

## Non-energy mining and quarrying



In June 2007 the European Commission published a staff working document analysing the competitiveness of the non-energy extractive industry in the EU <sup>(1)</sup>. This noted the uneven global distribution of non-energy minerals and ores witnessed by the EU's high net imports of metallic minerals compared with the EU's leading position in the output of some industrial minerals. Industrial and construction minerals are often further processed in downstream industrial sectors, for example, in the manufacture of glass, concrete, and basic or agricultural chemicals, as well as being used directly in the construction sector. Minerals are also used in industrial processes and precious and semi-precious stones and metals are used in jewellery and for some industrial processes.

### STRUCTURAL PROFILE

There were around 17 000 enterprises with non-energy mining and quarrying (NACE Subsection CB) as their main activity in the EU-27 in 2004. This sector accounted for 0.3 % of non-financial business economy (NACE Sections C to I and K) value added. The vast majority (85.8 %) of the value added in the non-energy mining and quarrying sector was generated in the other mining and quarrying (NACE Division 14) subsector and the remainder in the mining of metal ores (NACE Division 13) subsector. Non-energy mining and quarrying employed 290 800 persons in the EU-27 in 2004, 0.2 % of non-financial business economy workforce.

<sup>(1)</sup> SEC(2007) 771.

The five largest Member States each generated more than 10 % of EU-27 value added in this sector, with the United Kingdom the largest with a 16.8 % share and Spain the smallest with a 10.8 % share - see Table 12.2. In employment terms however the Polish workforce of 36 400 was equivalent to 12.5 % of the EU-27 total, followed by Germany (11.8 %), and Italy and Romania (both 10.2 %). Bulgaria, Poland and Romania were clearly the most specialised Member States in value added terms, followed by Sweden <sup>(2)</sup>: in this sector Sweden (5.4 %) and Bulgaria (1.1 %) recorded their highest contributions to EU-27 value added of any industrial NACE subsection.

The regional specialisation in these activities is shown on the map on page 224 which is based on the non-financial business economy employment share of this sector. There were several regions on the periphery of the EU specialised in non-energy mining and quarrying activities, notably in Bulgaria and Romania in the south-east, western Spain and Portugal in the south-west, the north of the British Isles in the north-west, and the north of Sweden and Finland in the north-east.

<sup>(2)</sup> Luxembourg, 2003; Ireland, Greece, Cyprus, Malta and Portugal, not available.

This chapter covers both underground and open-cast mining of ferrous and non-ferrous metal ores (NACE Division 13), as well as other mining and quarrying of non-energy producing materials (NACE Division 14), which includes the extraction of a variety of basic materials (such as salt and other minerals) and materials traditionally used for construction (such as sand and stone). Together these NACE divisions make up NACE Subsection CB.

### NACE

- 13: mining of metal ores;
- 13.1: mining of iron ores;
- 13.2: mining of non-ferrous metal ores, except uranium and thorium ores;
- 14: other mining and quarrying;
- 14.1: quarrying of stone;
- 14.2: quarrying of sand and clay;
- 14.3: mining of chemical and fertilizer minerals;
- 14.4: production of salt;
- 14.5: other mining and quarrying n.e.c.

