ANNUAL REPORT

2013

Facts and Trends 2012/2013

VEREIN DER KOHLENIMPORTEURE

Import Coal Market at a Glance

		2010	2011	2012[1)]
World				
Hard Coal Production	Mill. t	6,720	6,960	7,170
Hard Coal World Trade	Mill. t	1,053	1,042	1,164
thereof Hard Coal Seaborne	Mill. t	963	978	1.082
Hard Coal Cross-Border Trade	Mill. t	90	64	82
Coke Production	Mill. t	593	638	654
Coke World Trade	Mill. t	21	21	22
European Union (27)				
Hard Coal Production	Mill. t	133	130	128
Hard Coal Imports/Cross-Border Trade	Mill. t	182	198	212
Coke Imports	Mill. t	8	8	6
Germany				
Hard Coal Consumption	Mill. t	66.0	63.1	61.3
Hard Coal Production	Mill. t	12.9	12.1	11.0
Total Imports	Mill. t	45.2	48.4	47.9
thereof Hard Coal Imports	Mill. t	41.1	44.2	44.9
thereof Power Plants	Mill. t	31.9	34.2	35.3
Iron and Steel Industry	Mill. t	9.2	10.0	9.6
Coke Imports	Mill. t	4.1	4.2	3.0
Import Coal Use[2)]	Mill. t	50.4	49.5	49.2
Prices (annual averages)				
Steam Coal Marker Price CIF NWE	US$/TCE	107	143	108
Cross-Border Price Steam Coal	€/TCE	85	107	93
CO_2-Certificate Price (average)	€/t CO_2	14	14	8
Exchange Rate	€/US$	0.75	0.72	0.78

1) Some figures provisional

2) Total import and use of import coal differ owing to inventory movements

An Introductory Word – Hard Coal-fired Power Plants Today and Tomorrow: Our Guarantee for a Secure Energy Supply and Pillar of the Energy Turnaround

It is Year 2 of the energy turnaround, and we can see now:

- The expansion of the power grid is not keeping pace with the expansion of renewable energies, a situation which could lead to serious grid disruptions.
- The costs for the subsidisation of renewable energies are rising rapidly. The EEG surcharge alone has increased by almost 50% to 5.277 eurocents/kWh. In 2012, expenditures for green power came to about €20 billion, passed on to industry, trade and private households.
- The priority given to feed-in from these sources is leading to declining wholesale prices for electricity which are not in conformity with the market. First of all industry, business and trade, especially in neighbouring countries around Germany, are profiting from this fact because they import the low-cost electricity without having to pay the high EEG surcharge.
- Despite the increase in activity of hard coal-fired power plants thanks to low coal and CO_2-costs, the profit margins for thermal power plants continue to decline, constituting a threat to their continued operation.

If the dismal market situation leads to the disconnection of coal-fired power plant capacities from the grid ahead of schedule, this will be an enormous challenge for everyone: coal-fired power plants which are available at any time are decisive for securing the energy supply when the sun is not shining or the wind is not blowing or power is not generated at the place where it is needed.

This is the motivation behind the VDKi's call for a new design of the electricity market, one which will assure both current and new coal-fired power plants the opportunity to obtain the required financing as long as they make the key contribution to backing up power generation from renewable sources. This is a role which will continue to be vital for a long time, as determined by Prognos in a study commissioned by VDKi. Securing a reliable supply of energy while taking into consideration renewable energies, the continued expansion of the grid and other measures, will mean that thermal power plants with an output in the magnitude of 46,000 MW will still be indispensable in 2050.

Hamburg, July 2013

Dr Wolfgang Cieslik
- President -

Dr Erich Schmitz
- Managing Director -

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PROSPECTS FOR THE WORLD COAL MARKET

Outlook for world coal trade – have prices (most likely) bottomed out?

The **forecasts for world economic developments** in 2013 do not present a clear picture. The conclusions of the Annual Assessment 2012/2013 by the German Council of Economic Experts appraising the general economic conditions indicate that the world economy lost some of its momentum in 2012. The primary reason will be that the crisis related to public debts, banks and the macro-economic issues in the euro zone continued to escalate and to generate a high level of insecurity in the world economy.

The World Bank has lowered its forecast for global economic growth. It is now (per June 2013) assuming that worldwide economic growth will be no more than 2.2%. The forecast in January was for 2.4%. Growth in the past year was +2.3%. Slower growth has two principal causes: one is the recession in Europe, which has proved to be more severe than expected, and the other is the slowdown in the large threshold countries like China, Brazil, India and Russia, which no longer strong rise as in comparison with the time before the financial crisis.

According to the OECD, the GDP in the OECD rose by 0.4% in Q1 2013, whereby the growth rates within the OECD countries varied between -0.5% for Italy and +0.9% for Japan. However, the assumption is that the year as a whole will be characterised by a slight recession.

We will have to wait and see if growth is driven once again by the Pacific region now that China intends to steer its growth more tightly and limit it to 7.5%.

Gross Domestic Product *)

	2011 %	2012 1) %	2013 2) %
World	3.9	2.9	2.4
USA	1.8	2.2	1.7
Japan	-0.8	1.9	1.0
Euroland	1.4	-0.5	-0.3
Asia (excl. Japan)	7.4	6.6	7.1
China	9.2	7.8	8.0
OECD	1.9	-0.1	-0.1

**) Change with respect to previous year 1) Provisional 2) Forecast*

HT-P1 Source: Several evaluations; DB Research of 01/03/2013; OECD; Clarkson Research Services April 2013

DB Research of 1 March 2013 notes that many factors indicate that the German economy was once again on a path of growth in Q1 2013 – although a very flat one – and that the corporate mood has lightened over the last four months (Purchasing Managers Index, ifo Business Climate Index). The major risks are seen in the foreign trade environment (crisis in American public finances, recession in some European countries, above all in the southern periphery countries of the euro zone). DB Research expects meagre growth of 0.3% in Germany for 2013 as a whole.

World trade with the most important dry bulk goods besides coal and grains with an experienced growth of only 62 million tonnes in 2012, shows that the world economy had lost momentum in Asia as well. Essentially, the increases resulted from the unabated rise in coal and iron ore imports from China and India.

Most Important Bulk Goods in Million Tons

Natural Resources	2011	2012[1)]	2013[2)]	Difference 2011/2012
Steel Industry				
• Iron Ore	1,052	1,109	1,176	5.4
• Coking Coal	223	235	246	5.4
• Scrap	114	107	110	-6.1
• Coke	13	12	16	-7.7
• Pig Iron	13	12	13	-7.7
• Steel Products	279	281	290	0.1
Total	**1,694**	**1,756**	**1,851**	**3.7**
Steam Coal	721	823	864	14.1
Grain	343	370	374	7.9
Total	**2,758**	**2,949**	**3,089**	**6.9**

1) Provisional 2) Forecast. own calculations

HT-P2 Source: Clarkson Research Services 04/2013

Moreover, the increase in world trade is above all dependent on the stability of demand in the Asian region as a whole. The Chinese economy grew by 7.7% in the Q1 2013 following 7.9% in Q4 2012. The World Bank estimates that China's growth in 2013 will amount to 8.3%. The tendency for growth in 2013 in comparison with 2012 will be more in the direction of shrinkage.

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

	Planned additional construction 2010 m Dwt	2011 m Dwt	2012 m Dwt	2013 m Dwt
Capesize	210	249	279	23
Panamax	136	155	176	27
Handymax	109	127	139	13
Handysize	82	84	85	6
Total	**537**	**615**	**679**	**69**

HT-P3 Source: Clarkson Research Studies 05/2013

The **capacities of bulk goods vessels** rose by about 64 million dwt (10.3%) in 2012, but the dry bulk goods market grew by only 7%. A similarly high addition rate of about 10%, excluding decommissioning, is expected for 2013. Although growth in bulk goods shipping was forecast to increase by about 5% in 2013, the bulk goods vessels would continue to have overcapacities. During the first four months of 2013, however, growth was no more than 2.6%, an indication of cancellations or postponements of deliveries. These fundamental data will presumably continue to be the source of substantial pressure on freight rates. Depending on the number of decommissionings, a significant rise in freight rates cannot be expected before 2014/2015 at the earliest.

World market for coal – quo vadis?

The figures for world coal trade in 2012 could be a good basis for further growth in 2013. However, construction activities in China have been scaled back in an effort to prevent a real estate bubble and motor vehicle registrations in Europe are down. When it comes to the demand for steam coal in the Pacific region, the estimates tend to be optimistic. Although no one expects the growth rates of the past few years, there should still be a plus of 4%–5%. The projected growth rates for China, India and non-OECD Asia (Indonesia, Malaysia, Philippines, Thailand and Vietnam) are also quite high. A slight rise for the latter group in comparison with 2012 and growth rates of around 7% have been predicted. On the other hand, coal is facing growing competition from renewable energies for power generation in these countries and in China as well.

Steam coal market with stable prospects for growth in 2013?

All of the economic institutes, analysts and energy organisations familiar with the coal industry are in agreement that the long-term developments in Asia will be definitive for the coal market. Furthermore, China will play the decisive role for the global coal market. China is far and away the largest producer and consumer of hard coal:

- More than 50% of the world's coal consumption is attributable to China;
- More than 50% of the world's coal production is attributable to China;
- Chinese coal consumption in 2012 was more than treble the volume of the entire seaborne coal trade in the same year;
- China has been the world's largest coal importer since 2011.

The USA, India, Russia and Germany (including lignite) trail far behind when it comes to coal consumption. So the world market is keeping its eyes fixed on further development in Asia because it will have a decisive impact on the coal price on the demand side. Nevertheless, decisions about coal policies or extreme weather conditions can also have far-reaching effects on volumes and price.

IEA medium-term coal market report up to 2017 announced

Since coal is used primarily for power generation and this is in turn closely tied to economic growth, the IEA assumes that any change in economic growth has a direct effect on coal consumption.

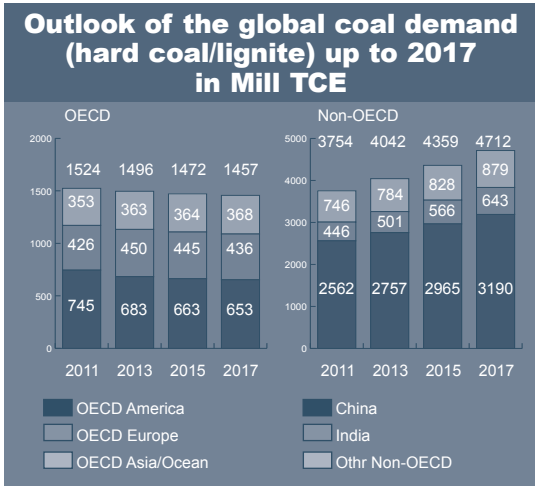

Figure 1: Source: IEA Medium-Term Coal Market Report 2012, BCS

In the opinion of the IEA as depicted in the base scenario, **worldwide demand for coal** will rise steadily and will reach the mark of 6,169 million TCE in 2017, corresponding to an increase of 17% in comparison with consumption of 5,279 million TCE in 2011. However, the pace of this growth will slow down from an annual rate of 5.3% between 2005 and 2010 compared to 2.6% p.a. between 2010 and 2017. The lion's share of this growth (annual growth rates of 3.9%) will take place in the non-OECD countries, whereby China – in absolute numbers – alone stands for additional demand of 628 million TCE. In relative terms, the greatest growth will be in India, where the annual growth rate will be 6.3%.

Coal consumption in the OECD will shrink by 0.8% p.a. Coal consumption in the USA will decline even more sharply (-2.5% p.a.), and this decrease can no longer be compensated by the growth rates in Europe (+0.4% p.a.) and OECD Asia Pacific (+0.7% p.a.).

Demand for Coal 2010-2017						
Demand for Coal Total	**2010**	**2011***	**2013**	**2015**	**2017 per Year**	**Growth Rate**
	Mill. TCE	Mill. TCE	Mill. TCE	Mill. TCE	Mill. TCE	%
OECD	1,545	1,525	1,496	1,473	1,457	- 0.8
USA	718	697	636	612	600	- 2.5
Europe	423	426	450	445	436	0.4
Pacific	354	353	363	364	368	0.7
Non-OECD	3,507	3,754	4,042	4,359	4,712	3.9
China	2,387	2,562	2,757	2,965	3,190	3.7
India	410	446	501	566	643	6.3
Africa + Middle East	157	152	158	166	176	2.5
East Europe/Eurasia	312	336	336	336	337	0.1
Other / Asia	212	225	252	284	320	6.1
Latin America	29	34	37	42	46	5.1
Total	**5,053**	**5,279**	**5,538**	**5,832**	**6,169**	**2.6**

*HT-P4 Source: IEA Medium-Term Coal Market Report 2012 *Estimation*

The development of seaborne coal trade is estimated by the IEA in accordance with the development of coal consumption as well:

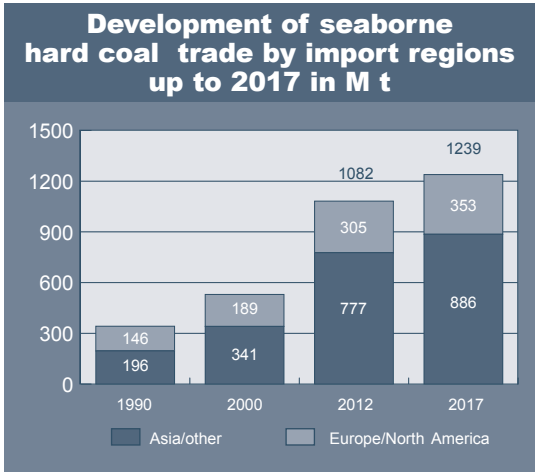

Figure 2 Source: IEA Medium-Term Coal Market Report 2012 - BCS, own evaluation

- Total world trade will grow by an average of 3.2% in the base scenario, from 888 million TCE to 1,107 million TCE in 2017. China will continue to play a dominant role in world coal trade and have a share of 16% of the world trade (import) in 2017.
- At the end of the forecast period, India will have become the largest importer nation of steam coal. According to IEA projections, India's coal imports will grow by 14.7% every year up to 2017, when it will have reached 157 million TCE, 10 million TCE more than China (147 million TCE).
- The largest export countries such as Australia, Indonesia and Colombia have the largest shares in the growing trade volumes.

According to the IEA base scenario, overseas trade with steam and coking coal will develop positively until 2017. In 2012, a total of just under 1,100 million tonnes was imported by the largest import countries: 777 million tonnes to Asia/Others and 305 million tonnes to Europe and the USA together. According to the IEA, by 2017

imports to Asia and other countries will rise by 14% to 886 million tonnes, imports to Europe and North America by 16% to 353 million tonnes and the overseas trade in total to 1,239 million tonnes.

The report from the Deutsche Bank Market Research dated 09/05/2013 presents a significantly more gloomy picture. Its authors see the steam coal market vulnerable to a twofold risk in the middle to long term: the steady increase in output in the largest producing regions in conjunction with stagnation, perhaps even decline, in demand from the coal-consuming nations. This could – carried to its logical conclusion – have the consequence that larger-scale expansion projects will be delayed because existing capacity is adequate to satisfy need. For this reason, DB Research projects coal prices in its base case scenario to 2020 by following the approach that the marginal costs offer the best price orientation. This will lead to nominal prices of US$95/t in 2015 and US$101/t in 2020, FOB Newcastle basis. In the three most important demand regions – Europe, USA and China– the demand for import coal could weaken while the USA could expand its export capacities.

In Europe, increasing volumes of power generation from renewable energies will further reduce the full load usage hours of coal-fired power plants while environmental protection laws which have already been passed will lead to the closure of coal-fired power plants. In the USA, pressure from environmental protection regulations will grow, especially in 2016, in the direction of widespread closures of coal-fired power plants, obviously leading to a reduced demand for coal on the power generation market, even though rising gas prices will relieve some of this pressure. DB Research estimates that in 2020 the demand for coal will be lower than the volumes in 2010, and the simultaneous expansion of production from the Powder River Basin will produce a supply surplus.

China has set a lower economic growth target for itself and simultaneously wants to separate energy intensity from GDP growth. This could weaken demand. On the other hand, the increase in power generation always exceeded GDP growth in 8 of the 11 years between 2001 and 2011. 2012 was the exception, when power demand grew by 4.2%, but the GDP rose by 7.8%.

At the end of Q1, the following has been determined for 2013:

Demand

The demand for electric energy on the Asian market is currently stagnating. However, continued urbanisation and industrialisation will still drive the Chinese and Indian demand for coal. According to estimates from VDKi, seaborne trade in Q1 2013 grew by 47 million tonnes in comparison with the comparable period of the previous year. Extrapolated over the entire year, this would mean an increase of 188 million tonnes (about 17%).

Europe currently has large surpluses. On the other hand, declining domestic production in Germany, Spain and Poland must be replaced, so it may be possible to maintain the level of 2012. The long winter and the current relationship between the clean dark spread and clean spark spread, which favours coal-fired power generation, support coal imports to Europe. However, the continuing growth in the feed-in of power from renewable energy sources, especially from photovoltaic power stations (solar parks) could put a damper on the demand for coal. Much is more and more dependent on the weather, and a reliable weather forecast for periods of three days and more is not possible.

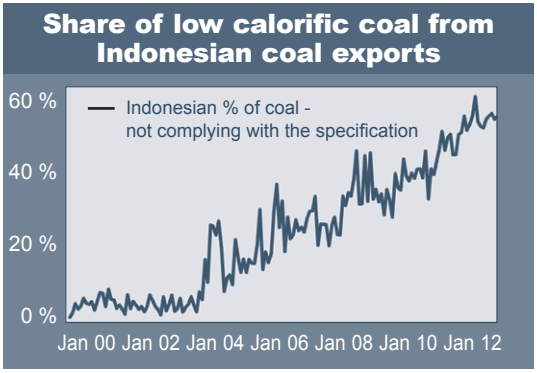

Figure 3: Sources: McCloskey, Deutsche Bank

Supply

The Pacific producers – above all Indonesia – are continuing to increase their supplies, albeit with some hesitation. The Indonesian government has issued a coal production target of 391 million tonnes for 2013, representing an increase of only 1% over 2012. However, the Indonesian export of low-calorific hard coal and lignite in particular could suffer from the announcement by China's National Energy Agency (NEA) of plans to prohibit the import of hard coal with calorific values below 4,500 kcal/kg as well as the import of coal with an ash content in excess of 25% and a sulphur content in excess of 1%. This would have the dual effect of supporting the output and prices for Chinese coal while simultaneously banning Indonesian lignite, ash-rich Australian coal and sulphurous US coal from China. According to a report from Argus on 16/05/2013, China imported about 54 million tonnes of lignite, primarily from Indonesia, in 2012. In 2012, about 200 million tonnes of this off-spec coal were traded. The share of off-spec coal in Indonesian coal exports rose from 1% in 2000 to 54% at the end of 2012. But other governments are intervening in the free trade with coal as well: Indonesia itself wants to prevent the export of raw materials from 2014 on by prohibiting the export of the raw material and allowing the export of processed products only. It is not clear at this time whether this will apply to coal as well.

According to a report from Argus, coal imports in the Ukraine may possibly fall by 30% in 2013 subsequent to a government announcement of plans to limit coking coal and steam coal imports to 10.2 million tonnes. These restrictions are supposed to enter into effect from 1 June 2013. In 2012, the Ukraine imported 14.8 million tonnes of hard coal.

Australia and Colombia have announced their intention to expand their steam coal exports and have invested in the necessary infrastructure. However, the low level of the world market price could induce mine operators to postpone or cancel expansion projects and otherwise to reduce production costs or output quantities so that they achieve a price level higher than the marginal costs. The combination of weak domestic demand and price pressures could force some Polish mining companies to close some of their mines. The same is said about Indonesian mines, especially those which produce low-calorific coal while simultaneously incurring relatively high operating costs.

Current prices will cause Poland's seaborne exports to remain at a very low level. Colombia and the USA could increase their exports to Europe. There is surplus production in the USA in particular as a consequence of the factors described above, and this will continue to apply pressure on exports. In terms of production costs, Colombia has the best position for profitably supplying the Atlantic market because the current price level is higher than the production costs.

But the low world market prices have not improved the competitive position of the USA as a swing supplier. Coal with a high sulphur content cannot be sold without granting substantial discounts on the CIF ARA price. The USA continues to be a potential exporter for Germany above all and will presumably increase the export quantities even further in 2013. Exports from the USA to Germany in Q1 2013 rose by 0.7 million tonnes, and the volume from Russia rose by 1.3 million tonnes. Exports from Colombia decreased by 0.8 million tonnes. During Q1 2013, strikes and other disruptions in supply in Colombia caused a change in the relationships among the procurement sources. 31% of all hard coal was procured from Russia, followed by 23% from the USA. Colombia, the second-most important coal supplier for Germany in 2012, fell to third place and provided only 14%.

Coking coal market – are volumes and prices "bearish"?

Demand

According to the short-term outlook from the World Steel Association in April 2013, worldwide demand for crude steel rose in comparison with 2012 by 2.9% to a total of 1,454 million tonnes in 2013. According to World Steel, crude steel production in the first four months of 2013 increased in 63 countries by 10.5 million tonnes (1.9%) to about 521 million tonnes in comparison with the same period last year. While crude steel production in the EU 27 from January to April 2013 declined by 3.3 million tonnes (5.7%) to 55.3 million tonnes, it rose in China by about 20 million tonnes to 258 million tonnes during the same period.

BREE, Resources and Energy Quarterly, March 2013, estimates that until 2018 world trade with metallurgical coal will rise by an average of 5% from 283 million tonnes per year to 357 million tonnes per year in 2013. Projections show that China and India will have the greatest share in import growth until 2013 while the increase in exports will come primarily from Australia.

World pig iron production from January to April 2013, extrapolated for the entire year, rose by 5.2%; in the USA, however, it fell by 0.1% and in Asia as a whole was 7% higher than in 2012. The trend indicates a stabilisation and consolidation at the level of the previous year. During the first four months of 2013, 14.4 million tonnes of crude steel were produced in Germany, corresponding to an extrapolated annual production of about 43 million tonnes, more or less the same as production in 2012. Pig iron production at 6.8 million tonnes between January and April 2013 is also at a comparable level with the previous year.

Prices for coking coal have fallen virtually across the board because of the surplus supplies. In April 2013, the spot prices for HCC FOB Queensland ranged between US$150 and US$160/t in comparison with US$220 to US$230/t in the same month of 2012. Contracts for prices ranging between US$145 and US$150/t (FOB) are expected for May 2013 because no push is coming from the steel market. Should the economy in China and India, especially steel production for the construction sector, pick up and be accompanied by economic recovery in the euro zone, prices could start to rise again in Q3 and Q4 2013.

Supply

In addition to the traditional supply sources, initial deliveries from the new projects in Mozambique, Indonesia,

Mongolia and Russia could occur in 2013 and expand the possible range. But the low price level is unlikely to encourage the expansion of coking coal mines around the globe at this time. Coking coal projects in Australia, Indonesia, Colombia and the USA are more likely to be delayed, cancelled or postponed, and production is being cut back and personnel dismissed even in existing mines. After years of a “bullish” attitude, good entrepreneurial sense and caution now appear to have returned to the mining companies.

But an accelerating trend toward isolationism can also be determined for coking coal. Some countries (China) are issuing export licenses in addition to levying export duties (Indonesia, China, Vietnam).

Australia, the USA and Canada continue to be the major suppliers to the global market. According to BREE, these countries, with the exception of the USA will continue to increase their production and exports in 2013 and the following years.

GENERAL GLOBAL ECONOMIC CONDITIONS

The attention of the world's energy and coal business in 2012 focused especially on the economic development of Asia, Europe and the USA and the continuing efforts to solve the bank and debt crisis, above all of the Southern European euro countries.

Downward tendency of world production and world trade

According to estimates from the OECD, the countries in the OECD region in particular stagnated in terms of economic growth, and in some countries a recession became apparent. Rise in the gross national product in comparison with 2011 is estimated at 1.4%. In contrast, a declining gross national product, although still at a high level, has been determined for Asian countries. China's GDP fell from 9.8% to 7.5%, that of India from 7.8% to 4.5% and that of Indonesia from 6.5% to 6.2%; in contrast, a rise in economic power was noted in Australia and South America. But the euro zone fell as well, from 1.5% to -0.4%.

Growth Rates in % of the World Economy

	2010	2011	2012	01/ 2013 [1)]
World Production (Industry)				
OECD	8.0	2.4	-0.1	-1.6
Europe	7.0	3.1	-2.7	-2.9
USA	5.3	4.1	3.5	2.1
China	15.7	13.7	10.0	7.3
Japan	16.6	- 3.5	0.0	- 5.8
India	10.0	3.9	1.5	2.4
GDP (World)	5.1	3.8	3.3	3.5

1) Estimation GDP for the total year

HT-W1 Source: Clarkson Research Service 15/03 and 12/04/2013

The threshold and developing countries also have an enormous backlog demand in energy consumption as they strive to raise their living standards even close to the level of the industrialised countries. In its WEO 2012, the IEA estimated that, despite the progress made in the past year, almost 1.3 billion people still have no access to electricity, and 2.6 billion do not have clean cooking facilities available to them. Three-fourths of the people without access to electricity are found in a mere ten countries – four developing countries in Asia and six in sub-Sahara Africa – and more than half of the people to whom clean cooking facilities are unavailable live in only three countries: India, China and Bangladesh. The world summit Rio +20 did not end with a binding commitment to the realisation of access to modern energy services for all by 2030, but the UN "Year of Sustainable Energy for All" resulted in welcoming new commitments to this goal. These figures clearly show why threshold and developing countries do not want to join the efforts of European industrialised countries to save energy and reduce greenhouse gas emissions, as was once again demonstrated during the follow-up conference to Kyoto in Doha. Satisfying the basic needs of their citizens for food, water, mobility and access to electric power for the improvement of living standards even to a modest level remains their top priority.

Energy consumption rises slightly, coal consumption sharply

Initial calculations indicate that worldwide energy consumption in 2011 (more recent data are not available) rose by 382 million TCE to 17.3 billion TCE (2.3%) in comparison with 2010. This modest growth is a consequence of the global economic stagnation which has above all had an impact on the OECD region.

The Asian-Pacific region, where the increase was 5.4%, continues to be a region of growth in primary energy. Worldwide oil consumption remained almost the same at 4,059.1 million TOE. The EU 27 countries and the USA substantially reduced their consumption of primary energy by 5% and 8%, respectively. In contrast, Russia's energy consumption rose by 2.5%.
Hard coal consumption grew globally by almost 5% in 2011. Renewable energies posted the greatest growth of about 18% or 42 million TCE.

Primary Energy Consumption in Billion TCE – Most Important Energy Sources –

	2000	2009	2010	2011	2010/2011 Change in %
Coal	3,120	4,900	5,080	5,320	4.7
Natural Gas	3,180	3,700	4,083	4,150	1.6
Petroleum	5,110	5,400	5,754	5,799	0.8
Nuclear Energy	0,840	0,900	0,900	0,900	0.0
Hydroelectric Power	0,882	1,000	1,100	1,130	2.7
Total	**13,132**	**15,900**	**16,917**	**17,299**	**2.3**

HT-W2 Source: BP, Statistical Review 2012

Coal (hard coal and lignite) reached a world market share (excluding renewable energies) of just under 31% in 2011 and has been the fastest-growing primary energy source for many years.

World Energy Outlook 2012 – forecast of worldwide development to 2035

The 2012 issue of the World Energy Outlook (WEO) from the International Energy Agency summarises the latest data and political developments of the past year; well-founded analyses and conclusions regarding the global energy markets today and projected up to 2035 are derived from this information. The WEO updates the scenarios introduced last year with the latest projections for energy demand and supply from 2010 to 2035.
The basis is the New Policies Scenario (NPS). The IEA focuses in particular on current developments in the energy economy and political actions.

The IEA comes to the sobering conclusion that even **"taking into account all of the new developments and political actions, it does not appear that there has been any success in steering the global energy system onto a more sustainable path."** In the NPS, global energy consumption in the period up to 2035 rises by more than one-third, whereby 60% in the increase occurs in China, India and the Middle East. In the OECD countries, energy consumption barely rises, but a clear trend in these nations away from oil and coal (and in some countries away from nuclear energy) and toward natural gas and renewable energies is observable. Despite the expansion of energy sources low in CO_2, the IEA is of the opinion that fossil fuels will continue to dominate the worldwide energy mix.

Demand for fossil fuels continuing to rise

Almost half of the rise in worldwide energy demand has been covered by coal in the last ten years, which means that coal has posted greater growth than all renewable energy sources together. In the opinion of the IEA, the effectiveness of political actions promoting energy sources producing lower emissions as well as the introduction of more efficient coal-firing technology and – what will be especially important in the longer term – CCS technologies will determine whether this strong growth continues or a change in course occurs. The political decisions with the greatest weight in the global coal balance will be made in Beijing and New Delhi because almost three-fourths of the expected

growth in coal consumption outside of the OECD countries will be in China and India. The IEA calculates that China's coal consumption will peak around the year 2020 and remain at this level until 2035; the increase in coal consumption in India will continue to rise with the result that India will overtake the United States as the world's second-largest coal consumer in 2025. Coal trade will continue to expand until 2020, i.e. approximately to the time from which India becomes the largest net importer of coal, but will then stabilise as the effects of declining imports in China make themselves felt. Nevertheless, the IEA concedes that these possible developments are sensitive to policy changes, the development of alternative fuels (e.g. of unconventional gas in China) and the provision in good time of the required infrastructure and are consequently subject to substantial uncertainty for the international steam coal markets and prices.

Opportunities for realisation of the 2° C goal becoming more limited

In several successive issues of the WEO, the IEA has pointed out that the achievement of the climate protection target of limiting global warming to 2° C is becoming more difficult and more expensive with each passing year. The IEA's 450 ppm scenario examines the actions required to realize this target and reveals that almost four-fifths of the CO_2 emissions related to energy allowed in total up to 2035 will be produced by power plants, buildings, factories etc. existing today. If no action is taken to reduce CO_2 emissions by 2017, the entire amount of allowed CO_2 emissions will be caused by the energy infrastructure created as of that point. The rapid introduction of energy-efficient technologies – as assumed in the IEA's so-called Efficient World Scenario – could postpone the point at which this happens until 2022. This would give more time to conclude an agreement for reduction of greenhouse gas emissions which, in the IEA's opinion, is urgently required. This so-called "Efficient World Scenario" includes an examination of the effect of a consequent utilisation of all of the known measures and instruments for increasing energy efficiency would have on the development of global energy consumption and consequently on CO_2 emissions.

The IEA also points out that **unless technologies for CO_2 capture and storage (CCS) are implemented on a large scale, no more than one-third of the proven deposits of fossil fuels may be consumed before 2050 if the 2° C target is to be achieved.** This was the result of IEA estimates of the worldwide "carbon reserves", which depict the possible CO_2 emissions from proven deposits of fossil fuels. Almost two-thirds of these carbon reserves are in coal, 22% in oil and 15% in gas. Geographically, two-thirds are found in North America, the Middle East, China and Russia. These results underscore the significance of CCS as a key technology for the reduction of CO2 emissions, but it is still completely unclear, as in the past, how quickly these technologies can be implemented because at this time only a handful of project plants on a commercial scale are in operation.

Will unconventional gas and oil transform the energy landscape?

In its WEO 2012, the IEA determines that the world map of the energy business is changing, which could possibly have far-reaching consequences for energy markets and energy trade. The changes are the result of the resurgence in oil and gas production in the United

States, and the map could continue to change because of the impact of the withdrawal from nuclear energy in a number of countries, the continued rapid growth in the use of wind and solar technologies and the worldwide expansion of unconventional gas production.

