



ANNUAL REPORT

**2008**

Facts and Trends 2007/2008

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## Import Coal Market at a Glance

		2005	2006	2007 <sup>1)</sup>
<b>World</b>				
Hard coal output	Mill. t	5,158	5,351	5,600
Hard coal world trade	Mill. t	811	858	906
thereof Hard coal seaborne	Mill. t	726	777	820
Hard coal domestic trade	Mill. t	83	81	86
Hard coal coke production	Mill. t	460	510	580
Hard coal coke world trade	Mill. t	28	32	31
<b>European Union (27)</b>				
Hard coal output	Mill. t	172	165	153
Hard coal imports/Domestic trade	Mill. t	207	218	220
Hard coal coke imports	Mill. t	11	12	11
<b>Germany</b>				
Hard coal consumption	Mill. t	68.5	70.1	71.3
Hard coal output	Mill. t	24.7	20.8	21.3
Total imports	Mill. t	39.9	46.5	47.5
thereof Hard coal imports	Mill. t	36.3	42.2	43.4
Hard coal coke imports	Mill. t	3.6	4.3	4.1
Use of imported coal <sup>2)</sup>	Mill. t	39.3	45.8	45.9
thereof power plants	Mill. t	27.3	31.1	30.5
Iron and steel industry	Mill. t	11.3	13.7	14.2
Heating market	Mill. t	0.7	1.0	1.2
<b>Prices</b>				
Steam coal marker price CIF NWE	US\$/t TCE	71	74	101
Border-crossing price steam coal	EUR/t TCE	65	62	68
CO <sub>2</sub> certificate price (mean value)	EUR/t CO <sub>2</sub>	20	18	1
Exchange rate	EUR/US\$	0.80	0.80	0.73
<sup>1)</sup> Some figures provisional				
<sup>2)</sup> Difference between total imports and use of imported coal due to inventory movements				

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## An Introductory Word

*In 2007, companies in Germany which use coal imported almost 48 million t of steam coal, coking coal and coke, a new record in the amount of coal imported into the country. The imports covered about 65% of the German demand for hard coal totalling over 71 million t in 2007.*

*A major contributor to the increase in consumption in 2007 was the steel industry, which further increased its purchases on the world markets. Coal imports by the electric power industry remained at the level of the previous year.*

*The border-crossing price for steam coal rose by 9.7% from €62 t/TCE to €68 t/TCE in 2007. But coal was able to defend its favourable position in comparison with the fossil energy competitors oil and natural gas.*

*Imported coal proved to be a competent “swing supplier” in 2007, above all in the electric power generation segment, and played a substantial role in filling the gaps in electric power generation caused by the shutdown of nuclear power plants.*

*The advantages of imported coal:*

- Well-structured geo-political supply*
- Constant expansion of supply sources*
- Prices which remain favourable, even at a generally higher level*
- Low risks during transport and delivery*
- Significant CO<sub>2</sub> reductions thanks to modern coal-fired power plants*
- In the long term, electric power generation largely free of CO<sub>2</sub> due to storage of CO<sub>2</sub>*

*Hard coal remains the fastest-growing fossil primary energy source in the world. Output rose in 2007 by 250 million t or 4.7% to 5.6 billion t. Seaborne hard coal world trade rose by 43 million t or 5.3% to 820 million t. The growth phase in world coal trade, which has now been going on for 7 years, has led to an extremely high utilisation of the export-oriented capacities.*

*In the long term – until 2030 – the IEA sees an increase in the share of hard coal in primary energy supply for the world from today’s 25% to 28%, while the share of coal used in electric power generation will increase from 40% today to 45%. The world will not be able to do without coal for the next 50 years.*

*This only makes the development of modern hard coal power generation technologies to increase efficiency and separate CO<sub>2</sub> from emissions even more important. Germany cannot demand CO<sub>2</sub> reductions during hard coal-fired power generation from the rest of the world unless it itself sets an example in the development and use of the technologies.*

*But the role of coal within the framework of a balanced energy mixture suffers in Germany from short-sighted tactics on the part of political parties to the detriment of a sustained and low-cost supply security.*

*“Doing nothing” and the policy of delay in the construction of new power plants will lead to a worsening of Germany’s CO<sub>2</sub> balance. At the same time, the desired greater competition on the electric power market is prevented because, among other factors, municipal power plants and new construction by foreign companies are being blocked.*

*A stable development in hard coal imports is expected for 2008 and the following years. The high prices for oil and natural gas will result to an increase in demand for coal around the world; in conjunction with the limited supplies at this time, they will result in substantial price increases on the world market.*

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## Contents

### General Global Economic Conditions

Economic Growth .....	5
World Population .....	5
Energy Consumption .....	6
Hard Coal Output .....	7
Coal Reserves .....	9
Hard Coal World Market .....	10
Steam Coal Market .....	12
Coking Coal Market .....	14
Freight Rates .....	17
Energy Policies .....	18

### European Union

Economic Growth .....	21
Energy Consumption .....	21
Hard Coal Market .....	22
Energy Policies .....	24

### Germany

Economic Growth .....	25
Hard Coal Market .....	28
Energy Policies .....	33
Outlook for Hard Coal Power Generation .....	39

### Prospects for the World Coal Market

World Trade .....	40
World Coal Market Overall .....	41
Steam Coal Market .....	42
Coking Coal Market .....	43
Infrastructure of the Hard Coal World Trade .....	44
Market Concentration .....	44
Coal Gasification and Liquefaction .....	44

### Country Reports

Poland .....	45
Czech Republic .....	46
Russia/Ukraine/Kazakhstan .....	47
USA .....	50
Canada .....	51
Colombia .....	52
Venezuela .....	54
Republic of South Africa .....	55
Australia .....	56
People's Republic of China .....	58
Indonesia .....	61
Vietnam .....	62

<u>Overview in Tables</u> .....	64-92
---------------------------------	-------

<u>Glossary</u> .....	93
-----------------------	----

<u>Members of VDKI</u> .....	94-96
------------------------------	-------

<u>Board of Directors VDKI</u> .....	97
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# GENERAL GLOBAL

## ECONOMIC CONDITIONS

### Economic Growth

The world economy continued its upswing in 2007. The boom in the world economy has now been going on for 4 years, with growth rates of just under 4% annually.

Growth in the euro zone remained at the level of the previous year, while Japan weakened slightly in its economic development. In contrast, China and other threshold countries increased their dynamic economic growth even more. But the economic developments in the USA slowed down noticeably. Private construction investment and consumption in the USA declined against the backdrop of the crisis on the financial markets.

All in all, the turbulent events on the financial markets did not yet have any serious influence on the development of the world economy in 2007. World trade once again rose by 6.6% at a high level, although this growth was slightly weaker than in the previous year.

#### Growth Rates in % of the World Economy

	2004	2005	2006	2007
World Production	3.8	3.4	3.9	3.7
World Trade	10.6	7.4	8.9	6.6

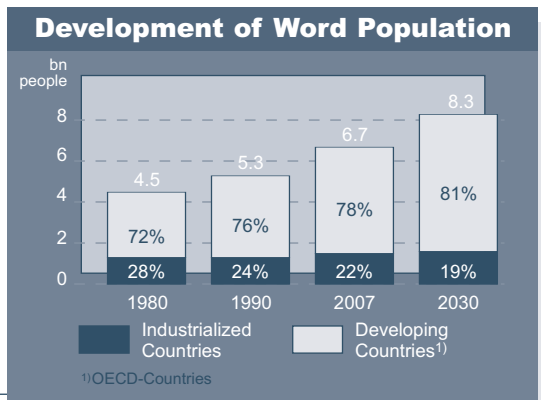
The positive development in 2007 was all the more astounding as high prices for oil and natural gas had the effect of dampening the upswing and causing interest rates to rise. But additional increases in interest rates were postponed in Europe in view of the crisis on financial markets. Interest rates in the USA were even lowered as a way to bolster the US financial markets.

Following the long period of strong growth in the world economy, a more moderate growth rate is expected for 2008.

Growth in the USA, the euro zone and in Japan will presumably slow down. The Middle East and, above all, Asia are proving to be engines powering the global upswing and will presumably stabilise the world economy and keep it on its expansion course.

### World Population

The greatest driving force for the expanding world economy and the global consumption of energy is the increasing size of the world's population. It is growing in the developing countries more than anywhere else. On the average, the world population is increasing by 1% to 1.2% or 60-70 million people annually.



Extrapolation of the figures indicates that world population will increase by almost 4 billion to 8.3 billion in the period from 1980 to 2030, i.e., over a time period of 50 years. But energy consumption is increasing even faster – 1.8% annually according to the latest reference scenario from the IEA (World Energy Outlook 2007) – because the specific per capital consumption is rising in addition to the population figures themselves.

The threshold and developing countries have an enormous backlog demand in energy consumption as they strive to raise their living standards to the level of the industrialised countries.

But even in 2030, the 20% of the world population living in the industrialised countries will consume more than 40% of the world energy supplies or 5.8 t TCE per capita; about 60% of the world energy supplies will go to the inhabitants of threshold and developing countries, but this will amount to only 2.2 t TCE per capita. This is just under 40% of the energy consumption per capita in the industrialised countries. So there will be a significant backlog demand for improvement in the living standards of most of the world's population even after 2030.

These figures make it clear why threshold and developing countries are currently unable to join the European industrialised countries in realising the latter's ideas for saving energy and reducing hothouse gas emissions. Satisfying the basic needs of their citizens for food, water, mobility and access to electric power for the improvement of living standards remains their top priority.

## Energy Consumption

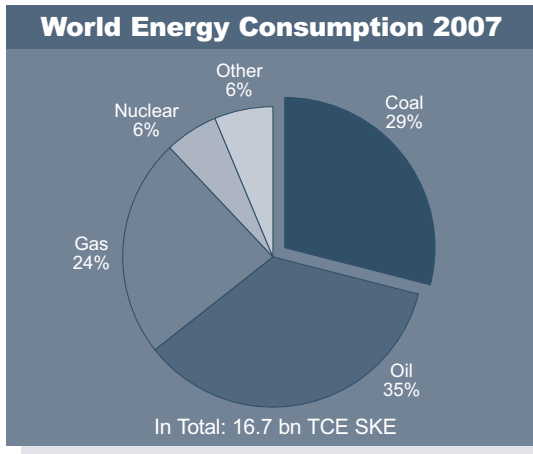
The world energy consumption continued to rise in 2007. The growth rate was 2.5% (2006: +3.2%). The Pacific region remains the area with the most rapid growth. Besides the increase in its own energy production, the area is making increasing use of the supplies on the world market.

<b>Primary Energy Consumption in Billion t TCE – Most Important Energy Sources –</b>					
	<b>2000</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>Growth 2006/2007</b>
Coal	3.120	4.436	4.636	4.849	0.213
Natural gas	3.180	3.768	3.862	3.943	0.081
Petroleum	5.110	5.792	5.835	5.923	0.088
Nuclear energy	0.840	0.941	0.953	0.960	0.007
Hydroelectric power	0.882	1.000	1.032	1.055	0.023
<b>Total</b>	<b>13.132</b>	<b>15.937</b>	<b>16.318</b>	<b>16.730</b>	<b>0.412</b>

Source: BP, own estimate for 2007

Coal (hard coal and lignite) reached a world market share of 29% in 2007 and has been the fastest-growing primary energy source for several years. The IEA, which also takes biomass and renewable energy sources into account in its statistics, predicts an average increase in the consumption of primary energy of 1.8% annually for the long term. So the IEA has increased its projected growth rates by 0.2% annually in comparison with last year. Yet the fossil energy sources – despite the accelerated expansion of renews-

ble energy sources – will have to cover 85% of the growth until 2030.



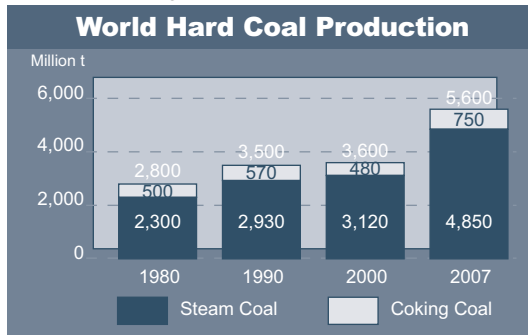
Sources: BP Statistical Review of World Energy, own calculations

According to data from the IEA, the demand for coal will rise by 73% in the period from 2005 to 2030 and will maintain its share of 28%-29% of the world's primary energy demand until 2030.

Despite high growth rates, energy sources largely free of CO<sub>2</sub> emissions, including nuclear power, will achieve a share of only 18% by 2030, while fossil energy sources will still cover a share of 82% of the world's energy needs. This demonstrates that all energy sources will be required if we are to come even close to satisfying demand.

### Hard Coal Output

In 2007, the world hard coal output increased once again and rose by 250 million t to about 5.6 billion t. Total output breaks down into 4.85 billion t of steam coal and 0.75 billion t of coking coal.



	1980	2000	2005	2015	2030	2005-2030 <sup>1)</sup>
	Mill. t TCE	Mill. t TCE	Mill. t TCE	Mill. t TCE	Mill. t TCE	%
Coal	2,679	3,438	4,338	5,982	7,491	2.2%
Oil	4,659	5,470	6,000	7,080	8,388	1.3%
Gas	1,856	3,134	3,531	4,566	5,922	2.1%
Nuclear energy	279	1,013	1,082	1,206	1,281	0.7%
Hydroelectric power	221	339	377	491	624	2.0%
Biomass and rubbish	1,129	1,561	1,724	2,001	2,422	1.4%
Other renewable energy sources	19	80	92	216	454	6.7%
<b>Total</b>	<b>10,842</b>	<b>15,035</b>	<b>17,144</b>	<b>21,542</b>	<b>26,582</b>	<b>1.8%</b>

<sup>1)</sup> Average annual growth rate

Source IEA, Energy Outlook 2007

Since 2000, i.e., in the last 7 years, world hard coal output has grown by 2 billion t. The major force behind this development is to be found in China, where output during this period was increased by 1.3 billion t. But other countries have also increased production significantly. The bulk of the worldwide growth in production clearly comes from Asia, as the developments of recent years show:

<b>Output of Major Countries in the Pacific Region in Million t</b>				
<b>Producing countries</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
China	1,992	2,190	2,326	2,523
India	350	370	390	430
Australia	297	306	302	322
Indonesia	135	153	205	230
Vietnam	28	34	44	50
<b>Total</b>	<b>2,802</b>	<b>3,053</b>	<b>3,267</b>	<b>3,555</b>

Source: IEA, 2007 provisional

Besides the countries shown above, substantial quantities of coal are being mined in the Asian region, namely in North Korea, Mongolia and New Zealand.

The incredible backlog demand for energy in the Asian economies for improvement of living standards can be covered, above all in China and India, only by greatly expanding the consumption and production of coal. But all of the other forms of energy sources – from renewable energy to nuclear energy – will also be required to keep pace with the dynamic development of demand. For example, the coal consumption in China will increase from 2.5 billion t today to 3 billion t/year in only a few years (2010/2011).

Outside of the Asian boom zone, developments in hard coal output varied.

Output in North America declined slightly as a consequence of the stagnating demand for steam coal. Canada

increased its hard coal output, which is primarily oriented to export, in view of the solid demand for coking coal and PCI coal.

In South America, Colombia constantly increased its output and may be able to overtake South Africa in terms of exports in only a few years. Smaller deposits of coking coal attracted growing attention in Colombia. Production in Venezuela, on the other hand, is stagnating. The government has limited the output – in the Zulia Province, at least – to 10 million t per year.

<b>The 10 Largest Coal Producers in the World</b>			
<b>Company</b>	<b>2005</b>	<b>2006</b>	<b>2007<sup>1)</sup></b>
	Mill. t	Mill. t	Mill. t
Coal India	324	343	322
Peabody <sup>1)</sup>	225	232	238
Shenhua	178	137	158
Rio Tinto	162	154	156
Arch <sup>1)</sup>	139	127	132
Anglo	95	98	95
China coal	72	91	91
Suek	85	90	90
BHPB	87	86	86
Xstrata	70	77	83

<sup>1)</sup>Own production and purchases

Source: The McCloskey Group, 2007 in part projections

In the CIS, Russia and Kazakhstan increased their output while the Ukraine recorded an unplanned drop in output because of geological and operational problems.

Production stagnated in South Africa. However, there is hope that the many BEE (Black Economic Empowerment) groups will make use of the mining rights which have been awarded to them and start coal production. New coal projects are being examined



in Mozambique, Botswana and Zimbabwe as well as, most recently, on Madagascar. Projects in Botswana and Mozambique have already made substantial progress.

Output in the European region (EU 27) declined further from 165 million t in 2006 to 153 million t in 2007. The greatest decline of 7 million t was seen in Poland.

The sharp rise in prices for oil and natural gas as well as for coal has improved the competitiveness of many coal deposits. The IEA predicts an expansion of world hard coal output to 7.1 billion t TCE or 8.7 billion t (t=t) by 2030. Most of this growth will occur in Asia, but there will also be some in North America and the CIS countries.

European coal consumption is falling and will decline to a share of less than 5% of the world coal consumption by 2030.

## Coal Reserves

It has now become necessary to distinguish between the two terms “resources” and “reserves” when speaking about natural resources, including coal. Resources refer to the total substance of coal found in a deposit.

The reserves are the part thereof which can be verified unquestionably and which can be mined efficiently using today’s technology. As coal prices rise, it is possible for parts of the resources in deposits to be attributed to reserves because it may become economically feasible to profitably mine these parts of the deposits, even though the mining costs are higher.

The current estimates of the hard coal reserves based on what is now known about the economically minable reserves worldwide (see table) show a figure of 736 billion t, corresponding to about 640 billion t TCE, the latest estimate of the Federal Institute for Geosciences and Natural Resources (BGR).

The BGR estimates hard coal resources in 2007 to be 8,817 billion t. The ratio of resources to reserves comes to 12 to 1 and has substantially improved since the last estimate (2005) by the BGR (5:1) because the volume of resources has more than doubled.

<b>Reserves and Output of Hard Coal According to Region</b>				
<b>Region</b>	<b>Reserves as per 2006</b>		<b>Output 2007</b>	
	Billion t	%	Billion t	%
Europe	19	2.6	153	3
CIS	111	15.1	485	8
Africa	53	7.2	243	4
North America (except Canada)	219	29.8	1,043	19
South America	20	2.7	77	1
PR China	167	22.7	2,523	45
Rest of Asia	106	14.4	740	13
Australia/New Zealand	41	5.5	327	6
Miscellaneous	0	0	9	1
<b>Total</b>	<b>736</b>	<b>100</b>	<b>5,600</b>	<b>100</b>

Source: Federal Institute for Geosciences and Natural Resources, Hanover, 2007; Output VDKI/BP Statistical Review of World Energy, June 2007

Coal reserves currently have a statistical reach of about 130-140 years based on an output of 5.6 billion t (base 2007).

## Hard Coal World Market

### General Market Tendencies

The hard coal world market grew by 48 million t or 5.6% to 906 million t in 2007, supported by a strong upswing in the world economy and steel industry.

World trade in coal developed as shown below:

World Trade in Coal			
	2006	2007	Growth
	Mill. t	Mill. t	Mill. t
Seaborne trade	777	820	+43
Domestic trade	81	86	+5
<b>Total</b>	<b>858</b>	<b>906</b>	<b>+48</b>

Total trade exceeded the 900 million t mark and seaborne trade passed the 800 million t mark.

The hard coal world market in 2007 for both steam coal and coking coal was characterised by many turbulences and difficulties. Nevertheless, it was possible to achieve yet another considerable increase in trade volume.

The following development was observed in the segments steam coal and coking coal for seaborne trade:

Seaborne World Trade in Coal			
	2006	2007	Increase/ Decrease
	Mill. t	Mill. t	Mill. t
Steam coal	594	618	+24
Coking coal	183	202	+19
<b>Total</b>	<b>777</b>	<b>820</b>	<b>+43</b>

Domestic trade also rose slightly. It is characterised primarily by the geographic proximity of the coal-produ-

cing countries and the short transport routes to the customers. Exports of China's neighbouring states and exports from Russia to the CIS countries in particular still have potential for growth.

Domestic trade in 2007 developed as shown below:

Domestic World Trade		
	2006	2007 <sup>1)</sup>
	Mill. t	Mill. t
USA – Canada	18.0	16.6
USA – Mexico	0.5	0.4
Canada – USA	1.7	1.7
Mongolia – China	2.3	3.2
North Korea – China	2.5	3.7
Vietnam – China <sup>1)</sup>	2.0	2.0
Poland – EU countries	7.0	7.7
CR – EU countries	6.5	7.0
Russia – CIS countries (Ukraine)	6.5	9.6
Russia – by land outside of the CIS	6.0	5.4
Kazakhstan – Russia	24.0	24.0
Within EU, excluding Poland/CR	4.0	4.4
<b>Total</b>	<b>81.0</b>	<b>85.7</b>

<sup>1)</sup> Estimated, share by land in total export

World production of hard coal and the seaborne hard coal world market have grown strongly in recent years. The share of the world trade in the production has risen slightly.

World Output/ Seaborne World Trade			
Hard coal	2000	2007	Growth
	Mill. t	Mill. t	%
World output	3,800	5,600	+47
World trade	530	820	+55
Share of world trade in production	13.9%	14.6%	

The seaborne trade volume breaks down into a coking coal market and a steam coal market. The steam coal market in turn comprises Pacific and Atlantic partial markets, which

are characterised by differing supplier structures. The exchange volume between the partial markets in 2007 came to only 5% or about 39 million t of the steam coal market. About 13% of the global steam coal production goes to the consumers via seaborne trade. The coking coal market, in contrast, is a uniform world market due to the low number of supplier countries on the one hand and, on the other hand, the worldwide distribution of demand. About 27% of worldwide production, a significantly greater share than for steam coal, goes to seaborne trade.

Differences in development were observed on the partial markets of coal world trade. The following comments refer only to the seaborne hard coal trade.

The largest import countries are found above all in the Southeast Asia region. China has joined Japan, South Korea and Taiwan as one of the largest importers. The two largest coal importers in Europe are Germany and Great Britain.

### The 10 Largest Hard Coal Import Countries

	2005 Mill. t	2006 Mill. t	2007 Mill. t
Japan	181	177	186
South Korea	75	78	88
Taiwan	61	62	66
Great Britain	44	50	43
Germany	36	42	43
India	40	45	52
China	26	38	51
USA	27	33	33
Spain	25	27	24
Italy	25	26	24
<b>Total</b>	<b>540</b>	<b>578</b>	<b>610</b>
Share of world trade	75%	74%	74%
<b>EU-27</b>	<b>209</b>	<b>230</b>	<b>220</b>
Share of world trade	29%	28%	24%

### Seaborne Hard Coal Trade 2007: 820 Mill. t



## Steam Coal Market

### Volume Development

#### Atlantic Region

The Atlantic region includes the eastern seaboard of North, Central and South America, Europe, including the countries bordering the Mediterranean, and the northern and western coasts of Africa.

The demand for steam coal in the Atlantic region fell to 229 million t in 2007. A weakening of demand from a number of countries was determined above all in Europe. Demand in North, Central and South America rose slightly.

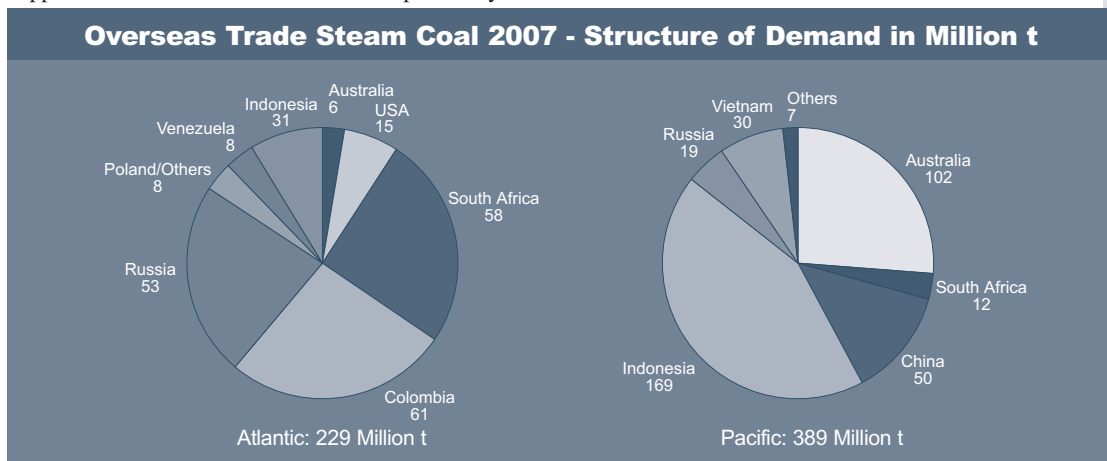
Colombia, Russia and the USA exported more, while Poland reduced its exports. South Africa exported steam coal at almost the same level as the previous year, but sold substantially greater volumes of the total to Asia, above all to India.

Indonesian coal also continued to make its way to the Atlantic market, although in smaller quantities, while freight rates remained high. The smaller supply countries Norway (Spitzbergen) and Venezuela maintained stable support levels more or less the same as the previous year.

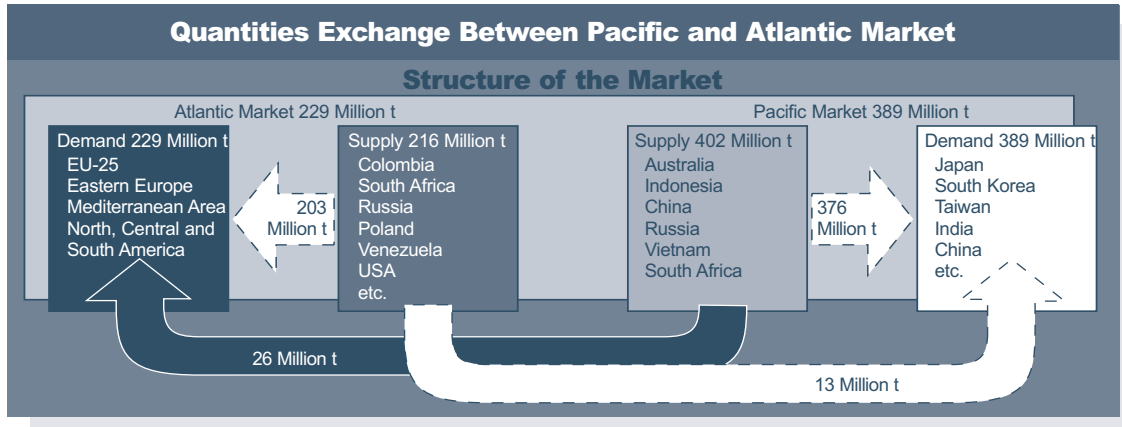
#### Pacific Region

The Pacific region continued to grow dynamically, and the coal demand for the generation of electric power rose further to 389 million t. Although China's increase in imports of 11 million t was the largest, almost all of the Asian economies increased their purchases. The market can be expected to continue to grow strongly over the next few years, above all as a consequence of demand from China and India.

Indonesia increased its exports by 18 million t and reduced its deliveries to the Atlantic region so that it made the greatest contribution to covering demand in the Pacific. But South Africa also exported greater volumes to the Pacific once again, following a period of many years in which exports were lower. Australia and Russia maintained their exports at last year's levels, while Vietnam and Canada provided additional volumes. China continued to be a major steam coal exporter in 2007 (51 million t), but reduced its exports by almost 8 million t in comparison with 2006.



Sources: Various evaluations, own calculations



Exchange Volume Between Pacific and Atlantic Markets

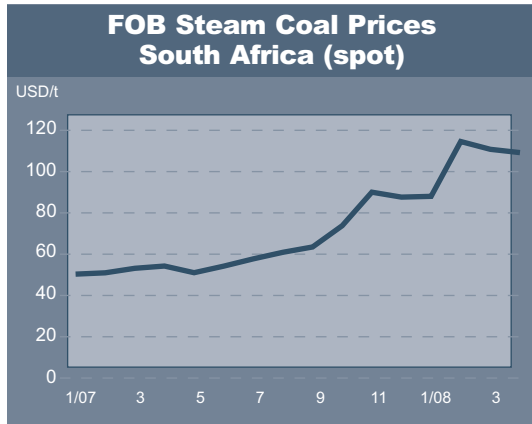
In 2007, Indonesia and Australia delivered substantially less to the Atlantic Market (26 million t), contributing now only about 10% to the supplies of this region. Of the Atlantic suppliers, South Africa and Colombia delivered 13 million t, corresponding to 3% of demand, to the Pacific Market.