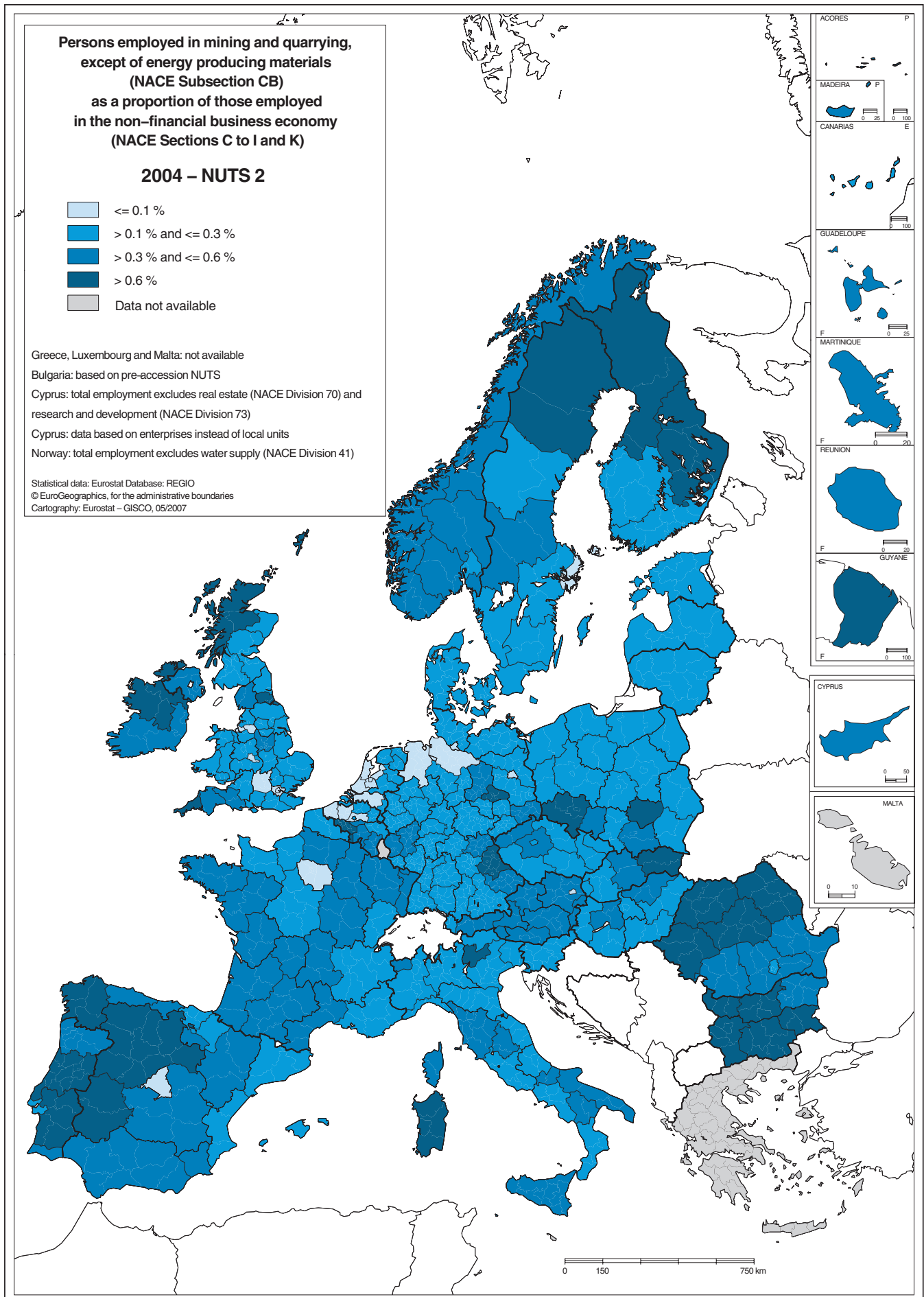


Table 12.1

**Mining and quarrying, except of energy producing materials (NACE Subsection CB)**  
**Structural profile, EU-27, 2004**

	No. of enterprises		Turnover		Value added		Employment	
	(% of thousands)	(% of total)	(EUR (% of million))	(% of total)	(EUR (% of million))	(% of total)	(thousands)	(% of total)
<b>Mining and quarrying, except of energy producing materials</b>	17.3	100.0	40 051	100.0	14 797	100.0	290.8	100.0
<b>Mining of metal ores (1)</b>	:	:	4 000	10.0	2 098	14.2	:	:
<b>Other mining and quarrying (1)</b>	17.0	98.1	36 000	89.9	12 698	85.8	:	:
<b>Quarrying of stone (1)</b>	6.1	35.2	7 500	18.7	2 900	19.6	68.3	23.5
<b>Quarrying of sand and clay (1)</b>	9.2	53.2	23 600	58.9	8 000	54.1	137.1	47.1
<b>Mining of chemical and fertilizer minerals (1)</b>	0.2	1.2	1 000	2.5	270	1.8	:	:
<b>Production of salt (1)</b>	0.5	2.9	1 800	4.5	700	4.7	:	:
<b>Other mining and quarrying n.e.c. (1)</b>	1.0	5.8	2 200	5.5	800	5.4	:	:

