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**The Market for Solid Fuels in the Community in 2009 and Estimates for 2010**

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This document has been produced using data provided by the Member States and observations from market participants up to the end of 2010. Where data have not been available, clearly indicated estimations have been made by the Commission services. Note that the data may differ from that of Eurostat.

Graphs and tables used in this document have been produced by the Commission services on the basis of data provided by the Member States unless a different source is identified under the individual graph or table.

## **INTRODUCTION**

Article 7 paragraph (c) of the Council Regulation (EC) No 405/2003 of 27 February 2003 concerning Community monitoring of imports of hard coal originating in third countries, requires the Commission to report in an appropriate form each year data and information on the market in solid fuels in the Community in the preceding year, together with a market outlook for the current year.<sup>1</sup>

### **1. EXECUTIVE SUMMARY**

#### **1.1. Coal in Europe**

Europe is the fourth largest region worldwide in terms of coal consumption, after China and the USA, having also fallen behind India in 2009. Around sixty percent of coal consumption in the EU is covered from indigenous production, with 133 million tonnes (Mt) of hard coal and 422 Mt of lignite produced in 2009. The coal industry in Europe is a major employer, with around 280,000 employees in total. In the EU around 26 % of electricity generation is based on coal<sup>2</sup>. The use of coal in electricity generation varies widely across the EU Member States. In Poland 90% of electricity is generated from coal and lignite, whereas in France 4% is generated from coal.

#### **1.2. Coal in Global Context**

In 2009 total world coal production (hard coal and lignite) increased by 2.1% to 6,902.9 Mt, continuing the growth of the last ten years (albeit at a much reduced rate), where 2009 production was 54% higher than 1999 levels. Analysis of proven coal and lignite reserve data indicates that, at current world production levels, there are approximately 144 years of reserves available. In its 'New Policies Scenario' in the World Energy Outlook 2010, the IEA projects coal demand increasing to 5,665 million tonnes coal equivalent (Mtce) in 2020, rising to just over 5,690 Mtce between 2025 and 2030 but then falling back slightly to 5,621 Mtce by 2035, a 19% increase on 2008.

#### **1.3. EU Reserves of Coal and Lignite**

Europe possesses substantial reserves of coal and lignite, which represent around 80% of Europe's fossil fuel reserves. The German Federal Institute for Geosciences and Natural Resources (BGR) estimates reserves at the end of 2008 of 19 Bt and resources of 475 Bt of hard coal, and reserves of 65 Bt and resources of 302 Bt of lignite. The largest hard coal reserve is in Poland, representing 70% of the EU total. In the case of lignite, reserves are present in a swathe from Germany through Central Europe and

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<sup>1</sup> The Commission staff working document covers only the data to 2009 in comparison with 2008. The data for the previous years can be found on the following website ([http://ec.europa.eu/energy/observatory/coal/report\\_solid\\_fuels\\_market\\_eu\\_en.htm](http://ec.europa.eu/energy/observatory/coal/report_solid_fuels_market_eu_en.htm)).

<sup>2</sup> Source – Eurostat 2008 data

the Balkans, to Greece. Within the EU, Germany has the largest deposit, with major reserves also in Poland, Greece, Hungary, and Bulgaria.

#### **1.4. EU Lignite Production and Consumption**

European production of lignite (including peat) was 420.8 Mt in 2009 compared to 434.3 Mt in 2008. Europe produces around 50 % of world coal production of lignite where it represents an energy resource of key importance. Around 95% of lignite is used in power stations with the remainder being largely used for district heating plants and domestic heating, mainly in the form of briquettes.

#### **1.5. EU Hard Coal Production and Consumption**

Indigenous production of hard coal continued its decline in 2009, with the overall trend expected to continue in 2010. Production reduced by 9.3% in 2009, to 132.5 Mt. Consumption continues to be dominated by the power sector at 72% followed by coke production at 15%.

#### **1.6. World Hard Coal Trade**

Global trade in hard coal grew slightly overall in 2009, with hard coal exports up just 0.4 Mt to 943.6. Steam and coking markets showed opposite trends, with steam coal exports in 2009 increasing by 26.8 Mt (3.9%) to 711.3 Mt, whereas coking coal exports reduced by 26.3 Mt (- 10.2%) to 232.3 Mt. The expected collapse in the steam coal market, as a result of the financial crisis did not materialise, mainly because of the impact of China. High Chinese imports have continued into 2010 and India also continues to grow as an export destination. Growing economies in the Asia-Pacific region, including China and India, more than make up for any stagnation in demand in the Atlantic market. New trade patterns are becoming established with South Africa and Russia switching more supplies east and significant tonnages from Colombia also moving to the Asia-Pacific market. The world trade in coking coal decreased by 11.3% to 232.3 Mt in 2009. As the steel industry began to recover later in 2009 and into 2010, the coking market has stabilised and is expected to return to growth in 2010.

#### **1.7. EU Hard Coal Imports**

Imports of hard coal to the EU in 2009 of 179.1 Mt represented a fall of 14.8% compared to 210.3 Mt in the previous year and represented 57% of total supply. The major exporting countries to the EU were Russia (30.0%), Colombia (17.9%), South Africa (16.1%), the USA (13.9%), Australia (7.7%) and Indonesia (7.1%).

#### **1.8. International Coal Prices**

After the commodities boom in 2008, prices reduced by 28% to \$99.74 in Europe in 2009, and by 10.3% to \$112.39 in Japan (the world's largest coal importer). The rapid fall in coal prices in late 2008 and early 2009, as a result of the economic downturn, was even more marked than the increase earlier in 2008. If Asian demand had not continued to grow, prices would probably have suffered a greater collapse. During the remainder of 2009 and for most of 2010 the overall price trend has been upwards,



although there has continued to be short term volatility. Prices were approaching \$100/tonne in October 2010, and the forward curve showed an expectation of prices rising to around \$115/tonne by 2014. The weakness of the Atlantic market vis-à-vis the Pacific was illustrated by the fact that free on board (fob) spot prices from Newcastle (Australia) were often higher than prices *delivered* to North West Europe. During 2009 and 2010 sea freight prices have responded to a resurgence in demand from China and, whilst being extremely volatile, have fluctuated between levels in accordance with historic norms.

## **1.9. EU Coke Production and Consumption**

Total EU production of coke was 35.4 Mt in 2009 compared with 48.8 Mt in 2008, a reduction of 27.3%. Production of coke is widespread around Europe, but most producing countries saw significant reductions as a result of the effect of the economic crisis on steelmaking.

## **2. KEY FACTS ON COAL IN EUROPE IN 2009**

### **2.1. European Coal Production and Consumption**

Europe is the fourth largest region worldwide in terms of coal consumption, after China and the USA, having also fallen behind India in 2009. Coal covers around 17% of the primary energy demand in the European Union; about 26 % of power generation is based on coal.

The use of coal in electricity generation varies widely across the EU Member States. In Poland 90% of electricity is generated from coal and lignite, whereas in France 4% is generated from coal and 76% is nuclear. The split of generation for the EU 27 in 2008 was nuclear 27.7 %, coal 26.2 %, gas 23.0 %, renewables 18 %, oil and others 5,1 %<sup>3</sup>.

In the European Union around sixty percent of consumption is derived from indigenous production, with 133 Mt of hard coal and 422 Mt of lignite<sup>4</sup> produced in 2009. (Production figures expressed on a common basis of tonnes coal equivalent (tce) are 110 Mtce of hard coal and 129 Mtce of lignite.)

The chart below illustrates the contribution of indigenous hard coal and lignite, together with imported hard coal, to total EU solid fuel supply, all expressed in tce<sup>5</sup>.

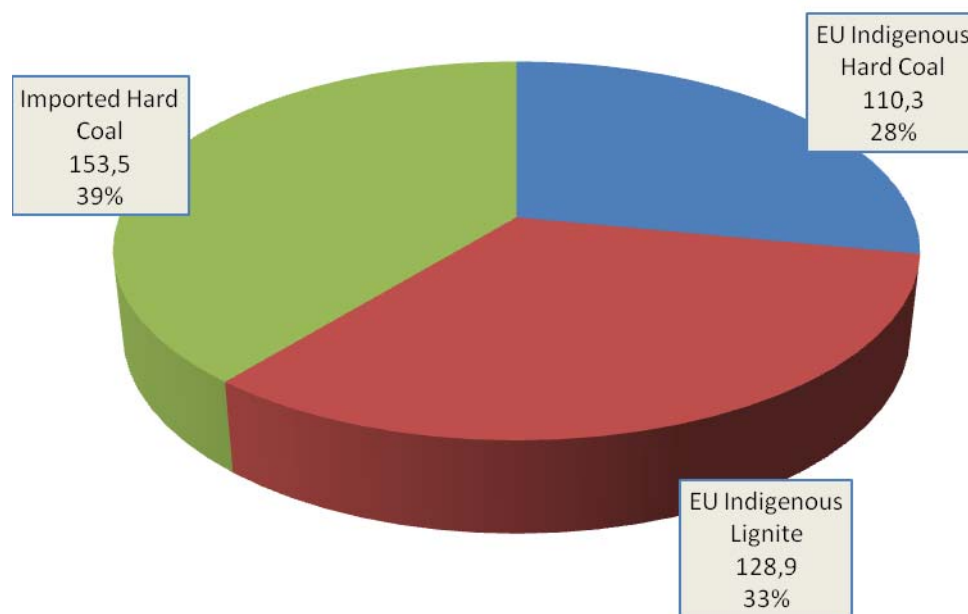
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<sup>3</sup> Source – Eurostat 2008 data

<sup>4</sup> For the purposes of the EU statistics in this report and the attached tables, lignite, brown coal and peat are grouped together and included in a single EU total. (Production of oil shale is not included in the solid fuel totals but figures are reported later in section 7.4.)

<sup>5</sup> Assumes average actual calorific value of imported hard coal of 6,000 kcal/kg (25,122 MJ/t) before converting to coal equivalent with calorific value of 7,000 kcal/kg (29,302 MJ/t)

**Figure 1 – EU Solid Fuel Supply in 2009 (Million Tonnes Coal Equivalent)**



Source – BP Statistical Review 2010

## 2.2. Emissions of CO<sub>2</sub> from Coal in the EU

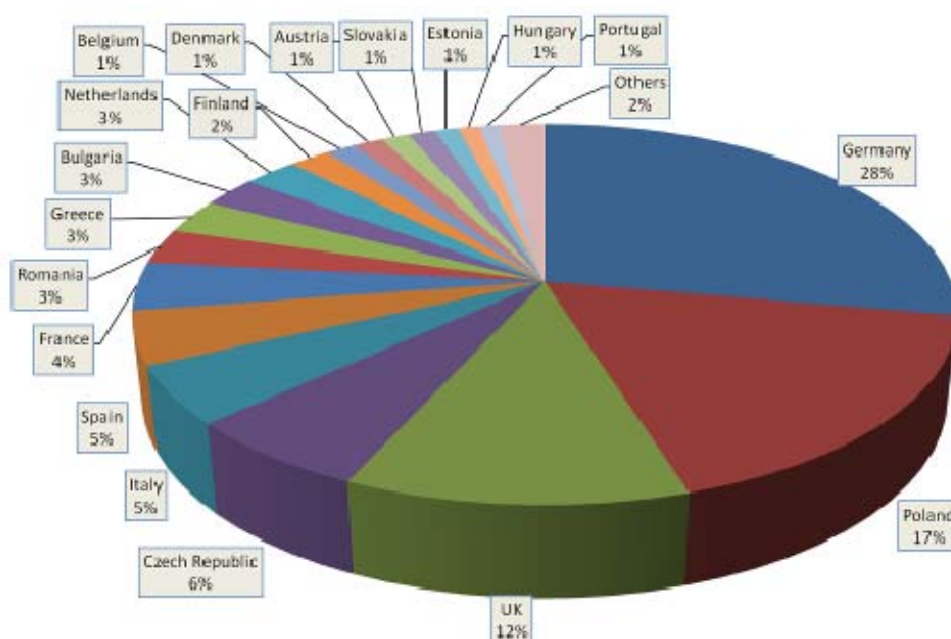
Emissions of CO<sub>2</sub> from fossil fuels are influenced both by the carbon content of the fuel and the efficiency with which it is burnt. For example, almost twice as much CO<sub>2</sub> per unit of electricity is emitted from the least efficient coal stations in the world compared to the most modern state-of-the-art plants. Emissions from bituminous coal are 95 tonnes CO<sub>2</sub> per Terajoule (t/TJ), and from lignite 101 t/TJ, compared to 55 t/TJ for natural gas. The generally poorer efficiencies of coal stations compared to gas and coal's higher carbon content, however, mean that on average coal emits more than twice as much CO<sub>2</sub> as gas in electricity generation. Average values of emissions factors for OECD<sup>6</sup> countries quoted by the IEA are 840 grams of CO<sub>2</sub> per kWh from bituminous coal and 940 grams for lignite, compared to 370 grams for natural gas.

In Europe, the split in estimated emissions of CO<sub>2</sub> in 2008 from combustion of coal, lignite and peat between EU Member States is illustrated by the following chart<sup>7</sup>.

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<sup>6</sup> Organisation of Economic Cooperation and Development  
<sup>7</sup> Source – IEA CO<sub>2</sub> Emissions from Fuel Combustion 2010 Edition

**Figure 2 – CO<sub>2</sub> Emissions from Combustion of Solid Fuels**



Source - IEA

It can be seen that the three largest emitters, Germany, Poland and the UK, account for 57% of the EU's emissions from burning solid fuels.

Detailed figures are given in Table 1 below.

**Table 1 – Emissions of CO<sub>2</sub> in 2008 from Combustion of Solid Fuels**

Million Tonnes CO <sub>2</sub>	Total (Sectoral Approach)	Change on 2007
Austria	15.1	-1.9%
Belgium	16.7	0.0%
Bulgaria	30.5	-2.6%
Cyprus	0.1	0.0%
Czech Republic	75.2	-5.9%
Denmark	15.9	-12.2%
Estonia	12.9	-9.2%
Finland	22.3	-23.1%
France	48.7	-8.6%
Germany	328.3	-6.2%
Greece	34.6	-5.5%
Hungary	11.6	-2.5%
Ireland	9.1	3.4%
Italy	58.9	-3.4%

Million Tonnes CO <sub>2</sub>	Total (Sectoral Approach)	Change on 2007
Latvia	0.4	0.0%
Lithuania	0.9	-10.0%
Luxembourg	0.3	0.0%
Malta	0.0	0.0%
Netherlands	29.8	-5.1%
Poland	205.4	-3.3%
Portugal	9.8	-12.5%
Romania	34.9	-3.3%
Slovakia	15.1	-4.4%
Slovenia	6.2	-4.6%
Spain	53.4	-32.1%
Sweden	8.9	0.0%
UK	135.9	-7.9%
<b>Total</b>	<b>1,180.9</b>	<b>-7.5%</b>

Source – IEA

The IEA calculates total CO<sub>2</sub> emissions both by the ‘sectoral approach’ (based on consumption in each sector) and by the reference approach (based on overall national fuel balances). The figures given here are from the sectoral approach, based on the total of all the sectors.

On this basis, total EU emissions of CO<sub>2</sub> from combustion of solid fuels in 2008 were 1.18 billion tonnes (Bt), a reduction of 7.5% on 2007.

### 2.3. Manpower in the European Coal Industry

The coal industry in Europe is a major employer, with around 270,000 employees in total. The following table shows the latest available manpower data for 2009. This refers to direct employees, not including contract labour or those working in the generation sector.

**Table 2 – Manpower in the European Coal Industry in 2009**

	Lignite	Hard Coal	Total
Bulgaria	9,030	4,690	13,720
Czech Republic	6,130	10,990	17,120

	Lignite	Hard Coal	Total
Germany	16,600	29,570	46,170
Greece	5,160		5,160
Hungary	2,630		2,630
Poland	16,630	119,800	136,430
Romania	13,850	10,740	24,590
Slovak Republic	4,500		4,500
Slovenia	1,830		1,830
Spain		7,680	7,680
UK		5,910	5,910
<b>Total</b>	<b>76,360</b>	<b>189,380</b>	<b>265,740</b>

Source – Euracoal

Employment is especially important in those regions where operations are concentrated, and where they may have been present for many years. In such regions there are usually significant numbers of further employees in supporting and related industries.

## 2.4. Demand Drivers

### 2.4.1. Overview

Coal demand in Europe is dominated by the power sector, accounting for 72% of overall consumption in the case of hard coal and 95% for lignite. Demand is driven by a complex set of factors and constraints. The starting point is demand for electricity, which is mainly impacted by the energy intensity of the economy, the level of industrial activity, the changing behaviour of consumers, and the weather. The prime determinant as to how demand for electricity can be met is the available capacity of different forms of generation.

For a given level of generation capacity, the market will broadly optimise the system, depending on competing fuel prices, the price of CO<sub>2</sub> permits under the EU Emissions Trading System, and environmental constraints. As a generality, hydro, nuclear and renewable generation will always run if it is available. Shortages or problems in any of these sectors are likely to lead to increased coal-based or gas-based generation. Scandinavian reservoir levels, for example, are an important factor in coal demand in Northern Europe. Oil generation will only run in circumstances of extremely high demand or where there is no other availability.