Prices

As a consequence of the high utilisation of capacities of export-oriented mines all around the world and of the export infrastructure, the market reacted with never before seen price movements, at times almost frantically, to every incident which might curtail production.

Following a phase of relatively low FOB prices in past years (until 2004) and a US dollar which constantly lost in value, expansion investments in mines and infrastructure were postponed indefinitely, above all in Australia and South Africa. Although the steam coal supply in 2007 increased by 24 million t, the demand rose strongly, especially in the Asian region, and kept the utilisation of capacities at an extremely high level.

This situation was reflected in the FOB price development of the last 15 months. The FOB price – Richards Bay – rose continuously over the entire year 2007; for the first half of the year, however, the rise was still moderate, going from about US\$50/t to about US\$60/t at the beginning of September 2007. But then came a dramatic jump. By the turn of the year 2007/2008, the FOB prices had reached the mark of US\$100/t and continued to rise until they reached almost US\$120/t at the end of February 2008. Then prices gave way slightly to US\$105/t at the end of March 2008 before beginning to rise once again. The steam coal market had never experienced such violent price fluctuations before. The last high-price phase for steam coal lasted from 1981 to 1985 and ended with a collapse of the oil price to US\$8 per barrel in 1986.



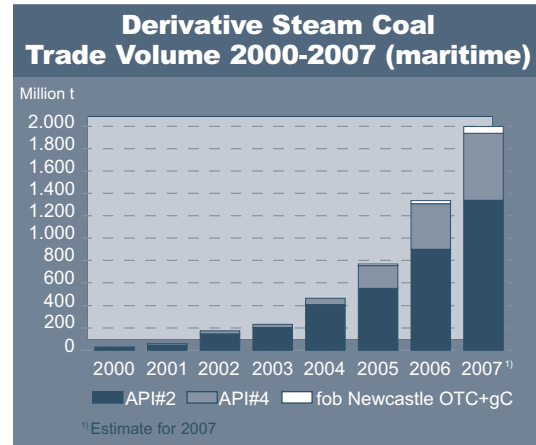
Source: McCloskey

European consumers benefited from the strong euro, which reached an exchange rate of US\$1.60/€1.00 in April 2008 and moderated in part the price increases.

#### Steam Coal Quotations

Prices for steam coal are being set more and more on coal exchanges, especially in Europe. The number of participants in the exchanges is rising. The latest published exchange figures are frequently used as benchmarks for contract conclusions. There is still a lack of transparency concerning the collection of market data and the methods used to determine the price indices. As the available supplies become increasing scarce, the fundamental data of the market lose in significance and the speculative elements gain the upper hand.

The volume of paper trade has exploded exponentially since 2000 and in 2007 amounted to 2.5 to 3.0 times the amount of the total physical steam coal trade. Most of the paper trade is found in the Atlantic region.



Source: Perret Associates

Besides the steam coal quotations, exchanges for trading emission certificates have become established in the European region.

## Coking Coal Market

#### Quantities

Crude steel production worldwide rose further by 100 million t from 1,244 million t in 2006 to 1,344 million t in 2007 (+8%). China once again had the outstanding share in this growth (66%).

The pig iron production decisive for the consumption of coking coal, PCI coal and coke increased by 74 million t from 872 million t in the previous year to 946 mil-

lion t in 2007. The share of crude steel production coming from the pig iron melted in the blast furnace process continued to rise because the growth in crude steel production, above all in China, was largely based on this process due to the lack of adequate supplies of scrap.

### Crude Steel and Pig Iron Production in China

	2006 Mill. t	2007 Mill. t	Growth Mill. t
Crude steel	423	489	+66
Pig iron	404	469	+65
Share of pig iron in crude steel	95.5%	95.9%	

The world's largest steel producers developed as shown below in 2007:

### The 10 Major Steel Producers in the World

Country	2005 Mill. t	2006 Mill. t	2007 Mill. t
China	349.4	421.5	489.2
Japan	112.5	116.2	120.2
USA	93.9	98.5	98.2
Russia	66.1	70.8	72.2
India	38.1	42.8	53.0
South Korea	47.7	48.4	51.4
Germany	44.5	47.3	48.6
Ukraine	38.7	40.8	42.8
Brazil	31.6	30.9	33.8
Italy	29.1	31.6	32.0
<b>Total world</b>	<b>1,142.0</b>	<b>1,244.0</b>	<b>1,344.0</b>

Source: IISI

China is by and large self-sufficient with respect to coking coal and coke, but also exports small quantities of coking coal and was the world's largest coke exporter (15.3 million t) in 2007. This is why

China's additional demand volume has passed by the world market and has been satisfied from the country's own sources. But, as the table shows, almost all of the steel-producing and coking coal-importing countries increased activities in 2007 so that the demand for coking coal in 2007, after stagnating development in 2005/2006, rose sharply.

The corresponding additional volume of coke was required during the reporting period for the production of 946 million t of pig iron. But 65 million t of the increase in pig iron production of 74 million occurred in China so that the "rest of the world" produced only an additional 9 million t of pig iron in the blast furnace process.

The supplier structure on the seaborne world market was characterised by a further reduction in Chinese exports. Russia also stagnated in its exports. Australia, the USA and Canada, on the other hand, increased exports.

### Market Share Coking Coal World Market

	2005		2006		2007	
	Mill. t	%-Share	Mill. t	%-Share	Mill. t	%-Share
Australia	124	67	124	68	138	68
China	5	2.5	4	2	2	1
USA	22	12	21	11	26	13
Canada	26	14	23	13	25	12.5
Russia	6	3	6	4	6	3
Miscellaneous	3	1.5	5	2	5	2.5
<b>Total</b>	<b>186</b>	<b>100</b>	<b>183</b>	<b>100</b>	<b>202</b>	<b>100</b>

It can be seen that the supplier structure did not undergo any major changes and that Australia's market share is about 68%. Despite major logistical problems, Australia was able to export 14 million t of coking coal more than in the previous year.

Coke production around the world continued to grow. China is by far the largest producer and exporter of coke. In comparison with production, the world market for

coke is relatively small. Only about 5%-6% or 30-35 million t of the total production is traded maritime and across the green border.

### Coke World Market

	2005 Mill. t	2006 Mill. t	2007 Mill. t
Total world market	28	32	31
% of world coke production	6%	6%	5%
Thereof by land	6	6	6
Thereof by sea	22	26	25
thereof China	12.8	14.5	15.3

### Price Trends

Due to a lack of quality parameters suitable for an exchange, prices for coking coal are not determined on the coal exchange. This is still done traditionally by means of direct agreement between producers and consumers. The contract price for hard coking coal agreed between Australian suppliers and the Japanese steel industry for the current Japanese fiscal year (April/March) serves as a benchmark.

In 2007, the prices for coking coal fell even further below the top prices realised in the last boom phase in 2005/2006. The table below shows the price development of the negotiation rounds 2007 for the most important coking coal qualities for the coking coal year 2007/2008.

### Price Change of Contract Prices

End of March	US\$/t FOB Australia			Change	
	2005	2006	2007	2006	2007
Hard coking coal					
Premium	125	116	98	-7.2%	-15.5%
Weak	125	105	85	-16.0%	-19.0%
Semi-soft coking coal					
PCI	99-101	63-67.5	65-67.5	-34.8%	1.5%

Source: Macquarie Research Commodities

Due to production losses caused by weather conditions in Australia at the beginning of 2008 and a steel industry which is booming around the globe, there are indications that there will be a drastic price increase for coking coal in the negotiation round 2008 for the coking coal year 2008/2009.

Now that the FOB prices on the spot market for steam coal have risen above the prices for coking coal, substantially higher prices are expected. Iron ore suppliers have already been able to assert increases of 65% to 85%. Moreover, the weak US dollar continues to put pressure on producers, especially Australian and Canadian, who together supply 80% of the world coking coal market.

This was the backdrop when the initial contracts were concluded in April 2008. The following projections came at the beginning of 2008 (Macquarie Research Commodities/Citi Group Equity Research):

### Expected Coking Coal Prices 2008/2009

End of March 2008	US\$/t FOB
Hard coking coal	200-225
Semi-soft coking coal	135-145
PCI	150-170

But the first concluded contracts at the beginning of April 2008 far exceeded these predictions and came to US\$300-US\$325/t for hard coking coal.

In view of this tense market situation, the coke prices FOB China have also developed to a new historic high point.

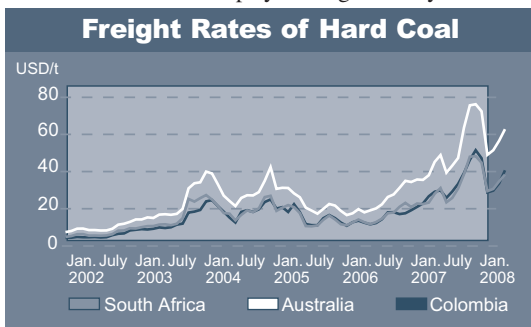




Source: China Coal Report

### Freight Rates

Freight rates started the year 2007 at a very high level and reached the first high point in May 2007. After a brief decline, the quotations once again climbed to new historic heights and shot up to more than US\$45/t for the benchmark route Capesize – Richards Bay – ARA in November 2007. This was followed by a significant drop, but they are currently (03/2008) once again at a very high level and display a rising tendency.



Anyone looking at recent years (2002-03/2008) will notice that the volatility of the freight rates has increased greatly and that they show a tendency to greater and greater fluctuations.

The high prices are caused by a shortage in capacities resulting from demurrage situations (waiting times), above all in Australia and Brazil, but in other ports as well. Furthermore, the transport service required per tonne has increased. For example, the distance travelled per “t” increased by 7% (tonne/mile performance).

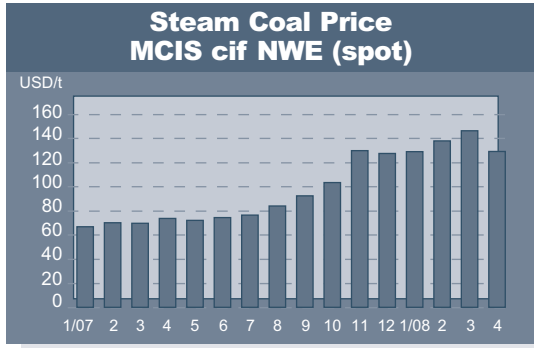
This results from structural shifts for sea transport of both iron ore and coal, leading to longer sea routes between export country and import country. China, for example, must go to increasingly remote countries to cover its demand for iron ore.

Intensive work is going on to eliminate the above-mentioned demurrage situations in the Australian ports, but an improvement cannot be expected before the end of 2008/beginning of 2009.

Worldwide growth of bulk commodities at 43% in the last 7 years has been extraordinarily high and the transported quantity has risen by about 900 million t.

<b>Seaborne Transport Bulk Commodities</b>			
	<b>2000</b>	<b>2007</b>	<b>Growth</b>
	Mill. t	Mill. t	2000/2007
	Mill. t		Mill. t
Iron ore	448	788	+340
Coal	520	778	+258
Grain	264	295	+31
<b>Total</b>	<b>1,232</b>	<b>1,861</b>	<b>+629</b>
Miscellaneous	862	1,145	+283
<b>Total</b>	<b>2,094</b>	<b>3,006</b>	<b>+912</b>

The steam coal prices CIF NWE (North-Western Europe) have risen correspondingly as well.



Source: McCloskey

### US Dollar Exchange Rate

The continued weakening of the US dollar in 2007 was detrimental to profit margins, above all for the Australian, Canadian and South African coal producers. The Canadian dollar almost achieved parity with the US dollar. To this extent, the weak US dollar was an additional factor driving up prices. The effects of the high energy prices in US dollars were capped to some extent by the strong euro, but only for European consumers.

## Energy Policies

### Natural Resources Policies

In view of the strongly increasing demand for energy and natural resources around the world, more and more countries are beginning to see the marketing of their primary energy deposits as a strategic task. This becomes clearly visible in the oil and natural gas industry, where a number of countries have nationalised oil and natural gas production so that optimal use can be made of limited reserves.

In this context, it is significant that the leading natural gas countries want to join forces in a kind of gas OPEC. This project is currently being pushed by Russia and Iran as the leaders. Rising natural gas prices can be expected as a consequence.

The coal sector comprises largely privately owned structures, but there are also observable tendencies towards government influence, e.g., in Venezuela. In view of the large coal reserves, massive intervention is not to be expected for the moment. In the long term, however, the self-interest of individual countries could turn its attention more and more to coal production as well, e.g., in Vietnam.

In private economies, however, the increased efforts to consolidate the companies and position them for sustained profitability takes the place of a national interest.

Overall, the supply security, especially in the Pacific region, is becoming of increasingly greater significance for the economic development of the threshold and developing countries in the area, and Japan as well as China and India are pursuing energy procurement and natural resources policies and securing reserves around the globe for their nations.

The discussions about energy and natural resources in Europe, on the other hand, are dominated by environmental policies and neglects more and more the aspects of supply security and economic efficiency.

### Environmental Policies

The outstanding event in world climate policies was the climate conference on the island of Bali.

However, the European politicians failed to achieve their goal of establishing globally binding threshold values for hothouse gases, especially for CO<sub>2</sub> emission values.

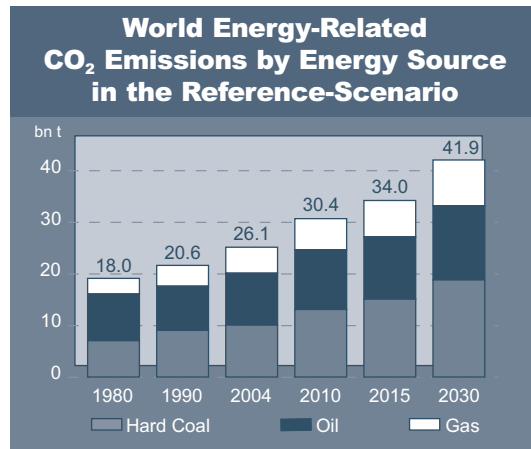
China, India and other countries see no reason to throttle their energy consumption at the expense of their economic growth. China, for example, increased its coal-fired power plant output by almost 100,000 MW in 2007, consuming almost an additional 200 million t of coal. It passed the USA as the largest producer of CO<sub>2</sub> emissions in 2007. The additional emissions of 600-700 million t CO<sub>2</sub> in one year (calculated for all energy sources) corresponds to the CO<sub>2</sub> reduction target of the EU 27 by 2020 for the regions subject to the ETS. This example illustrates the variance in priorities between Asia and Europe.

The IEA predicts an increase in CO<sub>2</sub> emissions from about 27 billion t in 2005 to about 42 billion t in 2030. 74% of this increase would be caused by a handful of countries.

CO <sub>2</sub> emissions increases		
	2005	2030
	Mill. t CO <sub>2</sub>	Mill. t CO <sub>2</sub>
China	5.1	11.4
India	1.1	3.3
Russia	1.5	2.0
USA	5.8	6.9
<b>Total</b>	<b>12.5</b>	<b>23.6</b>
Rest of world	14.5	18.4
<b>Total</b>	<b>27.0</b>	<b>42.0</b>

Unless these countries which currently see economic growth as their priority can be included in the efforts, it will not be possible to achieve any effects which have a positive effect on the global climate.

The structure of the increase in CO<sub>2</sub> emissions is shown in the following graph:



Source: IEA

A reduction of the EU 25 quantity by 30%, for example, equalling 1.2 billion t by 2030 would have the effect of a global reduction of 3%, compensating for the CO<sub>2</sub> world growth rates of about 2 years and thus postponing further climatic warming by only 2 years – an unpleasant fact. Global CO<sub>2</sub> trade reached a volume of 2.6 billion t (previous year 1.6 billion t) in 2007. The greatest part of the trade was in the European CO<sub>2</sub> trading system.

But the cycle of conferences to produce a subsequent treaty for the Kyoto Protocol will be continued. A new treaty which will include the threshold and developing countries as well as the USA is supposed to be negotiated by the end of 2009. The conference is scheduled to be held in Copenhagen.

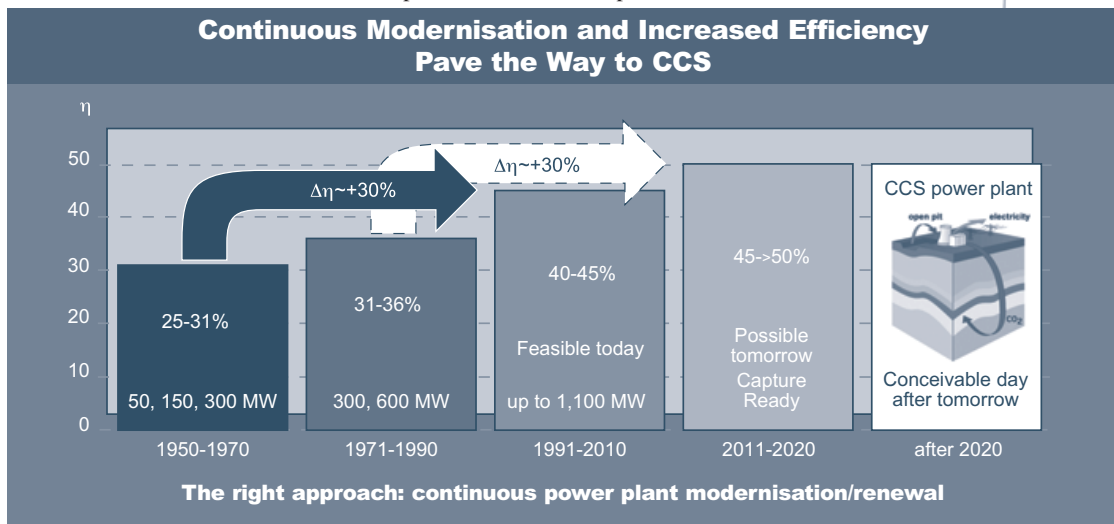
#### Technology

The energy generating industry has launched a worldwide offensive in technology to make the conversion of coal into electric power more environmentally friendly. This will be carried out in a number of steps.

The safest method, and the one which is the most economical and will have the quickest effect, is the optimisation of the current hard coal-fired power plant technology to efficiencies of as much as 45%-50%. Even higher degrees of efficiency (such as that of the power plant Moorburg in Hamburg, which is more than 60%) can be achieved in combination with the extraction of remote heating.

In the USA, Australia and other countries as well as in the EU, government funds are being invested in the further development of power plant technology so that rapid progress can be made. But private industry is also investing major sums in the development of new technologies.

The development of technologies to reduce CO<sub>2</sub> and the separation of CO<sub>2</sub> emissions when hard coal is used to generate electric power are the most important contributions which can be



made by industrialised countries to the environmentally friendly generation of electric power on a hard coal basis in threshold and developing countries, which in the long term cannot afford to do without hard coal.

## EUROPEAN UNION

### Economic Growth

The year 2007 was another positive one for the countries in the EU 27. All of the member states recorded growth rates.

The EU increased to 27 member states on 01/01/2007 by adding Bulgaria and Romania. The euro zone increased by adding Slovenia and now consists of 13 countries.

#### Economic Growth EU 27 in Percent

Member states	2006	2007
Countries Euro Zone (EU 13)	2.8	2.6
EU 16 (incl. Denmark, Sweden, Great Britain)	2.8	2.7
New members (EU 11)	5.3	6.0
EU 27	3.0	2.9

Economic dynamics are primarily driven by private consumption and the gross equipment investments. The labour market improved and unemployment throughout the EU fell to 7%.

The rate of inflation in the euro zone remained moderate. In the other member states, the inflation pressure was stronger due to tight labour markets and higher prices for natural resources.

A slightly weaker development is predicted for the EU 16 region in 2008. In the new member states (EU 11), on the other hand, the economy will continue to grow strongly.

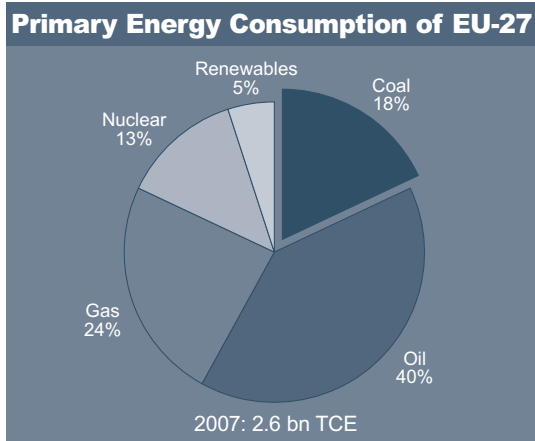
### Energy Consumption

The positive economic development in 2007, in combination with the mild weather conditions and high energy prices, led to a slight decline in energy consumption in the EU 27. The structure of the primary energy consumption essentially remained unchanged.

Energy consumption for 2007 is estimated as shown below according to the provisional information available:

EU Energy Consumption				
	2005	2006	2007 <sup>1)</sup>	Change
	Mill. tTCE	Mill. tTCE	Mill. tTCE	%
EU 15	2,200	2,280	2,230	-3%
EU 10/12	330	366	370	+1%
<b>EU 25/27</b>	<b>2,530</b>	<b>2,646</b>	<b>2,600</b>	<b>-2%</b>
<b>(from 2006: EU 27)</b>				
<sup>1)</sup> Own estimate for 2007				

Economic growth – especially in manufacturing – leads to an increase in the consumption of energy. In the more highly advanced EU 15 states, the growth in gross national product can be achieved by a low factor of rising energy consumption, while in the EU 12 states growth in the gross national product is more heavily dependent on additional energy consumption.



Sources: Various evaluations, own Calculations

Success in reducing CO<sub>2</sub> varies widely within the EU 15. While the industrial heavyweights in the EU, Germany and Great Britain, largely achieve their goals, most of the other countries fall short, some of them by a large margin, and the lethargy of the EU Commission in pushing delinquent countries to achieve their goals is incomprehensible.

### EU 25 Climate Balance: 1990-2006

	Mill. t CO <sub>2</sub> -Equivalent		Change	
	1990	2006	Mill. t	%
EU 15 (excluding Germany and Great Britain)	1,737	2,056	+319	+18
Germany and Great Britain	1,623	1,441	-182	-12
<b>EU 15</b>	<b>3,360</b>	<b>3,497</b>	<b>+137</b>	<b>+4</b>
EU 10	1,069	798	-271	-34
<b>EU 27</b>	<b>4,429</b>	<b>4,295</b>	<b>-134</b>	<b>-3</b>

Source: DIW/Ziesing

The table demonstrates that without the contributions of Great Britain, Germany and the EU 10 countries, growth of 18% would mean that the EU significantly misses its targets.

However, the successes in reducing emissions in Germany are largely a consequence of the economic transitional situation in Eastern Germany. Great Britain profited from the decline in hard coal mining of 80 million t during the period 1990-2007, and the EU 10 countries recorded a drop in emissions due to the collapse of many industrial structures in Eastern Europe; in other words, a major portion of the reduction successes are “one-off effects” which cannot be repeated. On the contrary, the EU 10 states, following their consolidation, will presumably begin a stronger growth phase with the concomitant rise in energy requirements.

In view of this background, one must question whether the EU reduction targets for 2012 and 2020 are at all realistic. The reduction of hothouse gases must aim more rigorously at traffic and heating markets as well and not be restricted to the energy producing industry. High energy prices, by the way, lead to savings in the transport and heating sectors, as the consumption development in 2007 shows.

### Hard Coal Market (EU 27)

There were further reductions in the output of European hard coal production in 2007. Output was reduced in

- Germany	-1.9 Mill. t
- Poland	-7.0 Mill. t
- Great Britain	-2.0 Mill. t
- Spain	-0.6 Mill. t
- Czech Republic	-0.5 Mill. t

a total reduction in output of about 12 million t. In the long term, further reductions in output are planned for Germany, but they can also be expected in Poland and Spain. However, an old mine (Hatfield Colliery) which still has reserves is currently being recommissioned in Great Britain so that a rise of 1-2 million t must be expected in 2008. In France, a deposit in the southern region of the country is being examined to determine whether mining operations would be profitable. Overall, there was a slight decline in hard coal consumption in the EU 27:

### Hard Coal and Lignite Volume in the EU

	2006 Mill. t (t=t)	2007 <sup>1)</sup> Mill. t (t=t)
EU 27 Output	165	153
EU 27 coal imports/Domestic trade	218	220
EU 27 coke imports/Domestic trade	12	11
Hard Coal Volumes	395	384
EU 27 Lignite	432	436

**Total – Coal Consumption**      **827**      **820**

<sup>1)</sup>Provisional figures

The good business in the steel industry had a stabilising effect on coal consumption. High prices for natural gas favoured the use of hard coal for the generation of electric power. In addition to hard coal consumption, about 430 million t of lignite (approx. 130 million t TCE) were produced and consumed in the EU 27.

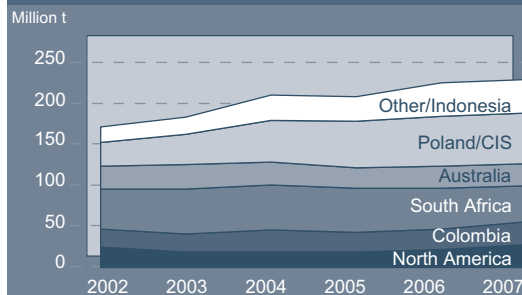
The hard coal consumption of 383 million t in the EU breaks down among the following sectors (estimate):

### Distribution of Hard Coal Consumption in the EU

	2006		2007	
	Mill. t	%	Mill. t	%
Power plants	272	66	251	67
Steel mills/Coking plants	84	21	88	22
Heating market	51	13	46	11
<b>Total</b>	<b>407</b>	<b>100</b>	<b>385</b>	<b>100</b>

There was virtually no change in the structure of the hard coal imports in 2007. Declining exports to the EU from Indonesia, Poland and South Africa were compensated by greater supplies from Colombia and the USA.

### EU Hard Coal Imports from Third Countries and EU-internal Trade



Sources: EUROSTAT, Statistics of Producing Countries

In the EU 27, Poland is the most important producer with 87 million t per year.

### Hard Coal Output in the EU

	2006		2007	
	Mill. t (t=t)	Share %	Mill. t (t=t)	Share %
Germany	24	15	22	14
Spain	12	7	11	7
Great Britain	19	12	17	11
Poland	94	57	87	57
Czech Republic	14	8	13	9
Romania	2	1	3	2
<b>Total</b>	<b>165</b>	<b>100</b>	<b>153</b>	<b>100</b>

#### Infrastructure

The infrastructure for Europe is being steadily expanded as import volumes rise. The railway lines between the interior and the ARA ports are also being improved.

### Coal Handling in Northwest European Ports in Million t

Ports	2005	2006	2007
Hamburg	4.7	4.9	5.7
Bremen	1.4	1.9	2.0
Wilhelmshaven	1.6	1.3	1.3
Amsterdam	19.0	19.6	22.2
Rotterdam	26.5	27.6	28.2
Zeeland Seaports	4.1	3.3	3.5
Antwerp	9.4	9.3	8.6
Ghent	2.8	2.7	3.4
Duinkerken	8.8	10.2	9.6
Le Havre	2.9	1.8	2.4
<b>Total</b>	<b>81.2</b>	<b>82.6</b>	<b>86.9</b>

Source: Port of Rotterdam

### Energy Policies

Energy policy objectives in Europe are being defined more and more by Brussels. Just as in the past, the EU has still not found a way to achieve adequate worldwide acceptance for its climate policy targets because countries such as China, India and many others simply see

their priorities in economic growth, raising the living standards of their populations and reducing unemployment. The climate conference on Bali demonstrated this clearly. Nonetheless, agreement was reached on a process which can bring about a treaty subsequent to the Kyoto Protocol as the latter's objectives expire in 2012. The next important conference will be held in Copenhagen at the end of 2009.