(1) Rounded estimates based on non-confidential data.

Source: Eurostat (SBS)

Table 12.2

**Mining and quarrying, except of energy producing materials (NACE Subsection CB)**  
**Structural profile: ranking of top five Member States, 2004**

Rank	Value added (EUR million) (1)	Employment (thousands) (2)	Share of non-financial business economy			
			No. of enterprises (3)	Turnover (3)	Value added (3)	Employment (4)
1	United Kingdom (2 479)	Poland (36.4)	Finland (0.2 %)	Bulgaria (0.8 %)	Bulgaria (1.9 %)	Bulgaria (0.7 %)
2	Germany (2 134)	Germany (34.2)	Slovakia (0.2 %)	Poland (0.5 %)	Poland (1.1 %)	Romania (0.7 %)
3	France (1 806)	Italy (29.7)	Slovenia (0.1 %)	Sweden (0.3 %)	Romania (0.8 %)	Poland (0.5 %)
4	Italy (1 723)	Romania (29.6)	Romania (0.1 %)	Romania (0.2 %)	Sweden (0.5 %)	Slovakia (0.3 %)
5	Spain (1 602)	France (28.8)	Austria (0.1 %)	United Kingdom (0.2 %)	Austria (0.4 %)	Sweden (0.3 %)

(1) Greece, Malta and Portugal, not available; Luxembourg, 2003.

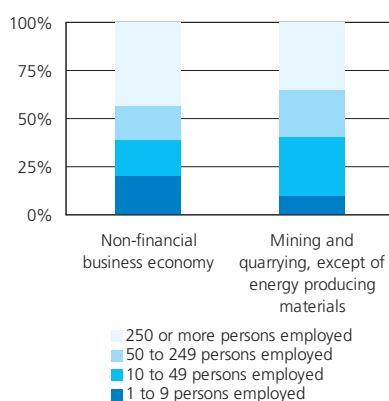
(2) Greece, Malta and Portugal, not available; Luxembourg and Slovenia, 2003.

(3) Ireland, Greece, Cyprus, Malta and Portugal, not available; Luxembourg, 2003.

(4) Ireland, Greece, Cyprus, Malta and Portugal, not available; Luxembourg and Slovenia, 2003.

Source: Eurostat (SBS)

The enterprise size structure of the non-energy mining and quarrying sector (see Figure 12.1) is the average of two extremes. Metal ore mining is concentrated in only a few locations and this activity was characterised by a high dominance of large enterprises (with 250 or more persons employed) that collectively generated 95.3 % of this subsector's value added in the EU-27 in 2004: this was the highest value added share recorded by large enterprises among any of the NACE divisions of the non-financial business economy. The local sourcing of many construction materials, resulting from widespread availability, relatively high transport costs and low barriers to entry, is reflected in the importance of smaller enterprises in related quarrying activities. SMEs (with less than 250 persons employed) accounted for 74.8 % of value added in other mining and quarrying of non-energy producing materials, compared with a non-financial business economy average of 57.0 %.