There are far-reaching developments occurring in the energy business in the United States, and the effects of these developments will be felt far beyond the borders of North America – and of the energy sector. The latest upswing in the production of oil and gas in the USA, facilitated by upstream technologies which can be used to develop light tight oil and shale gas deposits, is giving the economy a lift. Lower oil and gas prices are a competitive advantage for the economy and are gradually shifting North America's role in worldwide energy trade. From about 2020, believes the IEA, the United States will presumably become the world's largest oil producer (passing Saudi Arabia by the middle of the 2020s) while at the same time new measures to reduce fuel consumption per vehicle will begin to take effect in the transport sector. The result will be that US-oil imports will sink drastically and North America, according to IEA figures, will become a net oil exporter around 2030. This will accelerate the process of realignment of the international oil trade in the direction of Asia, and the question of the security of the strategic trade routes from the Middle East to Asia will move to the forefront of concerns. The United States, which currently cover about 20% of its total energy requirements with imports, will on balance become almost self-reliant – the reverse of the trend of developments in most of the other countries which import energy. But even now, the low-price shale gas is replacing coal for electricity generation, forcing the US coal industry to make record exports, most importantly to Europe.

But low-price shale gas also interacts with coal

The reduction in coal consumption in the United States results from the supply of low-cost natural gas and makes it possible to export more coal to Europe (where this coal in turn is replacing the more expensive natural gas). During the phase when prices were lowest in 2012, natural gas in the United States was traded at about one-fifth of the import prices in Europe and about one-eighth of the level in Japan. As time goes by, the price relationships among the regional gas markets will become more tightly meshed because trade with liquefied natural gas (LNG) will become more flexible and fluid, meaning that changes in one part of the world will be felt more quickly than in other parts of the world. Shale gas production can be quickly adapted to changing market conditions by cutting back on new wells during times of low prices and expanding the number of wells when prices are high. Within specific countries and regions, competitive electricity markets will allow stronger links to appear between the coal and gas markets, while these markets at the same time must adjust to the growing significance of renewable energies and, especially in Germany, to the restricted utilisation of nuclear energy. Politicians who simultaneously want to achieve progress in improving the security of the energy supply and in economic and ecological goals will be faced with increasingly complex – sometimes even contradictory – decisions.

Coal on the way to becoming the most important energy source

The need for electrical energy, which is steadily growing worldwide, is causing the demand for coal to grow faster than the demand for oil. The IEA estimates that coal could challenge oil for the top position as the globe's most important energy source in five years – even though the demand on the world coal market is currently rising a little more slowly.

The growth in demand for coal will fall back in coming years to 2.6% per year, according to the most recent middle-term energy outlook 2012–2017 from the IEA, after maintaining an annual level of 4.3% in the period from 2000 to 2010. India, and no longer China, will be the country which has the greatest increase in coal consumption and will become a significant importer of hard coal. According to estimates from the IEA, India will become the largest coal importer and push China aside from this position.

In contrast, the IEA projects a decline in coal consumption in the OECD countries by 0.7% annually during the middle term period 2012-2017.

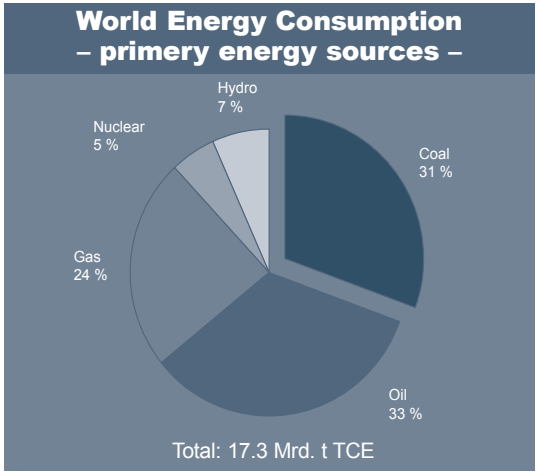

Figure 4: Source: Figures from BP Statistical Review 2012

Hard coal output rises to almost 7 billion tonnes (6 billion TCE)

World hard coal output continued to rise in 2012 and grew by about 206 million tonnes to approximately 7.2 billion tonnes. Total output breaks down into about 6,260 billion tonnes of steam coal and about 940 million tonnes of coking coal.

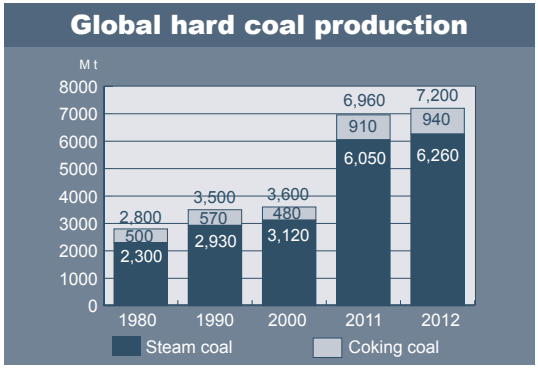

Figura 5: Source: IEA. 2012 preliminary. own calculation

Since 1990, i.e. in the last 22 years, world hard coal production has more than doubled from 3.5 billion tonnes to over 7 billion tonnes. The major force behind this development is to be found in China, where production in 2012 alone was increased by about 200 million tonnes. But other countries have also increased production significantly. The bulk of the worldwide growth in production clearly comes from Asia, as the development of recent years show:

Hard Coal Production of Important Countries in the Pacific Region in Million t

Producing countries	2010	2011	2012
China 2)	3,410	3,460	3,660
India 1)	537	554	580
Australia	355	346	366
Indonesia	295	318	386
Vietnam	50	49	45
Total	**4,647**	**4,727**	**5,037**

1) partly own estimation; in India reported years are not calendar years
2) incl. Lignite

HT-W3 Source: IEA, 2012, preliminary

The 10 Largest Hard Coal Producers in the World

Company	2010 Mill. t	2011 Mill. t	2012 * Mill. t
Coal India	431	436	554
Peabody 1)	246	268	249
Shenhua	225	282	304
Arch 1)	163	157	141
China Coal	123	160	176
BHPB	103	104	105
Anglo	107	103	84
SUEK	90	92	98
Xstrata	80	85	90
Rio Tinto	91	29	32
Total	**1,659**	**1,716**	**1,833**

*1) Own production and purchases * Own projections*

HT-W4 Source:The McCloskey Group 2012, Annual Reports

The 10 largest coal producers cover more than 25% of the world's coal needs and have an even larger share in seaborne world hard coal trade.

Reserves and Output of Hard Coal According to Region

Region	Reserves at End 2011		Output 2011	
	Bn t	%	Mill. t	%
Europe	20	3	135	2
GUS	121	16	443	7
Africa	36	5	259	4
North America	231	30	996	15
South America	9	1	90	1.5
PR China	181	24	3,384	51
India	77	10	540	8
Indonesia / Vietnam	17	2	371	5.5
Australia / New Zealand	58	8	350	5
Others	4	1	72	1
Total	**754**	**100**	**6,640**	**100**

HT-W5 Source: German Federal Institute for Geosciences and Natural Resources, brief study "Reserves, Resources and Availability of Natural Energy Resources"

Coal reserves currently have a statistical reach of about 107 years based on an output of about 7 billion tonnes (base 2012). Hard coal represents a share of about 47% of the total reserves of about 1,346 billion TCE in fossil energy sources and nuclear fuel; in terms of the resources in fossil energy sources of 17,747 billion TCE, the share amounts to 81% or 14,486 billion TCE. The ratio of coal reserves to production has fallen in recent years because of strong growth in production and not because of declining reserves.

Hard coal world market rises, seaborne trade grows

The world market for hard coal grew by a total of 122 million tonnes (about 12%) in 2012. World trade in coal developed as shown below:

World Hard Coal Trade

	2010 Mill. t	2011 Mill. t	2012 Mill. t	Change 2011/2012 Mill. t	Change 2011/2012 %
Seaborne Trade	963	978	1,082	104	11
Cross-Border Trade	90	64	82	18	28
Total	**1,053**	**1,042**	**1,164**	**122**	**12**

HT-W6

The world market for hard coal was once again an economically stable pillar in 2012. Despite the stagnation or even decline on the steel market, the normal weather conditions made it possible to post an increase in coking coal exports in seaborne trade of almost 17 million tonnes. The steam coal market, on the other hand, continued to grow more rapidly, and domestic trade rose by about 18 million tonnes to 82 million tonnes. The decisive factors were in particular the increase in exports from Mongolia to China, overland from Russia to China and from Kazakhstan to Russia.

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

Seaborne World Trade in Hard Coal

	2010 Mill. t	2011 Mill. t	2012 Mill. t	Growth 2011/2012 Mill. t	Growth 2011/2012 %
Steam Coal	713	739	826	87	12
Coking Coal	250	239	256	17	7
Total	**963**	**978**	**1,082**	**104**	**11**

HT-W7

The share of the world trade in the production has risen steadily since 2000. However, in general most of the coal output was consumed in the country where it was produced.

World Output / Seaborne World Trade

Hard Coal	2011 Mill. t	2012 Mill. t	Growth Mill. t
World Output	6,958	7,166	208
World Trade	978	1,082	104
Share of World Trade in Production	14.1%	15.1%	

HT-W8

The seaborne trade volume breaks down into a coking coal market and a steam coal market. The steam coal market in turn comprises Pacific and Atlantic partial markets, which are characterised by different supplier structures. The exchange volume between the partial markets in 2012 came to about 10% (about 85 million tonnes) of the steam coal market. About 13% of the global steam coal production was transported to the consumers via seaborne trade. The coking coal market, in contrast, is a uniform world market due to the low number of supplier countries on the one hand and, on the other hand, the worldwide spread demanders. About 27% of worldwide

production in 2012, a significantly greater share than for steam coal, went to overseas trade.

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

Figure 6: Seaborne Hard Coal Trade 2012: 1,082 M t

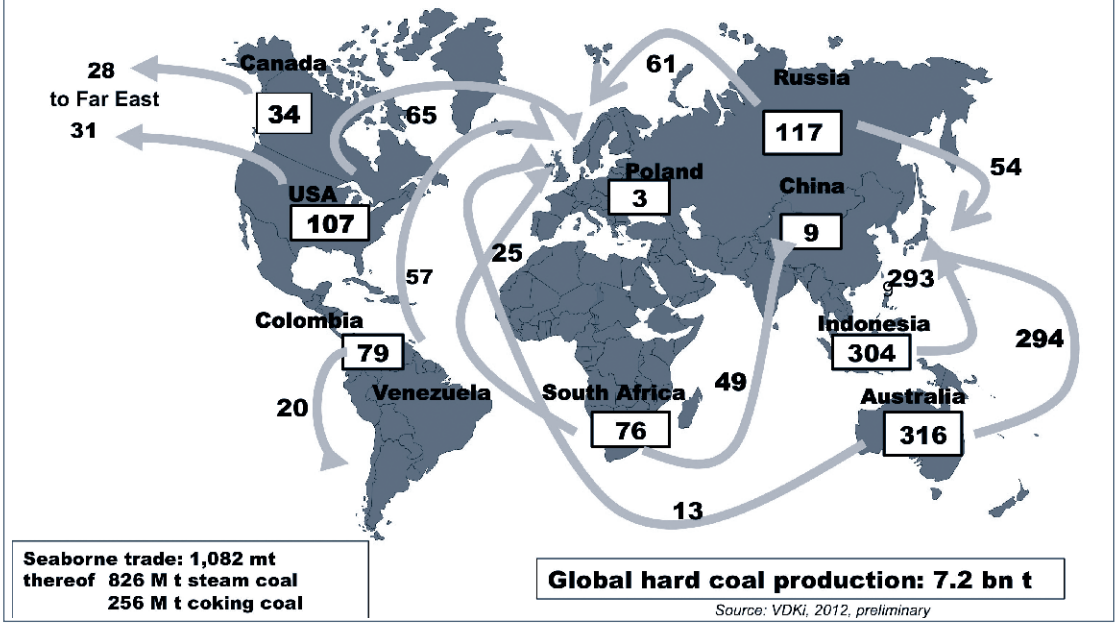

Figure 6

The largest import countries are found above all in the South-East Asia region. China became the largest importer in 2012 (235 million tonnes), overtaking Japan, which was previously the largest importer (185 million tonnes). They are followed by South Korea and India. The largest coal importers in Europe were Germany, Great Britain and Italy.

The 10 Largest Hard Coal Import Countries[1)]

	2010 Mill. t	2011 Mill. t	2012 Mill. t
China	166	183	235
Japan	184	175	185
India	86	114	129
South Korea	111	129	126
Taiwan	64	67	66
Germany	40	44	45
Great Britain	26	32	45
Italy	22	24	29
Spain	13	16	21
USA	15	11	7
Total	**727**	**795**	**888**
Share of World Trade	75 %	81 %	82 %
EU-27	**176**	**155**	**212**
Share of World Trade	19 %	15 %	20 %

1) Some figures provisional. seaborne quantities

HT-W9

Steam coal market continues to grow

Atlantic region

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

Demand in the Atlantic region was more restrained, but still grew overall. Demand in 2012 increased by 10 million tonnes (4.6%) to 226 million tonnes. In comparison, demand on the Pacific market rose by 79 million tonnes (15%). The major drivers for increased demand were China and India. Colombia was able to export very little to China. The Atlantic market has a market share of just under 27% of the total market.

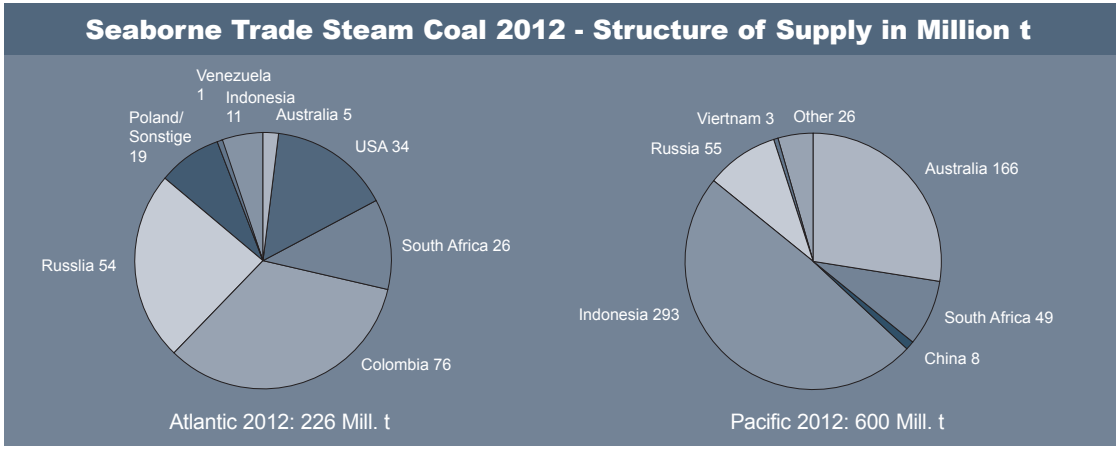

Figure 7: Seaborne Trade Steam Coal 2012 in Million Tonnes Sources: various evaluations

Pacific region

The Pacific region grew again, and the demand on the world market for coal for the generation of electric power rose by 79 million tonnes to 600 million tonnes. Almost all of the Asian economies increased their procurements. Whether this continues to be the case will depend on the needs of China and India and on the degree to which domestic production can cover these needs and there is no longer a price gap between domestic and imported coal. The year 2012 in the Pacific region was marked in particular by the continuing increase in steam coal imports to China and India. Australia, for instance, was able to raise significantly (+29 million tonnes) its exports to China. Indonesia was also able to increase exports to China slightly. Russia was also able to cover China's additional needs thanks to its Far East ports. Japan also increased imports so that the lack of power generation from nuclear power plants could be compensated by hard coal-fired power plants. Overall, however, the Chinese economy weakened slightly and triggered enormous pressure on volumes and prices on the steam coal market. The Pacific market has a market share of 73%.

Exchange volume between Pacific and Atlantic markets

Indonesia and Australia in particular supplied about 16 million tonnes to the Atlantic market in 2012, a share of about 7% of the supplies to this region. Of the Atlantic suppliers, South Africa, Colombia and the USA supplied a total of 69 million tonnes to the Pacific market, 15 million tonnes more than in 2011 and corresponding to 11.5% of demand. Total exchange volume came to 85 million tonnes (previous year 73 million tonnes).

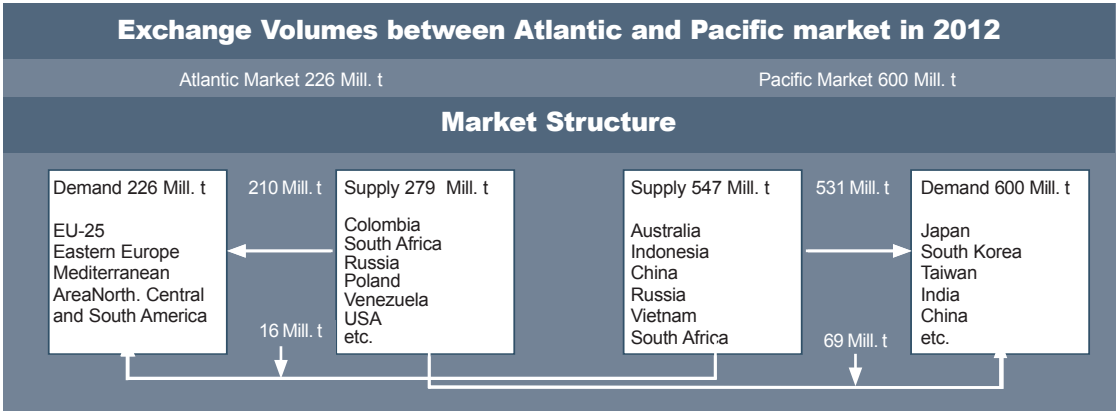

Figure 8 Source: VDKi 2012

South Africa in particular sold deliveries to India above all, but other countries were also customers. Indonesian exports to the Atlantic region, on the other hand, declined further.

Steam coal prices have fallen across a broad front – Pacific market sets the price

Prices

In 2012, a surplus of coal supplies, especially from the USA as well as Indonesia, was confronted with reserved demand which was increased only by isolated countries because of opportunities for arbitrage, creating enormous pressure on prices. The result was a high level of inventories and increased pressures to export, above all in America, where coal is currently being pushed aside by the lower prices for shale gas used in power generation. Although the Pacific steam coal market grew, the abundant supply made it impossible to maintain the price level of the past. These developments caused prices to fall steadily to the middle of 2012, ultimately reaching a level of US$84/t. During the second half of the year, the economy stabilised in Asia, especially in China, so that coal prices ranged from US$85/t to US$90/t.

But there were also substantial differences in the FOB prices of the Atlantic and Pacific suppliers:

Development of FOB-Prices in US$/t of Important Supplier Countries

	01.04.12	31.12.12	01.04.13
Atlantic Suppliers:			
Richards Bay	104	90	81
Bolivar	90	82	72
Poland	82	81	77
Russia (Baltic)	90	87	75
Pacific Suppliers:			
Newcastle	106	91	87
Qinhuangdao	143	115	114
Kalimantan	96	73	73
Russia (East)	103	87	89

HT-W10 Source: Own evaluation, Basis 6.000 kcal/kg

There was a range at the beginning of April 2013 from US$72/t to US$114/t.

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

Since South Africa was able to find customers in India and the Far East for a large part of its production, it was able to maintain prices here as well at a higher level than its competitors who were dependent on the Atlantic market.

Over the course of 2012, the CIF ARA prices (spot) declined to about US$84/t. This development has continued in 2013. In April 2013, the average price was US$80/t. The slightly greater strength of the US dollar cushioned the price decline for the euro countries.

The demand for steam coal in the Atlantic region has remained restrained in 2013. So the further course of price developments for steam coal will be largely dependent on the development of the Pacific region, specifically on the needs of China and India. China above all, being a “swing customer”, has an enormous impact.

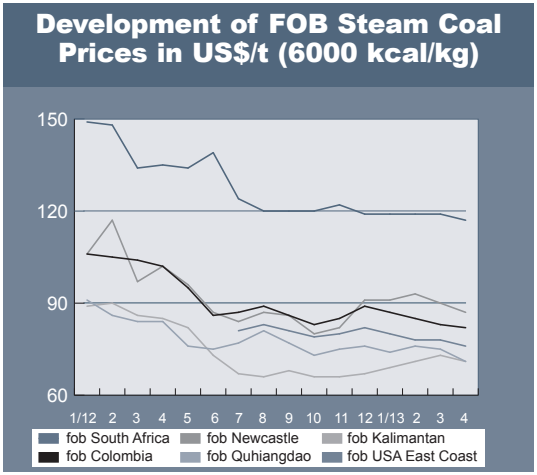

Figure 9: Development of FOB Coal Prices

Steam coal prices

For several years now, prices for steam coal have been set more and more on coal exchanges, especially in Europe. The number of participants in the exchanges is rising. The latest published exchange figures are used as benchmarks for contract conclusions.

The fact that recently the index API#4 has frequently and for longer periods of time been higher than API#2 is unsettling. As a consequence, the API#4 is losing its function as a suitable index for coal contracts for the Atlantic market because it is decisively determined by demand in Asia.

The volume of paper trade rose by 18% in comparison with 2011 and in 2012 amounted to about 2.2 times the amount of the total physical steam coal trade. In 2012, both the API#2 and the API#4 recorded higher trading volumes. However, the new financial indices for low-calorific ("off-spec") coal were successful in 2012. In total, the trading volume for this sub-bituminous coal is estimated at 200 million tonnes.

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

Stagnating demand for coking coal

Worldwide crude steel production in 2012 posted a new record at 1,548 million tonnes; in comparison with 2011, production increased by 21 million tonnes (about 1.2%). The rise came primarily in China (+3.1%) and North America (+2.5%). In contrast, crude steel production in Europe (EU 27) and South America declined by 4.7% to 169.94 million tonnes and by 3% to 46.9 million tonnes, respectively.

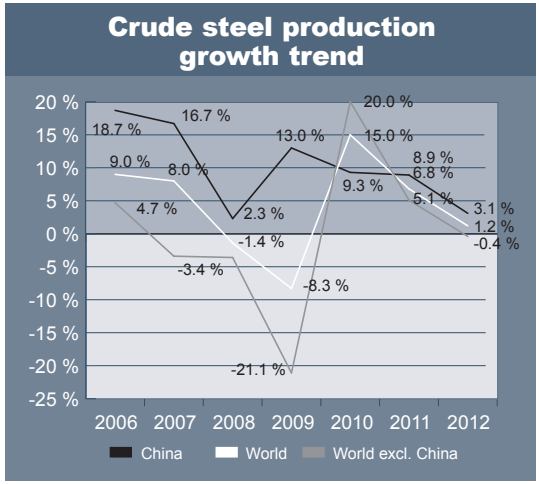

Figure 10 Source: World Steel Association

The pig iron production decisive for the consumption of coking coal, PCI coal and coke fell by 23 million tonnes from 1,083 million tonnes in 2011 to 1,060 million tonnes in 2012.

Crude Steel and Pig Iron Production in the World

	2010 Mill. t	2011 Mill. t	2012 Mill. t	Change 2011/2012 Mill. t
Crude Steel	1,429	1,527	1,548	+ 21
Pig Iron	1,035	1,083	1,060	-23
Share of Pig Iron in Crude Steel	72.4%	70.9%	68.5%	

HT-W11

In 2012, China was unable to increase its share in the world market for steel production of 46% over 2011. As a consequence, its share in world pig iron production for total steel production declined as well.

Crude Steel and Pig Iron Production in China

	2010 Mill. t	2011 Mill. t	2012 Mill. t	Change 2011/2012 Mill. t
Crude Steel	627	697	716	+ 19
Pig Iron	590	683	606	- 77
Share of Pig Iron in Crude Steel	94%	98%	84.6%	

HT-W12

The world's largest steel producers developed as shown below in 2012:

The 10 Largest Steel Producers in the World

Country	2010 Mill. t	2011 Mill. t	2012 Mill. t
China	627.0	697.0	716.5
Japan	109.6	107.6	107.2
USA	80.5	86.2	88.6
Russia	68.3	72.2	70.6
India	66.9	68.7	67.7
South Korea	58.9	68.5	69.3
Germany	43.8	44.3	42.7
Turkey	33.4	35.3	35.9
Brazil	32.9	35.2	34.7
Ukraine	29.1	34.1	32.9
Total	**1,150.4**	**1,249.1**	**1,266.1**

HT-W13 Source: World Steel Association

Only China, the USA, Turkey and South Korea were able to increase steel production in 2012 while production in all other countries declined.

The growth in crude steel production fluctuated from one region to the next, but increased overall and absorbed corresponding large quantities of coking coal on the world market. There were no limitations because of weather conditions so that production, above all in Australia, could again be driven at full speed.

Market Share Coking Coal World Market

	2010 Mill. t	2010 %-Share	2011 Mill. t	2011 %-Share	2012 Mill. t	2012 %-Share
Australia	159	64	133	52	144	53
USA	48	19	63	25	63	23
Canada	27	11	28	11	30	11
Russia	7	3	14	5	17	6
Miscallaneolus	7	3	15	7	18	7
Total	**248**	**100**	**253**	**100**	**272**	**100**

HT-W14 Source: BREE, Resources and Energy Quarterly, March 2013

The supplier structure has not changed significantly; however. Australia's market share rose again slightly by 1% to 53%. The USA had to surrender market shares to Australia, but still holds a share of 23%.

Coke world market

Coke production worldwide increased by 2.5% from 638 million tonnes to 654 million tonnes. China, far and away the largest coke producer, once again reduced its export to no more than about 1 million tonnes. China's production of 443 million tonnes comprises 66% of world production, and it increased coke output by 15 million tonnes in 2012. Europe produced 42 million tonnes of coke, less than in 2011 (-2.7%). This is the lowest rate since 2009. In comparison with production, the world trade market for coke is relatively small. Only about 3%–4% of the total production is normally traded maritime and across the green border.

Coke World Market

	2010 Mill. t	2011 Mill. t	2012[1)] Mill. t
Total World Market	21	21	22
% of World Coke Production	3%	3%	3.4%

1) provisional

HT-W15 Source: Own calculations

Prices declined sharply in 2012

The sharp rise in coking coal prices during the boom years 2007/2008 was followed by a drop in the benchmark prices for hard coking coal from US$300/t FOB to US$125–US$130/t FOB in 2010. As a consequence of the flooding in Queensland and the curtailing of supplies which resulted, prices shot up from US$225/t to US$330/t in Q2 and Q3 2011 before falling back to US$225/t in Q4 2011 because of diminishing demand. They continued to fall in 2012 because of the weakening steel economy and the simultaneous good supply of coking coal worldwide.

During the first two quarters of 2012, the falling worldwide demand continued to hold down prices. The quarterly contract conclusions fell to US$235/t in Q1 and to US$206–US$210/t in Q2 2012. Spot prices were generally about US$10–US$20/t below the quarterly contract prices. This trend made itself felt even more strongly during the second half of the year. During Q3 2012, prices for HCC quality continued to decline to US$160–US$180/t and in Q4 to US$170–US$175/t.

At the beginning of 2013, there was an initial slight increase for HCC to US$175–US$185/t, but in March the price fell again to US$165/t. BREE is predicting a slight rise in contract prices over the course of 2013 and estimates the average price for the year 2013 as a whole will be US$172/t.

Figure 11: Source: Various sources

Coke prices ex China were very high, remaining consistently at US$480–US$495/t (incl. 40% export duty) in 2012. The price fell below the magic mark of US$400/t only in October. ARA prices were significantly lower and declined from US$335/t at the beginning of the year to

US$270/t at the turn of the year 2012/2013. A new era began for Chinese coke prices at the beginning of 2013. China met its commitments to the WTO to eliminate trade barriers for coke and revoked the 40% coke export tax per 01/01/2013. The coke price FOB China fell to US$300–US$310/t in January 2013. The spot price on the world market in January 2013, however, was only US$270/t. We will have to wait and see whether coke exports from China will rise as a consequence of the revocation of the coke export tax.

Freight rates – no change from very low level

After a brief recovery in the autumn, the Baltic Dry Exchange Index fell dramatically once again at the end of last year and dropped to 647 points, its lowest point since 1986, at the beginning of February 2012; in comparison, it was quoted at more than 3,800 points in May 2010. The 2012 average of 917 points is well under the average of 1,549 points posted in 2011 and presumably the worst year for bulk goods shipping.

The most important reason is the flood of new ships which has caused the surplus in cargo volume to grow at an alarming rate. The collapse is especially significant for Capesize ships. Yet the fleet of large ships continues to expand steadily. Between January and August 2012, tonnage growth rose by 20% while only 13% was decommissioned. Panamax deliveries have also increased and rose with 21.5 million tonnes 51% above the previous year. The contrasting decommissions came to 5.4 million tonnes.

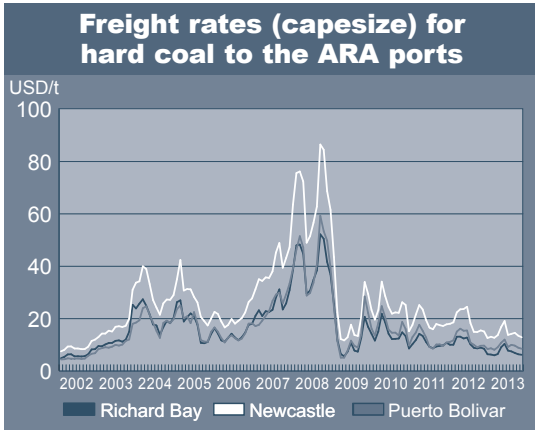

Figure 12: Source: Frachtcontor Junge

The fleet and capacity increase of all bulk carriers rose by about 64 million tonnes (10%) to 679 million tonnes by the end of 2012. Almost half of the newly delivered vessels are Capesize ships with a capacity of 30 million tonnes. New commissionings slowed down significantly in Q4 2012. All in all, it is calculated that about 6% less cargo volume was delivered in 2012 than in 2011.

According to Clarkson Research, net increase (new ships less decommissioning) as of October 2012 amounted to 128 Capesize ships totalling 28 million tonnes and 198 Panamax ships totalling 15 million tonnes in cargo volume. Clarkson Research does not expect deliveries to begin to decline until 2013. “Only” 165 Capesize ships are scheduled for construction, but 443 Panamax ships will still be delivered. However, these figures do not take into account cancellations, postponements of deliveries or accelerated decommissioning rates. The latter is dependent on the scrap price and on the expected development of freight rates.

The high bunker prices, which moved in tandem with increasing crude oil prices, forced many shipping companies into a corner in 2012 as well. Nevertheless, freight rates will undoubtedly remain at an extremely low level owing to the surplus supply of cargo space.

US dollar exchange rate

The US dollar exchange rate, a major component of the international energy and raw material business, was subject to volatile fluctuation.

Until spring of 2012, the US dollar was weak, but began to gain in strength over the course of the year. The euro strengthened again slightly at the end of 2012 and in the first months of 2013.

EUROPEAN UNION

No economic recovery in sight

The economic situation in Europe continues to be tense. The general economic process of shrinking in the crisis countries continued unabated in Q4 2012. The crisis states are falling more and more deeply into recession. GDP growth in the EU 27 as a whole declined. However, the speed in the various EU countries differed greatly, and the growth of some EU countries was lower than in the previous year.

Economic Growth EU 27 in Per Cent

Member States	2010	2011	2012	2013(F)
Countries Euro Zone (EU 17)	2.0	1.4	– 0.6	- 0.4
EU-27	2.1	1.6	– 0.3	- 0.1

HT-EU1 Source: Eurostat (F = Forecast)

The leaders in GDP growth rate in terms of relative percentage change from 2011 included Latvia (5.6%), Lithuania (3.7%), Estonia (3.2%), Norway (3.2%) and Germany (0.7%). In contrast, growth in Greece (-6.4%), Cyprus (-2.4%) and Portugal (-3.2%) was clearly negative.

In its latest estimate, the EU Commission expects GDP in the EU to decline by 0.2% rather than to grow by 0.1% in 2013. So the EU is in recession – with the exception of a very few member states. In the opinion of the International Monetary Fund (IMF), the crisis in the euro zone is spreading more and more quickly from the periphery to the core countries of the currency zone. The IMF displays a correspondingly pessimistic attitude in its growth prediction, but still assumes an economic shrinkage in the euro zone of only 0.3% and not 0.4%.

