting in an average rate of growth in output over the ten year period of 0.9 % per annum.

Tangible investment of EUR 0.9 billion in the EU-27's working of stone subsector in 2006 corresponded to 5.9 % of investment across the other non-metallic mineral products manufacturing sector. In comparison to the level of value added generated by the working of stone subsector, this corresponded to an investment rate of 14.1 %, which was significantly lower than the average rate (19.1 %) recorded for other non-metallic mineral products manufacturing in 2006.

Average personnel costs of EUR 23.5 thousand per employee within the EU-27's working of stone subsector were EUR 7.1 thousand less than the average across other non-metallic mineral products manufacturing in 2006. Nevertheless, personnel costs in the subsector accounted for a much higher proportion of operating expenditure than across other non-metallic mineral products manufacturing (26.8 % compared with 21.6 %), underlining the relatively labour-intensive nature of working with stone.

(7) Bulgaria, Cyprus, Poland and Romania, 2005; the Czech Republic, Malta and the Netherlands not available.

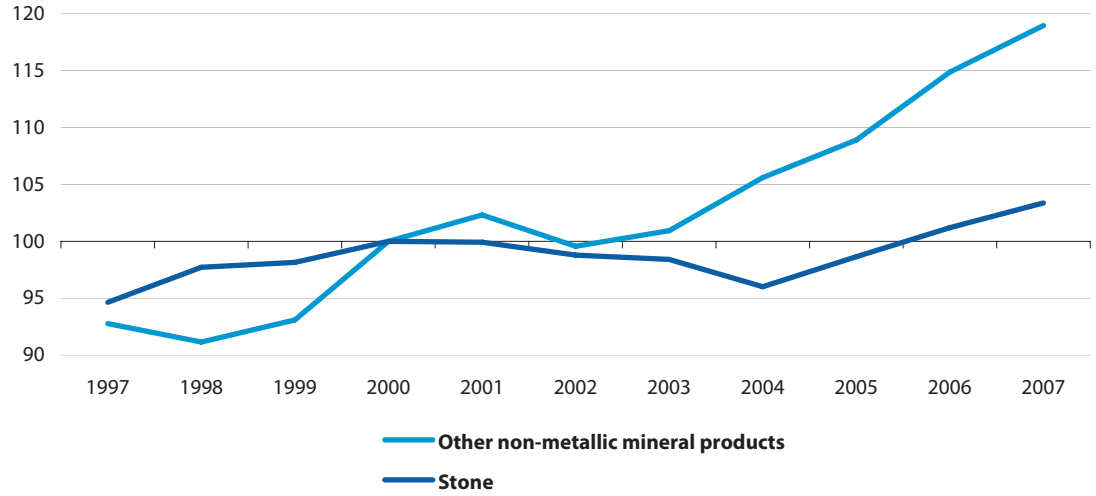
Table 8.13: Cutting, shaping and finishing of stone; manufacture of other non-metallic mineral products (NACE Groups 26.7 and 26.8)
Structural profile, EU-27, 2006 (1)

	Enterprises (thousand)	Turnover (EUR million)	Value added (EUR million)	Persons employed (thousand)	Share in total (%)	
					Value added	Persons employed
Stone and miscelleneous non-metallic mineral products (2)	40.6	38 627	11 102	301.3	100.0	100.0
Cutting, shaping and finishing of ornamental and building stone	37.0	17 000	6 400	203.4	54.0	67.5
Other non-metallic mineral products (2)	3.7	21 627	5 102	97.9	46.0	32.5

(1) Rounded estimates based on non-confidential data.
(2) Value added, 2005.

Source: Eurostat (SBS)

Figure 8.6: Cutting, shaping and finishing of stone; manufacture of other non-metallic mineral products (NACE Groups 26.7 and 26.8)
Index of production, EU-27 (2000=100)



Source: Eurostat (STS)

The apparent labour productivity of the EU-27's working of stone subsector was EUR 31.5 thousand of value added per person employed in 2006, just over one third (37.5 %) less than the average generated by each person employed within other non-metallic mineral products manufacturing activities. Despite relatively low personnel costs in this subsector, the wage adjusted labour productivity ratio for the working of stone subsector (133.7 %) remained lower than that for any of the other non-metallic mineral products manufacturing activities at the NACE group level and well below the average for all of these activities (164.5 %).