Much coal capacity runs ‘base load’. However, at times when there is an excess of generating plant production available on the system, coal and gas generation tends to compete for ‘mid-merit’ operation (i.e. during those periods when there is sufficient margin between demand and potential supply for choices to be made). The market choice between generation from coal or gas depends on the relationship between the coal price and the gas price, together with the impact on each of the carbon prices, usually expressed as the difference between the ‘clean dark spread’ and the ‘clean spark spread’.

The following paragraphs deal with some of these demand drivers in more detail.

#### 2.4.2. Coal and Gas Prices

The collapse in gas prices in 2009, caused by the onset of recession, was not matched by the fall in coal prices (which were supported by Asian demand) meaning that during much of 2009 the clean spark spread was ahead of the clean dark spread and gas generation was favoured, especially in the UK. The high generator coal stocks which resulted from low burn have continued to affect the market in 2010, with UK coal imports running at around half the levels of 2009. The effects of low spot gas prices primarily affect the UK market, because many other northwest European buyers continue to pay gas prices indexed to oil.

ARA Coal prices and UK gas prices are illustrated by the following chart, both on a £/GJ basis.

**Figure 3 – Comparison of Coal and Gas Prices**



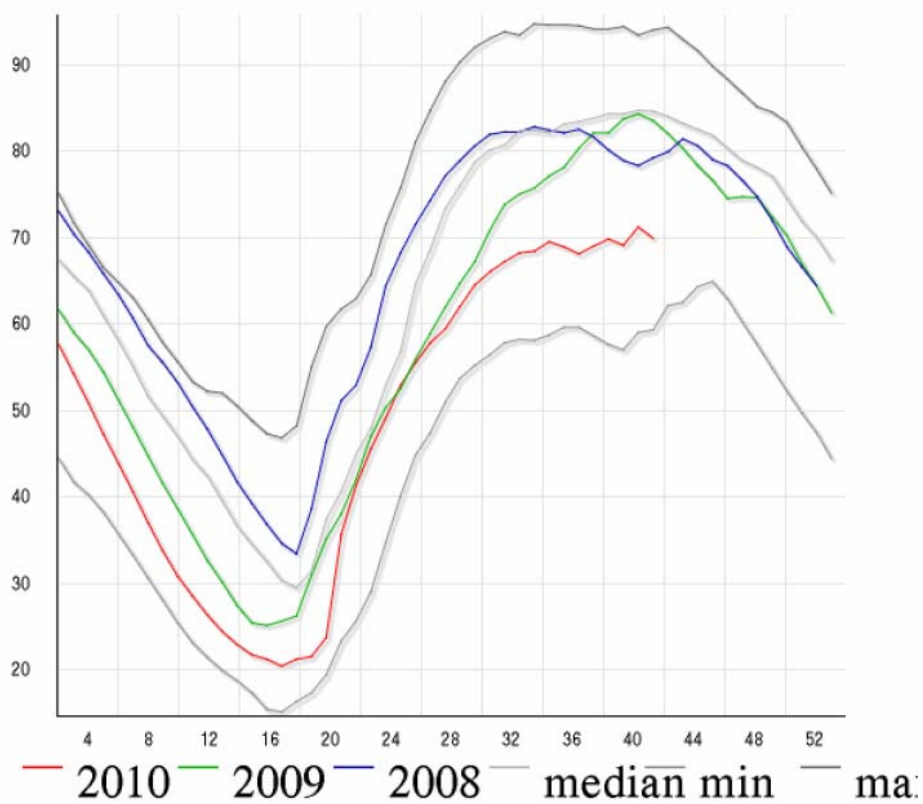
Source – McCloskey and EEX

### 2.4.3. Reservoir Levels for Hydro Generation

Reservoir levels in Spain, together with strong wind generation, have significantly weakened the demand for coal. Hydro reserves improved through 2009 and by the end of March were at 85% of capacity, their highest level of the century.

Conversely in Scandinavia, reservoir levels have been relatively low in 2009 and 2010 (as illustrated by the following graph). Hydro reserves ended the winter at their lowest level since 2005, leading to increased coal demand in Denmark for supply to the rest of Scandinavia through the interconnector.

**Figure 4 – Scandinavian Reservoir Levels (Percent)**



Minimum, maximum and median levels are for the period 1990 to 2006

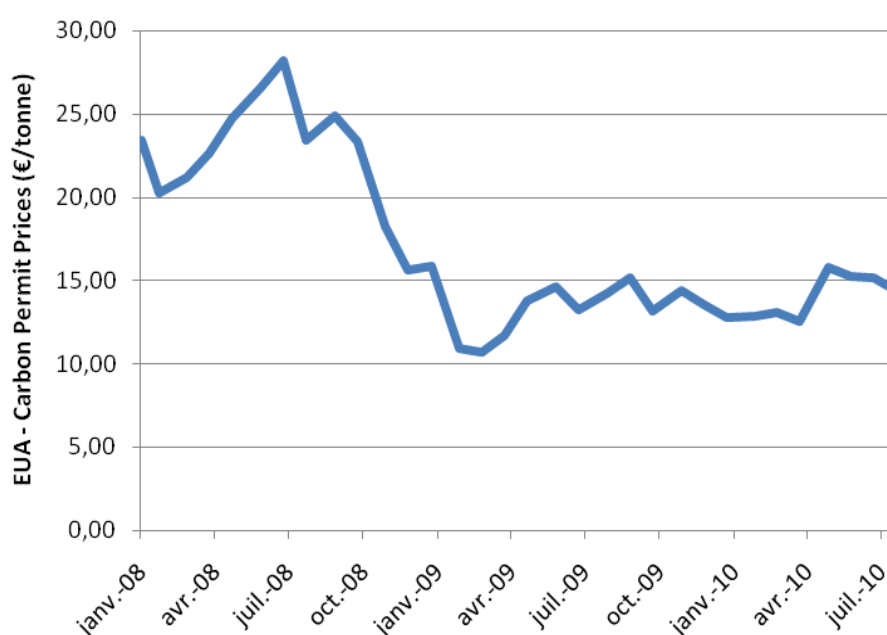
Source – Nordpool

#### 2.4.4. Emissions Trading

The second phase of the EU Emissions Trading System started in 2008 and prices of allowances initially ranged between €20 to €30 per tonne of CO<sub>2</sub>. However, a large reduction in demand associated with the economic downturn led to a fall in values to around €10 in early 2009. Allowances have since traded in a range generally between €12 and €15.

Carbon prices for the second phase are illustrated in the following chart<sup>8</sup>.

**Figure 5 – EU ETS Carbon Prices**



Source – EEX

At the lower levels of CO<sub>2</sub> prices, seen from the end of 2008, it might have been expected that coal would continue to run ahead of gas, increasing coal demand. However, this can be counteracted by lower gas prices, such as have been seen during 2009 and 2010.

#### 2.5. Reserves

Europe possesses substantial reserves of coal and lignite, which represent around 80% of Europe's fossil fuel reserves. There are a number of different ways of assessing these deposits, considered further below, but whichever way the assessment is carried out, the figures are substantial. In its latest triennial assessment, published in November 2010, the World Energy Council<sup>9</sup> gives estimates of proven recoverable

<sup>8</sup> Source – EEX

<sup>9</sup> Source – World Energy Council 2010 Survey of Energy Resources



reserves in Europe (at the end of 2008) of around 76.4 Bt, including around 7.6 Bt hard coal (including sub-bituminous coal) and 68.8 Bt lignite. The BGR, which uses different classifications, gives reserves at the end of 2009 of 17.8 Bt and resources of 473.5 Bt of hard coal, and reserves of 69.6 Bt and resources of 318.6 Bt of lignite<sup>10</sup>.

In common with previous years, BGR data are used in this document. The following table shows the BGR assessments of significant reserves and resources in European states at the end of 2009.

**Table 3 – European Coal Reserves and Resources**

	Hard Coal Reserves	Hard Coal Resources	Lignite Reserves	Lignite Resources
<b>Austria</b>				333
<b>Belgium</b>		4,100		
<b>Bulgaria</b>	192	3,920	2,174	2,400
<b>Czech Republic</b>	1,157	15,502	2,694	7,270
<b>France</b>		160		114
<b>Germany</b>	73	82,961	40,600	36,500
<b>Greece</b>			2,876	3,554
<b>Hungary</b>	276	5,075	2,633	2,704
<b>Ireland</b>	14	26		
<b>Italy</b>	10	600	7	22
<b>Netherlands</b>	497	2,750		
<b>Poland</b>	12,726	164,207	3,733	219,647
<b>Portugal</b>	3		33	33
<b>Romania</b>	11	2,435	280	9,640
<b>Slovakia</b>			177	887
<b>Slovenia</b>	56	39	315	341
<b>Spain</b>	868	3,363	319	
<b>Sweden</b>	1	4		
<b>United Kingdom</b>	367	186,700		1,000
<b>EU Total</b>	<b>16,251</b>	<b>471,843</b>	<b>55,842</b>	<b>284,445</b>
<b>Albania</b>			522	205
<b>Bosnia Herzegovina</b>	484	146	2,369	1,814
<b>Croatia</b>				300

<sup>10</sup> Source – BGR Reserves, Resources and Availability of Energy Resources 2010 (in German)

	Hard Coal Reserves	Hard Coal Resources	Lignite Reserves	Lignite Resources
<b>Kosovo</b>			1,564	9,262
<b>Macedonia</b>			332	300
<b>Montenegro</b>	142	195		
<b>Norway</b>	24	68		
<b>Serbia</b>	402	453	7,112	13,074
<b>Turkey</b>	529	793	1,814	9,240
<b>Europe Total</b>	<b>17,831</b>	<b>473,498</b>	<b>69,555</b>	<b>318,639</b>

Source – BGR Reserves, Resources and Availability of Energy Resources 2010

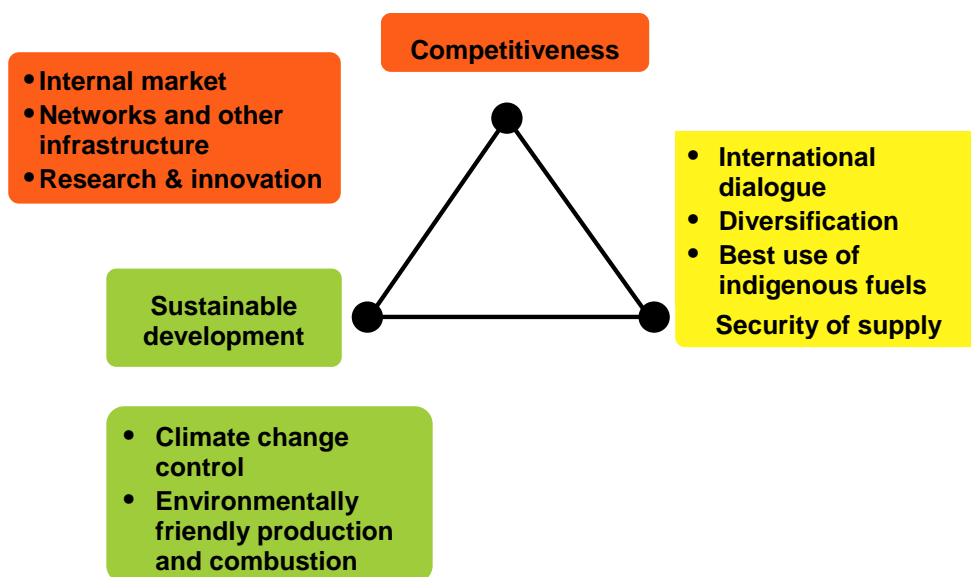
Poland holds the largest hard coal reserves in Europe, representing 78% of the EU total. In the case of lignite, reserves are present in a swathe from Germany through Central Europe and the Balkans, to Greece. Within the EU, Germany has the largest deposits, with major reserves also in Poland, Greece, Hungary, and Bulgaria.

## 2.6. Coal in the Context of European Energy Policy

Coal has been the backbone of European economies and energy landscapes in the past. This is due to the important contribution of coal to security of supply and also because of its abundance and accessibility. This allows energy from coal to be competitively priced.

The continued use of coal therefore contributes to the key objectives of the European Union's energy policy: to provide European businesses and consumers with safe, secure and sustainable energy at competitive prices.

## Triangle Character of European Energy Policy



The Energy Strategy 2020 adopted by the Commission on 10 November 2010<sup>11</sup> emphasized that "the potential for further development of EU indigenous fossil fuel resources [...] exists and the role they will play must be assessed in all objectivity." An important step in this effort is the planned Energy Roadmap 2050 which will identify the main lines and issues for EU's energy policy agenda in a long term perspective. It will focus on energy security and competitiveness during the transition to a low-carbon energy system until 2050. The Roadmap 2050 process will be supported by scenarios and other analyses.

The European Commission is pursuing discussion with stakeholders through the European Fossil Fuel Forum ("Berlin Forum") and the Coal Dialogue meetings. One focus of the Berlin Forum is to facilitate the best use of indigenous fossil fuel resources in the EU since the continued exploitation of fossil fuel resources in Europe provides important contributions to EU's economy and security of energy supply. At the Berlin Forum plenary meeting on 18-19 October 2010 it was concluded that good practice sharing can be a particularly suitable way of raising awareness of the importance of indigenous fossil fuels and could as well increase public acceptance by showing that their exploitation can be done in an environmentally friendly way.

Dialogue within the Berlin Forum will continue to identify how good practice sharing activities at EU level and the involvement of public institutions can generate the most added value for the industry, policy makers and the general public. Whereas initiatives by and within the respective industries will be of prime importance, it was also recognised that within Member States many good practices, e.g. on regulatory and planning matters, exist which could be further disseminated with help from the Commission.

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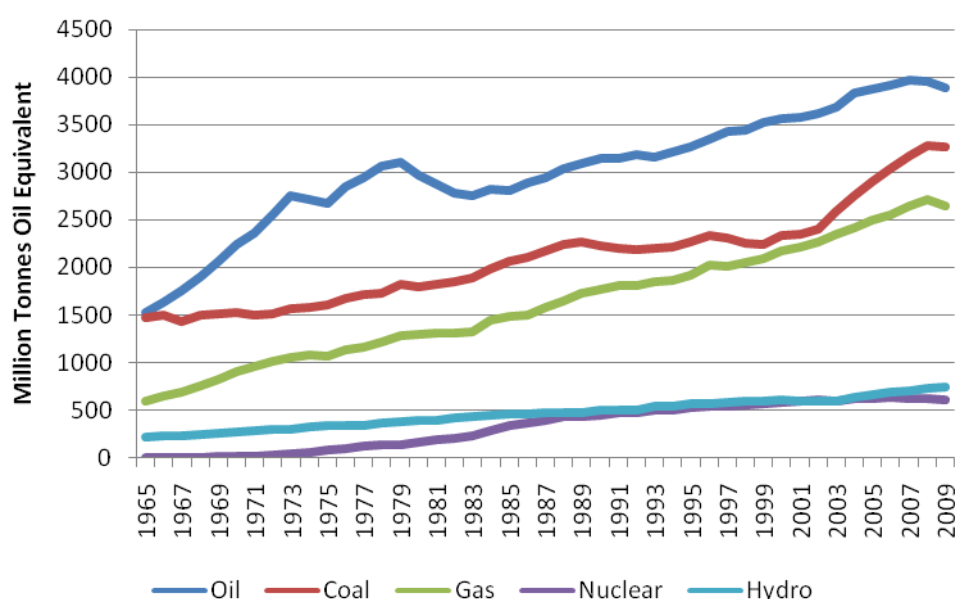
<sup>11</sup> Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Energy 2020. A strategy for competitive, sustainable and secure energy. COM(2010) 639 final.

### 3. COAL IN GLOBAL CONTEXT

#### 3.1. World Supply and Demand

In 2009 total world coal production (hard coal and lignite) increased by 2.1% to 6,902.9 Mt, continuing the growth of the last ten years (albeit at a much reduced rate), where 2009 production was 54% higher than 1999 levels<sup>12</sup>. The following graph illustrates the long term growth in coal demand compared to other energy sources, and also shows the marked reduction in oil and gas demand in 2009 as a result of the worldwide recession<sup>13</sup>.

**Figure 6 – World Energy Consumption**



Source – BP Statistical Review 2010

Hard coal production in 2009 increased by 3.4% to 5,990 Mt, following an increase of 6.5% in 2008. Cumulative growth since 2000 is 66.0%. Brown coal and lignite production decreased by 5.4% to 913 Mt in 2009, compared to growth of 1.2% in 2008, and remains just 0.7% above the 2000 production level.

Analysis of proven coal and lignite reserve data indicates that, at current world production levels, there are approximately 144 years of reserves available.

Total coal demand increased by 3.3%, or 156 Mtce<sup>14</sup> in 2009, following a six year trend of annual increases averaging 5.8%.