The negative spiral between the banking sector and the market for government bonds has been the most important factor increasing the stress level of the crisis. It has exacerbated investors' doubts about the ability of the countries and banks to service their debt. At the end of 2012, there was a sense that the most difficult part of the road had been left behind. But then came Cyprus, and the profound uncertainty of the financial markets once again came to the fore.

Information from Eurostat 2012 indicates **that inflation in the EU** averaged around 2.6%. It fell to 2% in January 2013. But conditions in the various countries differ greatly. Hungary has the highest inflation rate (5.4%), Sweden and Greece the lowest (each at 0.9%). On the average for the year, inflation in Germany was 2.1%. The inflation rate in the euro zone is expected to be lower in 2013 than in 2012.

All of these predictions, however, are subject to uncertainty and risks, including the unrest in Syria and the

continuing conflict with Iran regarding allegedly weapon-grade plutonium from the nuclear power plants there as well as the tensions between North and South Korea and the problems on the markets for government bonds in conjunction with the extremely high debts of many Southern European countries, now including Cyprus.
However, the development of industrial production could be an indication of the first signs of a recovery in 2013. According to Eurostat, industrial production in both the euro zone and the EU 27 rose by 0.4% in Q1 2013, although in January 2013 it had still declined by 0.6% and 0.5%, respectively.

Overall energy consumption declining – coal consumption rises

Along with the economic stagnation over the course of 2011, primary energy consumption fell in many EU countries – from a total of 2.5 billion TCE in 2010 to 2.42 billion TCE in 2011. As a consequence of the euro crisis and the slowed growth of the world economy, a further decline must be expected for 2012 because there is a relation between economic growth and primary energy consumption in the economy. The structure of power generation has continued to change at the expense of fossil energy sources. The share of renewable energies (excluding hydroelectric power) rose from 9% in 2011 to 10% in 2012. Despite the expansion of renewable energies, conventional energies, including nuclear energy, still dominate and provide about 88% of the energy supply in the EU 27. Coal, gas and oil contribute a share of 75%.
The coal share rose from 16% to about 19%, cutting into the share of gas. This development came from the decline in coal and CO_2 prices and the high gas prices. The conjunction of these two factors made coal-fired power generation more economical than gas-fired generation, and this was especially noticeable in Germany, Spain and Great Britain.

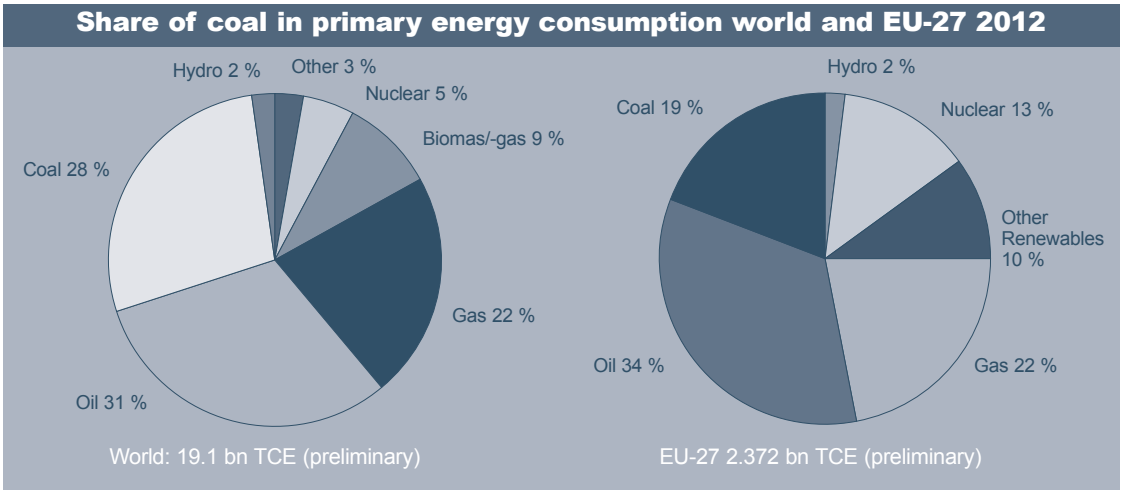

Figure 13: Source: Weltenergierat – Deutschland, Energie für Deutschland 2013, Berlin 2013

Hard coal market (EU 27) stagnating

In 2012 there were declines as well as increases in output among European hard coal producers:

Bulgaria	-0.1 Mill. t to 2.3 Mill. t total
Germany	-1.4 Mill. t to 11.6 Mill. t total
Great Britain	-1.5 Mill. t to 16.8 Mill. t total
Poland	+2.4 Mill. t to 78.1 Mill. t total
Spain	-0.5 Mill. t to 6.1 Mill. t total
Czech Republic	+0.1 Mill. t to 11.4 Mill. t total
Romania	-0.3 Mill. t to 1.9 Mill. t total

The bottom line showed a decline in output of 1 million tonnes to 128 million tonnes.

Hard Coal Output in the EU

	2010 Mill. t (t=t)	2011 Mill. t (t=t)	2012 Mill. t (t=t)
Germany	14	13	12
Spain	9	7	6
Great Britain	18	18	17
Poland	77	76	78
Czech Republik	12	11	11
Romania	2	2	2
Bulgaria	2	2	2
Total	**134**	**129**	**128**

HT-EU2

Poland's output of 78 million tonnes continues to lead the list of countries producing hard coal.

Further declines in output are to be expected in Germany, Poland and Spain in the next few years pursuant to the decision adopted by the EU Commission on 13/12/2010. But the fall in the level of the world market prices could cause output in Great Britain to decline as well.

Hard Coal and Lignite Volume in the EU

	2010 Mill. t (t=t)	2011 Mill. t (t=t)	2012[1)] Mill. t (t=t)
EU 27 Hard Coal Output	134	129	128
EU 27 Coal Imports/ Cross-Border Trade	181	198	212
EU 27 Coke Imports/ Cross-Border Trade	8	8	6
Hard Coal Volume	**323**	**335**	**346**
EU 27 Lignite	397	426	433
Total Coal Volume	**720**	**761**	**779**

1) *Provisional figures*

HT-EU3

The weakened steel business and the parallel reduction in pig iron and crude steel production at the mills reduced coking coal sales by 8 million tonnes. The use of steam coal for power generation overcompensated this. Lignite production and consumption also increased at a faster rate. Production rose by 8.2 million tonnes and consumption by 6.1 million tonnes.

The hard coal consumption of 338 million tonnes in the EU breaks down among the following sectors:

Distribution of Hard Coal Consumption in the EU

	2010 Mill. t	%	2011 Mill. t	%	2012[1)] Mill. t	%
Power Plants	230	71	210	67	240	71
Steel Mills/Coking Plants	60	18	70	22	54	16
Heating Market	36	11	35	11	44	13
Total	**326**	**100**	**315**	**100**	**338**	**100**

1) *Estimate*

HT-EU4

The structure of the hard coal imports did not change appreciably in 2012. Declining exports to the EU from Poland and Russia were compensated by greater supplies from Colombia and the USA. A total of 212 million tonnes of hard coal were imported last year, corresponding to an increase of just under 14 million tonnes (6%) in comparison with the previous year.

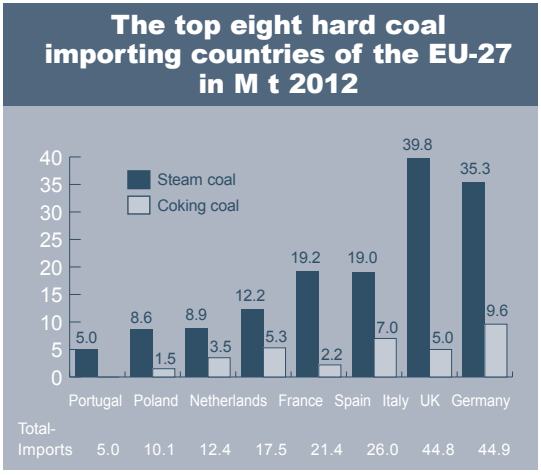

Figure 14

The primary energy source mix in power generation has further shifted slightly in the direction of renewable energies. The share of wind and solar power increased by 3% while nuclear energy decreased because of the closure of nuclear power plants in Germany.

New wind farms were constructed in 2012 as shown below, based on information from the EWEA (The European Wind Energy Association):

- 11,895 MW wind farm capacities were newly installed (2011: 9,616 MW).
- Wind farms comprised a total of 26.5% of all newly constructed electric power capacities in 2012.
- Electricity capacities from renewable energies rose by 29.2 GW to a total of 931.9 GW in 2012, thereof wind farms with a capacity of 11.9 GW. Wind power now has a share of 11.4% of the total installed power generation capacities.

The distribution of the newly constructed wind farm capacities among the EU countries varies widely:

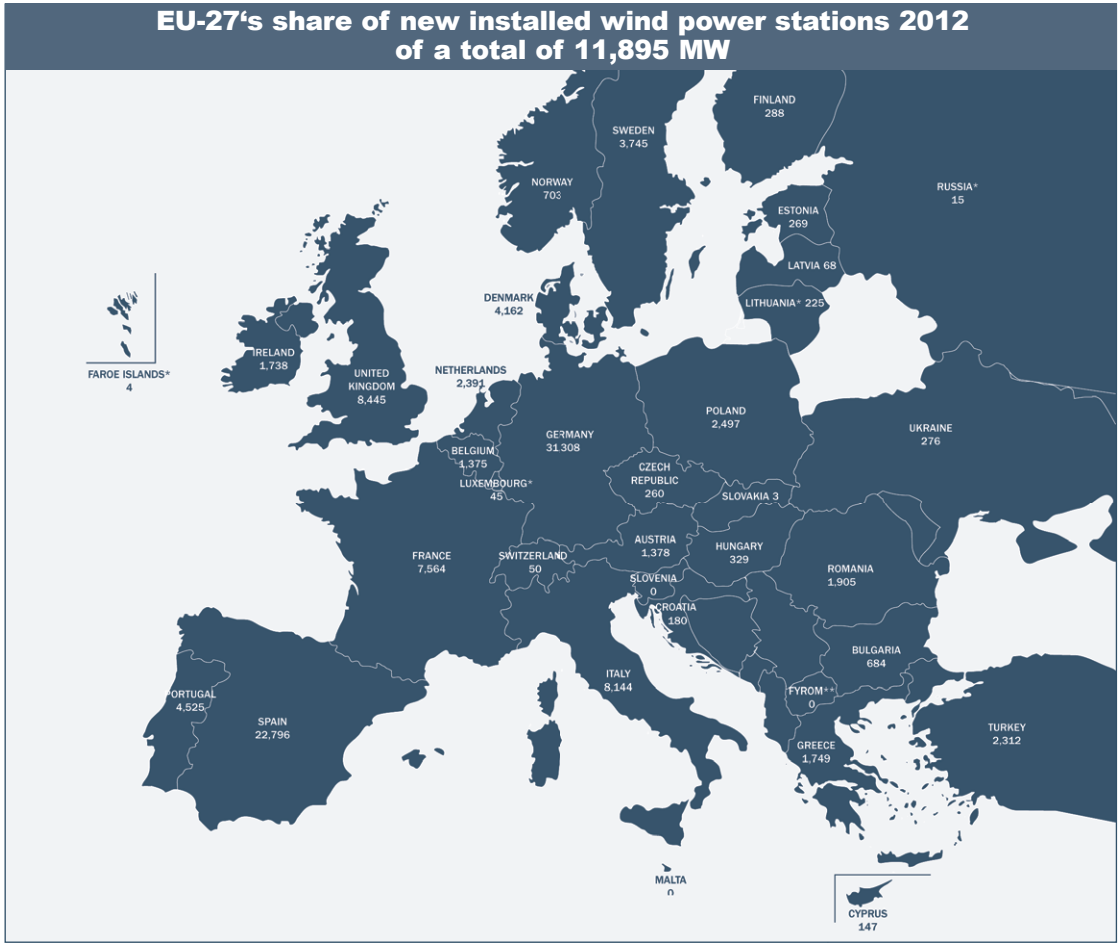

Figure 15: Source EWEA

Offshore wind parks behind schedule

In Europe, about 1,000 MW more offshore wind farms with an equivalent of about 330 turbines must be built if the EU target of providing 20% of the primary energy supply from renewable energies, including offshore wind farms, in 2020 is to be achieved.

The currently installed total capacity of offshore wind farms is 4,993 MW. In comparison, the various EU coun-

tries had planned to install 5,829 MW by the end of 2012 (according to EWEA data).
In Europe, nuclear power (26%) along with coal (25%), natural gas (23%), oil (2.0%) and mainly large hydro-electric plants (about 11%) generated almost 90% of the electric power in 2012 and represent 87% of power plant capacities.

EU-Energy Policies

EU Commission with doubts about renewable target

The discussion about new energy and climate goals for the European Union is heating up. In March 2013, the Parliament voted for a greenhouse gas reduction of 80% to 95% in comparison with 1990 by the year 2050, as the EU Commission foresaw in its Energy Road Map 2050.
However, the EU Commission also called for "clear targets" for renewable energies, energy efficiency and a reduction of greenhouse gases by 2030. On the other side, the CDU European MP Herbert Reul welcomed the vote in Parliament and the fact that the representatives had not been willing to set concrete targets.
However, the EU Commission itself appears to have its doubts as to whether the three-part package of targets – for renewable energies, greenhouse gas emissions and energy efficiency – set for 2020 should be continued.
In seven years, the EU wants to have a share of 20% of energy consumption from renewable energies, a 20% reduction in greenhouse gas emissions and a 20% reduction in energy consumption in comparison with 2005. If three new targets are to be set for 2030, their "interaction" with one another and with the EU emissions trading systems must be "unambiguously" taken into account, notes a draft for a discussion paper (green book).
As a rule, a green book is the first step in EU legislative procedure. The objective is to have clarity about the new energy and climate policies of the EU which will be pursued up to 2030 by the end of 2013 so that the industry can be assured of the conditions for investments.

Renewable energies are no longer in their infancy

According to the EU Commission, a new target for renewable energies must be "carefully considered" because the renewable sources will no longer be in their infancy after 2020 and will be subject to increasingly strong competition with "other energy technologies low in CO_2".
In 2010, the share of renewable energies in the EU came to 12.7%. Moreover, as noted in the green book draft, there must be an analysis to determine whether solely a target for reduction of greenhouse gas emissions, which the EU Commission wants to reduce by 40% by 2030, is "expedient".

Climate change in Parliament

According to a report in the Börsen-Zeitung on 17/04/2013, the EU Parliament has "made a remarkable decision which will also have far-reaching consequences." It will have far-reaching consequences because corrections to the emissions trading system could have been much more expensive for industries with high energy consumption. It is remarkable because the most European of all EU institutions surprisingly accepted a renationalisation of climate protection policies. By rejecting the proposals, however, the EU Parliament simultaneously declined to make any attempt whatsoever to turn the EU emissions trade back into a feasible management system. Now, more than ever before, it is a question of the seriousness of the national efforts.

EU criticises German energy policy

The EU Commission has indicated its increasing annoyance about Germany striking out on its own in energy policy. Climate protection and energy efficiency can be realised more effectively on large market territories than on a national scale, said Günther Oettinger, Energy Commissioner, during a convention of the Institute of Energy Economics at the University of Cologne (EWI). Oettinger raised the question of whether the priority feed-in of green power is in conformity with European internal market law. German electricity takes a path through Poland and the Czech Republic, and the power grids in these countries must deal with the surplus wind power from the North Sea coast.

EU Commission wants to drive forward CO_2 separation

Although the underground storage of CO_2 in Germany or other European countries, while it may not exactly be prohibited, is subject to almost insurmountable obstacles, the EU Commission wants to see its continued development and application. In explaining its reasons, the Commission noted that the wide-scale introduction of CCS will be necessary to curb CO_2 emissions in view of the rising demand for energy, which will presumably have to be covered for the most part by the use of fossil fuels. The Commission proposes various options for achieving this and opened a public participation procedure on the subject in March 2013.

At this time, CCS technology is not being used because of the expense. According to the Commission, a power plant fitted with CCS is 60% to 100% more expensive than similar conventional plants without CCS. The storage of 1 tonne of CO_2 emissions underground currently costs between €30 and €100. But in the opinion of the Commission, CCS must be tested now and deployed from 2020 on. Without this technology, the EU will not reach its goal of reducing greenhouse gas emissions by 80% in comparison with 1990 by 2050. The Commission is now considering trade with CCS certificates or a legal limit to the permissible CO_2 emissions for new power generation and industrial plants as a way to give the technology “a boost”. In addition, the subsidies, which were stopped at the end of 2012, should be reinstated and the funds from a second issue should be invested in CCS technology if possible. The amount of € 275 million is available for this purpose in 2013.

EU plans obstacles to capacity markets

EU countries will not be able to offer government subsidies for the construction of power plants for nationally planned capacity markets. They will be classified as services of general interest and consequently be governed by EU state aid rules. This could throw up high hurdles for subsidisation of investments in new conventional power plants, for instance. The VDKi has always opposed investment subsidies. An investment will pay for itself only if the market sends out price signals. But under the current framework conditions, even investment subsidies would not be adequate to secure the profitability of the plants.

EU announces a change of course in the assessment of the EEG

If the political establishment in Germany does not take care of the matter, the urgently required revision of the EEG could perhaps come from Brussels.

In the opinion of Joaquin Almunia, EU Competition Commissioner, the EEG could be challenged in two respects under European law: the exemption of industries with high energy consumption and the EEG as a whole, which Brussels now wants to classify as state aid.

The EU Commission justifies the new assessment by referring to the most recent decisions of the ECJ. In comparison with the legal situation which back in 2001 led to the decision that the EEG was not to be classified as state aid, there have in the meantime been major modifications to the act. Since 2010 at the latest, the EEG has expanded into much more than a price-setting regulation favouring renewable energies. This could mean that in the future the EEG as a whole will be subject to a so-called state aid notification procedure.

GERMANY

Germany and the euro crisis – growth forecast for 2013 lowered

Germany also experienced the worst year since 2008. During the last three months of 2012, economic performance in the euro zone fell by 0.6% in comparison with the previous quarter. The GDP shrank for the third time in succession.

These figures make it clear that the situation in the euro zone is still serious and that the debt crisis has by no means been mastered. Nevertheless, there were some indications at the end of last year and the beginning of this year that the euro crisis could be approaching its end. But even the largest national economy in the euro zone is vulnerable. Germany experienced the worst final quarter since 2008. Economic performance fell by 0.6% – more than expected by analysts.

At the beginning of 2013, the German government issued its new annual economic report entitled "Competitiveness – Key to Growth and Employment in Germany" in which it presented its overall economic projection for 2013 and submitted a statement on the Annual Assessment 2012/2013 by the German Council of Economic Experts.

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

Change from Previous Year in %	2011	2012	2013 Outlook
Gross Domestic Product (price-adjusted)	3.0	0.7	0.4
Labour Force (domestically)	1.4	1.0	0.0
Unemployment in %[2)]	7.1	6.8	7.0
Usage of GDP Price-adjusted			
Private Households and Non-profit Private Organisations	1.7	0.8	0.6
Equipment	7.0	-4.4	-1.3
Buildings	5.8	-1.1	1.3
Domestic Demand	2.6	-0.3	0.6
Exports	7.8	4.1	2.8
Imports	7.4	2.3	3.5
Trade Balance (GDP Growth Contribution)[3)]	0.6	1.1	-0.1

1)2011 results updated. 2012 provisional results
2)In relation to total labour force
3)Contribution to growth rate of GDP

HT-D1 Source: Forecast from the Annual Assessment 2012/13 of the German Council of Economic Experts assessing the general economic conditions, Bundestag Document 17/4401

The German government expects a significant recovery of the German economy over the course of 2013 following a period of economic weakness in the winter half of 2012. The annual economic report sees this weakness above all as a consequence of the slumping development of world economy and the "crisis of confidence" in the euro zone. Employment and consumer prices will remain stable overall in Germany. From 2014, growth at a rate substantially higher than 1% (1.6%) is expected.

A retroactive comparison with the annual projections for 2012 made the year before with actual development shows that, a year ago, the German government was highly accurate in its forecasts for GDP growth and unem-

ployment, but that it overestimated the domestic economy components and underestimated the contribution of foreign trade, which was once again the most important pillar for growth in the German economy in 2012 thanks to increases in exports.

Energy policy and the energy turnaround are given major attention in the annual economic report. The goals of the energy turnaround and the measures initiated for their realisation are described. There is also a statement that the costs will be reduced to an acceptable level so that the energy turnaround will be a success in the coming years as well. Achieving this will require a "fundamental reform" of the Renewable Energies Act (EEG). This reform should also include a review of the exception elements for the EEG surcharge. In addition, Germany will need "state-of-the-art and flexible fossil fuel-fired power plants even in the future" if a reliable supply of energy is to be secured. However, the search for solutions for a future-proof market design for the power plant sector has not been concluded.

Energy consumption grows faster than the economy

According to provisional calculations of the Arbeitsgemeinschaft Energiebilanzen (AGEB), primary energy consumption in Germany rose by 0.9% in 2012, corresponding to an increase of 4.9 million TCE to 466 million TCE. Primary energy consumption in Germany in 2012 was above the level of 2011. The increase was decisively affected above all by the weather conditions, which were significantly cooler than in the previous year and pushed upward the demand for heating. On the other hand, there was virtually no impact from the slumping economy.

Changes in production indices in manufacturing sectors in 2012 were largely negative, but in some industries with less high energy consumption, they increased in part:

- Metal products -3.7%
- Machine construction +1.0%
- Basic chemicals -3.6%
- Motor vehicle construction 0.0%
- Manufacturing in total -1.3%

If the impact of the low temperatures on the changes in primary energy consumption is considered and temperatures corresponding to the mean over a period of many years are assumed, the AGEB indicates that primary energy consumption, assuming that none of the other conditions change, would have declined by 0.8% rather than risen by 0.9%. The effect of the temperature varies according to energy source. Above all, it affects the consumption of natural gas and petroleum, which provide a large share of the heating market (depending on outside temperatures).

The most important energy source in 2012 continued to be oil (share 33.1%). It is followed by natural gas, which increased its share by 1.4% to 21.6% in 2012. Hard coal and lignite increased their contribution to the energy mix to 12.2% and 12.1%, respectively. The most striking changes were in nuclear energy (its share of consumption fell from almost 9% in 2011 to 8% in 2012) and in renewable energies (increased their contribution to the primary energy consumption from 10.8% in 2011 to 11.6% in 2012). Other energy sources (including the balance of electricity exchange) contributed less than 2% to coverage of energy demand.

In contrast, the strictly statistical effect, which had a particularly strong impact in 2011 owing to the major decline in nuclear energy and the significant increase in the use of power generation from renewable energies, was negligible in 2012, above all because of the sharp increase in the power export surpluses. Measured against the original values, overall economic energy productivity in

the German economy clearly worsened (-0.2%) in 2012 following the upward leap of over 8% in the previous year. Adjusted for temperature effects, however, energy productivity was 1.5% higher than in the previous year.

On the other hand, the economy had the effect of curbing consumption. Although total economic performance rose, production in manufacturing – especially in industries with high energy consumption – declined by a total of 1.2%.

Energy Productivity

	2011	2012	Difference in %
Gross Domestic Product (€ bn)	2,452	2,468	0.7
Primary Energy Consumption in Petajoules (Adjusted for Temperature and Inventories)	13,825	13,720	- 0.7
Energy Productivity (in €/GJ)	177	180	1.4

HT-D2 Source: AGEB, provisional information

Unlike primary energy consumption, gross power consumption fell once again; the decline of 1.3% was almost as great as that of the previous year. Gross electricity consumption of 595 billion kWh was the lowest since 2003. Gross electricity generation, on the other hand, rose by 1.4%. Nuclear energy lost further ground. Its share went from 17.7% to 16.1%.

Share of hard coal in primary energy consumption rises by 3.1% – third-largest supply contributor to the energy mix

According to provisional calculations, hard coal consumption in 2012 rose by 3.1% to 57.0 million TCE (corresponding to 1,671 PJ), an increase of 1.7 million TCE. This makes hard coal the third-largest supply contributor to the energy mix, a share of 12.2% in primary energy consumption in 2012, following oil and natural gas as in the past, but ahead of the contributions made by lignite and renewable energies.

While the **consumption of coking coal** and coke in Germany's steel industry decreased in 2012 by 10% to 15.4 million TCE as a consequence of the economic performance, the use of steam coal, which comprises more than two-thirds of the total consumption of hard coal in Germany, rose by 6.1% to 40.1 million TCE. There was a slight rise from 1.4 million TCE to 1.5 million TCE on the heating market.

Lignite also rose substantially by 5.3% to 56.1 million TCE. It covered slightly more than 12% of the total domestic energy demand.

Renewable energies contributed about 54 million TCE to the energy balance, an increase of over 8%. Of the renewable energy sources for power generation, there were very strong increases in comparison with 2011 in photovoltaics (+44%) and hydroelectric power (+18.8%). But biomass also posted a large increase (+8.8%). Less electricity was generated by wind farms, on the other hand (-5.7%). Just as in the past, biomass dominates power generation and had a share of almost 57% in 2012. Wind energy is in second place and has a share of 18.2% of power generation and 10.5% of total domestic energy demand. The generation of solar power has in the meantime reached the magnitude of the contribution from hydroelectric power. It increased its contribution by 44.3% last year and now holds a share of 11.1% of power generation from renewable energy sources.

The approximately 1,583 PJ or 54 million TCE from renewable energy sources were utilised as shown below:

- About 914 PJ (58%) or 31.2 million TCE in power generation
- About 549 PJ (35%) or 18.7 million TCE in heating
- About 120 PJ (7%) or 4.1 million TCE in fuel production

Primary Energy Consumption in Germany 2011 and 2012[1)]

Energy Source	2011	2012	2011	2012	Change 2012	Change 2011		Share in %	
	Petajoule (PJ)		Mill. TCE		PJ	Mill. TCE	%	2011	2012
Petroleum	4,537	4,513	154.8	154.0	-23	-0.8	-0.5	33.6	33.1
Natural Gas	2,911	2,953	99.3	100.8	42	1.5	1.4	21.5	21.6
Hard Coal	1,621	1,671	55.3	57.0	50	1.7	3.1	12.0	12.2
Lignite	1,562	1,645	53.3	56.1	83	2.8	5.3	11.6	12.1
Nuclear Energy	1,178	1,085	40.2	37.0	-93	-3.2	-7.9	8.7	8.0
Renewable Energies	1,465	1,583	50.0	54.0	118	4.0	8.1	10.8	11.6
Electricity Exchange Balance	-23	-83	-0.8	-2.8	-6.1	-2.1	---	-0.2	-0.6
Miscellaneous	267	278	9.1	9.5	11	0.4	4.1	2.0	2.0
Total	**13,518**	**13,645**	**461.2**	**465.6**	**127**	**4.4**	**0.9**	**100.0**	**100.0**

1) All of the figures are provisional

HT-D3 Source: AGEB

Electric power generation rises by 1.4%

Gross electric power generation in Germany rose by about 9 TWh (1.4%) from around 609 TWh in 2011 to 618 TWh in 2012. Gross power consumption in Germany, on the other hand, fell by about 8 TWh.

The Energy Mix of the Gross Power Generation

Energy Source	2010	2011	2012	Difference 2011/2012
	TWh	TWh	TWh	%
Lignite	145.9	150.1	159.0	5.9
Nuclear Energy	140.6	108.0	99.5	- 7.9
Hard Coal	117.4	112.4	118.0	5.0
Natural Gas	86.8	82.5	70.0	- 15.2
Petroleum	8.4	6.8	9.0	32.1
Renewabel Energies	102.8	123.5	136.2	10.2
Miscallaneous	26.7	25.6	25.9	1.7
Total	**628.6**	**608.9**	**617.6**	**1.4**

HT-D4 Source: AGEB

The **cross-border electric power trading volume** (total of imports and exports) came to about 112 TWh (18%) of the gross power generation in 2012. Although power import fell by almost 6 TWh, export increased by over 11 TWh. Virtually all of the energy sources, with the exception of nuclear energy and natural gas, posted growth.
Installed output in wind energy rose in 2012 by 2,248 MW to 31,308 MW, 626 MW from newly constructed facilities and 432 MW from repowering. A total of 23,030 wind turbines were in operation. However, production declined from 48.9 TWh to 46.0 TWh (-9.4%). Wind power plants supplied less electricity than in the year before, only 1,470 full-load hours, the equivalent of only 16.8% of their annual capacity.

Power Generation from Renewable Energy Sources

Energy Source	2010 TWh	2011 TWh	2012* TWh
Hydroelectric Power	21	17.7	21.2
Wind Power	37.8	48.9	46
Biomass	28.1	32.8	36
Waste**	4.6	4.8	4.9
Photovoltaics	11.7	19.3	28
Geothermal Energy	0.1	---	0.1
Total	**103.3**	**123.5**	**136.2**

** Provisional figures, in part estimated*
*** Renewable share, incl. biogas*

HT-D5 Source: AGEB, BDEW, BWE

Photovoltaics, which is subsidised most heavily per kWh, posted the greatest increase percentage-wise (44%). Despite the high sums in the billions which are paid for the feed-in of this power, its **share in gross power generation is only 4.7%.**

Hard coal market in 2012 at the same level as the previous year – hard coal imports overall dip only slightly

Hard coal consumption overall was able to maintain its good position. According to corrected figures from 2011, primary energy consumption of hard coal increased strongly by 1.7 million TCE from 55.3 million TCE in 2011 to 57.0 million TCE in 2012. Imported coal once again proved its value as a flexible "swing supplier."
Hard coal consumption in million TCE was covered as shown below:

Cover of Hard Coal Consumption in Germany

	2010 Mill. t TCE	2011 Mill. t TCE	2012[2)] Mill. t TCE	2011/2012 Change Mill. TCE
Import Coal	46.4	44.3	45.9	1.6
Domestic Production[1)]	13.2	12.3	11.1	- 1.2
Total	**59.6**	**56.6**	**57.0**	**0.4**

1) incl. inventory reductions 2) provisional

HT-D6

Domestic production adjusted its output once again and again reduced production by 1.2 million TCE from 12.3 million TCE in 2011 to 11.1 million TCE in 2012.
The sale of hard coal in t=t developed as shown here:

Total Hard Coal Sales in Germany

Utilisation	2010 Mill. t	2011 Mill. t	2012[1)] Mill. t
Power Plants	45.8	44.5	43.3
Steel Industry	18.4	16.8	15.8
Heating Market	1.8	1.9	2.2
Total	**66**	**63.2**	**61.3**

1) Provisional figures

HT-D7

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

Imports in 2012 contributed 80% to the high-quality supplies for the German market. Almost the same amount of coke was produced in Germany (8.1 million tonnes) as in the year before (8.0 million tonnes).

Import coal and domestic coal contributed to supplies in the various consumer sectors in 2012 as shown here:

Consumer Groups Import Coal and Domestic Coal in 2012

	Import Coal Mill. t	Domestic Coal Mill. t	Total[1] Mill. t
Power Plants	32.7	10.6	43.3
Steele Mills	14.7	1.1	15.8
Heating Market	1.8	0.4	2.2
Total	**49.2**	**12.1**	**61.3**

[1] *Previsional*

HT-D8

So import coal covers

- 76% of power plant demand;
- 93% of steel mill demand;
- 82% of heating market demand.

Imports break down according to quality as shown here:

Imports According to Quality in Mill. t (t=t)

Products	2010 Mill. t	2011 Mill. t	2012 Mill. t
Steam Coal	31.3	33.6	35.3 [1]
Anthracite	0.5	0.5	---
Coking Coal	9.2	10.0	9.6
Coke	4.1	4.2	3.0
Total	**45.1**	**48.3**	**47.9**

[1] *incl. Anthracite*

HT-D9 Source: German Federal Statistical Office, own calculations

It must be pointed out here that the import figures in 2012 differ from the consumption figures due to inventory movements. This was also the case in the previous years.