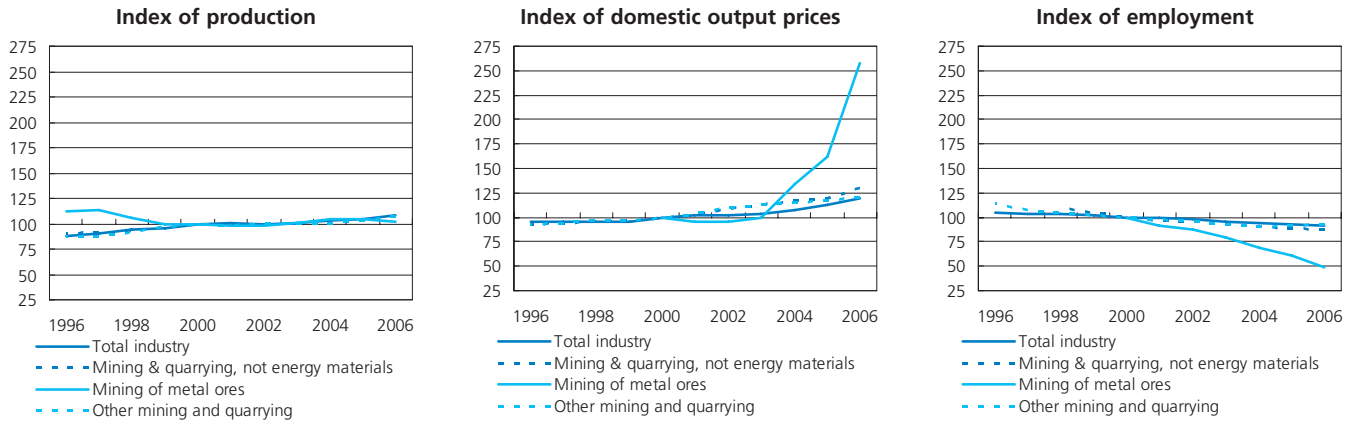
**Figure 12.1**  
**Mining and quarrying, except of energy producing materials (NACE Subsection CB)**  
**Share of value added by enterprise size class, EU-27, 2004**


Source: Eurostat (SBS)

The EU-27 index of production for non-energy mining and quarrying indicates that output recovered during the second half of the 1990s from a low point in 1996. For four consecutive years output grew, averaging 2.5 % per annum, in contrast to the mining and quarrying of energy producing materials (NACE Subsection CA – see Chapter 13), which declined over the same period. In 2001 this period of growth was reversed with a 2.5 % fall in the output of non-energy mining and quarrying, since when there have been five years of stability and growth, averaging growth of 1.8 % per annum - see Figure 12.2. The small activity of the mining of metal ores did not experience the same period of output growth during the second half of the 1990s. Instead, this activity recorded large falls in output in 1996, 1998 and 1999, all greater than 5 % per year. Since 2000 the level of output has been rather unstable, with output falling by up to 2.4 % (2001 and 2006) and increasing by up to 4.1 % (2004).

Figure 12.2

### Mining and quarrying, except of energy producing materials (NACE Subsection CB) Evolution of main indicators, EU-27 (2000=100)



Source: Eurostat (STS)

Since 1998 (start of the series), the EU-27 employment index for non-energy mining and quarrying fell each and every year, the fall averaging 2.7 % per annum, considerably more than the industrial average (-1.5 %). The short EU-27 time series available for the mining of metal ores shows a rapid fall in employment in this particular activity, averaging -11.3 % per annum between 2000 and 2006, such that overall the index more than halved in these six years.

Output prices are available for the EU-27 for both main parts of non-energy mining and quarrying. The activity of other mining and quarrying experienced uninterrupted year-on-year output price growth averaging 2.6 % per annum during the ten years to 2006. For the mining of metal ores a shorter time series is available showing that prices fell 5.1 % in 2001, stabilised in 2002, rose moderately (4.1 %) in 2003 and increased rapidly in the following three years: 35.8 % in 2004, 20.6 % in 2005, and 58.8 % in 2006 reflecting increased global demand. The annual average growth of 22.1 % in output prices for the mining of metal ores was by far the fastest growth of any industrial (NACE Sections C to E) NACE division <sup>(3)</sup> in the five years to 2006.

