ANNUAL REPORT

2011

Facts and Trends 2010/2011

VEREIN DER KOHLENIMPORTEURE

Coal Market at a Glance

		2008	2009	2010[1)]
World				
Hard Coal Production	Mt	5,850	6,100	6,720
Hard Coal Trade	Mt	930	916	1,053
Seaborne	Mt	839	859	963
Overland Trade	Mt	91	57	90
Coking Coal Production	Mt	527	528	608
Coke Trade	Mt	28	14	21
European Union (27)				
Hard Coal Production	Mt	149	135	134
Hard Coal Imports/Cross-Border Trade	Mt	217	189	182
Coke Imports	Mt	11	8	8
Germany				
Hard Coal Consumption	Mt	71.7	56.0	64.8
Hard Coal Production (useable)	Mt	17.1	13.8	12.9
Total Imports	Mt	48.0	39.5	45.1
thereof: Hard Coal Imports	Mt	44.0	36.6	41.0
Coke Imports	Mt	4.0	2.9	4.1
Use of Imported Coal [2)]	Mt	50.5	40.7	49.1
thereof: Power Plants	Mt	35.7	30.7	33.1
Iron and Steel Industry	Mt	13.5	9.1	14.7
Heating Market	Mt	1.3	0.9	1.3
Prices (annual averages)				
Steam Coal Marker Price CIF NWE	US$/tce	175	82	107
Cross-Border Price Steam Coal	€/tce	112	79	85
CO_2 Certificate Price	€/tCO2	23	13	14
Exchange Rate	€/US$	0.68	0.72	0.75

[1)] Some figures are provisional
[2)] Differences between total imports and use of imported coal are due to stock changes

After the Nuclear Disaster in Japan: What Will Determine the Future for Energy?

The year 2010 was positive for the world economy. While in Asia, to a large extent, the worldwide economic and financial crisis was hardly felt, in the western world, mainly in the USA and Europe, it left much evidence of economic downturn. In 2010, the USA and Europe gradually recovered. Accordingly, GDP also grew across the EU. However, growth rates in the individual EU Member States varied, depending on the situation in the individual countries, including their energy policies. Leading GDP growth, and thus once again the economic locomotive of Europe, was Germany, whose economy grew by 3.6%.

Without coal, this development would not have been possible. Economic development in China and India is essentially based on the generation of electricity using coal.

In Germany, hard coal acts as a major "swing-supplier". This became obvious last year, when primary energy consumption increased by approximately 4.6%, hard coal consumption grew by nearly 15.4% and power and heat generation by about 7.8%.

The year 2011 began with torrential downpours in Australia, resulting in floods in large parts of Queensland. An area the size of Germany and France was practically under water and many coal mines were flooded. According to the latest estimates, it will take months for production to again reach the level prior to the weather disaster. Between 20 Mt and 100 Mt of coking coal could be affected by force majeure in 2011.

Unrest in Middle Eastern states such as Algeria, Egypt, Yemen, Morocco and Libya, where people could gain freedom from dictatorships thanks to peaceful revolution, again shows how quickly geopolitical situations can change. Some of these countries are also significant oil and gas suppliers to Europe and Germany.

Globally, the recession dampened the boom of prices for oil, coal and raw materials only briefly and today primary energy prices are again high. In addition, raw material and power requirements in emerging economies such as China and India continue to increase and cause markets to remain nervous.

The most decisive event, that will probably have long-lasting influence on future energy policy, above all in Germany, was the massive earthquake and resulting tsunami, which cost thousands of human lives and devastated the northeast of Japan. On top of this, the country is now fighting to avert a nuclear disaster after the damage at the Fukushima 1 nuclear power plant, whose extent and eventual impact on human and the environment are still unpredictable.

This misfortune in Japan affects us all and we very much hope that the country will remain free from further earthquake damages and succeed in containing the nuclear disaster so that the population can begin to rebuild the destroyed areas.

The Fukushima disaster has heightened the debate about the future of nuclear energy, especially in Germany. In China, the government wants to reconsider the decision to build 40 new nuclear reactors by 2016; all approval procedures have been suspended for the time being. The same is happening in Russia that wants to erect 26 new nuclear power plants over the next 20 years. In the EU, Energy Commissioner Oettinger announced stress tests to assess the safety of the Union's nuclear power plants.

After the German Energy Concept is Before a new Energy Concept?

While in China, Russia and also in neighbouring European countries, it cannot be assumed de facto that new nuclear power plants will not be built, the German Federal Government has just embarked on the opposite course. The decision taken in autumn 2010 to extend the lifetime of Germany's nuclear power plants was suspended for three months by a moratorium; the seven oldest nuclear reactors were taken off the grid, an ethics committee was established to evaluate nuclear energy and, only a few weeks later, Germany announced its plan to end electricity generation from nuclear power plants by 2020 at the latest. At the same time, the Energy Concept that was also adopted in the autumn of 2010 is to be reviewed. Being based solely on climate protection, it neglected security of supply and economic factors.

Utopian aspirations are one thing, but somewhat more realism could have been expected of the black-yellow Federal Government. The current Energy Concept was already subject to criticism; most of its objectives are unrealistic and over-ambitious, because they are based on questionable assumptions. Furthermore, the huge costs and risks of the proposed transformation of the German energy sector were not made sufficiently clear:

- 18% share of renewables in primary energy consumption by 2020;
- 35% share of renewables in electricity generation by 2020 (currently 17%);
- 40% reduction of greenhouse gases by 2020;
- 20% decrease in energy consumption by 2020;
- 10% decrease in electric power consumption by 2020;
- Investment of over €200 billion required in the energy sector alone by 2020 (according to a Prognos study);
- €14 billion annual subsidies (Renewable Energy Sources Act) in 2011 with an upward trend;
- Additional costs of €2 trillion due to separate national initiatives instead of a co-ordinated European approach (according to a McKinsey study);
- € 120 billion to subsidise photovoltaics over the next 20 years; and
- In 2010 alone, 40% of the support for green electricity went to photovoltaics which met just 2% of power demand.

Against the background of increasing electrification (e.g. e-mobility), how realistic is it to expect industry, commerce and households to counter their increased need for electricity through savings and efficiency improvements? And how can this now happen even faster and more ambitiously?

It does not make sense to keep formulating new objectives, to set even more ambitious timeframes and to play down the impact on electricity tariffs or to deny any imminent bottlenecks in the electricity supply network. Is a concept that has not been properly thought through still defendable?

In the opinion of VDKi, policymakers should, on the basis of the most recent experience, further develop and detail the positions set out in the Energy Concept. This should include a re-evaluation of fossil-fuelled power generation, especially coal-fired power plants. In particular, VDKi requests:

1. A Measured and Realistic Energy Transformation

A U-turn in energy supply choices is wanted politically and socially for reasons of climate protection and is not questioned. It must, however, remain economically feasible and must not have a negative impact on security of supply, in order to be successful in the long run. Coal is the supporting pillar of a bridge to a safe, competitive and environmentally friendly supply of energy.

2. No Risk to Security of Supply

Power must be available reliably 24 hours a day for industry, commerce and households as well as public services. If it is accepted that renewable energy sources have priority feed-in, then coal must bring security to power generation today and tomorrow during times when renewables are not available.

With increasing non-dispatched power and priority feed-in, balancing the network will become even more challenging. According to expert opinion, several thousand kilometres of new extra-high voltage lines are needed by 2020 in order to transport wind power generated in North Germany to the consumption centres in West and South Germany. Bearing in mind that today not even 100 km have been constructed and that citizens are protesting against almost all infrastructure projects, the ambitious schedules of the Federal Government must be examined and adapted to reality.

3. Curb Subsidy for Green Electricity with a Harmonised European Approach that is Openly Transparent Shown in the Federal Budget

An industrial base such as Germany depends on reliable electricity at competitive prices. The costs to promote power generation from wind, sun and water should therefore no longer be passed through to the power consumer, but should be openly shown as a subsidy from the federal budget. Otherwise, the competitivity of Germany as an industrial centre with competitive energy prices is in serious danger because of the enormous costs of renewable energy sources.

With a functioning EU Emissions Trading Scheme, to protect the climate, the Renewable Energy Sources Act does not make sense. Furthermore, it appears that wind and solar capacities are developed where they obtain the highest subsidies and not where the best wind or sun conditions exist. It is all the more important to harmonise renewables support across the EU in order to deploy renewable energy where it is most economical.

4. Use Economic Options to Support Climate Policy

Taking climate protection seriously and setting ambitious CO2 reduction targets for 2020 implies a strong commitment to CCS. The EU objective of reducing CO2 emissions by approximately 85%-95% by 2050 means that many industrial plants, such as coal- and gas-fired power plants must be equipped with CCS. The law on CCS must not be sacrificed to tactical electioneering or the self-interest of German states. Here, a clear declaration of support from the Federal Government is required.

Building new and highly efficient coal-fired power plants with electrical efficiencies of >45% and overall efficiencies up to 70% (CHP) to replace old plants can make a substantial contribution to reducing CO2 emissions. In this context, VDKi expects clarity from the Federal Government on its announced "limited support for building new power plants". The massive development of renewables is already leading to conventional power plants having ever fewer full load hours each year. The specific costs of power generation in these power plants are therefore increasing. Free market principles should be adopted to ensure that those fossil-fired power plants that compensate for the fluctuating feed-in of green electricity are properly rewarded.

Hamburg, May 2011

Dr. Wolfgang Cieslik
- Chairman -

Dr. Erich Schmitz
- Managing Director -

Contents:

GLOBAL ECONOMIC OVERVIEW

In 2010, the economic trends after the recession, the continuation of the climate policy debate in Cancún and the outcome of the World Energy Council Congress were all of interest to the global energy sector and to the coal sector in particular.

21st World Energy Council Congress in Montreal

The World Energy Council (WEC) was founded in 1923 and is based in London. Today, about 100 National Member Committees belong to it, representing more than 90% of world energy production. The World Energy Council is the forum to debate global and long-term issues concerning the energy economy, energy policy and energy technology. As non-governmental, non-profit organisation, it represents a worldwide competence network, in industrialised, emerging and developing countries in all regions.

The activities of the World Energy Council cover the entire spectrum of energy sources – coal, oil, natural gas, nuclear energy and renewable energies – together with the associated environmental and climate issues. It is the only global network spanning all sources of energy of its kind.

Its mission since its foundation is to promote the sustainable use of all forms of energy for the greatest benefit of all, in particular the approximately two billion people who today still have insufficient or no access to affordable energy.

The objectives of the wide-ranging mandate of the World Energy Council are reflected in the four A´s: Accessibility – Availability – Acceptability – Accountability.

To implement these objectives, the World Energy Council carries out studies as well as technical and regional programmes that are presented and discussed every three years at the World Energy Council's congress.

At the 21st Congress of the World Energy Council (WEC) from 12-16 September 2010, more than 6,000 participants from over 130 countries and non-governmental organisations analysed major issues and challenges concerning global power supply and its future structure.

Accessibility:
Access to energy is a crucial condition for economic development.
However, the supply situation throughout the world is extremely divers:

- Approximately 70% of the global population lives in emerging nations with high rates of economic growth and fast-rising energy consumption. Above all, China and India alone will in the future account for 90% of additional energy consumption.

- For sustainable development in the poorest countries, access to power is essential to eradicate energy poverty.

Availability:
Fossil fuels are today the most widely available source of energy. Furthermore, their high share of the world energy mix has not changed significantly since the oil crisis, and they will probably make the major contribution to supply over the next 20 to 30 years. The Congress considered the availability of individual sources of energy and any limitations due to climate protection policies as well as improved energy efficiency in resource extraction and use.
After the disaster at the Deepwater Horizon platform in the Gulf of Mexico and the severe environmental damage

caused by the resulting oil spill, many oil exploitation projects were evaluated more critically or only approved with much tighter safety and environmental regulations.

Shale gas: A Paradigm Shift for Energy Supply?

The consequences of the surprise announcement made at the Congress concerning the large increase of natural gas reserves were widely discussed. For years, natural gas was considered a scarce resource with a reserve-to-production horizon of approximately 50 years. New techniques and technologies to improve the recovery of available deposits by up to 80%, and insights in to the production of natural gas trapped in deep sand and shale layers, coupled with the strong rise of liquefied natural gas (LNG) production, mainly in Arab countries, have multiplied world gas availability by a factor of five. Unconventional gas production could change the structure and market dynamics in large parts of the energy sector over the next years. Many WEC participants saw a "paradigm shift", particularly in the USA. With a share of nearly 25% of additional new gas reserves, the USA is the largest beneficiary of this development. The USA was to date an importer of energy, with demand constantly increasing. Now, however, America could become a gas exporter, and even a major coal exporter, if in the future more electricity is generated at gas-fired power plants. This has already led to initial short-term reactions on international gas markets and to more favourable gas prices in Europe. It remains to be seen, however, if this development will last.

This trend has already had a positive impact on the USA's reliance on imported oil and gas, and on its balance of payments, because about US$ 300-400 billion of the country's steadily rising deficit of nearly US$ 1 trillion comes from energy imports. In Europe, unconventional gas has already met with substantial resistance, even during the pre-exploration phase.

Acceptability:
The future structure of power supply might depend on public acceptance. All stages of electricity supply – production, long-distance transmission and distribution to consumers – are frequently associated with emissions and other impacts. It is a major challenge to balance economic and environmental factors over the entire chain of added value while safely meeting demand.

Accountability:
The joint accountability of politics and economics on all direct and indirect power supply issues were discussed as a separate item on the last day. Topics included international co-operation strategies, bi-lateral support, questions concerning financing and improved public communication and participation through the use of new technologies.

There was general agreement with the IEA's opinion that the risks of investing in power supply, with long delays before any return on investment and the lack of planning in the energy industry, had clearly increased since the last Congress. The long lead times required for the planning, permitting and construction of costly energy projects on the one hand, and the constantly shifting, sometimes contradictory policy changes on the other hand have opened a wide gap for investment decisions. This was noticeable above all in Europe, where at different political levels – from the European Commission and European Union down to Member States, the German states and local authorities – there is no alignment among partners and stakeholders, but instead often opposing political opinions that make it more difficult to find solutions. This affects projects such as the expansion of high-voltage transmission systems to transport power from renewable energy sources, the development of new, highly efficient coal-fired power plants and the realization of CCS technology with CO_2 pipelines and storage.

Global Production and Economy on a Growth Path

On the whole, OECD countries registered above-average growth rates in 2010 compared with 2009, according to estimates. Industrial production increased by 8.2% and gross domestic product (GDP) by approximately 3%. Global GDP growth was estimated at 5%.

This development is expected to continue in 2011. The problems in the financial and real estate sectors have not yet been remedied, while unemployment and national debt are on the rise, especially in OECD countries. Economic recovery programmes and the robust development of emerging economies in Asia and in parts of South America could have a positive effect. However, in contrast, the political unrest in MENA states has again led to high oil prices at the beginning of 2011, which could put a damper on economic recovery.

Growth Rates of the World Economy (%)

	2007	2008	2009	2010	2011 [1]
Global Industrial Production	3.7	3.0	- 1.1	3.0	13
GDP	5.4	2.9	- 0.5	5.0	4.2

[1] *Estimate*

HT-W1 Source: Clarkson Research Service 4/2011

World Population Grows to 8.2 Billion in 2030

The key driving force for the expanding world economy and global consumption of energy, leading to rising CO_2 emissions, continues to be increasing global population. It is growing mainly in developing countries. On average, the world's population increases by 1%-1.2% or 70-80 million people each year. This growth will however not be affected by the economic crisis, because it is taking place in the poorest countries.

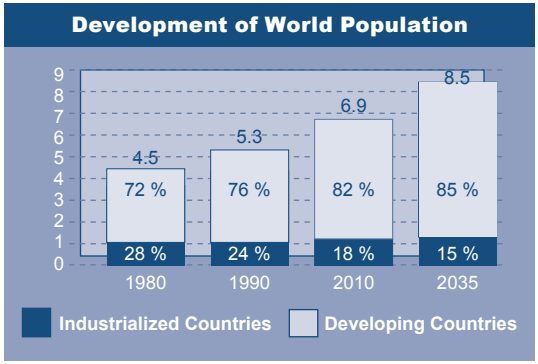


Figure 1 Source IEA

Extrapolation of the figures indicates that world population will increase by almost 3.7 billion people in the period from 1980 to 2030, i.e. over a span of only 50 years. Over the next 20 years, another 1.4 to 1.6 billion people will be added to the population. But energy consumption is increasing even faster than world population, because specific *per capita* consumption is rising in addition to the population figures themselves. The increased use of electrical devices and the steady shift from rural to urban populations around the world are causing an additional rise in energy consumption, especially because the specific energy consumption of people living in cities is higher.

Developing and emerging countries have an enormous potential to increase energy consumption as they strive to raise their living standards and narrow the gap with industrialised countries. The IEA estimates that 1.4 billion people – more than 20% of the world's population – do not have access to power and 2.7 billion people – approximately 40% of world population – still use traditional biomass (wood) to cook and coal briquettes to heat.

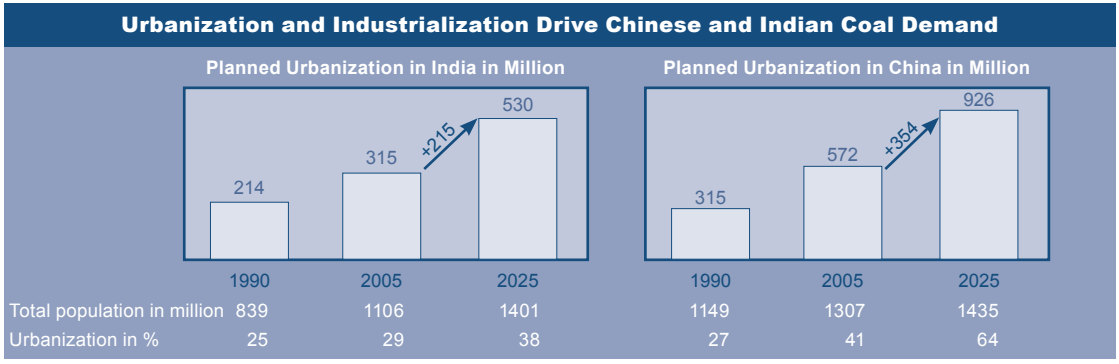


Figure 2 Source: McKinsey 2010

These figures make it clear why emerging and developing countries are currently unable to join Europe's industrialised countries in achieving the latter's priorities to save energy and reduce greenhouse gas emissions. Satisfying the basic needs of their citizens for food, water, mobility and access to electric power to improve their living standards, even to a modest level, remains their top priority.

Global Energy Consumption Increased Again

Initial estimates indicate that world energy consumption in 2010 reached the level of 2008. The reason behind this is the global recovery from the economic crisis, notably in the OECD countries.

The Pacific region continued to enjoy economic growth. In addition to the increase of its own energy production, especially China and India made increasing use of energy supplies available from the world market. Oil consumption increased by 4.6% and natural gas consumption by 2.7%. Global hard coal and lignite consumption, in contrast, grew by 6.7% in 2010, with hard coal accounting for most of this growth.

In 2010, coal (hard coal and lignite) reached a world market share of 32% (total does not include non-hydro renewables) and has continued to be the fastest-growing source of primary energy over the past several years.

Primary Energy Consumption - Major Sources of Energy -

	2000 Mtce	2008 Mtce	2009 Mtce	2010 Mtce	2009/2010 Change in %
Coal	3,120	4,724	4,900	5,230	6.7
Natural Gas	3,180	3,898	3,700	3,800	2.7
Oil	5,110	5,617	5,400	5,650	4.6
Nuclear	840	886	900	900	0.0
Hydro	882	1,026	1,000	1,000	0.0
Total	13,132	16,151	15,900	16,580	4.3

HT-W2 Source: BP, own estimate for 2010

World Energy Outlook – Forecast of World Development to 2035

The 2010 edition of the IEA Word Energy Outlook (WEO) includes projections of consumption, production, trade and investment to 2035. The WEO includes, for the first time, three scenarios.
These are:

1. The **Current Policies Scenario** (previously called Reference Scenario), in which no crucial changes to frame work conditions of energy and climate policies are assumed (i.e. business as usual).

2. The **New Policies Scenario** (main scenario) takes into account current government commitments to protect the climate and improve security of power supply.

3. The **450 ppm Scenario**, with the assumption that the concentration of greenhouse gases in the atmosphere is limited to 450 parts per million of CO_2 equivalent. This should make it possible to achieve the objective of limiting the global rise in temperature to a maximum 2°C, compared with pre-industrial level.

In its World Energy Outlook, the IEA is for the first time taking into account energy policy commitments and plans to limit greenhouse gas emissions and to improve security of energy supply to forecast supply and demand.

The most important results of the New Policies Scenario (NPS) are discussed here:

In its WEO 2010, the IEA concludes, firstly, that the outlook for global energy demand to 2035 will be determined mainly by energy policy measures and their influence on technology, energy prices and the behaviour of end-users. In the NPS, global **primary energy consumption rises by 36% to 24.0 billion tonnes of coal equivalent (tce) between 2008 and 2035**, corresponding to an average growth of 1.2% per annum. Compared with this, average annual growth was 2% over the last 27 years. In other words, the projected rise of energy demand is clearly lower than in the reference scenario, in which consumption rises annually by 1.4% until 2035. **Through to 2035, 93% of the rise in primary energy consumption will be in non-OECD countries**. The share of OECD countries in world primary energy consumption will drop from 44% in 2008 to 33% in 2035.

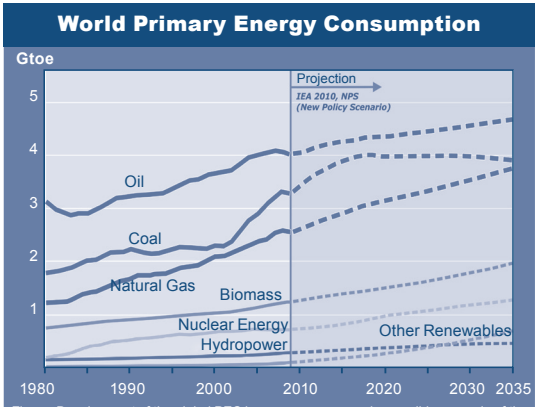


Figure 3 Source: BGR Hannover: Kurzstudie 2010 Reserven, Ressourcen und Verfügbarkeit von Energierohstoffen

According to IEA data, demand for coal rises very differently in the various scenarios between 2008 and 2035.

Fossil sources of energy retain a dominant position in all three scenarios to 2035. Their respective shares of the primary energy mix however vary markedly. Fossil fuels must, even in the NPS-scenario, cover more than half of the increase in demand.

Coal remains the No. 1 source of energy for electricity generation in the world

Word Coal Demand by Region to 2035 According to the IEA "New Policies Scenario"								
	1980 Mtce	2008 Mtce	2015 Mtce	2020 Mtce	2025 Mtce	2030 Mtce	2035 Mtce	2008-2035[1] %
OECD	1,379	1,612	1,562	1,452	1,337	1,208	1,021	- 1.7
North America	571	828	827	789	740	681	596	- 1.2
America	537	780	777	747	705	649	576	- 1.1
Europe	663	447	392	346	312	278	226	- 2.5
Pacific	145	337	342	318	285	249	199	- 1.9
Japan	85	162	161	146	125	106	82	- 2.5
Non-OECD	1,181	3,124	3,999	4,213	4,357	4,484	4,600	1.4
E. Europe/Eurasia	517	325	324	305	304	296	290	- 0.4
Caspian Region	n. a.	47	57	59	60	57	56	0.7
Russia	n. a.	167	170	163	163	159	158	- 0.2
Asia	572	2,601	3,458	3,687	3,830	3,958	4,081	1.7
China	446	2,019	2,685	2,788	2,831	2,842	2,822	1.2
India	75	373	467	551	609	682	781	2.8
Indonesia	0	53	95	111	131	151	168	4.4
Middle East	2	14	17	16	18	23	29	2.9
Africa	74	149	151	159	161	164	160	0.3
Latin America	16	35	49	46	43	43	40	0.6
Brazil	8	20	28	24	21	21	20	0.2
World	2,560	4,736	5,561	5,665	5,694	5,692	5,621	0.6
European Union	n. a.	434	374	314	277	240	193	-3.0

[1] Average annual growth rates

HT-W3 Source: WEO 2010, IEA

In the NPS, coal demand rises by approximately 20% until 2020 and then drops slowly after 2025. Non-OECD countries mainly account for this increase, with China, India and Indonesia alone representing nearly 90% of the entire rise. China remains the world's largest coal consumer and India progresses to second place in 2030. Over the period to 2035, **China will complete the construction of approximately 600 GW of new coal-fired power plants**, equivalent to today's entire coal-fired power generation capacity in the USA, the European Union and Japan together, or four times the installed capacity in Germany at the beginning of 2010.

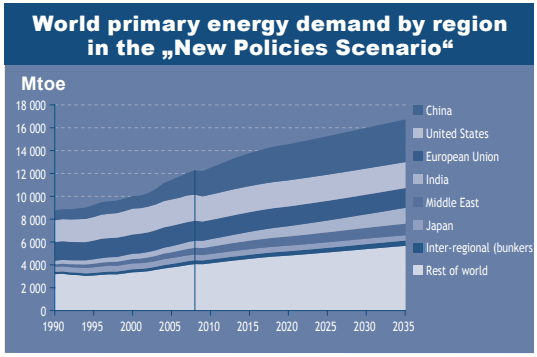


Figure 4
Source: IEA, World Energy Outlook 2010, chart 2.5, page 85

In the NPS, the energy mix for power generation changes to the disadvantage of fossil fuels by 2035. Fossil fuels will nevertheless still lead, with a share of 55% in 2035 (2008: 68%). **Worldwide, coal will remain the main fuel for the generation of electricity**, even though its share will drop to 32% from today's 41%.

Electricity consumption grows by 75% during the period 2008-2035 – even more than primary energy consumption. More than 80% of this increase is in non-OEDC countries. In China, demand for electricity triples. The share of coal in China's new capacity amounts to nearly 40%.

The fact that the greatest share of the long-term increase in coal consumption will be for the power sector makes it all the more necessary to develop modern clean coal technologies in order to protect the climate. Without CCS technology, it will not be possible to reduce CO_2 emissions in those countries where electricity generation is based primarily on coal. These countries include China, the USA, India, Russia and a growing number of other Asian countries, such as Indonesia and Vietnam.

The share of renewable energy sources in world power generation increases from 19% to 32% between 2008 and 2035, thereby catching up with coal. The generation of electricity from renewables will triple by 2035. This shows that all sources of energy will be needed simply to satisfy demand.

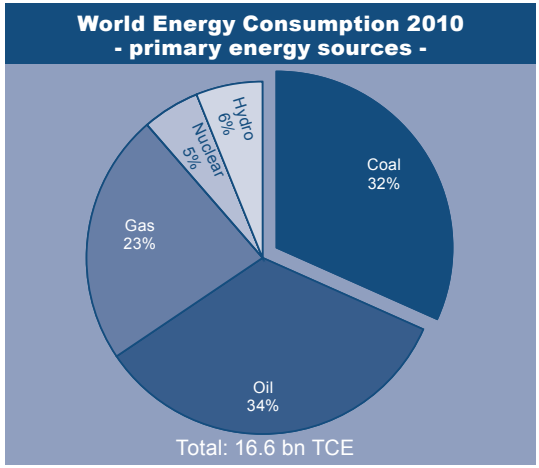


Figure 5 Source: Own calculations

Hard Coal Output Increases to 6.7 billion tce

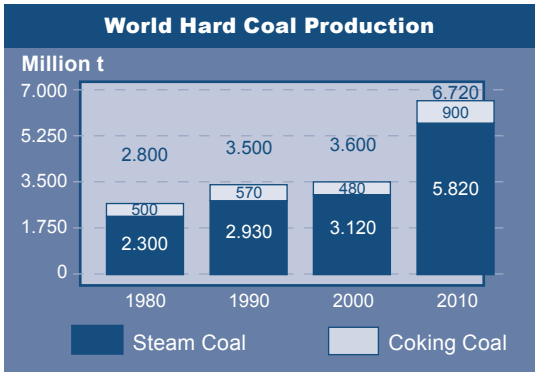


Figure 6 Source: IEA, 2010 preliminary, own estimation

In 2010, hard coal output worldwide continued to increase, growing by approximately 600 million tonnes to approximately 6.7 billion tonnes. Total output breaks down into approximately 5.8 billion tonnes of steam coal and approximately 0.9 billion tonnes of coking coal.

Over the last decade, since 2000, global hard coal output has grown by 86% or 3.1 billion tonnes. China is mainly responsible for this trend, alone increasing its production by 1.2 billion tonnes between 2005 and 2010.

Other countries have also increased production significantly. The majority of the worldwide growth in production comes from Asia, as trends in recent years show:

Hard Coal Output of Major Countries in Pacific Region Mt

Producing Countries	2008	2009	2010
China	2,761	2,910	3,410
India	489	532	537
Australia	334	344	355
Indonesia	255	280	325
Vietnam	40	43	50
Total	3,879	4,109	4,677

HT-W4 Source: IEA, 2010 provisional

In addition to the above-mentioned countries, elsewhere in the Asian region substantial quantities of coal are still mined in North Korea, Mongolia and New Zealand.
Outside booming Asia, developments in hard coal output varied. Output in North America remained almost stable, as domestic demand for steam coal declined. Additional demand came from an increase in exports of 19 million tonnes. US mining companies in the Appalachian coalfields are finding it increasingly difficult to obtain permits for mountaintop mining. Canada adjusted its hard coal production upwards, which is essentially aimed at export, in view of stronger demand for coking coal and PCI coal, reflecting the economic situation in the steel industry.

In South America, Colombia in particular, increased its production because of increasing demand from Europe and also, for the first time, from Asia. Furthermore, smaller coking coal deposits in Colombia attracted growing attention. Venezuela, by contrast, maintained production at a low level.

Economic recovery enabled Russia to increase production. Output in South Africa stagnated at its 2009 level. The many BEE (Black Economic Empowerment) groups will hopefully use their newly granted mining rights and start coal production. New coal projects are being examined mainly in Mozambique, but also in Botswana and in Zimbabwe.

In Europe (EU-27), production continued to drop slightly from 135 million tonnes in 2009 to 134 million tonnes in 2010, with declines in Poland and Germany. The sharp increases in world market prices towards the end of 2010 again strengthened the competitive position of indigenous European production.

Ten Major Coal Producers in the World

Company	2008 Mt	2009 Mt	2010 * Mt
Coal India	403	431	431
Peabody [1]	255	244	246
Shenhua	186	210	225
Arch[1]	125	125	161
China Coal	114	125	123
BHP Billiton	116	104	103
Anglo American	100	95	97
SUEK	96	91	90
Xstrata	86	85	80
Rio Tinto	153	132	73

[1] Own production and third party purchases

HT-W5 Sources: The McCloskey Group 2010, own estimate, Business Reports*

The following table shows the coal production trend in million tce expected by the IEA. To date, a comparison of IEA forecasts and reality shows that the Agency's forecasts of coal production have always been too low.

natural resources, including coal. Resources refer to the total quantity of mineral or coal found in a deposit.

World Coal Output by Region to 2035 According to the IEA "New Policies Scenario"

	1980 Mtce	2008 Mtce	2015 Mtce	2020 Mtce	2025 Mtce	2030 Mtce	2035 Mtce	2008-2035 [1] %
OECD	1,384	1,478	1,461	1,382	1,306	1,219	1,106	- 1.1
North America	672	883	863	825	773	709	621	- 1.3
America	640	828	807	775	731	670	589	- 1.3
Europe	609	258	195	161	138	118	89	- 3.8
Pacific	103	337	403	396	395	392	396	0.6
Australia	74	331	399	392	392	389	393	0.6
Non-OECD	1,196	3,401	4,099	4,284	4,388	4,473	4,514	1.1
E. Europe/Eurasia	519	401	376	351	344	336	325	- 0.8
Caspian Region	n. a.	72	77	80	80	78	76	0.2
Russia	n. a.	239	224	208	203	197	193	- 0.8
Asia	568	2,712	3,403	3,610	3,724	3,806	3,862	1.3
China	444	2,076	2,605	2,747	2,814	2,839	2,825	1.1
India	77	322	364	410	434	461	500	1.7
Indonesia	0	236	319	328	351	376	400	2.0
Middle East	1	2	2	2	2	2	2	1.4
Africa	100	208	217	222	221	225	226	0.3
South Africa	95	204	202	205	203	206	210	0.1
Latin America	9	79	101	99	97	104	99	0.8
Colombia	4	68	85	84	83	89	84	0.8
World	2,579	4,880	5,561	5,665	5,694	5,692	5,621	0.5
European Union	n. a.	254	188	143	118	96	70	- 4.7

HT-W6 Source: IEA WEO 2010 1) Average annual growth rates

According to the IEA's NPS, Europe's hard coal consumption will continue to drop, decreasing by 2.5% per annum from 2008 to 2035.

Coal Reserves Adequate for 120 Years

It has now become necessary to distinguish between the terms "resources" and "reserves" when referring to

The reserves are the part thereof which can be verified and which can be economically mined using today's technology.

As prices rise, some resources become reserves, because their higher production costs can be borne if necessary. When prices fall, however, deposits can become uneconomic.

The current estimates of hard coal reserves, based on what is known about worldwide economically recoverable reserves (see table), are in the range of 723 billion tonnes or approximately 620 billion tonnes of coal equivalent. This latest estimate comes from the German Federal Institute for Geosciences and Natural Resources (BGR – Bundesanstalt für Geowissenschaften und Rohstoffe).

BGR estimates hard coal resources in 2010 at 17,167 billion tonnes. The ratio between resources and reserves is approximately 23.7:1 and has substantially improved since the previous BGR estimate (21:1), because the volume of resources has risen dramatically. The world's coal resources are nowhere near as well documented as oil and gas resources.

Reserves and Output of Hard Coal by Region

	Reserves as at End 2009		Output 2009	
Region	Gt	%	Mt	%
Europe	18	2.5	140	2.3
CIS	123	17.0	401	6.7
Africa	30	4,2	254	4.2
North America	232	32.1	969	16.1
South America	9	1,2	77	1.3
PR China	181	25.0	2,930	48.8
India	72	10.0	532	8.9
Indonesia / Vietnam	9	1.2	296	4.9
Australia / New Zealand	45	6.2	352	5.9
Others	4	0.6	55	0.9
Total	723	100	6,006	100

HT-W7

Source: Bundesanstalt für Geowissenschaften und Rohstoffe, Kurzstudie "Reserven, Ressourcen und Verfügbarkeit von Energierohstoffen 2010" – Federal Institute for Geosciences and Natural Resources, Brief Study "Reserves, Resources and Availability of Energy Raw Materials 2010"

Coal reserves currently have a remaining life of approximately 120 years based on an output of 6.1 billion tonnes using 2009 data. Hard coal has a share of approximately 53% of the total energy reserves of approximately 1,360 billion tonnes of coal equivalent including all fossil sources of energy and uranium. With resources of 14,591 billion tonnes of coal equivalent, coal has an even greater share of resources – 75% of the 19,332 billion tonnes of coal equivalent total.

Compared to hard coal, oil reserves (24% of total reserves) are adequate for 40-45 years and gas reserves for 60-65 years at current production levels.

World Hard Coal Market Expanding with Growing Seaborne Trade

The world market for hard coal globally grew by 15% in 2010, reflecting recovery from the world economic crisis.