The steam coal was dominated by:

- Russia 10.5 million tonnes (about 30%)
- Colombia 9.0 million tonnes (about 25%)
- USA 7.1 million tonnes (about 20%)
- Poland 2.4 million tonnes (about 7%)
- South Africa 2.0 million tonnes (about 6%)

Russia became the largest supplier of steam coal, followed by Colombia and the USA. South Africa and Poland once again supplied lower tonnage volumes. The trend of a decline in South Africa's importance for the German market in particular is accelerating.

The most important suppliers for coking coal:

- Australia 4.1 million tonnes (about 43%)
- USA 2.7 million tonnes (about 28%)
- Canada 1.5 million tonnes (about 16%)
- Russia 0.8 million tonnes (about 8%)

Overall, the supply structure for all qualities is broadly diversified, and imports come primarily from politically stable countries. There were no logistical problems in 2012.

German hard coal imports (inclusive coke) by origin in M t

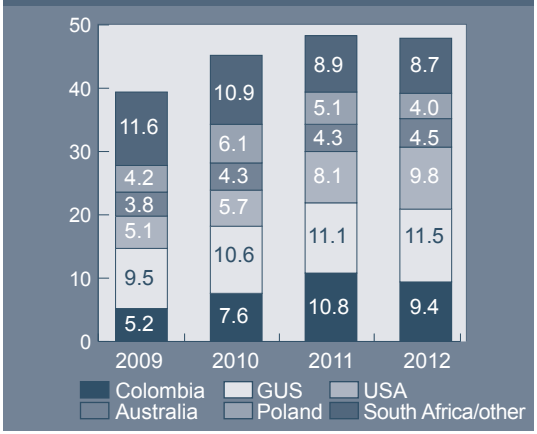

Figure 16 Source: Federal Statistical Office, own evaluations

Just under 48 million tonnes of import coal entered Germany via the following transport routes:

Transport Routes for Import Coal in Germany

Transport Routes	2010 Mill. t	2011 Mill. t	2012[1)] Mill. t
German Ports	14.0	9.7	13.8
Rail	16.0	15.0	9.7
Domestic Ships from ARA Ports	15.0	23.7	24.4
Total	**45.0**	**48.4**	**47.9**

[1)] *Provisional figures*

HT-D10

Energy prices: steam coal pushes aside natural gas for electric power generation

The prices for major fuels in competition with steam coal fell in 2012, but the coal prices fell substantially as well during 2012. Price developments for HFO and natural gas moved in different directions. This is what happened during the year:

Energy Price Development 2012

	01/01/12 €/TCE	01/07/12 €/TCE	31/12/12 €/TCE
Heavy Fuel Oil (HFO)	400	386	345
Natural Gas to Power Plants	270	262	262
Import Coal Price CIF ARA (Spot Market)	99	85	75

HT-D11

HFO followed the trend of crude oil prices and their substantial decline over the course of 2012. The price for natural gas did not follow the oil price this closely and hovered at a high level during the second half of the year. In all of the market situations, import coal enjoyed a great competitive advantage in 2012, which was amplified with respect to natural gas in 2012 because of the even greater decline in coal prices.

Energy Price Development as a Yearly Average

	2010	2011	2012	2011/2012 Change
	€/TCE			%
Heavy Fuel Oil (HFO)	270	355	394	11.0
Natural Gas/Power Plants[1)]	222	256	260	1.6
Cross-Border Price/ Imported Coal	90	112	98	- 12.5

[1)] *Annual mean value BAFA price*

HT-D12

The price advantages of import coal over HFO and natural gas were reinforced on the basis of the above values:

Price Advantages of Import Coal

	2010 €/TCE	2011 €/TCE	2012 €/TCE
Import Coal/HFO	180	243	296
Import Coal/Natural Gas	132	144	162

HT-D13

The German cross-border price ("BAFA" price) follows the spot market development (API#2) with a time lag of about 3 months.

Development of selected energy prices free power station

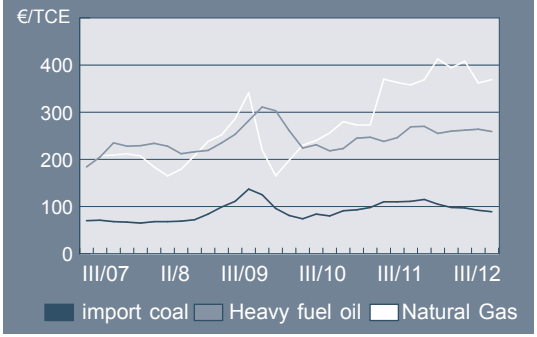

Figure 17 Source: Data from Statistik der Kohlewirtschaft

The so-called contract benchmark prices for "hard coking coal" no longer exercise the influence of the past on the level of coking coal prices. This is why only the cross-border prices for all types of coking coal from other countries are shown here.

Third Countries Cross-Border Price for Coking Coal in €/t[1)]

2008	133.00
2009	174.00
2010	175.00
2011	185.00
2012	188.00

1) Average values for all metallurgical coal types

HT-D14

The German cross-border price comprises not only the hard coking coal price, but the prices for semi-soft coking coal and PCI qualities as well.
Just as is the case for steam coal, the relationship of the euro to the US dollar plays a significant role.
In 2012, the average price of €188/t for coking coal was slightly higher than the level of 2011. But as a consequence of the weak steel business worldwide, the prices once again fell drastically in Q4 2012.

The coke prices developed as shown below:

Coke Price Development (Cross-Border Prices)

	Third-country Imports €/t
2010	260.00
2011	320.00
2012	259.00
Change 2011/2012	**- 61.00**

HT-D15

Coke prices fell strongly because of the slump in the steel economy worldwide. A trend toward lower quantities and prices can be expected for 2013 as well.

Tendencies of coal price development in 2013: pressure on quantities and prices appears to continue

Prices for coal CIF-ARA have been more or less at rock bottom since the beginning of 2012 and have moved in a range of US$86–US$106/t, below the price of the previous year. The market is oversupplied, and activities which would stimulate demand are nowhere to be seen in the world. This tendency continued in the opening months of 2013.

Then there is the US dollar, which is sometimes stronger, sometimes weaker with respect to the euro and correspondingly acts sometimes to hold down prices, but sometimes to drive prices upward in the euro zone.

Based on the spot market prices for steam coal in Q1 2013, the BAFA price will most likely hover around an estimated price level of €80 to €85/TCE over the course of the year.

Coking coal prices will surely remain under pressure in 2013 as well because no stimulus is coming from the steel market. In March 2013, spot prices for hard coking coal were in the vicinity of US$165/t FOB. But they could fall even lower if the steel business, in Asia above all, does not pick up. Spot prices below US$160/t FOB Australia have already been mentioned for Q2 2013.

Steel production fell slightly in 2012

The steel industry posted shrinkage in 2012. Crude steel production dropped by 3.7% from 44.3 million tonnes in 2011 to 42.7 million tonnes and remained below the level of 2010. Pig iron production declined further from 27.9 million tonnes in 2011 to 27.0 million tonnes. Steel production in 2013 will tend to decline because of the problematic state of the worldwide economy, even though this decline will most likely be slighter. The recovery of the demand for steel in the course of 2013 would be a sign of the strengthening of the economy in Germany and the world.

Pig Iron Production

	2010 Mill. t	2011 Mill. t	2012 Mill. t	Difference 2011/2012 %
Crude Steel	43.8	44.3	42.7	-3.7
Pig Iron	28.5	27.9	27	-3.2

HT-D16 Source: Stahl-online

The table below shows the average specific consumption of energy sources in the German steel industry:

Consumption by the Steel Industry

Energy Source	2010	2011	2012
Coke (dry kg per t / pig iron)	365	346	337.5
Blasting coal (kg per t / pig iron)	138	133	146.5
Sintering fuels (kg per t / pig iron)	48	50	48.6
Oil (kg per t / pig iron)	11	14	8.8

HT-D17

The worsened utilisation of blast furnace capacities reduced the specific consumption of coke, but consumption of blasting coal rose.

Pressure on prices for EU emissions rights remains

2012 was the last year of the 2nd period of CO_2 trading which ran from 2008 to the end of 2012. However, the unstoppable decline in prices for CO_2 certificates is interpreted in very different ways.

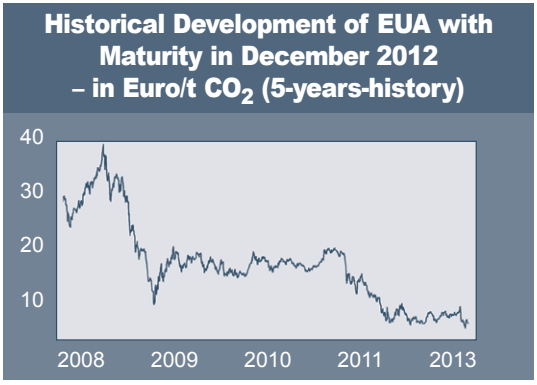

Figure 18 Source: Reuters

The cause of the price decline for CO_2 certificates is to be found above all in the political discussions about the retroactive change in the emissions rights which will be auctioned. Increased consumption by fossil fuel-fired power plants in 2012 did not lead to any compensation. The chart below illustrates price expectations per 04/2013 for the years from 2013 to 2016:

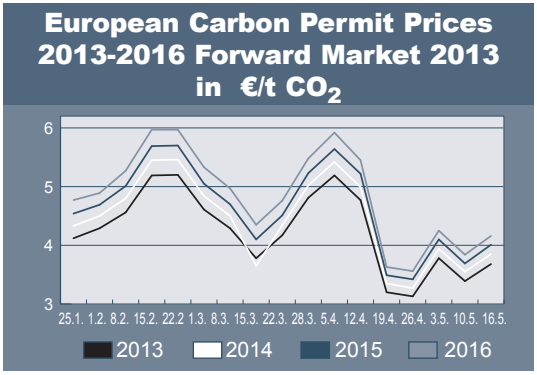

Figure 19 Source: McCloskey, Spectron based

EU Parliament: no correctives for emissions trading

The EU Parliament prevented an initiative by the EU Commission aimed at reversing the strong downward trend for CO_2 certificate prices. A close majority of the European MPs rejected a proposal from the EU Commission to postpone a total of 900 million "pollution rights" out of the upcoming auctions by five to six years. As explained by Commissioner Hedegaard, who is responsible for climate issues, the motivation behind the proposal for the so-called back-loading came from the desire to establish a new balance between supply and demand of the CO_2 certificates, contrary to the directive, so that the continuing decline in prices could be hindered. Immediately after the vote, the prices for CO_2 rights plunged by about 45% to €2.63/t CO_2 before stabilising at around €3/t CO_2. In view of the surplus supply of certificates, experts on the Carbon Solution Team at UniCredit expect that prices may fall even further in the coming months to as low as €1–€2/t CO_2. Following the voting in Parliament, the proposal was for the moment referred back to committee – but many see very little chance that this proposal will ever be adopted. If the model is to remain one driven by market forces, the present legal situation would prohibit any and every intervention on the part of the EU Commission.

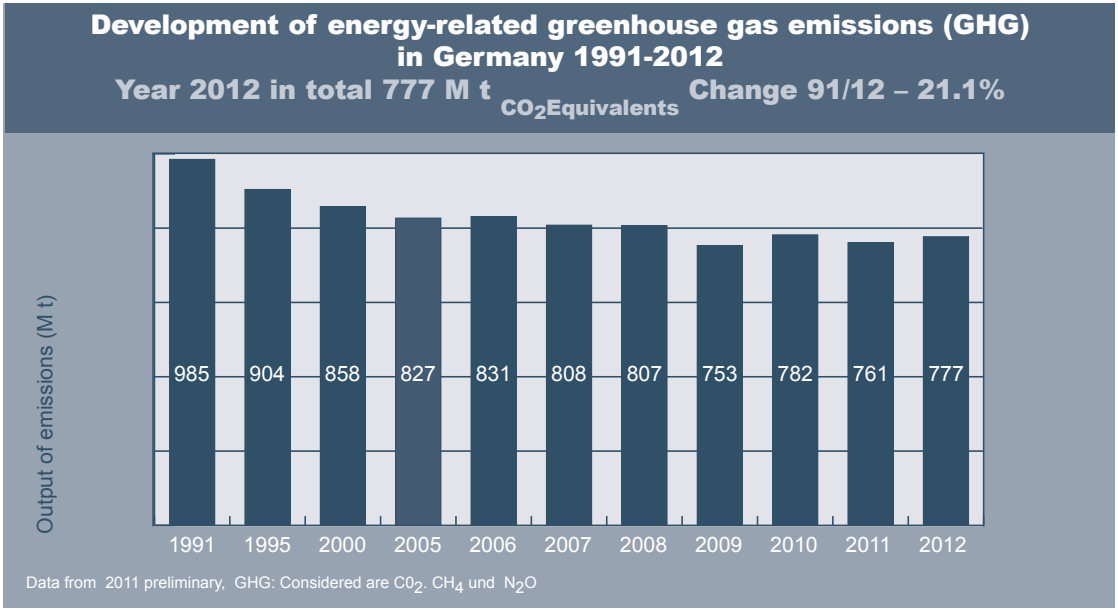

Figure 20 Source: Umweltbundesamt (UBA) from BMWi-Energiedaten, Tab. 10, 6/2012, UBA 2/2013

CO_2 emissions in Germany slightly higher than the 2011 level

According to press releases from the Federal Environmental Agency, the CO_2 emissions from the 1,627 plants in Germany subject to compulsory emissions trading in 2012 was slightly higher than the level of the previous year, coming to 452.4 million tonnes CO_2. In 2011, emissions amounted to 450.3 million tonnes CO_2. In total, however, they are at level of the annual emissions cap of the second trading period at 451.8 million tonnes CO_2.

A substantial factor behind this development was the decline in emissions from the energy-intensive plants by 3% in comparison with 2011. On the other hand, the more intensive use of lignite- and hard coal-fired power plants was responsible for an increase of 4% each.

Summit in Doha closes with minimum results

Greater efforts in climate protection tabled for the moment. Sharp criticism from industry and environmental protectionists.

Environmental protectionists and representatives of industry were united in assessing the results from Doha as extremely meagre. At the end of protracted negotiations, the community of nations decided to extend to 2020 the Kyoto Protocol, which expired at the end of 2012. However, the sole effect was the rescue of the instrument. No requirements for the reduction of greenhouse gases were established. Moreover, extremely vague financial commitments to the countries affected by climate change were adopted as was a working schedule for the world climate convention planned for 2020. The industrialised nations were

obligated to submit more rigorous climate protection targets by 2014.

Besides the 27 EU countries, ten other countries **committed** to Kyoto II; all of them together account for no more than 15% of the world's emissions. Countries with large emission volumes such as Russia, Canada and Japan have already decided that they do not intend to commit to any binding obligations within the Kyoto framework extending beyond 2013. Nevertheless, the extension of the Kyoto Protocol is seen as a glimmer of hope that other countries may possibly be willing – at a later point in time – to join in a world climate convention that includes binding targets for reduction.

Monitoring report "Energy of the Future"

Key results of the report in the eyes of the German government (excerpts):

Energy consumption and energy efficiency

- Despite substantial growth in economic activities, energy consumption in 2011 fell significantly (-4.9%). Gross electricity consumption in 2011 was 1.5% below the value of the previous year and 2.1% less than consumption in 2008.
- However, both of these developments were favoured by comparatively mild temperatures.
- In the period from 2008 to 2011, energy efficiency improved (increase in end energy productivity by an average of 2% per year). If the target set by the German government is to be realised (+2.1% annually to 2020), the current trend will have to be reinforced.

Renewable energies

- Overall, Germany is on schedule with the expansion of renewable energies. The share of renewable energies in the gross end energy consumption rose to more than 12% in 2011.
- In the electricity sector, the expansion of renewable energies is higher than the minimum target rate. In 2011, renewable energies exceeded the mark of 20% of gross electricity consumption for the first time; during the first half of 2012, the share was about one-fourth.
- The subsidisation of electricity from renewable sources as covered by the EEG led to costs which have been passed on to power consumers. In 2011, the EEG power feed-in volume amounted to about 91.2 TWh and the difference costs came to €12.1bn (2010: €9.4bn).
- Cost efficiency along with market and system integration are major challenges which have in part been addressed by modifications to the EEG. In addition, a fundamental reform of the EEG is required to control the expansion of renewable energies.

Supply security

- Germany's supplies of raw materials for energy purposes were not in jeopardy in 2011 any more than in the past.
- Owing to the shut-down of nuclear power plants with a capacity of 8.4 GW and to the rapid expansion of renewable energies, the electric power sector is in a phase of transition.
- Supply security in Germany remained high in 2011, but the grid situation in South Germany is problematic. It has led to new legal provisions for the securing of power plant reserve capacities in the latest

amendments to the German Energy Economic Act (EnWG). Moreover, the German national and state governments want to prepare a coordinated proposal for a public policy framework which will ensure a free market solution to secure adequate reserve capacities in the middle and long term.

- The expansion of ultra-high voltage grids is urgently required so that a changeover to renewable energies is possible while simultaneously the high level of supply security can be guaranteed.
- Overall, the German power supply is one of the most secure in Europe.
- In recent years, Germany has produced an export surplus in terms of quantities in electric power trade.

Greenhouse gases

- As of 2011, a total reduction in greenhouse gas emissions of 26.4% in comparison with 1990 had been achieved.
- Greenhouse gas emissions from energy production make up 80% of the total and are far and away the most significant source. Other sources are industrial processes, agriculture and waste disposal.

Energy price and costs

- In 2011 – as in the years before – consumer prices for energy and the energy costs for households and companies rose, in some cases by substantial amounts. The share of energy costs in the total economic value creation also increased. Even though the burden of energy costs has reached its acceptable limits for certain consumer groups, the competitiveness and affordability of the energy supply remained assured in general.
- The German government is monitoring the development of energy prices and will continue to take any necessary steps to ensure that they remain affordable for both consumers and companies in the future.
- In 2011, the EEG surcharge contributed to price increases for end consumers. However, the high power production from renewable sources led in part to a drop in wholesale prices on the electricity exchange. The German and state governments are working together on a fundamental reform of the EEG so that the impact of the continued expansion of renewable energies on electricity prices can be limited.
- A comprehensive evaluation of the overall economic effects of the energy turnaround is not yet possible because of the short period of implementation.

Position statement from the Expert Commission on the first monitoring report “Energy of the Future”

The German government’s monitoring process provides that an independent Expert Commission comprising four energy specialists support the responsible government agencies in the preparation of the monitoring report. Moreover, the Expert Commission is supposed to assess the monitoring report and comment on it in its own position statement. The Commission conducted these tasks parallel to the monitoring report and described a series of fundamental points for criticism:

- The Expert Commission sees a lack of **coordination between German and European energy and climate policies** in the energy turnaround although this project is embedded in the framework of European energy law and there are major interdependencies in the energy sector.
- The Commission is of the opinion that inconsistencies and conflicts among the specific targets within the complex bundles of objectives in the energy turnaround must be avoided. The experts propose

establishing a **"target hierarchy"** for this purpose. In concrete terms, the German energy policies of the coming years should be limited to two "superior targets" with a clear time horizon and should treat the other targets as "subordinate targets" or action-related implementation targets which can be flexibly modified if and when they cannot be realised or can be realised only if unreasonably high economic, social or ecological burdens are accepted.

The Expert Commission proposes these two superior targets:

1. The reduction of greenhouse gas emissions in Germany by 40% by 2020
2. The scheduled shut-down of all nuclear power plants by 2022 as resolved

The determination of what energy mix featuring what share of renewable energies would result from pursuing these objectives would consequently be treated as subordinate and consideration of various paths to achievement of these goals must remain possible.

In expressing this criticism, the Expert Commission opposes the political fixation on short- and middle-term quantitative targets as currently practised for expansion of electric power generation from renewable sources. On the other hand, the Expert Commission also calls for consideration of the consequences of possible failure to achieve these targets and to review potential for compensation. In the view of the Expert Commission, the analysis leads to the key conclusion that the "reduction of energy requirements in the heating sector" will play "an especially critical role" for the success of the energy turnaround.

- With respect to the political targets for expansion of renewable energies, the Commission sees the global target of a share in renewable energies of 18% in gross end energy consumption in 2020 as achievable – although ambitious. While the expansion of renewable energies in electric power generation is progressing faster than scheduled, the Expert Commission believes that the achievement of the objectives by 2020, especially in the heating and transport sectors, will be difficult.
- In addition, the Expert Commission expresses its surprise that several sections of the monitoring report **address questions of supply security, but that the position of the German government lacks transparency and that indicators are missing.** The Commission proposes that the "scope of secure capacity in relation to the annual peak load" be used "as an indicator" for power supply security. This shows that the "currently planned capacities fall well short", which is why "the supply security in the power industry" is regarded as "critical", in no small part a consequence of the delays in grid expansion.
- The Expert Commission considers the indicator system described in the first monitoring report to be in need of improvement. The experts recommend concentrating on a more compact list of "leading indicators" which should also be easily reproducible.

Criticism of the realisation of the energy turnaround continues

The Expert Commission is not alone; other leading economic experts from reputable organisations, institutions and associations have expressed criticism in the realisation of the energy turnaround.

- The chairperson of the German Council of Economic Experts for the Assessment of Overall Economic

Development reproaches the German government for a lack of action.

- The president of the Rheinisch-Westfälisches Institut für Wirtschaftsforschung (RWI) in Essen sees a blatant imbalance between the rapidly advancing expansion of renewable energies and the virtual standstill in the expansion of the infrastructure, especially the domestic power grids. He advocates reducing the pace of expansion in renewable energies and adjusting it to match the speed of infrastructure expansion. In addition, he warns of negative consequences for German companies due to high energy prices.
- The director of the Hamburg Institute of International Economics (HWWI) is unable to discern a concept for the prevention of rising costs, in particular a cost-efficient subsidy system for renewable energies.
- In the eyes of the president of the Centre for European Economic Research (ZEW), there will be three major areas requiring careful attention in the coming years: grid expansion and conversion, additional construction of power plant capacities and minimisation of the costs for the subsidisation of renewable energies. These tasks must be meshed into a general concept in which the sequence of reform steps and subsidisation measures is coordinated. But as of this time, no such concept can be recognised.
- The BDI (Federation of German Industry) has also set a course of confrontation on the issue of energy turnaround. During the energy turnaround congress, the Federation president, who left office at the end of the year, pointed out that the possible relocation of companies to other countries and the subsequent loss of jobs in Germany were not the sole issues under consideration. He also noted the threat of the collapse of the value creation chain in Germany, which is unique internationally, if the political establishment did not succeed in gaining control of the exploding costs of the conversion. In his view, the economic effectiveness of the energy turnaround is even now in acute jeopardy. Expensive, risky and not well thought out – that is how the BDI sees the project.
- For the first time in its history, the Initiativkreis Ruhr, an association of the about 70 largest companies in the Ruhr Valley (including E.ON, RWE, ThyssenKrupp, Evonik, Hochtief, Imperial Logistics International and RAG), issued a position paper on the energy turnaround containing a critical examination of the energy policies (http://www.i-r.de/wp-content/uploads/EnergiepolitischesPapier.pdf). The member companies of the Initiativkreis do not reject the energy turnaround out of hand, but they are concerned about the manner in which it is being realised. They call for framework conditions of the energy turnaround which can be planned and controlled and which must not worsen the competitiveness of the country's industry and energy sector. Internationally competitive energy prices and supply security remain the most important factors for North Rhine-Westphalia's position in the competition among locations for industries with high energy consumption. The companies urgently demand that the political establishment coordinate both the control elements and the grid expansion with the European Union. Solo efforts by single regions would be detrimental to the success of the energy turnaround. Energy policy must be understood and shaped within a European context.

Hard coal indispensable for the energy turnaround – but a new design of the electricity market long overdue

In 2012, Prognos AG conducted a study on the importance of thermal power plants for energy supply at the request of the German Coal Importers Association. The study results reveal that these plants will remain an indispensable component of Germany's power supply even in the age of the energy turnaround. Although ever larger quantities of power are being generated in plants based on renewable energies (primarily wind and photovoltaics), the dependable availability at all times of thermal power plants using fossil fuels will **continue to be the foundation of power supply security in 2050 as well. However, thermal power plants require a new designed electricity market because the current market structure and the subsidisation of renewable energies pursuant to the EEG and feed-in priority without any consideration of the actual need** create **an unfair competitive situation** for thermal power plants which prevents their evolvement in response to market forces.

The key results of the study:

- Thermal power plants will be indispensable for securing reliable supplies in Germany in the long term as well as now.
- Taking into account renewable energy, load management, international grid expansion and the expansion of domestic storage facilities, a minimum of 59 GW (2020), 52 GW (2030) and 46 GW (2050) in secured power plant capacity which can be regulated will be required to secure the necessary supply. Even in the long term, this will essentially have to be guaranteed by conventional thermal power plants.
- The provision of power plant capacity can be obtained by the construction of new capacities or by retrofitting (modernisation) of existing plants. In comparison of the examined scenarios, an electricity market structure which makes measures for extending the lifetime of existing power plants economically profitable leads to economic advantages over a power supply system oriented more strongly in the direction of new construction of thermal power plants.
  The full costs of the conventional power generation system using existing power plants would be lower by more than €4 billion by 2020, by about €11 billion by 2030 and by as much as €24 billion than in a scenario based on new construction, above all of gas turbines. The impact on the middle- to long-term climate protection efforts is comparatively low. The climate goals can also be achieved in the long term by the use of a system based on the retrofitting of existing plants.
- The financing of the retrofitting can be obtained by allowing price peaks or, alternatively, from a capacity mechanisms which is open and non-discriminatory with respect to old plants. However, the possible financing by means of price peaks presumes that there is significant flexibility in demand on the market. If this flexibility is not available to an adequate degree, mechanisms must be found which will enable marginal power plants to finance their fixed costs.
- The introduction of a strategic reserve utilising market-based mechanisms as much as possible can be seen as a short-term solution providing a kind of insurance for power outages as long as there is uncertainty about the activation of the demand flexibility. But it is not a permanent, sustainable solution to the problem.
- In the short and middle term, the current electricity market prices mean there is a threat of shut-downs of existing power plants which will presumably still be needed in the long term, putting the security of power supply in Germany in significant jeopardy.

Significance of thermal power plants for tomorrow's energy supply

About 90% of the installed output from thermal power plants is available. But because of the feed-in priority for renewable energies, the share of power generated by thermal plants is declining steadily as renewable energies grow because they cover only the remaining power demand. In recent years, there has been a substantial change in the share of power fed into the grid by the various sources. The share of nuclear energy in gross power generation has fallen from over 29% in 2000 to 16% in 2012; moreover, the premature shut-down of nuclear power plants by 2022 which has been decided must also be kept in mind here. Generation from lignite-fired power plants remained virtually constant or rose slightly during this period, while generation from hard coal declined by about 17%. Generation from renewable energies, in contrast, rose by 350% in the same period and now hold a share of 22%.

As of this time, only thermal power plants can assure a secure supply

The German government has not set down any quantified definitions regarding the energy policy goals of "maintenance of supply security" and "affordability of energy supply". These goals will require power plant facilities ready for operation which can produce the power needed to meet demand at any given time and system operation which can guarantee the balance between power feed-in and feed-out at all times.

If the system operation which can maintain the related fluctuations in frequency and voltage at a qualitatively acceptable level besides the balance in the power grid with respect to feed-in and feed-out is to function continuously, 15 to 20 GW in conventional output is required. During the desired conversion of power supply to renewable energies, there must be security in the future that all of the system services will be performed by conventional power plants whenever renewable technologies are unable to do so. One of the greatest challenges is adapting the market for system services to the new situation.

Electricity market development

The challenges facing the power system described above must be solved sooner or later within the scope of the energy turnaround, depending on the scenario for the continued expansion of fluctuating renewable energies – from the standpoint of today's technology, a task which can in principle be solved, but one which makes changes in the tailoring of the electricity market and price incentives for the continued operation of conventional power plants essential. The multitude of challenges and their interaction also involve substantial risks in all of the efforts for realisation (especially grid expansion and the construction of offshore plants) which are far too often given too little attention.

In the future, still greater parts of the electricity market will be subject to intervention from outside. This is why major efforts must be made to preserve sufficient competitive elements in power supply which will permit differentiation of the structures and actors. A special concern is power generation from renewable sources which must be fully integrated into the market; in other words, renewable energies will receive compensation only if and when power is demanded by the market, and this compensation must also be in alignment with market conditions and must under no conditions include fixed compensation over a period of decades. The challenge will be the development of a market in which generation technologies of all types can participate in equal and non-discriminatory competition so that in the long term the most efficient and most effective form of power supply is assured.

The electricity market at this time comprises two segments: the energy-only market and the market for balancing power. Traditionally, more than 90% of the revenues for power plant operators are realised on the energy-only market. Electricity is traded on exchanges and in bilateral transactions related to exchange prices on the basis of performance deadlines. Power plant operators and buyers submit anonymous bids, the exchange aligns demand and supply and sets the market clearing price (equilibrium price), leading to the creation of a so-called merit order of power generation. The last power plant on the market required to cover demand sets the price with its short-term marginal costs. All of the power plants previously utilised realise a contribution margin.

Because of the marketing of generation from renewable energies, which has marginal costs of zero and is compensated separately pursuant to the EEG, the rising power generation using renewable sources causes a shift in the supply curve on the energy-only market (merit order effect) and the prices for power fall. The contribution margins of thermal power plants also decline, endangering their refinancing.

The corporate consultancy A. T. Kearney foresees a crucial decision for the energy sector within the next five years. The consultants examined about 50 energy companies in Europe in a study which showed that decisive performance indicators had worsened substantially. Between 2007 and 2011, the total profit of the industry of European energy utilities declined by more than 30%. According to the consulting company, the corresponding stock index EuroStoxx Utilities fell precipitously by 60% during the same period. At the same time, incentives for investments in energy generation and the grid infrastructure declined. The consultants see the losses in power generation as a frequent cause. Profits fell by up to 80% in this segment, according to A. T. Kearney.

One possible solution to this problem could be a flexible demand for power which determines prices and consequently makes higher prices for electricity possible. Whether this type of system can assure the security of power supply is a question which cannot be answered from today's perspective.

Alternatives would be mechanisms which would provide incentives for investments in existing and new generation capacities and for flexibility in demand. Instruments such as capacity mechanisms and markets would be suitable for this purpose.

Future framework conditions – expansion of renewable energies and the need for thermal power plants

This was the background to the Prognos study examining the long-term need for thermal power plants. For this purpose, an output balance for electricity was prepared, assumptions regarding the development of renewable energies, the demand for electricity and the annual peak load were defined and potential for storage capacity, load management and interconnectors was assumed.

The assumptions regarding the development of renewable energies are based on the current Lead Scenario of the German Aerospace Center (DLR). It indicates that the share of renewable energies will grow to 2050 as shown below.

Expansionary path of renewable energies in Germany until year 2050

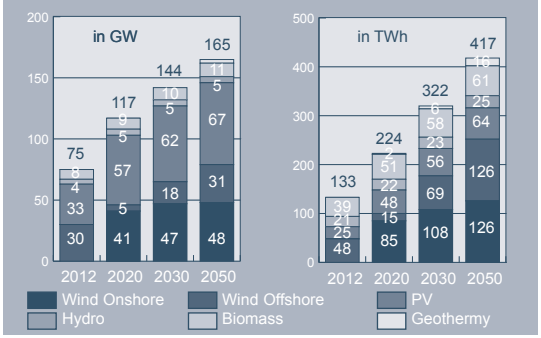

Figure 21 Source: DLR 2001, Scenario A

Owing to the feed-in from these energy sources (especially wind and solar), most of it fluctuating, the secure feed-in of electricity must be estimated as significantly lower than in the case of thermal power plants; for the output balance, the following secure output was assumed as a share in installed output (aligned with the estimates of dena (German Energy Agency): hydroelectric power, 40%; wind (on- and offshore), 5%; photovoltaics (only with future use of battery storage), barely 1%; biomass, 88%; geothermal energy, 90%.
Based on these assumptions, the development of secure output from renewable energies to 2050 is shown in Table 2 below:

Development of Secured Capacity from Renewable Energies

	2012	2020	2030	2050
Secured capacity / GW	11	13	16	20

HT-D18:Source: Prognos AG 2012

The key values for the assumptions regarding development of electricity needs are taken from the reference scenario of the German government in 2010. They show a decline in electricity demand up to 2020 of about 10% in comparison with current levels, then remain more or less constant until 2050.