<sup>12</sup> Source – IEA Coal Information 2010

<sup>13</sup> Source – BP Statistical Review 2010

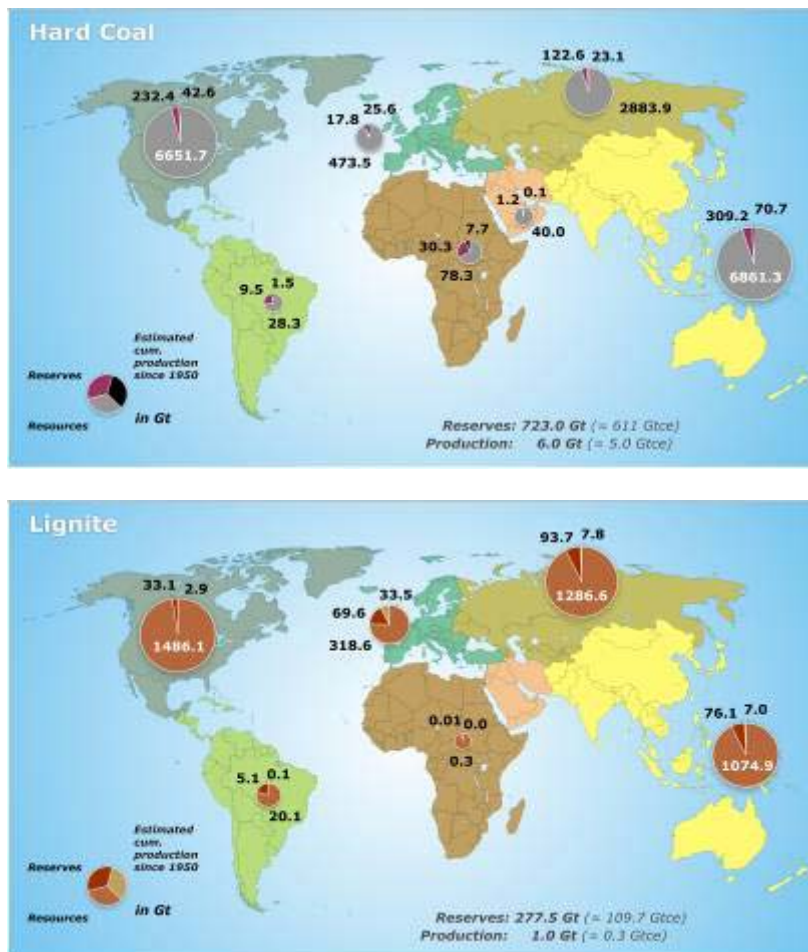
<sup>14</sup> IEA definition of 1 million tonne coal equivalent equals 0.7 tonnes oil equivalent, or 7 million kilocalories

Global trade in hard coal grew slightly overall in 2009, with hard coal exports up just 0.4 Mt to 943.6 Mt following a 17.6 Mt increase in 2008. Steam and coking markets showed opposite trends, with steam coal exports in 2009 increasing by 26.8 Mt (3.9%) to 711.3 Mt, whereas coking coal exports reduced by 26.3 Mt (- 10.2%) to 232.3 Mt.

### 3.2. Reserves

The following maps illustrate the world distribution of reserves of hard coal and lignite using BGR data.

**Figure 7 – World Reserves of Coal**



Source – BGR Reserves, Resources and Availability of Energy Resources 2010

The BGR lists the coal reserves and coal resources divided into lignite and hard coals in their studies of energy resources. All coals with an energy content of less than 16,500 kJ/kg are included in lignite; all coals with an energy content above 16,500 kJ/kg are considered hard coals. As internationally no delimitation between hard coal and lignite has been established, the combination of resource data from different countries can cause allocation problems. The coal classification used by the World Energy Council (WEC) subdivides coal in three types: bituminous coal including anthracite, sub-bituminous coal and lignite. Exact limit values for the classification of coals have not been specified by the WEC. The WEC reasons that there is no

universally accepted system for the classification of coals. Thus, the allocations to these three coal groups may differ from one country to another, and in particular the data relating to the sub-bituminous coals cover bituminous coals and also lignite in a number of countries.

The major differences between different reserves figures probably result from different assessments of what is proven and economically recoverable. Definitions used by BGR are as follows:

- **Reserves** comprise that portion of energy resources, which is known in detail and can be recovered economically using current technologies. This implies that the amount of reserves depends on the current prices as well as on technological progress. Synonymously used terms are “recoverable” (coal) as well as “proved reserves”. The definition mentioned above means that the amount of reserves depends on the level of knowledge about the deposit, on the commodity prices and the state of the art in technology.
- **Resources** comprise those energy resources which are either
  - (i) proved but at present not economically recoverable, or
  - (ii) not demonstrated, but can be expected for geological reasons.

In the case of oil, natural gas and uranium, only recoverable amounts are considered reserves. For coal this term is used for all resources in-place.

The WEC uses a similar definition for proved recoverable reserves, but makes the following comments about differences between assessments:

- Although the terms used may be identical, the meaning attributed to each word can vary widely from one source to another. In particular, ‘proved’ may include ‘probable’ reserves and the term ‘recoverable’ may not be strictly adhered to, amounts being in fact ‘in-situ’;
- Conceptually, proved recoverable reserves of any one finite resource in any particular country are not immutable, but subject to virtually constant change, due (inter alia) to shifts in economic criteria, improvements in recovery techniques and the promotion/demotion of deposits from one level of probability to another.

### 3.3. World Prices

#### 3.3.1. Price developments

The commodities boom in the early part of 2008 had a massive effect on coal prices with average CIF<sup>15</sup> steam coal prices for the year increasing by 68% to \$137.79/tonne in Europe, and by 77% to \$125.42/tonne in Japan (the world’s largest coal importer). The subsequent downturn in transport and commodity pricing was cushioned by unprecedented demand for imports by China, and in 2009, prices reduced by 28% to

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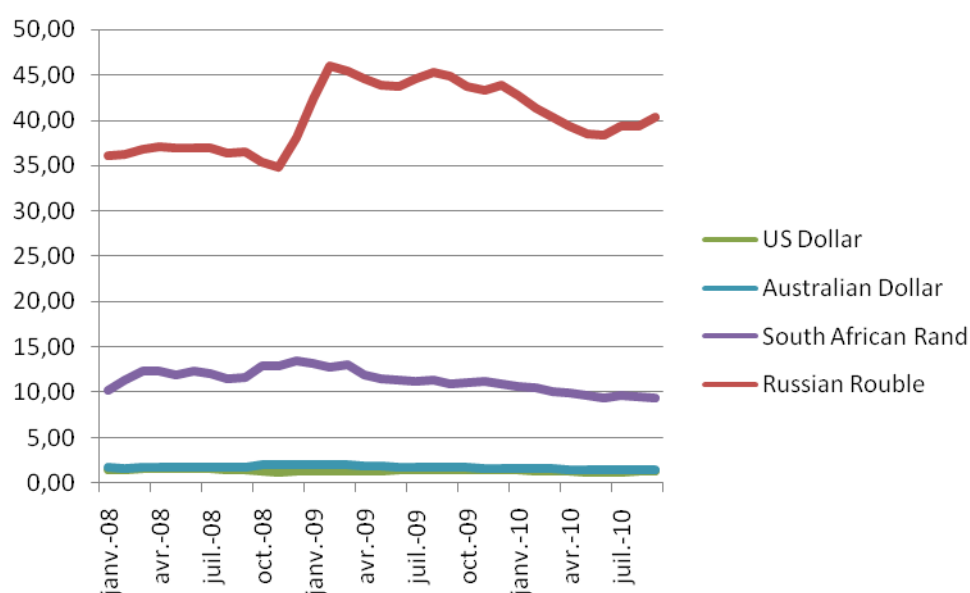
<sup>15</sup> Cost, insurance and freight

\$99.74 in Europe, and by 10.3% to \$112.39 in Japan. This saw prices returning to around their 2007 levels, which were still significantly higher than prices five years earlier. Average steam coal fob prices likewise decreased in 2009 – by 59.9% in Colombia, 52.1% in Indonesia, 30.8% in South Africa and 13.2% in Australia<sup>16</sup>.

### 3.3.2. Currencies

Internationally traded coal is generally priced in US dollars. However, the relationship of the dollar to currency in the producing country is important both in setting market prices and in determining competitiveness and profitability of suppliers. For example, where the South African rand is increasing against the dollar, it makes it harder for South African coals to compete and profitability decreases against the same dollar price. The currency movements against the Euro are illustrated by the following chart.

**Figure 8 – Exchange Rates for Key Currencies**

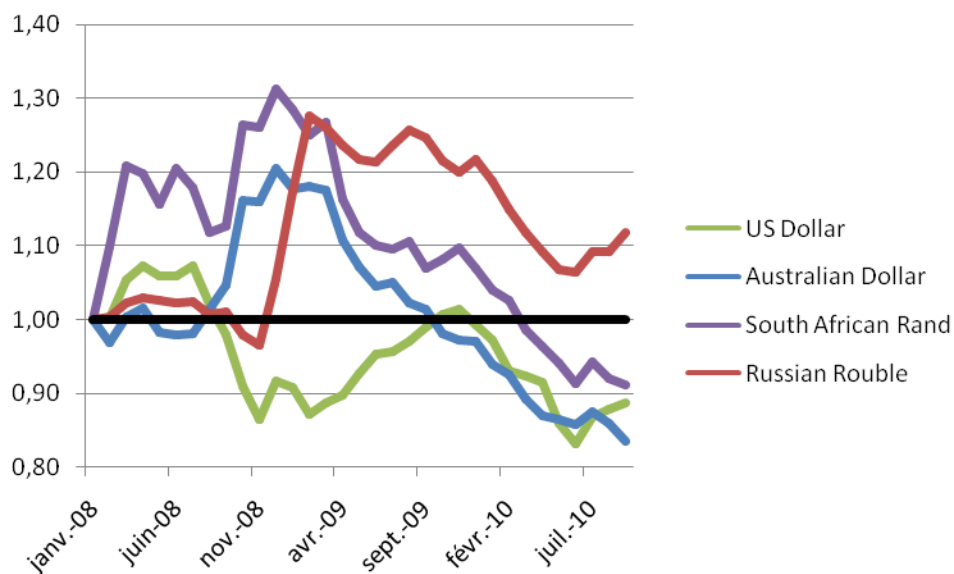


Source – OANDA.com

Relative movements in exchange rates can be more clearly seen if all the rates are arbitrarily indexed to a value of 1.00 at January 2008, as illustrated by the following chart. This shows how the US dollar weakened against the Euro through 2009 and then strengthened through the first half of 2010. After the turbulence in late 2008 and early 2009, currencies in Russia, Australia and South Africa all strengthened against the Euro in the remainder of 2009 and the first half of 2010, meaning that these countries need to see higher prices in Europe to maintain their earnings. This is one of the drivers for increasing coal prices in 2010.

<sup>16</sup> Source – IEA Coal Information 2010

**Figure 9 – Movements in Exchange Rates**



Source – OANDA.com

### 3.3.3. Coal Derivatives and Forward Prices for Steam Coal

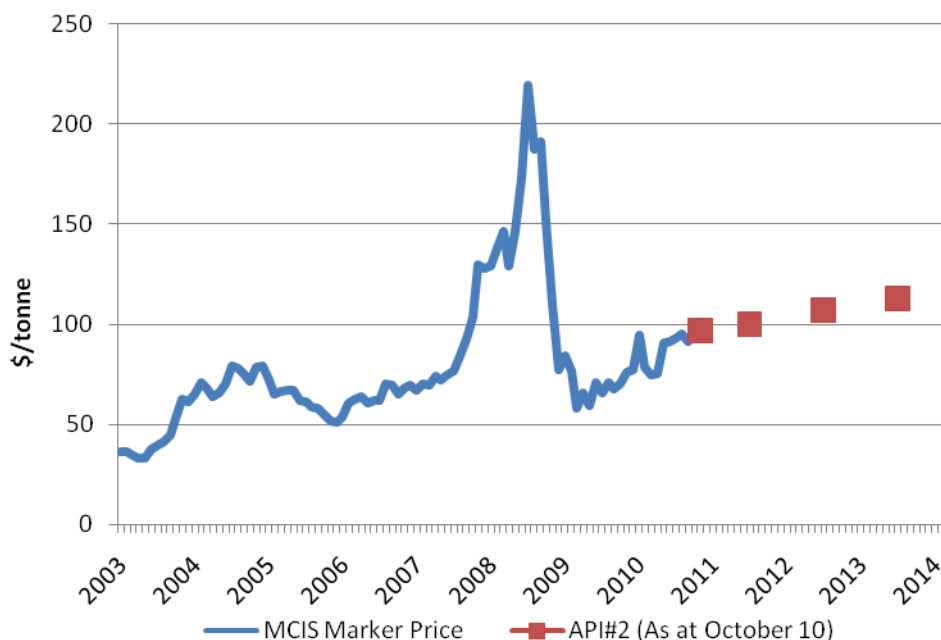
Over recent years we have seen the emergence and rapid growth of trading in coal derivatives – ‘paper trading’ – with swaps based on indices such as API 2 (the North West Europe index) and API 4 (the South African index). The volume of trade in coal swaps is now estimated at around 2 Bt per annum, several times greater than the Atlantic physical market.

Coal swaps enable the physical and financial risks of buying coal to be de-coupled, and are used by buyers and sellers in the market to hedge transactions. The liquidity of the market in coal derivatives has been helped by the increased number of participants; banks and finance houses began to trade coal swaps in addition to the major buyers, sellers and traders. Most transactions are on an over the counter (OTC) basis, although exchange-based transactions have more recently begun to gain ground.



The following chart shows the forward values of coal swaps for North West Europe as at the end of 2010, compared to historic prices.

**Figure 10 – Historic Spot and Forward Swap Prices**



Source – McCloskey Coal Information Services

### 3.4. Market Supply Structure

Compared to some other commodities, the supply structure for the international coal market is extremely diverse. There is some tendency towards market concentration in all of the producing countries. However, the long-term world market prospects are also encouraging new companies into the coal export business, therefore expanding the pool of suppliers.

In the case of coking coal – above all, hard coking coal – Australia has created a strongly dominant position with around two thirds market share, which in turn is in the hands of just a few producers. However, another player – Vale (CVRD) – has joined the coking coal scene. CVRD is developing into another market participant through projects in Mozambique as well as entry into Australian coal mining. The significant further consolidation which would have arisen from the planned takeover of Rio Tinto by BHP Billiton is no longer anticipated.

Competition in the area of steam coal continues to widen, and in recent years Russia and Indonesia have strengthened their position, as well as the USA returning to steam coal exports in periods of higher prices.

### 3.5. Steel Industry Developments

Crude steel production around the world fell by 110 Mt from 1.329 Bt to 1.219 Bt in 2009 (-8.3%), illustrated by the table below. The effects of the financial crisis can

clearly be seen here. China produced 47% of the world's steel and saw growth of 13% whilst Europe declined by 30% and the rest of the world by 19%. The first nine months of 2010 has seen world steel production recovering by 18%. China, already starting from a stronger base, has increased production by a further 11%.

**Table 4 – Trend in World Crude Steel Production**

	2006		2007		2008		2009	
	Mt	%	Mt	%	Mt	%	Mt	%
<b>China</b>	423	+19	489	+15	500	+2	567	+13
<b>EU 27</b>	207	+6	210	+1	198	-6	139	-30
<b>Rest of World</b>	621	+4	652	+5	631	-3	513	-19
<b>Total</b>	1,251	+9	1,351	+8	1,329	-2	1,219	-8

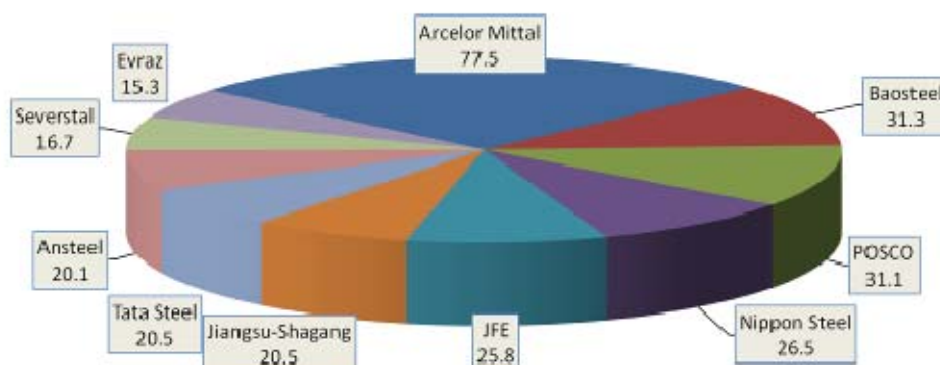
Source – World Steel Association

During 2009 European steel production reduced by 30% compared to the previous year as a result of the financial crisis. There has however been a good recovery in 2010 with production up by 29% over the first nine months.

Following the creation of ArcelorMittal Steel in 2006 and the acquisition of Corus Group by Tata Steel in 2007, there has been no further significant consolidation in the steel sector. Whereas in 2008 ArcelorMittal produced almost as much steel as the three next-largest companies combined, its production was reduced by 25% in 2009. Nippon steel (Japan) reduced by 29% falling behind Baosteel and POSCO, whose production only declined by around 10%. However, it should be noted that these top ten producers only accounted for 23% of total world production.