World coal trade developed as follows:

World Coal Trade

	2008	2009	2010	Change 2009/2010	
	Mt	Mt	Mt	Mt	%
Seaborne Trade	839	859	963	+ 104	+ 10.7
Overland	91	57	90	+ 33	+ 57.9
Total	930	916	1,053	+ 137	+ 15.0

HT-W8

The world market for hard coal was therefore stable in 2010. Because of economic recovery in the steel industry of OECD countries, seaborne trade included a distinct increase of coking coal exports. The market for steam coal also continued to grow. Overland trade increased sharply, by approximately 33 million tonnes.

The following trends were observed in the steam coal and coking coal segments of seaborne trade:

Seaborne Coal Trade	2008	2009	2010	Change 2009/2010	
	Mt	Mt	Mt	Mt	%
Steam Coal	631	658	713	+ 55	+ 8.3
Coking Coal	208	201	250	+ 49	+ 24.4
Total	839	859	963	+ 104	+ 12.1

HT-W9

The share of the world trade in total production has risen slightly since 2000. However, most coal output is consumed in the country where it is produced.

World Output / Seaborne World Trade			
Hard Coal	2000 Mt	2010 Mt	Growth %
World Output	3,800	6,720	+ 77
World Trade	530	963	+ 82
Share of World Trade in Output	13.9 %	14.3 %	

HT-W10

The quantities, exchanged between both markets, amounted in 2010 to approximately 8% or 79 million tonnes of the steam coal market. About 12% of global steam coal production was delivered to consumers by sea.

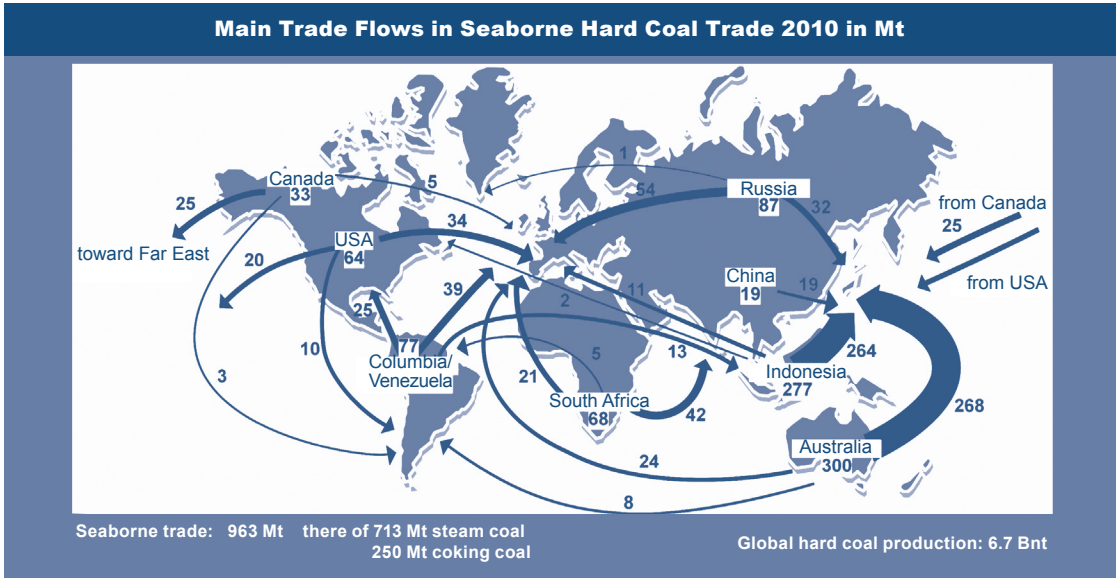


Figure 7 Source: VDKI, Hamburg 2011

The seaborne traded volume breaks down into a coking coal market and a steam coal market. The steam coal market in turn comprises the Pacific and Atlantic markets, characterised by different supply structures.

The coking coal market, in contrast, is a more uniform global market due to the small number of supply countries on the one hand, and to the worldwide distribution of demand on the other hand. About 28%

of world production was traded internationally in 2010, a significantly greater share than for steam coal.

Differences in trends were observed in the two segments of world coal trade. The following comments refer only to seaborne hard coal trade.

The major import countries are found mainly in Southeast Asia. In addition to Japan, South Korea and Taiwan, China has also become a major coal importer. India also pushed its way further up the ranking. In Europe, Germany and the United Kingdom imported most coal.

Ten Largest Hard Coal Importing Countries [1)]

	2008 Mt	2009 Mt	2010 Mt
Japan	190	162	184
China	41	127	166
South Korea	100	103	111
Taiwan	65	59	64
India	54	59	86
Germany	48	40	40
United Kingdom	48	37	26
Spain	33	25	13
USA	34	21	15
Italy	26	20	22
Total	639	653	727
Share of World Trade	76%	76%	75%
EU-27	217	189	182
Share of World Trade	25%	21%	19%

1) Partly provisional, seaborne quantities

HT-W11

Steam Coal Market Continues to Grow

Atlantic Region

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

The Atlantic region was hit especially hard by the world economic crisis. This affected demand in North, Central and South America and also in Europe. Demand dropped in 2010 by a further 15 million tonnes or 9% to 172 million tonnes. No country, however, reduced its exports. South Africa found compensation for the shortfall in European quantities on the Asian and Indian markets. Russia's exports to meet power plant demand on the Atlantic market remained stable. Colombia exported for the first time to China. The Atlantic market accounts for 25% of global steam coal trade.

Pacific Region

The Pacific region continued to grow dynamically, and global demand for coal for power generation rose by 70 million tonnes to 541 million tonnes or 15%. Almost all of the Asian economies increased their purchases. A sharply increasing market, driven mainly by demand from China and India, can also be expected over the coming years. 2010 in the Pacific region was marked in particular by the further rise in steam coal imports to China and India. Australia (+27 million tonnes) and Indonesia (+47 million tonnes) were therefore able to increase their exports. Russia also covered China's additional demand through its Far East ports. Without the "special economic situation" in China, prices on the steam coal market would probably have decreased much more steeply. The Pacific market accounts for 75% of global steam coal trade.

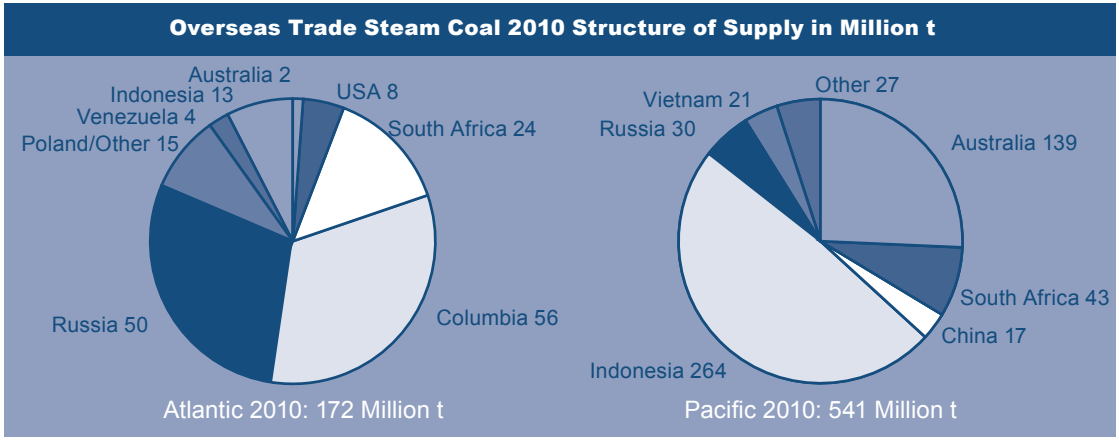


Figure 8 Sources: Several examinations, own calculations

Quantities Exchanged between Pacific and Atlantic Markets

Indonesia and Australia supplied only about 15 million tonnes to the Atlantic market in 2010, a market share of about 9% in this region. From the Atlantic suppliers South Africa, Canada and the USA supplied

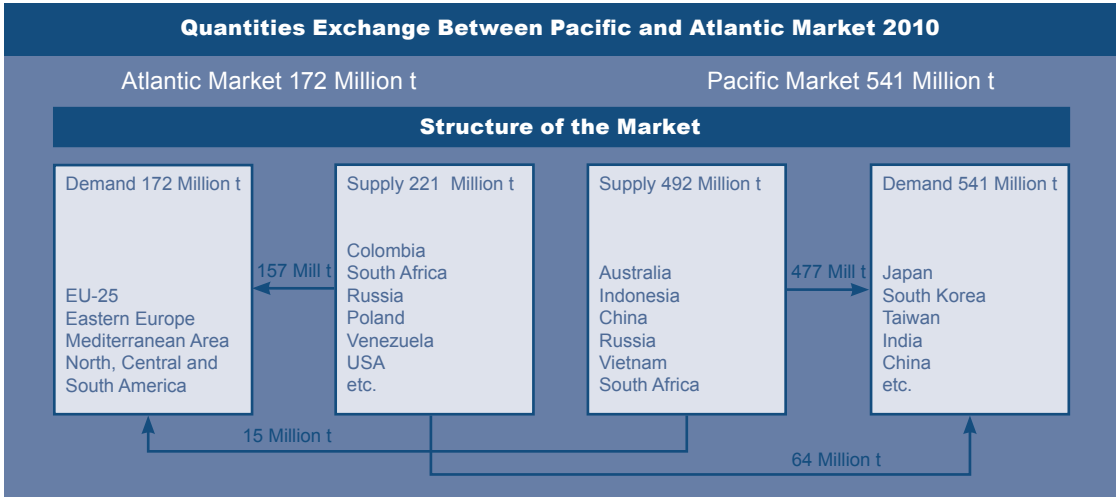


Figure 9

approximately 64 million tonnes to the Pacific market, corresponding to 11% of demand. Total movements between the two markets reached 79 million tonnes, compared with 59 million tonnes in the previous year.

In particular, South Africa sold significant quantities to India, but also to other countries. Indonesian exports to the Atlantic Region, by contrast, declined.

Steam Coal Prices Recover Driven by Pacific Market

Prices

While the demand for steam coal from the international market more or less stagnated in the Atlantic region, particularly in the USA and Europe, the Pacific steam coal market continued to grow. This trend resulted in prices easing during the first months of 2010. With OECD countries progressively recovering from the crisis, prices then increased again during the second half of the year.

There were substantial differences in FOB prices of Atlantic and Pacific suppliers:

FOB Price Trends of Major Exporting Countries in US$/t

	01.01.2010	31.12.2010	01.04.2011
Atlantic Suppliers:			
Richards Bay	91	108	121
Bolivar	59	84	113
Poland	81	110	118
Russia (Baltic)	85	109	117
Pacific Suppliers:			
Newcastle	96	105	122
Quinhuangdao	116	122	120
Kalimantan	82	104	102
Russia	97	112	114

HT-W12 Source: own estimates

At the beginning of April 2011, prices ranged from US$/t 84 to US$/t 130.

Whereas Atlantic suppliers Colombia, Russia (Baltic) and Poland had to offer lower prices in order to sell their tonnages, Pacific suppliers, above all Australia and Russia (Pacific), were able to charge significantly higher prices – a consequence of the high demand from China and India.

South Africa was able to find customers in India and the Far East for a large part of its production, it was therefore able to maintain prices at a higher level than its competitors in the Atlantic market.

Over the course of 2010, CIF ARA spot prices dropped to approximately 73 US$/t, but then rose steadily to approximately 123 US$/t by the end of the year. On 1 April 2011, the ARA price was 128 US$/t. The somewhat weaker US dollar partially offset the slight upward trend of prices in the euro zone.

Demand for steam coal in the Atlantic region has so far remained restrained in 2011. The future development of prices for steam coal will depend therefore largely on trends in the Pacific region and this, in turn, on the needs of China and India. More than any country, China has an enormous impact with its “swing” demand.

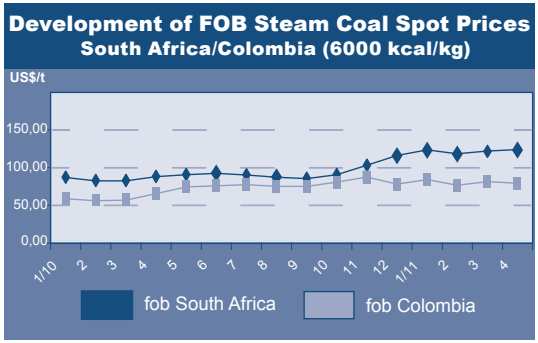


Figure 10 Source: Examination of various sources

Steam Coal Market Price Quotations

Prices for steam coal are being set more and more on coal exchanges, especially in Europe, with capital investors playing an increasingly important role. The number of participants in exchanges is rising. Today, the prices set on these exchanges are often used as benchmarks for settlements. On the other hand, transparency concerning the collection of other market data and the methods used to determine price indices could be improved. Otherwise there are no sufficient alternatives.

Nevertheless, there are a number of indices (especially by McCloskey) for various regions, for example:

- NW Europe steam coal marker (US$/t),
- Asian steam coal marker (US$/t),
- Indonesian sub-bituminous marker (US$/t),
- Anthracite Index - Mapi 1.

For over-the-counter (OTC) transactions, for example:

- API#2, CIF ARA,
- API#4, FOB Richards Bay,
- API#6, FOB Newcastle,
- McCloskey, swaps Indonesian sub-bit

and further indices are kept. It is very disconcerting, as observed in the recent past, that the API#4 index is sometimes higher than API#2. This raises the question if the API#4 index for the Atlantic market is still a suitable index for coal transactions.

The volume of paper trade has increased markedly since 2000, and amounted in 2010 to about 3.5 times total physical steam coal trade. Most paper trade is based on Atlantic region supply. In 2010, trading volume compared with 2009 increased by over 50%. The following chart shows the trend.

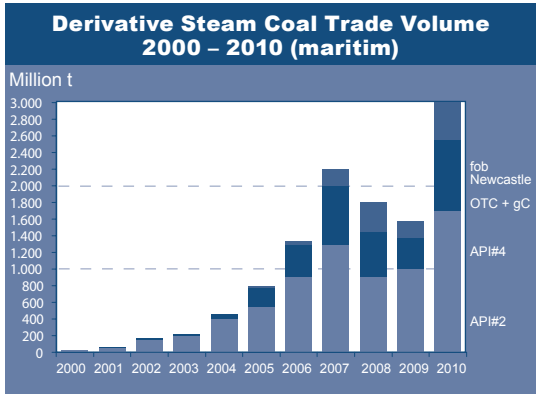


Figure 11 Source: Perret Associates

In addition to the paper trading of steam coal, exchanges have been established in Europe to trade allowances under the EU Emissions Trading Scheme.

Demand for Coking Coal Sharply Up

Worldwide crude steel production in 2010 reached a new record of 1,414 million tonnes compared with 2009, up by 15% or 194 million tonnes.

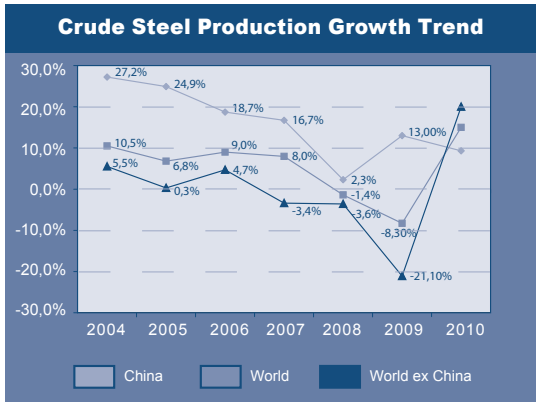


Figure 12 Source: World Steel Association

Pig iron production, which is relevant to coking coal, PCI coal and coke consumption, increased by 133 million tonnes from 898 million tonnes in 2009 to 1,031 million tonnes in 2010.

Crude Steel and Pig Iron Production in China

	2008 Mt	2009 Mt	2010 Mt	Growth 2009/2010 %
Crude Steel	502	568	627	59
Pig Iron	471	544	590	46
Share Pig Iron in Crude Steel	93.8%	95.8%	94%	

HT-W13

Due to China's rising share of global steel production, from 38% in 2008 to 44% in 2010, its share of world pig iron production also increased.

Global Crude Steel and Pig Iron Production

	2008 Mt	2009 Mt	2010 Mt	Change 2009/2010 %
Crude Steel	1,330	1,220	1,414	16
Pig Iron	927	898	1,031	15
Share Pig Iron in Crude Steel	69.7%	73.6%	73.0%	

HT-W14

Output from the world's major steel producers developed as shown below in 2010.

Major Steel Producing Countries in the World

Country	2008 Mt	2009 Mt	2010 Mt
China	502.0	568.0	626.7
Japan	118.7	88.0	109.6
USA	91.5	58.0	80.6
Russia	68.5	60.0	67.0
India	55.1	57.0	66.8
South Korea	53.5	49.0	58.5
Germany	45.8	33.0	43.8
Ukraine	37.1	30.0	33.6
Brazil	33.7	27.0	32.8
Turkey	26.8	25.0	29.0
Italy	30.5	20.0	25.8
World Total	1,330.0	1,220.0	1,414.0

HT-W15 Source: World Steel

All countries could still increase steel production.

Crude Steel and Pig Iron Production – Comparison of World and China

	2008 Mt	2009 Mt	2010 Mt	2009/2010 Change Mt
Crude Steel:				
World excluding China	828	652	787	135
China	502	568	627	59
Total World Crude Steel	1,330	1,220	1,414	194
Pig Iron:				
World excluding China	456	354	441	87
China	471	544	590	46
Total World Pig Iron	927	898	1,031	133

HT-W16

The strong growth of global crude steel production absorbed large quantities of coking coal from the international market. Weather-related restrictions towards the end of 2010, particularly in Australia, created a beginning supply shortage.

Global Coking Coal Market and Market Shares	2008		2009		2010	
	Mt	% Share	Mt	% Share	Mt	% Share
Australia	135	65	134	67	159	63
China	4	2	1	1	2	1
USA	35	17	32	16	48	19
Canada	25	12	21	10	27	11
Russia	3	1.5	5	2	7	3
Others	5	2.5	8	4	7	3
Total	207	100	201	100	250	100

HT-W17

The supply structure did not change substantially, with Australia's dominant market share remaining at about 63%. Despite major logistical problems and weather-related losses, Australia apparently managed to increase its exports.

Coke production grew worldwide by 15% from 528 million tonnes to 608 million tonnes. China, the largest coke producer and exporter by far, reduced its exports by a few million tonnes. With 400 million tonnes, China produced 65% of world production and increased coke output by 55 million tonnes in 2010. In comparison with production, the international market for coke is relatively small. Only about 5-6% of total production is normally traded across borders, either by sea or overland.

International Coke Market	2008 Mt	2009 Mt	2010 * Mt
Total International Trade	28	14	21
% of World Coke Production	5%	3%	3%
* provisional			

HT-W18 Source: own calculations

Prices in 2010/2011 Increase Sharply

The sharp rise in coking coal prices during the boom years of 2007 and 2008 was followed by a drop in benchmark FOB prices for hard coking coal from 300 US$/t to 125-130 US$/t. This was in response to the downturn in steel output.

Change of Contract Prices for Metallurgical Coal	US$/t FOB Australia	
	2008	2009
Hard coking coal	300	129
Semi-soft coking coal	235	78
PCI	245	85

HT-W19 Source: Macquarie Research Commodities

Negotiations for the contract year 2011/2012 resulted in substantially higher benchmark settlements in view of the strong demand from China and the recovering demand from OECD countries as well as weather-related drops.

Indicators of a Price Correction	Forecast for 2011/2012 US$/t FOB Australia
Hard coking coal	300-320
Semi-soft coking coal	200-245
PCI	180-200

HT-W20

The small number of coking coal producers is essentially an oligopoly which is able to dictate prices on the market with relatively little effort. This situation is being viewed with an increasingly critical eye.

Due to a lack of quality parameters suitable for an exchange, prices for coking coal are not determined on a coal exchange. This is still done traditionally by means of direct agreement usually via contract 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.

However, this practice has changed over the last year or so. The large coking coal producers have moved away from the previous system of annual contract prices to a quarterly price structure. At the same time, first attempts are being made to establish coking coal price indices. As a result, spot market elements are having a greater impact on pricing. American coking coal producers continue to offer annual prices, while one other producer wants to switch to monthly prices.

Figure 13 Source: China Coal Report and other

Coke prices ex-China still remain very high. ARA prices in 2010 were substantially lower, but have however been rising in recent months.

Freight Rates – Still at a Very Low Level

The Baltic Dry Index dropped steadily last year and at the beginning of February 2011, at 1,043 points, it reached a low point, after being above 2,700 points before October 2010.

The main reason is fleet overcapacity. This has since increased even more to the point where even with robust economic growth, the resulting demand cannot keep pace with bulk volumes. The collapse is particularly important for Capesize vessels.

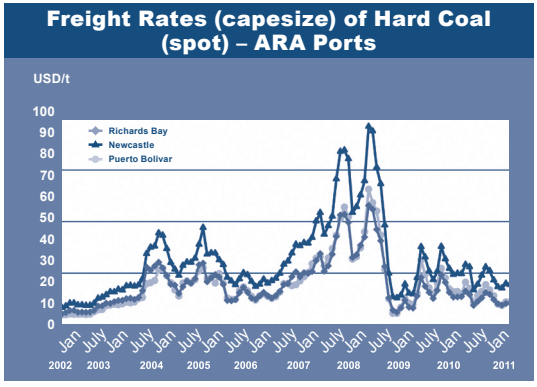


Figure 14 Source: Frachtcontor Junge

The fleet capacity increase in 2010 was about 16%, while the volume of bulk goods shipped globally, according to estimates, only increased by about 10%. This created a wide gap between supply and demand. Demurrage situations in Australia, China and Brazil reduced available capacities, but could not stop the rates crashing. It is all the more remarkable that despite the weak market and the unchanged high number of orders for new builds, more ships are being ordered. In 2010, 138 Capesize, 59 Post-Panamax (95,000 DWT) and 356 Panamax vessels were ordered. In January 2011 alone, 13 Capesize, 5 Post-Panamax and 13 Panamax vessels were ordered. Against this background, freight rates might remain very low, within the range 9-12 US$/t for the benchmark route South Africa – ARA.

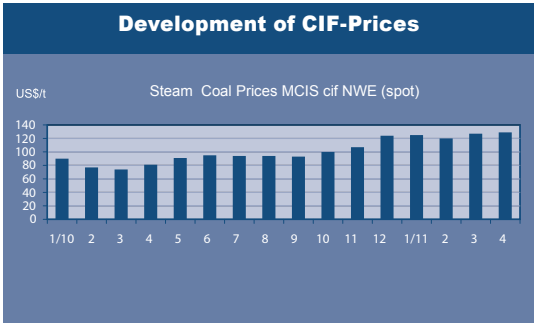


Figure 15 Source: McCloskey

US Dollar Exchange Rate

The US dollar exchange rate, a major component of international energy and raw materials trade, was volatile.

During the first and second quarters of 2010, the US dollar remained strong, but then weakened over the rest of the year. It recovered at the end of 2010. The currency of important raw material exporting countries, such as Australia, Canada and South Africa, stabilised with respect to both the euro and the US dollar.

Raw Materials Energy Policies - Still Challenging

Owing to strongly increasing demand for energy and raw materials 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 gas production so that optimal use can be made of limited reserves.

The coal sector comprises largely privately owned enterprises, but there are also obvious tendencies towards government influence, such as in Venezuela. In view of the still vast worldwide coal reserves, no significant state intervention should be expected for the moment. In the long-term, the self-interest of some countries in coal production could however be strengthen, for instance in Vietnam and South Africa.

In the private sector, however, consolidation and positioning for sustained profitability takes the place of national interest. As a whole, security of supply, especially in the Pacific region, is steadily gaining importance for the economic development of the emerging and developing countries. China and India in particular are now pursuing strategic energy procurement and raw material policies to secure reserves all around the globe.

This will most likely pursue these policies in 2011 and beyond. A number of Chinese companies are seeking to acquire mines abroad, most notably in Australia and Indonesia.

In contrast energy and raw materials policy discussions in Germany continue to be dominated, as in the past, by climate policy and increasingly ignore security of supply and economic competitiveness.

CO_2 Emissions Reached a Record High in 2010 – Renewables Development so far will not Save the Climate

When **BP** presented its new Energy Outlook 2030, the company established that the objective agreed at the UN Climate Summit to limit the average global temperature rise to 2 degrees Celsius cannot be achieved. This is because, over the coming years, world energy consumption will increase dramatically, mainly covered by fossil sources of energy: oil, gas and coal. Investing ever more in the development of renewable energy sources does not therefore have much impact.

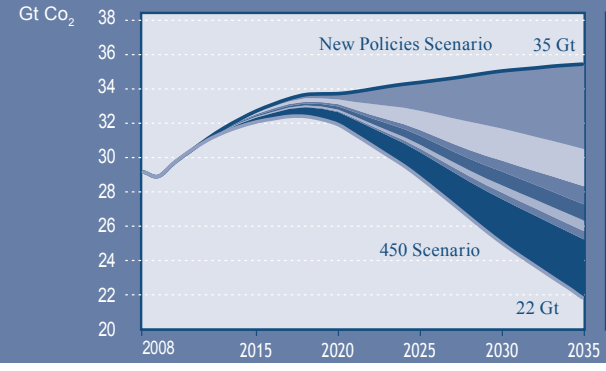
The **IEA** reached a similar conclusion. According to its latest estimates, **energy-related emissions of CO_2 in 2010 reached a historic high**. After the economy-

driven downturn in 2009, the IEA predicts a rise to 30.6 billion tonnes ($GtCO_2$) in 2010, a 5% increase compared with 2008.

The pledges of individual countries to reduce greenhouse gas emissions in the context of the Copenhagen Accord are not sufficient, in the opinion of the IEA, to achieve the Accord's objective of limiting global warming to 2°C. If the countries implement their pledges only hesitantly, as assumed in the IEA's New Policies Scenario, increasing demand for fossil sources of energy might further drive up energy-related CO_2 emissions during the reference period to 2020. Such a trend would make it impossible to achieve the 2°C objective, because emissions would have to be reduced too radically after 2020. According to this scenario, in 2020 only 34 Gt would be emitted, and in 2035 more than 35 Gt, an increase of 21% compared with 29 Gt in 2008. The forecast growth of global emissions is attributed to non-OECD countries alone, while emissions of OECD countries peak before 2015 and then diminish. These trends would correspond to a stabilisation of greenhouse gas concentrations of more than 650 ppm CO_2 equivalent. Achieving the 2°C objective requires extraordinary political efforts from all governments throughout the world and adhering to pledges through to 2020, something the IEA itself doubts.

The IEA has calculated that governments around the world will make available over US$ 200 billion in 2035 for renewable energy projects. That is nearly four times more than in 2009 (US$ 57 billion). **It would see the share of fossil sources of energy in the primary energy mix drop from 81% to 73%.**

World Energy-Related CO_2 emissions Savings by Regions in ppm in the 450 Scenario



	Abatement 2020	2035
China	19%	36%
United States	15%	16%
India	7%	8%
European Union	10%	7%
Middle East	6%	5%
Russia	3%	4%
Rest of world	40%	25%
Total (Gt CO_2)	1.8	13.7

Figure 16 Source: IEA, World Energy Outlook 2010, chart 13.20, page 411

Europe's energy consumptio n has only a slight impact on the planet's climate. A reduction of EU-27 emissions by say 60% or 2.3 billion tonnes by 2035 would have the effect of reducing global emissions by only 8%. This would compensate for only a few years of global CO_2 emissions growth and would thus postpone further global climate warming by just a few years, at an enormous cost to citizens of the European Union.

A Common Global Trade in CO_2 is Required, but is not Achievable

It is becoming increasingly clear that the EU Emissions Trading Scheme might, from a global viewpoint, remain an isolated solution because priority worldwide is understandably to solve more pressing problems. Raising standards of living, providing access to electric power, dealing with water shortages and eradicating hunger and poverty are ranked higher in emerging and developing countries. Precisely these countries will however be responsible for the increase in CO_2 emissions over the next 30-60 years.

Technology Makes Coal Cleaner

The energy industry, above all in the coal-producing countries, has launched a worldwide technology campaign to make the conversion of coal into electric power more environmentally friendly. This will be carried out via a number of steps:

The safest method, and most economic with the quickest effect, is the optimisation of the current hard coal-fired power plant technology to improve efficiencies up to 45%. Greater efficiency in the burning of fuels can be achieved in combination with combined heat and power (CHP) (e.g. such as at the Moorburg power plant in Hamburg or the GKM Unit 9 being under construction at Mannheim in Germany).

The development of technologies to reduce CO_2 and to separate CO_2 emissions in hard coal-fired power generation is the most important contribution industrialised countries can make to promote environmentally friendly hard coal generation in emerging and developing countries – countries which will rely on coal in the long-term.

The IEA has repeatedly emphasised the importance of CCS technology and improved efficiency in scenarios for reducing emissions.

Cancún Negotiations: A Step Towards a Climate Protection Accord?

The Cancún Agreement, reached on 11 December 2010, is another small but important step towards a comprehensive, legally binding climate protection framework agreement. The two-week negotiations in Cancún, however, made clear once again how slow and laborious this process is. In this sense, there is still a long and arduous route to a legally binding global climate protection agreement.
The Cancún Agreement follows the decisions taken a year ago in Copenhagen, and also points the way to how future progress can be achieved. The agreement is a compromise between different interests within the United Nations. The most important components of the package are the following:

- For the first time, it is admitted in a United Nations document that global warming must not exceed 2°C compared with pre-industrial temperatures. Furthermore, a process to establish the point in time when global emissions should peak and an objective for the reduction of emissions to be reached by 2050 were established.

- The pledges concerning emissions made by industrialised and developing countries were anchored in the UN process, and a procedure was introduced to clarify these pledges. The document also acknowledges that efforts to protect the climate must generally be reinforced, so that the upper limit of 2°C is not exceeded.

- A procedure was agreed on by which measures to abate or reduce emissions become more transparent, so that the whole procedure can be completed more effectively.

- Industrialised countries confirmed their objective of providing funds amounting to US$ 100 billion annually to developing countries for climate protection measures by 2020 and to set up a Green Climate Fund to distribute these funds.

- The parties agreed to create a framework to adapt to climate change (Cancún Adaptation Framework), in order to strengthen the appropriate measures.

- A REDD+ mechanism was initiated in favour of measures to reduce emissions from deforestation and forest degradation in developing countries.

- The parties agreed to examine the creation of a new CO_2 market mechanism, going beyond the project-oriented concept.

- A technology mechanism was created, including a Technology Executive Committee and a Climate Technology Centre and Network to promote the development and transfer of technologies.

- A clear procedure was introduced to examine whether the objective of a 2°C limit is adequate. In connection with this, it will also be examined by 2015 if the objective should not be stepped up to 1.5°C.

- The work of the Ad-hoc Working Groups in the context of the UNFCCC and Kyoto Protocol was extended by a year, while the legal form of potential negotiation results remained open.

We need to wait for the next meetings, however, to see if the community of nations actually commits itself to a binding follow-up agreement.

EUROPEAN UNION

Recovery of Economic Growth Progresses in 2010

The economic situation is gradually recovering; decisive factors being an end to stock piling and national economic recovery programmes. GDP growth consequently followed an upward trend in the EU. However, the speed of recovery in individual EU Member States varied, depending on the situation in the respective countries and on their domestic policies.

Economic Growth in the EU-27 (%)

Member States	2008	2009	2010	2011 (F)
Euro zone (EU-17)	0.4	- 4.1	1.8	1.6
EU-15	0.2	- 4.3	1.8	1.7
EU-27	0.5	- 4.2	1.8	1.8

HT-EU1 Source: Eurostat on 13.05.2011 F = Forecast

Front runners of GDP growth, in relative percent changes compared with 2009, were Sweden with 5.5%, Slovakia with 4.0%, Poland with 3.8% and Germany with 3.6%. In contrast, growth was more limited in France with 1.6%, Italy with 1.3%, the Netherlands with 1.8% and the United Kingdom with 1.3%.

According to the European Commission's latest estimate, GDP in the EU will increase by approximately 1.75% in 2011. In 2012, it is forecast to rise to 2%, with increasing investments and stronger demand from private households.

The job market situation should therefore improve slightly. The unemployment rate in 2010 was approximately 9.5% and should gradually drop to 9% by 2012.

Exports remained stable over a longer period, to the benefit of exporting countries in particular.

According to European Commission data, inflation in the EU will hover around an average of 2% in 2010 and 2011.

All forecasts are however fraught with uncertainties and risks. These include on the one hand unrest, tensions and even civil war-like clashes in the Middle East and North Africa, e.g. in Libya, Syria, Yemen and Egypt, which could rapidly spread to neighbouring countries; and in Europe, on the other hand, the on-going tensions in bond markets related to the massive debts of Ireland, Greece and Portugal or the real estate crisis in Spain and the United Kingdom.

Overall Energy Consumption on the Decline

With the improving economic situation in 2010 decreases in primary energy consumption in many EU Member States were almost completely compensated. The structure of power generation shifted slightly to the disadvantage of fossil fuels.

Their share of the energy mix for power generation has dropped slightly, from 54% to 51%, between 2000 and today, with coal dropping by 13%, while gas increased by 60%. Overall, it is estimated that power generation in 2010 will increase by approximately 3%.

Energy consumption is estimated as shown in the following according to provisional data for 2010:

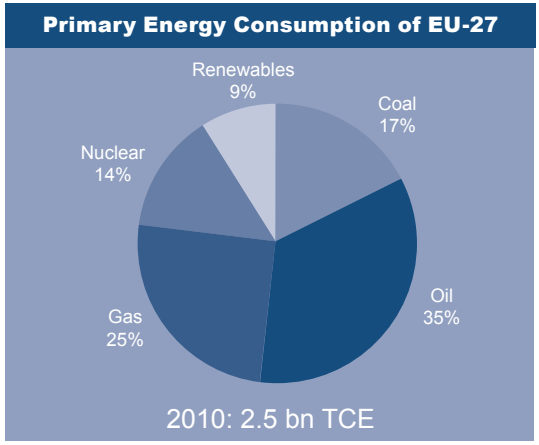


Figure 17 Sources: Various examinations, own calculations

Greenhouse Gas Emissions Down by More than 11% in 2009

The greenhouse gas emissions of European companies participating in the EU Emissions Trading Scheme (EU ETS) dropped by approximately 11.6% in 2009 compared with 2008. Figures for 2010 are not yet available.

It is of course not surprising that emissions dropped substantially, because of the economic crisis. It must however also be kept in mind that the recession considerably weakened the carbon-price signal. Several factors by and large explain the decrease: first, reduced economic activity due to the recession; and second, the persistently low gas prices in 2009, making gas-fired power generation temporarily more attractive than coal-fired generation. Furthermore, the price of CO_2 allowances during Phase 2 (2008-2012)

for companies participating in the EU ETS already partially contributed to reducing emissions. Verified emissions from all installations in 2009 totalled 1.873 billion tonnes of CO_2 equivalent.
Success in reducing CO_2 varies widely across the EU-15. While industrial heavyweights in the EU, Germany and the United Kingdom, have largely met their goals, most of the other Member States fall somewhat short. In those countries with most economic growth, CO_2 emissions will have risen further compared with 2009 (figures for 2010 are not yet available).