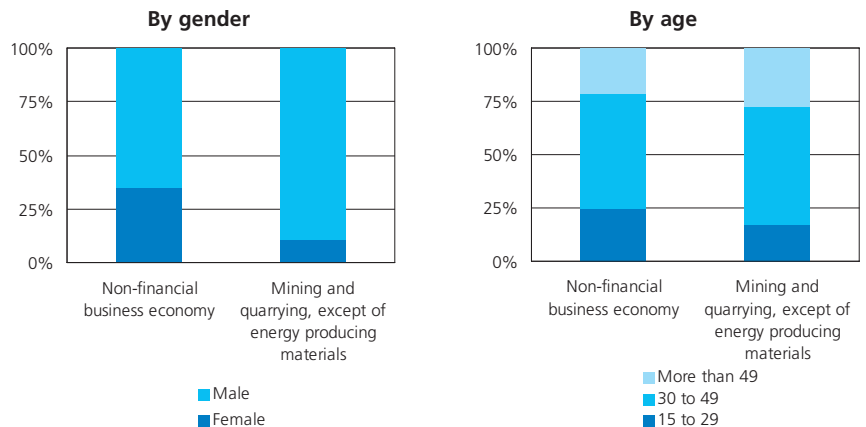
#### EMPLOYMENT CHARACTERISTICS

Like the energy mining and quarrying activities, the non-energy mining and quarrying workforce in the EU-27 was characterised by a relatively high reliance on full-time, male employment - see Figure 12.3. According to the Labour Force Survey, 97.1 % of persons in this sector worked on a full-time basis in 2006, the

<sup>(3)</sup> NACE Division 12, not available.

Figure 12.3

### Mining and quarrying, except of energy producing materials (NACE Subsection CB) Labour force characteristics, EU-27, 2006



Source: Eurostat (LFS)

highest full-time rate of all the sectoral chapter aggregates used in the present publication, some 11.5 percentage points above the non-financial business economy average (85.6 %). Within the mining of metal ores subsector the full-time rate in the EU-27 was 99.3 %, the highest of any NACE division. The EU-27's non-energy mining and quarrying workforce was 89.4 % male in 2006, 24.4 percentage points higher than the non-financial business economy average, and the second highest proportion among the chapters within the present publication, smaller only than in construction. In terms of its age profile, the EU-27's workforce in non-energy mining and quarrying had a low proportion of younger workers and a high proportion of older workers in 2006. Just 16.8 % of the workforce were

aged less than 30, some 7.4 percentage points less than the non-financial business economy average, while 27.2 % were aged 50 or over, some 5.6 percentage points higher than the non-financial business economy average: this represented the third lowest proportion of younger workers of any of the chapters in the present publication, and the second highest proportion of older workers.

In 2004 in non-energy mining and quarrying the share of paid employees in the number of persons employed (which also includes working proprietors and unpaid family workers) was 96.0 % for the EU-27, slightly above the industrial average (94.5 %) and therefore well above the non-financial business economy average (86.2 %).

### COSTS, PRODUCTIVITY AND PROFITABILITY

The EU-27's non-energy mining and quarrying sector recorded relatively high tangible investment in 2004, equivalent to around 9.7 % of total expenditure, approximately double the non-financial business economy average. Personnel costs accounted for 20.9 % of total expenditure, also above the non-financial business economy average, resulting in a 69.4 % share for the purchases of goods and services. The high share for personnel costs was recorded despite this sector reporting average personnel costs in 2004 of EUR 27 000 per employee in the EU-27, slightly lower than the non-financial business economy average (EUR 27 600). In contrast this sector recorded an apparent labour productivity of EUR 50 900 per person employed, some EUR 10 000 above the non-financial business economy average. Combining these two ratios into the wage adjusted labour productivity ratio shows the relationship between value added and personnel costs per head, and indicates that value added per person employed in the EU-27's non-energy mining and quarrying sector was equivalent to 188.7 % of the average personnel costs in 2004, significantly higher than the non-financial business economy average (148.0 %). Several Member States reported levels of this ratio in excess of 200 % indicating that apparent labour productivity was twice as high as average personnel costs, and this was most remarkable in Bulgaria (290.8 %).