The EU Commission is planning to define the electric power generation portfolios of the individual member states by means of emissions trading from 2013 to 2020. Emissions trading began in 2005. The first period ran from 2005 to 2007. At the end of the period, the CO<sub>2</sub> price fell to zero because the member states held an adequate number of CO<sub>2</sub> certificates. The second period covers the years 2008 to 2012. The EU has ordered significant reductions in the CO<sub>2</sub> budgets for the member states and also allows a partial sale of the certificates, a substantial tightening of the CO<sub>2</sub> regime. Additional certificates can also be acquired from all EU countries via CDM/JI projects, on the average 13% of the allocated certificate quantities. Each of the member states was allocated a corresponding percentage of the CO<sub>2</sub> budget.

### EU 27: Budget of the CO<sub>2</sub> Certificates

Time Period	Mill. t
1st Period 2005-2007	2,299
2nd Period 2008-2012	2,083
<b>Difference between 1st and 2nd Periods</b>	<b>216</b>
Potential CDM/JI volume (13%)	279



The third phase from 2013 to 2020 provides for a linear reduction of 20% in comparison with the level of 1990 or of 21% in comparison with the level of 2005.

Accordingly, the CO<sub>2</sub> budget of the 2nd period (2008-2012) of 2,083 million t is supposed to be reduced to 1,720 million t in the 3rd period (2013-2020). The EU's intention to allow CDM/JI credits for the third period only if an international treaty concerning CO<sub>2</sub> reduction is achieved is highly problematic. From today's viewpoint, this will be very difficult to achieve and is counterproductive for the solution to a global problem. Measures to reduce CO<sub>2</sub> should be implemented where they are the most economical.

There is also a suggestion to sell all of the certificates. It would make more sense to take into account the benchmarks and the burden factors of the individual energy sources. The sale will lead to a substantial price increase for consumers.

In the event that a majority cannot be found for benchmarks as an alternative to the complete sale, the European coal industry is of the opinion that only a cautious commencement of the auctions would be possible. It would be necessary to consider the following ques-

tions so that cost efficiency, competitiveness and supply security could be harmonised with one another while taking into account investment cycles:

- Step-by-step commencement of the auctioning process over a longer period of time for the electricity sector as well, e.g., parallel to energy-intensive industry, possibly determination of the auction share by the member states;
- Support of investments in state-of-the-art plants by providing equipment free of charge for these plants on the basis of fuel-specific benchmarks;
- Utilisation of revenues from auctions primarily for climate protection, e.g., power-plant related R&D and demonstration (increase in efficiency, carbon capture and storage);
- Full recognition of JI/CDM

The details of Phase 3 are still under discussion, but the EU must be careful not to manoeuvre itself into an island position which would adversely affect the region's competitiveness on the stage of the global economy.

The EU has adopted the draft of a general directive for CO<sub>2</sub> storage. After discussion with the member states, the directives must be transposed into the national law of each of the countries.

## GERMANY

### Economic Growth

In 2007, gross national product grew by 2.5%, a slight weakening in comparison with 2006.

The stimulus for the growth came above all from strong foreign trade. Domestic demand continued to be weak.

The increase in VAT as per 01/01/2007 acted as a brake on domestic consumption. Although unemployment declined, it remained at the high level of 9%.

Weaker growth in the gross national product of 1.5% to 1.7% is expected from 2008.

High oil prices, a slowdown in the dynamics of the world market and the strength of the euro on currency markets are having an adverse effect on growth.

The recession in the USA will also undoubtedly play a role.

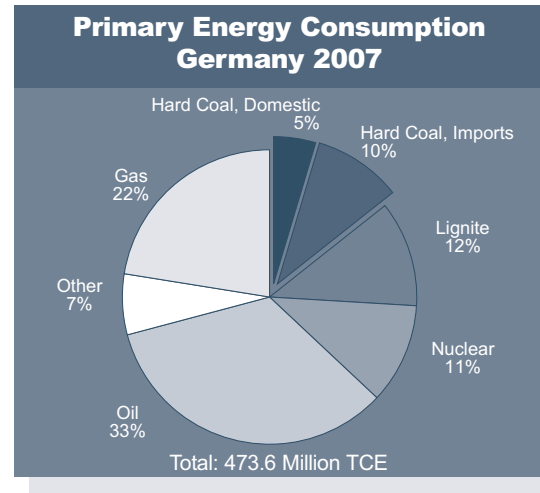
#### Primary Energy Consumption

Primary energy consumption in Germany declined in comparison with 2006 by 24.7 million t TCE or 5% to 473.6 million t TCE in 2007. There were a number of factors with differing effects which were responsible for this development.

- Growth in the real gross national product of 2.5% had the effect of increasing consumption.
- The mild winter temperatures, on the other hand, clearly caused a reduction in consumption.
- The high level of energy prices also prompted consumers to save energy.

The structure of the primary energy consumption according to energy sources changed very little in comparison with the previous year 2006. Oil and natural gas remained the most important primary energy sources. Hard coal and lignite increased slightly, while nuclear energy fell substantially due to disruptions in production. Renewable energy sources contributed 31 million t TCE or 6.6% to covering the primary energy demand, increasing their contribution by 4.2 million t TCE.

The overall energy productivity in the business rose significantly by 7.7% in 2007. Even when adjusted for temperature and inventories, the increase of 5% was unusually great. In the recent past (2000-2007), the average increase in energy productivity came to 1.7% annually.



Source: *Arbeitsgemeinschaft Energiebilanzen*

The consumption of petroleum declined by 16.3 million t TCE or 9.7% in 2007. The major reason for this was above all a decline in the sales of fuel oil of 34%. The mild winter, high prices and reduction of inventories were the reasons behind this sharp drop.

Sales of natural gas fell by 5.7 million t TCE or 4.5%. The largest loss in sales was noted in the private household consumption here as well. The use of natural gas for electric power generation rose slightly by 1.5%.

Nuclear energy contributed 10 million t TCE or 16.1% less to coverage of the primary energy demand. The outage or shutdown of at times as many as 6 of the 17 German nuclear power plants was the cause of this substantial decline.

Lignite posted growth of 1.3 million t TCE or

2.8%; above all, the increased use of lignite in the basic load led to this rise.

Renewable energy sources increased their contribution by 4.2 million t TCE or 15.2% to 31.4 million t TCE. Most of this came from highly subsidised wind energy. The above-average wind supply in 2007 was one factor behind the growth.

Hard coal consumption increased by 2.3 million t TCI or 3.5%. Sales in both electric power and heat generation and the steel industry increased slightly.

### Changes in Primary Energy Consumption in 2007

Energy source	Sales losses Mill. t TCE	Energy source	Sales increases Mill. t TCE
Oil	-16.3	Renewable energy sources	+4.2
Nuclear energy	-10.0	Lignite	+1.3
Natural gas	-5.7	Hard coal	+2.3
		Miscellaneous	+0.8
<b>Total</b>	<b>-32.0</b>	<b>Total</b>	<b>+8.6</b>

#### Power generation

Gross electric power generation in 2007 stagnated in comparison with the previous year, amounting to about 637 TWh. German power consumption amounted to about 618 TWh, which was a slight increase.

The border-crossing trade volume in electric power (total of imports and

exports) came to about 108 TWh or 17% of the gross power generation; the export surplus came to 19 TWh, approximately the same level as the previous year.

### The Energy Mixture of the Gross Power Generation

Energy source	2006 TWh	2007 TWh	Difference TWh
Lignite	151	156	+5
Hard coal	138	145	+7
Nuclear energy	167	141	-26
Natural gas	73	74	+1
Hydroelectric/Wind	58	67	+9
Miscellaneous	50	54	+4
<b>Total</b>	<b>637</b>	<b>637</b>	<b>0</b>

Source: DIW

Significant factors in power generation in 2007 included the operational loss of a number of nuclear power plants and an above-average wind supply. The broad energy mixture in Germany proved its value, and it was possible to compensate for the loss of power generation from nuclear plants with other generation capacities.

Loss of nuclear power: -26 TWh

Compensation largely from:

- Hard coal: +7 TWh
- Lignite: +5 TWh
- Natural gas: +1 TWh
- Renewable energy sources: +13 TWh

Lignite and hard coal cover 301 TWh or 47% of the German demand for electric power.

The installed output of the wind farms rose again strongly in 2007 by 1,670 MW and reached a total of 22,290 MW. Production increased to about 40 TWh. This corresponds to 1,800 h/a full-load hours for wind energy on land or 21% in relation to the number of hours in a year, an outstanding figure for wind-poor Germany.

### Power Generation from Renewables (preliminary figures)

Source of Energy	2005 bn KWh	2006 bn KWh	2007 bn KWh
Wind	27.2	30.7	39.5
Hydro	26.7	20	20.7
Biomass and Waste (only estimated share of renewables)	13.5	19.2	23.8
Photovoltaic	1.3	2.2	3.5
<b>Total</b>	<b>68.7</b>	<b>72.1</b>	<b>87.5</b>

Source: BMU

### Steel Production

Crude steel production in 2007 amounted to 48.6 million t, the highest amount since reunification. Pig iron production rose accordingly to 31.1 million t.

#### Pig Iron Production

	2006 Mill. t	2007 Mill. t	Difference %
Crude steel	47.2	48.6	2.9
Pig iron	30.4	31.1	2.3

The healthy steel industry was carried along by the robust world economy and well filled order books in the German steel-processing industry. The steel industry uses coke, blasting coal and sintering fuels.

The table below shows the average specific consumption by the German steel industry:

#### Consumption by the Steel Industry

Energy source	2006 Mill. t	2007 Mill. t
Coke (kg per t/pig iron)	363	351
Blasting coal (kg per t/pig iron)	99	107
Sintering fuels (kg per t/pig iron)	51	49
Oil (kg per t/pig iron)	20	20

Order books in the foundry industry were also full. This sector consumed close to 0.5 million t of foundry coke, most of it imported.

### Hard Coal Market (Germany)

The primary energy consumption of hard coal in 2007 came to about 68 million t TCE. This was an increase of 2.3 million t TCE or 3.5% in comparison with the previous year. Hard coal consumption has been fluctuating within a range of 63 to 69 million t TCE since 2000. The hard coal consumption was covered as shown below:

#### Cover of Hard Coal Consumption in Germany

	2005 Mill. t TCE	2006 Mill. t TCE	2007 Mill. t TCE	Growth
Import coal	37.8	45.3	45.9	+0.6
Domestic production	25.8	21.7	22.0	+0.3
Stock increase (-) /decrease (+)	-0.7	-1.4	-	-
<b>Total</b>	<b>62.9</b>	<b>65.6</b>	<b>67.9</b>	<b>+0.9</b>

Consumption of imported hard coal rose again slightly by 0.6 million t TCE. The German coal mining industry was able to produce an additional 0.3 million t TCE. The sale of hard coal in t=t developed as shown here:

(The difference in quantities between the "t TCE" figures and the "t=t" figures results mainly from the steam coal sector because coal with heating values under 7,000 kcal/kg is also used. This is why the t=t figures are higher.)

### Hard Coal Sales Total in Germany

Utilisation	2005	2006	2007
	Mill. t (t=t)	Mill. t (t=t)	Mill. t (t=t)
Power plants	50.0	51.3	51.4
Steel industry	17.4	17.4	18.3
Heating market	1.1	1.4	1.6
<b>Total</b>	<b>68.5</b>	<b>70.1</b>	<b>71.3</b>

Imports in 2007 contributed about 65% to the high-quality supplies for the German market. Without the import and supplies of high-quality import coal, the DSK-Kokerei Prosper, for example, would not be able to produce coke in the quality required for the steel mills because German coking coal is mined in only small quantities and does not meet all of the requirements in terms of quality.

Import coal provided a share of the supply to the various consumption sectors in 2007 as shown below:

### Import coal consumption sectors

	Imports	Domestic coal
Power plants	59%	41%
Steel mills	78%	22%
Heating market	75%	25%

It is important to note that the import figure of 47.5 million t in 2007 was 1.6 million t higher than consumption. The volume in excess of consumption goes to the consumer stocks. This was also the case in the previous years.

Broken down according to quality, the imports in 2007 give the following picture:

### Imports According to Qualities

Products	2005	2006	2007
	Mill. t (t=t)	Mill. t (t=t)	Mill. t (t=t)
Steam coal	28.8	32.7	32.7
Anthracite	0.4	0.4	0.5
Coking coal	7.1	9.1	10.2
Coke	3.6	4.3	4.1
<b>Total</b>	<b>39.9</b>	<b>46.5</b>	<b>47.5</b>

### Utilisation of Import Coal

Utilisation	2005		2006		2007	
	Quantity	Share in total sales	Quantity	Share in total sales	Quantity	Share in total sales
	Mill. t	%	Mill. t	%	Mill. t	%
Power plants	27.3	69%	31.1	68%	30.5	66%
Steel industry	11.3	29%	13.7	30%	14.2	31%
Heating market	0.7	2%	1.0	2%	1.2	3%
<b>Total</b>	<b>39.3</b>	<b>100%</b>	<b>45.8</b>	<b>100%</b>	<b>45.9%</b>	<b>100%</b>

The steam coal was dominated by:

- Russia	7.4 Mill. t
- Colombia	6.9 Mill. t
- South Africa	6.2 Mill. t
- Poland	4.6 Mill. t
- Spitzbergen	1.9 Mill. t
- USA	1.1 Mill. t
- Indonesia	1.1 Mill. t

The supply structure for steam coal is also broadly diversified. Colombia, Russia and the USA increased their exports, while South Africa, Poland and Indonesia supplied smaller quantities in 2007.

The most important suppliers for coking coal were:

- Australia	5.5 Mill. t
- USA	1.8 Mill. t
- Canada	1.7 Mill. t
- Russia	0.7 Mill. t

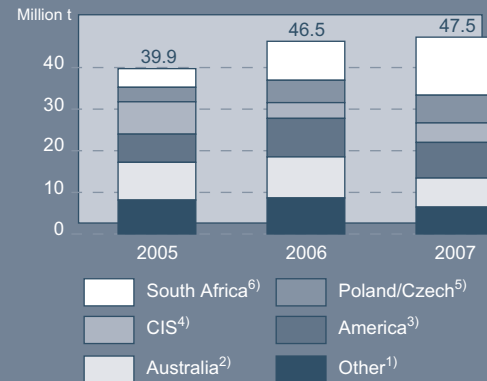
Australia increased its share of supplies once again.

The import situation for coke is shown below:

- Poland	1.7 Mill. t
- China	0.9 Mill. t
- Spain	0.7 Mill. t
- Czech Republic	0.3 Mill. t
- Russia	0.2 Mill. t

Overall, the supply structure for all qualities is broadly diversified and comes primarily from politically stable countries.

### Steam Coal Imports into Germany (incl. Coke)



Sources: Federal Statistical Office, own calculations

### Transport Routes for Import Coal

The some 47.5 million t of imported coal were imported as shown below:

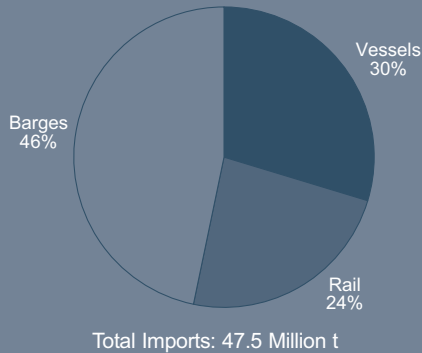
### Transport Routes for Imported Coal in Germany

Transport Route	2005	2006	2007 <sup>1)</sup>
German ports	12.3	13.6	14.1
Rail	9.1	12.0	11.2
Barges	18.6	20.9	22.2
<b>Total</b>	<b>40.0</b>	<b>46.5</b>	<b>47.5</b>

<sup>1)</sup> Provisional figures

About 4.1 million t were transported further from German ports/inland ports by rail, 6.7 million t were imported from the ARA territory and other EU countries and 4.5 million t from Poland/Czech Republic.

### Transports of Imported Hard Coal to Germany 2007



Sources: Federal Statistical Office, own calculations

The largest German import harbour terminal – Hansaport in Hamburg – reached almost 5.7 million t per year.

The port in Duisburg increased its coal transshipments from 4.4 million t in 2006 to 6.8 million t in 2007.

#### Development of Energy Prices

The HS price in 2007 averaged €198/t TCE and fluctuated at a high level in a range from €173-€246/t TCE. The natural gas price also remained at a high level, reaching €246/t TCE at the end of the year. The mean was €210/t TCE, but fluctuation was within a range of €200-€231/t

TCE. Imported steam coal was able to maintain its competitive position with respect to the above-mentioned energy sources at €68/t TCE.

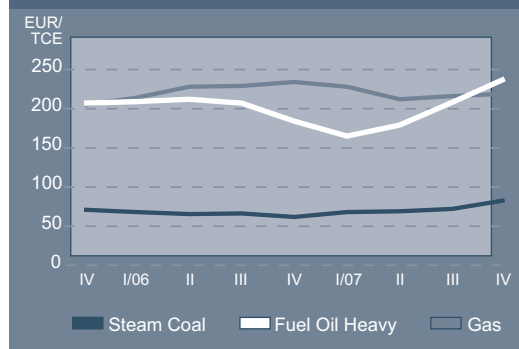
#### Development of Energy Prices

	2005	2006	2007
	EUR/t	EUR/t	EUR/t
	TCE	TCE	TCE
Heavy fuel oil (HS)	166	203	198
Natural gas/Power plants	188	231	210
Border-crossing price/ Imported coal	65	62	68
<b>Total</b>	<b>39.9</b>	<b>46.5</b>	<b>47.5</b>

In the energy prices, the difference between imported coal and HS was €130/t TCE and the difference between imported coal and natural gas was €142/t TCE.

The border-crossing price for imported steam coal (BAFA price K-Bogen) rose by about 9.7% or a good €6/t TCE to €68/t TCE from 2006 to 2007.

#### Development of Selected Energy Prices Free Power Plant



Sources: Statistik der Kohlenwirtschaft-Gas preliminary, BAFA, own calculations

The price behaviour of steam coal and coke is in line with the short-term market tendencies. Coking coal is generally negotiated in annual agreements and price increases/decreases always appear in the border-crossing prices with a certain time lag. This is the explanation for the rise of coking coal prices in 2006 as well. For 2007, however, the prices fell as a consequence of the low contract prices from the negotiation rounds 2006/2007 and 2007/2008.

Contract benchmark prices for hard coking coal in the most recent negotiations (2007/2008) and the border-crossing prices for coking coal from third countries developed as shown in the tables. They demonstrate that the border-crossing prices follow the contract prices after a certain time delay.

### Contract Benchmark Prices Hard Coking Coal

	US\$/t FOB
<b>2004/2005</b> <sup>1)</sup>	125.0
<b>2005/2006</b> <sup>1)</sup>	115.0
<b>2006/2007</b> <sup>1)</sup>	95.0

<sup>1)</sup>April-March=Japanese fiscal year

### Third Countries

	Border-crossing Price in EUR/t <sup>1)</sup>
<b>2004</b>	62.0
<b>2005</b>	95.0
<b>2006</b>	106.0

<sup>1)</sup>Average values covering all coking coal qualities

The German border-crossing price is often influenced by the inclusion of semi-soft coking coal qualities in the price and is not determined solely by the hard coking coal price.

The coke prices developed as shown below:

### Third-country Imports

	EUR/t
<b>2006</b>	156.0
<b>2007</b>	157.0
<b>Difference</b>	1.0

### EU Imports

	EUR/t
<b>2006</b>	171.0
<b>2007</b>	182.0
<b>Difference</b>	11.0

The import prices for coke remained stable by and large although the spot market, in the second half of the year especially, recorded substantially higher quotations. This is a consequence of the fact that coke deliveries are frequently concluded on the basis of annual contracts and the substantially higher spot market prices have not yet appeared in the annual price.

All of the prices for imports have been moderated by the loss of value of the US dollar.

### Tendencies of Price Development in 2008

While the view of the average price development for the major products steam coal, coking coal and coke was characterised by moderate development in 2007, the price development in 2008 shows all of the signs of an overheating of the market.



Initially, the expectations were for a continued slight decline in prices for coking coal. As a consequence of the strong growth in the coking coal demand in 2007 and shortages in supply caused by production losses due to weather conditions in Australia, prices shot up.

Predictions for the price development for hard coking coal have changed monthly:

January 2008: US\$150/t FOB

February 2008: US\$225/t FOB

March 2008: US\$300/t FOB

Encouraged by the high price increases during the contract conclusions for iron ore, the coking coal suppliers realised price increases of +200% for the first contract conclusions in 2008.

Depending on quality, a price of US\$295-US\$305/t FOB must be paid. Similar prices, allowing for the pertinent gradations, can be expected for semi-soft coking coal and PCI coal. However, there is a greater availability of semi-soft coking coal.

Coke prices also reached heights which had never before been seen. The coke price for 12.5% ash FOB China was quoted at US\$550/t in April 2008, for example.

The prices for steam coal also rose sharply, and in the 1st quarter of 2008, the provisional BAFA price

came to €93/t TCE (Own projection), a rise of 37% in comparison with the average value of €68/t TCE in 2007. The massive price increases for coking coal will not begin to affect import prices until May/June 2008.

## Energy Policies

### General

The German energy policies have lost sight of the balance of the target triangle consisting of

- economic efficiency
- supply security
- environmental compatibility

and are increasingly putting Germany's industrial position at risk by assigning priority to environmental compatibility.

The nonsense of allowing two ministries to have responsibility for shaping German energy policies leads to blockades and prevents establishment of a consistent energy policy which balances out the target triangle and should and could ensure a balanced, low-cost energy mixture.

Yet many countries envy Germany for having an electric power generation structure which is largely independent of short-term world market procurements:

- Nuclear energy
- Lignite
- Hard coal (domestic)
- Renewable energy sources

provide 65%-70% of the power, comforting assurance of supply security. The rest is supplemented by imported hard coal and natural gas which come from various geopolitically secure countries and are broadly diversified.

Germany, which has slightly more than 1% of the world's population and just over 3% of the hothouse gas emissions in the world, has very little influence on the global climate.

The lack of clarity in the attitude of the federal government, however, encourages provincial thinking because there is no overall concept concerning energy policies for the federal government. "Give me a good washing, but don't get me wet," is the slogan. Basically speaking, no energy source is still considered desirable:

- Nuclear energy: Discontinuation has been decided
- Coal: CO<sub>2</sub> emissions too high
- Natural gas: Dependency on Russia too great
- Renewable energy sources: High subsidies, disfigurement of the landscape

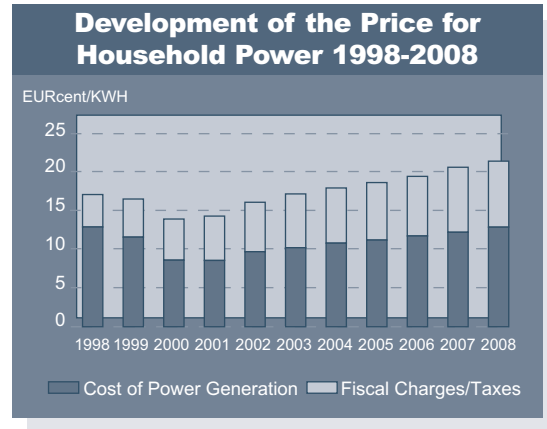
In addition, there are the problems of the slow expansion of the network. But the new geographic production structure which is becoming discernible demands the expansion of overland networks so that electric power can be transported from the north and east of Germany to the consumption centres in the west, south-west and south of Germany.

Burdens placed on consumers by government levies and taxes on energy are increasing while real income is declining because of globalisation.

But the government is the greatest price driver. Levies and taxes have in the meantime reached a share of more than 40% of the price, e.g., for household current. This turns the price increases in end energies induced by the government into a social problem.

It is therefore urgently necessary to turn the energy policies back to an emphasis on supply security and economic efficiency. It makes little sense to relocate production with high CO<sub>2</sub> emissions to other countries and to import unemployment.

The high demand for energy in the threshold and developing countries will continue to drive energy prices up, and this alone will be enough to ensure energy conservation and improvements in efficiency.



Source: *bdew*

### Coal Policies

The passage of the hard coal financing act (Act for Financing of the Termination of Subsidised Hard Coal Mining by the Year 2018) on 27 December 2007 set the legal conditions for an orderly end to German mining. The act entered into effect on 28/12/2007. A revision clause provides for a review of the energy industry situation for domestic coal in 2012, an increasingly wise precaution in view of the current price increases.

The RAG authorisation notices for the time from 2009 to 2012 or 2019 were issued along with the act. Since the subsidies are paid retro-

spectively, the subsidies for 2008, for example, will not be included in the federal budget until 2009.

The financing is secured by the federal government, the states of NRW and Saarland and a contribution from RAG itself. The RAG Foundation will take over the financing of the perpetual pumping expenses.

In total, the financing package includes €22 billion from public sources. The perpetual pumping expenses will be covered from the assets/earnings of Evonik Industries AG.

Owing to the geological problems at the Ensdorf mine, there has been a substantial change in the volume picture in comparison with the situation at the time the act was passed. The Ensdorf mine will continue to operate only at a reduced level and is supposed to be closed in 2012. The closing of the Lippe mine will be moved forward by one year for commercial reasons.

These factors result in the volume picture for the near future as shown below:

<b>Presumed Development of Production (Own estimates)</b>			
	<b>2007</b>	<b>2008</b>	<b>2009</b>
	Mill. t	Mill. t	Mill. t
West	2.98	3.0	3.0
Walsum	2.54	1.3	30/06/08 Closure
Prosper Haniel	3.52	3.5	3.5
Lippe	2.14	2.0	01/01/09 Closure
Auguste Viktoria	3.14	3.2	3.2
Ost	1.55	1.6	1.6
Ensdorf	3.55	1.0	1.0
Ibbenbüren	1.91	1.9	1.9
<b>Total</b>	<b>21.33</b>	<b>17.5</b>	<b>14.2</b>

The result is a substantially faster decline in production than previously scheduled. If there are no changes in the planned closure of an additional three mines, output in 2012 could be 9 million t per year.

The continued operation of Ensdorf with a substantially lower output – previously the location with the lowest cost and an output share of 17% – means that the average specific costs of RAG will increase substantially.

The RAG will undoubtedly continue to optimise its operations commercially to create a favourable situation for the time of the review in 2012.

### **Presumed Development of Output (own estimates)**

<b>Year</b>	<b>Previous estimate</b>	<b>New estimate</b>
	Mill. t	Mill. t
2007	21.3	21.3
2008	19.0	17.5
		Closure of Walsum as per 30/06/08
		Reduction of Ensdorf
2009	17.0	14.0
		Closure of Lippe as per 01/01/09
2010	16.0	12.0
		TBA
2011	14.0	10.0
		TBA
2012	12.0	9.0
		Closure of Ensdorf
2013	10.0	9.0
2014	10.0	9.0
2015	8.0	9.0
2016	6.0	7.0
2017	4.0	4.0
2018	2.0	4.0

Yet another element with a tendency to change the material situation is the improved competitiveness of German coal due to the sharp rise in coal prices on the world market. In April 2008, world prices were at the following level:

- Hard coking coal CIF ARA: US\$350/t  
(from Australia) or
- (exchange rate 1.55): €229/t.

This would make it possible to mine coking coal – at least for the contract period 2008/2009 – without any subsidies. Unfortunately, the RAG mines virtually no coking coal and can enjoy very few benefits from the market situation.