EU-15 CO_2 Emissions

	Baseline Year 1990 ($MtCO_2$ equivalent)	EU Objective 2008-2012 compared with Baseline Year (%)	Change 1990-2008 in %
EU-15	4,227.2	- 8.0	- 6.5
Germany	1,253.3	- 21.0	- 22.2
United Kingdom	746.0	- 12.5	- 18.6
Denmark	69.0	- 21.0	- 7.4
Luxemburg	12.7	- 28.0	- 4.8
Belgium	146.8	- 7.5	- 7.1
Austria	78.0	- 13.0	+ 10.8
Finland	76.8	0.0	- 0.5
France	546.7	0.0	- 6.4
Greece	107.0	+ 25.0	+ 22.8
Ireland	53.4	+ 13.0	+ 23.0
Italy	508.0	- 6.5	+ 4.7
The Netherlands	212.5	- 6.0	- 2.4
Portugal	57.9	+ 27.0	+ 32.2
Spain	286.8	+ 15.0	+ 42.3
Sweden	72.3	+ 4.0	- 11.7

HT-EU2 Source: IWR/European Environment Agency

The table shows that without the contributions of the United Kingdom, Germany and France, the EU-15 would fall far short of its targets, with an absolute increase in CO_2 emissions. The success of reducing emissions in Germany has been largely a consequence of the transitional economic situation in East Germany. The United Kingdom profited from the downsizing of its coal mining industry by 80 million tonnes during the period 1990 to 2010. Over the same period, the EU-10 countries recorded a 23% drop in emissions due to the collapse of industrial output in many countries of Eastern Europe. In other words, a major portion of the reductions are due to one-off effects that will not be repeated.

Including these countries, the EU has made progress in decreasing emissions. In 2009, EU-27 greenhouse gas emissions were about 17% below their level in 1990 and thereby already close to the 20% reduction objective for 2020.

The EU-10 states, following their accession, will presumably begin a stronger growth phase, with a simultaneous rise in energy requirements. However, this may now be delayed by 2-3 years owing to the economic crisis, with nearly all new Member States being affected yet with a positive effect on the EU's CO_2 inventory.

EU Hard Coal Market Still Declining

In 2010, small reductions in the output of European hard coal were registered in some countries alongside small increases in others. This resulted overall in 1.4 million tonnes less production in 2010.

Bulgaria	+ 0.1 Mt
Germany	- 1.0 Mt
Poland	- 0.9 Mt
Spain	+ 0.6 Mt
Czech Republic	+ 0.7 Mt
Romania	0.0 Mt
United Kingdom	+ 0.3 Mt

Further declines in output can be expected in Germany, Poland and Spain in the next few years following the European Commission's Decision on State Aid of December 2010.

Hard Coal and Lignite Volumes in the EU	2008 Mt	2009 Mt	2010 [1] Mt
EU-27 Hard Coal Production	149	135	134
EU-27 Hard Coal Imports/Inland trade	217	189	182
EU-27 Coke Imports/Inland trade	11	8	8
Total Hard Coal Volumes	377	325	324
EU-27 Lignite	422	407	397
Total Tonnage	799	732	721
[1] Provisional figures			

HT-EU3

The recovery in the steel sector, with the accompanying increase in pig iron and crude steel production at steel works, resulted in higher coal demand. Overall hard coal consumption in the EU nevertheless dropped by about 1 million tonnes. Lignite production and consumption remained relatively stable.

Hard coal consumption of 324 million tonnes in the EU is broadly distributed between the following sectors (estimation):

Distribution of Hard Coal Consumption in the EU	2008		2009		2010 [1]	
	Mt	%	Mt	%	Mt	%
Power Plants	245	65	230	71	217	67
Steel Plants / Coking Plants	88	23	60	18	70	22
Heating Market	44	12	35	11	37	11
Total	377	100	325	100	324	100
1) Provisional						

HT-EU4

The structure of hard coal imports changed again in 2010. Declining exports to the EU from Indonesia, Poland and South Africa were replaced by greater supplies from Colombia and Russia.

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

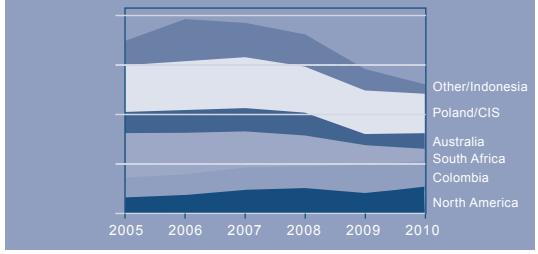


Figure 18 Sources: EUROSTAT, Statistics of Producing Countries

Among the hard-coal producing countries, Poland is by far the largest producer.

EU Hard Coal Output	2008 Mt	2009 Mt	2010 Mt
Germany	19	15	14
Spain	10	9	9
United Kingdom	18	18	18
Poland	83	78	77
Czech Republic	13	11	12
Romania	3	2	2
Bulgaria	3	2	2
Total	149	135	134

HT-EU5

The primary energy mix for power generation has shifted slightly towards renewable energy sources. Hydro and other renewable sources grew about 1%, while nuclear and coal decreased by 1%.

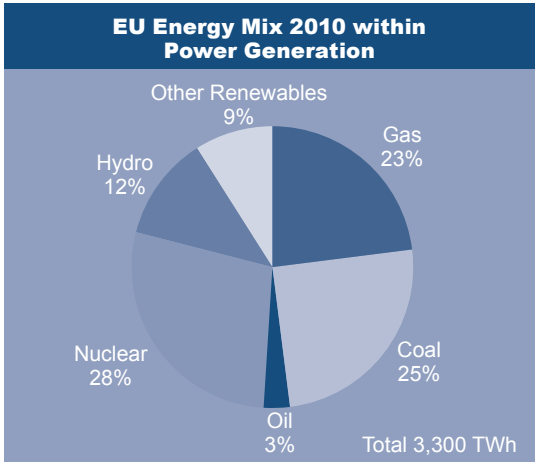


Figure 19 Sources: IEA, Eurostat, own estimation

Adequate and Flexible Infrastructure

The infrastructure in Europe is being steadily expanded as coal import volumes rise. Railway lines between the interior and the ARA ports (Amsterdam, Rotterdam and Antwerp) are being improved.

Coal Handling in Northwest European Ports in Mt

Ports	2008	2009	2010
Hamburg	5.2	5.2	5.3
Bremen	1.8	1.4	1.8
Wilhelmshaven	2.2	2.2	1.8
Amsterdam	22.2	18.0	18.8
Rotterdam	28.6	24.8	24.1
Zeeland Seaports	4.4	3.9	4.0
Antwerp	9.9	6.1	4.1
Gent	4.2	2.6	4.2
Dunkirk	9.7	6.1	6.5
Le Havre	2.7	2.2	2.1
Total	90.9	72.5	72.7

HT-EU6 Source: Port of Rotterdam

EU ENERGY POLICY

Energy Strategy and the First Energy Summit: 1,000 billion Euros Infrastructure Investment Required

On 10 November 2010, the European Commission presented its "Energy 2020 - strategies for competitive, sustainable and secure energy" communication in which it outlines a future energy policy to the year 2020 and beyond. Based on this, projects and legislation relevant to EU power supply will follow in 2011. The Commission's strategy begins with the statement that European energy systems, the choice of energy sources and related infrastructure are adapting too slowly in the face of new challenges. Investments totalling 1,000 billion euros will be required over the next ten years. It is probable that the 20-20-20 objectives will not be achieved, with the exception of the CO_2-free electricity production from renewable energy sources, hydro and nuclear power will together cover a 45% share of total power generation. Further measures therefore need to be agreed. The new energy strategy focuses on five noteworthy priorities that can be described as follows:

1. Improving energy efficiency in Europe
In the Commission's opinion, efforts should concentrate on the whole energy chain in order reduce primary energy consumption by 20%. Savings are considered necessary above all in sectors not participating in emissions trading (e.g. buildings and transport). A concrete proposal to address this was announced in 2011.

2. A pan-European integrated energy market
This is to be completed by 2014 and replace the remaining national markets, in favour of Market Coupling. According to the Commission's calculation, one trillion euros will be needed by 2020 to replace obsolete power generation capacity and to modernise

and adapt existing infrastructure, if the EU's already adopted climate policy objectives are to be achieved. Concretely, the Commission wants to agree a 10-year plan to develop networks, including CO_2 pipelines, to establish a deadline for their development over the next twenty years and to streamline national permitting procedures for projects of European interest.

3. Reinforcing security of supply and consumer protection
The competitiveness of major economic sectors depends on secure energy and affordable prices. A functioning internal market, based on adequate transport and storage infrastructure, increases security of supply. In the interests of consumer protection, the creation of an internal market requires an active competition policy with harmonised price comparisons and benchmark performance reports.

4. Leadership in energy technology
In keeping with Europe's leadership role in the field of energy technologies, the Commission wants to initiate four new large energy projects: smart grids, electricity storage (from large-scale installations to e-mobility), production of second-generation biofuels as well as "smart cities", with reduced primary energy consumption in the cities.

5. Strengthening the external dimension of the EU energy market
The Commission requests the EU to bring all its weight to foreign relations, in order to secure further energy supplies and routes and to push ahead international decarbonisation and energy savings by 2020. This includes, among other things, binding parties to the Energy Charter Treaty or the development of new southern routes for electricity and gas.

To support its proposals in the Energy 2020 strategy on markets, networks and their connection to foreign sources of energy, the Commission has presented a new package on energy infrastructure for 2020 and beyond. The Commission first establishes that Europe's energy infrastructure is becoming obsolete and is no longer adequate, leading to a loss of competitiveness, a lack of sustainability and inadequate security of supply, all threatening the achievement of environmental objectives and failing to create any new jobs. A new, integrated policy should co-ordinate and optimise development of energy networks.

The strategy is welcome as is the Commission's focus on the development of an energy infrastructure to ensure adequate energy supply in the future. We must nevertheless see how the strategy is shaped when the Commission takes further concrete steps and what impact these will have.

First European Energy Summit

EU Heads of State met on 4 February 2011 in Brussels for their first Energy Summit. It was, however, overshadowed and dominated by events in Egypt, the continuing euro crisis and a Franco-German proposal to harmonise tax and employment policies. Important decisions concerning future energy policy were nevertheless taken. Among others, the following priority measures, later confirmed by the European Council, are significant for the coal sector:

1. The Council **confirmed** the **20-20-20 objectives** (for 2020: a 20% CO_2 reduction, a 20% share of renewable energies in final energy consumption, and a 20% increase in energy efficiency). Even the Council considers progress towards this last objective to be inadequate. As of 1 January 2012, all Member States should include energy efficiency standards that contribute towards the efficiency objective in public procurement of buildings and services. Implementation of the EU's energy efficiency measures will be reviewed in 2013 and further measures considered if achievement of the 20% objective is not on track.

2. The Council still considers that a **safe**, **secure**, **reliable**, **available**, **sustainable and adaptable energy supply c**ontributes to European competitiveness and is a priority for Europe. Action at the EU level can and must bring added value to that objective.

3. The EU needs a fully functioning, interconnected and **integrated internal energy market**. Council wants the internal market to be **completed by 2014** so as to allow gas and electricity to flow freely. Transmission system operators together with the Agency for the Cooperation of Energy Regulators (ACER) should step up their work on market integration and guidelines, as well as uniform network codes.

4. For the Council, **energy infrastructure** is also a priority, especially to complete the internal market with cross-border connections and the integrated development of renewable energy sources. The bulk of the significant capital costs for infrastructure investment will have to be delivered by the market (i.e. network operators) with costs recovered through tariffs and thus paid by the consumer.

5. The Council also considers **security of energy supply** as important and points the Commission – in the opinion of the coal sector, positively – to the following, priorities: **"In order to further enhance its security of supply, Europe's potential for sustainable extraction and use of conventional and unconventional (shale gas and oil shale) fossil fuel resources should be assessed."** By June 2011, the Commission should also put forward a Communication on security of supply and international co-operation aiming to improve the consistency and coherence of the EU's foreign policy in the field of energy.

6. The European Commission is invited to strengthen its work with Member States on the implementation of the Renewable Energy Directive, in particular in regard to consistent national subsidies schemes and co-operation mechanisms.

7. The EU and its Member States are requested to invest in renewable sources of energy as well as in safe and sustainable long-term low-CO_2 technologies (e.g. CCS). The Commission is invited to table new initiatives on **smart grids, e-mobility, energy storage,** sustainable biofuels and energy-saving solutions for cities.

8. The European Council looks forward to the elaboration of a low-carbon 2050 strategy providing the framework for longer-term actions in the energy sector and other related sectors. Reaching the EU objective **of reducing greenhouse gas emissions by 80-95% by 2050 compared with 1990**, as agreed in October 2009 and as the IPPC considers necessary by developed countries as a group, will require a revolution in energy systems, which must start now. Due **consideration should be given to fixing intermediate stages towards reaching the 2050 objective**. The European Council will keep developments under review on a regular basis.

With these conclusions, the Council essentially confirmed the European Commission's strategy and at the same time gave a new mission to the European Commission: to draft an energy policy for the next forty years, clearly centred on reductions of CO_2 emissions and other greenhouse gases. The European Commission subsequently announced three so-called "road maps" to be launched in 2011 and establishing guidelines on how CO_2 emissions might be lowered by 80-95% by 2050, covering the economy as a whole and including both transport and energy.

CCS Technology: EU promotes 22 Demonstration Projects

Companies from 25 EU Member States have bid for European funds to build 22 large demonstration projects for the capture and underground storage of carbon dioxide (carbon capture and storage or CCS). This was announced by the European Commission on 10 March 2011. Only Luxembourg and Latvia did not submit proposals. In order to make such green technologies available to Member States and also to stimulate global exports, the EU offered approximately €4.5 billion to support at least eight CCS plants and 34 renewable energy projects. Up to three projects in each Member State are to be supported. In Germany, for example, the energy group Vattenfall Europe would like to have funds for its CCS project at Jänschwalde in Brandenburg. The large number of bids "shows the strong interest of the EU industry to invest in low-carbon technologies", said EU Commissioner for Climate Action, Connie Hedegaard.

Support is to take place via the sale of 300 million CO_2 emission allowances, which are earmarked in the Emissions Trading Scheme as a new entrants reserve (NER). The revised Emissions Trading Directive stipulates that these certificates (NER 300) are to be devoted to CCS and other "green" energy technologies. The EU wants to promote the development of a wide range of technologies. Most project bids were submitted for CCS installations with post-combustion capture technology.

Harmonised EU Support of Renewables is Overdue

At the end of 2010, in the Harz region of Germany, European Energy Commissioner, Günther Oettinger called for the harmonisation of renewables support across Europe, in order to better co-ordinate their development and thereby make them cheaper. "Germany is one of the least sunny countries", stressed Oettinger, "If photovoltaics can sprout here, it is not because of nature." The European Commissioner for Energy went on to say, "We plant orange trees in Spain and not here in the Harz." Or in the words of Fritz Vahrenholt, head of RWE Innogy, "Sunshine in Germany is like sunshine in Alaska. Just like pineapples cannot be grown there, photovoltaics are not economic in Germany."

This lively discussion concerning the share of renewables in the energy mix of individual Member States and the financial mechanisms in EU Member States was long overdue and is to be welcomed. An EU Communication has been announced for 2011, but no legally binding proposals are anticipated.

FEDERAL REPUBLIC OF GERMANY

Strong GDP Growth of 3.6% in 2010

Germany overcame the global financial and economic crisis more quickly and better than most other EU Member States. Even the harsh start to the winter during the fourth quarter of 2010 did not slow down the upward trend. The German economy was increasingly brighter after the disastrous slump during 2009.

Selected Key Data for Overall Economic Development in Germany [1]

	2009	2010	2011 Outlook
Change from Previous Year in %			
Gross Domestic Product (price-adjusted)	- 4.7	3.6	2.2
Employment (domestic)	- 0.1	0.5	0.7
Unemployment Rate in % [2]	8.2	7.7	7.0
GDP Split (price-adjusted)			
Private Households and Not-For-Profit Organisations	- 0.2	0.1	1.6
Manufacturing	- 22.6	9.2	6.0
Construction	- 1.5	4.2	1.8
Domestic Demand	- 1.9	2.2	1.9
Exports	- 14.3	15.5	6.7
Imports	- 9.4	13.3	6.8
Trade Balance (GDP contribution to growth) [3]	- 2.9	1.6	0.3

[1] 2010 provisional results from the German Federal Statistical Office, as at January 2011
[2] In relation to total labour force
[3] Contribution to GDP growth rate

HT-DI Source: Annual Economic Report 1/2011 of the Federal Republic of Germany

Economic recovery in Germany was impressive. In 2010, gross domestic product grew by 3.6%. Experts forecast that the economic situation will continue to improve in 2011, although not as strongly as in the past. GDP growth might reach 2.2%. According to expert forecasts, production losses resulting from the crisis will have been completely eliminated by the end of 2011.

Energy Consumption Increased With the Economy and Cold Weather

Primary energy consumption in Germany increased by approximately 22 million tonnes of coal equivalent (Mtce) or 4.6% from 458 Mtce in 2009 to 480 Mtce in 2010. Primary energy consumption in Germany almost reached the level seen before the economic slump. The positive economic development as well as cooler weather were central to this sharp rise in energy consumption. Energy-intensive industries benefitted well from the good economic development compared with the previous year.

PMJ from process industries grew as follows in 2010 compared with 2009:

- Pig iron production +24%,
- Metals production +21%,
- Basic chemicals production +18%.
- Total process industries +11%.

Especially production also increased sharply in other less energy-intensive industries:

- Machinery manufacturing +10%,
- Motor vehicle industry +25%,
- Electrical and electronic equipment sector +17%,
- Total manufacturing +12%.

As a result, the increase in energy consumption at 4.6% was greater than that of gross domestic product (3.6%). One reason for this was clearly the colder weather, compared with 2009. Based on heating degree days, it was about 17% colder in Germany in 2010 than the previous year. Without these temperatures, energy

consumption growth at 4.6% would have been much weaker. In the event, energy productivity improved by approximately 2%.

In 2010, the structure of primary energy consumption changed variably compared with 2009.

Oil and gas, with a 55.4% share, remained the most important sources of energy. Mineral oil consumption increased by over 1% or 2 Mtce to 161 Mtce. Without the increased use of biofuels – included in renewable energies balance – the increase of mineral oil use would have amounted to 4%. Consumption for diesel increased by 3.7%, while gasoline consumption dropped by approximately 2.6%. For heavy heating fuel oil, high prices had a negative affect on sales. Sales of light heating oil on the other hand increased by 4.3%.

In 2010, natural gas consumption increased by over 4% to 104 Mtce. The low temperatures at the beginning and end of the year resulted in higher sales on the heating market.

At approximately 57.8 Mtce, consumption of hard coal was about 7.7 Mtce or 15.4% higher than in 2009. This big increase was due to the earlier than expected economic recovery as well as to the somewhat unusually frosty weather during the autumn and winter months in Germany.

Lignite, by contrast, increased only moderately, by about 0.2% to 51.5 Mtce and covered just 11% of total primary energy demand.

Power generation from nuclear increased its contribution to primary energy supply by 4% to 52.3 Mtce, despite a number of nuclear power plants being out of service.

Renewables contributed 45 Mtce to the energy balance, an increase of about 10%. Power generation from hydro grew by 3%. Given the unfavourable wind conditions, and despite higher capacity, wind power dropped by 5.5%.

Primary Energy Consumption in Germany 2009 and 2010 [1)]

Energy Source	2009 Mtce	2010 Mtce	Changes 2009/2010 Mtce	Changes 2009/2010 %	2009 Share in %	2010 Share in %
Mineral Oil	159.3	161.3	2.0	1.3	34.8	33.6
Natural Gas	100.3	104.5	4.2	4.2	21.9	21.8
Hard Coal	50.1	57.8	7.7	15.4	10.9	12.1
Lignite	51.4	51.5	0.1	0.2	11.2	10.7
Nuclear Energy	50.2	52.3	2.1	4.1	11.0	10.9
Renewable Energies	41.0	45.0	4.0	9.9	8.9	9.4
Others [2)]	6.1	7.2	1.1	18.0	1.3	1.5
Total	**458.4**	**479.6**	**21.2**	**4.6**	**100.0**	**100.0**

[1)] All figures are provisional
[2)] Including balance of foreign trade in electricity

HT-D2 Source: AGEB

After the crisis year 2009, hard coal consumption registered by far the strongest increase in 2010 compared with all other sources of primary energy.

Photovoltaics made enormous progress, growing by about 80% from 24 PJ to 45 PJ or 1.46 Mtce. The share of all renewable energies in primary energy consumption increased from 8.9% to 9.4%. The 1,320 PJ or 45 Mtce from renewables were utilised as shown below:

- About 718 PJ (54%) or 24.5 Mtce for the generation of electricity;
- About 476 PJ (36%) or 16.2 Mtce for the heating market; and
- About 126 PJ (10%) or 4.3 Mtce for the production of fuel.

Energy Productivity Continues to Improve – But Below Average

Energy productivity – measured in euros per gigajoule – improved temperature adjusted by 1.6% in 2010. The best way to evaluate the structural development is to use values adjusted for temperature and stock changes:

Energy Productivity

	2009	2010	Difference in %
Gross Domestic Product (€ bn)	2,169	2,248	3.6
Primary Energy Consumption in Petajoules (Adjusted for temperature and stock changes)	13,610	13,853	1.8
Energy Productivity (in €/GJ)	159	162	- 1.6

HT-D3 Source: AGEB, provisional data

This growth in energy productivity almost reached the long-term average of 1.8% (1990-2010).

Electricity Generation Increases Significantly by 5.2%

Gross electricity generation in Germany in 2010 grew by 32 TWh or 5.2% from about 593 TWh in 2009 to 625 TWh. German consumption increased by about 29 TWh, while net exports grew by about 17 TWh.

Energy Mix for Gross Power Generation

Energy Source	2008 TWh	2009 TWh	2010 TWh	Difference 2009/2010 TWh
Lignite	150.6	145.6	145.9	0.3
Nuclear Energy	148.8	134.9	140.6	5.7
Hard Coal	124.6	107.9	117.4	9.5
Natural Gas	86.7	78.8	83.7	4.9
Mineral Oil	9.2	9.6	8.1	- 1.5
Renewable Energies	92.7	94.9	103.0	8.1
Others	24.6	21.5	26.0	4.5
Total	637.3	593.2	624.7	31.5

HT-D4 Source: AGEB

The volume of cross-border electricity trade (total of imports and exports) amounted to 101 TWh or 16% of gross power generation in 2010, representing an increase of 6 TWh. Almost all sources of energy contributed to the increased supply of electricity. Only generation from wind and petroleum products registered decreases. Generation from hard coal grew the most in absolute terms. Production increased by 9.5 TWh to 117.4 TWh, corresponding to about 2.5 Mtce. The use of lignite, essentially for base load, remained almost constant.

The installed capacity of wind turbines rose by about 1,551 MW to 27,200 MW in 2010. A total of 21,600 wind turbines were in operation. Despite the additional installed capacity of about 5.5%, production dropped from 38.6 TWh to 36.5 TWh (-5.5%). Wind turbines therefore supplied approximately 1,342 full-load hours in 2010, only 15.3% of their annual capacity. This was chiefly because there was little wind in 2010 compared with the long-term average, clearly indicating that this means of generating electricity is not suitable to cover the grid load requirements.

Power Generation from Renewable Energy Sources			
Energy Source	2008* TWh	2009* TWh	2010* TWh
Hydro	20.4	19.1	19.7
Wind	40.6	38.6	36.5
Biomass	22.3	25.5	28.5
Waste **	4.9	4.4	4.8
Photovoltaics	4.4	6.6	12.0
Geothermal	0.02	0.7	0.8
Total	92.62	94.9	102.3
* Provisional figures	** Renewable share		

HT-D5 Source: BDEW

Unfortunately, wind and solar capacities are being developed where the highest subsidies are available and not at locations with the best wind or sun conditions. Recent studies show that there is much more wind in the UK and Norway than in Germany, and better conditions for solar energy in Spain. It is all the more important to harmonise the subsidy system in the EU so that renewable projects are located in places where they can be operated at the lowest cost. This would also reduce distortions to competition on the European electricity market.

The generation of electricity from biomass increased by 3 TWh, increasing CO_2 emissions despite being rated as CO_2 neutral.

Photovoltaics, which are subsidised most heavily per kWh, increased by the greatest proportion (+82%). Subsidies amounting to billions of euros, ear-marked for feed-in tariffs, have to date resulted in photovoltaics' share in gross electricity generation of only 2%.

Owing to the intermittent generation of wind energy, part of Germany's wind power – during off-peak periods – is dispatched to the Netherlands and to Poland, at high additional costs. In other words, German taxpayers are subsidising electricity consumption and climate protection in neighbouring countries who, at the same time, take some burden off their CO_2 balance. The premium tariffs under the Renewable Energy Sources Act are allocated to electricity consumers, increasing their costs.

Steel Production in 2010 – Substantial Recovery

The steel industry enjoyed unusually strong growth in 2010. As a consequence, crude steel production increased 34.2% from 32.7 million tonnes in 2009 to 43.83 million tonnes. Pig iron production similarly increased by over 8 million tonnes from 20.1 million tonnes in 2009 to 28.5 million tonnes. Steelmaking is continuing to follow this upward trend in 2011, even though the growth rates are expected to be more restrained. The revival of steel demand is a sign of the dynamic economic situation in Germany in 2010.

German Pig Iron Production				
	2008 Mt	2009 Mt	2010 Mt	Difference 2009/ 2010 %
Crude Steel	45.8	32.7	43.8	34.0
Pig Iron	29.1	20.1	28.5	41.8

HT-D6

The table below shows the average specific fuel consumptions in the German steel industry:

Consumption by the Steel Industry			
Energy Source	2008	2009	2010
Coke (kg per tonne of pig iron)	366	386	348
PCI Coal (kg per tonne of pig iron)	106	92	138
Sintered Fuels (kg per tonne of pig iron)	51	63	48
Oil (kg per tonne of pig iron)	19	13	11

HT-D7

Better utilisation of blast furnaces decreased the specific consumption of coke. Consumption of PCI coal however increased by 46 kg per tonne of pig iron.

Strong Market for Hard Coal in 2010 – Hard Coal Imports Rose Sharply

After collapsing in 2009 to an all-time low, hard coal consumption in 2010 recorded the strongest rise compared with all other sources of primary energy. Primary energy consumption of hard coal increased by 7.7 Mtce, from 50.1 Mtce in 2009 to 57.8 Mtce in 2010, a rise of 15.4%. The levels of 61.4 Mtce in 2008 and 68.8 Mtce in 2007 before the crisis have not been achieved again so far. Imported coal was again a flexible "swing supplier".

Hard coal consumption in 2010 was covered as shown below:

Cover of Hard Coal Consumption in Germany

	2008 Mtce	2009 Mtce	2010 Mtce	2009/2010 Change Mtce
Imported Coal	43.6	35.1	43.0	3.8
Domestic Production [1]	17.8	14.2	14.8	- 1.0
Total	**61.4**	**49.3**	**57.8**	**2.8**

[1] *Including stock changes*

HT-D8

German hard coal production followed recent trends and fell by 1.0 Mtce from 14.2 Mtce in 2009 to 13.2 Mtce in 2010, with stock falling by 1.7 Mtce.

Sales of hard coal in t=t developed as shown here:

Hard Coal Sales Total in Germany

Utilisation	2008 Mt	2009 Mt	2010 [1] Mt
Power Plants	52.3	43.7	44.6
Steel Industry	17.7	12.9	18.4
Heating Market	1.7	1.4	1.8
Total	**71.7**	**58.0**	**64.8**

[1] *Provisional figures*

HT-D9

(The difference in quantities between the "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 included causing the "t=t" figures to be higher).

Imports again contributed over 70% to the high-quality supplies for the German market in 2010. Without the import and supplies of high-quality import coking coal, the RAG-coke oven plant Prosper, for example, would not be able to produce coke in the required quantity for the steel mills since German coking coal is mined in only small quantities and does not meet all of the quality requirements. In 2010, Germany produced 8.1 Mt of coke, more than the previous year's 6.7 Mt. Prosper alone produced 1.9 Mt of this total, nearly 30% more than the 1.5 Mt produced in the previous year.

In 2010, imports and domestic coal production contributed to supplies in the various consumer groups as shown here:

Consumer Groups Import Coal and Domestic Coal in 2010

	Import Coal Mt	Domestic Coal Mt	Total [1] Mt
Power Plants	33.1	11.5	44.6
Steel Mills	14.7	3.7	18.4
Heating Market	1.3	0.5	1.8
Total	**49.1**	**15.7**	**64.8**

[1] *Provisional*

HT-D10

So import coal covers:

- 74% of power plant demand,
- 80% of steel mill demand, and
- 72% of heating market demand.

Imports break down according to their quality as shown here:

Imports According to Quality in Mt (t=t)			
Products	**2008**	**2009**	**2010**
Steam Coal	33.2	29.3	31.3
Anthracite	0.5	0.4	0.5
Coking Coal	10.3	6.9	9.2
Coke	4.0	2.9	4.1
Total	**48.0**	**39.5**	**45.1**

HT-D11 Source: German Federal Statistical Office, own calculations

It must be pointed out that the import figures for 2010, as in previous years, differ from the consumption figures due to stock movements.

The steam coal was dominated by:

- Russia 9.3Mt or approximately 30%,
- Colombia 7.4 Mt or approximately 24%,
- Poland 3.7 Mt or approximately 12%,
- South Africa 3.3 Mt or approximately 11%,
- USA 2.7 Mt or approximately 9%, and
- Spitzbergen 0.9 Mt or approximately 3%.

The supply structure for steam coal is broadly diversified. Russia moved up to the position of largest supplier, followed by Colombia and Poland. South Africa and the USA also supplied significant tonnages. However, South Africa's declining importance for the German market is an accelerating trend.

The most important suppliers for coking coal were:

- Australia 4.0 Mt or approximately 44%,
- USA 3.0 Mt or approximately 33%,
- Canada 1.2 Mt or approximately 13%, and
- Russia 0.7 Mt or approximately 8%.

Overall the supply structure for all coal qualities is broadly diversified and is sourced primarily from politically stable countries. There were no logistical problems in 2010.

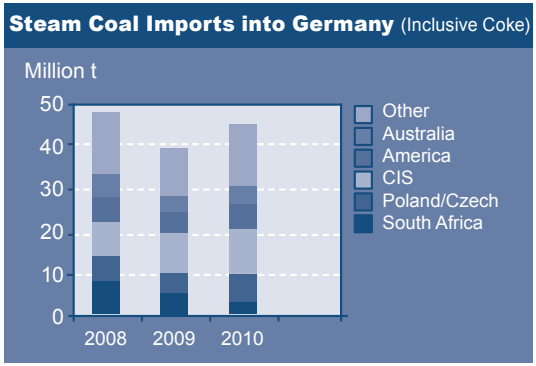


Figure 20 Sources: Statistisches Bundesamt, own calculations

The approximately 45 million tonnes of imported coal entered Germany via the following transport routes:

Transport Routes for Import Coal in Germany			
Transport Route	**2008 Mt**	**2009 Mt**	**2010 [1] Mt**
German Sea Ports	14.7	14.0	14.0
Rail	10.1	7.8	16.0
Barges from ARA Ports	23.2	18.2	15.0
Total	**48.0**	**40.0**	**45.0**

[1] Provisional figures

HT-D12

Energy Price Trends Diverge – Steam Coal Maintains Its Competitive Edge

The major prices for steam coal competitors partly declined again in 2010, but others increased also like coal prices. Price trends for HFO and natural gas varied widely.

This is what happened during the year:

Development of Energy Prices in 2010	01.01.2010 EUR/tce	01.07.2010 EUR/tce	31.12.2010 EUR/tce
Heavy Fuel Oil (HFO)	255	276	287
Natural Gas / Power Plants	227	242	248
Import Coal Price cif ARA (spot market)	81	85	104

HT-DI3

HFO followed the trend of crude oil prices and recovered significantly over the course of 2010. Natural gas prices continued to deteriorate, but then recovered during the second half of the year. In particular, an abundant supply of LNG on the world market led to volatile prices on spot markets.

In all market situations, import coal enjoyed a major competitive advantage in 2010 that diminished with respect to natural gas, because coal prices tightened sharply towards the end of the year.

Energy Price Development as a Yearly Average	2008	2009	2010	2009/2010 Change
		€/tce		%
Heavy Fuel Oil (HFO)	275	208	270	29.8
Natural Gas / Power Plants [1)]	269	246	233	- 5.3
Cross-Border Price/Import Coal	112	79	85	7.6

[1)] Annual mean value BAFA price (BAFA – German Federal Office of Economics and Exports Control)

HT-DI4

The price advantages of import coal over HFO and natural gas developed on the basis of the above values as shown below:

Price Advantages of Imported Coal	2008 €/tce	2009 €/tce	2010 €/tce
Import Coal versus HFO	163	129	185
Import Coal versus Gas	157	167	148

HT-DI5

Imported hard coal was able to maintain a significant price advantage over natural gas and HFO in 2010. The German cross-border price ("BAFA" price) follows spot market prices (API#2) with a time lag of 4-6 months.

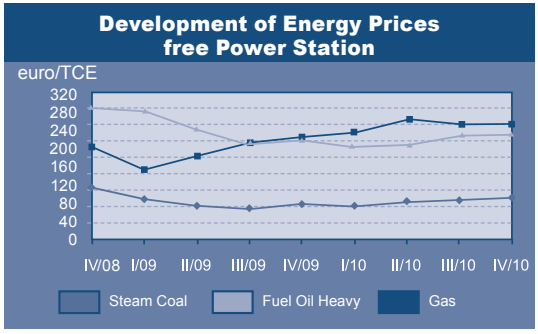


Figure 21 Sources: Statistik der Kohlenwirtschaft- Gas preliminary, BAFA , own calculations

Prices for steam coal and coke are in line with short-term market trends. Coking coal prices are generally negotiated annually and price increases/decreases appeared in the cross-border prices after a certain delay during the year. In 2010, a major change occurred. Large players on the market announced at relatively short notice that in future only quarterly prices would be agreed. Other coking coal exporters followed, although some, above all American companies, continue to offer yearly prices. The aim of quarterly pricing is to reflect more quickly the market situation as well as to push coking coal as a "commodity" and thus enable the use of financial products to secure prices. This change was and is a major problem for the steel industry, because it trades with its customers using yearly prices and it would be

very difficult to establish prices quarterly, especially in rapidly rising markets. Nevertheless, much more volatile price variations can be expected in the future.

The contract benchmark prices for hard coking coal in the latest negotiations (2010/2011) and the cross-border prices for imported coking coal from third countries developed as shown in the tables below:

Contract Benchmark Prices for Metallurgical Coal in US$/t fob	
2007/2008 [1]	98.00
2008/2009 [1]	300.00
2009/2010 [1]	129.00
2010/2011 [2]	220.00

[1] April-March = Japanese fiscal year
[2] Average of prices during Q3, Q4 2010 and Q1 2011

HT-DI6

Third Countries Cross-Border Price in EUR/t [1]	
2007	96.00
2008	126.00
2009	175.00
2010	147.00

[1] Average values of all metallurgical coals

HT-DI7

German cross-border prices include not only the price for hard coking coal but also for semi-soft coking coal and for PCI coal.

Just as it is the case for steam coal, the relationship of the euro to the US dollar plays a significant role.

In 2010, at €147/t, a significantly lower price for coking coal was reached on average than in 2009. During the fourth quarter of 2010, the average coking coal price of €176/t was higher than the average price in 2009.