**Figure 11 – Top Ten World Steel Producers 2008**

(Mt crude steel)



Source – World Steel Association

### **3.6. Carbon Dioxide Emissions**

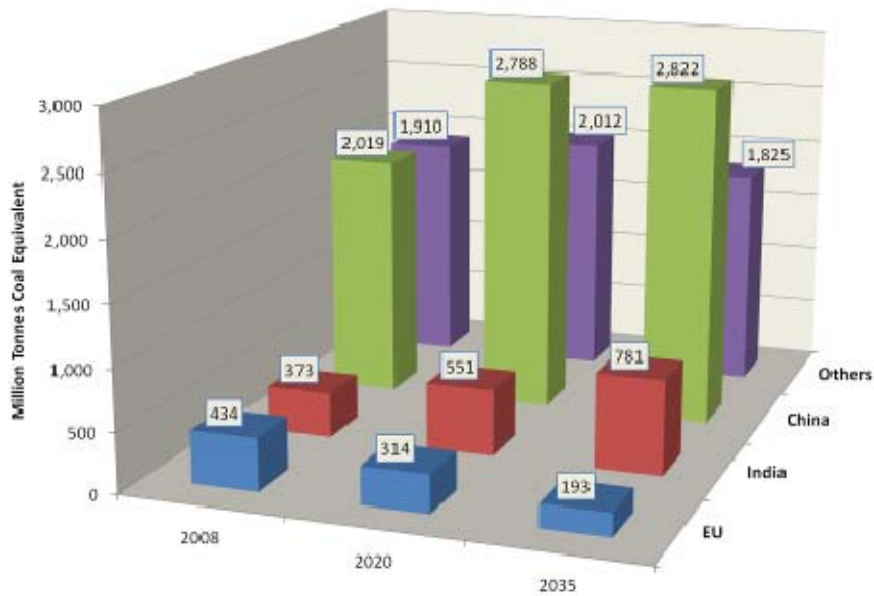
Coal remains the largest source of world CO<sub>2</sub> emissions (based on 2007 figures) at 12.2 Gigatonnes (Gt), 1.33 Gt greater than those for oil and over twice those from natural gas. Since 2002, CO<sub>2</sub> emissions from coal have grown by an average of 6.1% per year, over 75% of which has come from rapid growth in China.

### **3.7. Long Term Outlook**

The scenarios in the IEA's World Energy Outlook 2010 clearly demonstrate the critical influence of government policies, especially those related to climate change, on the outlook for coal demand. In the Current Policies Scenario, which assumes no change in government policies, strong global economic growth and near tripling of electricity demand in non-OECD countries lifts global coal demand to over 7,500 Mtce by 2035, or nearly 60% higher than in 2008.

In contrast, in the New Policies Scenario, which takes into account planned reforms of fossil-fuel subsidies, implementation of measures to meet climate targets and other planned energy-related policies, demand is around 1,925 Mtce (or a quarter) lower in 2035. In this scenario the IEA projects coal demand increasing to 5,665 Mtce in 2020, rising to just over 5,690 Mtce between 2025 and 2030 but then falling back slightly to 5,621 Mtce by 2035, a 19% increase on 2008. Whilst a demand reduction is foreseen in the EU, a major increase in demand is foreseen in India throughout the period; China levels out after 2020, as illustrated by the following chart.

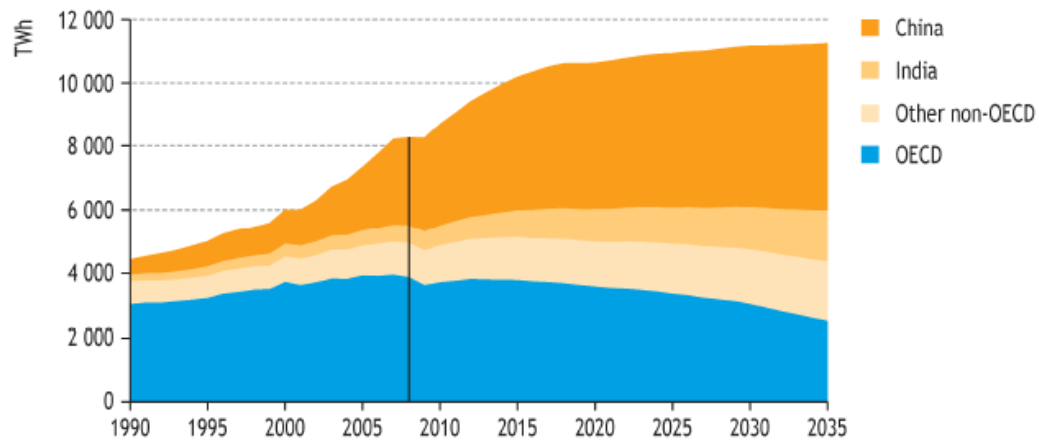
**Figure 12 – Outlook for World Coal Demand (IEA New Policies Scenario)**



Source – IEA World Energy Outlook 2010

In the New Policies Scenario, worldwide coal-fired electricity generation develops as shown in the following chart.

**Figure 13 – Coal-Fired Electricity Generation by Region**



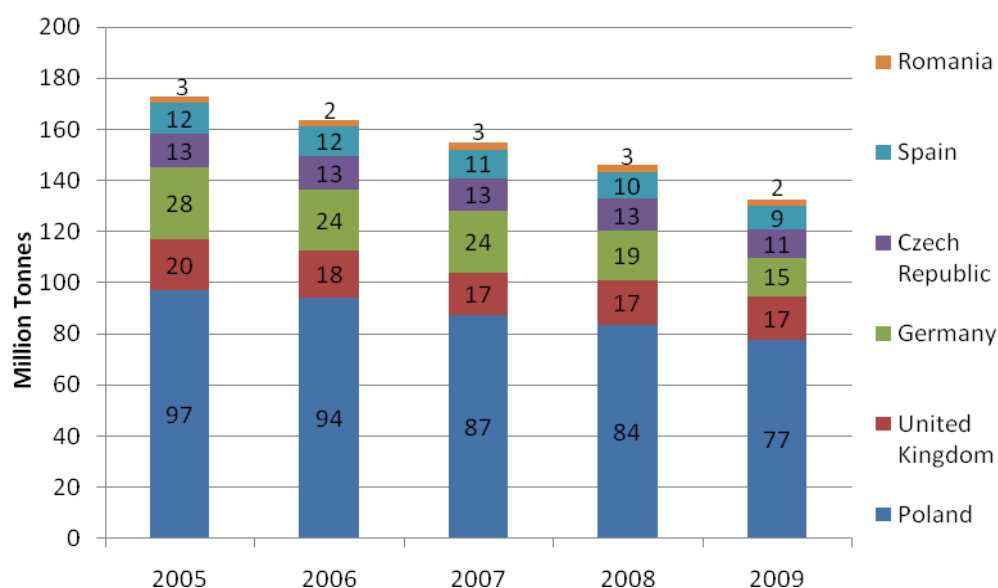
Source – IEA World Energy Outlook 2010

## 4. HARD COAL – PRODUCTION AND CONSUMPTION IN THE EU

### 4.1. EU Production Trends

Indigenous production continued its decline in 2009, with the overall trend expected to continue in 2010. The following chart shows trends for the major producing countries.

**Figure 14 – EU Hard Coal Production Trends**



Hard coal production reduced by 9.3% in 2009, to 132.5 Mt compared to 146.0 Mt in 2008. Detailed figures are given in the Annexes at the end of this report.

The average calorific value of European hard coal is estimated at 24.40 GJ per tonne<sup>17</sup>. On this basis, hard coal production in 2009, expressed in standard units of coal equivalent, was 110.3 Mtce.

In Poland production reduced by 6.2 Mt (-7.4%) to 77.5 Mt. Polish coking coal production was hard hit by the steel crisis and stocks increased as well as output being throttled back. All mines have suffered from a lack of investment in recent decades for the development of new reserves. Progress with privatisation is slow, with only the large single mine Bogdanka listed so far, and the economic downturn has led to further obstacles in sourcing capital for investment. In 2008 Poland became a net coal importer for the first time (also taking into account exports to other EU Member States) and imports increased slightly to 9.0 Mt in 2009.

In Germany, production in 2009 continued to decline in line with the planned deep mine closure programme, falling by 4.2 Mt (-21.8%) to 15.0 Mt. This programme was originally planned to achieve an orderly end to German mining by 2018, but may be

<sup>17</sup> Based on data in IEA Coal Information 2010

impacted by the outcome of deliberations in Brussels where the EU Commission has proposed an end to subsidies in 2014. After the closures of the Walsum and Lippe mines in 2008 and 2009, the Ost Mine is due for closure in late 2010.

UK production was relatively stable, reducing by 0.5% in 2009 to 17.4 Mt. Production was affected in early 2010 by operational problems at some deep mines and by bad weather at opencast sites, but has recovered to normal levels as the year has progressed. The Welbeck mine in Nottinghamshire closed as a result of exhaustion of reserves in May 2010, after which there were five major deep mines in operation together with a number of small underground mines and around 30 surface mines of various sizes.

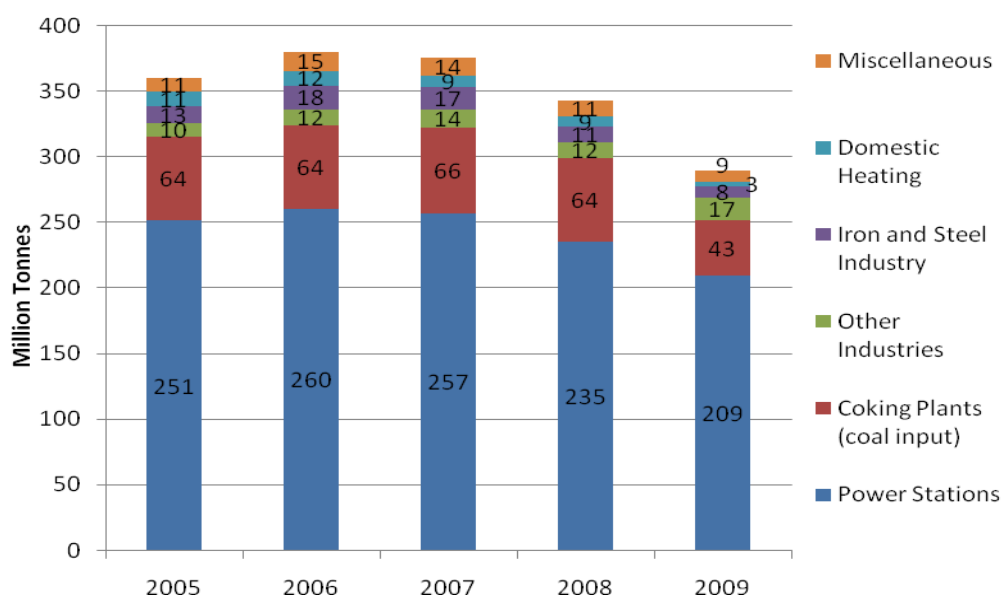
Production in the Czech Republic decreased by 1.7 Mt in 2009 (-13.0%) to 11.0 Mt. Coking coal accounts for around 60% of production volumes, and was affected by the difficult situation in the steel industry. The Czech hard coal industry is in need of investment to maintain output levels, otherwise there is a threat of a rapid drop in production in the next few years as developed reserves are exhausted.

In Spain production reduced by 0.7 Mt to 9.4 Mt in 2009. The economic crisis combined with increased generation from renewables has left many coal-fired power plants idle and as a result power plants and mines have stocked large amounts of coal.

## 4.2. Consumption

Trends in total consumption of hard coal are illustrated by the following chart.

**Figure 15 – EU Consumption Trends for Hard Coal**



Total hard coal consumption was 289.8 Mt in 2009 compared to 342.2 Mt in 2008. Consumption continues to be dominated by the power sector at 72% followed by coke production at 15%. Power station consumption was down by 11.1% in 2009 compared to 2008, whilst use for coke production was down by 33.6%.

Underlying the overall reduction in power station consumption were some significant reductions in individual Member States. In 2009, power station consumption reduced by 8.0 Mt (-17.3%) in the UK, by 7.3 Mt (-15.1%) in Germany, by 4.3 Mt (-17.6%) in Spain and by 1.8 Mt (-10.4%) in Italy.

The reduction in demand of 21.6 Mt (33.6%) from coking plants in 2009 was a dramatic consequence of the recession, with major falls in Poland of 3.5 Mt (35.5%), in Italy of 2.7 Mt (43.5%), in Germany of 2.5 Mt (24.9%) and in the Czech Republic of 1.2 Mt (28.2%). There is, however, evidence of significant recovery in this sector in 2010.

### **4.3. State Aid to the Hard Coal Industry in the EU**

In line with Council Regulation (EC) on State aid to the coal industry<sup>18</sup>, the amount of production aid paid to support uncompetitive hard coal mines which still exist in several Member States further declined. At the same time, the Member States concerned continued to finance measures related to restructuring and consolidation of their subsidised coal sectors. A large part of the support was directed to environmental clean-up measures or early retirement schemes - so called exceptional costs according to the before mentioned Regulation.

From 2007 to 2009 the yearly average of total aid to the hard coal sector was 3 025 million Euro of which 1 180 million Euro was spent for exceptional costs.

The detailed data on State aid expenditures to hard coal mining by Member State from 2004 until 2009 are available on the DG COMP website<sup>19</sup>. The Council Regulation on State aid to the coal industry expired on 31 December 2010. It was succeeded by a new Decision adopted by the Council on State aid to facilitate the closure of uncompetitive coal mines which provides for aid within a closure plan and under certain conditions.<sup>20</sup> The uncompetitive mines must be closed by 31 December 2018 and the coal production progressively reduced over the period. The Commission will examine the plans that are submitted to check their compliance with the Council Decision and will adopt decisions on these plans under Council Regulation EC n° 659/1999 of 22 March 1999 laying down rules for the application of Article 93 of EC Treaty.

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<sup>18</sup> Council Regulation No 1407/2002/EC of 23 July 2002 State aid to the coal industry, OJ L 205 of 2.08.2002, p. 1-8

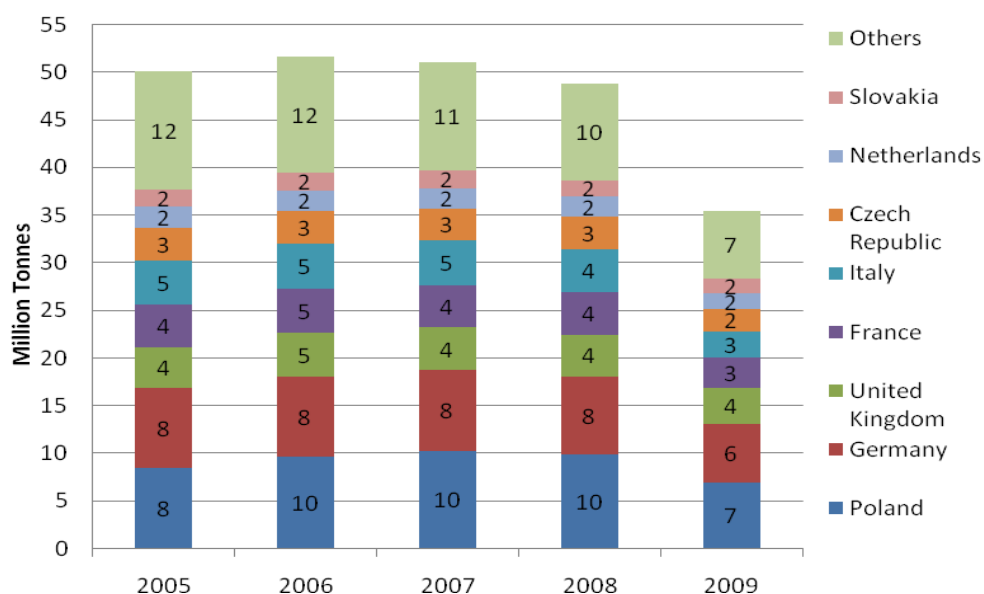
<sup>19</sup> Data differentiated by yearly average of aid destined to current production and not destined to current production and yearly average of total aid to coal sector - chapter 5.3. on the following website:  
[http://ec.europa.eu/competition/state\\_aid/studies\\_reports/studies\\_reports.html](http://ec.europa.eu/competition/state_aid/studies_reports/studies_reports.html)

<sup>20</sup> Council Decision No 2010/787/EU of 10 December 2010 on State aid to facilitate the closure of uncompetitive coal mines ( OJ L 336, 21.12.2010, p.24-29 ).

## 5. COKE – PRODUCTION AND CONSUMPTION IN THE EU

Production trends for coke are illustrated by the following chart.

**Figure 16 – EU Coke Production Trends**



Total EU production of coke was 35.4 Mt in 2009 compared with 48.8 Mt in 2008, a reduction of 27.3%. Total EU consumption of coke in 2009 was 36.3 Mt compared with 51.1 Mt in 2008, a reduction of 29.1%. At 2.6 Mt, coke imports were also down on 2008 by 53.1%, and supplied around 7% of the market.

As can be seen from the chart above, production of coke is widespread around Europe, but most producing countries saw significant reductions as a result of the effect of the economic crisis on steelmaking.



## 6. INTERNATIONAL HARD COAL AND COKE MARKETS

### 6.1. Major Hard Coal Producers

In 2009, world hard coal production increased by 3.4% (compared to 6.5% in 2008) and followed a period encompassing seven years of record growth, driven predominantly by China, which still showed growth of 8.7% for production in 2009. World production was again driven by growth from non-OECD countries, with 6.9% growth in 2009.

The following table shows figures for the largest producers.