Development of Gross Electricity Consumption in Germany

	2008	2020	2030	2040	2050
Electricity Demand in TWh	614	569	556	562	555

HT-D19 Source: Prognos / EWI / GWS / 2010; Reference scenario

The annual peak load in the ultra-high-voltage grid in Germany in 2010 was 79,884 MW (ENTSO-E). The actual peak demand came to about 83,000 MW because of the power flows in the lower grid levels and other reasons. Taking further into consideration the electricity export balance, the Prognos study shows the following development in gross power consumption in the coming years:

Gross Electricity Consumption and Annual Peak load of Electricity Consumption in Germany	2012	2020	2030	2050
Gross Electricity Consumption [TWh]	600	569	556	555
Annual Peak load [GW]	83	79	77	77
Annual Peak load + 10% Safety Margin [GW]	91	87	85	85

HT-D20 Source: ENTSO-E, Prognos AG 2012

Storage facilities, load management and interconnectors also have an effect on the load in the power grid. Taken together, all of the future potential sources could contribute about 10–15 GW to load coverage up to 2050.

This means that there will still be an enormous need for thermal power plants in 2050 because the gap between secure power supply and power demand without these plants is very large. The table HT-D21 shows the declining need for output from thermal power plants (at a high level) from 72 GW in 2010 to about 50 GW in 2050.

Demand and Supply of Secured Generation Capacity until 2050	2010	2020	2030	2050
[GW]				
Annual Peak load	83	79	77	77
Annual Peak load + 10% Safety Margin	91	87	85	85
Secured Capacity from Renewable Energies	11	13	16	20
Secured Capacity from Interconnectors Abroad	2	3	4	5
Secured Capacity from Storages in Germany	4	5	5	6
Load Management	2	3-7	3-8	3-8
Necessary Secured Capacity from Thermal Power Stations	**72**	**59-63**	**52-57**	**46-51**

HT-D21 Source: ENTSO-E, Prognos AG 2012

Looking statically at today's power plant inventory, for which a fixed power plant useful life (40 to 45 years) and the shut-down resolution is assumed, there will be a shortage of generation capacity in Germany from 2020 on; this shortage could occur even earlier because of a lack of profitability and the earlier decommissioning of certain power plants.

This could be countered by the preservation of existing power plants or the construction of new power plants. But since the construction of new power plants under the current market conditions cannot be viewed as profitable in most cases and the output from new power plants will not be available for years because of the long lead-in times, existing power plants or measures to extend the useful lifetime of these power plants are becoming more and more important.

In this static view, there will still be a need for secure output of at least 46 GW, even in 2050, which will have to be covered by new power plants, updated existing plants, interconnectors or load management. As early as 2020, there will be a shortage of 8 GW, and the capacity gap will grow to 27 GW by 2030. If power plants are shut down prematurely before the end of their technical lifetime, this gap will be even greater.

New construction or retrofit?

The study results show the roads to power plant inventories 2050 via various market shares of the different thermal power plant types over the years, whereby the deviations in the target year are only slight, as can be seen in the figure below:

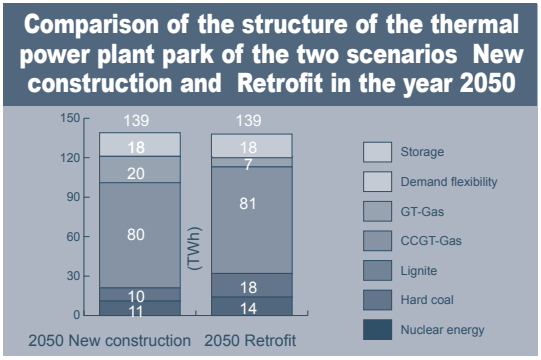

Figure 22 Source: Prognos AG 2012

The full costs for conventional power generation and security of output in the study include the capital costs for the power plants, the fuel costs, the variable and fixed operating costs and the costs incurred for the purchase of CO_2 certificates. In the retrofit scenario, these calculated costs for the period 2012 to 2050 are lower than the full costs in the new construction scenario, a mean of about €600 million annually. Over the entire period to 2050, the full costs in the retrofit scenario are about €24 billion below the costs in the new construction scenario. The difference to the year 2020 is about €4 billion and to the year 2030 about €11 billion.

The greatest difference between the costs of the two scenarios comes from the lower capital costs incurred by upgrading the existing plants in comparison with the construction of new plants. Because of the higher CO_2 emissions from the existing power plants, more CO_2 certificates must be purchased in the retrofit scenario than in the new construction scenario.

Over the period from 2012 to 2050, the CO_2 emissions in the retrofit scenario will annually be on average about 6.5 million tonnes higher than in the new construction scenario. In total, the emissions up to 2050 will be about 250 million tonnes greater than the emissions in the new construction scenario.

The costs for renewable energies are going up and up and up

EEG surcharge rises by almost 50% to 5.277 eurocents per kWh in 2013

According to data from network operators, electricity consumers must brace themselves for additional increases in the prices for electricity and will feel the costs of the energy turnaround even more clearly. The EEG surcharge in 2012 was 3.592 eurocents.

The absolute amounts of the subsidies reveal the full scope of this loss-generating “business model”. Total compensation pursuant to the EEG in 2011 amounted to €16.76bn. Taking into account avoided costs and, in particular, the marketing revenues via the EEX, the EEG surcharges came to €13.4bn.

In 2012, the network operators had to pay €20bn in compensation for the EEG electricity to the operators of renewable energy plants, corresponding to about €250 per capita annually in Germany. The operators received only about €2bn for sales on the exchange. So the marketing of the green power generated a deficit of about €18bn, which was passed on to electricity customers, including industry, commerce and trades. Marketing on the EEX led to declining wholesale prices for electricity, which benefited above all industry and commerce in neighbouring countries because they imported the cheap power. The distortion of competitive conditions and the misdirection of the economy are self-evident. The major cause for the increase is the rising difference in the forecast values for 2013 from the EEG compensation payments to be paid by the network operators, especially the compensation for solar power which remains extremely high, and the revenues from marketing on the exchange. It is also remarkable that, according to a publication from the BMU (Federal Ministry of the Environment)

entitled “Renewable Energies in Figures – National and International Development” (https://secure.bmu.de/fileadmin/bmu-import/files/pdfs/allgemein/application/pdf/broschuere_ee_zahlen_bf.pdf), the average compensation for power from renewable sources has risen from 8.5 eurocents/kWh in 2000, the first year of the EEG (after the preceding 9 years of the Electricity Feed-in Act), to 17.94 eurocents/kWh in 2011, an increase of more than 100%. No effects on learning, innovation and scaling can be discerned here.

According to a calculation from the four German power grid operators, the EEG surcharge could continue to rise in 2014 to a level of 5.74 eurocents/kWh.

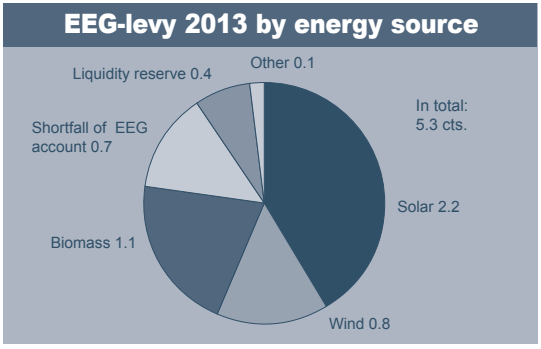

Figure 23 Source: Deutsche Übertragungsnetzbetreiber

Criticism of the exploding costs of the energy turnaround and the need for reform of the EEG impossible to ignore

Midsize business in the chemical industry sees a growing threat to small and midsize companies from the financial burden arising from the energy turnaround. According to data from the Cologne Institute for Economic Research (IW), an increase in the electricity price by 2 eurocents/kWh would lead to greater expenditures of about €3.9bn a year for the manufacturing sector. The chemical industry would be most severely affected with additional expenses of about €740m.

The BDEW (German Association of Energy and Water Industries) sees higher network fees for the general population. As much as €27 billion would have to be invested solely for the expansion of the distribution grid by 2020.

A dena distribution grid study shows that about €27.5 billion to €42.4 billion must be invested in the power distribution grid by 2030.

The Institute of Energy Economics (EWI) of the University of Cologne calculates total costs of €556 billion for electricity supply for the period from 2013 to 2022, according to a report in the Handelsblatt. Of this amount, €102 billion would go to the green power plants built by 2012 alone.

In a letter addressed to German Chancellor Merkel, the German Federation of the Chemical Industry (VCI), the Industry Trade Union Mining, Chemistry, Energy (IG BCE) and the German Employers Association Chemistry (BAVC) appealed for cost efficiency and social justice in the energy turnaround. In a joint statement, the chemistry organisations emphasised the great importance of energy for the German economy, especially for the chemical industry: along the road to raise the supply of power from renewable sources, private consumers and industry must not be overburdened.

The Consumers Office, the Renters Association and the Handwerkstag in North Rhine-Westphalia have also spoken up and fear a price explosion for electricity as a consequence of the energy turnaround. In an open letter, they warned that the country may be headed “possibly for a household electricity price of 40 eurocents per kWh” by 2020.

The subsidisation of renewable energies has also in the meantime become a point of dispute between the German states because of Bavaria's suit against the German State Fiscal Equalisation Scheme. The payment flows for subsidisation of renewable energies being handled among the German states have in the meantime exceeded the amounts for the state fiscal equalisation. Households in North Rhine-Westphalia, for example, pay for the masses of solar panels on Bavarian roofs through the EEG surcharge. In the state fiscal equalisation, Bavaria is the largest creditor state, North Rhine-Westphalia a recipient state.

According to information from the BDEW, electricity consumers in NRW "paid up" €2.25 billion in 2012. The value has doubled since 2010. The Bavarian consumers, on the other hand, have received €1.1 billion more in EEG compensation than they paid in to the EEG system.

Could the energy turnaround cost a trillion euros?

Peter Altmaier, German Federal Minister of the Environment, referred to the uncontrolled expenditures for green power in an interview with the FAZ (Frankfurter Allgemeine Zeitung) at the beginning of 2013. In his opinion, this could ultimately result in total expenditures of about €1 trillion for the energy turnaround and the transformation of the energy supply by the end of the 2030s. If there are no curtailments, the feed-in compensation payments and payment commitments will reach the unthinkable figure of €680 billion by 2022. More than €300 billion of this amount has already been paid out or promised to investors for power feed-in from renewable energy sources. Additional costs estimated at €300 billion will accrue for grid expansion, securing reserve capacities, research and development and on to electro-mobility and the installation of energy conservation features in buildings.

There are plenty of proposals for reform; the courage to implement them is missing

Political establishment at loggerheads on EEG reform

Although "whether" there is a necessity for reform of the power market design, especially of the EEG, is undisputed among politicians, economists and academics, the "how" and "when" are the subject of controversial discussions within the coalition as well as among all of the parties at a national and state level as well as among theorists.

There are currently four proposals for EEG reforms:

1. Putting the brakes on electricity prices (Environmental Minister Altmaier (CDU):

- The first step should be the legal determination of the amount of the EEG surcharge for the subsidisation of renewable energies.
- In 2013 and 2014, it will be frozen at the current level of 5.28 eurocents/kWh; thereafter it should not increase by more than 2.5% annually.
- Investors must expect that the payment of the feed-in compensation will be suspended for a certain number of months from the operational start-up of their plants.

2. Proposal from German Federal Economics Minister Rösler (FDP):

- Compensation will no longer be paid for green power if it cannot be transported to customers because of a grid overload (at this time, 95% of the compensation is paid as damages).
- All new EEG plants – with the exception of mini-plants – must market directly all of the power they generate.

That is currently the case only for biogas plants with a capacity in excess of 750 kWh.

- In addition, new plants must market a share of at least 20% without subsidisation.
- The initial compensation for onshore wind farms of just under nine eurocents per kilowatt hour represents an "increasingly serious excessive subsidisation" in the opinion of Rösler. As a minimum, the flexibility resulting from the decline in investment costs for the plants must be used to reduce the compensation.

3. Proposal from the Greens:

- The special compensation regulation for industries with high power consumption should again be raised to 10 instead of 1 gigawatt hour and be granted only to companies engaging in international competition.
- Increase of the minimum contribution by the industry to the EEG as compensation for price reductions for power on the exchange.
- In the future, an EEG surcharge must also be paid on consumption of own-generated power.
- Reduction of the compensation for onshore wind farms located in windy locations.
- Elimination of the market premium for direct marketing and evolvement of the green power privilege, i.e. the partial or complete exemption of the utility companies from payment of the EEG surcharge.
- Increase liquidity reserves as buffer for the EEG account at a slower rate than planned.

4. Proposal introduced in the Bundesrat by Saxony:

- As of 2014, the subsidy system for renewable energies will be changed to a quota model.
- Utility companies, companies with high power consumption and end consumers will be obligated to procure a proportion of power from renewable sources which increases annually.
- The procurement of the green power must be verified in the form of green power certificates.
- Green power certificates can be traded on- or off-market.

The common element in most of the proposals is that they attempt to rescue the system of EEG subsidisation with fixed compensation over a long period of time or merely to repair it. Only the quota model is a fundamental alternative to the feed-in rate which is worthy of applause. If this model is structured to be open to technology, i.e. including hard coal-fired power plants, it has the advantage that as a principle only the least expensive technologies will be subsidised. As the Handelsblatt reported, the Hamburg Arrhenius Institute for Energy and Climate Policy believes that cost efficiency should play a greater role. Sven Bode, the director of the Research Institute, and Felix Matthes, Director of the Öko-Institut, regard a radical about-face as necessary: risks must be redistributed, costs must be reduced. The system of fixed feed-in compensation is no longer sustainable for the future, stated the Handelsblatt.

Energy turnaround mood falls to a new low

The German Energy Turnaround Index has fallen to the lowest mark in the history of its records. During Q1 2013, the index, which is calculated by the corporate consultancy Ernst & Young and the German Energy Agency (dena), fell by more than seven points to a negative value of 95.8 points. The index has been tracked since Q2 2012 and is based on a scale from 0 (very negative) to 200 (very positive). According to dena, the regulatory and legal framework conditions for the realisation of the energy turnaround are weak points. Moreover, the survey results indicate that scepticism about the achievement of the key targets of the energy turnaround is dominant.

COUNTRY REPORTS

AUSTRALIA

Production

Australia's share in global GDP, adjusted for buying power, has been over 1% for many years and is an important indicator for the economic power of a country. This share of global GDP has been estimated at 1.16% for 2012 and Australia's economic growth in 2013 is expected to be 3% (2011: 3.1%). The primary reason for this positive economic development is in the demand for raw materials, above all coal, iron ore and industrial metals. However, the boom appears to be over, and further political decisions significantly affected coal mining in 2012.

Thanks to its raw materials for energy, Australia is the ninth-largest producer of raw materials and the source of 2.4% of the world's energy production and 6% of the world's hard coal output. According to a report from the Bureau of Resources and Energy Economics (BREE), Australia holds 34% of the world's uranium resources, 14% of the world's hard coal and 2% of the world's natural gas.

New South Wales (NSW) and Queensland (QLD) are the source of 97% of the hard coal. Most of the coking coal comes from QLD, while steam coal comes primarily from NSW. The major part of production comes from opencast pits. BREE estimates that there will be an increase in coal production to 408 million tonnes (+42 million tonnes) in 2013.

An increase in production in Australia's export provinces became possible once again in 2012 because there were no unusual weather conditions which would temporarily shut down operations. Output rose by 22 million tonnes from 336 million tonnes to 358 million tonnes.

Smaller quantities of hard coal were mined in West Australia (4 million tonnes), South Australia (4 million tonnes) and Tasmania (0.6 million tonnes) in addition to the output from Queensland and New South Wales, but this production was consumed exclusively on the domestic market. Hard coal production totalled about 366 million tonnes, thereof 219 million tonnes steam coal and 147 million tonnes coking coal.

Between 60 and 70 million tonnes of lignite were mined in Victoria in addition to the hard coal.

Usable Production of the Major Production States of Australia

	2010 Mill. t	2011 Mill. t	2012 Mio.t
New South Wales (NSW)	149	157	176
Queensland (QL)	195	179	182
Total NSW/QL	**344**	**336**	**358**
Western Australia / Tasmania	11	10	8
Total	**355**	**346**	**366**

LB-T1

Chinese and Indian companies are bidding to obtain holdings in Australian mines and projects or mining companies or even to acquire them, or they are seeking to secure their supplies of coal by concluding long-term contracts.

Australia is making great efforts to improve the coal processing chain, in particular in mining, firing and optimised exploitation of the potential of deposits. However, competitiveness was substantially weakened in 2012 as a consequence of a number of occurrences. We must wait and see what long-term effects this will have in the future. A number of small companies have had to discontinue operation or have been taken over by larger companies, including Riversdale, Centennial, Felix or Macarther Coal. On the side of cost burdens, the first factor is the

significant gain in strength of the Australian dollar in comparison with the US dollar. But investment costs have also risen sharply so that some of the expansion plans and projects have been postponed, drawn out over a longer period of time or simply cancelled. Mining companies have also been burdened by the tax on profits of highly profitable coal and iron ore companies – the so-called Minerals Resource Rent Tax (MRRT) – which went into effect per 01/07/2012. This mining tax is one of the most hotly disputed political actions taken by the governing Labor Party. A tax of 22.5% (30%, less 7.5% discount in recognition of the engagement of specialists for coal and ore mining) is levied on profits earned by mining companies producing coal and iron ore which exceed the limit of AUS$75 million. However, new investments can be claimed immediately in full as a tax deduction in lieu of a pro rata temporis write-off.

The CO_2 tax in the amount of AUS$23 (about €17) per tonne CO_2, which went into effect per 01/07/2012, is also of major significance. This tax is to be replaced by an emissions trading system, including fixed upper limits for emissions and prices determined by market forces, as of the middle of 2015. Revenues for the government in the amount of AUS$20 billion are expected from these taxes between 2012 and 2020, of which, according to the Australian Coal Federation, AUS$18 billion is supposed to come from the Australian coal industry. This could cost as many as 4,000 jobs over the next three years and force 18 mines to shut down operations. Yet another cost burden is facing mining companies in Queensland. The Queensland government has increased the mining levy (royalties) by 25% for coal which realises earnings from sales of over AUS$100/t and 50% for coal which realises earnings from sales of over AUS$150/t. In the view of large mining companies, this will lead to further losses of jobs, reduction of investment expenditures and the curtailment of exploratory drilling.

The levy is significant and applies to sales or consumption of coal after 01/10/2012 as shown below:

- Coal price up to AU$100t = 7%;
- Coal price between AUS$100t and AUS$150/t = 7% on the first AUS$100/t, 12.5% on the additional AUS$50/t; and
- Coal price over AUS$150/t = 7% on the first AUS$100/t, 12.5% on the next AUS$50/t and 15% on any amount above this threshold.

Goldman Sachs estimates that the production costs will increase by an average of US$2/t. About one-fourth of Australian mining is done in underground operations, three-fourths in opencast pits. The project list for steam coal as well as for coking coal is long in an international comparison. However, the political decisions increasing the cost burden, the rise in investment costs and the fact that the times of the highest market prices are apparently past, at least for the moment, have led to a review, if not the cancellation of some of the projects. One study reports that the average production costs for new mining capacity of 1 tonne of hard coal in Australia in 2007 corresponded approximately to the costs in the other coal-producing countries in the world. But these costs rose to US$176/t in Australia in 2011/2012 in comparison with only US$106/t for the rest of the world.

In its publication about “Resources and Energy Major Projects” from October 2012, BREE identified the following projects in the coal sector:

- 14 projects in the stage after investigation or for which the feasibility study has not been completed and featuring an indicative cost range between AUS$12.2 billion and AUS$15.9 billion;

- 63 projects in the stage after the feasibility study for which further development has been publicly announced and for which the maximum investment costs will amount to AUS$75.5 billion;
- 17 projects with an investment volume of AUS$14.4 billion which are in the stage of construction or construction preparation.

Seven of the projects in the last group are located in New South Wales, 10 of them in Queensland. The following projects were completed during the reporting period in NSW and QLD, increasing output capacities by 20 million tonnes per year and at a total cost of almost AUS$1.7 billion.

Resources and Energy Major Projects 2012

Project	Company	Capacity per Year in Mill. t (Hard Coal = HC, Coking Coal = CC)	Costs in Mill. A$ 1)
Bengalla-Extension (Phase 1)	Wesfarmers/Rio Tinto	1.5 (HC)	141
Burton	Peabody Energy	2.5 (CC)	300
Curragh Mine	Wesfarmers	1.5 (CC)	286
Hunter Valley	Rio Tinto/Mitsubishi	6.0 (HC + CC)	255
Mount Arther (Rx1)	BHP Billiton	4.0 (HC)	388
Narrabi Coal Project (Phase 2)	Whithaven	4.5 (HC)	300

1) Costs partly estimated

LB-T2 Source: BREE, Resources and Energy Major Projects, Oct. 2012

The following projects which are under construction or on which construction is about to commence are especially remarkable:

Rio Tinto-Misui's Kestrel and BMA's Caval Ridge Project are the projects with the highest investment volumes of about AUS$1.9 billion each. Caval Ridge was originally supposed to be combined with the increase in output capacity of the Peak Down Mine in QLD. BMA cancelled the latter project as a consequence of the declining prices on the world market. BHP Billiton has announced its investment decision for the Appin Avea 9 coal mine project with a volume of AUS$840 million.

The projects planned by Idemitsu Australia Resource for the expansion of the Boggabri coal mine, for which the government has issued a permit subject to charges, are still in an early stage. The AMCI and Bandanna projects in Galilee Basin with an output capacity of steam coal in the amount of 17 million tonnes a year, are also worthy of mention; at this time, the environmental compatibility study is being conducted.

Infrastructure

The scope and speed of the development of new coal projects also depend on the development of the infrastructure. Fortescue Metals Group (FMG) will serve as an example. FMG wants to have a court review of the introduction of the CO_2 tax, but it has not reduced its investment activities in new output capacities and infrastructure at all. For example, a third pier has been constructed at FMG's Port Hedland terminal. Despite the low prices for iron ore, Andrew Forrest, the owner, has announced the construction of a fourth pier as another component of an enormous expansion of the West Australian mine. The target is to expand rail and port connections from the current 55 million tonnes a year to a capacity of 155 million tonnes a year by the middle of 2013. The investments also include the start of production from two additional mines in conjunction with a train discharging system and two coal stackers. If this project is realised as planned, it will be a new milestone with respect to speed in the construction of new capacities and infrastructure.

However, the infrastructure frequently proves to be an Achilles' heel. On the other hand, several projects which are expected to relieve these bottlenecks were completed

in 2012. The expansion of the railway line from Goonyella to Abbot Point at a cost of AUS$1.1 billion substantially expanded the transport capacities by 50,000 tonnes a year. The Kooragang Island Coal Terminal in Newcastle representing an investment volume of AUS$670 million was completed. This project increased existing capacities by 20 million tonnes a year to the current 133 million tonnes a year. An additional expansion by another 12 million tonnes a year is currently under construction. Rio Tinto has increased its capacities in Dampier Port by 5 million tonnes a year, bringing total capacity to 150 million tonnes a year.

Another important hurdle has also been cleared by the Wiggins Island Rail Project (WIRP) connecting the coal fields in Queensland with the Wiggins Island Coal Export Terminal (WICET). The Australian cartel authority approved the project, which is being conducted by a syndicate of mining companies, including Xstrata Coal, Aquila Resources, Bandanna Energy, Caledon Resources, Northern Energy Corporation, Youcoal Australia, Wesfarmers Curragh and Cockatoo Coal. This syndicate concluded a contract for the construction of the railway line with the Australian railway operator QR National in 2011. A part of the line is scheduled for completion in the middle of 2014. The transport capacity will be 27 million tonnes a year.

The port at Abbot Point could have become one of the world's largest coal ports. The North Queensland Bulk Ports Corporation (NQBP) had plans for six new coal terminals (T4–T9) 25 kilometres north of Bowen in Queensland, each of them with annual capacity of 30 million tonnes. However, Rio Tinto withdrew the offer because of the uncertainty of the global economic situation. In the middle of 2012, the project was completely tabled by the government.

But the mining companies are also investing in the infrastructure. BHP Billiton is expanding the Hay Point Terminal in QLD by 11 million tonnes a year to a total of 55 million tonnes a year. The Wiggins Coal Terminal is under construction in the port of Gladstone in New South Wales and will increase the port's capacity by 27 million tonnes a year. Two expansion projects are also going on at the terminal of the Newcastle Coal Infrastructure Group (NCIG), which will at a cost of AUS$900 million increase capacity from 30 million tonnes a year to 53 million tonnes a year in two phases before another AUS$1 billion is invested to raise export capacity by another 13 million tonnes a year to 66 million tonnes a year. 20 million tonnes were already exported in 2012.

Exports of the Largest Coal Loading Ports

Coal Loading Ports	2010 Mill. t	2011 Mill. t	2012 Mill. t
Abbot Point	17.4	13.7	14.2
Dalrymple Bay	62.7	49.3	56.2
Hay Point	36.4	30.8	31.2
Gladstone	61.7	52.6	57.7
Brisbane	7.6	6.8	8.9
Total Queensland	**185.8**	**153.2**	**168.2**
Newcastle	95.1	98.1	106.5
Port Kembla	13.3	14.0	14.7
NCIG	–	–	20.0
Total New South Wales	**108.4**	**112.1**	**141.2**
Total	**294.2**	**265.3**	**309.4**

LB-T3 1) provisional

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

Almost all of the Australian ports have been expanded to the capacities shown below in recent years, and in 2011 and 2012 the coal volumes shown below were transshipped:

Coal Handling Australian Ports		
Ports	**Coal Handling in 2011** Mill. t	**Coal Handling in 2012** Mill. t
Newcastle	98	106
Port Kembla	14	15
NCIG	---	26
Dalrymple Bay	49	56
Hay Point	31	31
Gladstone	53	58
Abbot Point	14	14
Brisbane	7	9
Total	**266**	**315**

LB-T4

Export

In total Australia was able to increase exports enormously in 2012, posting monthly records in transshipment figures, in no small part because of the operational start-up of the 3 terminals Port Waratah Coal Services (PWCS), Newcastle Coal Infrastructure Group (NCIG) and Dalrymple Bay Coal Terminal (DBCT). Despite declining coal prices, export volumes rose by 44 million tonnes to 310 million tonnes. The exports from NSW increased by about 29 million tonnes to 141 million tonnes, while exports from QLD rose by about 15 million tonnes to 168 million tonnes.

The development of hard coking coal exports in selected regions is shown below:

Export Development in Selected Regions "Hard Coking Coal"			
	2011 Mill. t	**Difference 2012** Mill. t	**2011/12** Mill. t
China	13.7	14.3	0.6
Europe	15.4	15.9	0.5
India	24.0	30.0	6.0
Japan	22.0	38.4	16.4
Korea	8.1	7.4	-0.7
Total	**83.2**	**106.0**	**22.8**

LB-T5 Source: BREE, Resource and Energy Quarterly, March 2013, Page 163

In total, exports of coking coal (including semi-soft coking coal and PCI coal) rose by 9% in comparison with 2011 to 145 million tonnes. The largest importers of Australian coking coal are Japan, India, the EU, China and Korea. Japan's import of coking coal was almost 75% higher and Indian imported 25% more than in 2011. In contrast, Korea imported 9% less coking coal than in the previous year.

According to McCloskey, there have been some changes in the details of Australia's exports to China in 2012 in comparison with 2011:

Development of Australia's Exports to China		
	2011 Mill. t	**2012** Mill. t
Hard Coking Coal	7.1	14.3
Semi-soft Coking Coal (PCI)	6.6	13.8
Steam Coal	20.3	34.8
Total	**34.0**	**62.9**

LB-T6 Source: McCloskey

Hard Coal Exports According to Grades		
Coal Grade	**2011** Mill. t	**2012** Mill. t
Coking Coal (HCC)	88	91
Semi-soft Coking Coal	45	54
Steam Coal	148	171
Total	**281**	**316**

LB-T7 Source: McCloskey

Australia was able to increase its exports of steam coal by about 23 million tonnes (15.5%). Japan increased its steam coal imports from Australia by 10.5 million tonnes to 75.0 million tonnes. Sales to Korea rose in total by 0.5 million tonnes to 30 million tonnes.

Australia's key figures are shown here:

Key Figures Australia

	2010 Mill. t	2011 Mill. t	2012 [1] Mill. t
Hard Coal Output	355	346	366
Hard Coal Exports	300	281	316
• Steam Coal	141	148	171
• Coking Coal	159	133	145
Imports Germany	4.3	4.3	4.5
• Steam Coal	0.3	0.2	0.3
• Coking Coal	4.0	4.1	4.2
Export Rate in %	85	81	86

[1] *provisional*

LB-T8

Australia has about 29% of the world market in world hard coal trade, thereof a market share of 145 million tonnes in coking coal and of 171 million tonnes in steam coal. In the long term, Australia has the largest sustainable expansion potential for steam and coking coal.
In the long run, i.e. until 2030, an expansion of exports to 400–500 million tonnes is imaginable. Estimates from the Bureau of Resources and Energy Economics (BREE) of the Australian government expect steam coal exports to rise by an average of 11% p.a. to 304 million tonnes a year in 2017–2018.

INDONESIA

2012 was a year of mixed experiences for Indonesian mining companies. Speculation, rumours and government announcements were plentiful, contributing to substantial uncertainty which did not exactly serve to attract foreign investors. A case in point was the GR24 legislation which required every coal mining company owned by foreign interests to divest shares of the company until a minority position of 49% had been achieved. This mandatory divestment of corporate shares begins with a 20% release of shares in the sixth year of production. The minority position must be reached in the tenth year after production start-up.
There were and still are many rumours about the introduction of an export tax of 20% in the first year and 50% from the second year on. This brought to mind memories of events in 2005 when a 5% export tax was introduced, although it was annulled one year later by Indonesia's Supreme Court. The tax has not been re-introduced, but the official statements from the government are contradictory. Instead, work is being done on another revenue source from the sale of coal – the value-added tax. This could be because more and more coal with low calorific values and high ash content is being sold, although it is needed for power generation in Indonesian power plants.
Annual economic growth rates of about 6% and enormous increases in the demand for power have led to estimates that the domestic demand for coal for power generation could increase from 68 million tonnes a year today to 125 million tonnes a year in 2022.
Indonesian coal producers are plagued especially by problems arising from the rapidly growing costs of coal production which are diminishing the advantage once enjoyed by the world's largest exporter of steam coal and which have already caused production restrictions and even greater reticence in making investments. The declining world market prices and a more subdued demand at the end of 2012 have only accelerated this development. There are reports that the cash costs of coal production have risen from US$26/t in 2006 to US$53/t in 2012.

The subject of licences may also be a source of concern for some companies at some point. The Indonesian government had set an extremely ambitious goal for itself and intended to examine the status of all of the mining licences (IUP) by the end of last year. This so-called “clean and clear status” of every single licence is welcome as a means of creating legal security, but problems are inherent in the procedure if and when the licence territories of various companies overlap, possibly leading to litigations dragging on for years. It is estimated that more than 10,000 licences have been issued in Indonesia, but that only 6,000 have been given the status “clean and clear” as of this time.

Production

Discrepancies in production figures are nothing unusual in Indonesia and are the subject of constant discussions. The “Indonesian Coal Mining Association” (ICMA), for instance, reported production of 379 million tonnes for 2011 while the Ministry of Energy spoke of 326 million tonnes.