The production shortages due to poor weather in Australia at the turn of the year 2010/2011 will probably have had an impact on prices during the second quarter of 2011. A noticeable increase is expected.

Coke prices developed as shown below:

Coke Price Development		
	Third Country Imports / EUR/t	EU Imports EUR/t
2008	272.00	282.00
2009	240.00	193.00
2010	260.00	261.00
Increase 2009/2010	20.00	68.00

HT-DI8

Coke prices increased sharply because of the recovery of the steel industry. Similar quantities can be expected for 2011 and prices could remain on a very high level.

Prices and Trade with CO2 Certificates

2010 was the third year of the second trading period for EU ETS CO_2 allowances, from 2008 to the end of 2012.

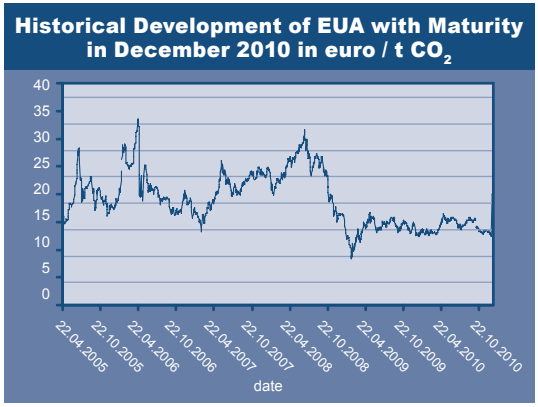


Figure 22: Source: Reuters

The good economic situation as well as the cold weather resulted in much higher emissions of CO_2 in 2010 and therefore in more trading of CO_2 certificates.

This stabilised prices and even pushed them up slightly. According to initial estimates, CO_2 emissions in Germany, after dropping due to the economic crisis in 2009 (-7%), increased by 4.8% in 2010 compared with the previous year. Nearly 38 $MtCO_2$ more were emitted, still 2.5% or 21 $MtCO_2$ less than CO_2 emissions in 2008.

Low temperatures pushed up energy consumption significantly in 2010 compared with 2009 – and also energy-related emissions: For the whole year, the number of heating degree days was about 17% higher (i.e. "colder") than in 2009.

In total, a 4.2% increase in greenhouse gas emissions is expected for 2010. This would represent an estimated 23.4% reduction of CO_2 emissions compared with the 1990 base year. With this, Germany would clearly exceed its binding objective of a 21% reduction for the period 2008-2012.

The following illustration shows the prices expected as at 04/2011 for the years 2011 to 2014:

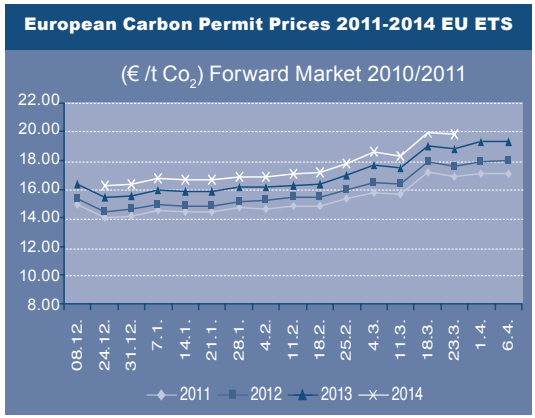


Figure 24 Source: Spectron

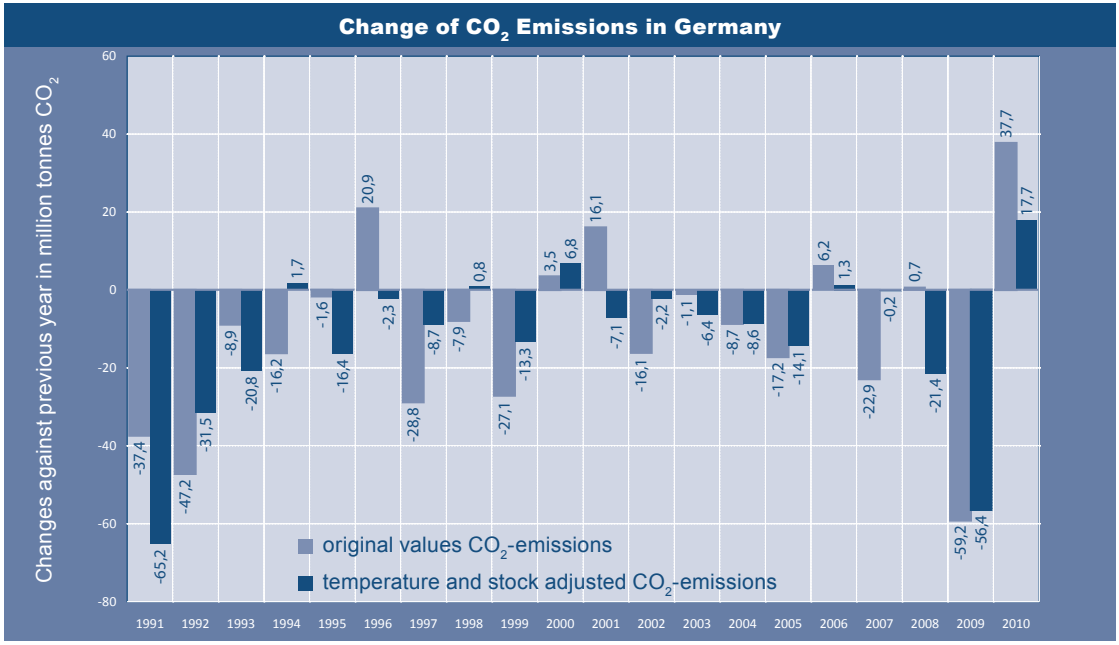


Figure 23 Sources: Umweltbundesamt; Deutscher Wetterdienst; AG Energiebilanzen; own calculations

First EUA Auctioning in 2010

In January 2010, at the European Energy Exchange (EEX), trade began in CO_2 emission allowances that had not been freely allocated to German companies. The price for a so-called EU emission allowance (EUA) – i.e. the right to emit one tonne of CO_2 – rose from just €13 at the beginning of 2010 to about €16 at the end of 2010. Since January 2010, the EEX has held regular auctions to sell emission allowances. From January to October 2010 and again in 2011, each week 300,000 EUAs were auctioned on the spot market and 570,000 EUAs on the forward market for the so-called mid-December contract of the current year. The remaining quantities were auctioned on the spot market in November and December 2010. In total, 41 million EUAs were auctioned in 2010. This is equivalent to 10% of all allocated EUAs in Germany.

Trends on the CER Market

The Kyoto Protocol to the UN Framework Convention on Climate Change (UNFCCC) obliges 39 industrialised states, including in the EU as a group, to reduce the emissions of greenhouse gases. At the forefront are efforts to reduce emissions in the individual industrialised countries, in order to reach various objectives set in accordance with their development. Developing countries, because of their low per capita emissions so far, are not yet obliged to take their own abatement measures, but are included in global climate protection by means of a mechanism for environmentally-friendly development (Clean Development Mechanism - CDM).

CDM allows industrialised countries according to Art. 12 of the Kyoto Protocol, to include Certified Emission Reductions (CERs) from emerging and developing countries in their own obligations to reduce emissions. The idea behind this is that developing countries, by improving their generally very low efficiency in the use of energy and raw materials, can make a more important contribution to climate protection with the same financial means than in developed industrialised countries. Before CERs can be issued, CDM projects must fulfil internationally defined requirements.

EU Member States have the option of using this instrument to fulfil their own reduction obligations and it is included within the EU Emissions Trading Scheme to a certain extent, thus allowing companies in the industrial and energy sectors to participate. During the second trading period (2008-2012), companies participating in the EU Emissions Trading Scheme have the possibility to replace more than 1.3 billion tonnes of EUAs with CDM certificates. In Germany, operators of installations participating in emissions trading can fulfil up to 22% of their abatement obligations with CDM certificates. This is about 90 $MtCO_2$ each year. CERs are traded like EUAs, but their price is always lower than EUAs. In 2010, the price for CERs fluctuated in the range €11-14/tCO_2. The corresponding prices for EUAs were about €3/tCO_2 higher.

According to estimates by experts, 928 million CERs will be issued by 2012. In order to reach this figure, an average of 17 million CERs must be issued each month by the United Nations. To date, a total of 553 million CERs have been issued.

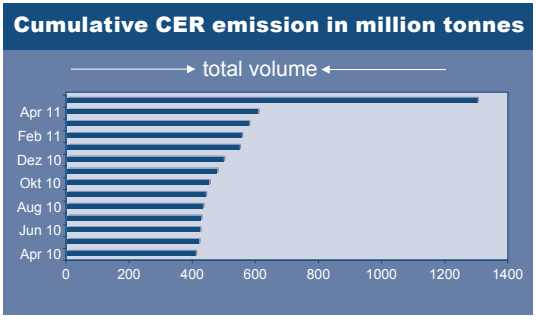


Figure 25 Source: Figures from cdc climat research

The future of CDM after 2012 is uncertain, because a legally binding follow-up protocol is lacking. At the moment, CERs are being issued only until 2012. They therefore no longer influence investment calculations for new climate protection projects. Without a legally binding follow-up, incentives are lacking.

Climate Summit in Cancún: Negotiations Continue

The good news was that the climate summit did not collapse. We cannot however report any breakthrough. After a marathon meeting at the end of 2010, a series of decisions was taken by the international community of states to combat global warming:

- In the preamble to the final document, it was acknowledged that the objective was to limit global warming to less than two degrees Celsius

- With the co-operation of the World Bank, a climate fund for developing countries was set up, with industrialised countries contributing US$100 billion each year.

- The conference agreed a roadmap for the follow-up to the Kyoto Protocol and one for the climate objectives of the USA and developing countries – however, these are not legally binding.

Trends in Price Development 2011 - Varying Development in Import Prices Expected -

Since the end of 2010, the CIF-ARA prices for coal have been at their highest level since November 2008, fluctuating between US$120-130/t and thus more than 70% above the respective price of last year. Freight rates, on the other hand, due to an over-supply of freight capacity for bulk commodities, are low.

At the same time, the US dollar has weakened with respect to the euro. Only time will tell if the national debts of Greece, Ireland, Portugal and Spain will have an impact on the euro.

Based on spot market prices for steam coal during the first quarter of 2011 and the stronger euro, BAFA prices will most likely reach a level above €90/tce during the course of the year.

Due to the flooding in Australia, coking coal prices might reach new record levels in 2011. After the moderate contract conclusions for the contract year 2009/2010 of US$130/t fob for "hard coking coal", the coking coal prices have been positively exploded and the benchmark conclusion between Japanese steel mills and the leading Australian producers is about US$225/t fob for the first quarter 2011. Coking coal prices agreed for the third quarter were also up to US$225/t fob.

High coking coal prices can be expected, reflecting the recovery of the steel industry throughout the world. Coke prices might also remain at a similarly high level.

Energy Concept of the German Federal Government

Energy Concept Adopted to 2050

In their coalition agreement of 2009, the "yellow-black" parties had agreed "to put forward a new Energy Concept at the latest within the next year, formulating guidelines based on scenarios for a clean, reliable and affordable supply of energy". The Concept was to be "free from ideology, open on technology and market-oriented" and "point the path to the age of renewable energies". In preparation, the EWI, GWS and Prognos institutes elaborated energy scenarios as cornerstones of the Energy Concept. It must be pointed out, that the scenarios are not forecasts. On the contrary, they are driven by political assumptions, i.e. with predefined

objectives and outcomes. As these same premises or assumptions were set by BMWi and BMU, the scenarios are "politicised" expert opinions. The assumptions were the starting point for the work and are based on the coalition agreement.

The operational impacts of a new regulation on nuclear safety that will extend and bring up to date requirements to the highest technical level, as announced in the 12th Nuclear Law, are awaited.

Assumptions for the Scenarios: Coalition Agreement

	Scenario I	Scenario II	Scenario III	Scenario IV	Development of Trends
GHG Emissions					
• to 2020	- 40 %	- 40 %	- 40 %	- 40 %	Consultant´s proposal
• to 2050	- 85 %	- 85 %	- 85 %	- 85 %	Consultant´s proposal
Nuclear Lifetime Extension	4 Years	12 Years	20 Years	28 Years	No lifetime extension
Energy Efficiency (Improved)	endogenous determined	2,3 - 2,5 % p. a.	2,3 - 2,5 % p. a.	endogenous determined	Business as usual (1.7-1.9 % p. a.)
Renewable Energies					
• Share in Final Energy Consumption 2020	≥ 18 %	≥ 18 %	≥ 18 %	≥ 18 %	≥ 16 %
• Share in Primary Energy Consumption 2050	≥ 50 %	≥ 50 %	≥ 50 %	≥ 50 %	Consultant´s proposal

HT-D19 Quelle: Forum für Zukunftsenergien, 10/2010

Lifetime Extension of Nuclear Power Plants on Average of 12 Years Decided in 2010, but Cancelled in 2011

When the Energy Concept was adopted there was also a controversial discussion on extending the life time of nuclear power plants. Nuclear was to be a bridge on the way to the "age of renewable energies". In order to function as a bridge, it was foreseen to extend the life time of all seventeen nuclear power plants in Germany an average of twelve years.

Immediately after the Cabinet had adopted the Energy Concept, draft legislation went through the Deutscher Bundestag in order to change existing nuclear legislation and set up a special "Energy and Climate Fund". A follow-up package of about sixty separate measures to further implement the Energy Concept is expected. The Energy and Climate Fund contract, negotiated by the Federal Government with those companies operating nuclear power plants, has been made public.

The **additional profits from life extensions should be partly used** to finance renewable energies and energy efficiency. In addition to the introduction of a new tax on nuclear fuel, initially levied until 2016 and raising a revenue of about €2.3 billion per annum, a contractual agreement was finalised with the operators of nuclear power plants on contributions to special promotion funds. Here, the Federal Government announced, with its Energy Concept, t**he establishment of a national Energy and Climate Fund as well as an efficiency fund as separate estate** (i.e. not in the budget), to be fed by the industry contributions and also, from 2013, with additional proceeds from the auctioning of CO_2 emission allowances. After the reactor disaster at Fukushima, extending the life time of nuclear plants is again being questioned. In the latest development, the Federal Government wants to finally opt out of nuclear energy (see preamble).

Energy Concept – Biased Towards Climate Protection

In its Energy Concept, the Federal Government formulates "guidelines for an environmentally-friendly, reliable and affordable energy supply" and describes for the first time in a government programme "the way to the age of renewable energies". So renewable energies are expected to take the main share of the future energy mix. In this way, "in a dynamic energy mix" with a steadily decreasing energy consumption, conventional sources of energy are to be gradually replaced by renewable energy sources.

The Energy Concept covers, in addition to the compromise on nuclear energy, nine fields of action, each still to be implemented by concrete measures:

- Renewable energies to be the main pillar of future energy supply
- Key question energy efficiency
- Nuclear energy and fossil power plants
- Efficient network infrastructure for electricity with integration of renewable energies
- Energetic renovation of building and energy-efficient construction
- Challenge of mobility
- Energy research for innovation and new technologies
- Supply of energy in the European and international context
- Public acceptance and transparency.

The Energy Concept is completed with a "10-point emergency programme" that includes measures to be implemented by the end of 2011. The programme includes, in particular, measures in the fields of offshore wind, network development and electricity storage, but also the agreement on the already published draft of a national law on CCS.

National Energy and Climate Policy Objectives – Rather Unrealistic

With the Energy Concept, very ambitious national climate protection and energy-saving objectives are to be achieved. To be precise, "Germany in the future, with competitive energy prices and high standards of living, is to become one of the most energy-efficient and environmentally friendly economies in the world."

A regular and consistent monitoring (with a monitoring report every three years) should promptly identify and correct any developments in the wrong direction.

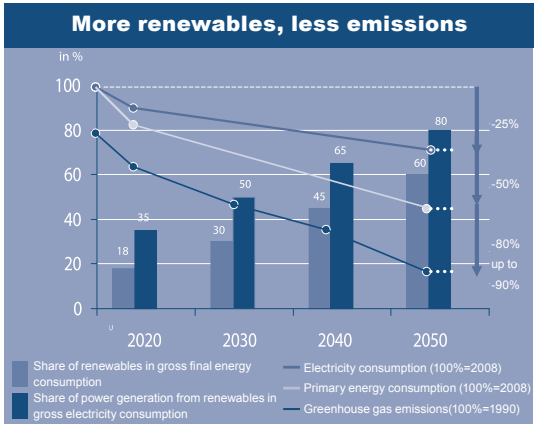


Figure 26 Source: Wirtschaftsrat der CDU

In detail, the following are the long-term objectives the government is aining for:

- **By 2050, reduction of greenhouse gas emissions** in Germany **by 80% to 95%** (compared with 1990),
- **By 2050, decrease of primary energy consumption by 50%** (compared with 2008),
- **Reduction of CO_2 emissions** as follows: -40% by 2020, -55% by 2030 and -70% by 2040,
- **By 2020, reduction of primary energy consumption by 20%** (compared with 2008).

In order to halve today's consumption by 2050, massive efficiency improvements must accelerate today's growth in energy productivity of about 1.7% p. a. to an average rate of 2.1% p. a. This is linked to specific sectoral energy savings:

- **Electricity consumption** in Germany should **be reduced by 10% by 2020** and by **25% by 2050**,
- For the transport sector, consumption of end-us energy should be reduced by 10% by 2020 and 40% by 2050,
- For the construction sector, the annual **energetic renovation rate should double** from 1% to 2%.

The share of **renewable energies** should be drastically increased:

- Their **share of gross end-use energy consumption** should rise from 10% in **2009 to 60%** by 2050,
- by 2020 to 18%,
- by 2030 to 30% and
- by 2040 to 45%.

For **power generation** in Germany, the Federal Government is even striving towards an **80% share of renewable energies in 2050**; the intermediate objectives here are: 35% by 2020, 50% by 2030 and 65% by 2040.

Primary Energy Mix Changes Radically

The primary energy mix would change dramatically under an energy scenario where the lifetime of nuclear power plants is extended by an average of 12 years between 2009 and 2050. It is clear that the underlying increase in energy efficiency then represents, to a certain extent, the most important "source of energy" in the future.

According to this scenario, hard coal consumption drops by about three quarters in Germany by 2050, to a remaining amount of approximately 15 Mtce. Already by 2020, one might expect to halve to just 31 Mtce. Afterwards, hard coal utilisation for power generation would only be possible in connection with combined heat and power (CHP) and then increasingly with CCS technology.

Consumption of mineral oil and natural gas would drop in absolute terms by about two-thirds by 2050. The contribution to supply from renewable energies would treble, however by 2050 reaching levels equivalent to current gas or coal consumption, at least in order of magnitude. Renewables growing share of primary energy consumption results also from a decrease in total consumption.
The energy scenarios are meant to prove that it is technically and economically feasible to reach these objectives. They however explicitly stress that, **"the calculations still do not say anything about how realistic it is in practice to reach the objective".**

€ 800 Billion Euros Investment Required, Based on Speculative Assumptions

All scenarios assume, among other things, additional investment needs of approximately €20 billion annually in the German energy sector to 2050, i.e. over 40 years. Cumulatively, therefore, the targeted transformation of the energy system would cost approximately € 800 billion. Neither the energy scenarios nor the Energy Concept clearly state how this required investment is to be financed or how the burdens are to be distributed. Besides the as crucial estimated investment costs, further "basic assumptions" are mentioned in the energy scenarios, which currently seem rather unrealistic and speculative, but ones that the Energy Concept simply presupposes to be achievable:

- **Conclusion of a global, legally binding climate protection agreement** setting targets for industrialised countries to 2050, as these are now set as an objective in Germany's Energy Concept.
- As from 2020, establishment of a fully integrated

European electricity market, **overcoming** all existing **transit and network obstacles in Europe** and carrying out all necessary infrastructure investments.

- After 2020, Germany's power supply will also depend increasingly **on imported electricity (of up to 30% in 2050),** without this ever being co-ordinated with Germany's neighbours.

- At national level, the energy scenarios (like the Energy Concept) assume that the **lifetime extensions of German nuclear power plants** can be **completely implemented** despite political opposition, complaints and doubts, and that e.g. the development of Germany's energy networks and advised renovation in the building sector will take place without any slowdown.

- Furthermore, the energy scenarios presuppose the **solution of all acceptance problems** related to the required investment projects and that a stable international context will exist, without e.g. raw material bottlenecks or shortages, or any surge in energy prices, and also without any price declines in fossil energy sources or similar reactions on the international energy markets.

- Innovation in the energy sector also carries some fundamental assumptions, such as the successful realisation of technologies that do not yet exist today or that will not be commercially available for a long time: among them are new technologies to store power via CCS (assumed to be "commercially available" from 2025), to e-mobility and the standard-setting zero-emission house.

Fulfilling all objectives in the scenarios very much depends, in addition to the analysis, on the given reduction in energy consumption actually being achieved. This, again, can only occur if the increase in energy productivity not reached so far becomes a reality, which presupposes at least a kind of "energy efficiency revolution". Furthermore, the assumption of a maximum 1% per annum average economic growth until 2050 would be detrimental to Germany's development as a location for industry and will fortunately be markedly exceeded in 2010 and probably also in 2011.

With these assumptions, all scenarios on average show slightly positive growth and job creation, of 0.7% and 9.5% respectively, compared with a reference scenario without climate policy objectives. However, the potential for error in these 40-year forecasts to 2050 is clearly much greater than in forecasts for a single year.

No Long-Term Positive Prospects for Coal?

From a coal perspective, the Energy Concept is fatal in the long-term. According to DEBRIV, the German Brown Coal Association, the draft Energy Concept should be understood as "a determined strategy against coal". The energy scenarios, being in agreement with political assumptions, assume 100% use of imported hard coal as from 2020. Indigenous lignite use declines after 2020; its contribution to electricity generation drops drastically and is estimated at less than 1% in 2050.

According to the scenarios, there is still, as mentioned above, a niche market for hard coal of round about 15 Mtce in 2050, of which 8 Mtce is steam coal and 7 Mtce imported coking coal and coke.

No Investment Security for New Coal-Fired Power Plants with Combined Heat and Power

According to the Energy Concept, coal-fired power plants in the future will no longer be used for base- or mid-load power generation, but instead like gas-fired power plants especially will be available as "swing and reserve capacity" for the fluctuating output from renewables. Nevertheless, sufficient investments in new, more flexible coal-fired power plants are considered "necessary" to ensure security of supply. This means also that, "the cost and availability of indigenous

sources of energy are important aspects in this context". But specific measures to safeguard sufficient coal-fired capacities are not mentioned in the Energy Concept. On this, it is sanguine: "We assume that the appropriate market signals will appear. Certainly, the construction of new fossil-fuelled power plants can also be supported by the state, but this will be limited to highly efficient and CCS-ready power plants, with priority for combined heat and power plants owned by companies "with a share of German electricity production capacity of less than 5%." This explicitly excludes large power utilities from support in Germany. In addition, the maximum amount of support is limited to 5% of the annual expenditure of the new Energy and Climate Fund. In such circumstances, it is more than questionable as to what extent new coal-fired power plants can still be planned and built, especially because the medium- and long-term prospects for power generation from coal have drastically worsened because of the Energy Concept, while for power plants, the EU Emissions Trading Scheme remains the central instrument to reach the Concept's ever-more ambitious climate objectives. This is all the more amazing given that power generation from combined heat and power plants is especially efficient and environmentally friendly.

The technologies to capture and store CO_2 (CCS) are perceived as important, because then, "future power generation from fossil sources of energy e.g. indigenous lignite, can take place in a climate-neutral way". CCS should however first be "tested … as an option". In addition, and according to the existing draft legislation on CCS in Germany, two of the twelve EU-supported demonstration projects should be completed by 2020 as well as an additional storage project for industrial emissions. These would then serve as a basis to decide on the potential commercial use of and support for CCS. The Energy Concept is open on the outcome of this evaluation. It does not mention other coal-related R&D projects.

Energy Concept Under Much Criticism

In addition to the coal industry itself and the IG BCE (Industriegewerkschaft Bergbau, Chemie, Energie – Mining, Chemical and Energy Industrial Union), the coal-producing Federal States and the BDI (Bundesverband der Deutschen Industrie – Federation of German Industry) have all criticised the lack of ambition for coal and its poor prospects in the Energy Concept. IG BCE expressly requested that coal, and not nuclear energy, be the bridge to the age of renewables.

Opposition parties in the Bundestag criticise above all the nuclear compromise and, in addition to a constitutional complaint, have announced that they will create more political opposition to the further use of nuclear. If they win at the elections, then they will cancel life time extensions of nuclear power plants. The opposition sees these extensions as an obstacle to the even faster development of renewable energies, as required by their even more ambitious climate protection objectives and measures.

The German Institute for Economic Research – Institut der deutschen Wirtschaft (IW) – as well as environmental experts and parts of the leading media consider that most, if not all objectives set out in the Energy Concept are unrealistic or exaggerated, precisely because they are based on doubtful assumptions (see above). In addition, the enormous costs and risks of the planned changes to the energy industry in Germany were not made clear (see for instance Der SPIEGEL of 20 September 2010: "The expensive dream of clean energy – green at any price", FAZ of 30 September 2010: "The inconsistencies of the energy u-turn" or Handelsblatt of 5 October 2010: "Berlin's Energy Concept is based on wrong assumptions"). It is an open secret that the forced development of renewable energies and the simultaneous development of the network will cause an avalanche of additional costs over the coming years and that higher electricity tariffs can be expected at least to 2020.

It has to be asked what the Federal Government has initiated with its extremely ambitious objectives in its Energy Concept, without having had a broad social debate about its consequences. It should acknowledge that today's long-term objectives to 2050 cannot be a burden and should therefore be understood more as environmental policy wishes. Last but not least, the improved energy-efficiency and energy-savings objectives appear almost Utopian, without drastic structural changes to existing production and consumption patterns. The Institute for Economic Research (IW), according to FAZ of 23 September 2011, comes to the conclusion that politicians should not rely on the, "vision of a massive drop in energy consumption". Furthermore, "an Energy Concept for the next 40 years should not rely only on optimistic assumptions".

The Association of German Scientists – Vereinigung Deutscher Wissenschaftler (VDW) – comes to the conclusion that, "after examining the measures planned by the Federal Government, substantial doubts remain as to whether the objectives of the Energy Concept are achievable with these measures".

There is also the basic question of how so many detailed and rule-setting energy sector "objectives" are to be combined with a market economy? The narrow focus on renewable energies is even contrary to the self-proclaimed "open to technology" approach of the black-yellow Federal Government itself and constrains the energy mix. The clear primacy of climate protection is in contradiction with the energy policy triangle – security, affordability and sustainability – and their balance. All objections made against it so far have in substance remained valid.

In addition to the economics of energy supply, security of supply is also underrated in the Energy Concept. This can be seen in German electricity supply which, for the first time in its history, according to the energy scenarios, will rely from 2020 and beyond on increasingly massive imports. Thus, domestic power supply, which BDI has referred to with concern, "depends on conditions in foreign countries". The power and influence of German energy policy will decrease to an extent unknown so far. The Energy Concept barely explains how, according to the energy scenarios, significant fossil energy imports can and should be secured, at least until 2020. The short section on "securing raw materials and international aspects" refers mainly to the EU level and supporting international infrastructure projects. Major challenges for security of energy supply thus remain unanswered.

End of Hard Coal Production in 2018 Finally Agreed

The end date for German hard coal mining has been sealed. The original proposal of the European Commission, published in July 2010, that would have allowed state aid for hard coal mining across the EU only until October 2014, was in contradiction with the German law on financing hard coal mining that came into force at the end of 2007. This law foresaw a regulation on a socially acceptable expiry date being agreed by the end of 2008, with a review clause in 2012. The review was dropped from a draft law agreed at the beginning of 2011 on changes to the financing of hard coal mining (BT-Drs. 17/4805), responding to a European Commission decision that left no scope for an eventual review of the national decision to end coal production. State aid to the remaining five mines, according to the EU decision, may only continue if, for each mine, a definitive, irreversible date for closure is established in a closure plan.

The Spanish coal industry introduced a complaint against the European Commission's decision of 10 December 2010 (787/2010/EU) to the European Court of Justice, according to which state aid had already been approved for not only the German, but also for the Spanish hard coal mining industry, with the same objective of a definite end to uneconomic Spanish hard coal mining. No hard coal mines will be closed in Germany in 2011. Only in mid 2012, with Saar mine

and at the end of 2012, with West mine will there be closures.

This results in the following production quantities:

Presumed Quantities / Production	2010 Mtce	2011 Mtce
West	3.0	3.0
Prosper Haniel	3.2	3.2
Auguste Viktoria	3.2	3.2
Ost (closed in 09/2010)	0.2	---
Ensdorf	1.3	0.6
Ibbenbüren	2.0	2.0
Total	**12.9**	**12.0**

HT-D20 Source: own evaluation

This shows an additional loss in output of another one million tonnes coal equivalent.

In the longer term, total hard coal output could develop as shown below:

Projected German Hard Coal Production		
Year	Estimate up to 2018 in Mtce	
2011	12.0	
2012	11.3	Closure of Ensdorf mine
2013	8.0	Closure of West mine
2014	8.0	
2015	6.0	
2016	6.0	
2017	4.0	
2018	4.0	

HT-D21 Source: own evaluation

Prompted by the temporarily high world market prices at the end of 2010, discussions about continuing German hard coal mining operations were again re-opened.

Assuming average production costs of € 180/tce for German production, the following competitive position for German steam coal was seen during the course of 2010. German production costs are compared with the cross-border price (BAFA) in tce:

Comparison of German Steam Coal / Cross-Border Price (BAFA) 2010	01.01.2010	30.06.2010	31.12.2010
	Euro/tce		
Costs German Coal - ex mine	180	180	180
BAFA Price (cross-border price)	75	92	103
Advantage Import Coal	105	88	77

HT-D22

These comparisons assume that the costs at German mines remained constant in 2010. Even if the pollution legacy costs of German mining are ignored, the difference is still substantial.

This comparison makes it clear that the difference between German steam coal and imported coal over the entire year was very large, calling into question whether indigenous steam coal could ever be competitive on the world market.

The prices for imported coking coal from January to December 2010 averaged €147/t and were again lower than German production costs.

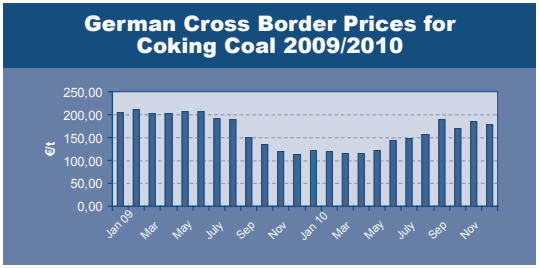


Figure 27 Source: Several evaluations

Over the course of 2010, coking coal import prices rose steadily up to €185/t in November 2010. This reflected rising demand for coking coal worldwide, which became very noticeable during the second half of the year. High prices can also be expected in 2011.

Overall, it can be stated that world market prices for coking coal are significantly closer to the average production costs in Germany than is the case for steam coal.

Renewables on the Rise – start-up support for new technologies grows to a massive, permanent public subsidy

The share of renewable energies in total final energy consumption rose further to 10.5% in 2010 owing to the generous subsidy and priority feed-in under the EEG (German Act on Renewable Energy Sources).

Renewable energies accounted for (provisional):

- 45 million tonnes of coal equivalent, a 9.4% share of primary energy demand, and
- 103 TWh, a 16.4% share of gross power generation.

Primary Energy Consumption / Renewable Energies by Sectors

	2008 Mtce	2009 Mtce	2010 Mtce
Electricity	21.3	21.8	24.5
Heating	13.3	14.5	16.2
Fuels	4.5	4.0	4.3
Total	39.1	40.3	45.0

HT-D23 Source: AGEB

Renewable Energies: Germany's Unilateral Action Results in a Heavy Burden for its Citizens – With no Benefit for the Global Climate

Despite the installed capacity for wind power increased by 5.5% or 1,551 MW, and in photovoltaics increased approximately by 40% or 7,500 MW output from wind dropped by about 5.5%. So, power generation from renewable energy sources from wind stagnated. Nevertheless, because of the priority feed-in, the absolute share produced from renewables increased, especially due to the rapid hike of solar power plants.

With a functional EU Emissions Trading Scheme to protect the climate, the EEG (Renewable Energy Sources Act) no longer makes sense. In fact, its effects run counter to emissions trading. The support for "green electricity" in Germany reduces energy production from fossil sources of energy and releases CO_2 certificates for trading. So, the price for the CO_2 certificates falls. Other EU countries can then produce more cheaper electricity from fossil fuels. German consumers end up subsidising fossil energy production in the EU and around the world. The effect on the climate is virtually nil.

Emissions trading in Europe achieves almost nothing in terms of global climate improvement. Although it reduces the demand for fossil fuels in Europe and makes their use more expensive, it does nothing to reduce the worldwide use of fossil fuels. Unless an international CO_2 trading system is established and a global climate protection treaty is concluded, German and European efforts are doomed to failure and are an unnecessary expense for taxpayers.

EEG Levy Increases by 70% to €0.035/kWh

According to information from BDEW, German electricity consumers paid €12.7 billion to support renewable electricity, i.e. approximately € 0.156/kWh. The market value of EEG power amounts to about €4.5 billion, so direct subsidies totalled €8 billion in 2010. The support of renewable energy sources is moving away from start-up financing for new technologies towards permanent subsidy by consumers. This financing is increasing and is far in excess of the subsidies for German hard coal mining.

In consequence, electricity tariffs increased for German households as follows:

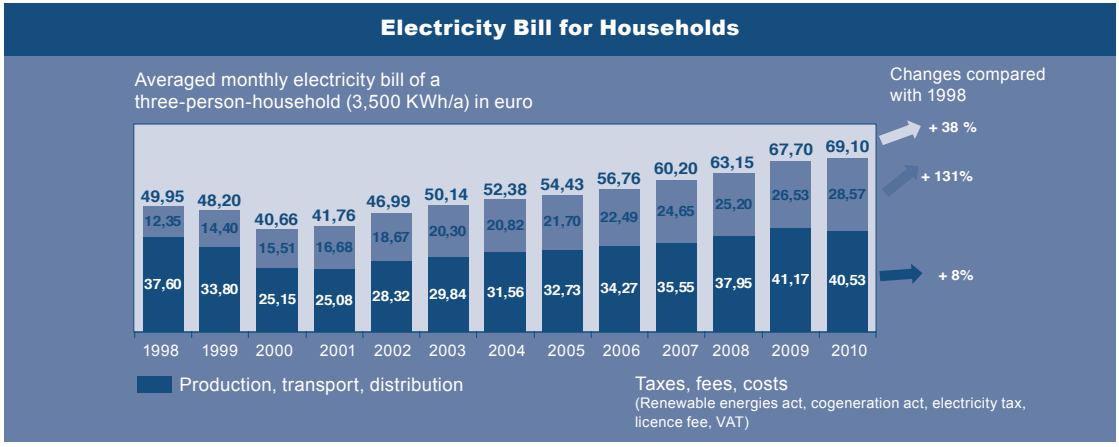


Figure 28 Source: BDEW, status 01/2011

40% of the total support for renewable electricity generation went to solar energy in 2010

Subsidies for solar energy – at unimaginably high levels – were only half-heartedly reduced after much debate by the Federal Government, despite the big price reductions for many of the components used in solar power generation, due to increased competition, mainly from China. A "subsidy bubble" is still developing, without making any major contribution to power supply or reduction of CO_2 emissions. Even with less support, at €0.29/kWh since the beginning of 2011, this kind of power generation is still six times more expensive than the traded price per kWh seen on the power exchange.