**Table 5 – Major World Hard Coal Producers**

	(Mt)		
	2007	2008	2009
<b>China</b>	2,466.4	2,734.4	2,971.4
<b>United States</b>	981.7	1,007.2	918.7
<b>India</b>	454.4	488.6	526.1
<b>Australia</b>	324.6	325.4	335.2
<b>Indonesia</b>	223.8	235.1	263.3
<b>South Africa</b>	247.7	252.3	247.3
<b>Russia</b>	217.9	222.4	228.6
<b>Kazakhstan</b>	93.5	106.2	96.2
<b>Poland</b>	88.3	84.3	78.0
<b>Colombia</b>	69.9	73.5	72.9
<b>Ukraine</b>	58.7	59.5	54.8
<b>Others</b>	214.6	205.1	197.1
<b>Total</b>	5,441.5	5,794.0	5,989.6

Source – IEA Coal Information 2010

China accounts for over 49% of world hard coal production. Output grew by 237 Mt or 8.7% in 2009, more than offsetting the combined 41 Mt decrease in production for the rest of the world. China's production has more than doubled since 2000 which allows the country to meet fast growing demand for coal-fired generation and steel making. However, as a major coal exporter, China moved from the second largest hard coal exporter in 2001 to the ninth in 2009. At the same time that exports have fallen, in 2009 China became the world's second largest coal importer at 137 Mt.

Coal production in the United States decreased by 8.8% in 2009 after a 2.6% increase in 2008. As well as being the second largest global hard coal producing country, the

United States has been one of the world's major exporters, and remains in sixth place, but in 2009 exports fell by 27.5% to 53.4 Mt.

India is the third largest hard coal producer, and increased production by 7.7% in 2009. Although it dominates South Asian production, Indian coal contains very high ash levels, and is consumed domestically – India is increasingly dependent on imports because of its rapidly growing power requirements and in 2009 became the world's fourth largest importer.

Australia remains the largest hard coal exporter as well as the fourth largest producer, and increased production by 3.0% in 2009, compared to an increase in production of just 0.2% between 2007 and 2008.

Indonesia overtook Russia to become the fifth largest hard coal producer and remains the second largest exporter in the world (and the largest exporter of steam coal). Coal production showed the world's strongest growth, up by 12.0% in 2009.

South Africa's hard coal production in recent years has been fairly static or declining, and it fell by 2.0% in 2009. Exports, however, increased by 11.5% and overtook the USA for fifth place. Although still a major exporter to the European Union, supplies have been increasingly directed to India and other Asian markets.

Russia increased its output by just 2.8% in 2009, and remained the largest international coal supplier to the European Union. Its exports increased by 19% to 116 Mt in 2009 due to large increases in demand from China, and it remained the world's third largest coal exporter, despite falling behind Indonesia and South Africa to be the world's seventh largest producer.

Production from Kazakhstan decreased by 9.4% in 2009, after a strong year in 2008. Exports (mainly overland to Russia) also reduced significantly to 23 Mt.

Colombian production fell back by 0.8% in 2009 following an increase of 5.2% in 2008. Colombia remains the fourth largest exporter in the world and a significant supplier to the European Union and the United States.

Poland is the only EU country to rank amongst the world's major hard coal producers, remaining in ninth place in 2009.

## **6.2. Hard Coal Trade**

A high proportion of world coal production is consumed within the country of origin – around 85%, and this is especially true of the two largest producers, China and the USA. Relatively small proportional changes in supply and demand in these countries can have a major impact on international market dynamics.

World hard coal trade grew by 0.3%, or 3.0 Mt, in 2009, to an estimated total of 940.8 Mt.<sup>21</sup> The major steam coal exporting nations are Indonesia, Australia, Russia, Co-

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<sup>21</sup> Source – IEA World Coal Information 2010

lombia and South Africa, whereas for coking coal the major exporters are Australia, the United States and Canada.

Major world coal trade flows are illustrated by the following diagram.

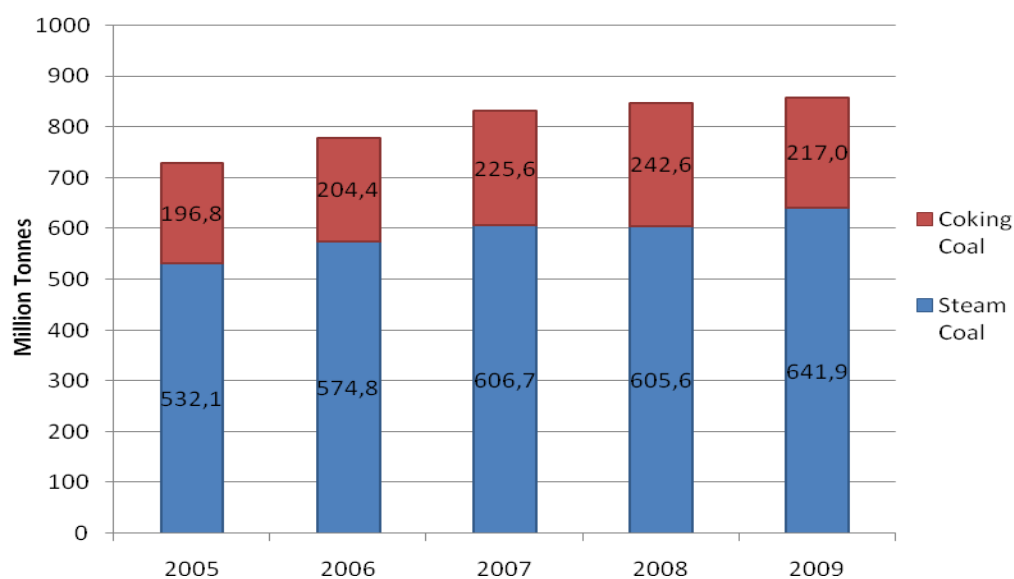
**Figure 17 – Hard Coal Seaborne Trade 2009**



Source – Verein der Kohlenimporteure Annual Report 2010

Trends in seaborne hard coal trade are illustrated by the following chart.

**Figure 18 – World Seaborne Hard Coal Trade**



Source – IEA Coal Information 2010

### **6.3. Steam Coal Trade**

Total world steam coal exports increased by 26.8 Mt (3.9%) in 2009 to 711.3 Mt.

Exports from Indonesia, Australia, Russia, Colombia, South Africa and Vietnam rose in 2009, whereas China, Kazakhstan and the United States saw declining exports.

In 2009 Indonesia further increased its steam coal market share to 28.1% of the world total. Australia, Russia, Colombia and South Africa followed with respective shares of 19.2%, 14.8%, 9.8% and 9.3%.

The expected collapse in the steam coal market, as a result of the financial crisis did not materialise, mainly because of the impact of China. A strong divergence between the Atlantic and Pacific markets developed during the year. Whereas demand stagnated or reduced in the USA and Europe, China became a significant net importer. Towards the end of 2009 shipments to China were reported for the first time from South Africa and Colombia, historically seen as Atlantic suppliers. South African coal is also increasingly finding a place in India; during 2009 around 15 Mt coal from South Africa switched from the Atlantic to the Pacific market compared to the previous year. Russia also increased its supplies to the East whereas supplies to the West were stable.

High Chinese imports have continued into 2010 and India also continues to grow as an export destination. Growing economies in the Asia-Pacific region, including China and India, more than make up for any stagnation in demand in the Atlantic market. New trade patterns are becoming established with South Africa and Russia switching more supplies east and significant tonnages from Colombia also moving to the Asia-Pacific market. In consequence, the steam coal market is expected to grow by over 30 Mt in 2010.

#### **6.4. Coking Coal Trade**

The world trade in coking coal decreased by 11.3% to 232.3 Mt in 2009<sup>22</sup>. Australia remained, by far, the largest exporter at 125.2 Mt, although exports decreased by 11.7 Mt compared to the previous year.

As a result of the collapse in steel demand in OECD<sup>23</sup> countries in 2009 (noted in section 3.5), the coking coal market was also expected to collapse. However, the strong growth of crude steel production in China absorbed large quantities of coking coal from the world market. As the steel industry began to recover later in 2009 and into 2010, the coking market stabilised and is expected to return to growth in 2010.

#### **6.5. Coke Trade**

The OECD countries' imports of coke more than halved between 2008 and 2009 as imports dropped from 18.9 Mt to 9.1 Mt<sup>24</sup>. Germany alone accounted for 34.8% of the OECD coke imports in 2009, whilst imports to the United States dropped by 90.4%.

With most coke produced close to where it is used for steelmaking, the international coke trade is extremely sensitive to levels of activity in the steel market. China is by far the largest coke producer and exporter, but demand for imported coke fell to very low levels with the economic downturn.

#### **6.6. Imports to the EU**

Imports of hard coal to the EU in 2009 of 179.1 Mt reduced by 14.8% compared to 210.3 Mt in the previous year and represented 57% of total supply. The major exporting countries to the EU were Russia (30.0%), Colombia (17.9%), South Africa (16.1%), the USA (13.9%), Australia (7.7%) and Indonesia (7.1%). In 2009 Colombia overtook the USA and South Africa to become the EU's second largest supplier.

The split of these imports between supplying countries is illustrated by the following chart.

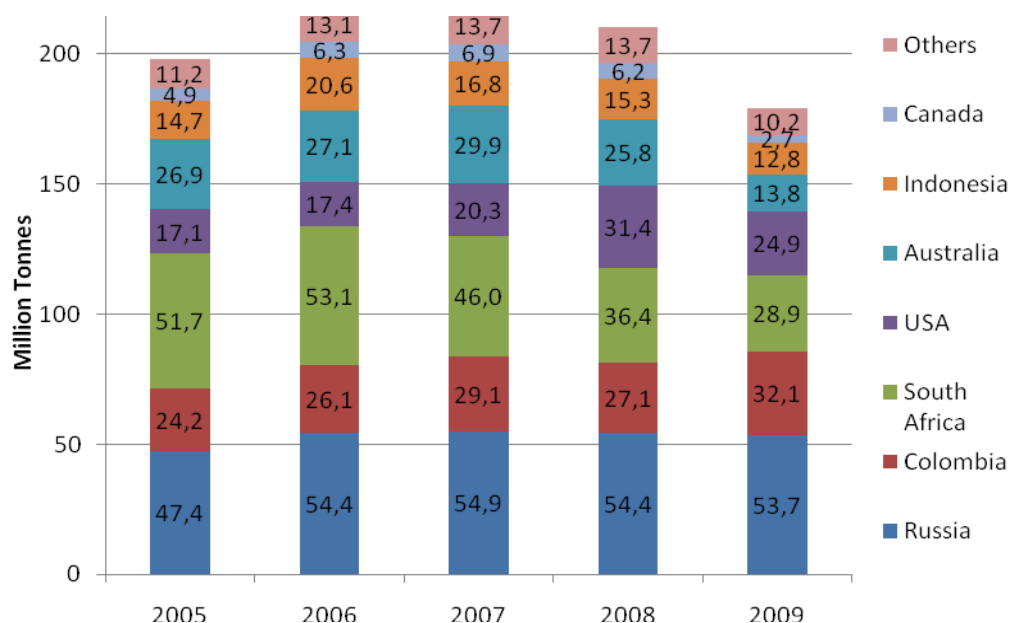
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<sup>22</sup> IEA includes coal used in coking blends and for pulverised coal injection in coking coal statistics which are not strictly coking coals

<sup>23</sup> Organisation of Economic Cooperation and Development

<sup>24</sup> Source – IEA Coal Information 2010

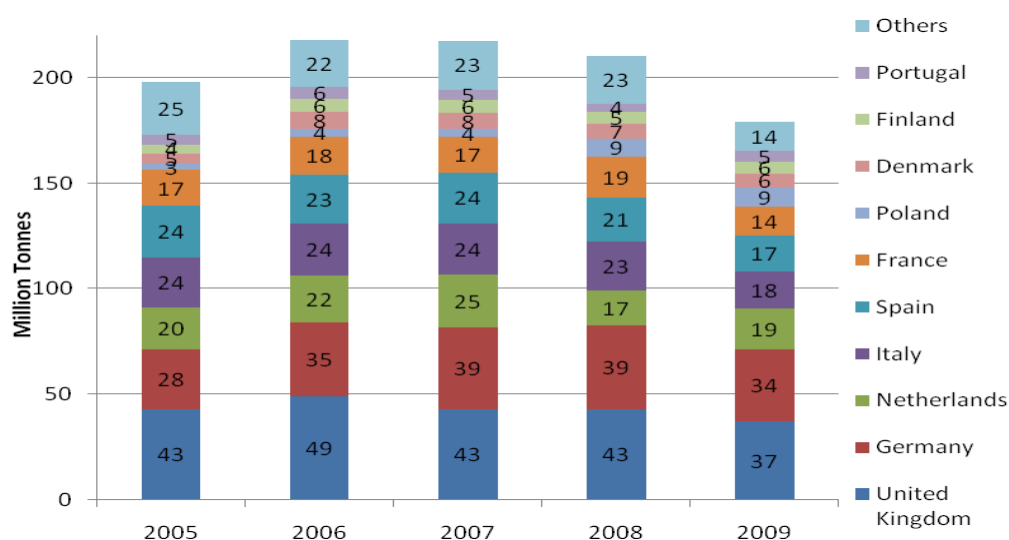
**Figure 19 – EU Import Sources**



Russia has been the largest supplier to the EU since 2006. Amongst the major importers, the UK took 51% of its imports from Russia in 2008 and Germany took 28%. Russia was also the main supplier to most of the Eastern and South Eastern European Member States. Colombia overtook South Africa as the second largest supplier to Europe, accounting for 41% of imports to the Netherlands, 19% to Germany and 17% to Spain. South Africa remained an important supplier, principally to Spain where it accounted for 25% of its imports, and also to Italy (23%), the Netherlands (22%), and France (21%).

Major European importing countries are illustrated by the following chart.

**Figure 20 – EU Import Volumes by Member State**



The UK remained Europe's largest coal importer in 2009 at 37.0 Mt, but showed a significant decrease of 14% on 2008. Germany also reduced imports by 13% to 34.2 Mt. Other major reductions in imports were seen in Italy (-24%), Spain (-18%) and France (-28%). The Netherlands was the only major importer to show a significant increase (+16%).

## 6.7. International Price Trends

The following graph illustrates the development of spot steam coal prices delivered to North West Europe.

**Figure 21 – North West Europe Steam Coal Prices**

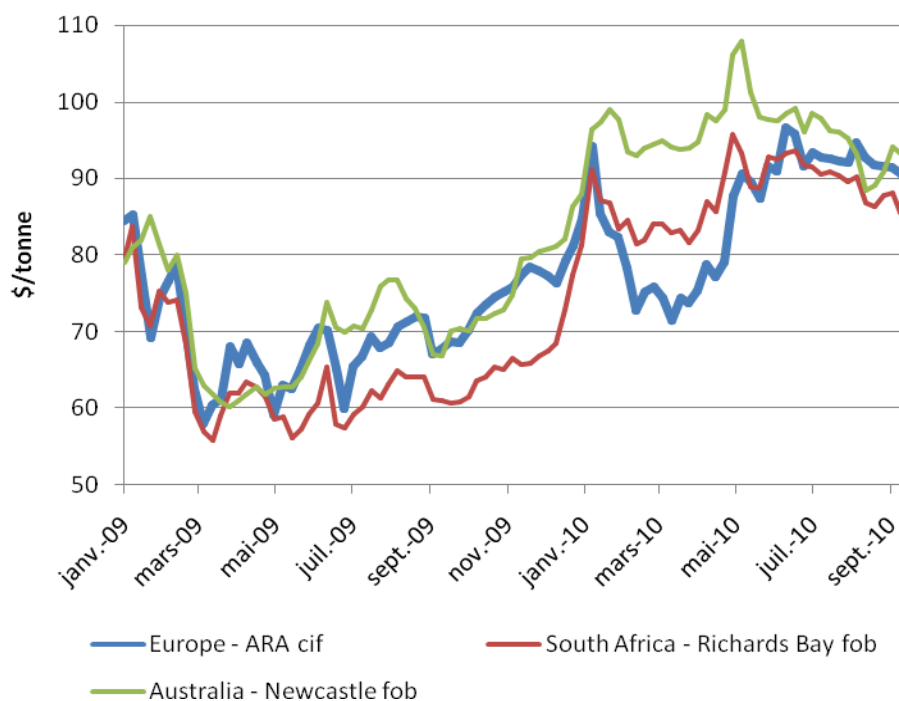


Source – McCloskey Coal Information Services (MCIS) basis 6,000 kcal NAR ARA

The rapid fall in coal prices in late 2008 and early 2009, as a result of the economic downturn, was even more marked than the increase earlier in 2008, although it should be noted that when prices reached their lowest point in March 2009, they were still high by historical standards. If Asian demand had not continued to grow, as detailed in section 6.3, prices would probably have suffered a greater collapse. During the remainder of 2009 and for most of 2010 the overall price trend has been upwards. There has continued to be short term volatility, but to a lesser degree than during 2008, and less than has been seen in oil and gas markets. Prices were approaching \$100/tonne in October 2010, and the forward curve (Figure 10) showed an expectation of prices rising to around \$115/tonne by 2014.

The weakness of the Atlantic market vis-à-vis the Pacific was illustrated by the fact that fob spot prices from Newcastle (Australia) were often higher than prices *delivered* to North West Europe as demonstrated in the following graph.