At the beginning of 2012, the ICMA estimated a production volume of 390 million tonnes a year for the year, but adjusted this figure downward to 360 million tonnes in the middle of 2012. The Ministry, on the other hand, assumes a volume between 335 million tonnes a year and 350 million tonnes a year, and the parliament set a target of 332 million tonnes a year for the royalties. The government gave the amount of 306 million tonnes a year on some occasions, a figure of 386 million tonnes a year at other times. The differences could in part result from sometimes including, sometimes excluding about 20–30 million tonnes a year of lignite mined on Sumatra in the figure for coal production.

Despite all of the confusion, the Indonesian coal mining industry continued to expand strongly in 2012. According to preliminary estimates from the Indonesian Ministry of Energy, output rose by 9% from 353 million tonnes to 386 million tonnes – according to the Indonesian Coal Mining Association, to 340–350 million tonnes. The output roughly breaks down into 1/3 high-quality hard coal and 2/3 low-calorific hard coal (sub-bituminous).

The Largest Hard Coal Producers in Indonesia[2)]

Company	Output 2011 Mill. t	Output 2012 Mill. t	Exports 2011 Mill. t	Exports 2012 Mill. t
Bumi	66.0	74.0	53.0	68.5
Adaro	47.9	47.2	36.4	37.9
Kideco	31.6	33.7	27.8	24.7
Banpu	25.0	28.2	25.6	25.7
Berau	19.8	21.0	17.7	16.9
Bayan	15.6	16.3	---	4.0
Bukit Asam	13.5	14.0	4.7	7.0
Indo Tambangraya (ITMG)	---	27.5	---	---
Total[1)]	**219.4**	**261.9**	**165.2**	**184.7**
Indonesia Total	**318**	**386**	**270**	**304**

LB-T9 [1)] Excluding additional purchases, provisional
[2)] Partly own estimates

Of the total output, 304 million tonnes were exported and 82 million tonnes were used for domestic consumption in 2012. The stockpile situation in Indonesia is unknown. The Indonesian mining industry expects output to increase again to as much as 400 million tonnes per year in 2013, whereby 320 million tonnes per year will go to exports and 80 million tonnes a year will be required to cover domestic demand alone. This latter figure has been set in a law for 2013 at 20.3% of the production in Indonesia, whereby the government assumes production of 366 million tonnes per year, leading to a demand of 74 million tonnes per year for the domestic market.

The tendency of the Indonesian output and with it the exports is increasingly in the direction of lower calorific values.

Bumi Resources, Indonesia's largest coal producer, is planning to increase its production in various mines from an estimated 74 million tonnes per year today to 77 million tonnes per year in 2013 and up to 114 million tonnes per year in 2014. The plan is to increase in particular the output from the subsidiaries KPC and Arutmin in 2013. Adaro, Indonesia's second-largest producer, and Bukit Asam each want to increase production by 5 million tonnes to 50–53 million tonnes per year and 19 million tonnes per year, respectively. Banpu is also planning to increase production. Banpu is planning to increase output in 2013 to a total of 29 million tonnes per year. Berau plans to produce a total of 23 million tonnes in 2013 and, in the middle term, up to 30 million tonnes per year of sub-bituminous coal above all. Although almost all of the large Indonesian producers want to increase production, they have also decided to carry out actions to reduce costs and raise productivity. This is an expression of significantly reduced margins as a consequence of the decline in world market prices as well as the more reserved demand from China and India; these two countries are now receiving offers for Colombian and American coal at competitive prices as well as from Australia.

The average benchmark prices in 2012 fell by more than 20% in Indonesia, according to Banpu. This so-called International Coal Price Reference (ICPR) for steam coal, also known as the HBA Index, is set by the Energy Ministry once a month and is used as the basis for calculating the royalties. It is based on a basket of indices: 25% Platts Kalimantan 1 estimate (5,900 kcal), 25% Argus Indonesia Coal Index 1 (6,500 kcal), 25% Newcastle Export Index (formerly Barlow-Jonker Index 6,322 kcal) from Energy Publishing and 25% from Global Coal Newcastle Index (6,000 kcal). At the beginning of 2012, the ICPR amounted to about US$111/t, fell to almost US$84/t in the middle of the year, then rose again to US$87 to US$88/t at the end of the year.

The production in Sumatra, which comprises only 7% of the total Indonesia production, is above all required for domestic consumption because the deposits are located close to the power consumption centre in densely populated Java. Owing to Indonesia's good economic development, the demand for electric power is also growing, although not at the rapid pace originally planned. The government-owned electric power provider PLN is behind schedule for the construction of new power plants. The demand for coal in 2013 for the government-owned power provider is therefore expected to be lower in 2013, which is why the obligation of the mining companies to make a certain percentage available to the domestic market (DMO = Domestic Market Obligation) has been reduced from 24.74% to 20.3%.

Besides hard coal production, there is lignite output of 20–30 million tonnes a year on Sumatra.

Infrastructure

Indonesia currently has six larger deep-water ports on Kalimantan with an annual transshipment capacity of 268 million tonnes, allowing the loading of freighters of 60,000 to 180,000 DWT. There are another ten coal terminals (including Samarinda and Palikpapan) with a total capacity of 80–100 million tonnes per year and with a draught which as a rule is adequate for Panamax ships. Transshipment capacities are also available on Sumatra. Moreover, there are numerous off-shore loading facilities for smaller ships.

The large number of loading opportunities has favoured the strong development of exports. In the long term, however, continued growth will be dependent on an

improvement in the infrastructure farther away from the coasts (construction of railway lines) because as of the moment only the coal reserves which are either in the proximity of the coasts or have a good river connection for further transport to the coast have been developed.
The state-owned railway PT Kereta Api Indonesia wants to expend US$350 million to expand transport capacity, above all on Sumatra, from 13.2 million tonnes to 50 million tonnes in 2018 by initiating a bundle of measures, among them maintenance programmes, new locomotives and transshipment facilities. Berau, on the other hand, has postponed an overland conveyor system and a power plant project. In contrast, PT Bukit Asam is determined to expand its coal terminal by adding a dock and a ship loader. Investments are also being made in tugboats and push boats so that the increased transport needs on rivers can be handled.
Shipments were handled mainly through the following ports: Adang Bay, Banjarmasin, Samarinda, Pulau Laut, Tanjung Bara and Kotabaru with monthly exports of 1 million tonnes to more than 6 million tonnes.

Export

The official export figure for 2012 announced at this time amounts to about 304 million tonnes, an increase of 34 million tonnes in comparison with 2011.
So Indonesia expanded further its leading world market position as the number one steam coal exporter in 2012. Indonesia made good use of the opportunity resulting from the decline in Chinese exports to export coal to China; according to McCloskey, China imported about 133 million tonnes of Indonesian coal (including lignite) in 2012, twice as much as in 2011. The focus of Indonesian exports is on the Pacific market. Volumes to the European and American countries remained almost unchanged at a low level in 2012.

But Indonesia's coal exports will undoubtedly continue to grow in the future to the extent that this is made possible by the world market price level on the one hand and the production costs on the other. Indonesia's geographical location in proximity to the largest consumer centres China, Japan, South Korea and India is an advantage for export because of the lower freight costs and shorter travel times to these countries.

Coal Exports According to Markets

	2010 Mill. t	2011 Mill. t	2012[1)] Mill. t
Pazific	226	259	292.9
Europe	13	10	11.0
USA	1	1	0.1
Total	**240**	**270**	**304.0**

LB-T10 [1)] Estimated

The largest individual buyers are found in Asia and include above all India, Taiwan, South Korea and Japan as well as China.

The Largest Buyers of Indonesian Coal

	2010 Mill. t	2011 Mill. t	2012 Mill. t
Taiwan	21.8	19.1	28.6
Japan	26.1	25.0	35.0
South Korea	34.7	36.7	37.8
India	36.5	52.8	94.6
China	68.1	78.0	81.4

LB-T11 [1)] Provisional, in part estimated

Exports to the Asian market will continue to increase. Kalimantan will remain the focus for exports.

Key Figures Indonesia

	2010 Mill. t	2011 Mill. t	2012[1)] Mill. t
Hard Coal Output	295	318	386
Steam Coal Exports	240	270	304
Imports Germany	0.1	0.1	0
Export Rate in %	81	85	79

LB-T12 [1)] Provisional

RUSSIA / UKRAINE / KAZAKHSTAN

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

- Russla
- Ukraine
- Kazakhstan

Coal has been able to strengthen the role it plays in all of these countries due to the higher prices of gas still in effect because tied to the oil price.

Only Russia is of any major significance for the world market. Nevertheless, here are the essential data for Ukraine and Kazakhstan.

Overall, **Ukraine** was able to increase production by almost 4.3% to 85 million tonnes per year. Steam coal rose strongly by 10% to 61 million tonnes per year while the production of coking coal fell by 0.4% to 24 million tonnes per year. A comparable level in coking coal output is expected for 2013.

Kazakhstan is developing more and more into a coal exporter. Kazakhstan has large coal deposits as well as other raw materials. About 121 million tonnes of hard coal were produced in 2012, of which about 30 million tonnes were exported.

Only Russia will be considered in the following remarks.

Russia is one of the leading coal producing and exporting countries. An estimated 1/3 of the world's coal resources and 1/5 of the explored reserves – a total of almost 200 billion tonnes – are located in Russia. These figures include more than 100 billion tonnes of lignite, 85 billion tonnes of hard coal (including coking coal) and 7 billion tonnes of anthracite. The reserves owned by Russian companies amount to almost 19 billion tonnes, 4 billion tonnes of it coking coal. A little more than 350 million tonnes per year make Russia the fifth-largest coal producer in the world.

In Russia, 228 companies run coal mining operations in 91 underground mines and 137 opencast pits. Coal is produced in 25 different regions of Russia and in 16 coal basins. Coal is used for power generation in Russia. About 25% of the power generating capacities are coal-fired power plants.

Coal mining can depend on support from the government. President Vladimir Putin views coal production as of strategic significance for the Russian economy. The Russian mining industry employs about 200,000 people. This is also a reason why the Russian government supports the expansion plans of the coal industry.

Last year, the growth rate of the Russian economy came to 3.6% and was lower than the level of the previous year (4.3%). Nevertheless, this figure indicates that the world's largest energy exporter of coal, oil and gas has stabilised economically.

Coal Production in Russia

	2010 Mill. t	2011 Mill. t	2012 [1] Mill. t
Coking Coal [2]	67	65	74
Steam Coal	254	271	279
Total	321	336	353

LB-T13 Source: McCloskey [1] Provisional [2] incl. Anthracite

Production

Coal production in Russia rose by 17 million tonnes to about 353 million tonnes, of which 72 million tonnes were coking coal and 2 million tonnes were anthracite. The demand for steam coal rose slightly to 279 million tonnes owing to increased demand at home. Initial

estimates indicate that the opencast pit output amounted to about 255 million tonnes, underground production to 98 million tonnes.

The most important area for Russian hard coal output is in the Kemerovo region. Almost all of the mining companies have increased production. The largest company in Russia, the Siberian Coal Energy Co. (SUEK), has output of 98 million tonnes and a market share of 27% in Russia. OAO Kuzbassrazrezugol reduced coal production once again by 3.3% to 45 million tonnes because it was concentrating on topsoil removal operations aimed at increasing coal output from 2013.

The most important Russian producers developed as shown below:

Coal Producers in Russia

Producers	2011 Mill. t	2012* Mill. t
SUEK	92.2	98.0
Kuzbassrazrezugol	47.0	45.0
Siberian Business Union (SDS)	22.4	25.0
Yuzhkuzbassugol	9.2	11.0
Vostsibugol	15.8	17.0
Raspadskaya	6.3	7.0
Yuzhny Kuzbass	14.0	14.0
Yakutugol	7.8	10.0
Total	**214.7**	**227.0**

*LB-T14 * In part estimated*

Coal Export Ports Russia

	2010 Mill. t	2011 Mill. t	2012 [1] Mill. t
Baltic Sea Ports and North Russia			
Murmansk	9.6	10.8	11.7
Vysotsk	2.3	3.2	3.3
Riga	11.5	13.5	14.9
Ventspils	3.6	6.8	7.0
Tallin (Muga)	1.2	0.3	0.0
St. Petersburg	2.2	0.3	0.0
Ust-Luga	7.6	12.3	15.3
Miscellaneous	1.7	0.8	1.7
Total	**39.7**	**48.0**	**53.9**
South Russia and Ukraine			
Mariupol (Ukraine)	1.7	1.7	1.3
Tuapse (Russla)	3.5	2.9	2.8
Yuzhny (Ukraine)	2.4	1.0	0.3
Miscellaneous	7.6	7.5	7.9
Total	**15.2**	**13.1**	**12.3**
Russia and Far East			
Vostochny	14.5	16.2	21.3
Vanino	1.3	1.5	1.1
Muchka	5.0	10.0	12.1
Miscellaneous	11.9	12.3	16.2
Total	**32.7**	**40.0**	**50.7**
Total	**87.6**	**101.1**	**116.9**

LB-T15 [1] Partly estimated

There have not been any reports of significant logistics problems despite the massive capacity and quality problems of the Russian national railway. This is presumably because the mining companies are taking over logistics operations themselves at an increasing rate. The Russians are also seeking to employ their own ports, above all in the Baltic region, because of the high transit fees in the Baltic countries. Vostochny in the Pacific (21.3 million tonnes) and Ust-Luga (15.3 million tonnes) are the largest and second-largest Russian export coal ports. In total, exports through the Baltic ports rose by

almost 6%. The transshipment via Black Sea ports declined slightly. The Far East ports were once again able to post strong growth (16%).

Overall, a highly dynamic development of export capacities in the Russian Far East ports can be observed. There will be no shortage of port capacities over the next few years which might restrict further increases in exports to the Pacific market. Nevertheless, new projects have been launched, among them a coal export terminal in the port at Vanino. Coking coal from Elgestan in Siberia is expected to be transported here in the future over a 402-km-long railway line Kyzyl–Kuragino (yet to be built) which will connect Elgestan with the national railway network.

Export

In response to the rise in demand abroad, Russia exported about 16 million tonnes more than in the previous year, bringing seaborne trade to a total of 117 million tonnes. In addition, another approximately 10 million tonnes were traded in domestic traffic with former CIS states. Total exports came to just under 127 million tonnes.

Russia is planning to export substantially more coal to the Asian market in the long term. The government wants to increase coal output to 430 million tonnes per year and raise exports to the Asian-Pacific markets from the current 32 million tonnes per year to 85 million tonnes over the course of three time periods (2011–2015, 2016–2020 and 2021–2030). The planning includes the expansion of the transport infrastructure, the loading railway stations and ports in the Russian Far East. A total of US$123 billion is supposed to be invested over 17 years, 9% of which will be provided by the state.

Key Figures Russia

	2010 Mill. t	2011 Mill. t	2012[1] Mill. t
Coal Output	321	336	353
Hard Coal Exports[2]	87	101	117
• Steam Coal	80	93	109
• Coking Coal	7	8	8
Imports Germany	10.5	11.2	11.6
• Steam Coal	9.3	9.6	10.5
• Coking Coal	1.0	1.2	0.8
• Coke	0.2	0.4	0.3
Export Rate in %)	27	30	33

[1] Provisional [2] Seaborne only

LB-T16

In north-western Europe, imports from Russia rose above all because of the low sulphur content and the high calorific values of the coal while imports in the EU 27 declined by 2.7 million tonnes. The UK purchased just under 14.6 million tonnes of steam coal, 26% more than in 2011. In Germany, imports from Russia increased by 0.4 million tonnes to 11.6 million tonnes, making Russia the most important coal supplier for Germany.

USA

Production

2012 was a difficult year for the American coal industry as it was faced with a continued decline in gas prices for shale gas and with the conversion from coal to gas in power generation triggered by the price advantage. Moreover, the fall in world market prices put downward pressure on margins. The closure of entire coal mines,

cost-cutting programmes and the loss of jobs were the consequences. Production in the USA declined by a total of 72 million tonnes to 922 million tonnes in 2012 despite the enormous increase in exports. The causes were mentioned at this point in the report in 2011 and have in some cases become even more severe.

Coal is currently on the losing end of the competition between shale gas, renewable energies and coal in power generation. It is true that power generation in the US is still based largely on coal – according to the Annual Energy Outlook 2013 from the US Energy Information Administration (EIA), 42% of the power generation in 2011 came from coal, but this is expected to fall to 35% by 2040. The continued fall of gas prices in 2012 have already led to a changeover in the use of fuel, and the long-term impact of this changeover on American production and on world coal trade can already be felt. 91% of the American coal consumption goes to power generation (in 2011 it was still 93%). Gas has in the meantime acquired a share of power generation of about 26%, and renewable energies make up a share of 14%. As more and more shale gas at prices below US$2 per mm BTU (April 2012) – 1 mm BTU corresponds to 27.777 TCE, so the price converts to about US$56 per TCE – is offered on the market, it is becoming almost impossible for coal from the Appalachian region in particular as well as from the Illinois Basin to compete. When transport costs are included, coal is almost twice as expensive as shale gas. As a consequence, there is a changeover from coal to gas taking place in the fuel used for power generation, above all in the eastern half of North America. Coal from the Powder River Basin, on the other hand, can be produced at substantially lower prices and will almost certainly (still) be competitive with shale gas, above all when prices rise to above US$3/mm BTU again. Nevertheless, a further decline in production to significantly less than 1 billion short tonnes per year is expected for 2013.

The fuel changeover is also taking place for the most part even without the construction of new power plants. More than half of the American gas-fired power plants are combined cycle power plants which serve no purpose other than the generation of electricity; their annual utilisation has risen, but is still only 50%, so there is still potential here. A secondary effect is that this fuel changeover has dropped the CO_2 emissions to the lowest level in 20 years. In its most recent Outlook 2013, the EIA estimates that CO_2 emissions from coal in 2035 will be another 48 million tonnes lower than predicted just last year; however, the gas-related CO_2 emissions will be a total of 67 million tonnes higher. The projected increase rate for CO_2 has been steadily falling since 2005. The share of coal in the total energy-related CO_2 emissions of 8,114 million tonnes amounted to about 40% or 3,226 million tonnes in 2005. This share declined in the projection 2010 to 37% and in the current EIA Outlook to 34% (1,874 million tonnes). The actual decline in CO_2 emissions in 2012 amounted to 8% in comparison with 2007, the year with the highest level of CO_2 emissions in the USA.

The new environmental protection regulations from the Environmental Protection Agency (EPA) obligate power plant operators to retrofit their facilities with purification equipment by 2015 which will handle emissions of dust, SO2, NOx and mercury. These obligations are based on the “Cross State Air Pollution Rule” (CSAPR) issued in 2011 and the “Mercury and Air Toxics Standards” (MATS) issued at the end of 2011 by the EPA. Announcements of the closure of power plants have already been made. There are forecasts showing that about 50 GW of steam-fired power plant capacities could be shut down by 2017 and a total of 192 power

plants could be closed by 2026. 50 GW corresponds to 1/6 of the total electricity generation capacities in the USA. This would undoubtedly be a substantial burden on coal production in the future. The EPA has also recently announced the implementation of CO_2 emissions limits for new coal-fired power plants so that in the future no coal-fired power plants could be built without the installation of CCS. In view of the substantially higher investment costs in comparison with a combined cycle plant, this would presumably mean de facto that no more new coal-fired power plants will be built. Georgia Power, for example, intends to close 15 coal- and oil-fired power plants with a total output of 2,061 MW in 2015 and 2016. In Pennsylvania, 12 old coal-fired power plants with a total output of 4,000 MW are scheduled for shut-down, and for that 9 gas-fired power plants with output of almost 8,000 MW are planned for construction.

The economy in the USA has not recovered as well as hoped, and the development of power consumption of Americans was correspondingly restrained. Moreover, the winter was mild. According to the Energy Information Agency (EIA), almost 12% (about 108 million tonnes) less coal was used for power generation in 2012 than in the year before.

Output Breakdown USA

	2010 Mill. t	2011 Mill. t	2012 Mill. t
Appalachian[1)]	313	312	286
Interior	135	142	145
Western	536	540	491
Total	**984**	**994**	**922**
East of Mississippi	409	414	390
West of Mississippi	575	580	532
Total	**984**	**994**	**922**

1)Incl. coal from stockpile processing, incl. lignite

Shown in metric tons

LB-T17 Source: EIA and own calculations

Two mines in the Powder River Basin in Wyoming produced 20% of the American coal in 2012: the North Antelope Rochelle Mine (production of 108 million short tonnes) and the Black Thunder Mine (production of 93 million short tonnes).

Infrastructure

The rise in exports meant that the infrastructure capacities of railways and ports were utilised very well. During the first 11 months of 2012, more than 44 million tonnes of coal were exported via the terminal Hampton Roads alone, an increase of almost 6 million tonnes in comparison with the same period in 2011. The decisive point for a further increase in exports is above all an improvement in the railway infrastructure, especially into the Powder River Basin, and the corresponding port infrastructure on the West Coast so that the coal from the Powder River Basin which is comparable with Indonesian coal in terms of calorific values can be exported to the Asian market. Canadian Pacific, however, has distanced itself from plans for a railway line with a length of 416 km which was supposed to connect a number of mines in the Powder River Basin. The decisive point was presumably the declining coal consumption in the USA. BNSF Railway, which already serves all of the larger ports on the West Coast with its own railway network, wants to develop additional export terminals. Kinder Morgan has announced the investment of US$200 million in the conversion of the shipyard port in Charleston into an export terminal with a capacity of 10 million tonnes per year.

The freight rates, which had just been raised in 2011 by the private railway companies, had to be reduced again in some areas because of the lower supply and the falling market prices. The inland ship capacities and transshipment capacities could cause a bottleneck to additional exports. Low water levels in the Mississippi were also a bottleneck for coal exports through the Gulf region.

While previous investments in new port capacities were made primarily on the East Coast, projects on the West Coast for future exports to Asia are being studied. However, these projects have provoked substantial resistance and protests among the population.

Export / Import

The USA is heavily oriented to Europe in its exports and was able to increase its exports of coking coal once again by 0.3 million tonnes and of steam coal by almost 17 million tonnes. Especially coal with high sulphur content from the Illinois Basin was traded in large quantities with the corresponding price reductions in comparison with API#2 standard quality coal. Seaborne export rose by about 16 million tonnes to a total of 107 million tonnes in 2012. Overland exports to Canada represented more than 6 million tonnes in addition.

Exports USA 2012

	Coking Coal Mill. t	Steam Coal Mill. t	Total Mill. t
Seaborne	59.0	48.1	107.1
Overland (Canada)	4.4	2.0	6.4
Total	**63.4**	**50.1**	**113.5**

LB-T18 Source: McCloskey, EIA

Seaborne exports of about 107 million tonnes focused on Europe (about 50 million tonnes) and Brazil (7 million tonnes). Germany was once again the largest customer in Europe, procuring 9.8 million tonnes of coking coal and steam coal. In contrast, imports, especially of Colombian coal, declined sharply. The USA remains a net exporter. Owing to the keen competition between shale gas and steam coal on the one hand and restrained demand in Europe on the other, there are signs of a development which will cause export business to pay attention to the Pacific market in the future as well as to the Atlantic market. Substantial quantities of coal were exported in 2012; 5 million tonnes went to Japan, 8.3 million tonnes to South Korea, and additional volumes to India and China. The extent to which American coal is competitive in Asia depends on many factors. Transport costs are a significant consideration. The level of sea freight rates is low at the moment. If it becomes possible in the future to ship large quantities of Powder River Basin coal from the West Coast to Asia at competitive prices, American coal will no doubt find its way to China and India for a long time.

Import-Export Balance USA (Seaborne)

	2007 Mill. t	2008 Mill. t	2009 Mill. t	2010 Mill. t	2011 Mill. t	2012 Mill. t
Export (seaborne)	37	53	44	64	91	107
Import (seaborne)	31	31	19	16	11	7
Balance	**6**	**22**	**25**	**48**	**80**	**100**

LB-T19

Imports from Colombia declined by another 2.3 million tonnes to 6.3 million tonnes. Venezuela exported 0.3 million tonnes to the USA.

The EIA expects a slight growth in seaborne exports of both steam and coking coal to a total of 124 million short tons (= 111 million tonnes) for 2013. If world market prices become more stable and freight rates remain low, steam coal should continue to be of inte-

rest for the Atlantic market as well as for the Asian market.

Key Figures USA

	2010 Mill. t	2011 Mill. t	2012[1)] Mill. t
Hard Coal Output	984	994	922
Hard Coal Exports	74	97	114
• Steam Coal	23	34	50
• Coking Coal	51	63	64
Hard Coal Imports	18	12	8
Imports Germany	5.7	8.1	9.8
• Steam Coal	2.7	5.1	7.1
• Coking Coal	3	3	2.7
Export Rate in %	8	10	12

1) Provisional

LB-T20

COLOMBIA

Production

Hard coal output in Colombia rose once again in 2012 despite a number of imponderable circumstances and reached a new record high. Total production grew by about 3.4 million tonnes (4%) to 89.2 million tonnes. Although this fell short of the production target of 97 million tonnes per year, achieving this production result of 89 million tonnes is nevertheless remarkable because production was impaired by a number of circumstances of varying intensity and duration: As the weather was not responsible for any major disruptions in 2012, the biggest issues were strikes, official directives and terrorist attacks.

Workers at Prodeco's La Jagua mine went on strike to obtain their demands for a 7% wage increase and a 7.15% increase in employee participation. Employees at the Fenoco Railway were on strike for five weeks, negatively affecting the total production of the Cesar Basin and the producers Drummond, Prodeco and Goldman Sachs, leading to a decline in exports of 2–3 million tonnes.

The Cerrejón opencast pit was not affected. However, after several years of relative calm, the railway line from Cerrejón to Puerto Bolivar and transport facilities were the targets of six terrorist attacks by the FARC (Fuercas Armadas Revolucionarias de Colombia) organisation, which has about 9,000 members. Despite the adversity, Cerrejón was able to increase production by 2.3 million tonnes in comparison with 2011 to a total of 34.3 million tonnes. The official directive prohibiting night-time transport on the Fenoco railway line between 10.30 p.m. and 4.30 a.m. had a significant negative impact. According to newspaper reports, this transport prohibition (issued as a noise protection measure) caused a daily loss of transports amounting to 80,000 tonnes. About 53% of all of Colombia's coal exports are shipped via the Fenoco line. Strikes and pay scale disputes impaired the production of Colombian National Resources as well, a wholly-owned subsidiary of Goldman Sachs, at the La Francia Mine. The affected producer declared a case of force majeure for some of the consignments.

The production in the domestic departments Boyacá, Cundinamarca and Norte de Santander reached 6.9 million tonnes, about 1.2 million tonnes (15%) less than in 2011. These mines produce primarily coking coal in underground operations. The falling prices all around the world are presumably a primary reason for the decline because the production costs there are very high.

The Colombian mining authorities expect production totalling 98 million tonnes and a price of US$75/t FOB for 2013, corresponding to an increase in quantity over the actual figures for 2012 of about 9 million tonnes (9%), for 2013. Cerrejón alone, the largest producer, produced 34 million tonnes (previous year 32 million tonnes) which was both a record for the year and about 38% of the total Colombian output. If the producers' expansion plans are all carried out as reported, Colombia's coal production could increase by as much as 55 million tonnes per year from the current approximately 80 million tonnes per year to about 145 million tonnes per year in 2020. Cerrejón is planning to increase output from 32 million tonnes a year to 40 million tonnes a year by the end of 2015 while Drummond, in a joint venture with Itochu, wants to achieve an increase from 26 million tonnes in 2012 to 32 million tonnes in 2013. Output in Vale's El Hatillo Mine is supposed to rise from the current 3–4 million tonnes per year to 9.5 million tonnes per year in 2014. Whether this will actually happen has become uncertain since Vale sold the mine to CPC, a subsidiary of CNR, itself a subsidiary of Goldman Sachs, at the beginning of 2013. Added to this are the Cerrolargo Sur deposits in the Cesar regions which have not yet been exploited; reserves here are estimated at 500 million tonnes.

Metallurgic coal output remained significantly below the level of the previous year. The coking coal industry has a cost problem, especially in central Colombia. There are reports that the coking coal mines in Colombia are not profitable at prices below US$200/t and have consequently cut back production or are producing for stockpiles at this time. If prices remain at the current level, it is questionable whether output of coking coal can be expanded to between 8 million and 10 million tonnes a year by 2015. Asian companies in particular are seeking to obtain coking coal mining licences in Colombia or to invest in the infrastructure.

Steam Coal Exports According to Companies

Exporter	2010 Mill. t	2011 Mill. t	2012 Mill. t
Cerrejon	31.5	32.0	32.8
Drummond	21.7	21.8	25.6
Glencore	12.1	14.8	14.3
Goldman Sachs	2.1	4.8	5.2
Other (incl. Central Colombia)	1.8	3.2	1.9
Total	**69.2**	**76.6**	**79.8**

LB-T21

Export

Colombia was able to increase its exports, including coking coal, to 81 million tonnes, enabling Colombia to maintain its position as the fourth-largest coal-exporting country (seaborne).

Colombian steam coal goes primarily to the Atlantic market. Of the total exports of steam coal (79.8 million tonnes), 73% went to European countries, including Turkey, 22% to North and South America and only 5% to Asia. Exports to Europe grew by 2.6 million tonnes. Exports to Germany declined slightly to about 9.4 million tonnes. The North American market had the greatest decline in exports (-27%). Hard coal exports in 2012 to the USA alone were 1.9 million tonnes lower. Exports to Asia, on the other hand, rose by almost 120% to 4.2 million tonnes.

The lion's share of the exports, almost 33 million tonnes, comes from the opencast pit Cerrejón in the province La Guajira, followed by Drummond with approximately 26

million tonnes; the latter's opencast pits are located in the neighbouring district Cesar.

Steam Coal Exports[1)] – Structure of Colombia

	2010 Mill. t	2011 Mill. t	2012 Mill. t
America	**22.3**	**18.3**	**17.0**
North America (USA + Canada)	13.1	8.4	6.2
South and Central America	9.2	9.9	10.8
Asia	**8.8**	**1.9**	**4.2**
Europe	**38.1**	**55.9**	**58.6**
Mediterranean Region	11.3	21.0	24.8
North-west Europe	26.8	34.9	33.8
Total	**69.2**	**76.1**	**79.8**

LB-T22 [1)]Coking coal and coke are not included in the export figures

Infrastructure

The existing infrastructure for transport and export ports is utilised at a high level. Most of the coal is transported by rail to the coal terminals.

If the plan to double coal output to 145 million tonnes per year by 2020 is to become reality, there will have to be an ambitious expansion of the entire coal infrastructure to the export ports. Cerrejón is investing US$1.3 billion for expansion of capacity to 40 million tonnes per year. The money is going to technical improvement of the railway tracks and to the port Puerto Bolivar. A second pier and another ship loader are under construction here. The Spanish company Ferrovial has been awarded the construction contract. Drummond and Glencore (Prodeco) are at this time building two new direct loading facilities in the vicinity of Ciénaga so that the increased volumes can be exported, but there are also environmental protection reasons for the construction: ships in Colombia must all be loaded using direct loading facilities from 2014 on. "Puerto Nuevo", Prodeco's new port, is supposed to commence operations in the middle of 2013 and have a loading capacity of 22 million tonnes per year.

Colombia's port of Buenaventura on the Pacific is supposed to be dredged to a depth of 30 metres very soon so that Panamax ships can also be loaded there in the future. Buenaventura is an important port for coking coal exports. 75% of all coking coal exports are shipped through this port. Coking coal is transported to the port by lorry from Boyaca and Santander.

But coking coal exporters will soon have an alternative: the port at Cartagena has been outfitted so that it can load Panamax ships. If the ship capacities on the Magdalena River, which flows into the ocean near Cartagena, are improved, this port could become of major significance for the export of coal from central Colombia.

With regard to the financing of the projects, it is becoming increasingly clear that the Chinese are interested because they would like to have access to Colombian coking coal. A number of cooperation agreements have been signed at the government level, including agreements for the dredging and widening of the Magdalena River and for a railway line with a length of 791 km from central Colombia to Buenaventura.