Manufacture of miscellaneous non-metallic mineral products

The manufacture of miscellaneous non-metallic mineral products (NACE Group 26.8) was an activity that employed 97.9 thousand persons in 2006 (6.2 % of the other non-metallic mineral products manufacturing workforce) in 3.7 thousand enterprises across the EU-27. These enterprises generated EUR 5.1 billion of value added in 2005, equivalent to just over one quarter (26.0 %) of the subsector's turnover. By far the largest of the two activities within this miscellaneous group was the manufacture of other non-metallic mineral products not elsewhere classified (NACE Class 28.82), which generated EUR 4.2 billion of added value in 2006 compared with EUR 1.5 billion for the production of abrasive products (NACE Class 26.81).

A little less than one third (31.1 %) of the value added generated by the EU-27's miscellaneous non-metallic mineral products manufacturing subsector in 2005 came from Germany, which was about three times the size of the next largest contributions from Italy (11.0 %) and the United Kingdom (10.2 %). However, the relative contribution of this activity to the value added of the non-financial business economy was greatest in Slovenia (0.5 %), about five times the average for the EU-27 as a whole.

The development of the EU-27's production index for miscellaneous non-metallic mineral products manufacturing was broadly similar to that for all other non-metallic mineral products manufacturing during the period between 1997 and 2007, albeit with a much steeper rise in output through from 2003. Over the ten-year period, the output of miscellaneous non-metallic mineral products rose by an average 2.5 % per annum.

Tangible investment in the EU-27's miscellaneous non-metallic mineral products manufacturing subsector was EUR 1.2 billion in 2006. Tangible investment within the subsector represented 7.5 % of all tangible investment across the activities of other non-metallic mineral products manufacturing in 2006. The level of tangible investment in this subsector was in line with its relative contribution to the value added generated across other non-metallic mineral products manufacturing as a whole, resulting in similar rates of investment, 17.3 % in 2005 compared with an average of 17.7 % for other non-metallic mineral products manufacturing.

Although personnel costs of EUR 38.9 thousand per employee on average in the EU-27's miscellaneous non-metallic mineral products manufacturing subsector in 2005 were just over one quarter (27.1 %) more than the average across all other non-metallic mineral products manufacturing, they represented a smaller share of operating expenditure (20.1 % for the subsector compared with 23.5 % across other non-metallic mineral products manufacturing in the same year).

The apparent labour productivity of the EU-27's miscellaneous non-metallic mineral products manufacturing subsector was EUR 52.3 thousand per person employed in 2005, which was 13.7 % higher than the average across other non-metallic mineral products manufacturing. However, with average personnel costs being so much higher, the wage adjusted labour productivity ratio for this subsector (134.4 %) in 2005 was much lower than the corresponding ratio (150.6 % in 2005) for the EU-27's other non-metallic mineral products manufacturing activities.

Table 8.14: Stone and miscellaneous non-metallic mineral products (CPA Groups 26.7 and 26.8)
Production of selected products, EU-27, 2007 (1)

	Prodcom code	Production value (EUR million)	Rounding base (EUR million)	Volume of sold production (million)	Unit of volume	Rounding base (million)
Bituminous mixtures based on natural and artificial aggregate and bitumen or natural asphalt as a binder	26.82.13.00	3 436	-	72 779	kg	-
Worked monumental/building stone and articles thereof, in marble, travertine and alabaster excluding tiles, cubes/similar articles, largest surface < 7 cm², setts, kerbstones, flagstones	26.70.11.00	3 325	-	9 817	kg	-
Worked monumental or building stone and articles thereof, of granite excluding tiles, cubes and similar articles, largest surface area is < 7 cm², setts, kerbstones and flagstones	26.70.12.60	2 991	3	6 575	kg	1
Slag wool; rock wool and similar mineral wools and mixtures thereof; in bulk; sheets or rolls	26.82.16.10	2 237	-	2 451	kg	-
Roofing or water-proofing felts based on bitumen (in rolls)	26.82.12.53	1 952	-	942	m²	-

(1) Excluding products of a generic nature (other), sales of services such as repair, maintenance and installation; estimates; threshold of production value set at EUR 1 billion; the rounding base indicates the magnitude of the rounding employed to protect confidential cells (in the case of PRODCOM code 26.70.12.60, the value lies within the range +/- EUR 3 million of the reported value).