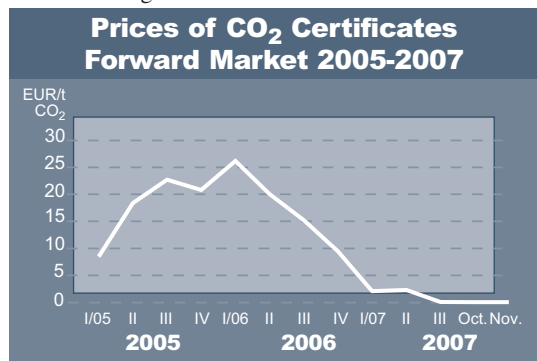
For steam coal, the level is at

- Steam coal CIF ARA (6,000 kcal/kg)  
(capesize route): US\$150/t
- corresponding to (7,000 kcal/kg): US\$175/t TCE
- corresponding to  
(exchange rate 1.55): €112/t TCE

There is still a substantial difference between the costs for RAG and the world market prices, but the gap which is to be bridged by subsidies has currently closed from the previous €120-€130/t TCE to €60-€70/t TCE for steam coal.

#### Prices and Trading with CO<sub>2</sub> Certificates

The first period 2005-2007 ended in the reporting period. Since the beginning of 2007, the prices had been approaching the zero point. Evidently the grants of CO<sub>2</sub> certificates on the basis of the 1st national allocation plan (NAP) were adequate for the consumers so that no significant trading movements occurred.

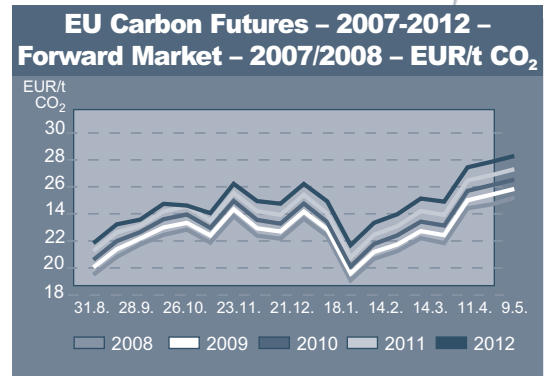


Source: EEX

The 2nd trading period, which will continue to and include 2012, began in 2008. The prices jumped to a higher level because the 2nd NAP is substantially lower than the 1st NAP. In the meantime, CO<sub>2</sub> prices are being traded for the entire period.

The high oil prices are being followed by higher prices for natural gas so that the competitive advantage enjoyed by coal for electric power generation is also increasing. This in turn leads to a higher demand for certificates and rising prices for certificates.

The figure below shows price expectations as per 04/2008.



Source: EEX

It is at this time difficult to assess how great the volume of CO<sub>2</sub> certificates from CDM and JI measures is. Germany is allowed to purchase an additional 22% of the allocation quantity. A sluggish bureaucracy has been created for the certification of CO<sub>2</sub> certificates from CDM and JI measures, delaying and making more difficult the availability of imported certificates.

Renewable Energy Sources

The share of renewable energy sources, including hydroelectric power, rose to about 14% of the gross power production, 4.4% of it from hydroelectric plants and 7.6% through the subsidisation of energy sources (cf. page 27).

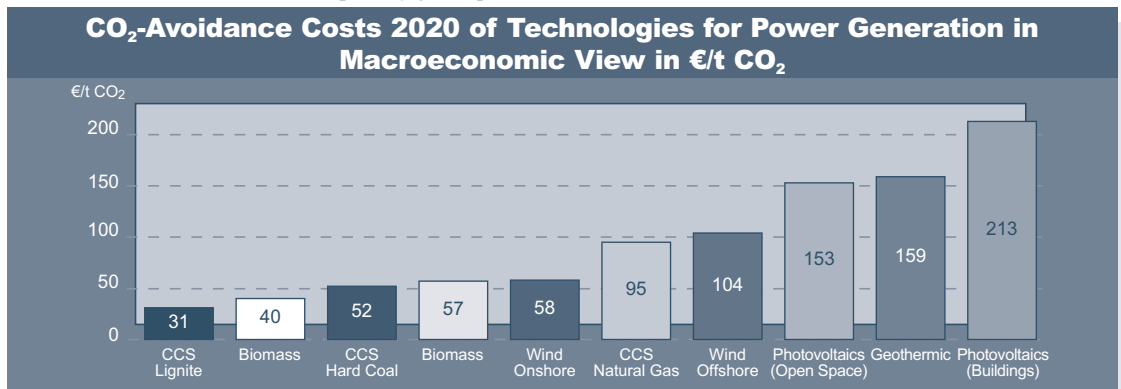
The target set by the EU of 12.5% share by 2010 was therefore already achieved in 2007. According to information from the BDEW, the German electricity customers paid €4.1 billion for support of ecological electricity in 2007. The support of renewable energy sources is moving further and further away from a startup financing for new technologies and in the direction of permanent subsidisation by consumers which is increasing in volume. The subsidy volume for solar energy at over 50 eurocents/KWh for generation of 2 TWh per year and costs for the prevention of CO<sub>2</sub> of €900 per tonne is especially grotesque.

It has become almost impossible for the expansion of the networks to keep up with the rising supply of wind energy. The lack of a unified overall concept for electric power generation in Germany once again becomes apparent here. The capacity of wind energy was further increased by 1,667 MW to 22,247 MW in 2007. The first supply from off-shore facilities is expected from 2011 on.

Since wind energy is not generated on the basis of demand, increasingly large quantities must be redirected to other countries (Netherlands/Poland) at the lowest prices. Assuming a feed-in payment of about 9.0 eurocents/KWh and a wholesale price of 4.0 to 4.5 eurocents/kWh, the subsidy comes to 4.5 to 5.0 eurocents/kWh, corresponding to €135-€150/t TCE. In other words, subsidies paid for wind energy are currently more than twice as high as those for German domestic coal. When wind power is redirected into the network in Germany and abroad during low-demand phases, wind energy realises revenues of only 2.0-2.5 eurocents/KWh.

A more forceful reduction of the subsidies for wind energy should also be called for. A further increase in wind energy subsidies for “repowering” would be completely wrong in terms of regulatory policies.

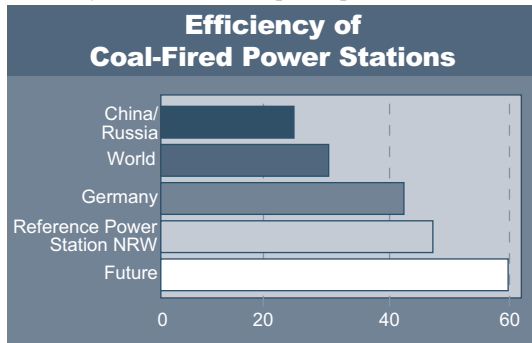
The specific costs for the avoidance of CO<sub>2</sub> are shown in the table below:



Source:McKinsey&Company, *Kosten und Potenziale der Vermeidung von Treibhausgasemissionen in Deutschland, Sektorperspektive Energie, Berlin in September 2007, pages 48 and 55*

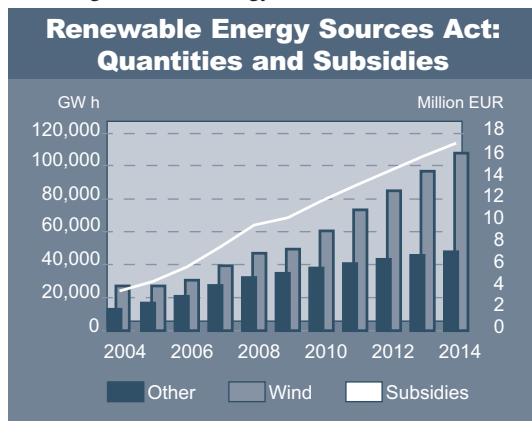
This means that the conversion to modern coal-fired power plants causes the lowest costs for preventing CO<sub>2</sub> emission and does so more efficiently, strengthening Germany as a business location in global competition. This is a measure with a great reduction effect which can also be realised in the short term.

The figure below shows the possible tendencies for the efficiency of hard coal-fired power plants:



Source: GVST

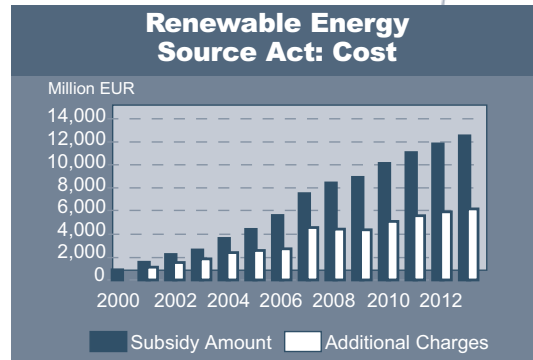
The VDN predicts the following EEG (Act for Renewable Energy Sources) expenses from power generation using renewable energy sources:



Source: BDEW (EEG-Mittelfristprognose 2000-2014)

The highly comfortable cushion provided by the EEG also eliminates any incentive for renewable energy sources to become more competitive. The federal government has announced a review of the compatibility of the subsidy instruments for 2007. In principle, the trade in CO<sub>2</sub> certificates makes all other instruments such as subsidisation of power-heat coupling and EEG superfluous because the trade system is intended to lead to a capping of CO<sub>2</sub> emissions and an economic optimisation of the costs for preventing CO<sub>2</sub> emissions.

But as the revision of the EEG unfortunately shows, only slight corrections have been made. A subsidisation mentality has become deeply rooted in the EEG industry.



Source: VIK

## Outlook for Hard Coal Power Generation

The construction of modern hard coal-fired power plants is becoming increasingly difficult as a consequence of regional resistance, delaying a possible reduction of CO<sub>2</sub> emissions. At the same time, this prevents the development and implementation of modern German power plant technology. The worldwide expansion of coal-fired power generation from today's 40% to a share of 45% of total power generation in 2030 urgently requires modern coal-fired power plants which have been proven to be highly efficient in operation so that the CO<sub>2</sub> emissions can be reduced by a technological approach. Modern coal technology is the key to CO<sub>2</sub> reductions worldwide.

The increased competition which the federal government would like to see is simultaneously being undermined by its actions. The new construction of hard coal-fired power plants by municipalities and foreign companies is being systematically prevented, although they could represent production alternatives to the four large utility companies in Germany.

The list of projects has been sharply reduced at this time.

### Planned Hard Coal-fired Power Plant Projects

Operator	Location	Capacity (MW)
1.) Coal-fired power plants now under construction or approved		
EnBW	Karlsruhe	910
E.ON	Datteln	1,050
Evonik Steag/EVN	Duisburg-Walsum	750
RWE Power	Hamm	1,500
Trianel	Lünen	750
Vattenfall	Hamburg-Moorburg	1,640
2.) Coal-fired power plants in approval process		
Dong Energy	Lubmin	1,600
Electrabel	Brunsbüttel/Stade	2 x 850
Electrabel	Wilhelmshaven	800
E.ON/Stadtwerke Hannover	Hanau	1,100
Kraftwerke Mainz/Wiesbaden	Mainz	750
Stadtwerke Düsseldorf	Düsseldorf	400
SüdWestStrom/Iberdrola	Brunsbüttel	2 x 800
Trianel	Krefeld/Uerdingen	750
3.) Coal-fired power plants in approval process, but momentarily suspended		
E.ON/Stadtwerke Kiel	Kiel	800
Evonik Steag	Herne	750
Vattenfall	Berlin	500-800
4.) Coal-fired power plants in planning		
BKW/MB Energie AG	Dörpen	900
E.ON	Wilhelmshaven	500
GETEC	Brunsbüttel	800
GKM	Mannheim	910

Source: BDEW/Evaluation of professional literature

In view of the planned discontinuation of the use of nuclear power, a supplementing of the energy mixture with coal-fired power plants able to carry a basic load is essential, especially in the event of a rise in the utilisation of renewable energy sources. In its study of March 2008, the Dena expressly refers to a capacity gap which can already be discerned in the middle term as long as the decision to discontinue the use of nuclear energy remains firm.

#### CO<sub>2</sub> Emissions of Hard Coal

According to provisional data, the CO<sub>2</sub> emissions from hard coal rose in 2007:

## CO<sub>2</sub> Emissions in Germany Between 1990 and 2007 According to Energy Sources

	1990	1995	2000	2005	2006	2007
Original values of CO <sub>2</sub> emissions in	Mill. t	Mill. t	Mill. t	Mill. t	Mill. t	Mill. t
Hard coal	159.6	159.8	147.3	146.5	151.6	156.9
Lignite	343.8	193.2	172.6	182.5	179.0	183.4
Petroleum	310.7	332.0	308.7	279.9	277.8	252.1
Gases	114.7	145.1	158.0	172.1	173.0	164.3
Miscellaneous	19.4	10.5	13.7	17.9	18.0	17.6
Total emissions from energy generation	948.2	840.6	800.2	798.9	799.4	774.3
Total emissions from processes	84.2	80.8	83.0	77.9	80.9	82.3
<b>CO<sub>2</sub> emissions total</b>	<b>1,032.3</b>	<b>921.3</b>	<b>883.2</b>	<b>876.8</b>	<b>880.3</b>	<b>856.6</b>
Changes in original values of total CO <sub>2</sub> emissions in comparison with 1990						
Mill. t CO <sub>2</sub>		-111.0	-149.1	-155.5	-152.0	-175.7
%		-10.8	-14.4	-15.1	-14.7	-17.0

The increase is a consequence of higher coal consumption, above all in the steel and other industries. Of the CO<sub>2</sub> emissions of about 157 million t in 2007, about 30% or 48 million t were caused by processes, 70% or 111 million t by the generation of energy.

If the new construction programme for hard coal-fired power plants described above is carried out, the CO<sub>2</sub> emissions could be significantly reduced by increases in efficiency by 2020.

### CO<sub>2</sub> Emissions Reductions from Hard Coal-fired Power Plants (Model Calculation)

	CO <sub>2</sub> -emissions Reduction	
	Mill. t	Mill. t
As per 2007 (provisional figures)	111	
By 2020 (-20%), effect of programme of new construction	-89	-22
By 2030 (-20%), CCS technologies/increase in efficiency	-69	-20
By 2040 (-20%), CCS technologies/increase in efficiency	-49	-20

From 2020 on, the CCS technology in conjunction with other increases in efficiency should successively result in further reductions. According to the model calculations, CO<sub>2</sub> emissions from electric power generation using coal could be more than halved by 2040.

If, however, the decision to discontinue the use of nuclear power is not revised, additional coal-fired and gas-fired power plants will be required. In this case, the Federal Economics Minister is perfectly correct in demanding additional CO<sub>2</sub> certificates for power generation from the EU.

## PROSPECTS FOR THE WORLD COAL MARKET

### World trade

The world economy and world trade are still in a growth phase. Global economic growth will presumably weaken from 3.7% to 3.3%. But this is still a robust rate of growth. However, there are differences in the developments in the various regions of the world.



Economic growth in the USA, triggered by the subprime crisis, is still weakening and will probably end in a recession in 2008. Europe and Japan are recording slower growth rates.

The Pacific region, on the other hand, is still achieving high growth rates in 2008 and remains the engine driving the global economy. In addition, all of the countries which profit from high prices for energy and natural resources are stabilising the situation.

World trade will probably weaken from 6.6% in 2007 to 5.5%-6.0%.

But overall the global economy will stay on a path of growth for the 6th year in succession.

### Bulk Commodities

Natural Resources	2006 Mill. t	2007 Mill. t	2008 Mill. t	Growth %
Iron ore	724	788	839	+6%
Coal (seaborne)	777	820	860	+5%
Steam coal	594	618	640	+4%
Coking coal	183	202	220	+9%
<b>All bulk commodities</b>	<b>2,840</b>	<b>3,006</b>	<b>3,135</b>	<b>+4%</b>

The growth of the bulk commodities world market as a whole is estimated to be 130 million t a year or 4% pa, 90 million t per year of this for iron ore and coal alone.

A major expansion of the bulk carrier fleet continues:

### Capacities of the Bulk Carrier Fleet-Projection

	2007 m dwt	2008 m dwt	2009 m dwt	2010-2011 m dwt
Capesize	131	140	167	251
Panamax	109	116	127	159
Handymax	77	85	99	121
Handysize	76	79	86	96
<b>Total</b>	<b>393</b>	<b>420</b>	<b>479</b>	<b>627</b>

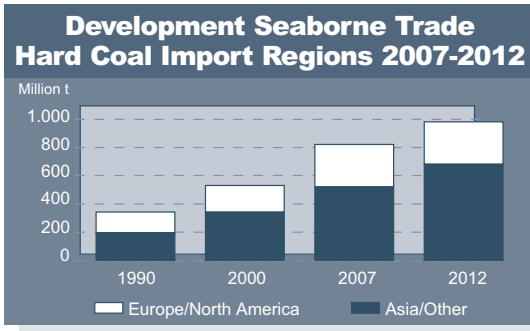
Source: Clarkson

A remarkable feature of this projection is the large increase of the capesize fleet in 2009. The expansion of the fleet is proceeding at a faster rate of growth than the bulk commodities world market. A large number of single-walled tankers are currently being converted to bulk commodity transporters and could bring some relief in this situation. Nevertheless, there has not been any easing of the pressures on the freight market. There is still a hope that the freight level will normalise if the additional volume in capesize ships can be realised in 2009.

### Coal World Market Overall

Seaborne coal world trade will rise sharply in the coming years as well. The enormous demand for electric power alone in China and India requires increasing imports from the world market in addition to the utilisation of the countries' own resources. But the build-up and expansion of the infrastructure in threshold and developing countries as well as the reinvestment of oil revenues by the OPEC countries should secure a stable business for the steel industry.

The IEA (Paris) and the EIA (Washington) expect long-term growth of the world coal market of 1.5%-2.0% p.a. The more recent past (2000-2007) shows average rates of about 3.5%-4.0% in seaborne trade, but this could weaken slightly in the next few years.



Source: Examination of several sources

But this will probably mean that the 1 billion t mark will be reached in 2012. Of the average growth of 30-32 million t per year, 20-22 million t will presumably come from the steam coal market and 8-10 million t from the coking coal market.

## Steam Coal Market

### Demand

The demand for electric power is unabated on the Asian market and is recording high growth rates in many countries.

Large parts of the Asian, African and South American populations still have no access to electricity.

import volume must be retained for the long term as well, but it must not increase by any substantial amount because of the burdens which would be incurred for the costs of the CO<sub>2</sub> certificates.

The IEA projects an increase in power consumption worldwide from 15,000 TWh in 2005 to about 30,000 TWh in 2030 (an average of 2.8% per year).

Growth rates of 5.1% and 6.1% are projected from the developing countries China and India, respectively.

The share of power generated using coal will rise from 7,300 TWh to 15,800 TWh.

The share of power generated using coal in the worldwide power production will rise from 40% in 2005 to 45% in 2030.

### Supply

The Pacific suppliers – above all Indonesia – are continuing to increase their supplies. The programme for the expansion of ports and railways in Australia will presumably bear fruit in 2008/2009. China is continuing to reduce its export supplies because of high domestic demand, but remains an

## Population with/without Access to Electric Power

	China		India		World	
	Million	Percent	Million	Percent	Million	Percent
Bevölkerung mit Zugang zu Strom	1,302	99.4%	607.6	55.5%	4,875	75.6%
Bevölkerung ohne Zugang zu Strom	8.5	0.6%	487.2	44.5%	1,577	24.4%
<b>Total</b>	<b>1,310.5</b>	<b>100%</b>	<b>1,094.8</b>	<b>100%</b>	<b>6,452</b>	<b>100%</b>

In Europe, imported coal is replacing the decline in domestic output, but it is also viewed increasingly as a low-price alternative to natural gas.

Since it must be assumed that domestic production in Germany, Poland and Spain will continue to decline, the

important exporter. It is difficult to assess Vietnam's potential. However, exports have been increased rapidly. The Vietnamese government is concerned about the high export volume and is considering the possibility of curbing it.

Russia is also increasing its Pacific exports and expanding loading capacities in the Far East.

In the Atlantic region, Colombia and Russia in particular are increasing their exports; South Africa is currently stagnating, but will supposedly again raise exports in the coming years. The seaborne exports by Poland continue to decline rapidly. Indonesia will presumably give up market share on the Atlantic market in favour of Asian customers. The smaller steam coal producers – Venezuela, USA and Spitzbergen – round off the available pool.

The USA exported substantially more steam coal in 2007. Stimulated by the high market prices, the export volume from the USA, above all to Europe, should continue to rise in 2008. Obviously the high price level at the moment has given US producers the necessary price signal to begin exporting more once again.

## Coking Coal Market

### Demand

Further growth in crude steel production is expected once again for 2008. As in previous years, China is the driving force, but production is also rising in India, South America and Eastern Europe.

The steel economy displays all the signs of an overheating phase. Iron ore suppliers have been able to push through price increases of 65%-85%. It appears that even greater price increases are imminent for coking coal and PCI coal. Steel producers are evidently able to pass the price increases on to their customers due to the high demand for steel.

### Growth in Crude Steel Production

	2006		2007		2008	
	Mill. t	%	Mill. t	%	Mill. t	%
China	425	+19	490	+15	540	+10
World except China	792	+3	806	+2	876	+8
<b>Total</b>	<b>1,217</b>	<b>+8</b>	<b>1,296</b>	<b>+6.5</b>	<b>1,416</b>	<b>+9</b>

So far, China has been able to cover its additional demand for coking coal largely from its own production so that the Chinese demand, in contrast to iron ore, has not become relevant for the world market. But this could change in the future.

### Supply

Australia, the USA and Canada continue to be the major suppliers to the global market. They will presumably continue to increase production and exports in 2008 and the following years. Russia, Colombia, Poland, New Zealand supply smaller volumes of coking coal, while Indonesia, Venezuela, Vietnam and South Africa export PCI coal.

New coking coal projects are under review in Indonesia, Mongolia and Colombia.

Mozambique may be able to start exporting from the Moatize Mine, designed for 12 million t per year, in 2010. Riverdale is also planning a project in Mozambique of 15-20 million t per year, 50% of it coking coal.

The high prices expected for 2008/2009 will encourage a large number of projects. Partial quantities of steam coal will also presumably be directed to the coking coal market (semi-soft coking coal).

### Infrastructure of the Hard Coal World Trade

Owing to the rapid growth in recent years of bulk commodities as a whole as well as of coal in particular, bottlenecks have occurred in the infrastructure. There have been major bottlenecks in both loading and discharging ports, domestic railway lines and sea transport. However, the chance to exploit market opportunities due to a rising demand in coal triggered a worldwide expansion – even though it was late – of the infrastructure across all of the links of the transport chain 2 years ago. Expansion projects along the entire coal chain have been launched by almost all of the major countries involved in world coal trade.

Yet the problems differ from one country to another. In Australia, for example, the primary problems are the bottlenecks in port and railway capacities, while South Africa has been unable to increase output.

### Market Concentration

The tendency toward market concentration continues in all of the producing countries. The Chinese, for example, are striving to create large hard coal companies with over 100 million t output for the long term. 5-6 companies are also handling the lion's share of production and export in Indonesia.

However, the improvement in world market prices is also luring new companies into the coal export business, thereby expanding the pool of suppliers.

In the case of coking coal – above all, hard coking coal – Australia has created a strongly dominant position with a market share of almost 68%, which in turn is in the hands of just a few producers. However, another player – Vale

(CVRD) – has stepped onto the coking coal scene. Vale (CVRD) is developing into another market participant through projects in Mozambique as well as the entry into Australian coal mining.

BHP's plans to take over its competitor Rio Tinto are worrying. Nor are Vale (CVRD)'s efforts to incorporate Xstrata a way to promote competition.

The competition in the area of steam coal continues to be broader, and in recent years Russia and Indonesia have strengthened their positions on markets alongside the traditional suppliers Australia, South Africa and Colombia. The USA has also returned to the ranks of the worldwide suppliers.

As a consequence of high oil and gas prices, known deposits in many countries are being reassessed and the possibility of mining the reserves is being examined (e.g., in Eastern Canada, Chile, Zimbabwe and Madagascar). This could lead to some increase in supplies in the long term.

### Coal Gasification and Liquefaction

Due to high oil and gas prices, coal liquefaction projects (CTL=coal to liquids) are being considered in Australia, China and the USA on the basis of low-cost coal deposits. This could lead to the development of a new sales market for coal with low extraction costs in 5-10 years.

The first international conference on this topic was held in Paris in 2008. Projects in China are evidently advanced. South Africa is currently the only country where coal is liquefied in large amounts. About 45 million t of coal are processed.

## Country Reports 2007

### POLAND

#### Production

The negative trend in Polish production continued at a surprisingly fast rate in 2007. Total output declined from 94.4 million t in 2006 to 87.4 million t in 2007, a drop of 7.0 million t.

The number of mines once again decreased, this time from 33 to 31 pits. All of the mining groups reduced their production levels. It is becoming increasingly evident that too little has been invested in the mines for the new development of reserves in recent decades. Another factor negatively affecting the economic efficiency of mining is the conclusion of pay scale agreements far in excess of the progress in productivity. Output is expected to fall even further in 2008.

Virtually no progress is being made in the privatisation of the Polish mining industry. The trade unions oppose privatisation. Nor are there any serious potential buyers for the steam coal mines. The coking coal mines, while more interesting, are in need of massive investments. Nevertheless, the first

steps toward progress have been taken. For example, the Bogdanka Mine is supposed to have an IPO on the Warsaw stock exchange. Kompania Weglowa has accepted a purchase offer of 205 million Polish zloty (US\$93 million) from the Gibson Group for the Silesia Mine. Supplies of Polish hard coal to Polish power plants are significant. About 57% of Polish electric power is generated from hard coal and another part from lignite.

#### The Major Hard Coal Producers in Poland

Company	Number of Mines		Output		Exports	
	2006	2007	2006	2007	2006	2007
			Mill. t		Mill. t	
Kompania Weglowa SA	17	16	50.4	46.8	10.7	8.5
Katowicka Group Kapitalowa	7	6	17.0	15.4	1.4	1.3
Jastrzebska Spolka Weglowa SA	5	5	13.3	11.8	2.9	1.6
Independent mines	4	4	13.7	13.4	0.8	0.7
<b>Total</b>	<b>33</b>	<b>31</b>	<b>94.4</b>	<b>87.4</b>	<b>15.8</b>	<b>12.1</b>

The high prices for oil and gas have stabilised the competitive position of Polish coal on the domestic heating market.

Nevertheless, in the middle term a further decline in output to 77-78 million t in 2010 is expected. This mark does not appear unrealistic after the large drop in 2007. There is currently no indication of how exhausted deposits can be replaced by new developments because the funds for investments are lacking. There will be no choice but to wait and see if the significant increase in world market prices can also raise the economic attraction and the investment capability of the mines. A cross-border mining project for coking coal between Poland and the Czech Republic is currently being reviewed. Poland has also been given the opportunity by the EU to pay subsidies related to closures to the mining companies.

### Infrastructure

There were no changes in the transport infrastructure, which is now rather too large for the declining export volume, in 2007. The export logistics in Poland are well developed. Loading ports include Gdansk, Swinoujscie, Szczecin and Gdynia. While Gdansk is able to load cape-size freighters, Swinoujscie and Gdynia are accessible only for panamax ships, and only handysize vessels can access Szczecin. Rail transport has also become increasingly important for coking coal and ballast coal exports, above all for Germany. Both Polish and German freight companies are active in this sector. Domestic shipping (Oder) is of no major importance for export (potential about 1.5 million t).

### Export

Exports declined from 15.8 million t in 2006 to 12.1 million t in 2007, a drop of 3.7 million t. Weglokoks exported about 10.2 million t or 84% of the total exports of 12.1 million t. The remaining volumes were marketed directly by the mining companies themselves.

Exports in 2007 break down as shown below:

<b>Export 2007</b>			
	<b>Coking coal</b>	<b>Steam coal</b>	<b>Total</b>
	Mill. t	Mill. t	Mill. t
Seaborne	0.2	4.4	4.6
Overland	3.4	4.1	7.5
<b>Total</b>	<b>3.6</b>	<b>8.5</b>	<b>12.1</b>

In comparison with 2006, seaborne exports declined sharply by 5 million t.

The largest buyers of steam coal were Germany, Austria and the Czech Republic. The largest customers for coking coal were the Czech Republic and Slovakia.

Coke exports came to about 6.3 million t.

Poland imported 5.7 million t of coal, above all from Russia, but smaller quantities from the Czech Republic, in 2007.