The Trafigura subsidiary Impala wants to invest US$27 million in a fleet of push boats intended for use on the Magdalena River. This would significantly reduce transport costs.

Another large-scale project is the planned deep-water river port near Barranquilla with an initial capacity of 5 million tonnes a year for steam and coking coal and a draught which would permit the loading of Capesize ships.

The transport system, especially rail transport, is a major Achilles' heel. Colombia's original plan for the construction and operation of a new railway line with a length of 1,000 miles at a cost of US$3 billion to connect the coal mines near Bogotá with the new loading ports on the Caribbean coast has not been pursued any further.

The Carbosan port of Santa Marta has applied for a licence for the construction of a connection 17 km in length from the Fenoco railway line to the terminal so that coal could be transported by rail via this port as well. Lorries are used for the transport at this time, but are significantly more expensive than rail transport.

The expansion of the Panama Canal now in progress and scheduled for completion in 2014 will be of greater significance in the long run for Colombian exports. The expansion is considered to be the key to increasing exports to the Pacific region because it will then be possible for smaller Capesize ships to use the canal instead of having to sail around the Cape of Good Hope.

Key Figures Colombia

	2010 Mill. t	2011 Mill. t	2012[1)] Mill. t
Hard Coal Output	74.4	85.8	89.2
Hard Coal Exports	72.2	81.2	81.0
• Steam Coal	69.2	78.2	79.8
• Coking Coal	3.0	3.0	1.2
Imports Germany	7.9	10.8	9.4
Export Rate in %	98	94	91

1) provisional

LB-T23

REPUBLIC OF SOUTH AFRICA

Coal is again the black gold of South Africa. In 2012, coal was the most valuable mineral and has resources estimated at about US$750 billion in South Africa. Only the platinum deposits, estimated at US$1.5 trillion, are more valuable. Coal is followed by palladium, gold and titanium as valuable minerals. The total value of all coal exports for 2012 is figured by the Department of Mineral Resources South Africa at about 47 billion rand (€1 = about 12 rand).

Coal covers almost 72% of the South African primary energy demand and contributes about 30% to coverage of the petrol demand in South Africa. 93% of the electric power is generated using coal. Coal exports account for about 26% of the coal output. More than 70,000 people are employed in coal mining. The "South African Coal Road Map", issued in 2010, concerns the current structure of the coal industry and its future developments up to 2030; it has been updated and an integrated resource plan to 2030 has been adopted. Particular objectives were to reconcile the primary energy sources for the new power plants which are to be built with the corresponding expansion plans for existing mines or the development of new mines on the one hand and the requirement for reduction of the CO_2 emissions on the other.

The use of coal in the power generation mix is highly dependent on the targets for the reduction of CO_2. New coal-fired power plants which will add 10 GW to the current capacities of 35 GW are already under construction. The share of coal for power generation is supposed to fall to 65% in 2030. There continues to be a political commitment to introduce a CO_2 tax on fossil primary energy sources.

Production

Having gone through a phase of stagnation lasting a number of years, South Africa can now look back at a considerable increase in production. Provisional information indicates that South African production in 2012 of 260 million tonnes rose by 3%, thereof 256 million tonnes steam coal, 3 million tonnes anthracite and about 1 million tonnes coking coal. Still, there are questions as to how long the demand of the state utility company Eskom can be secured using low-cost coal of lower quality. Eskom fears that it will not be able to procure enough coal after 2018. The need for coal to 2040 is estimated at 4 billion tonnes; only a little less than half of this amount has been contractually secured from existing coal mines. Eight mines provide 61% of Eskom's needs. These circumstances have led to deliberations about covering future need from new mines arising from the Black Empowerment economy. While this would strengthen these so-called junior coal mining companies, the prices would almost certainly be below the world market prices and the export prices for South African coal.

Costs of coal production have risen significantly in recent years. According to a Platts report of 05/11/2012, estimates show that the production of 1 tonne of coal for junior mining operations in Mpumalanga Province costs about 490 rand/t (about US$56.50/t); 350 rand/t must be assumed for washed export coal, 100 rand/t for mining and 40 rand/t for handling and shipping costs to the loading station. In addition, rail freight costs 200 rand/t so that the costs for the coal until it reaches the port at Richards Bay could total up to 690 rand/t (or just under US$80/t). In total, a cost range of US$73–US$80/t FOB Richards Bay is noted so that if the export price FOB Richards Bay is US$77/t and the exchange rate is US$1 = 8.5 rand, some junior mining companies might be suffering losses. Others estimate the average production costs to be US$73/t.

Moreover, the production costs could be burdened in the future by a 68% increase in bulk goods freight charges by the state-owned shipping and logistics company Transnet, by an increase in electricity rates of 8% for each of the next 5 years, the CO_2 tax and plans for export duties on coal, an attempt to prevent coal of poorer quality which would normally be sold for ESKOM from going to the Asian market.

The expansion of the current rail and port infrastructure is the key to releasing additional potential in production and export. Furthermore, the so-called junior mining companies often do not have access to the existing infrastructure, a circumstance which limits their opportunities to obtain funding from the market for the development of new coal mines.

The spectre of a nationalisation of the mining sector in South Africa appears to have been banished. But now the governing ANC party is thinking about a kind of mineral royalty of 50% on profits which are higher than 15% of usual profits.

The domestic markets in South Africa consumed the following quantities in 2012:

Consumption of the Domestic Markets

	2010 Mill. t	2011 Mill. t	2012[1)] Mill. t
Power Generation	121	132	132
Synthetic Fuels (Sasol)	45	45	45
Industry / Domestic Fuel	15	7	20
Metallurgical Industry	3	3	3
Total	**184**	**187**	**200**

1) provisional

LB-T24

Exxaro Resources wants to develop a number of projects for coal production in the Waterberg Region, especially for coking coal production, as a means of reducing the dependency on Eskom (3/4 of the production, about 42 million tonnes, go to Eskom). A joint venture between Sasol and Exxaro expects to receive a production licence for a new mine in the Waterberg Region of Limpopo Province. The coal could be used for Eskom and export. The original intention of using the coal for a new coal liquefication plant in Mafutha will not be pursued further for the moment.

ContiCoal wants to collaborate with a strategic partner to develop the mine De Wittekrans with a planned output volume of 2.4 million tonnes per year in Mpumalanga Province.

The high world market prices for anthracite have spurred new projects in Kwa-Zulu-Natal Province. Coal of Africa wants to start mining of coking coal from the Vele Mine in Limpopo Province, which has a capacity of 2.5 million tonnes per year of semi-soft coking coal, in 2013. The first consignment has already been shipped to Matola Terminal in Mozambique.

There **has been no change in the critical condition of the supply of electric power to South African Industry.** The state-owned company Eskom accounts for 96% of the power supply in South Africa. Prices for electricity are set by the national regulator and are supposed to rise by 8% in each of the next five years. Eskom's installed capacity amounts to 44,084 MW, of which 37,715 MW is from coal-fired power plants. Eskom generates 120 to 130 million tonnes of coal per year, corresponding to about 50%–60% of the total consumption in South Africa. The state-owned utility company Eskom has repeatedly pointed out that South Africa's long-term coal supply for coal-fired power plants is at jeopardy if the coal production policies are not revised. It is especially important to achieve a balance between coal export and coverage of domestic energy demand. Eskom sees the overriding problem in the fact that coal qualities with a higher ash content which were formerly procured only by Eskom are now being exported to Asia. New construction of coal-fired power plants by Eskom will presumably increase domestic consumption again as of 2013. Currently under construction are the power plant Medupi (6 blocks of 794 MW each under construction; completion of Block 1 in 2012 and operational start-up of all blocks by 2018) and the power plant Kusile (6 blocks of 800 MW each, operational start-up 2016–2018).

Infrastructure South Africa

The development of the infrastructure is not keeping pace with the development of new coal mines, the expansion of port capacities or the expansion of existing mines. This is especially a hindrance to the development of the Waterberg coal field in underdeveloped Limpopo Province. The expansion of the railway network is urgently needed. Currently about 30 million tonnes of coal are shipped by lorry to Eskom power plants – in 2008, it was 0 tonnes. But the lack of process and cooling water for the coal industry in the Waterberg Region is also a sticking point. In this sense, what is needed is a general infrastructure concept.

Rail transport remains unsatisfactory, despite substantial efforts and positive developments at Transnet, the South African state-owned shipping and logistics company. The number of derailments continues to decline, and progress is being made in productivity. Besides the organisational grouping of all coal activities into a single Coal Business Unit, transshipment times have been reduced as have the times for line maintenance. According to its own information, Transnet shipped more

coal, iron ore and general freight in fiscal year 2011/2012 than ever before. The mark of 200 million tonnes per year was broken.

As far as the shipments of coal to the Richards Bay Coal Terminal (RBCT) are concerned, Transnet had set itself the goal of conveying about 77 million tonnes in 2012, but by the middle of 2012 it was already so far behind that about 1.65 million tonnes per week would have had to be transported to RBCT during the second half of the year. Only 68.6 million tonnes were shipped during Transnet's fiscal year 2011/2012. At the end of 2012, Transnet reduced its forecast of the maximum possible shipping volume to 73 million tonnes. Other observers expect a shipping volume of only 68 million tonnes. But reduced shipments because of falling prices could also be the reasons for this in the future. Regardless of these circumstances, Transnet is setting even more ambitious targets for itself in the future. The capacity on the coal line from Mpumalanga Province to Richards Bay has been increased to 78 million tonnes per year. The goal is to be able to transport up to 98 million tonnes a year by 2019, a figure which would exceed the capacity of 91 million tonnes per year currently installed in RBCT. The plan requires an investment of US$4.2 billion. Special efforts are supposed to be made to increase the efficiency of the locomotives from the current 24.4 tonnes per kilometre to 27.2 tonnes per kilometre. The cycle time of the railway cars is to be reduced from the present 62 hours to 56 hours. This is supposed to be achieved by the construction of a new railway line from Mpumalanga Province through Swaziland to the South African Kwa-Zulu-Natal Province and RBCT. But this line could also be used to ship coal to Matola Coal Terminal in the vicinity of the Maputo port in southern Mozambique. Transshipment capacity has just been increased to 6 million tonnes a year and is supposed to be raised even further to 20 million tonnes a year. In addition, Transnet wants to build a new rail line from the Waterberg Basin to RBCT because the expectation is that activities for the opening of mines will increase in the coming years which will in part compensate for the declining output from Mpumalanga Province. All in all, Transnet wants to invest about US$26 billion in the railway network in the coming years.

In return, however, Transnet wants to conclude long-term supply agreements. The mining companies and RBCT are still reluctant. The investments are supposed to be financed above all by the waiver of dividend payments by the shareholder, the State of South Africa, and by loans. But there are also members of Parliament calling for a two-thirds increase in the rates for coal transports, which would presumably reduce the competitiveness of South African coal for export.

Exports Through South African Ports

	2010 Mill. t	2011 Mill. t	2012 Mill. t
RBCT	63.4	65.5	68.3
Durban	0.9	0.7	2.4
Maputo/Mosambik	1.3	1.1	4.0
Total	**65.6**	**67.3**	**74.7**

LB-T25

In 2012, 68.3 million tonnes of coal were exported via RBCT, an increase of 4.3% over the previous year, exceeding the record of 66.1 million tonnes set in 2007 by 3.5%.

Export Rights to Richards Bay Coal Terminal after Expansion

Richards Bay Coal Terminal (RBCT)	Mill. t/year 91.00	% 100
BHP Billiton Energy Coal SA	18.0	19.73
Anglo Coal	19.8	21.75
Xstrata	15.1	16.54
Optimum Coal Terminal	6.5	7.14
Total Coal	4.1	4.49
Sasol Mining	3.6	3.96
Kangra Coal	1.7	1.82
Koornfontein Mines	1.5	1.65
Exxaro Coal	1.0	1.10
Exxaro Coal Mpumalanga	0.9	0.95
South Dunes Coal Terminal	6.0	6.59
Other Exporteurs (incl. BEE)	9.0	9.89
Smaller Junior Mining Companies	4.0	4.39

LB-T26

Following expansion of the capacity, BEE companies are entitled to 28.86 million tonnes of export rights, corresponding to share of 32% in RBCT.

Export

Export of 76 million tonnes in 2012 was the highest in six years and increased by 9 million tonnes. South Africa was able to maintain its FOB prices at a relatively higher level than the Atlantic competitors (Colombia, USA, Russia) because of demand from India and Asia.

Structure of the Seaborne Exports in 2012

	Total Mill. t	Europe[1] Mill. t	Asia Mill. t	Miscellaneous Mill. t
Steam Coal	75.4	23.4	47.2	4.8
Anthracite	0.8	0.4	---	0.4
Total	**76.2**	**23.8**	**47.2**	**5.2**

[1] *Incl. neighbouring Mediterranean countries*

LB-T27

There has been a major shift in the structure of exports towards Asia. The decreased demand from Europe as a consequence of prices was compensated by greater demand from India and China above all, which purchased 36 million tonnes per year in 2012 from South Africa, 8 million tonnes (29%) more than in 2011. Taiwan purchased 4.5 million tonnes a year, South Korea 1.5 million tonnes a year. In view of India's high need for steam coal in the future, the exports to this country could continue to rise and Europe's importance decline further.

Europe, including the Mediterranean region (Turkey, Israel and UAE) remained an important market, but took only 32% of the exports, only a little more than in 2011. The largest European consumers were Italy, Spain, Germany, Turkey and Israel.

Key Figures Republic of South Africa

	2010 Mill. t	2011 Mill. t	2012 Mill. t
Hard Coal Output	254.0	252.0	260.0
Hard Coal Exports[1]	65.6	67.3	76.2
• Steam Coal	65.0	66.5	75.4
• Coking Coal	0.6	0.8	0.8
Imports Germany	3.3	2.6	2.0
• Steam Coal	3.2	2.6	2.0
• Coking Coal	0.1	0	0
Export Rate in %	27.0	26.7	28.2

[1] *Seaborne only*

LB-T28

MOZAMBIQUE

Profile for Mozambique:

Name of country: Republic of Mozambique, República de Moçambique
Climate: subtropical to tropical
Location: South-east Africa
Area: 799,380 km²
Capital: Maputo, population about 1.6 million (2010; source: World Bank)
Population: about 24 million, growth rate about 2.3% p.a. (2011; source: World Bank)
Languages spoken: Portuguese is the official language; there are about 40 African languages (included Makua, Changana, Sena, Chilomwe, Kisuaheli).
Religions, churches: about 45% nature religions, 37% Christian, 18% Muslim
National holiday: 25 June (Independence Day)
Independence: 25 June 1975
Form of government: Republic, presidential democracy
Parliament: Assembleia da República, one-chamber parliament with 250 members, elected for the first time in October 1994 and again in December 1999, 2004 and 2009 in general, equal and secret voting.
Governing party: FRELIMO, Frente da Libertação de Moçambique (Mozambique Liberation Front), governing party since the independence of the country, 191 seats.
Opposition: RENAMO (Resistência Nacional de Moçambique, National Resistance of Mozambique): 51 seats, MDM (Movimento Democrático de Moçambique, Democratic Movement of Mozambique): 8 seats
Trade unions: The former united trade union OTM-CS (Organização dos Trabalhadores Moçambicanos – Central Sindical, Organisation of the Workers of Mozambique) encompasses 17 separate trade unions. There are also about five other trade unions which are not a part of OTM, including the unions for teachers and journalists.
Administrative structure: 10 provinces + the city of Maputo with the status of a province, centralised administrative structure.
Gross domestic product (GDP): about US$12.8 billion (2011; source: World Bank)
Per capita GDP/year: about US$1002 (2012; source: World Economic Outlook)
Currency: (New) Metical / Metical (novo), plural: Meticais. 1 MZN = 100 Centavos. 1 euro = about 37 Meticais

NOTE:
This text contains basic information. It is updated regularly.
No warranties for the correctness and completeness of the data can be assumed.

Source: German Foreign Office (http://www.auswaertiges-amt.de)

There is a real boom in coal projects going on in the countries neighbouring South Africa. Many new projects have been launched in Botswana, Mozambique and Zimbabwe. Mozambique is well on the way to becoming a respected coal exporter in the coming years. But sometimes there are tremendous gaps between expectations and reality. There are currently four companies in possession of a mining licence; of this number, Rio Tinto, Vale and Beacon Hills are mining and exporting coal. Anglo American has acquired a majority interest of 59.4% in the Minas de Revuboe; the remaining shares are held by Nippon Steel and Posco.

Coal was discovered in the Moatize Coal Basin in Mozambique during the colonial period. Following a mine accident in 1979, the small underground mines were nationalised, and the government-owned company Corbomoc was given responsibility for operation of the mines. The Sena railway line from Moatize to the port of Beira was almost completely destroyed by rebels in 1983, rendering the export of coal impossible. Only small volumes were exported by lorry to Malawi or Zimbabwe.

The coal industry finally began to rise from the ashes when the first mining permit was given to Vale in 2004. Once the Sena line had been rebuilt, larger coal exports were again possible via the Beira port.

Vale and Rio Tinto have decided not to mine the coal close to the surface in underground mines, but in opencast pits instead. The coal industry should make a substantial contribution to the gross domestic product in the future. Even in 2012, this indicator rose by 7.5%. Over the last five years, US$5 billion have been invested, and coal reserves are estimated to be 20 billion tonnes. The largest reserves are in Tete Province in the Moatize Basin. But there is also coal in Mamica and Niassa.

The greatest problem is the lack of infrastructure,

especially in the transport sector. Just how delicate the situation is was illustrated at the beginning of the year when heavy rainfall washed out parts of the Sena railway line and exports became impossible owing to a lack of alternatives.

Production

Although production reached an all-time high of 4.9 million tonnes for Mozambique, the government's own goals had been much more ambitious: production of 11 million tonnes a year are expected for 2016, of 50 million tonnes a year for 2020 and of 100 million tonnes a year of coking and steam coal in 2022. Because of the partial destruction of the Sena railway line by floods, these targets will have to be adjusted downwards if they are to be realistic.

The mining company Beacon Hill started producing coal in the Minas Moatize Coal Mine in the middle of 2012. The production is supposed to grow to four million tonnes a year, 2.2 million tonnes thereof for export.

The Mozambique company Neondezi Coal will also commence production of coking coal for export at a later point in time and will produce instead steam coal with lower investment expenditures for the domestic market. Estimates for 2013 indicate that 6 million tonnes of coking coal and 1.5 million tonnes of steam coal can be produced in the Moatize Coal Field.

Export

It can be assumed that the 4.9 million tonnes of coal – primarily coking coal – which were produced were sent almost completely into exports. But there are no official figures.

The flooding of the Sena railway line prompted "force majeure declarations" from Vale, Rio Tinto and Coal of Africa.

Coking coal, more importantly steam coal, could potentially be exported from the Revuboe project in a volume of 6 to 9 million tonnes per year. However, the government has not yet granted any licences, and the project will presumably be delayed until 2015.

Infrastructure

At this time, a series of infrastructure measures, especially railway projects, have been initiated in Mozambique for the purpose of permanently improving the export of coal.

The Mozambique government has announced – perhaps a little too grandly – that it will build five new railway lines with a total length of more than 5,000 km to connect the coal fields with the present port of Beira (Sena line) and the planned deep-sea port of Nacala. The latter project has the greater chance of being realised in the near future because Vale has entered into a joint venture with the state-owned railway company Caminos de Ferro de Mocambique (CFM) and the financing consequently appears to be secure. The entire project consists of the new railway line from Tete to Nacala, where 200 km will be laid through Malawi, and is projected to have a capacity of 30 million tonnes a year.

Moreover, this project includes a coal terminal with a capacity of 18 million tonnes a year and the deep-sea port Nacala, which is supposed to be able to serve Capesize ships. Another railway line is planned to connect the Nhamayabue Region in Tete Province with Mutuale in Nampula. But there is a lot of uncertainty, especially concerning the non-discriminatory access to the railway lines for all mine operators and the financing. The government would prefer a public-private partnership, but must still find investors.

The South African Transnet has announced that it has

delivered the last 98 of 200 railway cars to Rio Tinto. They will be used to transport coking coal from the mine near Moatize to the plant at Uitenhage.

The state-owned transport company CFM has stated that the first 100 km of the Sena railway line affected by the flooding will be upgraded and expanded to handle a total capacity of 6.5 million tonnes a year. However, this project is already 18 months behind schedule.

Since there is currently only one railway line to Beira which functions to any appreciable degree, the fight for transport rights on this route is great. This has prompted companies to look for alternatives. Rio Tinto wanted to transport the coal via the Zambezi-river, but could not obtain the required permit. The consequences were special write-offs in the amount of US$3 billion as well as coal volumes lower than expected in the Benga and Zambezi project. Owing to the partial destruction of the Sena railway line by flooding, the company engaged by Rio Tinto for production in the Benga Mine suspended work for a period of time.

It is very difficult to understand the announcement of the state railway company CFM that it would build another railway line with a length of 525 km from Moatize to Macuze, a future port north of Quelimane. It is supposed to have a capacity of 20 million tonnes a year and, together with the port, will cost US$12 billion.

BOTSWANA

Besides South Africa and Mozambique, Botswana has coal deposits. In the eastern part of Botswana, African Energy Resources, after two years of exploratory drilling, is currently developing the coal field Sese and its estimated 2.5 billion tonnes of coal, a significant part of which is high in ash and sulphur content. The coal is supposed to supply a coal-fired power plant of 300 MW (not yet built), while the higher-calorific value coal is earmarked for export to regional markets and Asia.

The very first 15,000 tonnes of Sese coal were transported in a trial run comprising 34 railway cars to the east and the port in Maputo. In the longer term, production at the Sese Mine is supposed to be 5 million tonnes a year.

The only Marupule coal mine which has been in operation for a longer time is a joint venture of De Beers and the Botswana government and exports coal 1,300 km via Zimbabwe to Maputo. Botswana was granted access to the export ports Beira and Maputo on the basis of a memorandum of understanding between Botswana and Mozambique.

CANADA

Production

In 2012, 24 mines in Canada produced 67 million tonnes of hard coal (= 85%) and lignite (= 15%). The producing provinces are British Columbia, Alberta and Saskatchewan. Of this output, about 38 million tonnes of steam coal, including 10 million tonnes of lignite, from Alberta and Saskatchewan were mostly consumed in local power plants. Almost all of the hard coal production of 29 million tonnes – largely from British Columbia and Western Alberta – is exported as coking coal, PCI coal and, in smaller quantities, as steam coal.

The high price level in 2011 stimulated the further long-term expansion of Canadian mining. A number of projects are being developed in the Peace River Coal District. The Carbon Creek coking coal project is supposed to start in 2016 with the production of an expected

4.1 million tonnes per year. Xstrata is developing two coking coal projects in the same region. The so-called Susha Project, for which the environmental impacts must first be examined, is supposed to have a future capacity of about 4.5 million tonnes a year of coking coal. The second project is still in the exploratory phase and is reported to have a capacity of five million tonnes of coking coal a year. Coalspur is developing a mine in Alberta Province which is expected to produce 3.8 million tonnes of steam coal a year. Anglo America intends to expand the capacity of the coking coal mine Trend from 1 to 4 million tonnes a year. HD-Mining wants to develop an underground coking coal mine with an annual capacity of 6 million tonnes a year in the Tumber Ridge Region in north-eastern British Columbia.

The increase in exports of American coal to Asia have meant good capacity utilisation of Canada's leading transshipment facilities, the Westshore Terminals and Ridley Terminal. The export coal terminal Westshore, located 32 kilometres from Vancouver and right at the border to the USA, posted high volumes in coking coal shipped to Asia as well as in exported steam coal. The latter came above all from American mines in the Powder River Basin in Montana and Wyoming and from some of the mines in Utah. A total of more than 26 million tonnes per year was transshipped from Westshore in 2012. Capacity was increased to 29 million tonnes a year in 2012 and is supposed to be raised even further to 33 million tonnes a year by the end of 2013. Ridley Terminals shipped 11.5 million tonnes in 2012 and are near the limits of their capacity. Investments of US$200 million are planned to expand capacity to 24 million tonnes by 2014.

Infrastructure

Export coal is delivered to the Westshore Terminal near Vancouver by Canadian Pacific Rail (CP), while Canadian National (CN) transports coal to the Neptune Bulk Terminal.

Transshipment capacities and volumes in all of the ports will be expanded or have the levels as shown below in the coming years, whereby the transshipment figures do not agree with the export figures for technical reasons related to customs:

Handling Capacities 2012

Terminal	Capacities 2012 Mill. t/a	Exports 2012 [1] Mill. t/a	Capacities 2015 Mill. t/a
Neptune Bulk Terminal	9.0	5.2	18.0
Westshore Terminal	29.0	26.0	33.0
Ridley Terminal	12.0	11.5	25.0
Total	**50.0**	**42.7**	**76.0**

[1] Provisional figures

LB-T29

The port capacities will then be prepared for additional exports in the event of a rise in demand and production. Thunder Bay Terminal, which has a capacity of 11–12 million tonnes per year, is used for inland shipment of Canadian coal to the USA over the Great Lakes.

Exports

The seaborne exports of 34.6 million tonnes break down into about 3.6 million tonnes of steam coal and about 31 million tonnes of coking coal. Almost 0.9 million tonnes went overland to the USA, most of it coking coal.

There is a chance for 2013 that the export situation via Canada's ports will improve further if more coal from the Powder River Basin is shipped to Asia.

Key Figures Canada	2010 Mill. t	2011 Mill. t	2012[2] Mill. t
Hard Coal Output[1]	68	67	67
Hard Coal Exports	33	33	35
• Steam Coal	6	6	4
• Coking Coal	27	27	31
Imports Germany	1.2	1.7	1.5
• Coking Coal	1.2	1.7	1.5
Export Rate in %	50	49	52

1) Incl. hard lignite
2) provisional, partly estimated

LB-T30

VIETNAM

Production

Vietnam's economic growth declined from 5.9% to 5% in 2012, but in comparison with many other countries in the world, this is more an expression of sustained growth. Exports still rose by 18.3%, whereby the decline was caused by lower demand in the EU for textiles and shoes produced in Vietnam. This is also forecast for Vietnam in 2013. The demand for electricity is growing parallel to this increase. Coal is a leading fuel for power generation and will overtake hydroelectric power in the next five years. According to information from Vietnam Electricity (EVN), more than 20 new coal-fired power plants will be built by 2020. The power generation at the new power plants is supposed to reach the level of 156 TWh in 2020, and about 67 million tonnes of coal a year will be used for this generation. This development will have enormous impact on coal production and electricity prices. In the middle of 2012, Vinacom applied for an increase in the state-regulated coal prices for the electricity industry because it must sell coal with a calorific value of 5,200 kcal at a price of US$29/t.

In 2012, 44.5 million tonnes of coal were produced, a decrease of 4.5 million tonnes. Domestic consumption is about 30 million tonnes. Most of this output is anthracite; 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 to exports.

The growing demand for power which is becoming evident also requires an increase in coal production. An increase in production capacity to 55–58 million tonnes a year by 2015 and to 60–65 million tonnes a year by 2020 has been targeted.

But Vietnam's dynamically growing economy will also trigger an increase in import demand for steam coal. Vietnam's state-owned electricity provider EVN is building a coal terminal in the southern province Tra Vinh. In the future, up to 12 million tonnes of hard coal a year are supposed to be imported here. Owing to its power plant expansion programme, imports could cause Vietnam to become a major importer of steam coal and to restrict exports because of a rise in its own needs. Vinacom estimates that exports will decline to 8 million tonnes in 2013 and to 4–5 million tonnes as of 2015. This will mean that from 2015 Vietnam will become a net importer. Vinacom estimates an increase in imports of 5 million tonnes a year in 2015 and up to 25 million tonnes a year in 2020. In addition, a contract has been concluded by a Vietnamese coal importer to purchase a share of 70% in an Indonesian mine in West Sulawesi with the goal of exporting 3 million tonnes a year to Vietnam in the future. Export will be reduced further by an increase in the export duty from 15% in 2012 to 20%. Owing to the difficulties in selling the products domestically, the

duty was temporarily reduced to 10% so that the coal stockpiles, which had grown to 9 million tonnes, could be exported.

Infrastructure

The waters on the eastern coast of Vietnam are mostly shallow and have in the past allowed access only by ships of less than 10,000 DWT. But the infrastructure is not set up to handle the expected quantities of imports. The government has therefore instructed the Ministry of Industry and Commerce to make a final decision about the location of the coal terminal now that Vinacom has submitted the required plans. According to specifications from the government, the coal terminal is supposed to have a capacity of up to 1.6 million tonnes a year in 2015, 9.7 million tonnes a year in 2020, 15.6 million tonnes a year in 2025 and 37.8 million tonnes a year in 2030.

Export

Seaborne exports once again declined, this time by 2 million tonnes, to 15.2 million tonnes in 2012.

Besides China, Japan and South Korea buy only smaller volumes. The Vietnamese anthracite coal is also used in part as PCI coal.

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

Key Figures Vietnam

	2010 Mill. t	2011 Mill. t	2012 Mill. t
Output	44.0	49.0	44.5 [1)]
Export	19,2	17.2	15.2
thereof China	18,0	14.0	12.1
Export Rate in %	42	35	34

1) Provisional

LB-T31

PEOPLE'S REPUBLIC OF CHINA

Following the weakest year since 1999, economic growth in China once again began to gain momentum in Q4 2012 at 7.9%. China has become the ray of hope for the weakened world economy. Europe's debt crisis, the weak US economy and the control of the overheated real estate market in China depressed growth in Q3 2012 to 7.4%, the lowest mark in three and a half years. In December 2012, industrial production increased by 10.3% in comparison with the same month of the previous year, the Purchasing Manager Index (PMI) for Chinese industry climbed by 1.0 to 50.5 points, a value signalling growth. Total economic performance in China last year increased by 7.8% – the increase in 2011 was 9.2%. This growth is greater than the target set by the government of 7.5% and does not by any means appear poor in comparison with the minimal growth in Europe and the USA. But for a threshold country like China, which has so much catching up to do, this is not especially high. According to a forecast of the IMF, China will again grow by 8.2% in 2013. This country – just like other developing countries – cannot evade the effects of the economic slump in the established economic

powers USA, EU and Japan. However, the new president of the second-largest national economy, Xi Jinping, announced during an Asia conference at the beginning of 2013 that the days of rapid economic growth in China are numbered. It is more important to balance the economic expansion and ensure its sustainability. The rate of inflation fell significantly from 5.42% in 2011 to 3.01% in 2012 (provisional figures). The objective for 2013 is to hold inflation to 3%. In addition, the slow-down in economic growth made itself felt in the consumption of steel, cement and electricity. China produced about 75% (3,750 TWh) of its electricity using coal in 2012.

Power/Crude Steel/ Pig Iron Production

		2010	2011	2012
Power Generation	TWh	4,207	4,690	4,960
Crude Steel Production	Mill. t	627	694.8	716.5
Pig Iron Production	Mill. t	590	683.3	654.3

LB-T32

In 2013, China plans to invest more in environmental protection in response to the highest level ever of air pollution in the capital Beijing and to the protests among its citizens.

At the end of 2012, installed power generation in China amounted to 1,140 GW, an increase of 84 GW (7%). The installed coal-fired power plant output in 2012 came to 796 GW, increasing by about 6.8% or 51 GW in comparison with 2011. The capacities for Chinese electricity generation continue to grow. The China Electricity Council (CEC) estimates that electricity generation capacity will grow by 87 GW (7.5%) by the end of 2013. Power generation and consumption grew yet again, but only by 5.5% (previous year: 12%) to 4,960 TWh. Coal-fired power generation remained almost the same, a consequence above all of the fact that water was plentiful in 2012 and 25% more electricity was generated from water (762 TWh) than in 2011.

China overtakes the USA again as the largest energy consumer

China has taken the place of the United States as the world's largest energy consumer for the second time in succession. According to the Statistical Yearbook of BP, China's economy was responsible for over 21% of the global energy consumption while the USA had a share of 18.5%.