Source: Eurostat (PRODCOM)

Table 8.15: Manufacture of other non-metallic mineral products (NACE Division 26)
Main indicators, 2006 (1)

	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT
Enterprises	1.5	1.2	6.1	0.6	9.6	0.2	0.3	4.5	11.8	9.2	25.9	0.3	0.4	0.9
Persons employed	32.3	29.3	76.9	18.1	241.7	5.7	10.9	25.6	200.4	138.4	245.3	3.4	6.3	11.9
Turnover	8 435	1 270	5 475	3 322	42 312	509	2 598	3 705	36 474	30 624	43 613	534	376	511
Production	8 300	1 191	5 345	3 179	38 638	463	2 496	3 654	35 131	28 860	42 851	525	367	513
Purch. of goods & serv.	6 009	953	3 899	2 056	28 187	342	1 598	2 510	25 592	21 457	30 941	359	283	359
Value added	2 437	355	1 852	1 307	13 892	173	1 012	1 371	11 803	9 352	13 186	189	116	181
Personnel costs	1 503	89	832	843	9 661	74	468	668	6 021	5 963	7 262	86	43	82
Average personnel costs	48.9	3.1	11.8	47.5	41.3	12.8	43.5	31.5	31.1	44.0	35.0	26.3	6.9	7.3
Gross operating surplus	934	266	1 020	464	4 231	100	544	703	5 782	3 389	5 924	103	72	99
Gross investment	377	239	435	321	1 762	68	230	199	2 297	1 632	2 520	53	112	62
Apparent labour prod.	75.6	12.1	24.1	72.2	57.5	30.2	92.6	53.6	58.9	67.6	53.8	56.0	18.2	15.2
Wage adj. labour prod.	154.5	386.1	204.6	151.9	139.0	235.1	212.9	170.1	189.7	153.6	153.5	212.9	264.9	207.5
Gross operating rate	11.1	20.9	18.6	14.0	10.0	19.6	21.0	19.0	15.9	11.1	13.6	19.2	19.3	19.3
Investment rate	15.5	67.5	23.5	24.5	12.7	39.4	22.8	14.5	19.5	17.5	19.1	28.2	96.6	34.3
	LU	**HU**	**MT**	**NL**	**AT**	**PL**	**PT**	**RO**	**SI**	**SK**	**FI**	**SE**	**UK**	**NO**
Enterprises	0.0	2.3	:	1.6	1.4	10.3	5.8	2.8	0.5	0.4	0.9	2.1	4.9	0.8
Persons employed	2.9	28.7	:	29.2	35.4	134.1	60.4	60.4	9.6	21.0	17.0	20.3	112.7	11.1
Turnover	748	2 472	:	6 047	6 457	7 422	5 020	2 485	903	1 339	3 287	3 791	20 222	2 812
Production	707	2 100	:	5 669	6 040	6 994	4 718	2 412	826	1 287	3 191	3 542	18 575	2 638
Purch. of goods & serv.	448	1 776	:	4 047	3 990	5 008	3 663	1 782	606	932	2 134	2 630	12 227	1 959
Value added	297	722	:	1 969	2 625	2 669	1 672	790	301	416	1 213	1 210	7 867	905
Personnel costs	145	305	:	1 261	1 587	989	926	290	166	190	693	784	4 351	601
Average personnel costs	49.7	11.1	:	45.7	46.1	8.1	15.7	4.8	17.8	9.1	41.5	44.4	39.6	55.1
Gross operating surplus	151	416	:	708	1 038	1 681	745	499	135	226	520	398	3 516	304
Gross investment	17	294	:	193	451	769	366	863	62	149	149	167	1 265	154
Apparent labour prod.	100.9	25.2	:	67.5	74.2	19.9	27.7	13.1	31.2	19.8	71.5	59.6	69.8	81.2
Wage adj. labour prod.	203.1	226.5	:	147.7	160.9	245.3	176.6	269.7	175.9	218.6	172.4	134.3	176.5	147.5
Gross operating rate	20.2	16.8	:	11.7	16.1	22.6	14.8	20.1	14.9	16.9	15.8	10.5	17.4	10.8
Investment rate	5.7	40.7	:	9.8	17.2	28.8	21.9	109.2	20.6	35.7	12.3	13.8	16.1	17.1

(1) The Netherlands and Poland, 2005; unless otherwise stated, values refer to EUR million; number of enterprises and number of persons employed are given in thousands; average personnel costs and apparent labour productivity are given in EUR thousand per person; wage adjusted labour productivity, gross operating rate and investment are ratios expressed as percentages.

Source: Eurostat (SBS)