### **Key Figures Poland**

	<b>2005</b>	<b>2006</b>	<b>2007</b>
	Mill. t	Mill. t	Mill. t
Hard coal output	97	94	87
Hard coal exports	19	16	12.1
• Steam coal	16	13	8.5
• Coking coal	3	3	3.6
Coke exports	4.5	6.1	6.3
Hard coal imports	3	4	6
Imports Germany	8.3	9	6.4
• Steam coal	6.9	7.2	4.6
• Coking coal	0.2	0.2	-
• Coke	1.2	1.6	1.8
Export rate in % (Coke converted into coal terms)	25	26	20

### **CZECH REPUBLIC**

#### Production

Coal year 2007 was once again a stable one for the Czech Republic. Hard coal output declined slightly and reached 13.2 million t.

Coke production of the Czech mining companies amounted to 3.3 million t, utilising 3.3 million t of Czech coking coal and about 1 million t of coking coal imports from Poland.

Lignite production came to about 48.9 million t.

The Czech hard coal production was realised by one company following the takeover of CMD by OKD in 2006. OKD has been the owner of New World Resources since 2004. The company wants to increase the productivity of the mines. Substantial investments of €300 million in the Czech hard coal mining industry are planned for this purpose. If these plans are not realised, there is a threat of a rapid drop in production in the next few years as developed reserves

are exhausted. A major part of Czech production is coking coal, a product which commands significantly higher prices than steam coal.

### Hard Coal Producers in the Czech Republic

Company	2005 Mill. t	2006 Mill. t	2007 Mill. t
OKD, Ostravasko-Karvinske-Doly	10.8	13.4	13.2
CMD, Ceskomoravske Doly	2.4	-	-
<b>Total</b>	<b>13.2</b>	<b>13.4</b>	<b>13.2</b>

#### Infrastructure

Czech coal and coke exports were transported overland and on the Danube (Bratislava).

#### Export/Import

The export of hard coal increased and rose to 7.0 million t. Coke export came to 0.8 million t. Austria was the overall largest buyer, taking some 2 million t, followed by Germany at about 0.6 million t. Imports of coal rose from 1.2 million t to 1.8 million t. Coke imports from Poland also rose slightly.

### Key Figures Czech Republic

	2005 Mill. t	2006 Mill. t	2007 Mill. t
Hard coal output	13	13	13
Hard coal exports	4	5	7
Coke exports	1	1	0.8
Imports Germany	0.9	0.9	0.6
• Steam coal	0.5	0.5	0.3
• Coke	0.4	0.4	0.3
Export rate in % (Coke converted into coal terms)	41	49	60

## RUSSIA/UKRAINE/KAZAKHSTAN

The countries of the former Soviet Union with major coal production are shown below:

### Coal Production

	2005 Mill. t	2006 Mill. t	2007 Mill. t
Russia	300	310	314
Ukraine	78	80	75
Kazakhstan	86	94	96
<b>Total</b>	<b>464</b>	<b>484</b>	<b>485</b>

Coal is being reassessed in all of these countries due to the high prices for oil and gas. The use of coal for domestic electric power generation in particular is to be expanded.

Only Russia is of any significance for the world market. Ukraine exported about 2-3 million t of steam coal and anthracite from its own production and about 2-3 million t of coke through the Black Sea ports. Kazakhstan exported as traditional about 24-25 million t of steam coal to Russia and smaller quantities of coking coal to Ukraine.

## RUSSIA

#### Production

Russia was able to further increase production and reached a figure of about 314 million t. Opencast pit output rose by 4 million t to 204 million t, while production from underground operations increased from 109 million t to 110 million t. The production comprises the following segments:

### Production Russia

	2005 Mill. t	2006 Mill. t	2007 <sup>1)</sup> Mill. t
Coking coal	70	70	70
Steam coal	230	239	244
• High volatile coal	96	103	122
• Low volatile coal	50	52	51
• Anthracite	9	9	7
• Lignite	75	75	64
<b>Total</b>	<b>300</b>	<b>309</b>	<b>314</b>

<sup>1)</sup>Partly estimated

The focus of Russian hard coal output is found in the Kemerovo region, reaching 182 million t in 2007, about 100 million t from opencast pits and about 82 million t from underground operations. At the beginning of 2007, Gazprom wanted to acquire an interest in SUEK, the largest producer. The background for their interest is above all cooperation in electric power generation. But the transaction has not yet been concluded.

Russia is planning to replace gas-fired power plants with coal-fired plants so that more natural gas will be available for export. In the long term, the share of coal in power generation is supposed to increase from 23% to 30%.

#### Infrastructure

Owing to the high transit fees and handling rates of the Baltic ports, Russia is increasingly directing its exports through Murmansk. Greater use is also being made of the Baltic Sea port Ust-Luga. Nevertheless, it was necessary to continue utilisation of the Tallinn port (Muuga) to satisfy the growing demand. Shortages in rail cars occurred. It must be noted that the Russian seaborne coal exports in recent years have increased significantly. However, efforts are being made to eliminate the bottlenecks.

A further expansion of the port Ust-Luga is projected. There are also expansion plans for Murmansk. In the Far East, Vanino is supposed to be expanded so that it can handle capesize ships and capacities of up to 13 million t per year in 2012. The first loadings are planned for 2008.

Krutrade is investing in its own railway cars so that it can be more independent of the national railway system. In total, Russia's export capacities are supposed to be expanded to as much as 135 million t by 2020.

### Russian Ports

	2005 Mill. t	2006 Mill. t	2007 Mill. t
<b>Baltic Sea Ports and North Russia</b>			
Murmansk	10.8	10.5	11.7
Vysotsk	3.5	4.0	4.3
Rīga	10.7	10.7	10.4
Ventspils	4.6	3.9	4.2
Tallin (Muuga)	4.1	7.5	3.7
St. Petersburg	3.4	2.5	2.3
Ust-Luga	0.5	3.5	6.4
Miscellaneous	0.5	0.4	0.6
<b>Total</b>	<b>38.1</b>	<b>43.0</b>	<b>43.6</b>
<b>South Russia and Ukraine</b>			
Mariupol	2.0	2.2	2.2
Tuapse	3.1	3.2	2.9
Yuzhny	5.1	4.8	3.7
Miscellaneous	3.9	5.6	7.5
<b>Total</b>	<b>14.1</b>	<b>15.8</b>	<b>16.3</b>
<b>Russia Far East</b>			
Vostochny	14.1	15.4	15.3
Vanino	0.3	0.5	0.6
Miscellaneous	0.2	2.4	3.4
<b>Total</b>	<b>14.6</b>	<b>18.3</b>	<b>19.3</b>
<b>Total</b>	<b>66.8</b>	<b>77.1</b>	<b>79.2</b>

The export figures of the ports do not agree with the data from customs authorities regarding the exports.





## Export

Coal exports continued to rise in 2007 to 92.8 million t, 9.6 million t of which went over the green border into CIS countries. Exports to other countries amounted to 83.2 million t, 77.8 million t as seaborne exports and 5.4 million t as over-land exports. Total exports of 92.8 million t break down into about 13 million t coking coal and 79.8 million t steam coal and anthracite. The seaborne exports of 77.8 million t break down into about 6 million t of coking coal and PCI coal and about 71.8 million t of steam coal. 19.3 million t of coal were shipped to the Far East, 3.4 million t of it coking coal; 58.5 million t went to the European region, 2.4 million t of this figure coking coal and PCI coal.

In Europe, Great Britain reduced its imports of Russian coal, but remains the most important buyer. Germany reduced its purchases of Russian coal slightly.

### Key Figures Russia

	2005 Mill. t	2006 Mill. t	2007 Mill. t
Coal output	300	310	314
Hard coal exports <sup>1)</sup>	67	75	78
• Steam coal	60	69	72
• Coking coal	7	6	6
Imports Germany	6.7	9.3	8.6
• Steam coal	6.1	8.2	7.7
• Coking coal	0.5	0.9	0.7
• Coke	0.1	0.2	0.2
Export rate in %	23	25	25

<sup>1)</sup> seaborne only

## UKRAINE

Coal output of Ukraine in 2007 declined by 5.6 million t to 75.4 million t due to technical/geological problems, falling well short of the increase to 82 million t targeted for 2007. The government's long-term plans provide for an increase to 91 million t in 2010, 110 million t in 2015 and as much as 130 million t in 2030. Massive investments are necessary for the restructuring of existing mines and the development of new reserves if these targets are to be reached.

### Hard Coal Production Ukraine

	2005 Mill. t	2006 Mill. t	2007 Mill. t
Steam coal	45.2	50.1	47.0
Coking coal	32.7	30.2	28.4
<b>Total</b>	<b>77.9</b>	<b>80.3</b>	<b>75.4</b>
Coke	18.8	18.9	19.0 <sup>1)</sup>

<sup>1)</sup> Estimated

The poor development of output and the tendency to a decline in coking coal output forced Ukraine to increase its imports of coking coal so that it could improve steel production.

In 2007, Ukraine imported about 7 million t from Russia and another 2 million t from Kazakhstan. As the available coking coal qualities are poor, only a correspondingly inferior quality of coke can be produced.

This is why the conclusion of contracts for imports of Canadian and American coking coal has been reported for the first time for 2008.

## KAZAKHSTAN

Coal production increased slightly in 2007, amounting to about 96 million t. Production is supposed to be increased further to 120-130 million t by 2015, above all to cover the demand from the electric power industry.

## USA

### Production

Production in the USA fell slightly in 2007 (-2.1%) and is now at the level of about 1,043 billion t.

Output from the Appalachian coalfields continued to decline. The coalfield Interior also declined a bit. Only Western increased slightly. The demand for hard coal in the electric power industry was slightly lower. But more than 50% of the generation of electric power in the USA continues to be based on coal, and the long-term tendency is rising.

### Output Breakdown USA

	2005 Mill. t	2006 Mill. t	2007 Mill. t
Appalachian <sup>1)</sup>	347	370	344
Interior	129	142	138
Western	525	554	561
<b>Total</b>	<b>1,001</b>	<b>1,066</b>	<b>1,043</b>
East of Mississippi	430	462	435
West of Mississippi	571	604	608
<b>Total</b>	<b>1,001</b>	<b>1,066</b>	<b>1,043</b>

<sup>1)</sup>Incl. coal from stockpile processing, incl. lignite

Source: EIA

As a consequence of high oil prices, extensive examinations by both government and private parties of coal to liquid (CTL) projects are underway in the USA.

### Infrastructure

The infrastructure of the railways and ports is well developed. Since the private railway companies with their networks hold a monopolistic position in some of the output areas, the freight rates have risen substantially in recent years. About 52 million t were handled by the American ports in 2007. As much as 82 million t is expected for 2008.

### Utilisation of Port Capacity USA 2007/2008

Port	Terminal	2007	2008
		(Actual) Mill. t	(Projection) Mill. t
Hampton Roads	Lamberts Point	11.7	16.2
	DTA	6.57	11.7 (14.4)
	KM Pier IX	3.6 (6.3)	9.0
Baltimore	Chesapeake	2.88	3.15
	CNX Marine (Consol)	6.39	9.99
Mobile		8.64	10.8
Lower River	IMT (2/3 KM)	3.15	5.85
	United (Electrocoal)	5.4	9.0
	IC Marine Terminal	1.08	3.15
<b>Total</b>		<b>52.1</b>	<b>81.5</b>

Source: McCloskey

If the world market prices continue at the same high level, US exports in 2008 could increase further to 15-20 million t. In any case, the necessary port capacity is available. According to US figures, technical export capacity comes to 120-125 million t.

### Export/Import

Exports in 2007 rose by 7 million t to 53 million t. Seaborne shipments increased by 10 million t in comparison with 2006. Both coking coal and steam coal rose by about 5 million t each in seaborne export:

### Export USA 2007

	Coking coal Mill. t	Steam coal Mill. t	Total Mill. t
Seaborne	25.9	10.6	36.5
Overland (Canada)	3.4	13.3	16.7
<b>Total</b>	<b>29.3</b>	<b>23.9</b>	<b>53.2</b>

There is reason to believe that part of the quantities declared as steam coal were actually used as coking coal. This could be an estimated volume of 2-3 million t. Evidently the world market price in 2007 reached a level which made the export of steam coal attractive to US producers. The weaker domestic demand also encouraged exports.

The import-export balance for seaborne transports of coal increased once again in 2007, due to rising import figures.

### Import-Export Difference USA (Seaborne)

	2000 Mill. t	2002 Mill. t	2004 Mill. t	2007 Mill. t
Export (seaborne)	33	21	26	37
Import (seaborne)	11	15	25	31
<b>Difference</b>	<b>22</b>	<b>6</b>	<b>1</b>	<b>6</b>

The seaborne exports of coking coal went primarily to Europe and South America. Only 0.8 million t were supplied to the East Asian markets (India/South Korea). The imports of steam coal, including Canadian volumes, increased again and amounted to 33 million t. The largest suppliers were Colombia and Venezuela. But shipments from Indonesia also made their way to the US market.

### Key Figures USA

	2005 Mill. t	2006 Mill. t	2007 Mill. t
Hard coal output <sup>1)</sup>	1,001	1,066	1,043
Hard coal exports	45	46	53
• Steam coal	19	20	24
• Coking coal	26	26	29
Hard Coal Imports (incl. Canada)	27	30	33
Imports Germany	1.5	2.2	2.9
• Steam coal	0.2	0.3	1.1
• Coking coal	1.3	1.9	1.8
Export rate in %	4	4	5

<sup>1)</sup>Excluding lignite

## CANADA

### Production<sup>1)</sup>

Output in Canada in 2007 was more than 73 million t, thereof 33 million t of coking coal and PCI coal, most of which was exported.

The production of steam coal reached a volume of 40 million t. It breaks down into 4 million t of hard coal, 24 million t of hard brown coal (sub-bituminous) and 12 million t of lignite.

The year 2007 was a difficult one for the Canadian mining industry. The mines found themselves caught between falling export earnings on the one hand and worsening use of capacities with the concomitant rising specific costs and general cost rises on the other.

The weak US dollar contributed to the worsening of the earning position as well. The US dollar has currently reached parity with the Canadian dollar.

In view of rising world market prices and short supplies of coking coals, the expansion of coking coal and PCI mines is being continued. There are plans to develop additional reserves, above all of PCI coal, in Western Canada. Even large mining corporations (e.g., Amcoal) are interested in PCI projects.

<sup>1)</sup>Estimated

In Eastern Canada, “Xstrata”, in cooperation with “Erdene Gold”, is pursuing a project to reopen the mine Donkin in Cape Breton (Nova Scotia). The mine is said to have 200 million t of steam and coking coal reserves under the surface of the ocean. A drilling programme was started in December 2007.

#### Infrastructure

Export coal is delivered to the Westshore Terminal near Vancouver by CP Rail, while CN transports the coal to the Neptune Terminal. The more northerly Ridley Terminal was able to handle significant coal tonnage (4.4 million t) for the first time in a longer period in 2007. A further increase of 2 million t is expected in 2008. These quantities come from newly opened mines in Northeast British Columbia.

Handling capacities are shown below:

<b>Handling Capacities</b>	
<b>Terminal</b>	<b>Capacity</b> Mill. t/a
Neptune Bulk Terminal	8
Westshore Terminal	26
Ridley Terminal	16
<b>Total</b>	<b>50</b>

So the port capacities are prepared for additional exports in the event of a rise in demand and production. Thunder Bay Terminal, which has a capacity of 11-12 million t, is used for inland shipment of Canadian coal to the USA over the Great Lakes. The Thunder Bay Terminal is also used for handling US coal from the Powder River Basin.

#### Export

Exports in 2007 rose by 3.0 million t to 30.6 million t. Seaborne exports amounted to 28.9 million t, 25.1 million t of them coking coal and 3.8 million t steam coal. 1.7 million t were loaded for overland transport to the USA. The largest buyers were Japan (10.6 million t) and South Korea (6.0 million t). 8.4 million t went to the

European region, including Mediterranean countries. The import development of India and China will be of decisive importance for the long-term increase in Canadian exports.

#### **Key Figures Canada**

	<b>2005</b> Mill. t	<b>2006</b> Mill. t	<b>2007</b> Mill. t
Hard coal output <sup>1)</sup>	31	34	37
Hard coal exports	28	28	31
• Steam coal	2	3	4
• Coking coal	26	25	27
Imports Germany	1.6	1.6	1.8
• Coking coal	1.6	1.6	1.8
Export rate in %	90	82	84

<sup>1)</sup>Excl. sub-bituminous, lignite

## COLOMBIA

#### Production

Colombia’s hard coal output rose by about 5 million t to about 69 million t in 2007. A larger increase was prevented by inclement weather conditions. Colombian output is supposed to reach about 76 million t by 2010, 69 million t of which is supposed to be exported. Drummond especially is planning a sharp increase in its production to as much as 50 million t in the middle term. Other estimates range from an output of 84-85 million t as early as 2008 to as much as 102 million t/a in 2010. The average rates of increase achieved in past years came to 4-5 million t a year. This could lead to production of 85-90 million t in 2010. Coal licences have been granted to newcomers as well as to established companies. Colombia also has some smaller coking coal deposits of its own which are attracting more and more interest.

## Exports According to Companies

Exporter	2005	2006	2007
	Mill. t	Mill. t	Mill. t
Cerrejon	25.5	27.5	29.8
Drummond	22.4	20.8	22.5
Coal Corporation	-	-	2.3
Carbones De la Jagua	5.4	8.2	8.1
Carbones del Caribe	0.2	0.3	0.7
Miscellaneous	1.0	1.4	2.1
<b>Total</b>	<b>54.5</b>	<b>58.2</b>	<b>65.5</b>

### Infrastructure

Colombia's infrastructure is to undergo a major expansion so that the planned coal exports can be realised. The Colombian government bought back the railway company Atlantic Rail so it could be passed on to an international syndicate (incl. Glencore and Drummond) which is supposed to expand and maintain the systems. For example, there are plans to increase the route La Loma/Santa Marta (200 km) from its current annual handling capacity of about 25 million t to an annual capacity of 45 million t. There are also plans to expand the ports Cartagena, Bolivar, Santa Marta and Barranquilla.

The government has promised to build feeder roads in the areas where rail access is difficult. The port plans have run into resistance in Cartagena and Barranquilla. However, the government is striving to offer alternative locations.

In general, the expansion is becoming more urgent because the export volumes are approaching the capacity limits of the ports.

## Port Capacities of Colombia

	2005	2006	2007
	Mill. t	Mill. t	Mill. t
Puerto Bolivar	28.0	28.0	32.0
Cienaga (Drummond)	24.0	24.0	28.0
Prodeco Puerto	5.0	6.0	6.0
Carbosam	4.0	4.0	4.0
Rio Cordoba	3.0	3.0	3.0
Barranquilla	1.5	1.5	1.5
Cartagena	2.0	2.0	0.7
<b>Total</b>	<b>67.5</b>	<b>68.5</b>	<b>75.2</b>

### Export

Colombian coal goes primarily to the Atlantic market. Of the total exports of steam coal of 64.9 million t, about 3.0 million t went to Chile and Peru, i.e., the Pacific region. But the greater share of exports went to the USA, which increased its imports from 20.2 million t in 2006 to 21.8 million t in 2007. But the European region also bought an additional 3.2 million t of coal. The largest importers were Germany (6.9 million t), UK (3.0 million t), France (2.7 million t), Portugal (2.6 million t) and Israel (3.5 million t). Besides the steam coal, 0.6 million t of coking coal and 1.2 million t of coke were exported. Coke is not included in the export figures.

## Steam Coal Exports – Structure of Colombia

	2005	2006	2007
	Mill. t	Mill. t	Mill. t
Amerika	23.8	26.3	29.6
thereof North America (USA+Canada)	19.8	22.1	23.3
thereof South and Central America	4.0	4.3	6.2
Europa	30.8	31.9	35.3
thereof Mediterranean region	10.4	13.0	11.2
thereof Northwest Europe	20.4	18.9	23.9
<b>Total</b>	<b>54.6</b>	<b>58.2</b>	<b>64.9</b>

Exports should continue to rise in 2008. The government is supporting the expansion of coal production. The high world market prices make coal exports from Colombia increasingly important for the national economy.

### Key Figures Colombia

	2005 Mill. t	2006 Mill. t	2007 Mill. t
Hard Coal Output	60.0	63.7	69.0
Hard coal exports	54.8	58.5	65.5
• Steam coal	54.5	58.2	64.9
• Coking coal	0.3	0.3	0.6
Imports Germany	4.8	3.7	6.9
Export rate in %	92	92	95

## VENEZUELA

### Production

Following President Chavez' announcement to restrict coal production to 10 million t, all of the expansion projects have become unrealistic.

It is consequently clear that no more than the output shown above is to be expected from Venezuela. Presumably only a new political constellation will lead to a reconsideration of these plans. A high-quality steam coal which can also be used as PCI coal is produced.

### Production/Exports by Company

	2005 Mill. t	2006 Mill. t	2007 Mill. t
Carbones Del Guasare	5.27	5.50	6.00
Interamerican Coal	0.52	1.00	0.65
Carbones De La Guajira	0.77	0.63	1.01
Miscellaneous	0.52	0.62	0.67
<b>Total</b>	<b>7.08</b>	<b>7.75</b>	<b>8.33</b>

### Infrastructure

Now that the maximum exports have been set at 10 million t, the existing infrastructure is adequate, although not ideal. The entire transport from the mines to the shipping ports is handled by lorries.

### Exports of Venezuelan Coal via Venezuelan Ports

Port	User	2005	2006	2007 <sup>1)</sup>
		Mill. t	Mill. t	Mill. t
Bulk Wayuu	Carbones Del Guasare	5.61	5.60	6.00
El Bajo	Carbones De La Guajira, Interamerican Coal	0.81	1.00	1.00
Guanta	Geoconsa	0.13	0.20	0.20
La Ceiba	Carbones Del Caribe, Interamerican, Millinton	0.78	0.80	0.80
Palmarejo	Xcoal, Caneveca, Millinton, Carbones Del Guasare	0.47	0.40	0.40
<b>Total</b>		<b>7.80</b>	<b>8.00</b>	<b>8.40</b>

<sup>1)</sup>Provisional

About 1-1.5 million t of Colombian coal were also shipped through the Venezuelan ports.

### Export

The largest buyer at 3.5 million t was the USA. Canada imported 0.7 million t, while South American countries bought 1.3 million t. About 2.8 million t went to Europe.

### Key Figures Venezuela

	2005 Mill. t	2006 Mill. t	2007 Mill. t
Hard Coal Output	8	8	8.3
Hard coal exports	8	8	8.3
• Steam coal	8	8	8.3
• Coking coal	-	-	-
Imports Germany	0.1	0.108	0.15
• Steam coal	0.1	0.108	0.15
Export rate in %	100	100	100

Output might decline once again in 2008. The government's influence on the business activities of the mines is increasing.

## REPUBLIC OF SOUTH AFRICA

### Production

Production declined slightly in 2007 by 1 million t to 243 million t. South Africa has been unable to increase its production in recent years. As of this time, the many new companies under the BEE regime (Black Economic Empowerment) have not made any contributions to an expansion of production. In some cases, BEE companies have done nothing more than to take over existing mines from large mining companies. However, there are now indications that concrete steps are being taken to initiate a number of expansion projects.

The weak dollar was another factor causing profit margins for coal producers to shrink in 2007.

One disturbing point is the poor management of the electric power supply of the country. Since prices for power are kept low by government measures, no new generating capacities have been built so that it is no longer possible to cover demand completely, resulting in black-outs.

The domestic market in South America consumed the following quantities in 2007:

### Consumption on the Domestic Markets

	2005 Mill. t	2006 Mill. t	2007 Mill. t
Power generation	106.0	108.6	111.2
Synthetic fuels (Sasol)	41.5	43.8	45.4
Industry / Domestic fuel	18.0	18.2	15.6
Metallurgical industry	6.5	5.1	5.5
<b>Total</b>	<b>172.0</b>	<b>175.7</b>	<b>177.7</b>

The domestic market displays a rising trend. Above all, the demand for coal for use in power generation and the production of synthetic fuels is rising.

New coal production sites are being developed in South Africa's neighbour countries. Projects have been launched in Botswana, Mozambique and Zimbabwe. The possibility of opening a mine is also being examined on Madagascar.

### Infrastructure

The South African infrastructure – especially the transport by rail – functioned a little better in 2007, but it is still not satisfactory. The expansion of the export terminal Richards Bay which has been approved will also require the railway company (Spoornet) to expand capacity from its current 72 million t to 91 million t/a in the middle term (by 2010). Eskom is planning to part with its 3 million t allocation related to the South Dunes Coal Terminal.

### Export Rights to Richards Bay Coal Terminal after Expansion

Richards Bay Coal Terminal (RBCT)	Mill. t/a	%
Ingwe	26.95	29.62
Anglo Coal	19.78	21.74
Xstrata	15.06	16.54
Total	4.09	4.49
Sasol	3.60	3.96
Kangra	1.65	1.82
Eyesizwe	0.87	0.96
<b>South Dunes Coal Terminal</b>	<b>6.00</b>	<b>6.59</b>
<b>Other exporters (incl. BEE)</b>	<b>9.00</b>	<b>9.89</b>
<b>Common Users (incl. BEE)</b>	<b>4.00</b>	<b>4.39</b>
<b>Total</b>	<b>91.00</b>	<b>100.00</b>

The planned capacity was last reduced slightly by 1 million t to 91 million t in 2006. The original owners hold 79% of the export allocations. As a consequence of inadequate production and poor rail deliveries, the existing capacity of 72 million t is utilised only to an extent of 92%.

The export of 68 million t passed through the ports Richards Bay (RBCT), Durban and Maputo. Coal exports through the two smaller ports were disappointing.

#### Exports Through South African Ports

	2005 Mill. t	2006 Mill. t	2007 Mill. t
RBCT	69.2	66.5	66.2
Durban	0.8	1.4	0.8
Maputo/Mozambique	1.1	1.1	0.7
<b>Total</b>	<b>71.1</b>	<b>69.0</b>	<b>67.7</b>

#### Export

South Africa was once again unable to exploit fully its export potential in 2007. Seaborne exports sank by 1 million t to about 68 million t.

#### Structure of the Overseas Exports in 2007

	Total Mill. t	Europe <sup>1)</sup> Mill. t	Asia Mill. t	Other Mill. t
Steam coal	66.1	51.1	12.3	2.7
Anthracite	1.1	0.5	-	0.6
Coking coal	0.7	0.6	0.1	-
<b>Total</b>	<b>67.9</b>	<b>52.2</b>	<b>12.4</b>	<b>3.3</b>

<sup>1)</sup>Incl. neighbouring Mediterranean countries

Europe remained the largest market with 52.2 million t; including the supplies to the Mediterranean area (7.2 million t), this market was responsible for about 76% of the South African export turnover. The largest European consumers were Great Britain (4.6 million t), Spain (6.7 million t) and Germany (6.5 million t).

The Asian market – India above all – has regained importance for South Africa. India increased its purchases by 6 million t to more than 8 million t.

#### Key Figures Republic of South Africa

	2005 Mill. t	2006 Mill. t	2007 Mill. t
Hard Coal Output	245	244	243
Hard coal exports <sup>1)</sup>	71	69	68
• Steam coal	70	68	67
• Coking coal	1	1	1
Imports Germany	8.2	8.7	6.5
• Steam coal	8.2	8.7	6.1
• Coking coal	-	-	0.4
Export rate in %	29	28	28

<sup>1)</sup>Seaborne only

## AUSTRALIA

#### Production

Despite all of the difficulties, it was possible to increase production slightly. The Brazilian Vale Group (CVRD) has bought its way into the Australian coking coal market, acquiring the activities of AMCI.

#### Usable Production of the Major Production States of Australia

	2006 Mill. t	2007 Mill. t
New South Wales (NSW)	128	133
Queensland (QL)	176	180
<b>Total</b>	<b>304</b>	<b>313</b>

There are still some smaller hard coal production facilities in Western Australia and Tasmania (about 9 million t per year) in addition to the output in NSW and QL.



Besides hard coal production, about 70 million t per year, which are consumed domestically, are mined in Victoria.