An analysis of the gross operating rate (the ratio of the gross operating surplus to turnover) in 2004 confirms the overall high performance of this sector, with the non-energy mining and quarrying sector recording a rate of 18.2 % compared to the non-financial business economy average of 11.0 %. The highest gross operating rate <sup>(4)</sup> was recorded in Cyprus at 32.0 %.

### EXTERNAL TRADE

Less than half (46.9 %) of exports of metal ores and other mining and quarrying products (CPA Subsection CB) by the EU-27 Member States was destined for other Member States, in other words intra-EU trade. This share was well below the average for all industrial products (CPA Sections C to E, 67.5 %) and in fact the lowest of any of the products covered in the industrial chapters (Chapters 2 to 13) of this publication. Despite the low share of intra-EU trade, the level of extra-EU exports by the EU-27 Member States, in other words EU-27 exports, was just EUR 13.7 billion in 2006, equivalent to only 1.3 % of all industrial exports, and as such the smallest of any of the products covered in the industrial chapters of this publication. EU-27 imports were valued at EUR 31.8 billion, or 2.5 % of industrial imports. The resulting EU-27 trade deficit of EUR 18.1 billion was split into EUR 16.8 billion for metal ores (CPA Division 13) and EUR 1.3 billion for other mining and quarrying products (CPA Division 14). The size

<sup>(4)</sup> Luxembourg, 2003; Greece, Malta and Portugal, not available.

of the deficit for metal ores was therefore 12.6 times as high as for other mining and quarrying products, whereas five years earlier it had only been 3.0 times as high: this resulted from a fall in the deficit for other mining and quarrying products combined with the doubling of the deficit for metal ores during this period. The metal ores deficit increased during these five years due to a large increase in imports for both ferrous and non-ferrous metal ores, with the latter rising from EUR 4.5 billion in 2001 to EUR 11.1 billion in 2006, and ferrous metal ore imports rising from EUR 3.8 billion to EUR 6.9 billion.

The Member States most specialised in the export of metal ores and other mining and quarrying products in 2006 in terms of the share of all industrial exports accounted for by these goods were Belgium (3.3 %) and Greece (2.9 %). The largest share in industrial goods of imports of these goods was in Belgium (6.9 %) and in Finland (4.0 %).

These industrial products are unusual in that the United States is only the fourth largest export market (4.3 %) for the EU-27, well behind India (40.1 %), Israel (16.6 %) and to a lesser extent China (6.0 %). EU-27 imports were from a wide range of countries traditionally associated with mining, notably Brazil, South Africa, Chile, Canada, Australia and Russia, who all provided 5 % or more of EU-27 imports in 2006.

**Table 12.3**  
**Metal ores and other mining and quarrying products (CPA Subsection CB)**  
**External trade, EU-27, 2006**

	Extra-EU exports		Extra-EU imports		Trade balance (EUR million)	Cover ratio (%)
	(EUR million)	(% share of industrial exports)	(EUR million)	(% share of industrial imports)		
<b>Metal ores and other mining and quarrying products</b>	13 694	1.3	31 812	2.5	-18 118	43.0
<b>Metal ores</b>	1 188	0.1	17 976	1.4	-16 788	6.6
Iron ores	386	0.0	6 899	0.6	-6 513	5.6
Non-ferrous metal ores, except uranium and thorium ores	802	0.1	11 077	0.9	-10 275	7.2
<b>Other mining and quarrying products</b>	12 506	1.2	13 836	1.1	-1 330	90.4
Stone	567	0.1	892	0.1	-325	63.6
Sand and clay	422	0.0	1 067	0.1	-645	39.6
Chemical and fertilizer minerals	265	0.0	713	0.1	-448	37.2
Salt	110	0.0	115	0.0	-5	96.1
Other mining and quarrying products n.e.c.	11 141	1.0	11 049	0.9	93	100.8