Solar power covered barely 2% of Germany's total electricity demand in 2010. However, it received approximately €3.3 billion from the feed-in levy.

According to initial projections, 2010 was a record year for new connections of photovoltaic installations.

An estimated 7,500 MW were connected to the grid. A capacity of more than 18,000 MW could be reached in 2011. The "solar debt" of citizens probably reaches over €120 billion over the next twenty years, which must be amortised via electricity bills. This sum is similar in size to the cost of the measures to rescue the banks or to stabilise the euro. As solar energy subsidies are mainly used by well-off citizens, who can afford

the necessary investment in solar equipment, there is a transfer of wealth from poorer consumers to the owners of solar plants via electricity tariffs.

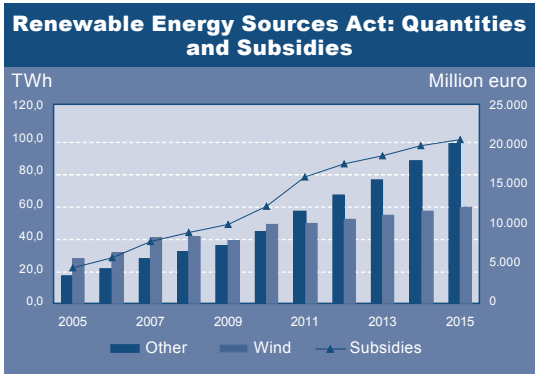


Figure 29: EEG Expenditure

World up-side-down on the European Energy Exchange: Negative electricity tariffs

On the European Energy Exchange in Leipzig, electricity prices slip more and more frequently into the red, i.e. on the spot market, prices fluctuate in a negative range. Anyone who purchased at this moment not only received free electricity, but also a premium for having taken it! From the beginning of September until the end of 2009, electricity prices were negative on 29 days. The reason for this absurd world? The German Federal Government's uncoordinated energy policy, with the result that when there is a lot of wind, huge amounts of renewable electricity are fed into a grid that has not been developed over the years to transport this excess electricity to those German regions with high consumption. If a weak demand for power coincides with high quantities of electricity from wind, grids become unstable, prices collapse and power producers offer customers on the energy exchange money to take the surplus quantities of electricity.

A faster reduction of the subsidies for wind energy should be called for. A further increase in wind energy subsidies for "repowering" would be completely wrong in terms of rational policy, because "repowering" should just lower the production costs.

BDEW predicts EEG costs for power generation from renewable energy sources (2009-2015) as follows:
We must now wait to see if the revision of the EEG in 2011 will again result in only slight corrections. A subsidy mentality has become deeply rooted in the renewables industry.

€14 billion Subsidy for EEG Expected in 2011 – The Trend is Still Upwards

Initial estimates indicate that subsidies will increase in 2011 due to the over-supply of renewable electricity. An estimated feed-in payment of €19 billion for electricity with a market value of €4.5 billion points to a subsidy of probably over €14 billion, to be paid by consumers through the EEG levy. In the medium-term, i.e. by 2015, the annual EEG levy will amount to approximately €21 billion.

Renewable Energies Cause Follow-up Costs of €2 Trillion – EEG Subsidies Belong in Federal Budget

The management consultant McKinsey estimates the additional costs of renewables at more than €2 trillion – i.e. two thousand billion euros – in a study of the costs of unilateral actions within the European Union to 2050. According to the study, even with a common approach across Europe – which is nowhere near – a radical transfer to renewable energies from 2020 to 2050 will cost at least €6.6 trillion. By a co-ordinated development of renewable energies in Europe and of the necessary networks, costs however would drop dramatically.

Even according to government information, a further €175 billion will be necessary by 2030, in addition to the €50 billion already paid so far. That is approximately €10 billion a year, or nearly as much as "the Soli" (Solidarity surcharge) pours into the coffers of the Federal government.

It would be time, as recently requested by the press, to move "the financing of the subsidy system for renewable power to where the expenditure and income must be justified to the voter: in the Federal Budget and in parliament" (FAZ, 10 May 2011).

Coalition Agreement on CCS Draft Legislation "Light" Reached

The EU, with its CCS Directive agreed in 2008, made an important step to improve the climate. At the beginning of 2009, first drafts by the Federal Government were put forward as national law.

What followed, however, was not only a diverging opinion between the Ministry for Economic Affairs (BMWi) and the Ministry for the Environment, but election tactics mainly by Schleswig-Holstein that staged a controversy on the underground storage of carbon dioxide between federal states.
The draft bill only considers the capture and storage of carbon dioxide (CCS) as a demonstration project. First, however, the resistance of the CDU/FDP coalition governments in Lower Saxony and Schleswig-Holstein had to be overcome. They required wide-ranging assurances that they could exclude storage sites in their countries (the so-called opt-out clause), which would not be a legal implementation of the EU directive. Time is however short, because the EU has offered support for demonstration projects which must be requested by the middle of the year and stipulates that a law must have entered into force. Thus the search for suitable CO_2 storage sites in Germany and the subsequent storage of CO_2 are all but impossible. Only at the beginning of April 2011, did the Federal Cabinet finally agree the draft of a law for the demonstration and use of technologies for the capture, transport and permanent storage of carbon dioxide (CCS bill).
The press release from the Federal Ministry for Economic Affairs stated, "With the draft bill, the Federal Government has decided in favour of a step-by-step procedure for the further development of CCS technologies. The draft bill first allows the testing and demonstration of some carbon dioxide storage sites and foresees a comprehensive evaluation of the state of development of these technologies in 2017."

Concretely, the bill on CCS proposes to regulate the following:

- Underground surveys to determine a site´s suitability for permanent storage,
- the establishment and operation of carbon dioxide storage sites,
- the closure and post-closure management of carbon dioxide storage sites, and further,
- handing sites over to the public authorities after a 30-year period.

Central criterion to obtain a permit for a demonstration storage site is the evidence of long-term security. The operator must take precautions against any potential impacts on the population and the environment according to state-of-the-art science and technology, i.e. meet the highest standards of precaution. He must take into consideration current knowledge during the entire process of long-term storage. The bill also makes extensive provisions for compulsory insurance cover and post-closure management.

BMWi also stressed the industrial policy and international dimensions of CCS: "With a CCS bill based on our draft, we have a secure legal framework for the testing and demonstration of CCS projects. We can therefore go ahead with this technology in Germany – for the

advantage of Germany's export trade and industry, and of international climate protection. One thing is clear: we must not ignore the global dimension of climate protection. Rising world population and rising energy consumption means that emerging and developing countries will not abandon fossil sources of energy in the foreseeable future.

CCS technology is therefore necessary in order to permanently store several billion tonnes of CO_2 and, in the future, to enable the use of CO_2 in industrial processes. With our agreement, we give German industry the chance to develop this key technology rapidly and to globally benefit from new export opportunities."

Until recently, the debate concerned what scope there was for the storage of carbon dioxide on lands. The way became free for the Cabinet, after the Ministry for Economic Affairs and the Ministry for the Environment, as well as the Federal States, had reached an agreement on the issue of this so-called "Country clause". With this, the countries can determine, in accordance with state law, if testing and demonstration of permanent storage is to be permitted only in certain areas or not to be permitted in certain areas. The countries are however bound by certain technical criteria. When defining areas, energy- and industrial-sector options for the use of potential storage sites, the geological characteristics of the areas and other public interests must be evaluated. The bill is generally disappointing and far behind the intent of the EU directive.

CO_2 Emissions from Hard Coal Consumption Up Approximately 24 million tonnes in 2010

The strong increase in hard coal consumption in electricity and steel production caused an increase in energy-related CO_2 emissions in 2010 of about 18 million tonnes for power generation and 6 million tonnes for steel production.

Coal-Fired Power Generation – Eight Installations Totalling 8,400 MW Under Construction

The completion of some of the eight coal-fired plants under construction is late due to major quality defects, particularly with the boilers, and also partly for legal reasons. Nearly all permits have been challenged. The construction of the E.ON Datteln 4 power plant, which is 80% complete, is threatened after its construction permit was found to be void and by the political change in North Rhine-Westphalia to a "red-green" coalition. Furthermore, statements by the Federal Government on the need to build highly efficient coal-fired power plants and to switch off old blocks only seem to receive lip-service. Shrinking political and public acceptance, motivated not only by special interests but also by the energy sector and Germany's legal and economic framework, concerning in particular the lifetime extension of nuclear power plants, has resulted in some projects being cancelled or postponed. This is the case for the planned E.ON Staudinger 6, after the city of Hanau announced that it had challenged the granting of an environmental permit. Following a number of press releases, GDF Suez eventually abandoned its coal project in Brunsbüttel. Other projects were also withdrawn.

This results in a delay to the reduction of CO_2 emissions from the replacement of older plants with new, highly efficient coal-fired power plants with efficiencies of 45%, some with combined heat and power.

Hard Coal-Fired Power Plant Projects in Germany		
Coal-Fired Power Plants Under Construction or Approved		
Operator	Location	Capacity (MW)
EnBW	Karlsruhe	912
E.ON	Datteln 4	1,055
Evonik Steag / EVN	Duisburg-Walsum	725
GDF Suez	Wilhelmshaven	800
GKM	Mannheim	911
RWE Power	Hamm	1,600
Trianel	Lünen	750
Vattenfall	Hamburg-Moorburg	1,640
Total Gross Capacity		8,392
As at: 31.12.2010		

HT-D24

PROSPECTS FOR THE WORLD COAL MARKET

Outlook for World Coal Trade Still Positive

Since 2010, world economic forecasts have been indicating signs of recovery. The degree and speed of recovery vary widely across the EU. The economic crisis was a global crisis, but with very different consequences throughout the world. Unemployment and budget deficits increased more rapidly in the USA than in the EU, but the gap in productivity between the USA and the EU increased. Some emerging countries are also facing major economic challenges, but generally, these countries returned more quickly to growth.

The Pacific area is once again providing the stimulus for growth. In aggregate, the non-OECD region is growing twice as fast as the OECD region. The major collapse of GDP, according to European Commission data, wiped out an average of four years of growth. According to the Commission's economic forecasts, it can be assumed that the EU will only reach the level of output seen prior to the crisis in 2008 during the second quarter of 2012.

Growth in Gross Domestic Product *)			
	2008 %	2009 %	2010 1) %
World	3.0	- 1.2	4.1
USA	0.4	- 2.4	3.8
Japan	- 1.2	- 5.2	1.7
Euro zone	0.6	- 3.9	1.5
Asia (excluding Japan)	6.9	2.0	6.2
China	9.6	8.4	9.0
OECD	0.5	- 3.4	2.7
Non-OECD	3.0	1.5	6.0
**) Changes compared with previous year*			
1) Provisional			

HT-P1 Source: European Commission, DG for Economic and Financial Affairs 1/2011

World trade in the key bulk commodities registered a clear upswing in 2010, with a growth of 191 million tonnes. This was essentially thanks to the strong rise in coking coal and iron ore imports into China and India.

Global Trade in Major Bulk Commodities

Raw Materials	2009 Mt	2010 [1] Mt	2011 [2] Mt	Difference 2009/2010 %
Steel Industry				
• Iron Ore	897	986	1,061	10
• Coking Coal	201	259	289	29
• Scrap	90	99	101	10
• Coke	9	13	16	17
• Pig Iron	12	12	12	0
• Steel Products	225	250	269	11
Total	**1,434**	**1,619**	**1,748**	**11**
Steam Coal	668	713	744	5
Grain	313	312	343	0
Total	**2,415**	**2,644**	**2,835**	**8**

[1] Provisional
[2] Forecast, own calculations

HT-P2 Source: Clarkson 04/2011

Moreover, global trade growth in bulk commodities is above all dependent on the stability of demand in the Pacific region as a whole. The growth rate of the non-OECD region from 2009 to 2010 was 6% compared with the previous year and so could again start off with former rates of growth.

Capacity of the Bulk Carrier Fleet Forecast Based on Order Books and Delivery Dates

	2008 M Dwt	2009 M Dwt	2010 M Dwt	2011 Planned New Builds M Dwt
Capesize	143	170	210	16
Panamax	115	121	136	33
Handymax	83	92	109	13
Handysize	77	76	82	6
Total	418	459	537	68

HT-P3 Source: Clarkson 05/2011

The overall capacity of bulk carriers recorded the highest growth in 2010 for a long time, at approximately 17%. A smaller growth rate is expected for 2011, because during the economic crisis, numerous orders were cancelled or contracts terminated because of a lack of solvency. For this reason, even with stronger growth of bulk traffic in 2011, the capacity of the bulk carrier fleet is more than sufficient. Such fundamental data therefore indicates that there will be no major upturn in freight rates.

Global Coal Market Returns to a Path of Growth

The unexpectedly buoyant world coal trade in 2010 provides a good basis for renewed growth in 2011. Both the worldwide revival of the steel industry and the uninterrupted demand for steam coal for power plants in the Pacific region will most likely continue to serve as market stimuli.

Development Seaborne Hard Coal Trade - Import Regions 2010 -

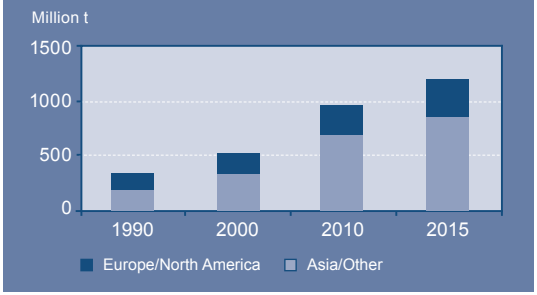


Figure 30 Evaluation of several sources

Steam Coal Market Enjoys Positive Outlook in 2011

Demand

Demand for electricity on the Asian market continues to grow rapidly, with high growth rates in many countries. Even so, large parts of the population in Asia, Africa and South America still have no access to electricity, so we can count on dynamic growth in the long term.

Further urbanisation and industrialisation are propelling Chinese and Indian demand for coal. Since 2007, for the first time more people in the world live in towns than in the country. According to UN forecasts, urban population will be about 70% of the total by 2050.

In Europe, imported coal is replacing the decline in indigenous production. On the other hand, it must increasingly compete with natural gas that has become less cheaper. Since indigenous production in Germany, Poland and Spain will continue to decline, import volumes will probably be maintained in the long term, but perhaps not increase substantially given the additional burden of the cost of CO_2 certificates and the further development of renewable energies, especially if the EU Emissions Trading Scheme remains a globally isolated solution.

According to the International Energy Agency's (IEA) "New Policies Scenario", world demand for electricity will increase on average by more than 2% each year to 2035, i.e. from 20,700 TWh nowadays to more than 30,300 TWh in 2035.

According to IEA estimates, more than 80% of the increase in global electricity demand comes from developing and emerging countries, while in OECD countries, the increase is slower because of mandated efficiency improvement. ExxonMobil in its "Outlook for Energy: A View to 2030" comes to similar results: demand for electricity will increase from the present 20,000 TWh by 80% globally by 2030. While for OECD countries, only a 25% increase is forecast compared with 2010, the increase in electricity demand in non-OECD countries is 150%, of which China alone accounts for 35%.

The share of global power generation from coal will probably decrease by 2035 according to IEA data, possibly by 25%. The reason for this is the volume of relatively inexpensive, unconventional gas available on the market that could partially displace coal and also the stronger emergence of renewable energy sources.

Supply

Pacific suppliers – above all Indonesia – continue to increase their supply. The programme for the expansion of ports and railways in Australia reaped its first rewards in 2011. However, the heavy rainfalls and subsequent flooding that lasted for weeks nearly brought production in Queensland to a halt and badly damaged some infrastructure. China is continuing to reduce its exports because of high domestic demand, but nevertheless remains an exporter to a certain extent. It is difficult to evaluate Vietnam's potential. Exports to date have been handled flexibly. The Vietnamese government was concerned about high exports and so cut them back. It will however ease its restraint on exports if domestic demand becomes weaker. Russia is increasing its Pacific exports and expanding shipping capacity to the Far East.

In the Atlantic region, Colombia and Russia in particular have the potential to develop their exports. South Africa is currently stagnating. Poland's contribution to seaborne exports is stabilising at a low level. Indonesia might lose market shares on the Atlantic market in favour of Asian customers. Smaller steam coal producers – Venezuela and Spitzbergen in Norway – complete the available sources of traded coal.

High market prices are now improving the competitive position of the USA as a "swing supplier". The USA

therefore has the potential to increase its exports to Europe in 2011. Venezuela will remain a constrained supplier in terms of volume for the foreseeable future.

Coking Coal Market – Signs Remain "Bullish"

Demand

The positive trend in the steel sector continued during the first months of 2011. All steel-producing countries have increased their pig iron production. The increased demand for coking coal has already led to price increases. As especially China and increasingly India are continuing to raise their steel production, largely based on pig iron, and OECD countries produce more, the coking coal market in 2011 could grow by 10-12% or 25-30 million tonnes compared with 2010.

Supply

In addition to the traditional supply sources, the first deliveries from the Elgen project in Russia and from the Vale project in Mozambique could occur in 2011 and extend the pool of suppliers in 2011. The high price level is also likely to encourage the expansion of coking coal mines around the world, while new coking coal projects are being examined in Indonesia, Mongolia and Colombia. Mozambique could begin exporting from the Moatize pit in 2011; it is under construction and has been designed for a production of 11 million tonnes per annum, of which 8.5 million tonnes is coking coal and 2.5 million tonnes steam coal.

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 2011 and in the following years. Russia, Colombia and New Zealand supply smaller quantities of coking coal. Indonesia, Venezuela, Vietnam and South Africa supply PCI coal.

Infrastructure for International Coal Trade

Owing to the rapid growth in recent years of the bulk commodity trade as a whole, and of coal trade in particular, infrastructure constraints have occurred. There have been major bottlenecks, sometimes serious, at both loading and discharge ports, on domestic railway lines and in sea transport. The chance to exploit market opportunities due to a rising demand for coal triggered over the last 2-3 years a worldwide infrastructure expansion, even though it came late, across all links in the transport chain. Expansion projects along the entire "coal chain" have been launched by almost all of the major countries involved in international coal trade. The problems have differed from one country to another. In Australia, for example, the primary problem is bottlenecks in port and railway capacities, while in South Africa it is limited rail capacity, already resulting today in the port of Richards Bay using only two-thirds of its capacity.

The realisation of the many expansion measures would have significantly improved the situation, above all in Australia if there had been no floods at the beginning of 2011.

Bottlenecks in supply are to be expected in 2011 because of the production shortfalls over several months in Australia and against the background of a rising demand for coking coal, which will affect prices accordingly. If the USA covers additional demand as a "swing supplier", then shipping capacity could rapidly reach its limit at US export ports.

In Indonesia, Colombia, Russia and South Africa, many port expansion projects are in progress or already completed.

Market Consolidation Continues

The tendency towards market consolidation continues in all of the producing countries. The plan of the Chinese government to create several large hard coal companies, each with over 100 million tonnes of annual output, is already being implemented. Five to six companies are also handling the major share of production and exports in Indonesia.
However, the long term world market prospects are also luring new companies into the coal export business, thereby expanding the pool of suppliers.

In the case of coking coal – especially "hard coking coal" – Australia has created a dominant position with 65-68% market share, 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 its market participation through projects in Mozambique as well as through its entry into Australian coal mining. A number of international companies are currently interested in opening new mines in Mongolia, in partnership with or by acquiring majority stakes in exiting mining companies.

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

Damper on the Development of Coal Gasification and Liquefaction Projects

Due to high oil and gas prices, coal-to-liquids (CTL) projects were being considered in Australia, China and the USA on the basis of low-cost coal deposits. With the economic crisis and the emergence of inexpensive shale gas and surplus LNG capacity, these projects were not intensively pursued. The projects could however be picked up again as oil prices are now increasing again. If oil supplies worldwide should become tighter, natural gas could push its way more strongly into the transport fuel sector. South Africa is currently the only country where coal is liquefied in large quantities – to produce transport fuels. Approximately 45 million tonnes of coal are processed each year.

COUNTRY REPORTS 2010-2011

AUSTRALIA

Production

Australia was one of the few countries able to enjoy economic growth in 2009 and to come out of the global economic and financial crisis almost unscathed, reporting 1.2% growth. This was due to the raw material wealth of the country. In the meantime, Australia has displaced China as the top iron ore producer. Given China's dynamic growth, Australia's main market for raw materials is expanding. Income from natural resources – coal, ores and industrial metals – puts the country and its 22 million inhabitants in an extraordinarily good strategic position.

With its energy commodities Australia is the ninth-largest energy producer, responsible for 2.4% of world power production and 6% of world hard coal production. 97% of is hard coal output comes from New South Wales (NSW) and Queensland (QLD). Coking coal comes predominantly from QLD and steam coal predominantly from NSW. Three quarters of production comes from opencast mines.

Production in Australia's export-focussed states was once again able to increase in 2010 by more than 7 million tonnes, from 337 million tonnes to 344 million tonnes.

In addition to the output in Queensland and New South Wales, there is still some hard coal production in Western Australia (6.8 million tonnes in 2010), in South Australia (3.8 million tonnes) and in Tasmanian (0.6 million tonnes), exclusively for the domestic market. In total, 355 million tonnes were produced.

As well as the hard coal production, lignite is mined in Victoria (68.7 million tonnes in 2010).

Usable Production of Australia's Major Producing States

	2008 Mt	2009 Mt	2010 Mt
New South Wales (NSW)	137	143	149
Queensland (QLD)	184	190	195
Total NSW / QLD	**321**	**333**	**344**
Western Australia / South Australia / Tasmanian	13	11	11
Total	**334**	**344**	**355**

LB-T1

Chinese and Indian companies are attempting to secure their needs for coal by participating in or acquiring Australian mines, mining projects and even mining companies, or by securing long-term contracts. For example, China has concluded a 20-year contract for 30 million tonnes of coal per year with Resourcehouse. The Indian Lanco Infratech Ltd. was successful in bidding for three large coal mines (Ewington and Muja) of the Griffin Coal Mining Co. Pty. Ltd. in Western Australia.

Australia is making great efforts to improve coal technology, in particular in mining, combustion and better exploitation of deposits. 23% of Australian coal mining is in underground operations and 77% in opencast. The list of new steam coal and coking coal projects is long. The scope and speed of output expansion are increasingly dictated by infrastructure development rather than issues related to financing or reserves. This has frequently led to bottlenecks. Currently, these occur primarily on the railways serving export ports. In addition, the local labour market cannot cover the needs of the mining industry for trained, skilled workers to build and operate the new mines, ports and other infrastructure.

Australia holds a share of about 33% of the international hard coal market: 64% of the world market for coking coal and 19% for steam coal. Australia has the largest potential for a sustainable expansion of steam and coking coal exports in the long-term. By 2030, expansion of exports to 400-500 million tonnes is conceivable.

Infrastructure

Australia's infrastructure was again at full capacity in 2010 and an Achilles heel for exporters. However, the first steps in a new round of port expansions were seen. For example, annual capacity at the Dalrymple Bay coal terminal was extended by 17 million tonnes, and at the port of Newcastle investment was made in 30 million tonnes of additional annual shipping capacity for steam coal. Annual export quantities could be increased by a further 18 million tonnes. After these expansion measures at the ports, the focus is shifting to the bottlenecks caused by rail transport. Progress can already be observed. The Australian government has put forward a national construction programme according to which NSW will make investments of AUS$12 billion available to develop rail capacity in the Hunter Valley, as well as AUS$1 billion to improve existing capacity in order to reduce queues to the port of Newcastle. Queues continue to dog other Australian ports. The entire infrastructure of Queensland was badly affected towards the end of 2010 and beginning of 2011 because of heavy rainfall and cyclones. These damaged rail tracks and port infrastructure. Exports were eventually hit in 2011, although production was affected immediately. Estimates are based on the assumption of a decrease in production from 20 million tonnes up to 100 million tonnes in 2011.

Exports of the Coal Loading Ports

Coal Loading Por	2008 Mt	2009 Mt	2010 Mt
Abbot Point	13.7	15.3	17.4
Dalrymple Bay	48.0	54.2	62.7
Hay Point	36.0	35.0	36.4
Gladstone	56.0	58.0	61.7
Brisbane	5.3	6.3	7.6
Total Queensland	**159.0**	**168.8**	**185.8**
Newcastle	91.5	92.8	95.1
Port Kembla	11.7	15.0	13.3
Total New South Wales	**103.2**	**107.8**	**108.4**
Total	**262.2**	**276.6**	**294.2**

LB-T2

The transhipment figures for coal loading ports do not match precisely with export figures. There may be customs-related reasons for this.

Almost all Australian ports were expanded over recent years and now have the following capacities:

Capacities of Australian Ports

Port	Current Capacity Mt	Cargo Handling in 2010 Mt
Newcastle	113	95
Port Kembla	18	13
Dalrymple Bay	85	63
Hay Point	44	36
Gladstone	76	62
Abbot Point	25	17
Brisbane	7	8
Wiggins Island	---	---
Total	**368**	**294**

LB-T3

In Newcastle alone, the first phase of a new coal terminal has been built for one billion AUS$ by the Newcastle Coal Infrastructure Group (NCIG) with an annual capacity of 30 million tonnes. The second phase, to expand export capacity to 53 million tonnes,

is already being planned and operation will start in 2013/2014.

Exports

Altogether, Australia increased its coal exports in 2010 by about 10% or 27 million tonnes. Demand for Australian coking coal in 2010 was significantly higher than expected due to the fast recovery of much of the global steel industry from the economic crisis. The heavy rainfall and consequent flooding of large parts of Queensland at the end of 2010 only affected exports at the beginning of 2011. The Australian Bureau of Agriculture and Resource Economics and Sciences (ABARES) estimates that exports dropped by 15 million tonnes during the first quarter of 2011 alone.

The development of hard coking coal exports is as follows:

Development of Hard Coking Coal Exports

	2009 Mt	2010 Mt	Difference 2009/2010 Mt
Europe	9.1	16.2	+ 7.1
South America	2.8	4.7	+ 1.9
Japan	21.8	26.5	+ 4.7
India	20.8	25.7	+ 4.9
Total	**54.5**	**73.1**	**+ 18.6**

LB-T4

In total, at 159 million tonnes, 18% more coking coal (including "semi-soft coking coal" and PCI coal) was exported than in the crisis year of 2009. The major importers of Australian coking coal are Japan, India, China, Korea and the European Union. 78% more coking coal went to Europe, 53% more to South America and 20% more to Japan than in 2009.

In contrast, China reduced its imports of both coking coal and steam coal, in total by approximately 10 million tonnes, down to 36 million tonnes, with the following breakdown:

Development of Australian's Coal Exports to China

Coal Quality	2009 Mt	2010 Mt
Hard Coking Coal (HCC)	18.9	13.0
Semi-Soft Coking Coal / PCI	12.0	8.7
Steam coal	15.8	14.5
Total	**46.7**	**36.2**

LB-T5

Coal Exports by Quality

Coal Quality	2009 Mt	2010 Mt
Hard Coking Coal (HCC)	84	102
Semi-Soft Coking Coal	50	57
Steam Coal	139	141
Total	**273**	**300**

LB-T6

Australia was only able to increase its exports of steam coal by about 2 million tonnes. The heavy rainfall at the beginning, and particularly at the end of 2010 may have played a role here. Japan increased its imports from Australia by about 9 million tonnes to 69.7 millions tonnes. Sales to South Korea decreased by about 3 million tonnes to 26 million tonnes.

The focus of Australian sales is shifting more and more to the Pacific region (for all qualities):

Sales Development Australia

	2009 Mt	2010 Mt
Atlantic	19	26
Pacific	254	274
Total	**273**	**300**

LB-T7

Australia's key figures are shown below:

Key Figures Australia	2009 Mt	2010 Mt
Hard Coal Output	348	355
Hard Coal Exports	273	300
• Steam Coal	139	141
• Coking Coal	134	159
Imports to Germany	3.9	4.3
• Steam Coal	0.5	0.3
• Coking Coal	3.4	4.0
Export Rate in %	**79**	**85**

LB-T8

INDONESIA

Production

Indonesian coal mining continued to expand in 2010. Preliminary estimates indicate that output rose from 280 Mt to 310 Mt. Official figures put output respectively at 275 Mt and 325 Mt, but there is additional output which was bought up in part by large companies. Output breaks down into 124 Mt high-quality hard coal and 203 Mt low-quality hard coal (sub-bituminous).

Major Hard Coal Producers in Indonesia [2]				
Company	Output 2009 Mt	Output 2010 Mt	Exports 2009 Mt	Exports 2010 Mt
Bumi	57.5	61.0	52.9	53.0
Adaro	40.6	42.2	31.6	33.3
Kideco	24.4	28.9	19.2	22.3
Banpu	21.5	23.5	22.5	22.5
Berau	11.3	17.4	10.1	12.7
Bukit Asam	10.8	13.1	4.4	4.2
Total [1]	**166.1**	**186.1**	**140.7**	**148.0**
Indonesia total	**280**	**327**	**230**	**277**

[1] Excluding additional purchases, [2] Partially own estimates

LB-T9

Of the total output, 277 Mt were exported and 50 Mt were used to meet domestic demand. The stock situation in Indonesia is unknown. For 2011, the Indonesian coal mining industry expects production to further increase to 360 Mt, of which 60 Mt is expected to cover domestic consumption.

The trend of Indonesian coal output, and its coal exports, is towards lower calorific values. Indonesian hard coal production is estimated to break down regionally into:

- 290 Mt in Kalimantan and
- 37 Mt in Sumatra.

Indonesia's major coal producer Bumi Resources plans to increase its production from an estimated 60 Mtpa to 113 Mtpa in 2013 with an investment of US$1.2 billion. In particular, the production of its subsidiaries KPC and Arutmin is to be expanded to 100 Mtpa in 2012 at a cost of US$1.1 billion.

Production in Sumatra is mainly used locally because the deposits are located close to consumption centres on the densely populated Java. Interest in the drying and briquetting of low-calorific coal is rising, and a number of pilot facilities are planned or under construction.

In addition to hard coal production, Indonesia also produces about 40 million tonnes of lignite.

A number of coking coal projects (Kalteng, Guloi, Lampunet and Tulup) are also being examined in Indonesia. Japanese, Chinese and Australian companies (e.g. Sumitomo/BHP) are beginning to develop coking and steam coal projects in Eastern and Central Kalimantan. There are also coking coal deposits on Sumatra, which are attracting some interest.

Infrastructure

Indonesia currently has six large deep-water ports on Kalimantan with an annual handling capacity of 268

Mt, allowing vessels of 60,000-180,000 DWT to be loaded. In addition, there are ten more coal terminals nationwide (including Samarinda and Palikpapan) with an annual capacity totalling 80-100 Mt and a depth which, as a rule, is adequate for Panamax shipsizes. Handling capacities are also available on Sumatra. Furthermore, there are numerous offshore loading facilities for smaller ships.

This large number of loading options has so far favoured the strong development of exports. In the long term, continued growth also depends on improving inland infrastructure further away from the coast (construction of railway lines), because up to now only the coal reserves near the coast or with a good connection to a river for onward transport have been developed. Adoni Enterprises has agreed a rail and port project in the Sumatra region. The estimated costs for the 250-km long railway and port infrastructure amount to US$1.65 billion, to be built by Adoni Global in 48 months. The port will be designed for an annual throughput of 60 Mt.

Coal shipments are handled through the following ports:

Coal Throughput at Indonesian Ports

	2008 Mt	2009 Mt	2010 Mt
Adang Bay	21.0	21.0	21.8
Banjarmasin	33.0	37.6	47.2
Kotabaru	16.5	9.2	7.9
Pulau Laut	12.0	22.9	12.0
Tanjung Bara	35.0	35.9	31.1
Tarahan	3.0	4.5	4.0
Total	120.5	131.1	124.0
10 additional smaller loading ports and 20 "offshore loading ports"	81.5	96.9	153.0
Total Throughput	**202.0**	**228.0**	**277.0**

LB-T10

Exports

The official published export figure for 2010 was about 277 million tonnes, an increase of 47 million tonnes in comparison with 2009.

Indonesia further consolidated its position as the world's leading steam coal exporter in 2010. It was able to seize the opportunity offered by the decline in Chinese exports. An estimated 2-3 Mt of Indonesian output entered the market as PCI coal. The focus of Indonesian exports is on the Pacific market. Volumes to European and American countries in 2010 remained relatively stable compared with 2009.

Coal Exports by Market

	2008 Mt	2009 Mt	2010 [1] Mt
Pacific	176	216	264
Europe	20	12	11
USA	5	2	2
Total	**201**	**230**	**277**

[1] *Estimated*

LB-T11

The largest individual buyers are located in Asia. Exports to China alone increased by over 90% to 74.9 Mt.

Largest Importers of Indonesian Coal

	2008 Mt	2009 Mt	2010 Mt
Taiwan	25.8	25.2	21.9
Japan	39.7	32.1	33.1
South Korea	26.6	33.7	43.2
India	29.2	37.7	44.4
China	16.1	39.4	74.9

LB-T12

Exports will continue to grow. Domestic demand, on the other hand, is not growing to the same extent, because many of the projects in the 10,000 MW special programme for new hard coal-fired power plants have

been delayed. The focus on exports will remain in Kalimantan. The long-term goal of the government is to provide electricity to 97% of the population and to increase coal-fired generation to consume about 110 Mtpa by 2018 for this purpose. Coal production is to be increased to 560 Mtpa by 2025, according to the government's long-term plan.

Key Figures Indonesia	2008 Mt	2009 Mt	2010 Mt
Hard Coal Output	255	280	327
Steam Coal Exports	202	230	277
Imports to Germany	0.5	0.1	0.1
Export Rate in %	**79**	**82**	**85**

LB-T13

The government postponed publication of trading licences which contributed to a certain disruption of exports. According to the new Indonesian mining law, traders must convert their existing licences into production licences before they may export coal. This forced many traders to hold their shipments until the allocation of licences was agreed. Furthermore, the Indonesian government continued to regulate the coal market, introducing standardised monthly price indices for steam and coking coal mined in Indonesia. This system has been operating since September 2010 and forms the basis for the collection of royalties and taxes. The indices are also increasingly used to calculate the minimum price for coal sales. Exports were also hindered by heavy rainfall during the second half of 2010, causing temporary shortfalls in production.

RUSSIA

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

- Russia
- Ukraine
- Kazakhstan.

Coal is being re-assessed in all these countries due to the high prices for oil and oil prices linked gas. The recovery of the steel industry enabled an increase of coal production in comparison with 2009. However, there has been no return to the production peaks of 2008.

Only Russia is of any significance for the international coal market. Ukraine namely increased total production in 2010 by 5% to 76 Mt. Steam coal increased by 10% to 51 Mt, while production of coking coal dropped by 7% to 24 Mt. For 2011, a further drop in the production of coking coal is expected.

Only Russia is considered in the following remarks.

Coal Production in Russia	2008 Mt	2009 Mt	2010 [1] Mt
Coking Coal [1]	80	67	84
Steam Coal	195	183	171
Total	**275**	**250**	**255**

[1] *Including anthracite*

LB-T14 *Source: McCloskey*

Production

Coal production in Russia increased by 21 Mt to about 321 Mt, of which 79 Mt was coking coal. Demand for hard coal increased by 7% to 197 Mt, including 39 Mt of coking coal, due to improved domestic demand.