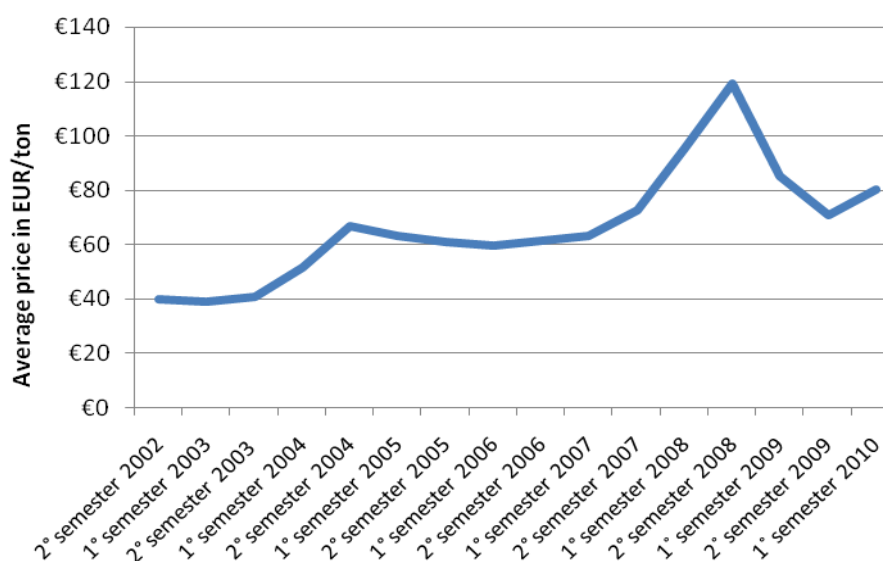
**Figure 22 – Comparison of Loaded and Delivered Prices**



It can also be noted that, whereas European delivered prices have often been represented as a South African loaded price plus a sea freight rate, for much of the time this implied freight rate has been negative. This reflects the stronger demand for South African coal in India, and the fact that European spot prices are more likely being set by imports from Colombia.

Import prices for steam coal reported to the European Commission are illustrated by the following chart.

**Figure 23 – Price of Steam Coal Imported from Third Countries**





After the peak of €119/tce in the second semester of 2008, prices fell back by 40% to €71/tce by the second semester of 2009 before recovering to €80/tce in the first semester of 2010.

It is important to note that the prices illustrated in Figure 21 are spot prices, whereas those reported by the European Commission are contract prices. Spot prices refer to deliveries ninety days ahead. There is therefore a time lag before these spot prices and contemporaneous forward swap prices are reflected in contract prices paid by customers such as those reported to the European Commission illustrated in Figure 23. The short-term volatility of international prices is also smoothed out where buyers have entered into longer-term contracts, reflecting prices which were current, or anticipated, when contracts were negotiated.

## 6.8. Coking Coal Prices

For many years, pricing for coking coal was largely determined in annual contract negotiations and has been strongly influenced by the resulting benchmark prices which emerged during the annual negotiating round (shown in Table 6). From 2010 this practice has changed, with the major suppliers leading a move to quarterly price settlements from April. At the same time, with an increasing spot market in coking coal, a start has been made in establishing monthly price indices (illustrated in Figure 24 – Coking Coal Spot Prices).

The following table illustrates the development of prices for internationally traded coking coal, based on Australian contract prices up to the last year for which annual prices were negotiated.

**Table 6 – Price Trends in Coking Coal<sup>25</sup>**

(US \$/Tonne FOB Australia)

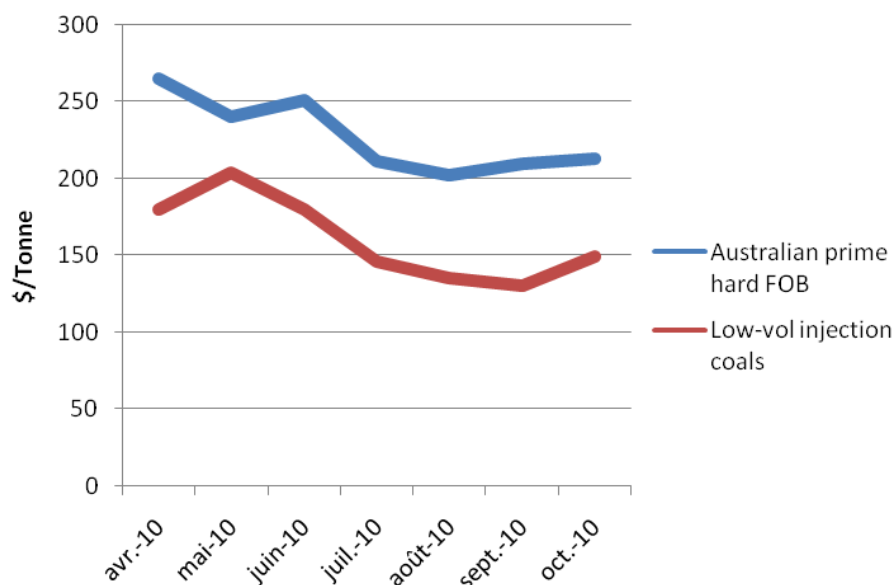
<b>Contract Prices*</b>	<b>2005/6</b>	<b>2006/7</b>	<b>2007/8</b>	<b>2008/9</b>	<b>2009/10</b>
<b>Hard Coking Coal</b>	125	112	96	300	129
<b>Semi-soft Coking Coal</b>	80	58	65	240	85
<b>PCI</b>	102	68	71	250	90

\*April to March basis

Since April 2010, monthly spot prices have been quoted for coking coals and are illustrated by the following chart.

<sup>25</sup> Source – Merrill Lynch/Macquarie

**Figure 24 – Coking Coal Spot Prices**



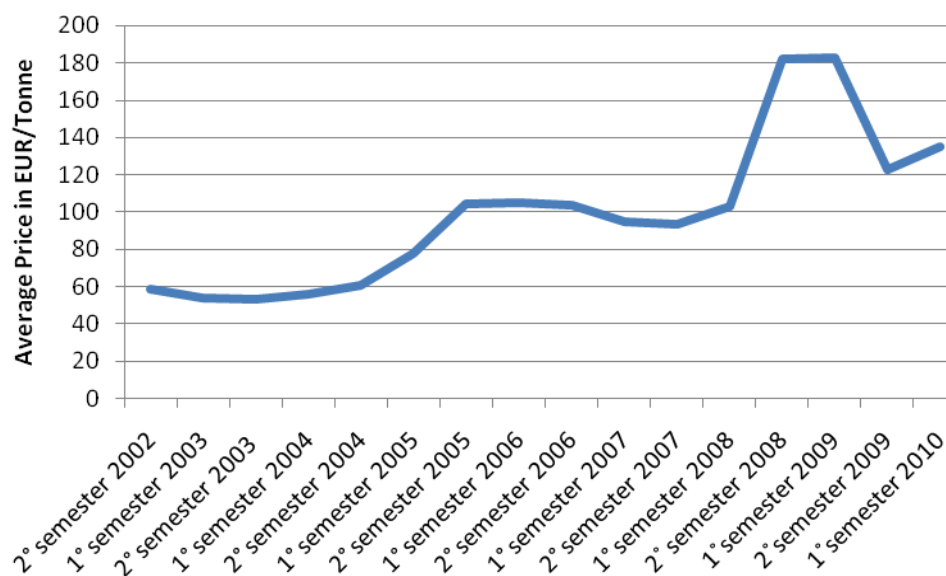
Source – McCloskey Coal Information Services (MCIS)

Over recent years the most significant driver of coking coal prices has been the supply/demand balance. The relatively small number of suppliers of prime coking coals, together with the burgeoning demand growth, means that any perceived perturbation to the market can have major impacts on prices.

The global recession – and the associated major downturn in steel production (see paragraph 3.5) – had a significant impact on negotiations for coking coal prices in 2009/10, although these were elevated to some degree by tonnages contracted at the higher prices for 2008/9 and not accepted for delivery by customers. With the move to quarterly prices from April 2010 prices can react more rapidly to perceived changes in the supply/demand balance and after some softening earlier in the year, prices are expected to increase again as the steel market continues its recovery worldwide.

Import prices for coking coal reported to the European Commission are illustrated by the following chart.

**Figure 25 – Price of Coking Coal Imported from Third Countries**

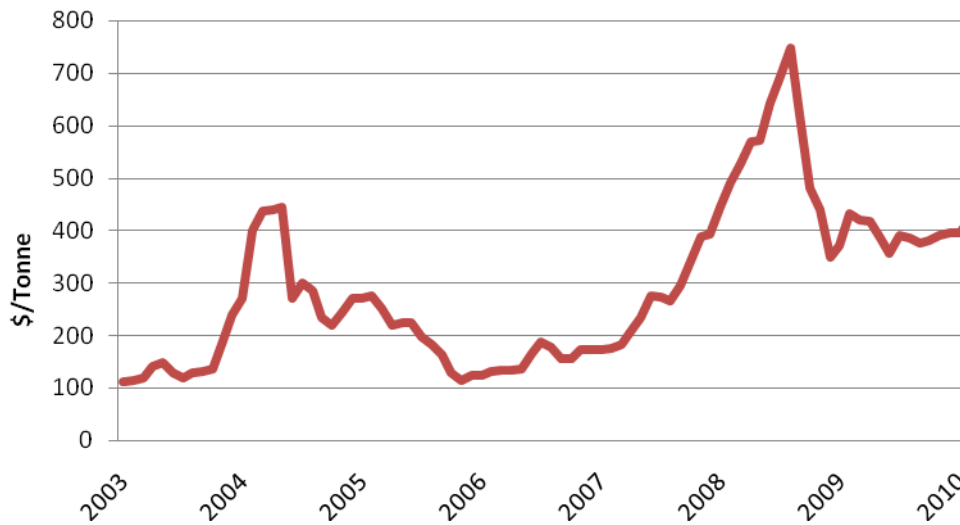


The high prices reached in the second semester of 2008 continued into the first semester of 2009, despite the financial crisis, because of the impact of annually negotiated contracts on price levels. The impact of lower contract prices from April 2009 was seen in the second semester of 2009 when prices reduced by 33% to €123/tce before recovering to €135/tce in the first semester of 2010.

## **6.9. Coke Prices**

Developments in coke prices to April 2010 (fob 12-12.5% ash), are illustrated by the following chart.

**Figure 26 – Spot Chinese Coke Prices**



Source – Euracoal

The development of coke prices reacted in a similar manner to coking coal, reflecting an overheating steel market followed by a partial collapse as the recession took hold. Coke prices from China still remain very high, but there are currently very few sales.

### **6.10. World Transport Infrastructure**

Infrastructure constraints are a major factor in both the development of new coal resources around the world and in meeting surges in current demand. With the rapid growth in recent years of bulk commodities as a whole, and of coal in particular, there have been major bottlenecks in both loading and discharging ports, and domestic railway lines.

Problems vary from country to country; in Australia there has been major congestion at ports; in Russia the very long rail routes both West and East from the coal producing region in Siberia cause periodic problems because of shortage of wagons or adverse weather conditions.

The chance to exploit market opportunities arising from the increasing demand in coal has triggered plans for a worldwide expansion of the infrastructure across all of the links of the transport chain.

The realisation of many measures has significantly improved the situation, especially in Australia where queues in the loading ports have been falling. Expansion projects in the loading ports have been launched in Indonesia, Colombia, Russia and South Africa, and Russia is acting to improve rail access to Eastern ports.

However, with the pause in demand growth in 2009, transport bottlenecks were less of a problem and have given infrastructure solutions the opportunity to catch up with demand. No major infrastructure issues which would hinder growth in the market are expected in 2010.

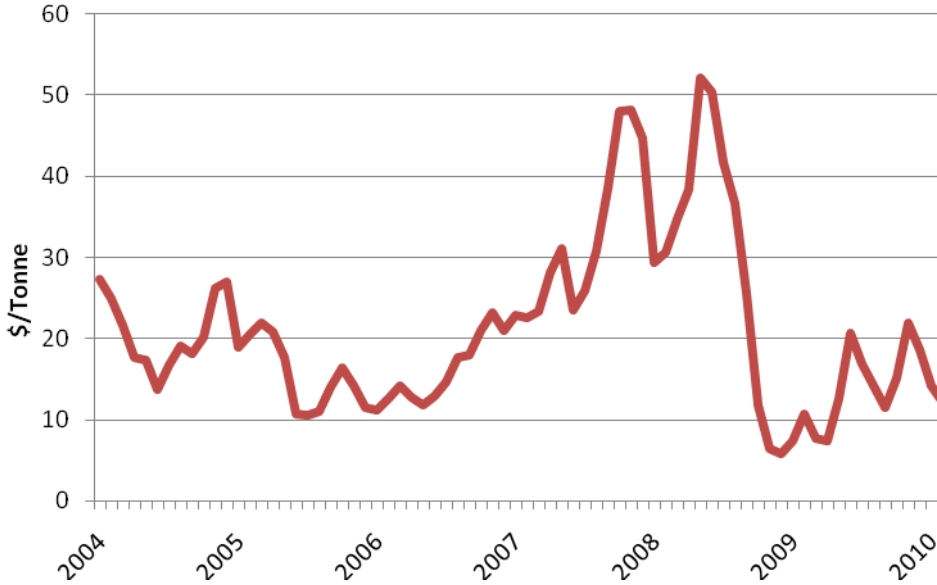
**6.11. Freight Considerations**

Delivered prices to Europe comprise both fob prices from the country of loading and sea freight rates.

The following chart shows the development of rates from the beginning of 2004 to April 2010.

**Figure 27 – Spot Sea Freight Rates**

Richards Bay (South Africa) to Rotterdam



Source - Euracoal

Freight rates react rapidly to supply/demand dynamics and have shown major volatility in recent years. The benchmark freight rate from Richards Bay to Rotterdam ended 2008 at around 10% of its peak value in the middle of the year, as a result of the initial impact of the financial crisis. During 2009 and 2010 prices have responded to a resurgence in demand from China and, whilst being extremely volatile, have fluctuated between levels more in accordance with historic norms.

The peaks in prices seen at various times in recent years, and particularly during 2008, were caused by shortages in capacity, resulting from congestion at ports, on top of a rapid growth in the market both in terms of volume and distances travelled. It is important to note that bulk carriers are used both for coal and for iron ore, for example with Chinese demand for iron ore relying heavily on long-distance deliveries from Brazil.

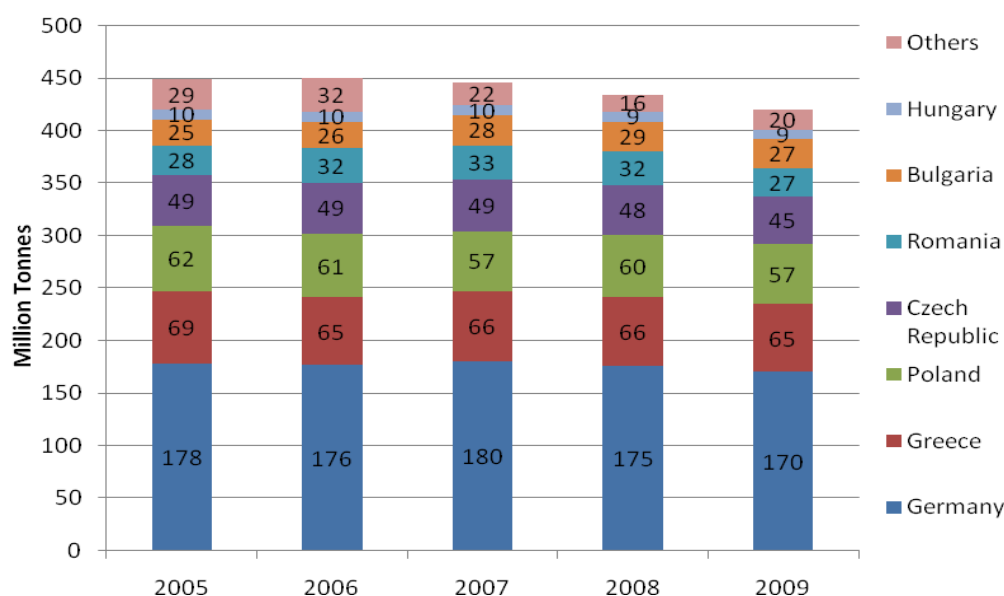
The dry-bulk freight market is a very pure market which reacts very swiftly to changes in the supply of ships compared with the demand for the fleet's use. The fleet capacity increase in 2009 was about 10%, whilst the bulk goods volume declined by 3%, creating a large gap between supply and demand. Another strong increase of more than 10% in fleet capacity and only modest growth in overall demand means that it will remain a buyers' market.

## 7. LIGNITE AND PEAT – PRODUCTION AND CONSUMPTION

### 7.1. EU Production Trends

European production of lignite was 420.8 Mt in 2009 compared to 434.3 Mt in 2008. Production reduced by 3.1% in 2009 compared to the previous year. Production trends are illustrated by the following chart<sup>26</sup>.

**Figure 28 – EU Lignite Production Trends**



The average calorific value of European lignite (including peat) is estimated at 8.98 GJ per tonne<sup>27</sup>. On this basis, lignite production in 2009, expressed in standard units of coal equivalent, was 128.9 Mtce.