Being a leading coal exporter, Australia is becoming increasingly involved in CCT (clean coal technology) and CTL (coal to liquid) projects. 25% of Australian mining is done in underground operations, 75% in opencast pits. The project list for steam coal as well as for coking coal is long. The scope and speed of the increase in output is not so much a question of financing and reserves; it is being increasingly dictated by the development of the infrastructure, which is lagging behind actual need. Bottlenecks are at this time found primarily along the railway lines ahead of the export ports. Australia continues to hold a world market share of about 30% of global coal trade and has the largest sustainable expansion potential for steam and coking coal for the long term.

#### Infrastructure

Utilisation of railway and port facilities in Australia was very high, but they did not reach their planned capacities. Nevertheless, handling in the ports increased by almost 14 million t.

### Coal Loading Ports

Coal Loading Ports	Exports	Exports
	2006	2007
	Mill. t	Mill. t
Abbot Point	11.207	11.756
Dalrymple Bay	50.946	44.787
Hay Point	32.152	39.675
Gladstone	49.750	53.382
Brisbane	3.952	5.263
<b>Total Queensland</b>	<b>148.007</b>	<b>154.863</b>
Newcastle	79.805	84.796
Port Kembla	11.184	12.924
<b>Total New South Wales</b>	<b>90.989</b>	<b>97.720</b>
<b>Total</b>	<b>238.996</b>	<b>252.583</b>

But, just as in the past, there is currently a backlog in export contracts of 8-10 million t. The handling figures do not necessarily agree with the export figures.

Almost all of the Australian ports have plans for expansion:

### Expansion Plans Australian Ports

Port	Current capacity	Short-term increase	Middle-term expansion
	Mill. t	2008-2009	2010-2012
	Mill. t	Mill. t	Mill. t
Newcastle	89	105	130
Port Kembla	14	14	14
Dalrymple Bay	60	68	85
Hay Point	40	44	57
Gladstone	45	68	88
Abbot Point	15	21	50
Brisbane	5	5	5
Miscellaneous	-	-	30
<b>Total</b>	<b>268</b>	<b>325</b>	<b>459</b>

The expansion of Abbot Point to 21 million t should become effective in 2008. The expansion of Dalrymple Bay to 68 million t should also make itself felt in 2008. Hay Point increased capacity by 4 million t to 44 million t. Expansion of the other terminals is also proceeding rapidly. There is hope that the loading bottleneck in the ports will have been overcome in 2009. Substantial demurrage costs must still be expected for 2008.

However, a study by Mitsui shows that the railway capacities are increasingly becoming a bottleneck now that port capacities are being expanded. But Australian authorities are striving to eliminate bottlenecks here as well.

### Export

Despite the port restrictions, exports rose substantially by 13 million t to 250 million t. The export of hard coking coal rose by almost 5 million t, PCI coal and semi-soft coking coal increased by 9 million t, so the total for coking coal was 14 million t. The export of steam coal declined by 1 million t.

#### **Coal Exports by Qualities**

<b>Coal Quality</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
	Mill. t	Mill. t	Mill. t
Coking Coal (HCC)	81	80	85
Semi-soft coking coal	43	44	53
Steam coal	110	113	112
Anthracite	-	-	-
<b>Total</b>	<b>234</b>	<b>237</b>	<b>250</b>

The hard coking coal (HCC) is sold all around the world due to its good quality because Australia is far and away the largest provider of this high-quality coal. The sales of the other qualities focus primarily on the Pacific region. Australia's largest buyer is Japan at 25.5 million t. Since rail and port capacities are restricted, the Australian producers are evidently optimising their export earnings by giving preferential treatment to the export of coking coal qualities which bring a better price.

#### **Key Figures Australia**

	<b>2005</b>	<b>2006</b>	<b>2007<sup>1)</sup></b>
	Mill. t	Mill. t	Mill. t
Hard Coal Output	305	314	322
Hard coal exports	234	237	250
• Steam coal	110	113	112
• Coking coal	124	124	138
Imports Germany	3.5	5.4	6.7
• Steam coal	0.4	0.8	1.2
• Coking coal	3.1	4.6	5.5
Export quota in %	76	77	76

<sup>1)</sup> Provisional

## PEOPLE'S REPUBLIC OF CHINA

The dynamic development of the national economy continued in 2007. The gross national product grew by 11%-12%. Production of electricity, steel and cement rose yet again, increasing the demand for energy in every form.

Chinese electric power generation rose by 15% or 426 TWh in 2007. Production of crude steel (+65 million t) and of pig iron (+63 million t) also rose substantially.

#### **Power/Crude Steel/ Pig Iron/Coal Production**

		<b>2005</b>	<b>2006</b>	<b>2007</b>
Power generation	TWh	2,498	2,834	3,260
Crude steel production	Mill. t	349	424	489
Pig Iron Production	Mill. t	330	406	469
Coal Production	Mill. t	2,190	2,331	2,523

The rise in electric power generation came primarily from the expansion of the hard coal-fired generation by 96,000 MW. The steel industry, which essentially uses the blast furnace method for the production of crude steel, also needed significant additional quantities.

### Production

Coal output was further expanded to secure the supply of energy. It was possible to increase production by 192 million t to 2,523 million t. The greatest growth was achieved by the state-owned mines, while the provincial mines were able to increase production only slightly. The large number of small businesses realised almost 38% of the total output. The number of small mines is to be reduced further. According to Chinese data, 11,155 small mines with a capacity of 250 million t a year had been clo-

sed by the end of 2007. In the long term, their numbers are supposed to be reduced to well under 10,000 with a total capacity of 700 million t a year.

<b>Coal Production in China</b>			
	<b>2005</b>	<b>2006</b>	<b>2007</b>
	Mill. t	Mill. t	Mill. t
State-owned mines	1,070	1,126	1,240
Provincial mines	305	308	324
Small operators	815	892	959
<b>Total</b>	<b>2,190</b>	<b>2,326</b>	<b>2,523</b>

Coal production is being increasingly burdened by levies for recultivation, mine safety and exploration.

Hard coal output is to be increased further. According to Chinese information, capacities of about 1 billion t a year are currently under construction; about 500 million t of these new facilities are expected to go into production in 2008 and 2009.

Assuming that growth rates in the demand for electric power and steel remain high, coal production will presumably continue to grow at an average rate of 150-200 million t a year and could reach a level of 3 billion t a year in 2010. The consolidation process in the Chinese coal industries continues.

China's coking plant capacity amounts to 400 million t a year. 335 million t of coke were produced in 2007. Production is supposed to be increased to 360 million t of coke in 2008.

### Infrastructure

China's infrastructure is being steadily expanded. Chinese railways transported 1.54 billion t of coal in 2007, more than 50% of the total output.

Port handling of coal increased by 55 million t to 463 million t. This figure breaks down as shown here:

- 68 Mill. t export of coal/coke
- 51 Mill. t import of coal
- 344 Mill. t handling via Chinese ports for retransport to the interior.

A breakdown of figures for 2007 is not yet available.

### **Coal Loading Ports in China in 2006<sup>1)</sup>**

	<b>Total Handling</b>	<b>Thereof Coal</b>
	Mill. t	Mill. t
Quinhuangdao	205	185
Tianjin (Xingang)	258	75
Qingdao (Tsingtao)	224	8
Rizhao (Shijuso)	110	22
Lianyungang	72	12
Huanghua	70	68
Miscellaneous	40	38
<b>Total</b>	<b>979</b>	<b>408</b>

<sup>1)</sup>Partly estimated

### Export/Import

The export of hard coal declined again in 2007 and fell by 10 million t to 53 million t. The greatest decline was in steam coal (-8.4 million t), followed by coking coal (-1.9 million t). Exports of anthracite, on the other hand, rose slightly.

The largest buyers of steam coal were South Korea (16 million t), Taiwan (13 million t) and Japan (13 million t). Coking coal deliveries of 1 million t each were made to Japan and South Korea.

The higher world market prices led to an increase in the export of coke by 0.8 million t to 15.3 million t.

### Coal Exports According to Qualities

	2005 Mill. t	2006 Mill. t	2007 Mill. t
Steam coal	60.8	53.7	45.3
Coking coal	5.3	4.4	2.5
Anthracite	5.6	5.2	5.3
<b>Total</b>	<b>71.7</b>	<b>63.3</b>	<b>53.1</b>
Coke	12.7	14.5	15.3

Imports increased by about 12.5 million t to 50.7 million t. They break down according to quality as shown here:

### Coal Imports According to Qualities

	2005 Mill. t	2006 Mill. t	2007 Mill. t
Steam coal	6.2	10.8	16.0
Coking coal	7.2	4.8	6.3
Anthracite	12.8	22.6	28.4
<b>Total</b>	<b>26.2</b>	<b>38.2</b>	<b>50.7</b>

The increase in the imports of anthracite is above all a consequence of increased demand from power plants in the south-west of China for anthracite from Vietnam. Coking coal imports increased in comparison with 2006. The difference between export and import developed as shown below (in million t):

### Difference Export/Import

	2003 Mill. t	2004 Mill. t	2005 Mill. t	2006 Mill. t	2007 <sup>1)</sup> Mill. t
Exports	94	87	72	63	53
Imports	11	19	26	38	51
<b>Difference</b>	<b>83</b>	<b>68</b>	<b>46</b>	<b>25</b>	<b>2</b>

<sup>1)</sup> Estimated

Imports could increase again in 2008. But it will be necessary to wait and see how the extremely high world market prices at this time will influence China's export behaviour and if China will permanently become a net

importer. The Chinese government is attempting to hold down inflation domestically by regulating coal prices. Exports are subject to the granting of state licences. The export figures for the coal exporters authorised to conduct exports developed as shown below:

### Companies Authorised to Conduct Exports

	2005 Mill. t	2006 Mill. t	2007 Mill. t
China Coal	34.0	27.2	19.2
Shenhua	25.6	25.5	25.6
Shanxi	7.6	5.3	5.0
Minmetals	3.9	3.9	4.0
<b>Total</b>	<b>71.1</b>	<b>61.9</b>	<b>53.8</b>

The number of companies exporting coke was further reduced in 2007. The coal policies of the Chinese government aim to make exports more expensive and imports cheaper.

### Key Data People's Republic of China

	2005 Mill. t	2006 Mill. t	2007 Mill. t
Hard Coal Output	2,190	2,326	2,523
Hard coal exports	71.7	63.2	53.1
• Steam coal	66.4	58.8	50.6
thereof anthracite	5.6	5.2	5.3
• Coking coal	5.3	4.4	2.5
Coke exports	12.7	14.5	15.3
Hard Coal Imports	26.2	38.2	50.7
• Steam coal	6.2	10.8	16.0
• Coking coal	7.2	4.8	6.3
• Anthracite	12.8	22.6	28.4
Imports Germany	1.2	0.9	0.9
• Steam coal	0.2	-	-
• Coke	1.0	0.9	0.9
Export rate in %	4	3	2

## INDONESIA

### Production

Indonesian coal mining continued to expand in 2007 and, according to official information, came to about 192 million t (+12 million t in comparison with the previous year).

This must be increased by the output which is not officially recorded and which is in part purchased by large companies. Total production in 2007 presumably amounted to 225-230 million t.

Of the total output, 189 million t were exported and about 39 million t were used for domestic consumption. No information is available concerning inventory movements.

<b>The Major Hard Coal Producers in Indonesia</b>		
<b>Company</b>	<b>Output 2007</b> Mill. t	<b>Exports 2007</b> Mill. t
Bumi	56.0	51.4
Adaro	36.1	26.5
Kideco	20.5	14.7
Banpu	17.8	17.5
Berau	11.8	7.6
Bukit Asam	8.5	3.9
Bayan Group	8.5	8.0
<b>Total</b>	<b>159.2</b>	<b>129.6</b>
<b>Indonesia Total<sup>1)</sup></b>	<b>230.0</b>	<b>189.0</b>

<sup>1)</sup>Estimated

The middle-term to long-term tendency of the Indonesian output and

with it the exports is in the direction of lower calorific values. An approximation is that the Indonesian production of 230 million t breaks down into

205 Mill. t in Kalimantan and  
25 Mill. t in Sumatra

The production in Sumatra especially is required for domestic consumption because the deposits are located close to the power consumption centre in densely populated Java. The interest in the drying and briquetting of low calorific coal is rising as well, and a number of pilot facilities are being planned or are already under construction. Japanese, Chinese and Australian companies (Sumitomo/BHP) are commencing and examining coking and steam coal projects in Eastern and Central Kalimantan. There are coking coal deposits on Sumatra as well which are attracting interest.

### Infrastructure

Indonesia currently has six larger deep-water ports on Kalimantan with an annual handling capacity of 111 million t, allowing the loading of freighters of 60,000 to 180,000 DWT. In addition, there are ten more coal terminals nationwide (including Samarinda and Palikpapan) with an annual capacity totalling 60-70 million t and a depth which, as a rule, is adequate for panamax sizes. Handling capacities are also available on Sumatra. Moreover, there are numerous off-shore loading opportunities for smaller ships.

The large number of loading opportunities favoured the strong development of exports. In the long term, further growth is also dependent on an improvement in the infrastructure (construction of railway lines) because as of this point only the coal reserves which are either in the proximity of the coasts or have a good river connection for further transport to the coast have been developed.

### Export and Port Capacities in Indonesia

	2005 Mill. t	2006 Mill. t	2007 <sup>1)</sup> Mill. t
Adang Bay	12	13	15
Banjarmasin	6	7	10
Kotabaru	14	15	16
Pulau Laut	22	30	30
Tanjung Bara	28	34	37
Tarahan	2	3	3
<b>Total</b>	<b>84</b>	<b>102</b>	<b>111</b>
10 additional smaller coal loading ports	50	75	89
20 offshore loading opportunities	-	-	-
<b>Total Capacity</b>	<b>134<sup>1)</sup></b>	<b>177<sup>1)</sup></b>	<b>200<sup>1)</sup></b>

<sup>1)</sup> Estimated figures in part

#### Export

The official export figure currently available is about 164 million t. Other estimates assume exports of 181-185 million t in 2007. Based on available statistics, we are assuming a figure of 189 million t, an increase of 17 million t in comparison with 2006.

So Indonesia expanded further its leading world market position as steam coal exporter in 2007. Indonesia was more than able to compensate for the decline in Chinese exports. An estimated 2-3 million t from Indonesian output went onto the market as PCI coal. The focus of Indonesian exports is on the Pacific market. Volumes to the European and American countries declined in 2007:

#### Coal Exports According to Markets

	2005 Mill. t	2006 Mill. t	2007 Mill. t
Pacific	110	141	167
Europe	15	25	17
America	4	5	5
<b>Total</b>	<b>129</b>	<b>171</b>	<b>189</b>

The largest individual buyers are found in Asia. China developed high growth rates and imported 15 million t in 2007.

### The Major Buyers of Indonesian Coal

	2005 Mill. t	2006 Mill. t	2007 Mill. t
Japan	27.3	31.4	34.1
South Korea	14.4	20.8	26.5
Taiwan	17.9	24.4	25.8
India	16.3	19.8	24.8
China	2.5	6.2	14.9

Exports will continue to develop upwards.

Domestic demand is growing slowly because many power plant projects of the 10,000 MW special programme have been delayed.

Focus of exports will remain Kalimantan.

#### Key Figures Indonesia

	2005 Mill. t	2006 Mill. t	2007 Mill. t
Hard coal output <sup>1)</sup> (sub-bituminous)	153	202	230
Steam coal exports	129	171	189
Imports Germany	0.2	1.5	1.2
Export rate in %	84	85	82

<sup>1)</sup> Estimated figures

## VIETNAM

#### Production

Exact production figures are not yet available, but based on domestic consumption of about 17 million t and exports of about 33 million t, output in 2007 came to about 50 million t.

Vietnam is beginning to import small volumes of special qualities.

The output capacities of the Vietnamese mines were estimated as shown below on the basis of information from Vinacom (2006):

Opencast pits	26.5 Mill. t
Underground operations	38.1 Mill. t
<b>Total</b>	<b>64.6 Mill. t</b>

These figures make the rapid increase in exports plausible. The government has since called for a restriction of exports in the future to less than 20 million t annually as a means of securing long-term domestic demand.

But output is to be increased further and to reach 80 million t in the long term (by 2025). Production from opencast pits is currently dominant, but it will be necessary to change over to underground operations more and more as reserves are depleted if these output targets are to be reached.

The substantial increases in production and export now being accomplished are being carried out in part with Chinese support.

#### Infrastructure

The waters on the eastern coast of Vietnam are mostly shallow and have in the past allowed access only by ships of less than 10,000 DWT. As a result of dredging work in Campha, larger ships can now be loaded there. So there is also a possibility to handle 65,000-DWT ships with additional loading when in the roads. Hon Gai Port can handle 10,000-DWT ships at the pier and 30,000-DWT ships in the roads.

According to information from Vinacom, export capacities in the ports amount to about 34 million t/a:

<b>Export and Port Capacities in Vietnam 2007</b>	
	<b>2007</b> Mill. t
Cam Pha/Cua Ong	15.0
New ports in Cam Pha	10.0
Hon Gai/Nam Cau Trang	3.0
Hon Gai/Dien Vang	1.5
Hon Gai/Troi	1.5
Uong Bi/dien Cong	3.0
<b>Total</b>	<b>34.0</b>

The inland infrastructure, i.e., roads and railway lines, is also being expanded with Chinese aid.

#### Export

Vietnam increased its exports from 29.8 million t in 2006 to 32.5 million t in 2007. The growth rates in exports have levelled off slightly after the wild growth of recent years. Primary buyers are the south-western Chinese power plants, most of them in the vicinity of the coast, in the provinces Guanxi and Guangdong, which buy almost 25 million t and are oriented to anthracite or low volatile coal from China. In addition to China, Japan, Thailand and South Korea bought volumes. The Vietnamese anthracite coal is also used in part as PCI coal.

The high Vietnamese export of anthracite steam coal is in part low calorific and is profitable only because of the short sea routes to China. This coal would not stand a commercial chance on the normal international steam coal market. Nevertheless, it covers demand which otherwise might have to be covered by purchases on the world market and thus alleviates pressures on this market. A small part of the exports also goes overland to China.

<b>Key Figures Vietnam</b>			
	<b>2005</b> Mill. t	<b>2006</b> Mill. t	<b>2007</b> Mill. t
Output	34.0	44.0 <sup>1)</sup>	50.0 <sup>2)</sup>
Export	17.1	29.8	32.5
thereof China	9.9	20.1	24.6
Export rate in %	50	68	65

<sup>1)</sup>Provisional <sup>2)</sup>Estimated

## Report in Figures

Table 1:	World Energy Consumption by Source of Energy and Regions	65
Table 2:	World Hard Coal Production/Foreign Trade (Domestic Trade and Seaborne Trade)	66
Table 3:	Seaborne Hard Coal Trade	68
Table 4:	Qualities of Coking Coal Traded on the World Market	70
Table 5:	Qualities of Steam Coal Traded on the World Market	72
Table 6:	Hard Coal Export of Poland	73
Table 7:	Hard Coal Export of USA	74
Table 8:	Hard Coal Export of Canada	75
Table 9:	Hard Coal Export of Colombia	76
Table 10:	Hard Coal Export of South Africa	77
Table 11:	Hard Coal Export of Australia	78
Table 12:	Hard Coal Export of Indonesia	79
Table 13:	Hard Coal Export of China	80
Table 14:	Hard Coal Export of Russia	81
Table 15:	Hard Coal Imports of EU-Countries - Imports and Domestic Trade	82
Table 16:	Energy Consumption in the EU-Countries	83
Table 17:	Primary Energy Consumption in Germany	84
Table 18:	Coal Handling in German Ports	85
Table 19:	Import of Hard Coal and Coke to Germany	86
Table 20:	Hard Coal Sales in Germany	88
Table 21:	Consumption, Import/Export and Electric Power Generation in Germany	89
Table 22:	European/International Price Quotations	90
Table 23:	Germany: Energy Prices/Exchange Rates	91
Table 24:	Hard Coal Market in Germany: Quantities and Prices 1957-2007	92



## World-Energy Consumption by Source of Energy and Regions

Source of Energy	2001	2002	2003	2004	2005	2006	Mill. Tce 2007
	Mineral Oil	5.130	5.160	5.280	5.460	5.792	5.836
Natural Gas	3.210	3.310	3.400	3.509	3.768	3.862	3.943
Nuclear Energy	870	880	867	905	940	953	960
Hydro Power	840	850	875	920	1.000	1.032	1.055
Hard Coal	2.900	3.160	3.460	3.700	4.106	4.305	4.519
Lignite	320	330	330	330	330	330	330
<b>Total</b>	<b>13.270</b>	<b>13.690</b>	<b>14.212</b>	<b>14.824</b>	<b>15.936</b>	<b>16.318</b>	<b>16.730</b>
Region of Consumption	2001	2002	2003	2004	2005	2006	Shares in % 2007
North America	29,1	28,7	27,9	27,2	26,5	25,8	25,6
Asia/Australia	27,5	28,9	30,0	31,3	32,7	33,5	34,0
EU-15/since 2004 EU-25	16,2	15,5	15,4	16,8	16,0	15,7	15,6
CIS	10,3	10,1	10,0	9,8	9,2	9,3	9,2
Remaining World	16,9	16,8	16,7	14,9	15,6	15,7	15,6
<b>Total</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>
Coal Consumption (Hard Coal and Lignite)	2001	2002	2003	2004	2005	2006	Mill. Tce 2007
	<b>3.220</b>	<b>3.490</b>	<b>3.790</b>	<b>4.030</b>	<b>4.436</b>	<b>4.635</b>	<b>4.849</b>
Region of Consumption	2001	2002	2003	2004	2005	2006	Shares in % 2007
North America	26,0	24,8	24,1	24,0	20,8	19,8	20,0
Asia/Australia	45,5	49,1	51,3	52,0	56,7	58,0	57,1
EU-15/since 2004 EU-25	9,6	8,9	8,7	11,1	10,0	9,8	9,4
CIS	7,8	6,9	7,0	6,3	6,0	5,9	5,7
Remaining World	11,1	10,3	8,9	6,6	6,5	6,5	7,8
<b>Total</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>
Considered were only commercial traded sources of energy				.2007 preliminary figures/partly estimated			

Source: BP Statistical Review of World Energy

<b>World Hard Coal Production/Foreign Trade</b>									
	<b>2002</b>			<b>2003</b>			<b>2004</b>		
	Production	Export	Import	Production	Export	Import	Production	Export	Import
Germany	29	0	32	29	0	35	29	0	39
France	2	0	18	2	0	19	0	0	20
Great Britain	30	0	29	28	0	31	25	0	37
Spain <sup>1)</sup>	13	0	24	13	0	21	14	0	24
Poland	-	-	-	-	-	-	99	19	2
Czech Republic	-	-	-	-	-	-	13	4	1
Romania	-	-	-	-	-	-	-	-	-
<b>EU-15/since 2004 EU-25</b>	74	0	172	72	0	180	180	24	211
Poland	102	23	2	100	21	3	283	66	26
Czech Republic	14	4	1	13	4	1	70	26	-
CIS	303	42	1	320	52	1	80	4	9
<b>Mentioned Countries</b>	419	69	4	433	77	5	433	96	35
Canada	30	25	18	27	25	22	29	26	18
USA	995	36	15	983	38	22	1.020	43	25
Colombia	41	36	0	45	44	0	52	51	0
Venezuela	8	8	0	8	8	0	8	8	0
<b>Mentioned Countries</b>	1.074	105	33	1.063	115	44	1.109	128	43
<b>South Africa</b>	219	69	2	238	71	3	243	68	0
<b>Australia</b>	274	204	0	279	215	0	297	225	0
India	310	0	26	320	0	30	348	0	31
China <sup>2)</sup>	1.455	84	11	1.722	93	11	1.992	87	19
Japan	3	0	158	3	0	167	0	2	179
Indonesia	107	76	0	119	89	0	135	105	0
<b>Mentioned Countries</b>	1.875	160	195	2.164	182	208	2.475	194	229
Remaining Countries	113	13	214	117	10	230	130	21	243
<b>World</b>	4.048	620	620	4.366	670	670	4.794	758	758

2007 preliminary figures      <sup>1)</sup> Production incl. "Lignito Negro"      <sup>2)</sup> Production incl. lignite (about 50 Mill. t estimated)

Sources: Statistik der Kohlenwirtschaft, ECE, IEA, statistics of import and export countries, Barlow Jonker, internal calculations



**(Domestic Trade and Seaborne Trade)**

Million t

2005			2006			2007			
Production	Export	Import	Production	Export	Import	Production	Export	Import	
28	0	36	24	0	42	22	0	48	Germany
0	0	20	0	0	21	0	0	18	France
20	0	44	19	0	50	17	0	43	Great Britain
12	0	25	12	0	27	11	0	25	Spain <sup>1)</sup>
97	20	2	94	16	4	87	12	5	Poland
13	4	1	14	5	1	13	7	2	Czech Republic
-	-	-	2	-	-	3	0	3	Romania
170	24	209	165	21	223	153	19	220	<b>EU-15/since 2004 EU-25</b>
300	70	-	310	89	25	314	93	24	Russia <sup>3)</sup>
86	24	-	94	25	-	96	26	-	Kazakhstan <sup>3)</sup>
78	8	12	80	3	4	75	3	9	Ukraine <sup>3)</sup>
464	102	12	484	117	29	485	122	33	<b>Mentioned Countries</b>
31	28	20	34	28	21	37	31	29	Canada
1.029	45	27	1.066	46	30	1.043	53	33	USA
60	55	0	64	59	0	69	66	0	Colombia
8	8	0	8	8	0	8	8	0	Venezuela
1.128	136	47	1.172	141	51	1.157	158	62	<b>Mentioned Countries</b>
241	75	0	244	69	0	243	68	0	<b>South Africa</b>
306	234	0	314	237	0	322	250	0	<b>Australia</b>
370	0	40	390	0	53	430	0	52	India
2.190	72	26	2.326	63	38	2.523	53	51	China <sup>2)</sup>
-	0	181	0	0	177	0	0	180	Japan
153	129	0	202	171	0	230	189	0	Indonesia
2.713	201	247	2.918	234	268	3.183	242	283	<b>Mentioned Countries</b>
136	39	296	54	39	287	57	47	308	Remaining Countries
5.158	811	811	5.351	858	858	5.600	906	906	<b>World</b>

<sup>3)</sup> Russia, Kazakhstan, Ukraine: separate since 2004

Table 2

### Seaborne Hard Coal Trade in Million t

Exporting Countries	2002			2003			2004		
	Coking Coal	Steam Coal	Total	Coking Coal	Steam Coal	Total	Coking Coal	Steam Coal	Total
Australia	104	100	204	111	104	215	118	107	225
USA	15	5	20	16	3	19	20	6	26
South Africa	1	68	69	2	70	72	1	67	68
Canada	21	2	23	20	1	21	22	1	23
China	14	70	84	13	81	94	6	81	87
Colombia	0	35	35	0	44	44	0	51	51
Indonesia	0	76	76	0	89	89	0	105	105
Poland	2	19	21	2	12	14	2	10	12
Russia	9	33	42	7	42	49	10	51	61
Venezuela	0	8	8	0	8	8	0	9	9
Other	2	6	8	2	12	14	1	17	18
<b>Total</b>	<b>168</b>	<b>422</b>	<b>590</b>	<b>173</b>	<b>466</b>	<b>639</b>	<b>180</b>	<b>505</b>	<b>685</b>
Importing Countries/ Regions	2002			2003			2004		
	Coking Coal	Steam Coal	Total	Coking Coal	Steam Coal	Total	Coking Coal	Steam Coal	Total
Europe <sup>1)</sup>	49	148	197	51	162	213	52	166	218
EU-15/since 2004 EU-25	39	127	166	43	139	182	48	163	211
Asia	102	247	349	105	274	379	110	304	414
Japan	59	99	158	54	112	166	56	124	180
South Korea	19	51	70	20	52	72	15	64	79
Taiwan	7	44	51	0	55	55	0	61	61
Hongkong	0	8	8	0	10	10	0	12	12
India	13	13	26	14	16	30	15	18	33
Latin America	16	9	25	16	10	26	16	11	27
Other (incl. USA)	1	18	19	1	20	21	2	24	26
<b>Total</b>	<b>168</b>	<b>422</b>	<b>590</b>	<b>173</b>	<b>466</b>	<b>639</b>	<b>180</b>	<b>505</b>	<b>685</b>