Initial estimates indicate that opencast production was about 221 Mt, while underground production totalled 100 Mt.

The most important area for Russian hard coal production is the Kemerovo region. The major enterprise in this region, OAO Kuzbassrazrezugol, increased its coking coal output by about 74% to 4.7 million tonnes in 2010. In total, 49.7 million tonnes were produced by the company.

Figures for the most important Russian producers are shown below:

Coal Producers in Russia

Producer	2009 Mt	2010 * Mt
SUEK	87.8	87.0
Kuzbassrazrezugol	46.1	49.7
SBU Coal	14.7	14.0
Yuzhkuzbassugol	14.0	11.2
Vostsibugol	2.1	14.9
Raspadskaya	10.6	7.2
Yuzhny Kuzbass	9.6	13.8
Yakutugol	5.2	9.0
Total	**190.1**	**206.8**
** Partially estimates*		

LB-T15 Source: McCloskey

Russian production increased in 2010 because of improved demand, both domestic and for export. Exports to the Far East again increased. The Russian mining and steel group, Mechel, announced that the first coking coal quantities from the long-awaited Elgen project would be mined in May 2011. Production in 2011 could total 1 Mt. The goal is to achieve an annual output of 27-30 Mt in about five years. The 200-km rail link between the Elgen mine and the Baikal-Amir main line is under construction and was scheduled for completion during the fourth quarter of 2010.

Infrastructure

Coal Exports via Russian Ports

	2008 Mt	2009 Mt	2010 Mt
Baltic Sea Ports and North Russia			
Murmansk	10.6	11.5	9.6
Vysotsk	2.8	2.9	2.3
Riga	12.8	13.8	11.5
Ventspils	4.3	5.3	3.6
Tallin (Muga)	---	1.6	1.2
St. Petersburg	2.1	2.4	2.2
Ust-Luga	4.9	6.6	7.6
Others	3.3	2.1	1.7
Total	40.8	46.2	39.7
South Russia and Ukraine			
Mariupol	1.4	1.5	1.7
Tuapse	3.1	3.1	3.5
Yuzhny	3.3	2.9	2.4
Others	7.7	7.5	7.6
Total	15.5	15.0	15.2
Far Eastern Russia			
Vostochny	14.1	14.1	14.5
Vanino	0.7	1.2	1.3
Muchka		4.9	5.0
Others	6.5	7.9	11.9
Total	21.3	28.1	32.7
Total	**77.6**	**89.3**	**87.6**

LB-T16

As coal competes with the transport of wheat, iron ore and steel to the major export ports, there are seasonal bottlenecks with rail transport.

The Russians are seeking to employ their own ports in preference to others in the Baltic region because of high transit fees charged by the Baltic States. Nevertheless, Riga was able to maintain its position. Total exports through the Baltic ports dropped by a total of about 6.5

million tonnes. Transhipments via the Black Sea ports were practically unchanged. The largest increases were seen at the Far Eastern ports, adding 4.6 million tonnes. The new port of Muchka handled 5 million tonnes compared with its annual capacity of 12 million tonnes. The port of Vanino plans to expand its capacity from today's 4.5 million tonnes to 12 million tonnes by 2012.

Overall, a rapid development of export capacities in Russia's Far Eastern ports can be observed. There will be no lack of port capacity over the next few years to restrict further increases in exports to the Pacific market. Krutrade is investing in its own rail wagons so that it can be more independent of the state rail company and benefit from an "on-rail" coal store with its private investment. In total, Russia's annual export capacity is anticipated to grow to as much as 135 million tonnes by 2020.

Exports

Owing to increased demand on the domestic market, Russia's seaborne exports in 2010 were about 87 Mt, some 3 Mt less than the previous year. In addition, about 10 Mt was traded overland with former CIS states. The major decrease was in the steam coal sector, with a fall of 5 Mt, leaving about 97 Mt exported in total.

In the Far East, China only bought 11.7 Mt in 2010, of which 6.7 Mt was steam coal and 5 Mt coking coal. Korea and Japan together purchased 19 Mt. In aggregate, this resulted in a growth of 4.6 Mt.

In the Mediterranean region, imports from Russia were practically unchanged. Croatia imported 0.4 Mt more, while Bulgaria reduced its imports by 0.4 Mt.

Key Figures Russia

	2008 Mt	2009 Mt	2010 Mt
Coal Output	**330**	**300**	**321**
Hard Coal Exports[1)]	78	90	87
• Steam Coal	75	85	80
• Coking Coal	3	5	7
Imports to Germany	8.0	9.3	10.5
• Steam Coal	6.9	8.7	9.3
• Coking Coal	0.9	0.5	1.0
• Coke	0.2	0.1	0.2
Export Rate in %	**24**	**30**	**27**

1) Seaborne only

LB-T17

Exports from Russia to north-west Europe dropped by 19% or 8 Mt. The UK imported just 7 Mt or 52% less steam coal than in 2009. In Germany, on the other hand, imports from Russia increased by 1.2 Mt to 10.5 Mt.

USA

Production

Coal production in the USA dropped by 1 Mt to 982 Mt in 2010 compared with 2009. This slight fall reflected not only the continuing decrease in demand for electric power resulting from the recession in the USA, but also the increased construction of new renewable power plants. The generation of electricity in the USA continues to be based largely on coal. Owing to the availability of shale gas, coal-fired power generation is not likely to increase in the near future, even perhaps declining.

On the other hand, according to some estimates for 2010, fuel switching from gas to coal could have reached 15 million tonnes.

Output Break-Down USA			
	2008 Mt [2]	2009 Mt [2]	2010 Mt [2]
Appalachian[1]	355	326	313
Interior	137	130	135
Western	576	527	534
Total	1,068	983	982
East of the Mississippi	448	416	409
West of the Mississippi	620	567	573
Total	**1,068**	**983**	**982**

[1] Including coal from reconditioning and lignite production
[2] Metric tonnes

LB-T18 Source: US EIA

The US government wants to better exploit the country's coal potential by employing modern technology as a way to reduce US dependency on oil imports. Indeed, coal-to-liquids (CTL) projects are under consideration. The sharp decline in natural gas prices has however put a damper on expectations, although President Obama points to coal as the country's most important energy resource. The plan to modernise the energy sector foresees investments in a CCS programme. More than 10 GW of new coal-fired power plants are being built, that could increase coal consumption by 10-12 Mtpa. On the other hand, there is 150-175 Mt of coal on stock at power plants, representing a 34% increase compared with the long-term average.

Stricter environmental regulations (e.g. the banning of mountaintop mining) and new legislation concerning water and other approval requirements could hinder any expansion of production. Yet exports could increase in the medium term because a number of old coal-fired power stations will be shut down due to the EPA's proposal to introduce strict mercury and dust emission limits. The EPA (Environmental Protection Agency) estimates that about 1,200 American coal-fired power plants are affected by such environmental regulations. For coking coal, further increases in exports are assumed in 2011.

Infrastructure

The USA's infrastructure of railways and ports is well utilised. Freight rates have risen substantially in recent years due to the somewhat monopolistic position of the private railways with their networks in the coal-producing areas. About 74 Mt, including domestic deliveries of about 10 Mt, were handled via American seaports in 2010. There are technical reasons related to customs which account for the discrepancy between shipments and export volumes. The capacity of river barges and transhipment equipment could cause a bottleneck for further export growth. While investments to date were mainly in new port capacities on the East Coast, plans are now being made on the West Coast for future coal export growth to Asia.

Utilisation Port Capacity USA				
Port	Terminal	2008 (Actual) Mt	2009 (Actual) Mt	2010 (Actual) Mt
Hampton Roads	Lamberts Point	16.06	24.79	29.05
	DTA	8.77		
	KM Pier IX	8.54		
Baltimore	Chesapeake	1.92	5.75	12.44
	CNX Marine (Consol)	7.78		
Mobile		7.51	7.09	8.82
Lower River	IMT (2/3 KM)	7.96	4.27	8.49
	United (Electrocoal)			
	IC Marine Terminal			
Total		**58.54**	**41.90**	**58.80**

LB-T20 Source: McCloskey

Exports/Imports

The USA is strongly oriented to Europe for its coal exports and in 2010 managed to increase its total exports of coking coal by 17 Mt and of steam coal by 3 Mt. Seaborne exports increased by about 20 Mt to almost 64 Mt in 2010. Overland exports to Canada grew again, by 3 Mt to 10 Mt.

Exports USA 2010	Coking Coal Mt	Steam Coal Mt	Total Mt
Seaborne	47.9	15.6	63.5
Overland (to Canada)	3.1	7.1	10.2
Total	**51.0**	**22.7**	**73.7**

LB-T20

Primary destinations of seaborne coal exports, totalling about 64 Mt, were Europe, with 34 Mt and Brazil with 7 Mt. The major customer in Europe was again Germany with 5.7 Mt of coking and steam coal. Imports, of Colombian coal in particular, declined sharply. The USA remained a net exporter. In 2010, exports of coking coal increased again.

Import-Export Balance USA (Seaborne)	2002 Mt	2004 Mt	2007 Mt	2008 Mt	2009 Mt	2010 Mt
Export (seaborne)	21	26	37	53	44	64
Import (seaborne)	15	25	31	31	19	15
Balance	**6**	**1**	**6**	**22**	**25**	**49**

LB-T21

Imports from Colombia declined by about 3 Mt, while volumes from Indonesia and Venezuela fell respectively by 0.9 Mt and 0.7 Mt.

For 2011, the continued export of coking coal can be expected. Exports of steam coal, despite the attractive economic situation in the USA and high world market prices, may also grow. In case of bottlenecks in rail transport, coking coal exports could increase in preference. To an extent, the USA might be able to benefit from the weather-related shortfalls in Australian production.

Key Figures USA	2008 Mt	2009 Mt	2010 Mt
Hard Coal Output	1,068	983	982
Hard Coal Exports	74	53	74
• Steam Coal	35	19	23
• Coking Coal	39	34	51
Hard Coal Imports	31	19	20
Imports to Germany	5.7	5.1	5.7
• Steam Coal	3.1	3.2	2.7
• Coking Coal	2.6	1.9	3.0
Export Rate in %	**7**	**5**	**8**

LB-T22

COLOMBIA

Production

In 2010, Colombia's hard coal production strongly grew and reached an all-time high. In total, production grew by about 5 Mt to 75.1 Mt. The goal of 82.5 Mt could not be reached because of unseasonal heavy rainfall during the fourth quarter of 2010, which was exceptional for this season. Production of metallurgical coal could be increased by 0.5 Mt to 2.8 Mt. The target production of 89.2 Mt for 2011 is being pursued, in agreement with the corporate plans of coal producers. This corresponds to state plans of between 85 and 90 Mt production.

Colombian Coal Exports by Company	2008 Mt	2009 Mt	2010 Mt
Exporter			
Cerrejon	31.4	30.3	31.5
Drummond	22.2	20.5	22.5
Prodeco / Carbones De la Jagua	11.5	9.0	12.1
Vale / Carbones del Caribe	2.0	1.8	2.1
Coal Corp. (Including coking coal)	---	1.5	1.2
Others	1.6	3.2	2.9
Total	**68.7**	**66.3**	**72.3**

LB-T23

Exports

Colombia managed to increase its exports, according to corporate reports, by 6 million tonnes to 72.3 million tonnes, falling short of its own 75 million tonne goal, because of poor weather. Colombia was nevertheless able to hold on to its status as the fourth largest seaborne coal exporting nation. The increase in exports from Prodeco/Carbones De la Jagua of almost 35% or 3.1 million tonnes is notable. These mines were purchased in 2010 by Glencore having exercised its option to buy back the mines from Xstrata. Glencore plans to increase annual production from the Prodeco mine from its current 10 million tonnes/a to over 20 million tonnes/a in 2015.

Colombian coal goes primarily to the Atlantic market. Of the total exports of steam coal, about 13 Mt went to the Pacific region and about 56 Mt to the Atlantic region. Exports to Europe stagnated at 38.1 Mt while exports to Germany were up by 46% or 2.4 Mt to a total of 7.6 Mt. The Asian market grew strongly in relative terms. More than 8 Mt of hard coal were exported for the first time to China, Taiwan and South Korea in 2010. In contrast, exports to the USA declined by 2.8 Mt.

The lion's share of exports, at 31.5 Mt, comes from the Cerrejon opencast mine in the province of La Guajira, followed by Drummond with 22.5 Mt from its opencast mine in the neighbouring Cesar district.

Steam Coal Exports – Structure of Colombia

	2008 Mt	2009 Mt	2010 Mt
America	34.3	24.5	22.3
North America (USA + Canada)	24.2	16.0	13.1
South and Central America	10.1	8.5	9.2
Asia	---	---	8.8
Europe	34.4	38.9	38.1
Mediterranean Region	11.2	10.5	11.3
North West Europe	23.2	28.4	26.8
Total	**68.7**	**63.4**	**69.2**

LB-T24

Smaller quantities of coking coal and coke are not included in these export figures.

Key Figures Colombia

	2008 Mt	2009 Mt	2010 Mt
Hard Coal Production	73.0	70.0	75.1 [1)]
Hard Coal Exports	69.3	66.3	72.7
• Steam Coal	68.7	63.4	69.2
• Coking Coal	0.6	2.9	3.5
Imports to Germany	5.8	5.2	7.6
Export Rate in %	**95**	**95**	**97**

[1)] Provisional

LB-T25

Infrastructure

The already extensive infrastructure for the transport and export of coal is currently being expanded and reviewed. Most coal is transported by train to the coal terminals. The ownership structure of the Fenoco railway (Ferrocarriles del Norte de Colombia S.A.), over whose tracks the coal from the Cesar mining region is transported, has changed. A series of producers, among them Coalcorp, Caribe (Vale) and Prodeco acquired shares in the railway, ending Drummond's sole access to its capacity.

At the smaller sea ports, capacities were increased slightly, although they were not fully used. A consortium of mine operators under the leadership of Prodeco participated in the construction of Puerto Nuevo, a new coal terminal with a transhipping capacity of 30 Mtpa including direct boat loading.

In the long term, the expansion of the Panama Canal, now underway and planned for completion by 2014, is of major significance for Colombian exporters. This expansion is perceived as the key to increasing exports to the Pacific region. It will make it possible for smaller Capesize vessels to go through the canal instead of sailing around the Cape of Good Hope, as in the past.

REPUBLIC OF SOUTH AFRICA

In 2010, South Africa hosted the World Cup football championship. As guests came from around the world, many were agreeably taken aback by the perfect organisation of the games and by South African hospitality. Economically, the championship moved the country a further step forward.

On energy policy, the government has drafted an energy plan for the next twenty years, foreseeing a drop of coal's share in the energy mix for power generation from 90% today to 48% in 2020. The rest of the mix would then be 14% nuclear, 16% renewable energies and 22% domestic or imported hydro power or power generated in gas-fired power plants. Generation capacity is to grow from 40 GW today to 92 GW, with absolute volumes of coal burn probably higher than today despite improved efficiency.

Production

South African coal production, at 250 Mt in 2010, was equal to production in 2009.

The many new coal companies under the BEE regime (Black Economic Empowerment) have regrettably not yet made any significant contribution to an expansion of production. The Mooiplaats Colliery should be mentioned as an exception, increasing its production by 59%. In some cases, BEE companies have done nothing more than to take over existing mines from large mining companies. On the positive side, there are now early indications that concrete steps are being taken. There are in some cases approval problems for projects, although BHP's Douglas-Middelton project is being implemented and Exxaro is investing to expand its Grooteluk mine. BHP (Klipsprint), Xstrata (Goedgevonden) and Amcoal (Zondagsfontein) are planning additional projects.

In general the recent trend – looked at as a long-term average – of stagnating production in South Africa will most likely turn around in the long term, with slightly rising production.

The supply of power to industry in South Africa is critical. Poor management of the country's electricity supply is causing great concern. As prices for power are kept low by the government, no new generation capacity was being built and it became impossible to cover demand completely – black-outs have occurred for some years. 6,000 MW of generating capacity are unavailable in the country due to necessary maintenance work at old power stations, and 4,000 MW are unavailable because of poor coal quality. Eskom therefore began to renegotiate coal supply contracts in order to obtain the necessary quality. Eskom also succeeded in pushing through massive electricity price increases over a period of three years, so that more investments can be made. As the national power supply company, Eskom has warned that South Africa's long-term coal supply to its coal-fired power plants is at risk if coal production policy is not thought through. This especially concerns the balance between fulfilling coal exports and meeting domestic power requirements. Eskom perceives that the main problem is the trend to export lower quality coals, coals which were previously obtained only by Eskom, and that this is pushing up prices for domestic coal.

The construction of new coal-fired power plants by Eskom will presumably increase domestic coal consumption from 2012. BHP Billiton announced it will sell some if its unexploited coal concessions and concentrate on existing mines. New production capacity for export could follow in the coming years.

Domestic markets in South Africa consumed the following quantities in 2010:

Consumption of the Domestic Market			
	2008 Mt	2009 Mt	2010 [1] Mt
Power Generation	119	112	121
Synthetic Fuels (Sasol)	44	45	45
Industry/Domestic Fuel	18	15	15
Metallurgical Industry	5	3	3
Total	**186**	**175**	**184**

[1] *Provisional*

LB-T26

In contrast to South Africa, new coal production is being developed in neighbouring states. In Botswana, Mozambique and Zimbabwe, projects have been launched. The possibility of opening a coal mine in Madagascar is also being examined.

MOZAMBIQUE

Mozambique is on the way to becoming a significant coal exporter in the coming years. Vale's Moatize project is already advanced and will be developed over time up to a capacity of 26 Mtpa (11 Mtpa coking coal and 15 Mtpa steam coal). A condition for this is the construction of new railway capacity that has been limited to about 5 Mtpa up to now.

Riversdale is planning to export 10 Mtpa from the Benga project: 6 Mtpa of coking coal and 4 Mtpa of steam coal. The coal will be loaded at the port of Beira which is now being prepared for export coal handling. The 665-km rail connection – Sena Rail – has almost been completed. The first Panamax vessels were scheduled to be loaded at the end of 2010 or beginning of 2011.

The Mozambican coal developer, Riversdale, received a takeover bid of over AUS$ 4 billion from Rio Tinto. The company, listed in Australia, owns anthracite coal mines in Zululand in South Africa, but its coking coal mine projects in Benga and Zambeze in Mozambique are of particular interest.

Coal India Limited plans to export 10 million tonnes of coal annually within the next ten years from its two own production concessions.

Infrastructure

The planned construction of the Trans Kalahari railway, connecting Botswana's Mmamabula coalfields with the southwest coast of Namibia and the port of Walvis Bay, could cost up to US$9 billion. The government has called for tenders for the construction and operation of this 1,500-km railway. It will provide an alternative route for the import and export of products and goods, making Namibia a transit hub in the region. Botswana has over 200 billion tonnes of coal reserves. A decision concerning the outcome of the tender and financing is to take place in 2011, with completion planned for 2018.

South African infrastructure – especially rail transport – still does not function satisfactorily. Frequent derailments on the Transnet stretch to Richards Bay Coal Terminal (RBCT) are a real burden, often resulting in disruptions lasting a few days. In response, the state railway operator, Transnet, has proposed a 10-year, US$4 billion maintenance plan. Transnet has also invested in new locomotives. The first two of one hundred fuel-saving locomotives were delivered as part of a plan to renew the fleet with an investment of 110 billion Rand (€11.5 billion). The remaining locomotives will be available by 2013.

To a lesser extent, plans are being made to expand production capacities in the coking coal sector. At the Makhado coking coal project in the Limpopo province, a mine with an estimated 137 billion tonnes of resources, of which 230 million tonnes have been proven, will be opened. According to plans, coking coal production will begin in 2013 and then increase to a full capacity of 5 million tonnes per annum.

The Rietkuil project in the Mpumalanga region was granted production rights. The aim is to produce about 3 Mt of coal annually for 30 years.

Coal Exports Through South African Ports

	2008 Mt	2009 Mt	2010 Mt
RBCT	61.8	61.1	63.4
Durban	1.0	0.9	0.9
Maputo/Mosambik	0.9	1.3	1.3
Total	**63.7**	**63.3**	**65.6**

LB-T27

Until recently, RBCT had an annual loading capacity of 76 million tonnes, but only about 82% of this is currently used. An expansion to 91 Mt has been completed. But doubts are growing as to whether this capacity can be fully utilised in view of stagnating coal output and inadequate rail transport. In 2010, RBCT exported "just" 63 Mt, an increase of 3.8% compared with 2009. Furthermore, the state-owned railway operator Transnet has only guaranteed freight of 65 Mtpa. The two smaller ports at Durban and Maputo were able to increase their export volumes slightly.

Export Rights at Richards Bay Coal Terminal After Expansion

Richards Bay Coal Terminal (RBCT)	Mtpa 72.00	% 79.13
Ingwe	26.95	29.62
Anglo Coal	19.78	21.74
Xstrata	15.06	16.54
Total	4.09	4.49
Sasol	3.6	3.96
Kangra	1.65	1.82
Eyesizwe	0.87	0.96
South Dunes Coal Terminal	**6.00**	**6.59**
Other Exporters (including BEE)	**9.00**	**9.89**
Common Users (including BEE)	**4.00**	**4.39**
Total	**91.00**	**100.00**

LB-T28

Alternative export routes – although not necessary for current output – are being considered in Namibia and Mozambique.

Exports

In 2010, exports, at 68 Mt, increased by 5 Mt compared with 2009. South Africa was able to maintain FOB prices at a higher level than its Atlantic competitors (Colombia and Russia) thanks to demand from India and the Far East.

Structure of South African Overseas Exports in 2010

	Total Mt	Europe [1] Mt	Asia Mt	Others Mt
Steam Coal	67.0	14.9	38.9	13.2
Anthracite	0.6	---	0.1	0.5
Total	**67.6**	**14.9**	**39.0**	**13.7**

[1] Including neighbouring Mediterranean countries

LB-T29

There has been a major shift in the structure of South African exports towards Asia. The low demand from Europe, driven by high prices, was compensated by increased demand mainly from India and China, who in 2010 purchased almost 29 Mt (an annual increase of about 10 Mt). Taiwan bought 3 Mt and South Korea 2.2 Mt. In view of India's growing need for steam coal, future exports to this country could continue to rise as those to Europe decrease.

Europe, including the Mediterranean region, remained an important market, but now accounts for only 32% of exports. The largest European consumers were Spain, Germany, Italy, Turkey and Israel.

Key Figures Republic of South Africa

	2008 Mt	2009 Mt	2010 Mt
Hard Coal Output	246.0	250.0	250.0
Hard Coal Exports[1]	**63.0**	**62.2**	**67.6**
• Steam coal	62.0	61.6	67.0
• Coking Coal	1.0	0.6	0.6
Imports to Germany	**8.2**	**5.3**	**3.3**
• Steam Coal	8.1	5.2	3.2
• Coking Coal	0.1	0.1	0.1
Export Rate in %	**25.6**	**24.9**	**27.0**

[1] *Seaborne only*

LB-T30

CANADA

Production

Coal and lignite production in Canada totalled 68 Mt in 2010. The provinces with coal production are British Columbia, Alberta and Saskatchewan. Of this output, about 35 Mt was steam coal sourced from Alberta and Saskatchewan, with the majority consumed as hard brown coal or lignite in local power plants.

Most of the hard coal production amounting to 33 Mt and largely from British Columbia, is exported as coking coal (27 Mt), or as PCI coal and smaller quantities of steam coal (6 Mt).

The significantly higher coal prices in 2010 and 2011, as well as the speedy recovery of the steel industry, have underpinned the further long-term expansion of Canadian coal mining. This can be seen also at Canada's leading transhipment facility, Westshore Terminals. This coal export terminal, 32 km from Vancouver and close to the US border, saw record volumes of coking coal transhipped to China, in addition to steam coal exports. These come mainly from American mines in the Powder River Basin in Montana and Wyoming as well as from some mines in Utah. In total, about 25 Mt of coal were handled at Westshore in 2010.

Power generation in Canada is based mainly on hydro, with significant contributions from coal.

Infrastructure

Export coal is delivered to the Westshore Terminal near Vancouver by CP-Rail, while CN transports the coal to the Neptune Terminal. Also via the more northerly Ridley Terminal again coal tonnages are handled.

Port handling capacities are shown below. There are technical reasons related to customs which account for the discrepancy between reported shipments and export volumes.

Handling Capacities 2010

Terminal	Capacity 2010 Mpta	Exports 2010 [1] Mt
Neptune Bulk Terminal	8	6
Westshore Terminal	26	25
Ridley Terminal	12	8
Total	**46**	**39**

[1] *Provisional figures*

LB-T31

Port capacity is available for additional exports in the event of a rise in demand and production. Thunder Bay Terminal, with a capacity of 11-12 Mtpa, is used for the inland shipment of Canadian coal to the USA over the Great Lakes.

Exports

Seaborne exports of 33 Mt break down into about 6 Mt of steam coal and 27 Mt of coking coal. Almost 1 Mt went overland to the USA, mostly coking coal.

The increase in exports came to 5 Mt, boosted by demand from China and Japan. China purchased 0.5 Mt more coking coal and an additional 0.6 Mt of steam coal. Japan's increase amounted to 2 Mt of coking coal.

There is a chance that Canada's export situation will further improve in 2011 if the steel industry continues to recover and also if it can cover any shortfall in production in Australia.

The import demands of India and China will be of decisive importance for the long-term development of Canadian exports.

Key Figures Canada

	2008 Mt	2009 Mt	2010 Mt
Hard Coal Output	**38**	**28**	**33**
Hard Coal Exports	**33**	**28**	**33**
• Steam Coal	6	6	6
• Coking Coal	27	22	27
Imports to Germany	**1.7**	**1.1**	**1.2**
• Coking Coal	1.7	1.1	1.2
Export Rate in %	**87**	**100**	**100**

LB-T32

VIETNAM

Production

Production rose in 2010 by about 7 Mt to 50 Mt. Domestic consumption went from 18 Mt to 23.3 Mt. Most output is anthracite, although small quantities of lignite and sub-bituminous coal are also mined. The latter are used exclusively for domestic consumption, while the anthracite output goes largely for export.

The output capacities of Vietnamese mines, at 64.5 Mtpa, based on information from the state-owned Vinacom (2006), were clearly over-estimated. Otherwise, these capacities would continue to be well under utilised.

According to state plans, production is to be slightly increased by 1-3 million tonnes per annum between 2011 and 2015 and then to 55 million tonnes in 2015. This is at odds with the request of the Vietnamese Ministry for Planning and Investment to only produce 44 million tonnes in 2011.

Vietnam's fast-growing economy could trigger an increase in import demand for steam coal. However, Vietnam was also hit by the economic crisis in 2009 and GDP contracted. Nonetheless, in the mid-term – from 2013 – Vietnam could become a significant importer of steam coal and reduce its exports because of higher local demand.

Infrastructure

The waters on the eastern coast of Vietnam are mostly shallow and have in the past allowed access only to ships of less than 10,000 DWT. In Cam Pha, larger ships can now be loaded following dredging. And it is possible to also handle 65,000 DWT ships with additional loading in the roads. Hon Gai-Port can handle 10,000 DWT ships at the pier and 30,000 DWT ships in the roads. The first deep-water port is planned to be constructed in central Vietnam.

According to information from Vinacom, port capacities amount to about 34 Mtpa:

Export and Port Capacities in Vietnam	
Port	**Mt**
Cam Pha/Cua Ong	15.0
New ports in Cam Pha	10.0
Hon Gai/Nam Cau Trang	3.0
Hon Gai/Dien Vàng	1.5
Hon Gai/Troi	1.5
Uong Bi/dien Cong	3.0
Total	**34.0**

LBT33

Exports

In 2010, seaborne exports dropped again by almost 4 million tonnes to 20.8 million tonnes. For 2011, a further decrease to 16.5 Mt is expected since domestic consumption is expected to increase by about 4.2 million tonnes to 27.5 millions tonnes.

In addition to China, Japan, Thailand and South Korea bought smaller quantities. Vietnamese anthracite coal is also partly used as PCI coal and sales improved because of the continued recovery of the steel industry.

A high proportion of Vietnamese anthracite steam coal exports are of low calorific and only profitable because of the short sea routes to China. This coal would not be commercially competitive on the international steam coal market. Nevertheless, it covers demand which otherwise might have to be satisfied by purchases on the world market and thus alleviates pressure on this market. A small part of the exports also goes overland to China.

Key Figures Vietnam			
	2008 Mt	**2009 Mt**	**2010 Mt**
Output	40.0	43.0	50.0 [1)]
Exports	19.4	25.1	20.8
thereof to China	16.9	24.1	18.0
Export Rate in %	**48.5**	**58**	**42**

[1)] *Provisional*

LB-T34

PEOPLE'S REPUBLIC OF CHINA

In 2010, China drove the global economy with its continued growth, albeit slightly slower than in recent years. GDP increased again by around 10%. The growth was supported by a massive economic stimulus programme, which focused on infrastructure expansion. This, together with further urbanisation in China, drove demand for steel, cement and electricity. China generated 80% of its electricity from coal. Demand for coal increased accordingly.

Electric Power / Crude Steel / Pig Iron / Coal Production				
		2008	**2009**	**2010**
Power Generation	TWh	3,405	3,664	4,207
Crude Steel Production	Mt	502	568	627
Pig Iron Production	Mt	471	544	590
Coal Production	Mt	2,716	2,910	3,410

LB-T35

The Chinese economy continues to grow strongly, with standard of living and levels of education also increasing. There are nevertheless tensions, given the huge divide between rich and poor. There have been protests against the high rate of inflation, against low wages and against bad working conditions.

China was however able to distance itself from the ongoing effects of the global economic crisis by stimulating domestic demand.

At the end of 2010, the installed power generation capacity in China totalled to 962 GW, an increase of 88 GW or 10%. The installed coal-fired power plant capacity in 2010 came to about 700 GW, up by about 7.4% or 45 GW compared with 2009. Chinese electric power generation capacity is planned to be expanded to 1,400-1,500 GW by 2020. About 70% of this, i.e. 980-1,050 GW, is to be coal-fired power plants. This means that each week in the future, one to two new coal-fired power plants will be connected to the grid.

Electricity generation increased by about 13% to 4,207 TWh and coal-fired power generation by 12%, or 346 TWh, to 3,330 TWh. Electricity consumption increased by about 15% to 4,192 TWh. Pig iron and crude steel production also continued to grow strongly. In total, 627 Mt crude steel and 590 Mt pig iron were produced. For 2011, a further growth of crude steel production to 671 Mt is expected.

In line with the new five-year plan, the Chinese government has targeted a growth rate of 8% for 2011.

Production

Coal production expanded further, rising by 500 Mt to 3,410 Mt in 2010.

China has been restructuring its indigenous coal industry continuously for some years and intends to focus on thirteen so-called coal-production bases. Each base will produce more than 100 Mtpa for power generation. The restructuring is characterised by the integration of coal-fired power plants within 98 coal mining regions in China. The model is China's largest coal company, Shenhua Group. The objective of the restructuring is to better steer coal prices and to optimise production structures. The number of small operations is also being reduced. According to official information, in total 1,693 smaller mines with a production capacity of 155 Mtpa were closed. In Shanxi province alone, the number of coal mines was reduced from 2,598 at the end of 2009 to 1,053 at the end of 2010. In total, this brought the number of small operations with an annual production of less than 300,000 tonnes down to less than 10,000. By the end of 2010, five gigantic state-owned coal producers were well established, each with a production capacity above 100 Mtpa. These include China Shenhua Group, China National Coal Group, Datong Coal Group, Shanxi Coking Coal Group and Chemical Industry Group. China's objective is to have ten mega coal producing companies, each with
a 100 Mtpa production capacity, and ten additional companies with a capacity of 50 to 100 Mtpa by 2015. The largest producer Shenhua Group alone produced almost 225 Mt coal in 2010, an increase of almost 7% compared with 2009.

Coal stocks at power plants amounted to about 56 Mt at the end of 2010, sufficient for 15 days power generation.

Coal Production in China

	2008 Mt	2009 Mt	2010 Mt
State-owned Mines	1,377	1,518	1,694
Provincial Mines	345	365	516
Small Operations	994	1,027	1,200
Total	**2,716**	**2,910**	**3,410**

LB-T36

Hard coal output is to be increased further. At the moment, according to Chinese information, about 7,000 projects with an annual production capacity of about 1.5 billion tonnes are under construction. As growth rates in the demand for electricity and steel remain high, coal production will presumably grow at an average rate of 150-200 Mtpa and will pass the 4 billion tonne mark in 2015. China's coking capacity amounts to 400 Mtpa, with coke output in 2010 remaining relatively stable. Nevertheless, smaller coking plants are being closed as new plants come on stream, so that capacity is at least maintained.

Infrastructure

China's infrastructure is steadily being expanded, strongly supported by the economic stimulus programme that started in 2009. Shenhua Group alone announced that it wanted to invest about US$ 5.3 billion in 2011, of which 40% would be spent on railway and port infrastructure. Chinese railways transported about 1.5 billion tonnes of coal in 2010, almost 45% of total output. Expansion of the railway system is a great challenge for China because more and more coal must be transported from the north and west to the consumer centres in the south. China's largest coal port, Quinhuangdao, handled 224 Mt of coal in 2010, overstretched beyond its capacity. Plans also exist to expand the capacity of the ports of Huanghua and Tianjin.

Imports/Exports

China's import-export development in 2010 had a major effect on quantities and prices on the international hard coal market. China's change from being a net exporter to a net importer of coal, first observed in 2009, continued.

Chinese Import/Export Development

	2009 Mt	2010 Mt	Change 2009/2010 Mt
Steam Coal Imports	92*	119*	+ 27
Coking Coal Imports	35	47	+ 12
Total Imports	**127**	**166**	**+ 39**
Steam Coal Exports	22*	18*	- 4
Coking Coal/Coke Exports	1	4	+ 3
Total Exports	**23**	**22**	**- 1**

** Steam Coal + Anthracite*

LB-T37

Additional imports of 39 Mt and 4 Mt less exports of steam coal influenced the world market by a net amount of 43 Mt. This provided some compensation to coal exporting countries for the weak demand for steam coal and coking coal in the Atlantic region during the first half of 2010.

China's total exports declined by 1 Mt to 22 Mt in 2010. Exports of steam coal fell further, by 4 Mt to 18 Mt (including anthracite), while exports of coking coal changed only minimally.

The export of coke increased from 0.5 Mt in 2009 to 3.3 Mt in 2010. The largest customers for the sharply reduced exports of steam coal and coking coal were South Korea (7.2 Mt), Japan (6.4 Mt) and Taiwan (4.4 Mt).

Chinese Coal Exports by Quality

	2008 Mt	2009 Mt	2010 Mt
Steam Coal	35.9	18.5	13.6
Coking Coal	3.5	0.6	1.1
Anthracite	6.1	3.2	4.2
Total	**45.5**	**22.3**	**18.9**
Coke	12.1	0.5	3.3

LB-T38

China's 31% increase in coal imports strongly influenced the world market. It was covered mainly by Indonesia (about 56 Mt), Australia (about 37 Mt), Russia (about 12 Mt) and Mongolia (about 17 Mt). Vietnam supplied 18 Mt of anthracite, largely to south-west China, and coal was also imported from the Atlantic region, including from the USA, Canada, Colombia and South Africa.