Source: Eurostat (Comext)

Table 12.4

## Mining of metal ores (NACE Division 13)

## Main indicators, 2004

	EU-27	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT
No. of enterprises (thousands) (1)	:	:	:	0.0	0.0	0.0	0.0	0.0	:	0.0	0.2	0.0	0.0	0.0	0.0
Turnover (EUR million) (2)	4 000	:	:	0	0	0	0	316	:	114	41	:	0	0	0
Production (EUR million) (2)	4 000	:	:	0	0	0	0	313	:	118	42	:	0	0	0
Value added (EUR million)	2 098	:	115	0	0	0	0	135	:	39	9	:	0	0	0
Gross operating surplus (EUR million)	1 198	:	:	0	0	0	0	65	:	11	-6	:	0	0	0
Purchases of goods & services (EUR million) (2)	2 000	:	:	0	0	0	0	178	:	83	32	:	0	0	0
Personnel costs (EUR million) (2)	900	:	:	0	0	0	0	69	:	28	15	:	0	0	0
Investment in tangible goods (EUR million)	:	:	:	0	0	0	0	39	:	9	2	:	0	0	0
Employment (thousands)	:	:	:	0	0	0	0	1	:	1	1	:	0	0	0
Apparent labour prod. (EUR thousand) (2)	40.0	:	:	17.1	:	:	:	114.6	:	56.0	16.7	:	:	:	:
Average personnel costs (EUR thousand)	:	:	:	:	:	:	:	59.0	:	41.5	28.0	:	:	:	:
Wage adjusted labour productivity (%)	:	:	:	0.0	:	:	:	194.1	:	135.0	59.8	:	:	:	:
Gross operating rate (%) (2)	30.0	:	:	61.7	:	:	:	20.7	:	9.5	-13.6	:	:	:	:
Investment / employment (EUR thousand)	:	:	:	5.2	:	:	:	32.8	:	12.8	4.1	:	:	:	:
	LU (3)	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	NO	
No. of enterprises (thousands)	0.0	:	:	0.0	0.0	0.0	:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turnover (EUR million)	0	:	:	0	:	:	:	72	:	16	102	1 226	0	74	
Production (EUR million)	0	:	:	0	:	:	:	107	:	17	102	1 233	0	75	
Value added (EUR million)	0	:	:	0	:	:	:	95	:	4	43	629	0	36	
Gross operating surplus (EUR million)	0	:	:	0	:	:	:	6	:	0	21	375	0	15	
Purchases of goods & services (EUR million)	0	:	:	0	:	:	:	92	:	12	60	606	0	39	
Personnel costs (EUR million)	0	:	:	0	:	:	:	89	:	4	22	254	0	21	
Investment in tangible goods (EUR million)	0	:	:	0	:	:	:	11	0	0	7	139	0	4	
Employment (thousands)	0	:	:	0	:	:	:	18	:	1	0	5	0	0	
Apparent labour prod. (EUR thousand)	:	:	:	:	:	:	:	5.2	:	6.3	105.5	127.2	:	99.7	
Average personnel costs (EUR thousand)	:	:	:	:	:	:	:	4.9	:	5.9	53.1	57.4	:	58.4	
Wage adjusted labour productivity (%)	:	:	:	:	:	:	:	106.5	:	108.0	198.7	221.8	:	170.8	
Gross operating rate (%)	:	:	:	:	:	:	:	8.2	:	2.0	20.8	30.6	:	20.3	
Investment / employment (EUR thousand)	:	:	:	:	:	:	:	0.6	:	0.6	17.4	28.1	:	11.2	

(1) Italy, 2003. (2) EU-27, rounded estimate based on non-confidential data. (3) 2003.