In 2009 Germany reduced its lignite production by 5.5 Mt (-3.1%) to 169.9 Mt as a result of lower demand from the vertically integrated power sector. Production remained centred in four mining regions – the Rhineland around Cologne, Aachen and Mönchengladbach (92.1 Mt), the Lusatian mining area in South East Brandenburg and North East Saxony (55.7 Mt), the central German mining area in the South East of Saxony-Anhalt and in North West Saxony (20.2 Mt) and the Helmstedt mining area in Lower Saxony (1.9 Mt)<sup>28</sup>.

Greece is the EU's second largest lignite producer, in tonnage terms, and in 2009 production reduced slightly by 1.5% to 64.7 Mt. Production comes from the West Macedonia Lignite Centre in the North of the country and from the Megalopolis Centre in the Peloponnese.

In Poland, lignite production reduced by 4.1% to 57.1 Mt in 2009. Two lignite operations are located in central Poland with a third in the south-western region of the country. During 2009

<sup>26</sup> For the purposes of the EU statistics in this report and the attached tables, lignite, brown coal and peat are grouped together and included in a single EU total. (Production of oil shale is not included in the solid fuel totals but figures are reported later in paragraph 7.4.)

<sup>27</sup> Based on data in IEA Coal Information 2010

<sup>28</sup> Source – Euracoal

the first lignite was produced from the Szczercow Field. Szczercow is one of the three fields in the Belchatow lignite deposit where resources amount to 620 Mt.

Production in the Czech Republic reduced by 4.5% to 45.4 Mt in 2009. The main lignite basin and the largest mining area is the Northern Bohemian Brown Coal Basin in the North West of the country, with production from around ten mines.

Romania also has a number of lignite mines of varying sizes, mainly in the South West of the country in the Oltenia Basin; production in 2009 reduced by 13.5% to 27.5 Mt as a result of reduced demand from the power sector.

In Bulgaria, most of the production comes from the Maritsa East coalfield in the South East of the country. Overall Bulgarian production in 2009 reduced by 5.5%, to 27.2 Mt.

## **7.2. Consumption**

Total EU consumption of lignite in 2009 was 420.0 Mt, a decrease of 4.6% compared to 440.4 Mt in 2008. Around 95% of lignite is used in power stations with the remainder being largely used for district heating plants and domestic heating, mainly in the form of briquettes.

There is little trade in lignite because of its low heat value and resulting high unit transportation costs. This means generally that power stations burning lignite are situated close to the mines, with supply and demand being closely matched. Total EU imports of lignite in 2009 were 0.8 Mt, only 0.2% of total supply.

## **7.3. Peat Production**

Within the overall lignite figures, production and consumption of peat is included. Production comes mainly from Finland, Ireland, Sweden, Estonia and Lithuania. In 2009, 13.0 Mt of peat was produced, an increase of 3.7 Mt compared to production of 9.3 Mt in 2008. Consumption of peat in 2009 was 12.9Mt, a decrease of 1.2 Mt compared to consumption of 14.1 Mt in 2008.

## **7.4. Oil Shale**

Oil shale statistics are not included in any of the tables or figures in this report. In 2009, 14.9 Mt of oil shale was produced in Estonia compared to 16.1 Mt in 2008 (-7.5%). Oil shale consumption of 13.8 Mt was used mainly in the power generation sector where consumption was 13.6 Mt. In 2009 consumption was 15.7 Mt including 12.1 Mt in power generation.

## **7.5. World Context**

World production of lignite<sup>29</sup> decreased by 5.4% in 2009 to 913.3 Mt. Following its 1989 peak, lignite production declined steadily until 1999, largely as a result of contractions in supply and demand in central and Eastern Europe. Since then, production has been fairly stable with production in 2009 just 0.7% above that in 2000.

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<sup>29</sup> In this report the term 'lignite' also includes brown coal

The following table shows figures for the largest producers.

**Table 7 – Major World Lignite Producers**

	(Mt)		
	2007	2008	2009
<b>Germany</b>	180.4	175.3	169.9
<b>Turkey</b>	72.9	76.8	70.5
<b>Russia</b>	71.1	82.5	68.2
<b>United States</b>	71.3	68.7	65.8
<b>Greece</b>	66.3	65.7	64.7
<b>Australia</b>	65.6	72.4	64.0
<b>Poland</b>	57.5	59.6	57.1
<b>Czech Republic</b>	49.7	47.5	45.4
<b>Serbia-Montenegro</b>	37.1	38.7	38.3
<b>Indonesia</b>	36.7	38.5	38.2
<b>Canada</b>	36.6	34.9	35.0
<b>India</b>	34.0	32.4	34.7
<b>Romania</b>	35.8	35.9	30.6
<b>Bulgaria</b>	28.4	29.0	27.2
<b>Others*</b>	110.2	106.9	103.7
<b>Total</b>	953.6	964.8	913.3

\*IEA figures also include oil shale production in Estonia

Source – IEA Coal Information 2010

Many European nations feature amongst the top producing countries in the world. Europe is responsible for around 50% of world production of lignite, where it represents an energy resource of key importance.



**Annex 1 – Summary of EU-27 Data**

(Mt)

	2008	2009	% Change
<b>Hard Coal</b>			
Availability			
Production	146.0	132.5	-9.3
Recoveries	1.8	1.2	-32.1
Imports from third countries	210.3	179.1	-14.8
<b>Total</b>	<b>358.1</b>	<b>312.8</b>	<b>-12.7</b>
Deliveries			
Power Stations*	235.2	209.1	-11.1
Coking Plants	64.2	42.7	-33.6
Others	42.8	38.0	-11.3
Exports to third countries	0.6	1.2	109.8
<b>Total</b>	<b>342.8</b>	<b>291.0</b>	<b>-15.1</b>
<b>Coke</b>			
Availability			
Production	48.8	35.4	-27.3
Imports from third countries	5.5	2.6	-53.1
<b>Total</b>	<b>54.2</b>	<b>38.0</b>	<b>-29.9</b>
Deliveries			
Steel Industry	43.2	31.2	-27.7
Others	7.9	5.0	-36.4
Exports to third countries	1.4	1.2	-11.3
<b>Total</b>	<b>52.5</b>	<b>37.5</b>	<b>-28.6</b>
<b>Lignite</b>			
Availability			
Production	434.3	420.8	-3.1
Imports from third countries	1.3	0.8	-33.2
<b>Total</b>	<b>435.5</b>	<b>421.6</b>	<b>-3.2</b>
Deliveries			
Power Stations*	414.2	398.2	-3.9
Briquetting Plants	16.0	14.3	-10.3
Others	10.2	7.4	-27.0
<b>Total</b>	<b>440.4</b>	<b>420.0</b>	<b>-4.6</b>

\*Including industrial and pithead power stations

**Table 1**  
**Supplies and Deliveries of Hard Coal in 2008 (Part 1)**

(in thousands of metric tonnes)

Member State	Austria	Belgium	Bulgaria	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Ireland	Italy
<b>1. Production (t=t)</b>			19		12,651					19,144				120
of which :														
<b>A - Underground</b>			19		12,651					19,144				120
<b>B - Opencast</b>														
<b>2. Recoveries</b>					230		6		277					
<b>3. Receipts from other EU Countries</b>	2,551	302	135		1,830	264		89	2,172	5,929		547	117	1,646
<b>4. Total imports from Third Countries</b>	651	7,134	1,983	46	477	7,306	123	5,455	19,113	39,498	664	1,384	2,386	23,453
of which :														
<b>A - USA</b>	510	1,853	317		224	344		533	4,072	5,373	66	839	142	3,254
<b>B - Canada</b>		60						393	544	1,629		72		984
<b>C - Australia</b>		2,252			18			292	6,319	4,443		18	394	2,923
<b>D - South Africa</b>		1,941				2,243		191	3,317	8,816	51		294	4,596
<b>E - Russian Federation</b>	68	550	391	46	236	2,604	123	3,770	1,826	9,157	329	383		918
<b>F - China</b>		40							167			110		
<b>G - Colombia</b>		209				1,680		68	1,956	4,667			779	2,429
<b>H - Indonesia</b>		219						129	2		18		478	7,212
<b>I - Venezuela</b>									435					395
<b>J - Others</b>	73	9	1,274			435		79	474	5,413	90	72	297	742
<b>5. Total Availabilities (1+2+3+4)</b>	3,202	7,436	2,137	46	15,188	7,570	129	5,544	21,562	64,571	664	1,931	2,503	25,219
<b>6. Gross Inland Consumption*</b>	4,143	5,731	2,137	40	9,119	6,998	129	5,027	19,548	65,920	523	1,914	2,226	25,430
<b>A - Power Stations (public &amp; mine)</b>	1,697	1,953	1,735		3,096	6,677		3,607	8,190	48,135		258	1,690	17,000
<b>B - Coking Plants (coal input)</b>	1,827	2,737	402		4,301			1,235	5,986	10,251		1,432		6,249
<b>C - Iron and Steel Industry**</b>	281	478			812				2,636	2,969				1,218
<b>D - Other Industries</b>	265	325		40	846	194	120	180	2,241	3,115	520	161	188	962
of which <b>Power Stations</b>					254				311	2,912				
<b>E - Domestic Heating</b>	74	231				127	9		480	1,341	3	55	271	1
<b>F - Miscellaneous (Total (i)+(ii)+(iii))</b>		7			64			5	15	109		8	77	
<b>(i) Issue to Workers</b>									107					
<b>(ii) Patent Fuel Plants</b>		6							15				4	39
<b>(iii) Others</b>		1						5		2			4	38
<b>7. Deliveries to Other EU Countries</b>	1	1,122			6,299	129			186	140		3		47
<b>8. Exports to Third Countries</b>		93				27				5	2			
<b>9. Total Deliveries (6+7+8)</b>	4,144	6,946	2,137	40	15,418	7,154	129	5,027	19,734	66,065	525	1,917	2,226	25,477

\* Including transformation for coke

\*\* PCI Coal

**Table 1**  
**Supplies and Deliveries of Hard Coal in 2008 (Part 2)**

(in thousands of metric tonnes)

Latvia	Lithuania	Luxembourg	Malta	Netherlands	Poland	Portugal	Romania	Slovakia*	Slovenia (Estimate)	Spain	Sweden	United Kingdom	Total EU-27	Member State	
					83,648		2,801			10,187		17,463	146,033	1. Production (=t)	
					83,648		2,801			4,254		8,034	130,671	of which:	
					674					5,933		9,429	15,362	A - Underground	
										184		449	1,820	B - Opencast	
	17	44		1,047	1,464	3	64	2,222		213	376	893	21,925	2. Recoveries	
														3. Receipts from other EU Countries	
167	366	72		16,578	8,637	3,826	2,404	2,287	48	20,754	2,481	42,995	210,288	4. Total imports from Third Countries	
														of which:	
					3,129	1,659	273	1,148	408	2,380	567	4,353	31,444	A - USA	
					584			70	169	235		1,435	6,175	B - Canada	
					600			214		3,195	1,139	4,004	25,811	C - Australia	
		72			3,906		1,101			5,601		4,264	36,393	D - South Africa	
167	363				891	5,226	21	826	1,677	2,623	764	21,440	54,399	E - Russian Federation	
					73					115		15	520	F - China	
					5,360	489	2,015	104		1,995		5,354	27,105	G - Colombia	
					886		154			4,064		2,122	15,284	H - Indonesia	
					1,024					192	11	8	2,065	I - Venezuela	
	3				125	1,263	262	43	33	48			11,090	J - Others	
167	383	117			17,625	94,422	3,829	5,270	4,509	48	31,339	2,857	61,800	380,068	5. Total Availabilities (1+2+3+4)
162	326	117			12,627	75,672	4,140	5,270	4,483	48	29,502	2,774	58,240	342,246	6. Gross Inland Consumption*
21					8,224	43,506	4,032	3,261	1,897		24,430	332	46,278	226,019	A - Power Stations (public & mine)
					3,049	9,907		2,003	2,499		3,364	1,959	7,045	64,246	B - Coking Plants (coal input)
					1,354	412	10			10	661	532	11,407	11,407	C - Iron and Steel Industry**
78	172	83			6,545		98			38	677	465	3,875	21,188	D - Other Industries
					4,139								1,541	9,157	of which Power Stations
63	154				4,661			88		320			691	8,569	E - Domestic Heating
					10,640			6		50			351	11,332	F - Miscellaneous (Total (i)+(ii)+(iii))
					1,025			6						1,138	(i) Issue to Workers
													340	404	(ii) Patent Fuel Plants
					9,615					50			11	9,726	(iii) Others
	8				6,276	7,929	11		4	1,741	3	690	24,589	7. Deliveries to Other EU Countries	
					101	168	29		21	95	7	34	582	8. Exports to Third Countries	
165	334	117		19,004	83,768	4,180	5,270	4,508	48	31,338	2,784	58,964	367,419	9. Total Deliveries (6+7+8)	

\*Consumption  
Split Estimated

\* Including transformation for coke  
\*\* PCI Coal

**Table 2**  
**Supplies and Deliveries of Hard Coal in 2009 (Part 1)**

(in thousands of metric tonnes)

Member State	Austria	Belgium	Bulgaria	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Ireland	Italy
<b>1. Production (t=t)</b>			13		11,001					14,971				72
of which :														
<b>A - Underground</b>			13		11,001					14,971				72
<b>B - Opencast</b>														
<b>2. Recoveries</b>									147					
<b>3. Receipts from other EU Countries</b>	2,691	362	27	29	1,446	233		192	1,658	4,252	23	488	38	1,471
<b>4. Total imports from Third Countries</b>	348	4,445	1,114		279	6,477	30	5,744	13,780	34,222	244	816	2,023	17,869
of which :														
<b>A - USA</b>	280	1,618			61	516		443	3,868	4,424		379		2,122
<b>B - Canada</b>		140						293	197	1,110				423
<b>C - Australia</b>		376						223	2,948	3,606				1,039
<b>D - South Africa</b>	21	1,900				1,075			2,903	5,320			337	4,054
<b>E - Russian Federation</b>	14	206	332		212	2,710	30	4,669	1,598	9,529	233	389		894
<b>F - China</b>		1							9					
<b>G - Colombia</b>		114				2,019		74	1,700	6,487			1,223	2,305
<b>H - Indonesia</b>								13	1				156	6,555
<b>I - Venezuela</b>								3	357					110
<b>J - Others</b>	33	90	782		6	157		26	200	3,746	11	48	308	367
<b>5. Total Availabilities (1+2+3+4)</b>	3,038	4,807	1,154	29	12,726	6,710	30	5,936	15,584	53,445	267	1,304	2,061	19,411
<b>6. Gross Inland Consumption*</b>	3,048	4,521	1,154	23	6,895	6,826	87	5,722	15,997	53,827	337	1,334	1,878	19,798
<b>A - Power Stations (public &amp; mine)</b>	1,160	1,741	1,153		2,866	6,642		4,263	7,954	40,876	74	209	1,376	15,230
<b>B - Coking Plants (coal input)</b>	1,591	2,047	1		3,090			1,069	4,353	7,704		1,022		3,531
<b>C - Iron and Steel Industry**</b>	110	46			584				1,343	1,528	261			467
<b>D - Other Industries</b>	170	318		23	282	184	80	303	1,863	2,622		45	168	570
of which <b>Power Stations</b>					222			303	164	2,431				
<b>E - Domestic Heating</b>	17	358			73		7	87	480	989	2	52	302	
<b>F - Miscellaneous (Total (i)+(ii)+(iii))</b>		11							4	108		6	32	
<b>(i) Issue to Workers</b>										106				
<b>(ii) Patent Fuel Plants</b>									4			6	32	
<b>(iii) Others</b>		11								2				
<b>7. Deliveries to Other EU Countries</b>	2	886			5,802	64			87	150		2		5
<b>8. Exports to Third Countries</b>		4			168				10		2			
<b>9. Total Deliveries (6+7+8)</b>	3,050	5,412	1,154	23	12,865	6,890	87	5,722	16,094	53,977	339	1,336	1,878	19,803

\* Including transformation for coke

\*\* PCI Coal

**Table 2**  
**Supplies and Deliveries of Hard Coal in 2009 (Part 2)**

(in thousands of metric tonnes)