The balance between exports and imports (excluding coke) changed as shown below:

Balance Imports / Exports	2008 Mt	2009 Mt	2010 Mt
Exports	45	22	19
Imports	41	127	166
Balance	**4**	**- 105**	**- 147**

LB-T39

So China was a net importer for a second year in 2010.

The reasons for China's increasing imports are varied. For coking coal, it is mainly the falling quality of domestic coal, but also the higher cost of domestic production.

Another reason is the location of some steel companies at the coast near to coal terminals, creating the opportunity to import coking coal from the Asian region, while the new steel mills, built in the western provinces of China, will increasingly depend on imported coking coal from Mongolia.

Export volumes for the large Chinese exporters declined, in line with the decrease in exports.

Chinese Companies with Coal Export Licences	2008 Mt	2009 Mt	2010 [1] Mt
China Coal	16.1	4.3	4.5
Shenhua	22.3	13.6	10.3
Shanxi	4.2	3.6	3.8
Minmetals	3.0	1.1	0.4
Total	**45.6**	**22.6**	**19.0**

[1] Provisional

LB-T40

For 2011, imports are predicted to remain high, at up to 180 Mt, while domestic production will be expanded further. The degree to which China imports coal will largely depend on international prices. If Chinese domestic prices are higher than on the world market, power plants and steel mills located near the coast will buy on the world market.

Key Figures People's Republic of China	2008 Mt	2009 Mt	2010 Mt
Hard Coal Output	2,716	2,910	3,410
Hard Coal Exports	**45.3**	**22.3**	**18.9**
• Steam Coal	41.8	21.7	17.8
thereof Anthracite	6.1	3.2	4.2
• Coking Coal	3.5	0.6	1.1
Coke Exports	12.1	0.5	3.3
Hard Coal Imports	**41.0**	**126.7**	**166.2**
• Steam Coal	14.3	57.8	92.5
• Coking Coal	7.2	34.5	47.2
• Anthracite	19.5	34.4	26.5
Imports to Germany	**0.6**	**0.15**	**0.2**
• Steam Coal	-	-	-
• Coke	0.6	0.15	0.2
Export Rate in %	**2.0**	**0.8**	**0.6**

LB-T41

MONGOLIA

With growing worldwide demand for imported coking coal and steam coal, in China and elsewhere, the importance of Mongolia as a coal producer is increasing. To this end, Mongolia wants to invest massively in a 1,000-km long railway line to connect the undeveloped Tavan Tolgoi Mine in the South Gobi desert and also the Ovoot basin with an existing Russian railway, leading to the Russian port of Vanino. This project and others would enable Mongolian coal producers to export coking coal to Japan and South Korea and thereby reduce the dependence of land-locked Mongolia on Russian and Chinese customers.

Proposed projects include the Ukhaa khudag mine with an expected coking coal production capacity of 5 Mtpa, the Ovoot Tolgoi Mine with 8 Mtpa and the Khu shuut project with almost 6 Mtpa.

Although it has the largest coking coal reserves in the world, Mongolia has an underdeveloped infrastructure. Accordingly, there is much interest from major producers to acquire coal mines and to participate in or to set up joint ventures.

POLAND

Production

The decline in Polish coal output continued also in 2010. Total output fell by 1.4 Mt from 78.0 Mt to 76.6 Mt. Despite good profits over the last five years, output from Polish producers has declined by more than 20 Mt.

Major Hard Coal Producers in Poland

Company	Production		Exports	
	2009 Mt	2010 Mt	2009 Mt	2010 Mt
Kompania Weglowa	42.2	39.5	6.7	8.7
Katowicka Grupa Kapitalowa	13.5	12.8	0.7	0.8
Jastrzebska Spólka Weglowa	11.4	13.3	1.8	0.5
Private Mines	10.4	11.0	0	0
Total	**77.5**	**76.6**	**9.2**	**10.0**

LB-T42

Polish coking coal and coke production increased in the wake of recovering steel output. Coking coal production is thought to have increased from 8.5 Mt to about 11.7 Mt.

Investment in coke production is returning because moth-balled coking coal mines are being re-opened. After coke production dropped to 6.95 Mt in 2009, capacity in 2010 increased again to about 10 million tonnes.

The privatisation of the Polish mining industry is sluggish. Weglokoks announced that it would float on the stock market during the summer of 2011, thereby privatising this state-owned enterprise. Furthermore, Poland is planning to merge Weglokoks with two other coal mining companies, Katowicki Holding Weglowy SA and Kompania Weglowa. A decision is expected during the summer of 2011.

Poland is importing increasing quantities of coal, primarily steam coal, but also smaller quantities of coking coal and anthracite. Import volume in 2010 amounted to 13.5 Mt, primarily from Russia; most of it is used in northern Poland.

Poland has also been granted the opportunity by the EU to pay subsidies related to the closure of mining companies.

Infrastructure

In 2010, there were no changes in the transport infrastructure, which is now too large for the current export volumes. Export logistics in Poland are well developed.

Loading ports include Danzig, Swinemünde, Stettin and Gdingen. While Danzig is able to load Capesize freighters, Swinemünde and Gdingen are accessible only to Panamax ships and Stettin only to Handysize vessels. In the medium term, these ports will gain in importance for imports. Import capacity could in the short term be increased from 7 Mt to 19 Mt.

Exports

Exports in 2010 increased by 10% to 10.1 Mt. With imports of almost 13.5 Mt, Poland remained a net importer. Of the exported 10.1 Mt, 7 Mt were marketed by Weglokoks and 1.4 Mt by mining companies themselves. The increase in exports was due to steam coal alone, while coking coal exports dropped by 13.5% to about 1 Mt.

Exports in 2010 break down as shown below (Weglokoks only):

Exports in 2010	Coking Coal Mt	Steam Coal Mt	Total Mt
Seaborne	0.2	5.3	5.5
Overland	0.7	2.5	3.2
Total	**0.9**	**7.8**	**8.7**

LB-T43

Seaborne exports rose by 1.9 Mt in 2009 to 10.1 Mt in 2010. The largest customers for steam coal were Germany with about 6 Mt and the UK with about 0.6 Mt. A large part of this volume was transported by rail.

Key Figures Poland	2008 Mt	2009 Mt	2010 Mt
Hard Coal Output	84.0	78.0	76.6
Hard Coal Exports	**8.3**	**8.7**	**10.1**
• Steam Coal	7.3	6.7	9.2
• Coking Coal	1.0	2.0	0.9
Coke Exports	5.6	4.6	6.3
Hard Coal Imports	**9.0**	**10.0**	**13.5**
Imports to Germany	**5.4**	**4.2**	**6.0**
• Steam Coal	3.8	2.5	3.6
• Coking Coal	---	---	---
• Coke	1.6	1.7	2.4
Export Rate in % (Coke converted into coal terms)	**19**	**14**	**24**

LB-T44

CZECH REPUBLIC

Production

In 2010, the Czech Republic was able to increase production by 0.7 Mt. Hard coal output increased from 11.0 Mt in 2009 to 11.7 Mt in 2010.

Coke production in the Czech Republic amounted to 2.6 Mt. Lignite production came to 43.8 Mt, dropping slightly by 1.4 Mt.

Czech hard coal production of 11.7 Mt breaks down into 6.3 Mt of coking coal and 5.4 Mt of steam coal (estimates).

Infrastructure

Coal and coke exports to the Czech Republic were transported overland by railway and also by barge on the Danube (via the Port of Bratislava).

Exports/Imports

Exports of hard coal and coke amounted to about 7.1 Mt, of which 6.3 Mt was coal and 0.8 Mt coke. Austria with 2.0 Mt, Slovakia with 1.6 Mt and Poland with 2.0 Mt were the major customers. A large share of exports consists of coking coal. The Czech Republic imported smaller quantities of coal and coke – around 1.9 Mt – mainly from Poland and Russia.

Key Figures Czech Republic	2008 Mt	2009 Mt	2010 Mt
Hard Coal Output	12.6	11.0	11.7
Hard Coal Exports	6.1	6.0	6.7 [1)]
Coke Exports	0.7	0.5	0.8 [1)]
Imports to Germany	0.5	0.3	0.5
• Steam Coal	0.2	0.2	0.1
• Coke	0.3	0.1	0.4
Export Rate in % (Coke converted in coal terms)	54	62	66

1) Provisional

LB-T45

The export share as a proportion of output rose to 66%.

VENEZUELA

Production

Internal political problems continued in Venezuela during the year under review. In addition, poor weather and a shortage of spare parts led to interruptions in production. Production at Carbon del Guasare collapsed again.

Hard coal production in 2010, at 3.8 million tonnes, was only slightly above the previous year.

Unusually heavy rain had a negative impact on mines and the transport of coal for over three months. The Carbon del Guasare and Carbones de la Guajira coal producers claimed *force majeure* for December loadings.

Production and Exports by Company

	2008 Mt	2009 Mt	2010 Mt
Carbones del Guasare	4.5	2.7	2.2
Interamerican Coal	0.6	0.5	0.5
Carbones de la Guajira	0.6	---	0.8
Others	0.6	0.3	0.6
Total	**6.3**	**3.5**	**4.1**

LB-T46

Infrastructure

Now that President Chavez has set the maximum annual coal exports at 10 Mt, the existing infrastructure is adequate, although not ideal. All transport from the mines to ports is handled by trucks.

Exports

Exports in 2010 increased by 0.3 Mt from 3.5 Mt to about 3.8 Mt. Despite the great sales opportunities, Venezuela is unable to utilise its potential. Major customers were Europe with 1.3 Mt and the USA with 0.9 Mt. The remainder went to Central and South America.

Key Figures Venezuela

	2008 Mt	2009 Mt	2010 Mt
Hard Coal Output	6.2	3.7	3.8
Hard Coal Exports	6.2	3.7	3.8
Imports to Germany	0.92	0.35	0.43
• Steam Coal	0.92	0.35	0.43
Export Rate in %	**100.0**	**92.4**	**100.0**

LB-T47

Small volumes of Colombian coal were exported through the ports at Frontier and Milliton. Estimates range from 0.4 to 0.45 Mt and 0.2 to 0.25 Mt respectively.

World-Energy Consumption by Source of Energy and Regions							Mill. TCE
Source of Energy	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010[1)]**
Mineral Oil	5,460	5,792	5,584	5,645	5,617	5,551	5,650
Natural Gas	3,509	3,768	3,653	3,767	3,898	3,794	3,800
Nuclear Energy	905	940	907	888	886	873	900
Hydro Power	920	1,000	996	1,013	1,026	1,059	1,000
Hard Coal	3,700	4,106	4,014	4,207	4,394	4,358	4,900
Lignite	330	330	330	330	330	330	330
Total	**14,824**	**15,936**	**15,484**	**15,850**	**16,151**	**15,965**	**16,580**
							Shares in %
Region of Consumption	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
North America	27.2	26.5	25.8	25.6	24.8	23.8	22.9
Asia/Australia	31.3	32.7	33.4	34.3	35.3	37.1	39.8
since 2007 EU-27	16.8	16.0	15.8	16.4	15.8	14.4	13.8
CIS	9.8	9.2	8.8	8.7	7.8	7.4	6.9
Remaining World	14.9	15.6	16.2	15.0	16.3	17.3	16.6
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
							Mill TCE
Coal Consumption (Hard Coal and Lignite)	**3,790**	**4,030**	**4,436**	**4,344**	**4,724**	**4,688**	**5,230**
							Shares in %
Region of Consumption	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
North America	24.0	20.8	19.9	19.3	18.9	16.2	13.4
Asia/Australia	52.0	56.7	58.3	59.7	61.0	65.7	67.2
since 2007 EU-27	11.1	10.0	11.1	10.6	9.5	7.9	6.0
CIS	6.3	6.0	5.5	3.6	5.2	4.6	6.7
Remaining World	6.6	6.5	5.2	6.8	5.4	5.6	6.7
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Considered were only commercial traded sources of energy.

Source: BP Statistical Review of World Energy - 2009 [1)] Year 2010: Own calculations

Table 1

World Hard Coal Production / Foreign Trade - (Domestic Trade and Seaborne Trade)

	2005			2006			2007		
	Production	Export	Import	Production	Export	Import	Production	Export	Import
Germany	28	0	36	24	0	42	24	0	48
France	0	0	20	0	0	21	0	0	18
Great Britain	20	0	44	19	0	50	17	0	43
Spain[1)]	12	0	25	12	0	27	11	0	25
Poland	97	20	2	94	16	4	87	12	5
Czech Republic	13	4	1	14	5	1	13	7	2
Romania	0	0	0	2			3	0	3
Since 2004 EU-25/ since 2007 EU-27	170	24	209	168	21	236	158	19	231
Russia	300	70		309	89	25	314	93	24
Kazakhstan	86	24		92	25	0	88	26	0
Ukraine	78	8	12	80	3	4	75	3	9
Countries Total	464	102	12	481	117	29	477	122	33
Canada	31	28	20	34	28	21	37	31	29
USA	1,029	45	27	1,066	46	30	1,043	53	33
Colombia	60	55	0	64	58	0	69	65	0
Venezuela	8	8	0	8	8	0	8	8	0
Countries Total	1,128	136	47	1,172	140	51	1,157	157	62
South Africa	241	75	0	244	69	0	243	68	0
Australia	306	234	0	314	237	0	322	250	0
India	370	0	40	390	0	53	430	0	52
China[2)]	2,190	72	26	2,326	63	38	2,523	53	51
Japan		0	181	0	0	177	0	0	180
Indonesia	153	129	0	199	171	0	231	189	0
Countries Total	2,713	201	247	3,473	540	268	3,184	242	283
Other Countries	136	39	296	57	40	274	59	49	298
World	5,158	811	811	5,351	858	858	5,600	907	907

2010 preliminary figures
[1)] Production incl."Lignito Negro"
[2)] Production incl. lignite (about 50 mill. t estimated)

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

Mill. t (t=t)

2008			2009			2010			
Production	Export	Import	Production	Export	Import	Production	Export	Import	
19	0	46	15	0	36	14	0	40	Germany
0	0	19	0	0	16	0	0	19	France
18	0	48	18	0	38	18	1	26	Great Britain
10	0	33	9	0	18	9	0	13	Spain1)
83	8	9	78	9	10	77	14	10	Poland
13	7	3	11	6	2	12	7	2	Czech Republic
3	0	0	4	0	5	4	0	5	Romania/Bulgaria [3]
149	15	217	135	15	189	134	22	182	**since 2004 EU-25/EU-27 since 2007**
330	95	28	300	100	25	321	97	10	Russia
90	25	0	80	25	0	104	22	0	Kazakhstan
78	5	0	72	4	0	76	6	10	Ukraine
498	125	28	452	129	25	501	125	20	**Countries Total**
38	33	23	28	28	2	33	34	9	Canada
1,068	74	31	983	53	19	982	74	15	USA
73	69	0	70	66	0	75	72	0	Colombia
6	6	0	4	4	0	4	4	0	Venezuela
1,185	182	54	1,085	151	21	1,094	184	24	**Countries Total**
235	63	0	250	63	0	250	68	0	**South Africa**
334	261	0	344	273	0	355	300	0	**Australia**
465	0	54	532	0	59	537	0	86	India
2,716	45	41	2,910	23	127	3,410	19	166	China[2]
0	0	190	0	0	162	0	0	184	Japan
255	202	0	280	230	0	325	277	0	Indonesia
3,436	247	285	3,722	253	348	4,272	296	436	**Countries Total**
13	37	346	112	32	333	114	58	391	Other Countries
5,850	930	930	6,100	916	916	6,720	1,053	1,053	**World**

[3] since 2009 Romania/Bulgaria

Table 2

Seaborne Hard Coal Trade

	2005			2006			2007		
Exporting Countries	**Coking Coal**	**Steam Coal**	**Total**	**Coking Coal**	**Steam Coal**	**Total**	**Coking Coal**	**Steam Coal**	**Total**
Australia	124	110	234	124	113	237	138	112	250
USA	22	5	27	20	6	26	26	11	37
South Africa	1	70	71	1	68	69	1	67	68
Canada	26	2	28	23	3	26	25	4	29
China	5	67	72	4	59	63	2	51	53
Colombia		55	55	1	58	59	1	65	66
Indonesia		129	129		171	171	0	189	189
Poland	0	11	11	1	9	10	1	4	5
Russia	8	60	68	6	69	75	6	72	78
Venezuela		8	8		8	8	0	8	8
Other	2	21	23	3	30	33	2	35	37
Total	**188**	**538**	**726**	**183**	**594**	**777**	**202**	**618**	**820**

	2005			2006			2007		
Importing Countries/Reg.	**Coking Coal**	**Steam Coal**	**Total**	**Coking Coal**	**Steam Coal**	**Total**	**Coking Coal**	**Steam Coal**	**Total**
Europe [1)]	53	170	223	45	167	212	50	161	211
EU-25/since 2007 EU-27	46	163	209	40	164	204	45	156	201
Asia	116	319	435	123	310	433	131	346	477
Japan	55	126	181	73	119	192	74	126	200
South Korea	12	63	75	20	60	80	21	65	86
Taiwan		61	61	9	58	67	9	61	70
Hongkong	5	9	14	3	13	16	3	20	23
China	0	15	15	0	11	11	0	12	12
India	17	23	40	19	23	42	23	29	52
Latin America	16	17	33	13	4	17	14	6	20
Other (incl. USA)	3	32	35	2	113	115	7	105	112
Total	**188**	**538**	**726**	**183**	**594**	**777**	**202**	**618**	**820**

2010 preliminary figures; excl. land transport
[1)] incl. Mediterranian countries

Analysis of several sources

Mill. t

2008			2009			2010			
Coking Coal	Steam Coal	Total	Coking Coal	Steam Coal	Total	Coking Coal	Steam Coal	Total	Exporting Countries
135	126	261	134	139	273	159	141	300	Australia
36	17	53	31	12	43	48	16	64	USA
0	63	63	1	61	62	1	67	68	South Africa
25	6	31	22	6	28	27	6	33	Canada
4	42	46	1	22	23	2	17	19	China
0	69	69	3	63	66	4	69	73	Colombia
0	202	202	0	230	230	0	277	277	Indonesia
0	2	2	1	3	4	0	6	6	Poland
3	75	78	5	85	90	7	80	87	Russia
0	6	6	0	4	4	0	4	4	Venezuela
4	24	28	3	33	36	2	30	32	Other
207	**632**	**839**	**201**	**658**	**859**	**250**	**713**	**963**	**Total**

2008			2009			2010			
Coking Coal	Steam Coal	Total	Coking Coal	Steam Coal	Total	Coking Coal	Steam Coal	Total	Importing Countries/Reg.
50	159	209	36	153	189	47	134	181	Europe [1)]
45	143	188	36	137	173	47	134	181	EU-25/since 2007 EU-27
139	368	507	115	432	547	149	511	660	Asia
56	131	187	45	113	158	52	132	184	Japan
23	73	96	16	81	97	19	92	111	South Korea
11	60	71	11	59	70	5	59	64	Taiwan
3	17	20	31	85	116	47	119	166	China
0	11	11	0	12	12	0	10	10	Hongkong
29	25	54	12	47	59	26	60	86	India
18	5	23	6	4	10	3	19	22	Latin America
0	100	100	44	69	113	51	49	100	Miscellaneous (incl. USA)
207	632	839	201	658	859	250	713	963	**Total**

Table 3

World Coke Production							1,000 t
Country/Region	2004	2005	2006	2007	2008	2009	2010
Europe							
Austria	1,360	1,360	1,360	1,428	1,360	1,290	1,400
Belgium	2,681	2,833	2,714	2,667	1,983	1,570	1,950
Bosnia-Herzegovina	218	459	450	596	816	714	920
Bulgaria	768	682	615	500	300	0	0
Croatia	0	0	0	0	0	0	0
Czech	3,337	3,227	3,231	3,063	3,206	2,172	2,493
Finland	904	894	870	865	860	740	828
France	4,412	4,301	4,290	4,374	4,422	3,170	3,100
Germany	8,292	8,040	8,250	8,520	8,260	6,770	8,150
Hungary	605	614	913	1,014	999	746	900
Italy	4,010	4,515	4,560	4,632	4,455	2,687	3,588
Netherlands	2,205	2,260	2,160	2,180	2,166	1,700	2,100
Norway	0	0	0	0	0	0	0
Poland	9,989	8,396	9,599	10,264	9,832	6,947	9,545
Portugal	0	0	0	0	0	0	0
Romania	1,950	1,910	1,804	1,669	1,017	237	0
Serbia							
Slowakia	1,777	1,739	1,749	1,750	1,735	1,575	1,750
Spain	2,702	2,590	2,742	2,753	2,400	1,691	2,298
Sweden	1,179	1,191	1,182	1,193	1,174	980	1,150
Great Britain	3,919	3,991	4,276	4,280	4,152	3,600	4,210
Europe in total	**50,308**	**49,002**	**50,765**	**51,748**	**49,137**	**36,589**	**44,382**
CIS	**55,318**	**50,025**	**51,067**	**54,054**	**50,783**	**44,653**	**50,059**
North America	**20,622**	**20,337**	**20,237**	**20,184**	**19,031**	**14,339**	**17,212**
Latin America	**10,313**	**10,431**	**10,785**	**12,026**	**12,275**	**9,819**	**11,950**
Africa	**2,778**	**2,861**	**2,855**	**3,232**	**2,975**	**1,970**	**2,837**
Middle East	**5,765**	**5,892**	**6,211**	**6,135**	**5,611**	**5,132**	**5,290**
Asia							
China	206,186	254,117	297,680	321,714	312,148	345,017	400,000
India	16,776	18,633	18,865	18,067	18,282	18,664	20,100
Japan	38,314	38,095	38,077	38,354	38,300	35,900	35,900
South Korea	10,446	10,246	9,887	9,949	10,614	9,577	12,218
Other	4,599	4,537	3,963	4,585	4,580	4,479	5475
In total	**276,321**	**325,628**	**368,472**	**392,669**	**383,924**	**413,637**	**473,693**
Austral-Asia	**3,361**	**3,278**	**3,117**	**3,323**	**3,161**	**2,498**	**2,990**
WORLD in total	**424,786**	**467,454**	**513,509**	**543,371**	**526,897**	**528,637**	**608,413**

Table 4

Sources: Several sources, data from associations and industry

Qualities of Steam Coal Traded on the World Market							
Exporting Countries	**Volatile**	**Ash**	**Moisture**	**Sulphur**	**F. Carbon**	**Grinding Index**	**Calorific Value**
	%	%	%	%	%	HGI	kcal/kg
Atlantic Supplier							
USA (east coast)	17 - 39	5 - 15	5 - 12	0.5 - 3.0	39 - 70	31 - 96	6000 - 7200
South Africa	16 - 31	8 - 15	6 - 10	0.5 - 1.7	51 - 61	43 - 65	5400 - 6700
Colombia	30 - 39	4 - 15	7 - 16	0.5 - 1.0	36 - 55	43 - 60	5000 - 6500
Venezuela	34 - 40	6 - 8	5 - 8	0.6	47 - 58	45 - 50	6500 - 7200
Poland	25 - 31	8 - 16	7 - 11	0.6 - 1.0	44 - 56	45 - 50	5700 - 6900
Czech Republic	25 - 27	6 - 8	7 - 9	0.4 - 0.5	58 - 60	60 - 70	6700 - 7100
Russia	27 - 34	11 - 15	8 - 12	0.3 - 0.6	47 - 58	55 - 67	6000 - 6200
Pacific Supplier							
Australia	25 - 30	8 - 15	7 - 8	0.3 - 1.0	47 - 60	45 - 79	5900 - 6900
Indonesia	37 - 47	1 - 16	9 - 22	0.1 - 0.9	30 - 50	44 - 53	3700 - 6500
China	27 - 31	7 - 13	8 - 13	0.3 - 0.9	50 - 60	50 - 54	5900 - 6300
Russia (east coast)	17 - 33	11 - 20	8 - 10	0.3 - 0.5	47 - 64	70 - 80	5500 - 6800
Vietnam / Anthr.	5 - 6	15 - 33	9 - 11	0.85 - 0.95	58 - 83	35	5100 - 6800
Germany	19 - 33	6 - 7	8 - 9	0.7 - 1.4	58 - 65	60 - 90	6600 - 7100

Indication in gross bandwidths

Sources: see table 6

Table 5

Qualities of Coking Coal Traded on the World Market

Exporting Countries/	Volatile %	Ash %	Latent Moisture %	Sulphur %	Phosphorus %	Swelling Index FSI
Low Volatile						
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	n/a	8-9
Middle Volatile						
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	n/a	7-9
Poland	23-28	7.0-8.9	0.7-1.5	0.60-0.80	n/a	6-9
China	25-30	9.5-10.0	1.3-1.5	0.35-0.85	0.015	
High Volatile						
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	n/a	8 - 9
Poland	29-33	6.9-8.9	0.8-1.5	0.60-1.00	n/a	5-8
Germany	26.6[1)]	7.4[1)]	1.5[1)]	1.1[1)]	0.01-0.04	7-8

Figures in bandwidths

[1)] Utilization mixture for coking plant
[2)] CSR-value (Coke Strength under Reduction) describing the heating strength of coke after heating up to 1,100° C and following CO_2-fumigation. The CSR-values classified to the coal are only standard values.

Sources: Australian Coal Report, Coal Americas, companies' information

Coke strength CSR-value[2)]	Fluidity max ddpm	Contraction max %	Dilatation max %	Reflection middle %	Macerale reactive %	Macerale inert %	Minerals %
50-65	500-2000	20-30	25-140	1.23-1.29	38-61	36-58	3-4
60-75	34-1400	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	200-2000+	25-35	0-65	1.01-1.05	50-53	43-44	4-6
50-70	150-7000	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	500-7000	22-18	50-100	1.10-1.50	72-78	18-24	4
n/a	n/a	26-32	30-120	n/a	n/a	n/a	n/a
35-55	100-4000	27-45	(-)10-60	0.69-0.83	67-84	11-28	2-5
65-75	950-1000+	23-24	35-160	0.95-1.03	61-79	18-36	3-4
50-60	600-30000	22-31	50-148	1.00-0.95	76-81	17-19	2-4
60-70	18000-26847	26-33	150-217	1.00-1.10	75-78	18-21	4
n/a	n/a	26-32	30-120	n/a	n/a	n/a	n/a
50-65	30-3000	27-28	108-170	1.15-1.45	60-80	15-35	5

Table 6

Hard Coal Export of Australia							1,000 t
Importing Countries	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Germany	4,357	4,445	5,372	6,744	5,156	3,759	4,303
France	4,639	4,033	4,542	3,733	3,446	2,077	2,946
Belgium/Luxembourg	1,790	1,906	1,600	2,580	2,927	680	1,298
The Netherlands	3,622	3,704	3,975	3,240	2,523	500	1,217
Italy	2,533	2,286	2,234	2,466	2,041	1,122	1,741
Great Britain	5,477	5,034	4,568	3,478	3,943	2,746	3,612
Denmark	156	130	0	0	0	151	0
Spain	3,321	3,508	2,977	3,043	2,105	776	1,715
Portugal	0	0	0	0	0	0	0
Sweden	1,323	1,261	1,289	1,273	1,379	716	1,825
EU-25/since 2007: EU-27	27,218	26,307	26,557	27,709	24,730	12,904	18,657
Israel	987	849	300	348	824	672	592
Turkey	758	815	1,118	838	2,242	759	1,304
Romania	45	0		0	0	0	0
Other Europe [1)]	1,867	1,246	1,120	315	383	350	288
Europe	30,875	29,217	29,095	29,210	28,179	14,685	20,841
Japan	101,896	104,812	103,293	115,466	117,962	101,618	117,768
South Korea	30,061	30,158	23,576	22,096	36,797	41,662	43,629
Taiwan	18,828	21,868	22,653	25,463	24,385	22,517	28,706
Hongkong	1,038	0	0	0	303	1,175	440
India	16,556	18,985	18,938	22,511	25,694	27,092	32,862
China	6,271	5,468	7,450	3,957	3,295	46,546	37,069
Brazil	3,143	3,454	2,929	3,360	5,036	3,713	3,457
Chile	1,605	984	1,625	462	592	481	944
Other Countries	14,775	18,123	27,718	27,899	17,576	13,902	15,038
Export in Total	**225,048**	**233,069**	**237,277**	**250,454**	**259,819**	**273,391**	**300,754**

[1)] incl, Mediterranean countries *2010 preliminary figures*

Source: McCloskey

Table 7

Hard Coal Export of Indonesia							1,000 t
Importing Countries	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Germany	492	132	1,509	1,168	513	86	69
The Netherlands	1,106	2,139	3,704	1,822	1,669	239	0
Italy	5,198	6,285	8,626	6,290	6,252	5,427	7,094
Great Britain	1080	1,302	1,822	1,141	2,126	786	162
Ireland	0	602	609	152	318	0	0
Denmark	0	0	0	0	0	0	0
Spain	2,776	3,317	4,033	4,226	3,826	4,361	2,115
Slovenia	623	634	1,562	1,242	2,032	840	840
Other	1,106	770	2,835	2,000	1,014	376	356
EU-25/since 2007: EU-27	12,381	15,181	24,700	18,041	17,750	12,115	10,636
USA	1,960	2,050	2,646	2,962	2,956	2,025	1,250
Chile	839	1,368	1,733	1,600	498	437	980
Japan	22,700	27,313	32,842	34,135	39,719	32,109	33,120
Südkorea	11,741	14,377	20,780	26,521	26,620	33,698	43,192
Hongkong	7,439	9,409	10,514	11,550	10,382	11,131	9,575
Taiwan	17,769	17,896	24,397	25,753	25,754	25,206	21,896
Malaysia	6,113	7,400	7,324	7,814	9,415	11,184	12,548
Philippines	3,603	3,906	4,113	4,290	6,160	7,066	8,503
Thailand	4,787	6,404	7,800	9,413	11,371	10,334	10,195
India	10,674	16,255	19,822	24,840	29,283	37,735	44,352
China	1,473	2,503	6,219	14,894	16,093	39,402	74,898
Other countries	4,386	4,981	8,049	7,492	6,259	7,844	5,814
Export in total	**105,865**	**129,043**	**170,939**	**189,305**	**202,260**	**230,286**	**276,959**
2010 preliminary figures							

Sources: Own calculations. companies' information

Table 8

Hard Coal Export of Russia							1,000 t
Importing Countries	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Germany	5,460	6,620	9,100	8,367	7,800	9,449	10,308
Belgium/Luxembourg	900	1,000	1,747	1,327	1,867	0	0
Italy	2,400	1,800	1,522	818	1,723	1,017	862
Great Britain	9,820	18,000	22,701	19,828	21,434	15,501	7,332
Spain	3,130	4,200	2,761	905	2,623	1,439	768
Finland	5,430	2,400	4,440	5,080	3,745	4,770	2,900
Poland	2,300	2500	3,327	5,000	5,267	1,766	1,402
Romania	0	0	0	982	1,009	222	308
other			6039	8,029	5,533	11,325	13,532
EU-25/since 2007: EU-27	32,000	37,000	51,637	50,336	51,001	45,489	37,412
Turkey	6,500	7,000	6,500	4,013	2,229	8,672	9,139
Romania	2,500	3,000	1,505	0	0	0	0
other Europe	9,000	10,000	8,005	4,013	2,229	8,672	9,139
Europe	41,000	47,000	59,642	54,349	53,230	54,161	46,551
Japan	9,280	10,700	9,204	11,491	9,960	8,718	10,575
South Korea	5,140	3,300	1,071	6,358	7,495	4,541	8,574
Taiwan	1,380	1,200	1,305	1,329	1,203	1,652	1,116
China	570	800	1,030	269	760	12,122	11,660
Other countries [1)]	2,830	5,200	2,248	5,104	4,952	8,409	9,056
Export in Total [2)]	**60,200**	**68,200**	**74,500**	**78,900**	**77,600**	**89,603**	**87,532**

[1)] 2004-2009 exports via Cyprus/Libanon; the quantities were partially exported in other not known countries
[2)] only hard coal exports (seaborne trade) in countries outside of the former UdSSR
2010 preliminary figures

Sources: 2004-2010: information from companies, own calculations

Table 9

Hard Coal Export of the United States							1,000 t
Importing Countries	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Germany	1,540	606	2,191	2,065	5,662	5,104	5,727
France	787	1,146	1,475	2,162	3,213	3,052	2,788
Belgium/Luxembourg	1,545	1,881	1,959	1,907	2,746	2,503	2,080
The Netherlands	1,622	4,247	1,191	4,117	2,976	2,458	3,314
Italy	1,908	2,226	2,975	3,212	2,891	2,125	3,000
Great Britain	1,793	1,599	2,251	3,032	5,342	4,052	3,980
Ireland	0	0	0	74	142	0	0
Denmark	67	66	348	72	283	291	73
Spain	1,380	1,685	1,472	1,337	2,161	1,581	1,837
Portugal	405	143	267	258	391	1,020	531
Finland	426	259	661	265	425	202	428
Sweden	570	535	426	483	667	434	676
Other		239	849	2,300	6,315	1,920	4,076
EU-25/since 2007: EU-27	12,043	14,632	16,065	21,284	33,214	24,742	28,510
Israel	0	0	0	0	0	0	0
Turkey	1,179	1,708	1,106	1,306	1,736	1,295	2,296
Romania	256	1,391	1,002	0	0	0	0
Other Europe [1)]	225	1,495	1,240	4,087	5,414	2,033	3,069
Europe	13,703	19,226	19,413	26,677	40,364	28,070	33,875
Canada	15,722	17,577	18,030	16,625	20,589	9,509	10,528
Mexico	929	906	454	422	1,092	1,161	1,682
Argentina	265	218	317	273	331	417	281
Brazil	3,942	3,792	4,110	5,908	5,785	6,720	7,177
Japan	4,014	1,888	301	5	1,572	822	2,869
South Korea	112	1,304	515	201	1,225	1,562	5,237
Taiwan	449	0	2	2	71	77	227
Other countries	3,829	0	1,581	3,091	2,468	4,891	11,787
Export in total	**42,965**	**44,911**	**44,723**	**53,204**	**73,497**	**53,229**	**73,663**

[1)] incl. Mediterranean countries
2010 preliminary figures

Table 10

Source: McCloskey

Hard Coal Export (only Steam Coal) of Colombia							1,000 t
Importing Countries	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Germany	4,719	4,256	3,729	6,931	5,906	5,173	7,397
France	4,348	2,228	3,341	2,720	2,589	2,232	2,329
Belgium/Luxembourg	134	510	0	0	149	168	125
The Netherlands	3,765	4,597	6,031	5,554	5,986	10,726	9,061
Italy	2,441	2,589	1,993	1,887	2,026	2,080	1,715
Great Britain	2,853	2,133	2,511	3,003	4,041	4,471	4,417
Ireland	1,152	893	1,129	475	661	980	1,048
Denmark	1,388	1,252	1,998	2,259	1,869	1,973	1,092
Greece	0	0	71	149	0	0	76
Spain	1,290	1,988	1,501	2,219	2,301	2,441	2,272
Portugal	2,550	2,521	2,920	2,590	1,903	1,929	1,553
Finland	0	0	158	0	130	72	277
Sweden	184	0	0	0	0	0	0
Slovenia	782	426	220	238	356	341	0
EU-25/since 2007: EU-27	25,606	23,393	25,602	28,163	28,359	32,587	31,362
Israel	2,838	4,722	3,371	3,527	2,092	2,549	3,770
Other Europe [1)]	2,851	2,703	2,898	3,437	3,901	3,718	3,006
Europe	31,295	30,818	31,871	35,127	34,352	38,854	38,138
Japan	0	0	27	28	31	30	119
Hongkong	0	0		0	0	0	0
USA	13,342	17,641	20,179	21,830	21,919	14,191	11,301
Canada	1,671	2,132	1,944	1,450	2,214	1,794	1,843
Brazil	442	285	268	208	1,038	750	1,123
Other Countries	4,440	3,924	4,211	6,034	9,123	7,814	16,683
Export in total	**51,190**	**54,800**	**58,500**	**64,677**	**68,677**	**63,433**	**69,207**