2007 preliminary figures; excl. land transport

<sup>1)</sup> incl. Mediterranean countries

Source: Analysis of several sources

Million t

2005			2006			2007			Exporting Countries
Coking Coal	Steam Coal	Total	Coking Coal	Steam Coal	Total	Coking Coal	Steam Coal	Total	
124	110	234	124	113	237	138	112	250	Australia
22	5	27	20	6	26	26	11	37	USA
1	70	71	1	68	69	1	67	68	South Africa
26	2	28	23	3	26	25	4	29	Canada
5	67	72	4	59	63	3	51	53	China
-	55	55	1	58	59	1	65	66	Colombia
-	129	129	-	171	171	-	189	189	Indonesia
0	11	11	1	9	10	1	4	5	Poland
8	60	68	6	69	75	6	72	78	Russia
-	8	8	-	8	8	-	8	8	Venezuela
2	21	23	3	30	33	2	35	37	Other
<b>188</b>	<b>538</b>	<b>726</b>	<b>183</b>	<b>594</b>	<b>777</b>	<b>202</b>	<b>618</b>	<b>820</b>	<b>Total</b>
2005			2006			2007			Importing Countries/ Regions
Coking Coal	Steam Coal	Total	Coking Coal	Steam Coal	Total	Coking Coal	Steam Coal	Total	
53	170	223	45	167	212	50	161	211	Europe <sup>1)</sup>
46	163	209	40	164	204	45	156	201	EU-15/since 2004 EU-25
116	319	435	123	310	433	131	346	477	Asia
55	126	181	73	119	192	74	126	200	Japan
12	63	75	20	60	80	21	65	86	South Korea
-	61	61	9	58	67	9	61	70	Taiwan
0	15	15	0	11	11	-	12	12	Hongkong
17	23	40	19	23	42	23	29	52	India
16	17	33	13	4	17	14	6	20	Latin America
3	32	35	2	113	115	7	105	112	Other (incl. USA)
<b>188</b>	<b>538</b>	<b>726</b>	<b>183</b>	<b>594</b>	<b>777</b>	<b>202</b>	<b>618</b>	<b>820</b>	<b>Total</b>

Table 3

## Qualities of Coking Coal Traded on the World Market

Exporting Countries/ Qualities	Volatile %	Ash %	Latent Moisture %	Sulphur %	Phosphorus %	Swelling Index FSI
<b>Low Volatile</b>						
Australia/NSW	21-24	9.3-9.5	1.0	0.38-0.40	0.03-0.07	6-8
Australia/Qld.	17-25	7.0-9.8	1.0-1.5	0.52-0.70	0.007-0.06	7-9
Canada	21-24	9.5	0.6	0.30-0.60	0.04-0.06	6-8
USA	18-21	5.5-7.5	1.0	0.70-0.90	no figure	8-9
<b>Middle Volatile</b>						
Australia/NSW	27-28	7.9-8.3	1.5-1.8	0.38-0.39	0.04-0.06	5-7
Australia/Qld.	26-29	7.0-9.0	1.2-2.0	0.38-0.90	0.03-0.055	6-9
Canada	25-28	8.0	0.9	0.30-0.55	0.03-0.07	6-8
USA	26-27	6.8-9.0	1.0	0.95-1.10	no figure	7-9
Poland	23-28	7.0-8.9	0.7-1.5	0.60-0.80	no figure	6-9
China	25-30	9.5-10.0	1.3-1.5	0.35-0.85	0.015	
<b>High Volatile</b>						
Australia/NSW	34-40	5.5-9.5	2.4-3.0	0.35-1.30	0.002-0.05	4-7
Australia/Qld.	30-34	6.5-8.2	2.0	0.50-0.70	0.02-0.04	8-9
Canada	29-35	3.5-6.5	1.0	0.55-1.20	0.006-0.04	6-8
USA	30-34	6.8-7.3	1.9-2.5	0.80-0.85	no figure	8-9
Poland	29-33	6.9-8.9	0.8-1.5	0.60-1.00	no figure	5-8
<b>Germany</b>	26.6 <sup>1)</sup>	7.4 <sup>1)</sup>	1.5 <sup>1)</sup>	1.1 <sup>1)</sup>	0.01-0.04	7-8

Figures in bandwidths

<sup>1)</sup> Utilization mixture for coking plant

<sup>2)</sup> CSR-value (Coke Strength under Reduction) describing the heating strength of coke after heating up to 1.100° C and following CO<sub>2</sub>-fumigation. The CSR-values classified to the coal are only standard values.

Sources: ACR, Coal, companies' information

Coke strength CSR-value <sup>2)</sup>	Fluidity max ddpm	Con- traction max %	Dilatation max %	Reflection middle %	Macerale		Minerals %
					reactive %	inert %	
50-65	500-2.000	20-30	25-140	1.23-1.29	38-61	36-58	3-4
60-75	34-1.400	24-34	35-140	1.12-1.65	61-75	20-34	3-5
65-72	10-150	20-26	7-27	1.22-1.35	70-75	20-35	5
60-70	30-100	25-28	30-60	1.30-1.40	65-75	20-30	3
40-60	200-2.000+	25-35	0-65	1.01-1.05	50-53	43-44	4-6
50-70	150-7.000	19-33	(-)5-240	1.00-1.10	58-77	20-38	3-4
50-70	150-600	21-28	50-100	1.04-1.14	70-76	20-24	5
60-70	500-7.000	22-18	50-100	1.10-1.50	72-78	18-24	4
no figure	no figure	26-32	30-120	no figure	no figure	no figure	no figure
35-55	100-4.000	27-45	(-)10-60	0.69-0.83	67-84	11-28	2-5
65-75	950-1.000+	23-24	35-160	0.95-1.03	61-79	18-36	3-4
50-60	600-30.000	22-31	50-148	1.00-0.95	76-81	17-19	2-4
60-70	18.000-26.847	26-33	150-217	1.00-1.10	75-78	18-21	4
no figure	no figure	no figure	no figure	no figure	no figure	no figure	no figure
50-65	30-3.000	27-28	108-170	1.15-1.45	60-80	15-35	5

Table 4

### Qualities of Steam Coal Traded on the World Market

Exporting Countries	Volatile %	Ash %	Moisture %	Sulphur %	F. Carbon %	Grinding Index HGI	Calorific Value kcal/kg
<b>Atlantic Supplier</b>							
USA (east coast)	17-39	5-15	5-12	0.5-3.0	39-70	31-96	6,000-7,200
South Africa	16-31	8-15	6-10	0.5-1.7	51-61	43-65	5,400-6,700
Colombia	30-39	4-15	7-16	0.5-1.0	36-55	43-60	5,000-6,500
Venezuela	34-40	6-8	5-8	0.6	47-58	45-50	6,500-7,200
Poland	25-31	8-16	7-11	0.6-1.0	44-56	45-50	5,700-6,900
Czech Republic	25-27	6-8	7-9	0.4-0.5	58-60	60-70	6,700-7,100
Russia	27-34	11-15	8-12	0.3-0.6	47-58	55-67	6,000-6,200
<b>Pacific Supplier</b>							
Australia	25-30	8-15	7-8	0.3-1.0	47-60	45-79	5,900-6,900
Indonesia	37-47	1-16	9-22	0.1-0.9	30-50	44-53	3,700-6,500
China	27-31	7-13	8-13	0.3-0.9	50-60	50-54	5,900-6,300
Russia (east coast)	17-33	11-20	8-10	0.3-0.5	47-64	70-80	5,500-6,800
Vietnam/Anthr.	5-6	15-33	9-11	0.85-0.95	58-83	35	5,100-6,800
<b>Germany</b>							
	19-33	6-7	8-9	0.7-1.4	58-65	60-90	6,600-7,100

Indication in gross bandwidths

Sources: see table 4



Hard Coal Export of Poland								1,000 t
Importing Countries	2001	2002	2003	2004	2005	2006	2007	
Germany	7,390	6,910	7,020	7,170	7,022	7,330	4,651	
France	1,190	1,312	1,013	819	1,227	762	340	
Belgium	580	455	2	500	649	291	1	
The Netherlands	490	1	2	191	270	320	70	
Italy	230	601	0	94	540	248	111	
Great Britain	1,280	2,243	2,031	1,365	1,614	1,008	277	
Ireland	250	253	263	276	287	235	255	
Denmark	2,100	2,154	860	1,088	821	523	350	
Spain	150	233	16	134	111	150	64	
Portugal	-	345	0	0	221	0	0	
Finland	2,010	1,698	2,081	1,626	653	513	273	
Austria	2,100	1,573	1,346	1,328	1,155	1,233	1,807	
Sweden	300	355	567	327	172	283	288	
Czech Republic	-	-	-	1,227	1,146	1,642	2,365	
Slovakia	-	-	-	1,147	802	1,030	617	
Hungary	-	-	-	183	380	249	259	
Other	-	-	-	53	50	72	8	
<b>EU-27 since 2007</b>	<b>18,070</b>	<b>18,133</b>	<b>15,201</b>	<b>17,528</b>	<b>17,120</b>	<b>15,889</b>	<b>11,736</b>	
CIS	1,400	822	1,176	0	13	36	0	
Czech Republic	1,200	1,181	1,174	-	-	-	0	
Slovakia	800	482	588	-	-	-	0	
Hungary	270	166	315	-	-	-	0	
Bulgaria	190	-	0	0	0	0	0	
Romania	0	-	0	0	0	0	0	
Brazil	-	282	0	0	0	70	0	
Other countries	1,370	1,733	2,300	3,062	1,438	620	364	
<b>Export in total</b>	<b>23,300</b>	<b>22,799</b>	<b>20,754</b>	<b>20,590</b>	<b>18,571</b>	<b>16,509</b>	<b>12,100</b>	

2007 preliminary figures

Sources: McCloskey, WEGLOKOKS, since 1998 Germany: Federal Statistical Office, own calculations

## Hard Coal Export of USA

1,000 t

Importing Countries	2001	2002	2003	2004	2005	2006	2007
Germany	828	868	1,283	1,540	606	2,191	2,065
France	2,087	1,184	975	787	1,146	1,475	2,162
Belgium/Luxembourg	2,579	2,147	1,637	1,545	1,881	1,959	1,907
The Netherlands	1,910	1,480	1,798	1,622	4,247	1,191	4,117
Italy	4,905	2,790	2,373	1,908	2,226	2,975	3,212
Great Britain	2,437	1,707	1,337	1,793	1,599	2,251	3,032
Ireland	344	632	216	0	0	0	74
Denmark	0	-	261	67	66	348	72
Spain	1,491	1,734	1,605	1,380	1,685	1,472	1,337
Portugal	601	115	406	405	143	267	258
Finland	140	147	449	426	259	661	265
Sweden	565	393	346	570	535	426	483
Other	-	-	-	-	239	849	2,300
<b>EU-27 since 2007</b>	<b>17,887</b>	<b>13,197</b>	<b>12,686</b>	<b>12,043</b>	<b>14,632</b>	<b>16,065</b>	<b>21,284</b>
Israel	0	119	0	0	0	0	0
Turkey	803	524	991	1,179	1,708	1,106	1,306
Romania	0	-	0	256	1,391	1,002	0
Other Europe <sup>1)</sup>	1,416	1,129	1,423	225	1,495	1,240	4,087
<b>Europe</b>	<b>20,106</b>	<b>14,969</b>	<b>15,100</b>	<b>13,703</b>	<b>19,226</b>	<b>19,413</b>	<b>26,677</b>
Canada	15,995	14,443	18,212	15,722	17,577	18,030	16,625
Mexico	723	754	1,078	929	906	454	422
Argentina	168	172	218	265	218	317	273
Brazil	4,131	3,171	3,186	3,942	3,792	4,110	5,908
Japan	1,878	1,137	5	4,014	1,888	301	5
South Korea	691	211	176	112	1,304	515	201
Taiwan	135	0	2	449	0	2	2
Other countries	273	69	190	3,829	0	1,581	3,091
<b>Export in total</b>	<b>44,100</b>	<b>34,926</b>	<b>38,167</b>	<b>42,965</b>	<b>44,911</b>	<b>44,723</b>	<b>53,204</b>

<sup>1)</sup> incl. Mediterranean countries

2007 preliminary figures

Source: McCloskeys

Hard Coal Export of Canada								1,000 t
Importing Countries	2001	2002	2003	2004	2005	2006	2007	
Germany	1,214	1,046	1,295	2,123	1,757	1,608	1,838	
France	503	259	324	388	529	372	598	
Belgium/Luxembourg	570	228	309	293	0	0	0	
The Netherlands	265	1,037	1,250	1,139	807	1,194	1,047	
Italy	1,096	705	994	892	1,469	1,178	1,128	
Great Britain	2,016	1,138	1,078	1,064	1,677	1,418	1,492	
Denmark	-	-	0	0	0	0	0	
Spain	173	332	392	113	344	175	227	
Portugal	-	0	0	0	0	0	0	
Finland	302	147	197	200	516	494	345	
Sweden	-	0	0	0	0	0	0	
<b>EU-27 since 2007</b>	<b>6,139</b>	<b>4,892</b>	<b>6,022</b>	<b>6,212</b>	<b>7,099</b>	<b>6,439</b>	<b>6,675</b>	
Other Europe <sup>1)</sup>	1,233	1,280	685	1,707	1,170	1,582	1,834	
<b>Europe</b>	<b>7,372</b>	<b>6,172</b>	<b>6,524</b>	<b>7,919</b>	<b>8,269</b>	<b>8,021</b>	<b>8,509</b>	
Japan	10,718	9,388	7,753	5,384	7,499	8,676	10,548	
South Korea	5,287	4,393	3,659	0	5,014	4,975	6,078	
Taiwan	1,142	1,078	1,077	991	1,276	1,221	1,130	
Brazil	1,807	1,173	1,642	1,483	1,718	1,584	1,545	
USA	2,045	1,796	1,789	2,497	1,709	1,750	1,677	
Chile	1,027	401	349	322	549	721	702	
Mexico	490	257	467	1,395	406	274	230	
Other countries	257	327	1,716	5,950	1,490	344	267	
<b>Export in Total</b>	<b>30,145</b>	<b>24,985</b>	<b>24,976</b>	<b>25,941</b>	<b>27,930</b>	<b>27,566</b>	<b>30,686</b>	

<sup>1)</sup> incl. Mediterranean countries      2007 preliminary figures

Sources: Coal Americas, own estimations

## Hard Coal Export of Colombia

1,000 t

Importing Countries	2001	2002	2003	2004	2005	2006	2007
Germany	5,797	5,932	5,918	4,719	4,256	3,729	6,931
France	1,480	2,098	2,686	4,348	2,228	3,341	2,720
Belgium/Luxembourg	160	604	147	134	510	0	0
The Netherlands	2,503	2,158	1,435	3,765	4,597	6,031	5,554
Italy	1,300	2,205	2,074	2,441	2,589	1,993	1,887
Great Britain	6,000	2,189	2,344	2,853	2,133	2,511	3,003
Ireland	750	482	271	1,152	893	1,129	475
Denmark	280	1,071	2,715	1,388	1,252	1,998	2,259
Greece	120	0	0	0	0	71	149
Spain	680	1,410	1,662	1,290	1,988	1,501	2,219
Portugal	1,450	1,678	1,812	2,550	2,521	2,920	2,590
Finland	-	134	59	0	0	158	0
Sweden	170	83	41	184	0	0	0
Slovenia	-	-	-	782	426	220	238
<b>EU-27 since 2007</b>	20,690	20,044	21,164	25,606	23,393	25,602	28,025
Israel	2,500	3,051	2,690	2,838	4,722	3,371	3,527
Other Europe <sup>1)</sup>	500	331	2,849	2,851	2,703	2,898	3,576
<b>Europe</b>	23,690	23,426	26,703	31,295	30,818	31,871	35,128
Japan	0	0	31	0	0	27	0
Hongkong	-	0	0	0	0	-	0
USA	9,500	6,781	11,989	13,342	17,641	20,179	21,831
Canada	2,400	1,998	1,514	1,671	2,132	1,944	1,450
Brazil	150	124	244	442	285	268	208
Other Countries	1,360	3,074	3,876	4,440	3,924	4,211	6,883
<b>Export in total</b>	<b>37,100</b>	<b>35,403</b>	<b>44,357</b>	<b>51,190</b>	<b>54,800</b>	<b>58,500</b>	<b>65,500</b>

<sup>1)</sup> incl. Mediterranean countries, Turkey 2007 preliminary figures

Sources: IEA, Intercor, The McCloskey Group, internal calculations

Hard Coal Export of South Africa								1,000 t
Importing Countries	2001	2002	2003	2004	2005	2006	2007	
Germany	4,581	4,980	8,962	9,876	9,453	8,189	6,505	
France	4,204	4,624	4,140	8,760	5,473	4,267	4,799	
Belgium/Luxembourg	1,992	1,733	2,159	2,456	1,677	1,512	1,088	
The Netherlands	9,939	11,174	11,439	3,116	7,713	13,687	10,580	
Italy	5,067	4,117	4,503	4,758	5,286	4,616	4,776	
Great Britain	8,872	8,106	8,443	10,210	11,837	8,431	4,580	
Ireland	526	389	566	510	788	389	478	
Denmark	1,430	1,680	2,590	1,430	1,651	2,300	2,130	
Greece	280	140	0	0	132	0	0	
Spain	7,948	9,982	8,882	9,700	8,836	7,585	6,724	
Portugal	1,920	2,240	2,340	1,750	1,561	1,000	1,970	
Finland	-	60	300	0	0	120	0	
Other	-	-	-	-	441	170	535	
<b>EU-27 since 2007</b>	<b>46,759</b>	<b>49,225</b>	<b>54,324</b>	<b>52,556</b>	<b>54,848</b>	<b>52,266</b>	<b>44,165</b>	
Israel	6,048	5,396	5,220	6,910	5,123	4,780	4,520	
Morocco	3,197	3,270	2,130	1,780	2,835	2,890	1,267	
Turkey	1,074	994	1,647	1,550	1,302	1,913	1,349	
Japan	1,288	863	320	0	140	0	440	
South Korea	500	140	120	0	130	0	290	
Taiwan	2,000	1,656	1,576	1,390	411	70	410	
Hongkong	360	210	0	0	0	0	0	
India	2,874	3,854	3,000	738	3,904	2,469	8,492	
China	470	620	260	60	0	0	30	
USA	645	330	130	40	126	0	100	
Brazil	1,417	1,058	780	760	654	1,484	759	
Other countries	2,578	1,584	1,475	2,136	5,089	3,064	6,068	
<b>Export in total</b>	<b>69,210</b>	<b>69,200</b>	<b>70,982</b>	<b>67,920</b>	<b>74,562</b>	<b>68,936</b>	<b>67,890</b>	
till 2003 incl. Sales for other countries      2007 preliminary figures								

Sources: IEA, South African Mineral Bureau, South African Coal Report, own calculations

## Hard Coal Export of Australia

1,000 t

Importing Countries	2001	2002	2003	2004	2005	2006	2007
Germany	2,672	1,394	5,022	4,357	4,445	5,372	6,720
France	4,471	4,989	4,736	4,639	4,033	4,542	3,733
Belgium/Luxembourg	2,611	1,814	1,182	1,790	1,906	1,600	2,580
The Netherlands	4,089	5,971	2,202	3,622	3,704	3,975	3,240
Italy	2,875	2,190	2,734	2,533	2,286	2,234	2,473
Great Britain	6,991	4,886	5,777	5,477	5,034	4,568	3,496
Denmark	160	317	909	156	130	0	0
Spain	3,903	3,888	3,688	3,321	3,508	2,977	3,043
Portugal	532	705	797	0	0	0	0
Sweden	1,164	1,048	1,193	1,323	1,261	1,289	1,273
<b>EU-27 since 2007</b>	<b>30,405</b>	<b>27,202</b>	<b>28,240</b>	<b>27,218</b>	<b>26,307</b>	<b>26,557</b>	<b>26,558</b>
Israel	1,971	1,806	2,130	987	849	300	348
Turkey	1,398	993	1,381	758	815	1,118	838
Romania	220	150	487	45	0	-	0
Other Europe <sup>1)</sup>	777	1,415	1,289	1,867	1,246	1,120	1,234
<b>Europe</b>	<b>34,771</b>	<b>31,566</b>	<b>33,527</b>	<b>30,875</b>	<b>29,217</b>	<b>29,095</b>	<b>28,978</b>
Japan	91,662	91,636	95,271	101,896	104,812	103,293	114,650
South Korea	24,964	21,385	22,488	30,061	30,158	23,576	22,106
Taiwan	15,557	14,815	13,968	18,828	21,868	22,653	25,458
Hongkong	217	585	619	1,038	0	0	0
India	13,067	14,069	12,829	16,556	18,985	18,938	22,000
China	879	4,691	5,222	6,271	5,468	7,450	3,957
Brazil	4,570	3,757	4,887	3,143	3,454	2,929	3,420
Chile	710	1,404	1,215	1,605	984	1,625	1,044
Other Countries	7,976	19,484	24,971	14,775	18,724	27,718	28,638
<b>Export in Total</b>	<b>194,373</b>	<b>203,392</b>	<b>214,997</b>	<b>225,048</b>	<b>233,069</b>	<b>237,277</b>	<b>250,251</b>

<sup>1)</sup> incl. Mediterranean countries                      2007 preliminary figures

Sources: IEA, Australian Coal Report, Joint Coal Board, Queensland Coal Board

Hard Coal Export of Indonesia								1,000 t
Importländer	2001	2002	2003	2004	2005	2006	2007	
Germany	400	400	405	492	132	1,509	1,168	
The Netherlands	2,100	1,500	1,881	1,106	2,139	3,704	1,822	
Italy	1,600	2,500	4,580	5,198	6,285	8,626	6,290	
Great Britain	0	0	531	1,080	1,302	1,822	1,141	
Ireland	300	400	0	0	602	609	152	
Denmark	-	200	8	0	0	-	-	
Spain	2,400	2,700	3,004	2,776	3,317	4,033	4,226	
Slovenia	-	-	-	623	634	1,562	1,242	
Other	-	-	-	1,106	770	2,835	2,000	
<b>EU-27 since 2007</b>	<b>7,500</b>	<b>9,000</b>	<b>10,409</b>	<b>12,381</b>	<b>15,181</b>	<b>24,700</b>	<b>18,041</b>	
USA	710	900	1,914	1,960	2,050	2,646	2,962	
Chile	1,000	1,000	271	839	1,368	1,733	1,600	
Japan	15,500	18,000	20,486	22,700	27,313	32,842	34,135	
South Korea	6,000	7,000	7,857	11,741	14,377	20,780	26,521	
Hongkong	4,700	4,600	6,814	7,439	9,409	10,514	11,550	
Taiwan	14,500	14,500	15,798	17,769	17,896	24,397	25,753	
Malaysia	3,000	4,000	5,199	6,113	7,400	7,324	7,814	
Philippines	3,500	4,000	3,091	3,603	3,906	4,113	4,290	
Thailand	3,000	4,000	4,338	4,787	6,404	7,800	9,413	
India	4,000	5,000	7,846	10,674	16,255	19,822	24,840	
China	700	2,000	534	1,473	2,503	6,219	14,894	
Other countries	2,390	2,320	4,477	4,386	4,981	8,049	7,492	
<b>Export in total</b>	<b>66,500</b>	<b>76,320</b>	<b>89,034</b>	<b>105,865</b>	<b>129,043</b>	<b>170,939</b>	<b>189,305</b>	
2007 preliminary figures								

Sources: IEA, Coal Manual, Indonesian Coal & Power, International Coal Report, internal calculations

<b>Hard Coal Export of China</b>								1,000 t
<b>Importing Countries</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	
Germany	244	264	257	347	75	0	50	
France	512	820	556	240	8	0	188	
Belgium/Luxembourg	400	736	82	127	282	189	170	
The Netherlands	100	368	240	313	141	245	49	
Italy	324	201	380	185	0	0	0	
Great Britain	391	68	84	172	54	34	0	
Spain	0	71	319	0	332	292	0	
Greece	0	0	0	136	0	0	0	
<b>EU-15</b>	1,971	2,528	1,918	1,520	892	760	457	
Japan	26,557	27,662	31,255	28,471	23,175	20,586	15,547	
South Korea	29,380	25,387	29,722	24,798	21,206	18,779	19,231	
Taiwan	15,753	14,249	16,040	19,855	16,230	13,258	12,690	
Hongkong	3,494	2,964	2,118	1,123	944	855	674	
India	3,401	2,323	2,363	3,084	3,855	5,001	538	
Malaysia	368	389	102	65	46	36	37	
Thailand	141	262	69	249	0	28	1	
North Korea	420	258	468	407	147	576	227	
Philippines	3,812	2,879	2,908	2,928	1,916	1,035	1,028	
Brazil	1,990	1,989	2,489	548	278	191	283	
Other countries	2,713	2,651	4,187	3,512	2,986	2,127	2,379	
<b>Export in total</b>	<b>90,000</b>	<b>83,541</b>	<b>93,639</b>	<b>86,560</b>	<b>71,675</b>	<b>63,232</b>	<b>53,092</b>	

2007 preliminary figures

Sources: The McCloskey Group, China Coal Report



<b>Hard Coal Export of Russia</b>								1,000 t
<b>Importing Countries</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	
Germany	2,065	1,870	2,600	5,460	6,620	9,100	8,367	
Belgium/Luxembourg	750	900	400	900	1,000	1,747	1,327	
Italy	950	1,600	1,660	2,400	1,800	1,522	818	
Great Britain	3,900	4,400	5,200	9,820	18,000	22,701	19,828	
Spain	1,600	2,200	1,960	3,130	4,200	2,761	905	
Finland	2,600	2,000	5,900	5,430	2,400	4,440	5,080	
Poland	-	-	-	2,300	2,500	3,327	5,000	
Romania	0	0	0	0	0	0	982	
Other	-	-	-	-	-	6,039	8,029	
<b>EU-27 since 2007</b>	<b>12,000</b>	<b>14,000</b>	<b>21,100</b>	<b>32,000</b>	<b>37,000</b>	<b>51,637</b>	<b>50,336</b>	
Turkey	4,000	4,000	5,000	6,500	7,000	6,500	4,013	
Romania	1,400	1,500	1,700	2,500	3,000	1,505	0	
Japan	5,700	6,300	7,600	9,280	10,700	9,204	11,491	
South Korea	2,000	3,000	3,500	5,140	3,300	1,071	6,358	
Taiwan	1,500	1,900	2,000	1,380	1,200	1,305	1,329	
China	0	1,150	2,000	570	800	1,030	269	
Other countries <sup>1)</sup>	6,400	8,150	6,500	2,830	5,200	2,248	4,004	
<b>Export in Total <sup>2)</sup></b>	<b>33,000</b>	<b>40,000</b>	<b>49,400</b>	<b>60,200</b>	<b>68,200</b>	<b>74,500</b>	<b>77,800</b>	

<sup>1)</sup> 2001-2007 exports via Cyprus/Libanon; the quantities were partially exported in other not known countries  
<sup>2)</sup> only hard coal exports (seaborne trade) in countries outside of the former UdSSR  
2007 preliminary figures

Sources: 1996-2000: Coal Information, 2001-2003: internal calculations, 2004-2007: information from companies