Source: Eurostat (SBS)

Table 12.5

## Other mining and quarrying (NACE Division 14)

## Main indicators, 2004

	EU-27 (1)	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT (2)	CY	LV	LT
No. of enterprises (thousands)	17.0	:	:	0.4	0.1	1.7	0.0	0.1	:	2.5	2.5	3.6	0.1	0.0	0.0
Turnover (EUR million)	36 000	:	:	441	267	5 754	32	844	:	3 772	6 080	:	73	14	53
Production (EUR million)	35 000	:	:	451	246	5 450	31	791	:	3 775	5 801	:	73	14	54
Value added (EUR million)	12 698	:	46	174	104	2 134	13	248	:	1 563	1 798	:	39	6	23
Gross operating surplus (EUR million)	6 098	:	26	104	52	788	7	111	:	841	684	:	23	3	13
Purchases of goods & services (EUR million)	23 000	:	:	291	150	3 564	18	599	:	2 333	4 140	:	31	8	32
Personnel costs (EUR million)	6 600	:	21	71	52	1 346	6	137	:	722	1 114	:	15	3	10
Investment in tangible goods (EUR million)	3 100	:	:	43	35	414	4	65	:	328	505	:	6	4	6
Employment (thousands)	:	:	:	7	1	34	1	3	:	27	28	:	1	1	1
Apparent labour prod. (EUR thousand)	:	:	:	24.5	88.0	62.4	17.9	75.5	:	56.9	63.6	:	60.4	10.4	15.2
Average personnel costs (EUR thousand)	:	:	3.3	10.4	45.2	40.5	8.7	42.1	:	27.6	39.7	:	25.6	4.7	6.8
Wage adjusted labour productivity (%)	:	:	:	235.0	194.6	154.2	205.1	179.5	:	206.4	160.1	:	236.2	220.0	224.1
Gross operating rate (%)	16.9	:	:	23.6	19.5	13.7	20.9	13.1	:	22.3	11.2	:	32.0	23.3	23.4
Investment / employment (EUR thousand)	:	:	:	6.1	29.4	12.1	5.4	19.7	:	11.9	17.9	:	9.9	7.2	4.3
	LU (2)	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	NO	
No. of enterprises (thousands)	0.0	:	:	0.1	0.3	1.0	1.3	0.5	0.1	0.1	0.4	0.5	0.8	0.6	
Turnover (EUR million)	63	:	:	896	:	:	827	195	:	82	431	608	7 604	746	
Production (EUR million)	61	:	:	841	:	:	827	204	:	79	412	544	7 405	747	
Value added (EUR million)	30	:	:	267	:	:	339	68	:	28	136	175	2 479	296	
Gross operating surplus (EUR million)	17	:	:	149	:	:	155	33	:	12	72	64	1 326	145	
Purchases of goods & services (EUR million)	33	:	:	625	:	:	513	140	:	54	297	411	4 814	472	
Personnel costs (EUR million)	13	:	:	117	:	:	184	35	:	16	65	111	1 153	150	
Investment in tangible goods (EUR million)	4	:	:	:	:	:	149	41	:	9	48	62	543	53	
Employment (thousands)	0	:	:	3	:	:	13	11	:	2	2	3	28	3	
Apparent labour prod. (EUR thousand)	94.1	:	:	103.4	:	:	26.3	6.0	:	11.7	72.5	64.0	88.0	88.1	
Average personnel costs (EUR thousand)	40.8	:	:	46.0	:	:	14.8	3.1	:	6.8	36.7	45.6	41.9	48.2	
Wage adjusted labour productivity (%)	230.8	:	:	224.8	:	:	177.9	191.9	:	172.2	197.7	140.5	209.9	182.8	
Gross operating rate (%)	27.8	:	:	16.7	:	:	18.7	17.0	:	14.3	16.6	10.6	17.4	19.5	
Investment / employment (EUR thousand)	12.7	:	:	:	:	:	11.6	3.7	:	4.0	25.3	22.9	19.3	15.8	

(1) Rounded estimates based on non-confidential data. (2) 2003.

Source: Eurostat (SBS)