[1)] incl. Mediterranean countries, Turkey
2010 preliminary figures

Source: IEA, McCloskey, companies´ information

Table 11

Hard Coal Export of South Africa							1,000 t
Importing Countries	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Germany	9,876	9,453	8,189	6,505	8,190	5,231	3,351
France	8,760	5,473	4,267	4,799	5,450	2,050	1,030
Belgium/Luxembourg	2,456	1,677	1,512	1,088	1,140	300	460
Netherlands1)	3,116	7,713	13,687	10,580	8,234	4,049	1,179
Italy	4,758	5,286	4,616	4,776	4,170	4,230	3,250
Great Britain	10,210	11,837	8,431	4,580	3,110	1,000	470
Irleand	510	788	389	478	0	460	220
Denmark	1,430	1,651	2,300	2,130	1,140	1,080	780
Greece	0	132	0	0	0	0	50
Spain	9,700	8,836	7,585	6,724	5,981	5,062	3,673
Portugal	1,750	1,561	1,000	1,970	1,660	1,240	320
Finland	0	0	120	0	150	0	0
Other		441	170	535	185	680	147
EU-25/since 2007: EU-27	52,556	54,848	52,266	44,165	39,410	25,382	14,930
Israel	6,910	5,123	4,780	4,520	3,720	3,250	2,490
Morocco	1,780	2,835	2,890	1,267	1,333	300	810
Turkey	1,550	1,302	1,913	1,349	1,350	1,106	3,182
other Europe [1)]	10,240	9,260	9,583	7,136	6,403	4,656	6,482
Europe	62,796	64,108	61,849	51,301	45,813	30,038	21,412
Japan	0	140	0	440	50	390	300
South Korea	0	130	0	290	1,150	525	2,260
Taiwan	1,390	411	70	410	160	2,220	3,140
Hongkong	0	0	0	0	0	340	0
India	738	3,904	2,469	8,492	7,766	18,690	22,280
China	60	0	0	30	0	790	6,700
USA	40	126	0	100	0	0	170
Brazil	760	654	1,484	759	1,223	296	1,102
Other countries	2,136	5,089	3,064	6,068	6,493	8,927	10,280
Export in total	**67,920**	**74,562**	**68,936**	**67,890**	**62,655**	**62,216**	**67,644**

[1)] incl. Mediterranean countries
2010 preliminary figures

Table 12

Sources: IEA, South African Coal Report, own calculations

Hard Coal Export of Canada							1,000 t
Importing Countries	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Germany	2,123	1,757	1,608	1,733	1,708	1,070	1,203
France	388	529	372	598	569	117	166
Belgium/Luxembourg	293	0	0	0	0	0	48
The Netherlands	1,139	807	1,194	1,047	272	300	696
Italy	892	1,469	1,178	1,013	1,084	465	1,016
Great Britain	1,064	1,677	1,418	1,492	1,123	317	284
Denmark	0	0	0	0	0	0	0
Spain	113	344	175	227	235	1	64
Portugal	0	0	0	0	0	0	0
Finland	200	516	494	345	426	258	416
Sweden	0	0	0	0	0	0	0
							59
EU-25/since 2007: EU-27	6,212	7,099	6,439	7,086	5,587	2,528	3,952
Other Europe [1)]	1,707	1,170	1,582	1,203	1,426	952	840
Europe	7,919	8,269	8,021	8,289	7,783	3,480	4,792
Japan	5,384	7,499	8,676	10,548	11,482	8,765	10,615
South Korea	0	5,014	4,975	6,078	6,736	7,381	6,553
Taiwan	991	1,276	1,221	1,130	1,154	795	638
Brazil	1,483	1,718	1,584	1,545	2,020	936	1,693
USA	2,497	1,709	1,750	1,758	1,725	1,045	1,470
Chile	322	549	721	702	411	214	259
Mexico	1,395	406	274	230	695	283	697
Other countries	5,950	1,490	344	369	468	4,931	5,944
Export in Total	**25,941**	**27,930**	**27,566**	**30,649**	**32,474**	**27,830**	**32,661**

[1)] incl. Mediterranean countries
2010 preliminary figures

Sources: McCloskey, own estimations

Table 13

Hard Coal Export of China							1,000 t
Importing Countries	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Germany	347	75	0	43	14	5	7
France	240	8	0	166	216	0	0
Belgium/Luxembourg	127	282	189	170	143	0	14
The Netherlands	313	141	245	51	57	5	0
Italy	185	0	0	0	0	0	0
Great Britain	172	54	34	0	0	0	0
Spain	0	332	292	0	104	0	0
Greece	136	0	0	0	0	0	0
EU-15	1,520	892	760	430	534	10	21
Japan	28,471	23,175	20,586	15,548	13,337	6,391	6,436
South Korea	24,798	21,206	18,779	19,225	16,457	9,919	7,207
Taiwan	19,855	16,230	13,258	12,690	10,597	4,870	4,418
Hongkong	1,123	944	855	674	475	122	395
India	3,084	3,855	5,001	539	1,006	0	0
Malaysia	65	46	36	37	52	12	12
Thailand	249	0	28	1	1	0	0
North Korea	407	147	576	237	228	52	224
Philippines	2,928	1,916	1,035	1,019	1,119	839	2
Brazil	548	278	191	283	156	0	0
Other countries	3,512	2,986	2,127	2,435	1,309	133	225
Export in total	**86,560**	**71,675**	**63,232**	**53,118**	**45,271**	**22,348**	**18,940**

2010 preliminary figures

Source: McCloskey

Table 14

Hard Coal Export of Poland							1,000 t
Importing Countries	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Germany	7,170	7,022	7,330	4,651	3,834	2,649	3,659
France	819	1,227	762	340		358	583
Belgium	500	649	291	1	1	79	216
The Netherlands	191	270	320	70	1	165	73
Italy	94	540	248	111	0	0	0
Great Britain	1,365	1,614	1,008	277	197	565	639
Ireland	276	287	235	255	266	240	245
Denmark	1,088	821	523	350	151	82	441
Spain	134	111	150	64	0	0	7
Portugal	0	221	0	0	0	0	0
Finland	1,626	653	513	273	88	224	225
Austria	1,328	1,155	1,233	1,807	906	853	428
Sweden	327	172	283	288	60	59	120
Czech Republic	1,227	1,146	1,642	2,365	1,017	746	828
Slovakia	1,147	802	1,030	617	64	71	143
Hungary	183	380	249	259	127	58	133
Other	53	50	72	8	1,029	1,970	1,971
EU-25/since 2007: EU-27	17,528	17,120	15,889	11,736	7,741	8,119	9,711
Other countries	3,062	1,451	620	364	559	581	389
Export in total	**20,590**	**18,571**	**16,509**	**12,100**	**8,300**	**8,700**	**10,100**
2010 preliminary figures							

Sources: McCloskey, WEGLOKOKS, allocation of countries only for WEGLOKOKS quantities since 1998 Germany: Federal Statistical Office, own calculations

Table 15

Hard Coal Imports of EU-Countries: Import and Domestic Trade							1,000 t
	2004	2005	2006	2007	2008	2009	2010
Germany	39,080	39,900	46,500	47,480	44,000	36,800	40,000
France	19,300	20,500	20,700	19,200	19,400	16,200	19,300
Italy	25,500	24,500	24,500	24,600	26,200	22,000	22,700
Netherlands	14,000	13,000	12,000	13,000	12,100	10,800	11,800
Belgium	11,100	10,000	9,000	8,000	6,000	4,100	3,500
Luxembourg	150	150	150	150	150	200	200
Great Britain	36,110	43,800	49,000	45,300	43,200	38,100	25,900
Ireland	2,300	2,500	3,000	3,000	2,300	2,300	2,200
Denmark	7,120	5,200	7,000	8,000	7,700	4,400	4,100
Greece	800	700	800	800	800	400	600
Spain	24,300	24,700	22,550	20,800	16,500	17,100	12,800
Portugal	5,500	5,300	5,700	5,500	3,800	3,100	3,000
Finland	7,650	4,500	7,000	7,000	4,600	6,000	5,900
Austria	3,900	4,100	4,000	4,000	4,200	4,000	4,000
Sweden	3,000	2,700	3,000	3,200	2,500	2,400	3,000
Poland	2,000	2,000	5,200	5,800	9,900	10,000	10,000
Czech Republic	1,000	1,000	1,900	2,500	2,200	1,700	1,900
Hungary	600	500	1,900	2,000	1,900	1,400	1,800
Slovakia	6,000	5,600	5,600	5,300	4,900	3,200	3,500
Slovenia	500	500	600	500	600	600	600
Latvia	200	200	300	n.a.	n.a.	n.a.	n.a.
Lithuania	500	500	700	n.a.	n.a.	n.a.	n.a.
Estonia	500	500	100	n.a.	n.a.	n.a.	n.a.
Cyprus	-	-					
Malta	-	-					
Bulgaria		(1,500)	(1,600)	1,400	1,300	3,500	3,500
Romania		(3,500)	(3,300)	3,300	3,200	1,200	1,400
EU-25	**211,110**	**212,350**	**231,200**				
EU27 since 2007		**217,350**	**236,100**	**230,830**	**217,450**	**189,500**	**181,700**
		there of coke:	there of coke:	there of coke:	coke:	coke:	coke:
Coke	10,000	11,000	12,000	11,000	11,000	8,000	8,000
2010 preliminary *figures*							

Sources: McCloskey, Euracoal, own calculations

Table 16

Coal Consumption in the EU-Countries						Mill. t
	Hard Coal		Therefrom Hard Coal-Import in t=t		Lignite	
	2009	2010	2009	2010	2009	2010
Germany	51.8	54.1	36.8	40.0	169.9	169.4
France	16.2	19.3	16.2	19.3		
Italy	22.0	22.7	22.0	22.7		
Netherlands	10.8	11.8	10.8	11.8		
Belgium	4.1	3.5	4.1	3.5		
Luxembourg	0.2	0.2	0.2	0.2		
Great Britain	56.0	44.1	38.1	25.9		
Ireland	2.3	2.2	2.3	2.2		
Denmark	4.4	4.1	4.4	4.1		
Greece	0.4	0.6	0.4	0.6	64.8	56.5
Spain	26.5	21.6	17.1	12.8		
Portugal	3.1	3.0	3.1	3.0		
Finland	6.0	5.9	6.0	5.9		
Austria	4.0	4.0	4.0	4.0		
Sweden	2.4	3.0	2.4	3.0		
EU-15	**210.2**	**200.1**	**167.9**	**159.0**	**234.7**	**225.9**
Poland	87.5	86.6	10.0	10.0	57.9	55.9
Czech Republic	12.7	13.6	1.7	1.9	45.4	43.8
Hungary	1.4	1.8	1.4	1.8	9.0	9.1
Slovakia	3.2	3.5	3.2	3.5	2.6	2.4
Slovenia	0.6	0.6	0.6	0.6	4.4	4.5
Latvia	0.0	0.0	0.0	0.0	0.0	0.0
Lithuania	0.0	0.0	0.0	0.0	0.0	0.0
Estonia	0.0	0.0	0.0	0.0	0.0	0.0
Cyprus	0.0	0.0	0.0	0.0	0.0	0.0
Malta	0.0	0.0	0.0	0.0	0.0	0.0
Bulgaria	5.5	5.6	3.5	3.5	25.1	27.2
Romania	3.4	3.6	1.2	1.4	27.5	27.7
EU-27 since 2007	**324.5**	**315.4**	**189.5**	**181.7**	**406.6**	**396.5**

Sources: Arbeitsgemeinschaft Energiebilanzen, Euracoal, BP statistical review, own calculations, 2010 preliminary
The coal consumption differs from hard coal supply by changes in stock,

Table 17

Primary Energy Consumption in Germany							million TCE
Energy Sources	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Hard Coal	65.8	62.8	65.6	67.4	61.4	50.1	57.8
thereof Import Coal	(40)	(37.8)	(45.3)	(46.0)	(43.6)	(34.8)	(43.0)
Lignite	56.2	54.5	53.7	55.0	53.0	51.4	51.5
Mineral Oil	177.9	175.8	176.7	157.9	166.4	159.3	161.3
Natural Gas	110.4	110.9	112.1	106.6	104.4	100.3	104.5
Nuclear Energy	62.2	60.7	62.3	52.3	55.4	50.2	52.3
Hydro and Wind Power	5.6	5.9	6.3	7.4	7.5	7.1	7.0
Foreign Trade Balance Electricity	-0.9	-1.0	-2.4	0.2	0.0	-1.8	-2.1
Other Energy Sources	15.1	18.0	23.2	25.6	36.0	41.8	47.3
Total	**492.3**	**487.6**	**497.5**	**472.4**	**484.1**	**458.4**	**479.6**
							shares in %
Energy Resources	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Hard Coal	13.4	12.9	13.2	14.3	12.7	10.9	12.1
thereof Import Coal	(8.1)	(7.8)	(9.1)	(9.7)	(9.0)	(7.7)	(9.0)
Lignite	11.4	11.2	10.8	11.6	11.0	11.2	10.7
Mineral Oil	36.2	36.1	35.5	33.4	34.3	34.8	33.6
Natural Gas	22.4	22.7	22.6	22.6	21.6	21.9	21.8
Nuclear Energy	12.6	12.4	12.5	11.1	11.4	11.0	10.9
Hydro and Wind Power	1.1	1.2	1.3	1.5	1.6	1.6	1.5
Foreign Trade Balance Electricity	-0.2	-0.2	-0.5	0.0	0.0	-0.4	-0.4
Other Energy Sources	3.1	3.7	4.6	5.5	7.4	9.0	9.8
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

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

Table 18

Coal Handling in German Ports									1,000 t
	2002	2003	2004	2005	2006	2007	2008	2009	2010
North Sea Ports									
Hamburg	4,301	4,794	4,944	4,636	4,963	5,781	5,195	5,189	5,276
Wedel - Schulau	707	700	700	600	871	0	0	0	0
Stade-Bützfleth	27	43	12	19	13	6	4	9	5
Wilhelmshaven	890	1,453	1,672	1,520	1,332	1,360	2,229	2,404	1,843
Bremen	1,547	1,464	1,505	1,216	1,715	1,965	1,668	1,410	1,796
Brunsbüttel	655	387	393	273	622	749	874	500	434
Emden						5	5	1	2
Nordenham	1,703	1,439	2,058	1,915	2,129	2,162	1,889	2,284	2,235
Papenburg	170	260	289	214	170	143	149	121	141
Remaining North Sea Ports S.H.	62	67	126	37	70	632	574	502	610
Remaining North Sea Ports N.S.	7	2	-		-	-	-	-	7
Total	**10,069**	**10,609**	**11,699**	**10,430**	**11,885**	**12,803**	**12,587**	**12,420**	**12,349**
Baltic Sea Ports									
Rostock	993	1,145	1,187	1,145	1,251	993	1,443	823	1,200
Wismar	41	41	42	33	30	22	35	26	34
Stralsund	2	2	1	3	0	0	1	-	-
Lübeck	-	3	-	-	-	-	-	-	-
Flensburg	261	358	343	325	275	246	301	230	209
Kiel		113	418	402	193	123	291	453	479
Saßnitz						7	3	1	5
Wolgast						2	-	-	-
Remaining Baltic Sea Ports	4	7	4	2	3	-	1	-	-
Total	**1,301**	**1,669**	**1,995**	**1,910**	**1,752**	**1,393**	**2,075**	**1,533**	**1,927**
Tonnage Total	**11,370**	**12,278**	**13,694**	**12,340**	**13,637**	**14,196**	**14,662**	**13,953**	**14,276**

Source: Federal Statistical Office

Table 19

Hard Coal Sales in Germany							1,000 t
	2004	2005	2006	2007	2008	2009	2010
Total Sales[1] in Hard Coal, Coke and Briquettes							
Power Stations	55,319	50,000	53,800	55,400	52,300	43,700	44,600
Iron and Steel Industry	14,836	17,400	18,400	18,800	17,700	12,900	18,400
Heating Market/Other[2]	1,882	1,100	1,300	1,600	1,700	1,400	1,800
Total	**72,037**	**68,500**	**73,500**	**75,800**	**71,700**	**58,000**	**64,800**
[1]Domestic Sales [2]incl. Consumption of Mines, Benefits							
Sources: Statistik der Kohlenwirtschaft, 2010 own calculations							
Therefrom Import Coal							
Power Stations[3]	27,900	30,900	27,300	33,400	34,900	31,000	33,100
Iron and Steel Industry	11,300	11,600	11,300	14,700	13,600	10,000	14,700
Heating Market	2,000	1,800	700	1,000	1,300	900	1,300
Total Imports	**41,200**	**44,300**	**39,300**	**49,100**	**49,800**	**41,900**	**49,100**
[3] Imports of power plants accord. to K-Bogen (BAFA, Division 431), own calculations							

Table 20a

Sources: BAFA, Statistik der Kohlenwirtschaft, own calculations/partly estimations

Petcoke in Germany										1,000 t
Petcoke	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Production of refineries	1696	1642	1799	1794	1912	1918	1851	2018	1902	2013
+ Import	944	1031	885	858	762	988	727	937	556	703
= Quantity	**2640**	**2673**	**2684**	**2652**	**2674**	**2906**	**2578**	**2955**	**2458**	**2716**
- Domestic sales	1349	1415	1247	1278	1173	1378	1177	1464	1026	1125
- Export	672	682	729	683	660	654	628	673	815	774
- Consumption of refineries	619	576	708	691	841	874	773	818	617	817
= Usage	**2640**	**2673**	**2684**	**2652**	**2674**	**2906**	**2578**	**2955**	**2458**	**2716**

Source: MWV

Table 20b

Imports of Hard Coal and Coke to Germany

Countries	2007 Steam Coal	2007 Coking Coal	2007 Anthra-cite	2007 Coke	2007 Total	2008 Steam Coal	2008 Coking Coal	2008 Anthra-cite	2008 Coke	2008 Total
Poland	4,613	37	0	1,720	6,370	3,790	45	0	1,566	5,401
Czech Republic	302	0	1	314	617	168	0	0	183	351
Spain	0	0	0	744	744	0	0	0	482	482
France	0	0	0	23	23	0	0	0	459	459
Other	1100	27	67	248	1,442	969	6	70	484	1,529
since 2007 EU-27	6,015	64	68	3,049	9,196	4,927	51	70	3,174	8,222
CIS	7,357	701	349	196	8,603	6,939	607	292	173	8,011
Norway	1,816	0	81	0	1,897	1,522	148	70	0	1,740
USA	1,102	1,803	0	0	2,905	3,079	2,583	0	0	5,662
Canada	104	1,734	0	0	1,838	22	1,651	0	0	1,673
Colombia	6,917	15	0	0	6,932	5,710	82	0	0	5,792
South Africa	6,187	317	2	0	6,506	8,086	140	0	0	8,226
Australia	1,176	5,544	0	0	6,720	520	5,020	0	0	5,540
China	10	38	2	870	920	10	2	2	628	642
Indonesia	1,168	0	0	0	1,168	513	0	0	0	513
Venezuela	8	7	0	10	25	63	0	0	29	92
Other Third Countries	762	3	0	1	766	1,851	0	35	1	1,887
			0							
Third Countries	26,607	10,162	434	1,077	38,280	28,315	10,233	399	831	39,778
Total	**32,622**	**10,226**	**502**	**4,126**	**47,476**	**33,242**	**10,284**	**469**	**4,005**	**48,000**

2010 preliminary figures

Sources: Federal Statistical Office, BAFA, own calculations

1,000 t

2009					2010					
Steam Coal	Coking Coal	Anthra-cite	Coke	Total	Steam Coal	Coking Coal	Anthra-cite	Coke	Total	**Countries**
2,489	24	0	1,712	4,225	3,650	8	1	2,399	6,058	Poland
151	0	0	129	280	63	0	0	379	442	Czech Republic
0	0	0	0	0	0	0	0	86	86	Spain
0	0	0	408	408	0	0	0	179	179	France
459	0	89	427	975	1007	74	170	490	1,741	Other
3,099	24	89	2,676	5,888	4,720	82	171	3,533	8,506	**EU-27 since 2007**
8,696	478	260	102	9,536	9,295	730	317	248	10,590	CIS
1,321	0	0	0	1,321	856	0	0	0	856	Norway
3,207	1,897	0	0	5,104	2,742	2,956	29	0	5,727	USA
0	1,070	0	0	1,070	0	1,203	0	0	1,203	Canada
5,105	68	0	21	5,194	7,397	191	0	39	7,627	Colombia
5,246	4	0	0	5,250	3,330	0	1	0	3,331	South Africa
447	3,311	0	0	3,758	289	4,014	0	0	4,303	Australia
3	0	2	141	146	7	0	0	199	206	China
86	0	0	0	86	70	0	0	0	70	Indonesia
346	0	0	7	353	410	20	0	2	432	Venezuela
1,687	0	10	2	1,699	2,236	3	0	93	2,332	Other Third Countries
26,144	6,828	272	273	33,517	26,632	9,117	347	581	36,677	**Third Countries**
29,243	**6,852**	**361**	**2,949**	**39,405**	**31,352**	**9,199**	**518**	**4,114**	**45,183**	**Total**

Table 21

Consumption, Import/Export and Power Generation in Germany

	2004	2005	2006	2007	2008	2009	2010
Gross Electricity Consumption in TWh	608.6	612.1	617.2	618.1	614.8	578.9	607.8
Electricity Foreign Trade in TWh							
Exports	51.5	61.9	65.9	63.4	62.7	54.9	59.1
Imports	44.2	53.4	46.1	44.3	40.2	40.6	42.1
Balance	-7.3	-8.5	-19.8	-19.1	-22.5	-14.3	-16.9
Gross Electricity Generation in TWh	616.0	620.6	637.0	637.2	637.0	593.2	624.7
Utilization of Energy Resources for Power Generation in TWh	2004	2005	2006	2007	2008	2009	2010
Hard Coal	140.8	134.1	137.9	142.0	124.6	107.9	117.4
therefrom Import Coal [1)]	(91.8)	(85.3)	(85.4)	(86.2)	(,86.4)	(77.4)	(85.3)
Lignite	158.0	154.1	151.1	155.1	150.6	146.5	145.9
Natural Gas	61.4	71.0	73.4	75.9	86.7	78.8	83.7
Fuel Oil	10.3	11.6	10.5	9.6	9.2	9.6	8.1
Nuclear Energy	167.1	163.0	167.4	140.5	148.8	134.9	140.6
Hydro / Wind Power	52.4	53.9	57.5	67.8	67.1	57.6	57.1
Other	26.0	32.8	39.4	46.3	50.0	57.9	71.9
Total	**616.0**	**620.5**	**637.2**	**637.2**	**637.0**	**593.2**	**624.7**

[1)] Sales to power stations
2010: preliminary figures

Sources: BDEW, Statistik der Kohlenwirtschaft, BAFA, Arbeitsgemeinschaft Energiebilanzen, DIW, own calculations

Table 22

European / International Price Quotations

	2004	2005	2006	2007	2008	2009	2010
Crude Oil Prices							
USD/Barrel Brent	38.00	55.00	65.14	72.44	96.99	67.86	79.47
USD/TCE	195.00	283.00	335.00	373.00	499.21	349.28	409.04
Source: MWV							
Natural Gas Prices: Free German Border							
€/ TCE	105.00	142.00	191.00	180.00	237.00	198.00	185.00
Source: Statistik der Kohlenwirtschaft							
Steam Coal Marker Prices 1 %S, CIF NW Europe							
USD/TCE	83.90	71.25	74.41	101.03	174.74	81.75	107.16
€/ TCE	67.44	57.27	59.23	73.17	118.29	58.69	81.01
Source: McCloskey							
Sea Freight Rates Capesize Units - Port of Destination ARA (Amsterdam, Rotterdam, Antwerp)							
South Africa USD/t	20.60	15.75	15.94	32.33	30.36	13.66	12.41
USA/East Coast USD/t	19.60	16.60	14.87	34.47	32.65	16.68	15.06
Australia/NSW USD/t	31.00	24.00	24.07	51.77	50.91	22.46	22.15
Colombia USD/t	20.10	16.10	14.89	33.55	31.71	16.25	14.75
Sources: Frachtcontor Junge, internal calculations							

EU: Price Development for Imported Hard Coal from non-EEC Countries

	2004 EU-15	2004 EU-25	2005 EU-25	2006 EU-25	2007 EU-27	2008 EU-27	2009 EU-27	1. HY 2010 EU-27
Steam Coal €/TCE	56.20	55.98	61.86	60.43	72.49	106.83	78.22	79.92
Coking Coal €/t	61.66	61.20	91.03	104.26	103.27	141.07	151.35	134.73

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,

Source: EU-commission

Table 23

Germany - Energy Prices / Exchange Rates

	2004	2005	2006	2007	2008	2009	2010
Exchange Rates							
EURO/USD	0.804	0.804	0.797	0.730	0.680	0.717	0.7543
Source: Deutsche Bundesbank							
Cross Border Price for Coking Coal and Coke - €/t							
Imported Coking Coal	63.50	95.25	105.88	96.22	132.62	173.75	174.78
Imported Coke	214.35	230.30	166.79	175.55	281.20	196.91	259.37
Source: Federal Statistical Office							

Cross Border Price for Steam Coal in € / TCE: Utilization in Power Plants

Jahr	1, quarter	2, quarter	3, quarter	4, quarter	Annual Value
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
2008	93.73	106.01	131.80	120.13	112.48
2009	91.24	76.35	69.36	73.31	78.81
2010	75.06	86.34	87.97	92.89	85.33

Source: BAFA Division 431 (cross border prices=cif price ARA + freight German border)

Energy Prices free power station € / TCE

Sources of Energy	2004	2005	2006	2007	2008	2009	2010
Natural Gas	176.00	206.00	220.00	209.00	269.00	246.00	233.00
Heating Oil, Heavy	117.00	166.00	203.00	198.00	275.00	208.00	270.00
Steam Coal	60.00	70.00	67.00	73.00	117.00	84.00	90.00

Sources: BAFA. Statistik der Kohlenwirtschaft. own calculations. 2010 preliminary

Table 24

Hard Coal Market in Germany

Quantities and Prices 1957 - 2010

Quantities								Prices							
Imports of Hard Coal and Coke t=t				Domestic Mining of Hard Coal Mill. t usable output				Steam Coal from non-EEC Countries[1]				Domestic Industry Coal [2]			
Year	Mill. t	Year	Mill. t	Year	Mill. t	Year	Mill. t	Year	€/ TCE	Year	€/ TCE	Year	€/ TCE	Year	€/TCE
1957	18.9	1987	8.8	1957	149.4	1987	75.8	1957	40	1987	46	1957	29	1987	132
1958	13.9	1988	8.1	1958	148.8	1988	72.9	1958	37	1988	42	1958	29	1988	134
1959	7.5	1989	7.3	1959	141.7	1989	71.0	1959	34	1989	49	1959	29	1989	137
1960	7.3	1990	11.7	1960	142.3	1990	69.8	1960	33	1990	49	1960	29	1990	138
1961	7.3	1991	16.8	1961	142.7	1991	66.1	1961	31	1991	46	1961	29	1991	139
1962	8.0	1992	17.3	1962	141.1	1992	65.5	1962	30	1992	42	1962	30	1992	147
1963	8.7	1993	15.2	1963	142.1	1993	57.9	1963	30	1993	37	1963	30	1993	148
1964	7.7	1994	18.1	1964	142.2	1994	52.0	1964	30	1994	36	1964	31	1994	149
1965	8.0	1995	17.7	1965	135.1	1995	53.1	1965	29	1995	39	1965	32	1995	149
1966	7.5	1996	20.3	1966	126.0	1996	47.9	1966	29	1996	38	1966	32	1996	149
1967	7.4	1997	24.3	1967	112.0	1997	45.8	1967	29	1997	42	1967	32	1997	149
1968	6.2	1998	30.2	1968	112.0	1998	40.7	1968	28	1998	37	1968	30	1998	149
1969	7.5	1999	30.3	1969	111.6	1999	39.2	1969	27	1999	34	1969	31	1999	149
1970	9.5	2000	33.9	1970	111.3	2000	33.3	1970	31	2000	42	1970	37	2000	149
1971	7.8	2001	39.5	1971	110.8	2001	27.1	1971	32	2001	53	1971	41	2001	149
1972	7.9	2002	39.2	1972	102.5	2002	26.1	1972	31	2002	45	1972	43	2002	160
1973	8.4	2003	41.3	1973	97.3	2003	25.7	1973	31	2003	40	1973	46	2003	160
1974	7.1	2004	44.3	1974	94.9	2004	25.7	1974	42	2004	55	1974	56	2004	160
1975	7.5	2005	39.9	1975	92.4	2005	24.7	1975	42	2005	65	1975	67	2005	160
1976	7.2	2006	46.5	1976	89.3	2006	20.7	1976	46	2006	62	1976	76	2006	170
1977	7.3	2007	47.5	1977	84.5	2007	21.3	1977	43	2007	68	1977	76	2007	170
1978	7.5	2008	48.0	1978	83.5	2008	17.1	1978	43	2008	112	1978	84	2008	170
1979	8.9	2009	39.5	1979	85.8	2009	13.8	1979	46	2009	79	1979	87	2009	170
1980	10.2	2010	45.2	1980	86.6	2010	12.9	1980	56	2010	85	1980	100	2010	180
1981	11.3			1981	87.9			1981	84			1981	113		
1982	11.5			1982	88.4			1982	86			1982	121		
1983	9.8			1983	81.7			1983	75			1983	125		
1984	9.6			1984	78.9			1984	72			1984	130		
1985	10.7			1985	81.8			1985	81			1985	130		
1986	10.9			1986	80.3			1986	60			1986	130		

2010: preliminary figures, since 1991 Eastern Germany included, EUR values are rounded
[1] Price free German border (BAFA Div. 432), since 1996: BAFA Div. 431
[2] Estimated cost-covering price

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

Table 25

Glossary

ARA	Amsterdam-Rotterdam-Antwerp
BAFA	Bundesamt für Wirtschaft und Ausfuhrkontrolle (Federal Office of Economics and Export Control)
BDEW	Bundesverband der Energie- und Wasserwirtschaft e.V. (German Energy and Water Association)
BEE	Black Economic Empowerment
BIP	Bruttoinlandsprodukt (GDP - Gross domestic product)
capesize	definition for bulk-carrier > 100.000 - 150.000 DWT
CCS	Carbon Capture Storage
cif	INCOTERM: cost-insurance-freight
CIS	formerly Soviet Union
DIW	Deutsches Institut für Wirtschaftsforschung (German Institute for Economic Research)
ECE	Economic Commission for Europe
EE	Erneuerbare Energien (Renewable Energy)
EEG	Erneuerbare-Energien-Gesetz (Renewable Energy Sources Act)
EEX	European Energy Exchange AG, Leipzig
fob	INCOTERM: free on board
GVSt	Gesamtverband Steinkohle (German Hard Coal Association)
IEA	International Energy Agency
HS	fuel oil heavy
kWh	kilowatt hour
KWK	combined heat and power
LNG	liquified natural gas
MENA	Middle East North Africa
mt	metric ton
NAR	coal trade: net as received
NER	New Entrants Reserve
NPS	New Policies Scenario in the WEO 2010 by IEA
OECD	Organisation for Economic Co-operatioon and Development
Panamax	definition for bulk-carrier 50.000 - 90.000 DWT
PCI-coal	metallurgical area: pulverized coal injection
PEV	Primary energy consumption
QLD	Queensland
sintering coal	low-volatile coal, used in sintering plants
TCE	ton coal equivalent (7.000 kcal/kg)
Spotmarket	short-term market
st	short ton (= 0,90719 mt)
t	ton
t/a	ton per annum
VDN	Verband der Netzbetreiber (Association of German network operators)
WCI	World Coal Institute
WEO	World Energy Outlook

Institutions / Links:

AGEB (Arbeitsgemeinschaft Energiebilanzen/The Working Group on Energy Balances)
www.ag-energiebilanzen.de
American Coal Council
www.americancoalcouncil.org
APFCR (Association of Coal Producers and Suppliers of Romania)
www.apfcr.ro
Australian Bureau of Agriculture and Resource Economics
www.abareconomic.com
Australian Coal Association
www.australiancoal.com
Australian Institute of Energy
www.aie.org.au
Banovici Coal Mining (Bosnian Coal Producer)
www.rmub.ba
BRGM (Bureau de Recherces Géologiques et Minières)
www.brgm.fr
CARBUNION (Federation of Spanish Coal Producers)
www.carbunion.com
CERTH/ISFTA (Centre for Research and technology Hellas/ Institute for Solid Fuels Technology & Applications
www.certh.gr/isfta.en.aspx
Chamber of Mines of South Africa
www.bullion.org.za
CoalImp (Association of UK Coal Importers)
www.coalimp.org.uk
Coal International
www.coalinternational.co.uk
COALPRO (Confederation of the UK Coal Producers)
www.coalpro.co.uk
Coaltrans Conferences Ltd.
www.coaltrans.com
DEBRIV (Bundesverband Braunkohle/German Lignite Organization)
www.braunkohle.de
DTEK (Ukrainian Coal Producer)
www.dtek.com
EIA (Energy Information Administration)
www.eia.doe.gov
EMAG (Institute of Innovative Technologies)
www.emag.pl
EPS (Electric Power Industry of Serbia)
www.eps.co.yu
Euracoal
www.euracoal.org
FDBR - Fachverband Dampfkessel, Behälter- u. Rohrleitungsbau e.V.
www.fdbr.de
Finnish Coal Info
www.helen.fi
GIG (Central Mining Institute)
www.gig.eu
Golder (Golder Associates Ltd.)
www.rmtltd.com
GVSt (Gesamtverband Steinkohle)
www.gvst.de
HBP (Hornonitrianske Bane Prievidza)
www.hbp.sk
IEA (International Energy Agency)
www.iea.org
ISSeP (Institut Scientifique de Service Public)
www.issep.be
IZ Klima - Informationszentrum klimafreundliches Kohlekraftwerk e.V.
www.iz-klima.de
KOMAG (Institute of Mining Technology)
www.komag.eu
MATRA (Mátra Erömü Rt)
www.mert.hu
Mini Maritsa Iztok EAD (Bulgarian Lignite Producer)
www.marica-iztoc.com
National Mining Association
www.infomine.com
PATROMIN (Federation of the Romanian Mining Industry)
www.patromin.ro
PPC (Public Power Corporation)
www.dei.gr
PPWB (Confederation of the Polish Lignite Industry)
www.ppwb.org.pl
Premogovnik Velenje (Slovenian Lignite Producer)
www.rlv.si
Svenska Kolinstitutet
www.kolinstitutet.se
TKI (Turkish Coal Enterprises)
www.tki.gov.tr
University of Nottingham
www.nottingham.ac.uk
US Department of Energy - Fossil.Energy.gov
www.fe.doe.gov
World Coal Institute
www.wci-coal.com
ZSDNP (Czech Confederation of the Coal and Oil Producers)
www.zsdnp.cz

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