## Hard Coal Imports of EU-Countries - Imports and Domestic Trade 1,000 t

	2001	2002	2003	2004	2005	2006	2007
Germany	33,400	33,070	35,360	39,080	39,900	46,500	47,480
France	14,450	15,130	18,500	19,300	20,500	20,700	18,200
Italy	19,540	18,800	21,190	25,500	24,500	24,500	24,600
The Netherlands	16,000	13,300	13,800	14,000	13,000	12,000	13,000
Belgium	11,070	8,900	9,500	11,100	10,000	9,000	8,000
Luxembourg	220	125	150	150	150	150	150
Great Britain	35,540	28,700	31,490	36,110	43,800	49,000	42,800
Ireland	3,750	2,000	2,100	2,300	2,500	3,000	3,000
Denmark	6,950	7,000	9,030	7,120	5,200	7,000	8,000
Greece	660	1,300	850	800	700	800	800
Spain	18,940	24,500	21,480	24,300	24,700	22,550	24,900
Portugal	4,810	4,300	5,000	5,500	5,300	5,700	5,500
Finland	4,200	5,700	9,070	7,650	4,500	7,000	7,000
Austria	3,280	4,000	4,000	3,900	4,100	4,000	4,000
Sweden	2,990	2,800	3,000	3,000	2,700	3,000	3,000
Poland	-	-	2,000	2,000	2,000	5,200	5,800
Czech Republic	-	-	1,000	1,000	1,000	1,900	2,500
Hungary	-	-	600	600	500	1,900	2,000
Slovakia	-	-	6,500	6,000	5,600	5,600	4,900
Slovenia	-	-	500	500	500	600	500
Latvia	-	-	200	200	200	300	no figure
Lithuania	-	-	500	500	500	700	no figure
Estonia	-	-	500	500	500	100	no figure
Cyprus	-	-	-	-	-	-	-
Malta	-	-	-	-	-	-	-
Bulgaria	-	-	-	-	(1,500)	(1,600)	1,400
Romania	-	-	-	-	(3,500)	(3,300)	3,300
<b>EU-25</b>	<b>175,800</b>	<b>169,625</b>	<b>196,320</b>	<b>211,110</b>	<b>212,350</b>	<b>231,200</b>	<b>-</b>
<b>EU27 since 2007</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>217,350</b>	<b>236,100</b>	<b>230,830</b>
Thereof domestic trade (Poland and Czech Republic)					25,000	19,000	18,700
					thereof coke:	thereof coke:	thereof coke:
<b>Coke</b>	8,350	11,750	13,000	10,000	11,000	12,000	11,000
2007 preliminary figures							

Sources: McCloskey, internal calculations

<b>Coal Consumption in the EU-Countries in Million t</b>						Million t
	<b>Hard Coal</b>		<b>Therefrom Hard Coal Import in t=t</b>		<b>Lignite</b>	
	<b>2006</b>	<b>2007</b>	<b>2006</b>	<b>2007</b>	<b>2006</b>	<b>2007</b>
Germany	70.3	71.3	45.8	45.9	176.3	180.4
France	20.7	18.2	20.7	18.4	-	-
Italy	24.5	24.6	24.5	24.8	-	-
The Netherlands	12.0	13.0	11.9	13.2	-	-
Belgium	9.0	8.0	8.9	8.0	-	-
Luxembourg	0.2	0.2	0.2	0.2	-	-
Great Britain	68.0	59.8	49.0	43.0	-	-
Ireland	3.0	3.0	2.9	3.0	-	-
Denmark	8.5	8.0	8.4	8.0	-	-
Greece	0.8	0.8	0.8	0.8	64.2	65.8
Spain	34.3	35.9	22.7	25.0	6.8	6.2
Portugal	5.7	5.5	5.7	5.6	-	-
Finland	7.0	7.0	6.8	7.1	-	-
Austria	4.0	4.0	4.0	4.1	-	-
Sweden	2.4	3.0	2.4	3.0	-	-
<b>EU-15</b>	<b>270.4</b>	<b>262.3</b>	<b>214.7</b>	<b>210.1</b>	<b>247.3</b>	<b>252.4</b>
Poland	99.6	93.2	5.2	5.8	60.7	56.8
Czech Republic	15.3	15.4	2.0	2.5	49.1	49.3
Hungary	1.5	2.0	1.9	2.1	9.9	9.8
Slovakia	5.0	4.9	5.6	5.0	2.5	2.2
Slovenia	0.0	0.5	0.0	0.6	4.6	4.5
Latvia*	0.0	0.0	0.0	0.0	-	-
Lithuania*	0.0	0.0	0.0	0.0	-	-
Estonia*	0.0	0.0	0.0	0.0	-	-
Cyprus*	-	-	-	-	-	-
Malta*	-	-	-	-	-	-
Bulgaria	-	0.0	-	1.4	-	28.4
Romania	-	5.9	-	3.3	-	32.4
* Other	1.8	-	1.8	-	58.2	-
<b>EU-27 since 2007</b>	<b>393.6</b>	<b>384.2</b>	<b>231.2</b>	<b>230.8</b>	<b>432.3</b>	<b>435.8</b>

Sources: Arbeitsgemeinschaft Energiebilanzen (The Working Group on Energy Balances), BP statistical review, internal calculations, 2007 estimations

Primary Energy Consumption in Germany in Million TCE							
Energy Sources	2001	2002	2003	2004	2005	2006	2007
Hard Coal	65.8	64.3	68.7	65.8	62.8	65.6	67.9
therefrom Import Coal	(36.5)	(35.7)	(37)	(40)	(37.8)	(45.3)	(46.0)
Lignite	55.6	56.6	55.9	56.2	54.5	53.7	55.0
Mineral Oil	190.3	183.2	180.2	177.9	175.8	176.7	160.4
Natural Gas	106.6	106.2	110.0	110.4	110.9	112.1	106.4
Nuclear Energy	63.7	61.4	61.5	62.2	60.7	62.3	52.3
Hydro and Wind Power	4.2	4.9	4.6	5.6	5.9	6.3	7.4
Foreign Trade Balance Electricity	0.3	0.1	-1.0	-0.9	-1.0	-2.4	-2.3
Other Energy Sources	12.3	12.7	13.2	15.1	18.0	23.2	26.5
<b>Total</b>	<b>498.8</b>	<b>489.4</b>	<b>493.1</b>	<b>492.3</b>	<b>487.6</b>	<b>497.5</b>	<b>473.6</b>
<b>Energy Resources</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	shares in % <b>2007</b>
Hard Coal	13.2	13.1	13.9	13.4	12.9	13.2	14.1
therefrom Import Coal	(7.3)	(7.3)	(7.5)	(8.1)	(7.8)	(9.1)	(9.7)
Lignite	11.1	11.6	11.3	11.4	11.2	10.8	11.7
Mineral Oil	38.2	37.4	36.6	36.2	36.1	35.5	33.8
Natural Gas	21.4	21.7	22.3	22.4	22.7	22.6	22.7
Nuclear Energy	12.8	12.6	12.5	12.6	12.4	12.5	11.1
Hydro and Wind Power	0.8	1.0	0.9	1.1	1.2	1.3	1.5
Foreign Trade Balance Electricity	0.1	0.0	-0.2	-0.2	-0.2	-0.5	-0.4
Other Energy Sources	2.4	2.6	2.7	3.1	3.7	4.6	5.5
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Sources: Arbeitsgemeinschaft Energiebilanzen (The Working Group on Energy Balances),  
The Federal Statistical Office of Germany, internal calculations

Coal Handling in German Ports								1,000 t
	2001	2002	2003	2004	2005	2006	2007	
<b>North Sea Ports</b>								
Hamburg	3,607	4,301	4,794	4,944	4,636	4,963	5,716	
Wedel-Schulau	944	707	700	700	600	871	0	
Bützfleth	21	27	43	12	19	13	6	
Wilhelmshaven	1,844	890	1,453	1,672	1,520	1,332	1,360	
Bremische Häfen	1,418	1,547	1,464	1,505	1,216	1,715	1,951	
Brunsbüttel	666	655	387	393	273	622	742	
Emden	-	-	-	-	-	-	3	
Nordenham	1,867	1,703	1,439	2,058	1,915	2,129	2,159	
Papenburg	164	170	260	289	214	170	138	
Remaining North Sea Ports S.H.	70	62	67	126	37	70	632	
Remaining North Sea Ports N.S.	4	7	2	-	-	-	-	
<b>Total</b>	<b>10,605</b>	<b>10,069</b>	<b>10,609</b>	<b>11,699</b>	<b>10,430</b>	<b>11,885</b>	<b>12,707</b>	
<b>Baltic Sea Ports</b>								
Rostock	976	993	1,145	1,187	1,145	1,251	993	
Wismar	40	41	41	42	33	30	22	
Stralsund	4	2	2	1	3	0	0	
Lübeck	-	-	3	-	-	-	-	
Flensburg	399	261	358	343	325	275	246	
Kiel	-	-	113	418	402	193	123	
Saßnitz	-	-	-	-	-	-	7	
Wolgast	-	-	-	-	-	-	2	
Remaining Baltic Sea Ports	4	4	7	4	2	3	-	
<b>Total</b>	<b>1,423</b>	<b>1,301</b>	<b>1,669</b>	<b>1,995</b>	<b>1,910</b>	<b>1,752</b>	<b>1,393</b>	
<b>Turnover in Total</b>	<b>12,028</b>	<b>11,370</b>	<b>12,278</b>	<b>13,694</b>	<b>12,340</b>	<b>13,637</b>	<b>14,100</b>	

Source: Federal Statistical Office

## Imports of Hard Coal and Coke to Germany

Countries	2004					2005				
	Steam Coal	Coking Coal	Anthacite	Coke	Total	Steam Coal	Coking Coal	Anthacite	Coke	Total
Poland	7,085	40	-	1,828	8,954	6,875	147	14	1,175	8,211
Czech Republic	469	-	-	384	857	522	-	-	354	880
Spain	-	-	-	416	416	-	-	-	144	144
France	-	-	-	449	449	-	-	-	207	207
Other										
<b>EU-15/since 2004 EU-25</b>	7,554	40	0	3,077	10,676	7,397	147	14	1,880	9,442
CIS	5,288	125	126	471	6,011	5,855	480	286	135	6,756
Norway	1,387	-	-	-	1,387	905	323	-	-	1,228
USA	778	763	-	-	1,541	198	1,274	-	-	1,472
Canada	73	2,050	-	-	2,123	-	1,566	-	-	1,566
Colombia	4,719	-	-	-	4,719	4,750	7	-	-	4,757
South Africa	9,860	16	-	-	9,876	8,230	5	4	-	8,239
Australia	440	3,915	2	-	4,357	434	3,115	-	-	3,549
China	239	-	108	1,472	1,819	160	-	19	1,040	1,219
Indonesia	814	-	-	24	838	206	-	-	-	206
Venezuela	16	-	-	-	16	1	-	-	-	1
Other Third Countries	336	347	72	130	888	623	165	112	560	1,465
<b>Third Countries</b>	23,950	7,216	308	2,097	33,575	21,362	6,935	421	1,735	30,458
<b>Total</b>	<b>31,504</b>	<b>7,256</b>	<b>308</b>	<b>5,174</b>	<b>44,251</b>	<b>28,759</b>	<b>7,082</b>	<b>435</b>	<b>3,615</b>	<b>39,900</b>

2007 preliminary figures

Sources: Federal Statistical Office, BAFA, internal calculations

1,000 t

2006					2007					Countries
Steam Coal	Coking Coal	Anthacite	Coke	Total	Steam Coal	Coking Coal	Anthacite	Coke	Total	
7,158	155	17	1,637	8,967	4,613	37	-	1,720	6,370	Poland
525	-	1	405	931	302	-	1	314	617	Czech Republic
-	-	-	701	701	-	-	-	744	744	Spain
-	-	-	279	279	-	-	-	23	23	France
-	-	-	-	0	1,100	27	67	248	1,442	Other
7,683	155	18	3,022	10,878	6,015	64	68	3,049	9,196	<b>EU-27 since 2007</b>
8,215	548	338	201	9,302	7,357	701	349	196	8,603	CIS
1,138	133	-	-	1,271	1,816	-	81	-	1,897	Norway
338	1,852	-	-	2,190	1,102	1,803	-	-	2,905	USA
0	1,608	-	-	1,608	104	1,734	-	-	1,838	Canada
3,997	-	-	-	3,997	6,917	15	-	-	6,932	Colombia
8,505	161	2	-	8,668	6,187	317	2	-	6,506	South Africa
819	4,553	-	0	5,372	1,176	5,544	-	-	6,720	Australia
8	27	2	883	920	10	38	2	870	920	China
1,509	-	-	-	1,509	1,168	-	-	-	1,168	Indonesia
108	-	-	-	108	8	7	-	10	25	Venezuela
388	24	65	200	677	762	3	-	1	766	Remaining Third Countries
25,025	8,906	407	1,284	35,622	26,607	10,162	434	1,077	38,280	<b>Third Countries</b>
<b>32,708</b>	<b>9,061</b>	<b>425</b>	<b>4,306</b>	<b>46,500</b>	<b>32,622</b>	<b>10,226</b>	<b>502</b>	<b>4,126</b>	<b>47,476</b>	<b>Total</b>

Table 19

<b>Hard Coal Sales in Germany</b>								1,000 t
	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	
<b>Total Sales<sup>1)</sup> in Hard Coal, Coke and Briquettes</b>								
Power Stations	52,522	49,630	51,618	55,319	50,000	51,500	51,400	
Iron and Steel Industry	14,634	14,666	14,588	14,836	17,400	17,400	18,300	
Heating Market/Other <sup>2)</sup>	3,605	2,954	2,155	1,882	1,100	1,400	1,600	
<b>Total</b>	<b>70,761</b>	<b>67,250</b>	<b>68,361</b>	<b>72,037</b>	<b>68,500</b>	<b>70,300</b>	<b>71,300</b>	
<sup>1)</sup> Domestic Sales <sup>2)</sup> Incl. Consumption of Mines, Benefits <i>Sources: Statistik der Kohlenwirtschaft, internal calculations</i>								
<b>Therefrom Import Coal</b>								
Power Stations <sup>3)</sup>	26,647	26,100	27,900	30,900	27,300	31,100	30,500	
Iron and Steel Industry	10,100	10,300	11,300	11,600	11,300	13,700	14,200	
Heating Market	2,715	2,767	2,000	1,800	700	1,000	1,200	
<b>Total Imports</b>	<b>39,462</b>	<b>39,167</b>	<b>41,200</b>	<b>44,300</b>	<b>39,300</b>	<b>45,800</b>	<b>45,900</b>	
<sup>3)</sup> Imports of power plants according to K-Bogen (BAFA, Division 431), own calculations								

*Sources: BAFA, Statistik der Kohlenwirtschaft, internal calculations/partly estimations*



<b>Consumption, Import/Export and Power Generation in Germany</b>							
	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
<b>Gross Electricity Consumption</b> in billion kWh	584,8	587,4	599,5	608,6	610,5	617,0	617,5
<b>Electricity Foreign Trade</b> in billion kWh							
Exports	44,8	45,5	53,8	51,5	61,9	65,9	63,3
Imports	43,5	46,2	45,8	44,2	53,4	46,1	44,3
Balance	1,3	-0,7	8,0	7,3	8,5	-19,8	-19,0
<b>Gross Electricity Generation</b> in billion kWh	586,1	586,7	607,5	616,0	619,0	636,8	636,5
<b>Utilization of Energy Resources for Power Generation</b> in million TCE							
Hard Coal	42,0	40,9	44,3	40,2	40,4	43,1	44,8
therefrom Import Coal <sup>1)</sup>	(23,6)	(23,0)	(24,6)	(26,2)	(25,7)	(26,7)	(27,2)
Lignite	51,4	52,7	52,5	51,5	51,9	50,0	52,5
Natural Gas	13,6	13,8	14,0	14,9	15,6	15,7	16,7
Fuel Oil	2,4	2,2	2,5	2,9	1,8	1,3	1,9
Nuclear Energy	63,7	61,3	61,5	62,2	60,7	62,1	50,5
Hydro/Wind Power	5,0	5,7	5,4	6,7	7,1	7,8	8,5
Other	6,2	6,4	6,5	5,8	7,3	6,8	14,2
<b>Total</b>	<b>184,3</b>	<b>183,0</b>	<b>186,7</b>	<b>184,2</b>	<b>184,8</b>	<b>186,8</b>	<b>189,1</b>
<sup>1)</sup> Sales to power stations	2007 preliminary figures						

Sources: VDEW, Statistik der Kohlenwirtschaft, BAFA, AG Energiebilanzen, DIW, own calculations

## European/International Price Quotations

	2001	2002	2003	2004	2005	2006	2007	
<b>Crude Oil Prices</b>								
USD/Barrel Brent	24.40	25.00	29.00	38.00	55.00	65.14	72.44	
USD/t SKE	125.00	128.00	150.00	195.00	283.00	335.00	373.00	
<i>Source: MWV</i>								
<b>Natural Gas Prices: Free German Border</b>								
EUR/tce	123.00	105.00	111.00	105.00	142.00	191.00	180.00	
<i>Source: Statistik der Kohlenwirtschaft</i>								
<b>Steam Coal Marker Prices 1% S, CIF NW Europe</b>								
USD/t SKE	46.00	37.00	50.00	83.90	71.25	74.41	101.03	
EUR/tce	51.50	39.10	44.20	67.44	57.27	59.23	73.17	
<i>Source: McCloskey</i>								
<b>Sea Freight Rates Capesize Units - Port of Destination ARA (Amsterdam, Rotterdam, Antwerp)</b>								
South Africa USD/t	6.70	6.50	14.60	20.60	15.75	15.94	32.33	
USA/East Coast USD/t	5.40	5.30	11.90	19.60	16.60	14.87	34.47	
Australia/NSW USD/t	10.50	9.50	20.50	31.00	24.00	24.07	51.77	
Colombiaen USD/t	5.30	5.40	12.10	20.10	16.10	14.89	33.55	
<i>Sources: Frachtcontor Junge, internal calculations</i>								
<b>EU: Price Development for Imported Hard Coal from non-EEC Countries</b>								
				2004	2004	2005	2006	1. HY. 2007
				EU-15	EU-25	EU-25	EU-25	EU-25
Steam Coal EUR/tce	52.00	45.50	39.80	56.20	55.98	61.86	60.43	62.87
Coking Coal EUR/t	60.00	59.00	53.50	61.66	61.20	91.03	104.26	98.95
<p>Steam Coal: Utilisation in power plants; weighted average of cross border price in the EU-countries            Coking Coal: Indicative CIF-price, own calculations for determination of the annual values</p>								
<i>Source: EU-commission</i>								

## Germany - Energy Prices/Exchange Rates

	2001	2002	2003	2004	2005	2006	2007
<b>Exchange Rates</b>							
EUR/USD	1.1166	1.0575	0.8840	0.8039	0.8038	0.7965	0.7296
<i>Source: Deutsche Bundesbank</i>							
<b>Cross Border Price for Coking Coal and Coke - EUR/t</b>							
Imported Coking Coal	54.53	59.49	56.47	63.50	95.25	105.88	96.22
Imported Coke	91.42	87.32	102.15	214.35	230.30	166.79	175.55
<i>Sources: Coking Coal until 2002 BAFA, Division 432; since 2003 Federal Statistical Office Coke: Federal Statistical Office</i>							
<b>Cross Border Price for Steam Coal in EUR/TCE: Utilization in Power Plants</b>							
	Year	1. quarter	2. quarter	3. quarter	4. quarter	Annual Value	
	2000	36.90	39.22	43.13	47.76	42.08	
	2001	50.17	54.08	55.26	53.47	53.18	
	2002	50.76	47.33	40.31	39.41	44.57	
	2003	38.42	37.83	40.43	42.27	39.87	
	2004	48.68	55.44	58.76	61.81	55.36	
	2005	64.81	64.01	65.59	65.8	65.02	
	2006	63.03	61.61	59.75	62.54	61.76	
	2007	63.10	63.51	67.14	78.54	68.24	
<i>Source: BAFA Division 431 (cross border prices=cif price ARA + freight German border)</i>							
<b>Energy Prices free power station EUR/TCE</b>							
	2001	2002	2003	2004	2005	2006	2007
<b>Sources of Energy</b>							
Natural Gas	159.00	151.00	167.00	176.00	206.00	220.00	210.00
Heating Oil. Heavy	108.00	115.00	124.00	117.00	166.00	203.00	198.00
Steam Coal	58.00	50.00	45.00	60.00	70.00	67.00	73.00
<i>Sources: BAFA, Statistik der Kohlenwirtschaft, own calculations, natural gas 2007: preliminary</i>							

## Hard Coal Market in Germany

### Quantities and Prices 1957-2006

Quantities								Prices							
Imports of Hard Coal, Coke and Briquettes t=t				Domestic Mining of Hard Coal t v.F.				Steam Coal from non-EEC Countries <sup>1)</sup>				Domestic Industry Coal <sup>2)</sup>			
Year		Mill. t		Year		Mill. t		Year		EUR/tce		Year		EUR/tce	
1957	18.9	1983	9.8	1957	149.4	1983	81.7	1957	40	1983	75	1957	29	1983	125
1958	13.9	1984	9.6	1958	148.8	1984	78.9	1958	37	1984	72	1958	29	1984	130
1959	7.5	1985	10.7	1959	141.7	1985	81.8	1959	34	1985	81	1959	29	1985	130
1960	7.3	1986	10.9	1960	142.3	1986	80.3	1960	33	1986	60	1960	29	1986	130
1961	7.3	1987	8.8	1961	142.7	1987	75.8	1961	31	1987	46	1961	29	1987	132
1962	8.0	1988	8.1	1962	141.1	1988	72.9	1962	30	1988	42	1962	30	1988	134
1963	8.7	1989	7.3	1963	142.1	1989	71.0	1963	30	1989	49	1963	30	1989	137
1964	7.7	1990	11.7	1964	142.2	1990	69.8	1964	30	1990	49	1964	31	1990	138
1965	8.0	1991	16.8	1965	135.1	1991	66.1	1965	29	1991	46	1965	32	1991	139
1966	7.5	1992	17.3	1966	126.0	1992	65.5	1966	29	1992	42	1966	32	1992	147
1967	7.4	1993	15.2	1967	112.0	1993	57.9	1967	29	1993	37	1967	32	1993	148
1968	6.2	1994	18.1	1968	112.0	1994	52.0	1968	28	1994	36	1968	30	1994	149
1969	7.5	1995	17.7	1969	111.6	1995	53.1	1969	27	1995	39	1969	31	1995	149
1970	9.7	1996	20.3	1970	111.3	1996	47.9	1970	31	1996	38	1970	37	1996	149
1971	7.8	1997	24.3	1971	110.8	1997	45.8	1971	32	1997	42	1971	41	1997	149
1972	7.9	1998	30.2	1972	102.5	1998	40.7	1972	31	1998	37	1972	43	1998	149
1973	8.4	1999	30.3	1973	97.3	1999	39.2	1973	31	1999	34	1973	46	1999	149
1974	7.1	2000	33.9	1974	94.9	2000	33.3	1974	42	2000	42	1974	56	2000	149
1975	7.5	2001	39.5	1975	92.4	2001	27.1	1975	42	2001	53	1975	67	2001	149
1976	7.2	2002	39.2	1976	89.3	2002	26.1	1976	46	2002	45	1976	76	2002	160
1977	7.3	2003	41.3	1977	84.5	2003	25.7	1977	43	2003	40	1977	76	2003	160
1978	7.5	2004	44.3	1978	83.5	2004	25.7	1978	43	2004	55	1978	84	2004	160
1979	8.9	2005	39.9	1979	85.8	2005	24.7	1979	46	2005	65	1979	87	2005	160
1980	10.2	2006	46.5	1980	86.6	2006	20.7	1980	56	2006	62	1980	100	2006	170
1981	11.3	2007	47.5	1981	87.9	2007	21.3	1981	84	2007	68	1981	113	2007	170
1982	11.5			1982	88.4			1982	86			1982	121		

2007 preliminary figures; since 1991 incl. new federal states, EUR-values are rounded

<sup>1)</sup> Price free German border (BAFA Div. 432), since 1996: BAFA Div. 431

<sup>2)</sup> Estimated cost-covering price

Sources: Federal Statistical Office, Statistik der Kohlenwirtschaft, BAFA, RAG, own calculations

## Glossary

<b>ARA</b>	Amsterdam-Rotterdam-Antwerp	<b>kWh</b>	kilowatt hour
<b>BAFA</b>	Bundesamt für Wirtschaft und Ausfuhrkontrolle (Federal Office of Economics and Export Control)	<b>KWK</b>	combined heat and power
<b>BEE</b>	Black Economic Empowerment	<b>LNG</b>	liquefied natural gas
<b>capsize</b>	definition for bulk-carrier > 100.000-150.000 DWT	<b>NAR</b>	coal trade: net as received
<b>cif</b>	INCOTERM: cost-insurance-freight	<b>mt</b>	metric ton
<b>CIS</b>	formerly Soviet Union	<b>Panamax</b>	definition for bulk-carrier 50.000-90.000 DWT
<b>DIW</b>	Deutsches Institut für Wirtschaftsforschung (German Institute for Economic Research)	<b>PCI-coal</b>	metallurgical area: pulverized coal injection
<b>ECE</b>	Economic Commission for Europe	<b>sintering coal</b>	low-volatile coal, used in sintering plants
<b>EEG</b>	Erneuerbare-Energien-Gesetz (Renewable Energy Sources Act)	<b>t/ce</b>	ton coal equivalent (7.000 kcal/kg)
<b>EEX</b>	European Energy Exchange AG, Leipzig	<b>Spotmarkt</b>	short-term market
<b>fob</b>	INCOTERM: free on board	<b>st</b>	short ton (= 0,90719 mt)
<b>GVSt</b>	Gesamtverband Steinkohle (German Hard Coal Association)	<b>t</b>	ton
<b>IEA</b>	International Energy Agency	<b>t/a</b>	ton per annum
<b>IISI</b>	International Iron and Steel Institute	<b>BDEW</b>	Bundesverband der Energie- und Wasserwirtschaft e.V. (German Energy and Water Association)
<b>HS</b>	fuel oil heavy	<b>VDN</b>	Verband der Netzbetreiber (Association of German network operators)
		<b>WCI</b>	World Coal Institute

## Institutions/Links

<b>AGEB (Arbeitsgemeinschaft Energiebilanzen/ (The Working Group on Energy Balances)</b> <a href="http://www.ag-energiebilanzen.de">www.ag-energiebilanzen.de</a>	<b>EIA (Energy Information Administration)</b> <a href="http://www.eia.doe.gov">www.eia.doe.gov</a>
<b>American Coal Council</b> <a href="http://www.americancoalcouncil.org">www.americancoalcouncil.org</a>	<b>Euracoal</b> <a href="http://www.euracoal.org">www.euracoal.org</a>
<b>Australian Bureau of Agriculture and Resource Economics</b> <a href="http://www.abareconomic.com">www.abareconomic.com</a>	<b>FDBR - Fachverband Dampfkessel, Behälter- und Rohrleitungsbau e.V. (Association of Steam Boiler Pressure Vessel and Piping Manufacturers)</b> <a href="http://www.fdbbr.de">www.fdbbr.de</a>
<b>Australian Coal Association</b> <a href="http://www.australiancoal.com">www.australiancoal.com</a>	<b>GVSt Gesamtverband Steinkohle (German Hard Coal Association)</b> <a href="http://www.gvst.de">www.gvst.de</a>
<b>Australian Institute of Energy</b> <a href="http://www.aie.org.au">www.aie.org.au</a>	<b>IEA (International Energy Agency)</b> <a href="http://www.iea.org">www.iea.org</a>
<b>Chamber of Mines of South Africa</b> <a href="http://www.bullion.org.za">www.bullion.org.za</a>	<b>National Mining Association</b> <a href="http://www.infomine.com">www.infomine.com</a>
<b>Coal International</b> <a href="http://www.coalinternational.co.uk">www.coalinternational.co.uk</a>	<b>US Department of Energy - Fossil.Energy.gov</b> <a href="http://www.fe.doe.gov">www.fe.doe.gov</a>
<b>DEBRIV (Bundesverband Braunkohle German Lignite Organization)</b> <a href="http://www.braunkohle.de">www.braunkohle.de</a>	<b>World Coal Institute</b> <a href="http://www.wci-coal.com">www.wci-coal.com</a>

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<b>Bulk Trading S.A.</b> Piazza Molino Nuovo 17, 6900 Lugano, Switzerland	(+41)	916115130	916115137	www.bulktrading.ch
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