Latvia (Estimate)	Lithuania	Luxembourg	Malta	Netherlands	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	Sweden	United Kingdom	Total EU-27	Member State
					77,449		2,168			9,447		17,374	132,495	1. Production (t=t)
					77,449		2,168			4,208		7,520	117,402	of which :
										5,239		9,854	15,093	A - Underground
												500	1,236	B - Opencast
					589									2. Recoveries
		25		669	1,093			2,028		104	249	1,177	18,255	3. Receipts from other EU Countries
167	215	77		19,196	9,004	5,061	409	1,970		16,934	1,649	36,990	179,063	4. Total imports from Third Countries
														of which :
					2,068	963	1,064	49	375	1,630	324	4,700	24,884	A - USA
					258				60			201	2,682	B - Canada
					612	64				1,151	865	2,931	13,815	C - Australia
		77			4,290		1,654	11		4,201	1	3,063	28,907	D - South Africa
167	215				2,487	7,076	73	303	1,464	1,914	419	18,810	53,744	E - Russian Federation
														F - China
					1					6		616	633	G - Colombia
					7,910	255	1,894	43		2,802		5,250	32,076	H - Indonesia
					674					4,633		721	12,753	I - Venezuela
					10					112	29		731	J - Others
					886	646	266	3	71	485	11	698	8,840	
167	215	103		19,865	88,135	5,061	2,577	3,998		26,485	1,898	56,041	331,047	5. Total Availabilities (1+2+3+4)
162	243	103		11,863	68,545	4,668	2,577	3,974		24,946	2,433	48,805	289,766	6. Gross Inland Consumption*
21	6			8,405	44,835	4,638	2,476			20,123	343	38,262	202,653	A - Power Stations (public & mine)
				2,484	6,386		92			2,056	1,440	5,787	42,653	B - Coking Plants (coal input)
		19		938	446		5	2,018		269	295	60	8,389	C - Iron and Steel Industry**
78	94	84		36	10,445		25	1,957		260	355	3,585	23,547	D - Other Industries
								1,957				1,416	6,493	of which Power Stations
63	49							4		300		686	3,469	E - Domestic Heating
	93				6,432			5		1,938		425	9,054	F - Miscellaneous (Total (i)+(ii)+(iii))
					1,107			5					1,218	(i) Issue to Workers
													340	(ii) Patent Fuel Plants
	93				5,325					1,902		85	7,418	(iii) Others
					4,455	7,568	14		25	1,321	1	572	20,954	7. Deliveries to Other EU Countries
					255	596	53			54	5	74	1,221	8. Exports to Third Countries
165	243	103		16,573	76,710	4,735	2,577	3,999		26,322	2,439	49,451	311,947	9. Total Deliveries (6+7+8)

\* Including transformation for coke  
 \*\* PCI Coal

**Table 3**  
**Supplies and Deliveries of Coke in 2008 (Part 1)**

(in thousands of metric tonnes)

Member State	Austria	Belgium	Bulgaria	Cyprus	Czech Republic	Denmark	Estonia	Finland*	France	Germany	Greece	Hungary	Ireland	Italy
1. Production (t=t)	1,410	2,309	277		3,399		35	860	4,488	8,246		999		4,486
2. Recoveries														
3. Receipts from other EU Countries	1,288	15	1		578	1		392	646	2,259		16		
4. Total imports from Third Countries	8	835	106	163	13	38		141	664	2,088				229
of which :														
A - USA	3	35								12				93
B - Canada										19				
C - Australia										176				
D - South Africa														
E - Russian Federation		770			13			64	12	11				
F - China		28				38		76	564					136
G - Colombia										46				
H - Indonesia		2												
I - Venezuela														
J - Others	5		106	163					70	1,843				
5. Total Availabilities (1+2+3+4)	2,706	3,159	384	163	3,990	39	35	1,394	5,798	12,593		1,015		4,715
6. Gross Inland Consumption	2,684	3,042	384	153	3,102	35		1,381	4,972	12,542		735		4,295
A - Power Stations (public & mine)														
B - Coking Plants (coal input)					116								2	
C - Iron and Steel Industry	2,617	2,975			2,881			1,351	4,303	12,171		724		4,252
D - Other Industries		59	384	153	80	35		30	641	326		9		43
of which Power Stations														
E - Domestic Heating	67	8			25					43				
F - Miscellaneous (Total (i)+(ii)+(iii))									28	2				
(i) Issue to Workers										2				
(ii) Patent Fuel Plants														
(iii) Others									28					
7. Deliveries to Other EU Countries		90			847				983			129		214
8. Exports to Third Countries		17			41		35	6	10			122		25
9. Total Deliveries (6+7+8)	2,684	3,149	384	153	3,990	35	35	1,387	5,965	12,542		986		4,534

\* Imports  
 Estimated

**Table 3**  
**Supplies and Deliveries of Coke in 2008 (Part 2)**

(in thousands of metric tonnes)

Latvia	Lithuania	Luxembourg	Malta	Netherlands	Poland	Portugal	Romania	Slovakia	Slovenia (Estimate)	Spain	Sweden	United Kingdom	Total EU-27	Member State
				2.109	9.831		984	1.737		2.111	1.119	4.359	48.759	1. Production (=t)
				129		4	921	236		67	121	195	6.876	2. Recoveries
	5	2		100			26	135	62	137	198	527	5.483	3. Receipts from other EU Countries
3	10			21						42	5		211	4. Total imports from Third Countries
												22	41	of which :
													176	A - USA
														B - Canada
														C - Australia
														D - South Africa
3				57			1	134		81			175	E - Russian Federation
	7			12						4	8		75	F - China
											11		46	G - Colombia
													2	H - Indonesia
														I - Venezuela
	3			10			25		62	9	174	210	2.680	J - Others
3	15	2		2.338	9.831	4	1.930	2.108	62	2.315	1.438	5.081	61.118	5. Total Availabilities (1+2+3+4)
5	16	2		2.121	3.778	4	1.930	1.909	62	1.691	1.436	4.840	51.119	6. Gross Inland Consumption
												4.097	4.215	A - Power Stations (public & mine)
													635	B - Coking Plants (coal input)
5		2		1.917	2.836		1.900	1.909	62	1.272	1.376		43.188	C - Iron and Steel Industry
	16			204	707	4	30			419	60	95	3.295	D - Other Industries
					235							14	392	of which Power Stations
													30	E - Domestic Heating
													2	F - Miscellaneous (Total (i)+(ii)+(iii))
														(i) Issue to Workers
													28	(ii) Patent Fuel Plants
														(iii) Others
				368	4.683			76		592	19	151	8.152	7. Deliveries to Other EU Countries
					900			123		32	14	34	1.359	8. Exports to Third Countries
5	16	2		2.489	9.361	4	1.930	2.108	62	2.315	1.469	5.025	60.630	9. Total Deliveries (6+7+8)

**Table 4**  
**Supplies and Deliveries of Coke in 2009 (Part 1)**

(in thousands of metric tonnes)

Member State	Austria	Belgium	Bulgaria	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Ireland	Italy
1. Production (t=t)	1,281	1,574	1		2,269		18	738	3,222	6,176		746		2,767
2. Recoveries														
3. Receipts from other EU Countries	745	62	1		505	12		197	796	1,472		3		
4. Total imports from Third Countries	1	119	72			8		49	251	1,696				
of which :														
A - USA		50								3				
B - Canada										17				
C - Australia														
D - South Africa														
E - Russian Federation		40						10	15	12				
F - China		29				8		21	111					
G - Colombia									33	20				
H - Indonesia														
I - Venezuela														
J - Others	1		72					18	76	1,661				
5. Total Availabilities (1+2+3+4)	2,028	1,755	74		2,774	20	18	984	4,269	9,344		749		2,767
6. Gross Inland Consumption	2,012	1,326	74		2,246	20		1,001	4,265	9,405		639		2,217
A - Power Stations (public & mine)					120									
B - Coking Plants (coal input)														
C - Iron and Steel Industry	1,968	1,263			2,006			971	3,603	9,230		625		2,216
D - Other Industries	7	53	74		80	20		30	538	166		14		
of which Power Stations														
E - Domestic Heating	37	9			40					8				1
F - Miscellaneous (Total (i)+(ii)+(iii))		1							124	1				
(i) Issue to Workers										1				
(ii) Patent Fuel Plants														
(iii) Others		1							124					
7. Deliveries to Other EU Countries		405			523				583			79		196
8. Exports to Third Countries		4			5		18		34			75		80
9. Total Deliveries (6+7+8)	2,012	1,735	74		2,774	20	18	1,001	4,882	9,405		793		2,493



**Table 4**  
**Supplies and Deliveries of Coke in 2009 (Part 2)**

(in thousands of metric tonnes)

Latvia (Estimate)	Lithuania	Luxembourg	Malta	Netherlands	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	Sweden	United Kingdom	Total EU-27	Member State
				1,683	6,946		321	1,575		1,482	949	3,693	35,441	1. Production (t=t)
														2. Recoveries
		1		57	26	1	550	242		11	56	129	4,866	3. Receipts from other EU Countries
3				10	28		84		2	110	90	49	2,572	4. Total imports from Third Countries
										18	8		79	of which :
													17	A - USA
														B - Canada
														C - Australia
3				5	18					67		36	206	D - South Africa
					5						2		176	E - Russian Federation
										14			67	F - China
										10			10	G - Colombia
3		1		5	6		84				80	13	2,016	H - Indonesia
														I - Venezuela
														J - Others
5		1		1,750	7,001	1	955	1,817	2	1,603	1,095	3,871	42,881	5. Total Availabilities (1+2+3+4)
5	11	1		1,744	2,711	3	955	1,764	1	1,277	840	3,735	36,252	6. Gross Inland Consumption
												3,180	3,300	A - Power Stations (public & mine)
5		1		1,628	2,511		948	1,764		1,194	806	467	31,206	B - Coking Plants (coal input)
	11			116	200	3	7		1	83	34	78	1,515	C - Iron and Steel Industry
														D - Other Industries
													10	of which Power Stations
														E - Domestic Heating
														F - Miscellaneous (Total (i)+(ii)+(iii))
														(i) Issue to Workers
														(ii) Patent Fuel Plants
														(iii) Others
				15	4,428			52		120	13	82	6,496	7. Deliveries to Other EU Countries
				62	512			1	1	80	261	72	1,205	8. Exports to Third Countries
5	11	1		1,821	7,652	3	955	1,817	2	1,476	1,114	3,889	43,953	9. Total Deliveries (6+7+8)

**Table 5**  
**Supplies and Deliveries of Brown Coal and Lignite in 2008 (Part 1)**

(in thousands of metric tonnes)

Member State	Austria	Belgium	Bulgaria	Cyprus	Czech Republic	Denmark	Estonia (peat)	Finland* (peat)	France	Germany	Greece*	Hungary	Ireland (peat)	Italy
1. Production (t=t)			28,751		47,537		214	4,780		175,313	65,720	9,404	3,356	
of which :														
A - Underground			365		711			4,780				1,286		
B - Opencast			28,385		46,826		214			175,313	65,720	8,118	3,356	
2. Recoveries														
3. Receipts from other EU Countries	71	282			86				67	28		429	26	5
4. Total imports from Third Countries												384		
of which :														
A - USA														
B - Canada														
C - Australia														
D - South Africa														
E - Russian Federation												379		
F - China														
G - Colombia														
H - Indonesia												5		
I - Venezuela														
J - Others														
5. Total Availabilities (1+2+3+4)	71	282	28,751		47,623		214	4,780	67	175,341	65,720	10,217	3,383	5
6. Gross Inland Consumption	73	282	28,751		46,084		207	8,020	67	175,194	65,720	9,930	4,610	5
A - Power Stations (public & mine)			27,034		38,927		133	6,654		161,005	65,406	9,535	3,002	
B - Coking Plants (coal input)														
C - Iron and Steel Industry														
D - Other Industries	42	278	51		5,795		74	1,278	67	736	310	43	39	
of which Power Stations					2,196								39	
E - Domestic Heating	31	4	109		1,100			44		1	4	348	864	
F - Miscellaneous (Total (i)+(ii)+(iii))			1,558		262			44		13,452		4	705	5
(i) Issue to Workers												2	702	
(ii) Patent Fuel Plants			1,558		262					13,452		2	3	5
(iii) Others								44				2		
7. Deliveries to Other EU Countries	6				1,535		118			15		152		
8. Exports to Third Countries					4									
9. Total Deliveries (6+7+8)	79	282	28,751		47,623		325	8,020	67	175,209	65,720	10,082	4,610	5

\*Consumption  
Split Estimated

\*Consumption  
Split Estimated

**Table 5**  
**Supplies and Deliveries of Brown Coal and Lignite in 2008 (Part 2)**

(in thousands of metric tonnes)

Latvia (peat)	Lithuania (peat)	Luxembourg	Malta	Netherlands	Poland*	Portugal	Romania	Slovakia*	Slovenia	Spain	Sweden (peat)	United Kingdom	Total EU-27	Member State
11	59				59,570		31,787	2,423	4,521		837		434,283	1. Production (=t)
							1,276	2,423	4,521				15,362	of which :
11	59				59,570		30,511				837		418,920	A - Underground
														B - Opencast
														2. Recoveries
		7		45			141	820			363		2,370	3. Receipts from other EU Countries
							159	92	620		1		1,256	4. Total imports from Third Countries
														of which :
														A - USA
														B - Canada
														C - Australia
														D - South Africa
								92						E - Russian Federation
														F - China
									620					G - Colombia
														H - Indonesia
														I - Venezuela
							159				1		160	J - Others
11	59	7		45	59,570		32,087	3,335	5,141		1,201		437,910	5. Total Availabilities (1+2+3+4)
9	32	7		45	59,570		32,069	3,335	5,141		1,201		440,352	6. Gross Inland Consumption
8	32				58,844		32,050	2,996	5,141		1,169		411,937	A - Power Stations (public & mine)
														B - Coking Plants (coal input)
														C - Iron and Steel Industry
														D - Other Industries
		6		40			3				32		8,794	of which Power Stations
													2,235	E - Domestic Heating
1		1			726		10	339					3,581	F - Miscellaneous (Total (i)+(ii)+(iii))
							6						16,041	(i) Issue to Workers
							6						6	(ii) Patent Fuel Plants
													15,976	(iii) Others
													59	
													1,831	7. Deliveries to Other EU Countries
													4	8. Exports to Third Countries
9	37	7		45	59,570		32,069	3,335	5,141		1,201		442,187	9. Total Deliveries (6+7+8)

\*Consumption  
 Split Estimated

\*Consumption  
 Split Estimated

**Table 6**  
**Supplies and Deliveries of Brown Coal and Lignite in 2009 (Part 1)**

(in thousands of metric tonnes)

Member State	Austria	Belgium	Bulgaria	Cyprus	Czech Republic	Denmark	Estonia (peat)	Finland (peat)	France	Germany	Greece	Hungary	Ireland (peat)	Italy
1. Production (t=t)			27,170		45,413		328	8,900		169,857	64,722	8,986	3,085	
of which :														
A - Underground			635		592							908		
B - Opencast			26,535		44,821		328			169,857	64,722	8,078	3,085	
2. Recoveries														
3. Receipts from other EU Countries	61	172			100			83	51	10		231	42	6
4. Total imports from Third Countries								34			24	142	2	
of which :														
A - USA														
B - Canada														
C - Australia														
D - South Africa														
E - Russian Federation								17				137		
F - China														
G - Colombia														
H - Indonesia												5		
I - Venezuela														
J - Others								17			24		2	
5. Total Availabilities (1+2+3+4)	61	172	27,170		45,513		328	9,017	52	169,867	64,746	9,359	3,129	6
6. Gross Inland Consumption	27	152	27,170		44,313		263	6,800	51	169,869	64,401	9,325	4,706	6
A - Power Stations (public & mine)			26,554		37,510		138	4,962		156,288	64,101	8,971	3,032	
B - Coking Plants (coal input)														
C - Iron and Steel Industry														
D - Other Industries	26	152	59		5,417		125	1,300	51	778	298	55	39	
of which Power Stations					2,851			1,300					39	
E - Domestic Heating	1		95		1,100			538		1	2	283	854	1
F - Miscellaneous (Total (i)+(ii)+(iii))			462		286					12,802		16	782	5
(i) Issue to Workers														
(ii) Patent Fuel Plants			462		286					12,802		2	782	
(iii) Others												14		5
7. Deliveries to Other EU Countries	2				1,200		13	36		38		41		
8. Exports to Third Countries														
9. Total Deliveries (6+7+8)	29	152	27,170		45,513		276	6,836	51	169,907	64,401	9,366	4,706	6

**Table 6**  
**Supplies and Deliveries of Brown Coal and Lignite in 2009 (Part 2)**

(in thousands of metric tonnes)

(Estimate)	Latvia (peat)	Lithuania (peat)	Luxembourg	Malta	Netherlands	Poland	Portugal	Romania	Slovakia*	Slovenia*	Spain	Sweden (peat)	United Kingdom	Total EU-27	Member State
11						57.108		27.493	2.572	4.429		702		420.776	1. Production (t=t)
								1.030	2.572	4.429				10.166	of which :
11						57.108		26.463				702		401.710	A - Underground
										74				74	B - Opencast
			8		18			75	637			364		1.858	2. Recoveries
								125	40	401		71		839	3. Receipts from other EU Countries
															4. Total imports from Third Countries
															of which :
															A - USA
															B - Canada
															C - Australia
															D - South Africa
										23					E - Russian Federation
															F - China
															G - Colombia
										401					H - Indonesia
															I - Venezuela
								125	18			71		257	J - Others
11			8		18	57.108		27.692	3.249	4.904		1.137		423.547	5. Total Availabilities (1+2+3+4)
9			8		18	56.026		27.692	3.241	4.756		1.137		419.970	6. Gross Inland Consumption
8						56.026		27.641	2.912	4.756		1.102		394.001	A - Power Stations (public & mine)
															B - Coking Plants (coal input)
															C - Iron and Steel Industry
															D - Other Industries
			7		15							35		8.357	of which Power Stations
														4.190	E - Domestic Heating
1			1					15	329					3.221	F - Miscellaneous (Total (i)+(ii)+(iii))
								37						14.393	(i) Issue to Workers
								37						37	(ii) Patent Fuel Plants
														14.334	(iii) Others
														22	
										8				1.338	7. Deliveries to Other EU Countries
															8. Exports to Third Countries
9			8		18	56.026		27.692	3.249	4.756		1.137		421.308	9. Total Deliveries (6+7+8)

\*Consumption \*Import and Consumption  
 Split Estimated Split Estimated