Production

Coal production was expanded further and rose by 4% to 3,660 million tonnes in 2012.

The consolidation of the domestic coal industry in all of China progressed further in 2012. Impetus comes above all from the need to improve environmental and occupational safety standards in the smaller mines by merging them. China's mining companies have made investments in occupational safety, machinery, equipment and training, bringing about tremendous progress in the reduction of fatal accidents in the mines, but this figure is still too high in comparison with Western coal mines. This was made clear once again by the most recent known accidents in Heilongjiang Province (12 dead, 26 injured from carbon monoxide poisoning) and in Jilin Province (10 dead, 28 injured, also from carbon monoxide poisoning) in January 2013.

According to a publication by the state occupational safety administration, the rate for fatal accidents in 2012 declined by one-third to 0.374 deaths per one million tonnes of mined coal (DPMT), the first time that this figure was lower than 0.5 DPMT. But even this rate is still more than ten times higher than the average rate for

industrialised countries (0.02 DPMT). Extrapolated to coal output of 2012, this means that in 2012 about 1,300 people died in Chinese coal mines, which would be the lowest number since records began to be kept 60 years ago. The official figure for 2011 was 1,973 and for 2012 a total of 1,384 fatal accidents.

800 coal mines were shut down in Inner Mongolia and the number of coal mines reduced to 500 from the earlier 1,300 mines. All of the small operations with annual production of less than 300,000 tonnes were closed.

China is planning to close as many as 5,000 more small mines in 2013. In 2012, a total of 628 midsize mines were closed in China; mining technology was improved in 622 mines, and 388 mines were merged with other mines.

These mergers and closures of the smallest mines had an impact on almost 100 million tonnes per year of production, but there was nevertheless no decline in output. On the contrary, the central government expects these measures to result in improved efficiency and in general a greater orientation to competitive structures which will compensate for the loss of capacities in the mini mines. Five gigantic state-owned coal producers have emerged as of this time, each of them with an output capacity of more than 100 million tonnes annually. They are China Shenhua Group, China National Coal Group, Datong Coal Group, Shanxi Coking Coal Group and Chemical Industry Group. The world's largest coking coal mining company, Shenhua Group, alone produced a total of 304 million tonnes of coal and sold 464 million tonnes in 2012. During the first 11 months of 2012, China National Coal Group produced 160 million tonnes.

Coal Production in China

	2010 Mill. t	2011 Mill. t	2012[1)] Mill. t
State-owned Mines	1,694	1,774	2,099
Provincial Mines	516	545	498
Small Operations	1,200	1,140	1,063
Total	**3,410**	**3,459**	**3,660**

1) Provisional Source: China Coal Report

LB-T33

As of the end of 2012, about 85 million tonnes were in producers' stockpiles. The development of hard coal output will continue to be controlled by the government. According to the latest 5-year plan, coal production is to be limited to 4.1 billion tonnes a year, 65% of China's total primary energy consumption. In this sense, growth rates will be less dramatic in the future. Production of 3.9 billion tonnes a year is calculated for 2015.

New projects are also being carried out. The state Commission for Development and Reform has approved the development of a coal project for 122 million tonnes a year. This project in the city Hami in the autonomous region Xinjiang Uyghur in north-western China is planned as a group of 19 mines. The coal field has verified reserves of 55 billion tonnes of coal. However, they are about 1,000 metres deep under the ground. The preparatory work is scheduled for completion by the middle of 2013. The Xinjiang Region intends to produce 140 million tonnes of coal in 2012 and wants to increase output to as much as 400 million tonnes a year in 2015. According to information from the IEA, quantity increases in coal production from 2013 to 2017 will occur above all in China and worldwide coal trade will be decisively influenced by this fact. But the scope of the impact will ultimately depend on how great or how restrained the expansion of production in the coming years can be or is

allowed to be. An increase of 2.4% is expected for 2013. The plan to close power plants with output below 100 MW – a total of about 20,000 MW and annual demand for coal of 60 million tonnes – for environmental protection reasons could have a slight impact on production.

Infrastructure

China's infrastructure is being steadily expanded. In 2015, China is supposed to have railway transport capacities of more than 3 billion tonnes a year, an increase from over 2 billion tonnes a year in 2010. The 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 and east.

China Shenhua Group plans to invest more than US$1.5 billion in the construction of 6 railway lines to Inner Mongolia by the end of 2015. Two lines will serve the western part of Inner Mongolia, one of them a line to connect the existing railway line Datong-Zhunge and the other to connect the city Galutu and the new coal field Shanghaimiao. The other 4 railway lines are aimed at developing the eastern part of Inner Mongolia. Shenhua has output capacity of 200 million tonnes a year in Inner Mongolia and already owns 5 railway lines across China with a length of 1,600 km; the network is supposed to be expanded to a length of more than 3,000 km by the end of 2015. Shenhua has also received the approval of the central government to expand the port in Huanghua in China's northern province Hebei by constructing additional capacity of 13 million tonnes a year. China's largest coal port, Qinhuangdao, transshipped 253 million tonnes of coal in 2011, utilising capacity to more than 100%. There are plans to expand capacity at the port Tianjin as well.

Import/Export

China's import/export development had a dramatic impact in terms of quantity and price on the world's hard coal market in 2012. China's change from a net exporter to a net importer of hard coal, first observed in 2009, continues to progress by leaps and bounds. China increased its imports of hard coal by 26% in comparison with 2011.

Import/Export Development

	2011 Mill. t	2012 [1] Mill. t	Difference 2011/12 Mill. t
Imports Steam Coal	138*	181*	+ 43
Imports Coking Coal	45	54	+ 9
Total Imports	**183**	**235**	**+ 52**
Exports Steam Coal	11*	8*	- 3
Exports Coking Coal/Coke	7	2	- 5
Total Exports	**18**	**10**	**- 8**

*1) Provisional * incl. anthracite*

LB-T34

Because of 43 million tonnes in additional imports and 3 million tonnes in lower exports, China's impact on the world market totalled 46 million tonnes. This enabled the coal exporting countries to compensate to some extent for the weak demand for steam coal on the Atlantic market. Australia was the beneficiary of these increased imports and rose to become China's largest coal trading partner for steam coal (39 million tonnes compared to 33 million tonnes in the previous year), followed by Indonesia (33 million tonnes compared to 65 million tonnes in the previous year). Vietnam supplied 17 million tonnes of anthracite, largely to south-west China. But coal was also imported from the Atlantic region. The USA substantially increased its exports to China to almost 5 million tonnes of steam coal, and South Africa exported

an additional 14.3 million tonnes of steam coal (24% rise) to China. Colombia and Canada were also able to increase their exports to China in comparison with 2011. Chinese exports declined in total by 8 million tonnes to about 10 million tonnes in 2012. The export of steam coal fell further by about 3 million tonnes to 8 million tonnes (including anthracite); the export of coking coal declined significantly to only 1.5 million tonnes.

Coke exports fell to only 1.0 million tonnes in contrast to 2011. The largest customers for steam and coking coal for these sharply reduced exports were Japan (4.0 million tonnes), South Korea (3.7 million tonnes) and Taiwan (1.3 million tonnes).

Coal Exports According to Grades

	2010 Mill.t	2011 Mill.t	2012[1)] Mill. t
Steam Coal	13.6	6.8	4.9
Coking Coal	1.1	3.6	1.5
Anthracite	4.2	4.2	3.2
Total	**18.9**	**14.6**	**9.6**
Coke	3.3	3.3	1.0

1) Provisional

LB-T35

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

Balance Exports / Imports

	2010 Mill. t	2011 Mill. t	2012[1)] Mill. t
Exports	19	15	10
Imports*	166	183	235
Balance	**- 147**	**- 168**	**- 225**

** incl. hard lignite 1) Provisional*

LB-T36

So China was once again a net importer in 2012. Simultaneously, China overtook Japan as the world's largest coal importer for the second time. Although Japan's imports rose to 185 million tonnes, they were still 50 million tonnes below China's.

There are many and various reasons for the increase in imports. The main reason in the case of steam coal is driven by the market and prices. The primary importers were also the power generation companies located on the east coast who have de facto been subsidising domestic coal mining without being able to pass the costs on to their electricity customers. A price reform is now expected to change this. There is no choice but to wait and see what effects this will have on imports in 2013.

Another reason is the location of some of the steel companies on the coast in the vicinity of coal terminals; they are able to import coking coal from the Australian region while the new mills constructed in China's western provinces are increasingly dependent on coking coal imports from Mongolia. The power plants in South China, on the other hand, look to Indonesia as the geographically favoured exporter, above all for low-caloric lignite/coal.

Initially, continued high imports were projected for the first half of 2013 because of the low world market prices. But the extent to which China imports also depends on the economic development of the country and the new price system for the domestic coal market. There are opinions that expect a decline in imports of almost 50% owing to the falling costs for Chinese coal. If the Chinese domestic price level is higher than prices on the world market, this will be the main motivation for the power plants and steel mills to procure their supplies from the world market.

Key Figures People's Republic of China	2010 Mill. t	2011 Mill. t	2012 [1] Mill. t
Hard Coal Output	3,410	3,459	3,660
Hard Coal Exports	18.9	14.6	9.6
• Steam Coal	17.8	11.0	8.1
thereof Anthracite	4.2	4.2	3.2
• Coking Coal	1.1	3.6	1.5
Coke Exports	3.3	3.3	1.0
Hard Coal Imports	166.2	183.1	235.1
• Steam Coal	92.5	102.3	147.0
• Coking Coal	47.2	44.7	53.6
• Anthracite	26.5	36.1	34.5
Einfuhren Deutschland	0.2	0.2	0.01
• Steam Coal	-	-	0.009
• Coke	0.2	0.2	0.002
Export Rate in %	0.6	0.4	0.3

[1] *Provisional*

LB-T37

MONGOLIA

This country is rich in raw materials which have not yet been exploited, and it could become the main beneficiary of the raw material boom of recent years. But resource nationalism and falling world market prices could once again generate enormous uncertainty about the country's mining future. Moreover, Mongolia's importance with regard to raw material policies and strategies for the future could be reassessed as a whole.

Production

Because of Mongolia's location – Russia and China are the only nations bordering it – Chinese companies have been especially interested in securing the developing coking coal deposits for themselves. Today the Chinese are battling in courts.

One noteworthy case is the litigation between the Chinese company Chalco and the Mongolian state company Erdenes-Tavan-Tolgoi (EET) regarding the granting of a loan for US$350 million in return for supplies of coking coal. EET suspended the deliveries with the goal of securing significantly higher prices per tonne of supplied coking coal. Now Chalco is suing for performance of the contract. South Gobi Resources also announced production cutbacks because of inadequate prices. The attempt by Chalco to acquire South Gobi Resources from the Canadian majority owner Turquoise Hill was also prohibited by the national government. The privatisation of EET was also halted, and the Mongolian president announced a series of acts and amendments to laws related to mining and the production of coal by foreign companies, all of which are aimed at obtaining greater governmental influence, even the majority interest in the deposits, and regulation. The impact on the agreement with 3 large companies concerning 50% access to a part of the Tavan-Tolgoi coal deposits, which the Mongolian government signed in 2011, cannot yet be appraised. But it is hardly imaginable that the project will continue to progress under these general conditions because it will no longer appear economically and commercially appealing. In the future, such uncertainties will undoubtedly discourage foreign investors from investing in Mongolia, and the economic development of this country and its people will suffer the most. At the end of 2012, all of the coking coal exports from Mongolia to China were suspended. It will be necessary to wait and see how greatly this development will affect production and export and relations between the two neighbours, Mongolia and China.

Export

In the first 11 months of 2012, Mongolia exported 19 million tonnes of coking coal a year to China, 3 million tonnes more than in 2011. The predictions of exports of 50 million tonnes a year in 2015 and 80 million tonnes a year in 2017 are almost certainly worthless in view of the latest developments.

Infrastructure

Although most of the coking coal and coal deposits are located within a 300-kilometre radius of the Chinese border and lorry transport is currently the only feasible option, the transport of larger quantities in the future will require above all a railway infrastructure. Mass exports are not possible without rail connections.

POLAND

Production

Polish production increased by 3.6 million tonnes in comparison with 2011 to 79.3 million tonnes. However, sales on the domestic market declined slightly so that about 8 million tonnes were stockpiled at the end of 2012. Production of lignite also rose by 1 million tonnes to about 64 million tonnes.

The Largest Hard Coal Producers in Poland

Company	Output 2011 Mill. t	Output 2012 Mill. t	Exports 2011 Mill. t	Exports 2012 Mill. t
Kompania Weglowa	39.1	39.3	3.7	4.9
Katowicka Grupa Kapitalowa	13.2	12.0	0.6	0.5
Jastrzebska Spólka Weglowa	12.6	13.5	0.4	0.5
Independent Mines	10.8	14.5	2.1	1.1
Total	**75.7**	**79.3**	**6.8**	**7.0**

LB-T38

Poland was able to maintain the level of coking coal and coke production. Coking coal production came to 12.0 million tonnes.

The capacity for coking coal production was increased again to 11 million tonnes per year, but was not fully utilised. Coke production in 2012 grew again by 5% in comparison with the comparable period of the previous year, but the total production amounted only to 8.6 million tonnes. The largest Polish coal company, Kompania Weglowa, has announced that it will increase its coking coal production by 50% to 3.6 million tonnes in 2013.

Progress in the privatisation of Polish mining is almost at a standstill. Weglokoks once again proclaimed that it intended to go public in part. The government wants to place between 20% and 40% of the Weglokoks stock on the exchange.

Poland has a 60% share of European hard coal production, but has been importing more coal than it exports since 2008. Most of the imports are of steam coal, but smaller quantities of coking coal and anthracite are also imported. Volume in 2012 came to 10.1 million tonnes. The steam coal came primarily from Russia (6.5 million tonnes) and the Czech Republic (1 million tonnes) and is used mostly in northern Poland. The coking coal

comes from the USA. This trend will continue over the next few years.

Poland has also been given the opportunity by the EU to pay subsidies related to closures to the mining companies.

Infrastructure

There were no changes in the transport infrastructure, which is now too large for the current export volume, in 2012. The export logistics in Poland are well developed. Loading ports include Gdansk, Swinoujscie, Szczecin and Gdynia. While Gdansk is able to load Capesize freighters, Swinoujscie and Gdynia are accessible only to Panamax ships, and only Handysize vessels can access Szczecin. In the middle term, these ports will continue to gain in importance for imports.

Export

Exports of hard coal in 2012 increased slightly by 0.2 million tonnes to 7.0 million tonnes, but imports of 10.1 million tonnes make Poland a net importer. Of the exported 7.0 million tonnes, 4.9 million tonnes were marketed by Weglokoks; 2.1 million tonnes were marketed directly by the mining companies. The quantities marketed by Weglokoks were exported by sea (49%) and land (51%) transport. Coke exports, in contrast, are declining sharply. In 2012, 5% less was exported (5.4 million tonnes). Exports in 2012 break down as shown below (Weglokoks only):

Export 2012

	Coking Coal Mill. t	Steam Coal Mill. t	Total Mill. t
Seaborne	---	2.4	2.4
Overland	0.3	2.2	2.5
Total	**0.3**	**4.6**	**4.9**

LB-T39

The largest customers for steam coal were Germany (about 2.4 million tonnes) and the Czech Republic (about 1.5 million tonnes).

Key Figures Poland

	2010 Mill. t	2011 Mill. t	2012 [1] Mill. t
Hard Coal Output	76.6	76.2	79.3
Hard Coal Exports	10.4	6.8	7.0
• Steam Coal	8.7	5.1	5.4
• Coking Coal	1.7	1.7	1.6
Coke Exports	6.3	5.9	5.4
Hard Coal Imports	13.5	15.1	10.1
Imports Germany	3.9	5.1	4.0
• Steam Coal	1.5	2.6	2.4
• Coking Coal	---	---	---
• Coke	2.4	2.5	1.6
Export Rate in % (Coke converted into coal)	19	18	18

[1] *Provisional*

LB-T40

CZECH REPUBLIC

Production

In 2012, 11.4 million tonnes of hard coal were produced in the Czech Republic, so there was no increase in hard coal output.

Coke production by the Czechs amounted to 2.5 million tonnes in 2012. Lignite production came to 43.5 million tonnes, a slight increase of 2.6 million tonnes.

Czech hard coal production of 11.4 million tonnes breaks down into 5.0 million tonnes of coking coal and 6.4 million tonnes of steam coal.

Infrastructure

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

Export / Import

Exports of hard coal and coke amounted to about 5.8 million tonnes, thereof 5.4 million tonnes of coal and 0.4 million tonnes of coke. Austria (1.8 million tonnes), Slovakia (1.6 million tonnes) and Poland (1.6 million tonnes) were the largest customers. A large part of the exports consists of coking coal (3.0 million tonnes). The Czech Republic imported small quantities of coal and coke – about 1.5 million tonnes – from Poland.

Key Figures Czech Republic

	2010 Mill. t	2011 Mill. t	2012 Mill. t
Hard Coal Output	11.7	11.3	11.4
Hard Coal Exports	6.3	6.3	5.4
Coke Exports	0.5	0.5	0.4
Imports Germany	0.4	0.4	0.3
• Steam Coal	---	0.1	---
• Coke	0.4	0.3	0.3
Export Rate in % (Coke converted into coal)	59	61	52

1) provisional

LB-T41

VENEZUELA

Production

The problems for Carbones de la Guajira and other coal producers in Venezuela are seemingly never-ending.

The transport of the coal by lorry from the mines to the ports is obstructed and prevented for a number of different reasons. Hard coal output in 2012 amounted to 2.73 million tonnes and represented yet again a decline in comparison with the previous year. Higher production is expected for 2013.

The production of the largest mine, Carbones del Guasare's Paso Diablo, fell by 0.6 million tonnes to 1.53 million tonnes. The nationalisation of the industry by the late President Hugo Chavez caused problems for the procurement of mine equipment and spare parts because of issues related to currency exchange rates.

Production / Exports by Company	2010 Mill. t	2011 Mill. t	2012 Mill. t
Carbones del Guasare	2.2	2.1	1.5
Interamerican Coal	0.5	0.2	0.6
Carbones de la Guajira	0.8	0.7	0.2
Miscellaneous	0.6	0.8	0.4
Total	**4.1**	**3.8**	**2.7**

LB-T42

Key Figures Venezuela	2010 Mill. t	2011 Mill. t	2012 Mill. t
Hard Coal Output	3.8	3.8	2.7
Hard Coal Exports	3.8	3.8	2.7
Imports Germany	0.43	0.16	0.11
• Steam Coal	0.43	0.16	0.11
Export Rate in %	100.0	100.0	100.0

1) provisional

LB-T43

Infrastructure

While the current infrastructure is adequate to export the small quantities, it is obsolete. Owing to the expropriations of international corporations in the past, especially in the oil sector, as well as the general economic chaos in Venezuela, no investors, who are willing to put money into new infrastructure projects, can be found. It will be necessary to wait and see if any changes come about after the death of President Chavez.

Export

Export in 2012 amounted to 2.7 million tonnes, 1.1 million tonnes less than in the previous year. Despite the best sales opportunities, Venezuela is unable to realise its potential. The purchase of 1.1 million tonnes made Europe the largest customer, while the USA procured 0.2 million tonnes.

Report in Figures

World-Energy Consumption by Source of Energy and Regions

Mill. TCE

Source of Energy	2006	2007	2008	2009	2010	2011
Mineral Oil	5,584	5,645	5,617	5,400	5,754	5,799
Natural Gas	3,653	3,767	3,898	3,700	4,083	4,150
Nuclear Energy	907	888	886	900	900	900
Hydro Power	996	1,013	1,000	1,000	1,100	1,130
Hard Coal	4,014	4,207	4,394	4,570	4,750	4,990
Lignite	330	330	330	330	330	330
Total	**15,484**	**15,850**	**16,125**	**15,900**	**16,917**	**17,299**
						Shares in %
Region of Consumption	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
North America	25.8	25.6	24.8	23.8	23.1	22.6
Asia/Australia	33.4	34.3	35.3	37.1	38.1	39.1
since 2007 EU-27	15.8	16.4	15.8	14.4	14.5	13.6
CIS	8.8	8.7	7.8	7.4	8.3	7.0
Other regions	16.2	15.0	16.3	17.3	16.0	17.7
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
						Mill. TCE
Coal Consumption (Hard Coal and Lignite)	**4,436**	**4,344**	**4,724**	**4,688**	**5,080**	**5,321**
						Shares in %
Region of Consumption	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
North America	19.9	19.3	18.9	16.2	15.6	14.3
Asia/Australia	58.3	59.7	61.0	65.7	67.1	68.6
since 2007 EU-27	11.1	10.6	9.5	7.9	7.9	7.5
CIS	5.5	3.6	5.2	4.6	4.8	4.4
Other regions	5.2	6.8	5.4	5.6	4.6	5.2
Total	**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 until 2011

Table 1

World Hard Coal Production / Foreign Trade [1]

M t (t=t)

	2007			2008			2009		
	Production	Export	Import	Production	Export	Import	Production	Export	Import
Germany	24	0	48	19	0	46	15	0	36
France	0	0	18	0	0	19	0	0	10
Great Britain	17	0	43	18	0	48	18	0	38
Spain[2]	11	0	25	10	0	33	9	0	18
Poland	87	12	5	83	8	9	78	9	10
Czech Republic	13	7	2	13	7	3	11	6	2
Romania	3	0	3	3	0	0	4	0	5
since 2007 EU-27	158	19	231	149	15	217	135	15	189
Russia	314	93	24	330	95	28	300	100	25
Kazakhstan	88	26	0	90	25	0	80	25	0
Ukraine	75	3	9	78	5	0	72	4	0
Countries Total	477	122	33	498	125	28	452	129	25
Canada	37	31	29	38	33	23	28	28	2
USA	1,043	53	33	1,068	74	31	983	53	19
Colombia	69	65	0	73	69	0	70	66	0
Venezuela	8	8	0	6	6	0	4	4	0
Countries Total	1,157	157	62	1,185	182	54	1,085	151	21
South Africa	243	68	0	235	63	0	250	63	0
Australia	322	250	0	334	261	0	344	273	0
India	430	0	52	465	0	54	532	0	59
China[3]	2,523	53	51	2,716	45	41	2,910	23	127
Japan	0	0	180	0	0	190	0	0	162
Indonesia	231	189	0	255	202	0	280	230	0
Countries Total	3,184	242	283	3,436	247	285	3,722	253	348
Other Countries	59	49	298	13	37	346	112	32	333
World	5,600	907	907	5,850	930	930	6,100	916	916

2012 preliminary figures [1] internal trade and seaborne trade [2] Production incl."Lignito Negro"
[3] Production incl. lignite (about 50 mill. t estimated)

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

World Hard Coal Production / Foreign Trade [1)]

M t (t=t)

2010 Production	2010 Export	2010 Import	2011 Production	2011 Export	2011 Import	2012 Production	2012 Export	2012 Import	
14	0	41	13	0	44	11	0	45	Germany
0	0	19	0	0	15	0	0	18	France
18	1	27	18	0	32	17	0	45	Great Britain
9	0	13	7	0	15	6	0	21	Spain[2)]
77	14	10	76	7	16	79	7	10	Poland
12	7	2	11	6	2	11	5	2	Czech Republic
4	0	4	4	0	5	4	0	4	Romania / Bulgaria
134	22	182	129	13	199	128	12	212	**EU-27 since 2007**
321	97	10	336	107	2	353	127	30	Russia
106	29	1	108	30	0	121	30	0	Kazakhstan
76	6	10	82	0	10	85	0	10	Ukraine
503	132	21	526	137	12	559	157	40	**Countries Total**
33	33	9	33	33	9	67	35	10	Canad
984	74	15	994	97	11	922	114	9	USA
75	72	0	86	81	0	89	81	0	Colombia
4	4	0	4	4	0	3	3	0	Venezuela
1,096	183	24	1,117	215	20	1,081	233	19	**Countries Total**
250	68	0	252	67	0	260	76	0	South Africa
355	300	0	346	281	0	366	316	0	Australia
537	0	86	554	0	114	580	0	129	India
3,410	19	166	3,650	15	183	3,660	9	235	China[3)]
0	0	184	0	0	175	0	0	185	Japan
295	240	0	318	270	0	386	304	0	Indonesia
4,242	259	436	4,522	285	472	4,626	313	549	**Countries Total**
141	89	390	66	44	339	146	57	344	Other Countries
6,720	1,053	1,053	6,958	1,042	1,042	7,166	1,164	1,164	**World**

Table 2

Seaborne Hard Coal Trade

Mill. t

Exporting Countries	2007 Coking Coal	2007 Steam Coal	2007 Total	2008 Coking Coal	2008 Steam Coal	2008 Total	2009 Coking Coal	2009 Steam Coal	2009 Total
Australia	138	112	250	135	126	261	134	139	273
USA	26	11	37	36	17	53	31	12	43
South Africa	1	67	68	0	63	63	1	61	62
Canada	25	4	29	25	6	31	22	6	28
China	2	51	53	4	42	46	1	22	23
Colombia	1	65	66	0	69	69	3	63	66
Indonesia	0	189	189	0	202	202	0	230	230
Poland	1	4	5	0	2	2	1	3	4
Russia	6	72	78	3	75	78	5	85	90
Venezuela	0	8	8	0	6	6	0	4	4
Other	2	35	37	4	24	28	3	33	36
Total	**202**	**618**	**820**	**207**	**632**	**839**	**201**	**658**	**859**

Importing Countries/ Regions	2007 Coking Coal	2007 Steam Coal	2007 Total	2008 Coking Coal	2008 Steam Coal	2008 Total	2009 Coking Coal	2009 Steam Coal	2009 Total
Europe[1)]	50	161	211	50	159	209	36	153	189
EU-25/since 2007 EU-27	45	156	201	45	143	188	36	137	173
Asia	131	346	477	139	368	507	115	432	547
Japan	74	126	200	56	131	187	45	113	158
South Korea	21	65	86	23	73	96	16	81	97
Taiwan	9	61	70	11	60	71	11	59	70
China	3	20	23	3	17	20	31	85	116
Hongkong	0	12	12	0	11	11	0	12	12
India	23	29	52	29	25	54	12	47	59
Latin Amerika	14	6	20	18	5	23	6	4	10
Other (incl. USA)	7	105	112	0	100	100	44	69	113
Total	**202**	**618**	**820**	**207**	**632**	**839**	**201**	**658**	**859**

2012 preliminary figures; excl. land transport

1) incl. Mediterranian countries

Evaluation of several sources

Table 3

Seaborne Hard Coal Trade

Mill. t

2010 Coking Coal	2010 Steam Coal	2010 Total	2011 Coking Coal	2011 Steam Coal	2011 Total	2012 Coking Coal	2012 Steam Coal	2012 Total	Exporting Countries
159	141	300	133	148	281	145	171	316	Australia
48	16	64	60	31	91	59	48	107	USA
1	67	68	1	66	67	1	75	76	South Africa
27	6	33	26	6	32	30	4	34	Canada
2	17	19	5	10	15	1	8	9	China
4	69	73	3	78	81	1	80	81	Colombia
0	277	277	0	270	270	0	304	304	Indonesia
0	6	6	0	3	3	0	3	3	Poland
7	80	87	8	93	101	8	109	117	Russia
0	4	4	0	4	4	0	3	3	Venezuela
2	30	32	3	30	33	11	21	32	Other
250	713	963	239	739	978	256	826	1,082	**Total**

2010 Coking Coal	2010 Steam Coal	2010 Total	2011 Coking Coal	2011 Steam Coal	2011 Total	2012 Coking Coal	2012 Steam Coal	2012 Total	Importing Countries/ Regions
51	125	176	48	148	196	42	193	235	Europe[1)]
51	125	176	39	116	155	37	149	186	since 2007 EU-27
149	511	660	140	531	671	139	601	740	Asia
52	132	184	55	120	175	52	133	185	Japan
19	92	111	22	107	129	21	105	126	South Korea
5	59	64	0	66	66	0	66	66	Taiwan
32	117	149	21	109	130	34	145	179	China
0	10	10	0	13	13	0	12	12	Hongkong
26	60	86	33	81	114	31	98	129	India
3	19	22	4	31	35	20	17	37	Latin Amerika
47	58	105	47	29	76	55	15	70	Other (incl. USA)
250	**713**	**963**	**239**	**739**	**978**	**256**	**826**	**1,082**	**Total**

World Coke Production

1,000 t

Country/Region	2006	2007	2008	2009	2010	2011	2012
Europe							
Austria	1,360	1,428	1,360	1,290	1,400	1,350	1,350
Belgum	2,714	2,667	1,983	1,570	1,880	1,867	1,788
Bosnia-Herzegovina	450	596	816	714	920	891	754
Bulgaria	615	500	300	0	0	0	0
Czech	3,231	3,063	3,206	2,172	2,396	2,436	2,317
Finland	870	865	860	740	828	852	881
France	4,290	4,374	4,422	3,170	3,110	2,841	3,186
Germany	8,250	8,520	8,260	6,770	8,150	7,990	8,050
Hungary	913	1,014	999	746	1,018	1,049	1,026
Italia	4,560	4,632	4,455	2,724	3,708	4,154	3,907
Netherlands	2,160	2,180	2,166	1,700	1,882	1,998	1,850
Poland	9,599	10,264	9,832	6,947	9,546	9,134	8,637
Romania	1,804	1,669	1,017	237	0	0	0
Slowakia	1,749	1,750	1,735	1,575	1,550	1,555	1,608
Spain	2,742	2,753	2,400	1,691	2,021	2,045	1,761
Sweden	1,182	1,193	1,174	980	1,118	1,151	1,048
Great Britain	4,276	4,280	4,152	3,600	3,774	3,717	3,677
Europe in total	**50,765**	**51,748**	**49,137**	**36,626**	**43,301**	**43,030**	**41,840**
CIS	**51,067**	**54,054**	**50,783**	**45,379**	**48,220**	**49,673**	**49,200**
North America	**20,237**	**20,184**	**19,029**	**14,550**	**19,624**	**19,632**	**19,230**
Latin Amerika	**10,785**	**12,026**	**12,275**	**9,754**	**12,350**	**13,117**	**13,318**
Africa	**2,855**	**3,232**	**2,975**	**1,970**	**2,691**	**2,618**	**2,463**
Middle East	**6,211**	**6,035**	**5,611**	**5,125**	**5,320**	**5,135**	**5,400**
Asia							
China	297,680	321,714	312,148	355,140	383,400	427,790	443,230
India	18,635	17,838	17,936	18,803	19,359	19,972	20,520
Japan	38,077	38,354	38,300	37,500	37,500	34,000	36,000
South Korea	9,887	9,949	10,614	9,577	12,835	14,784	14,607
Other	3,963	4,585	4,580	4,630	5,454	5,619	5,521
Total	**368,242**	**392,440**	**383,578**	**425,650**	**458,548**	**502,165**	**519,878**
Austral-Asia	**3,117**	**3,323**	**3,161**	**2,498**	**3,149**	**2,982**	**2,858**
WORLD in total	**513,279**	**543,042**	**526,549**	**541,552**	**593,203**	**638,352**	**654,187**

Sources: Several sources, data from associations and industry

Table 4

Qualities of Steam Coal Traded on the World Market

Exporting Countries	Volatile %	Ash %	Moisture %	Sulphur %	F. Carbon %	Grinding Index HGI	Calorific Value kcal/kg
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/Anthracite	5 - 6	15 - 33	9 - 11	0.8 - 0.9	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/ Qualities	Volatile %	Ash %	L. 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

Table 6

Qualities of Coking Coal Traded on the World Market

Coke strength CSR-value[2)]	Fludity max. ddpm	Con-traction max. %	Dilatation max. %	Reflecion middl. %	Macerale reactiv %	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	n/a	n/a	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

Hard Coal Export of Australia

1,000 t

Importing Countries	2006	2007	2008	2009	2010	2011	2012
Germany	5,372	6,744	5,156	3,759	4,303	4,280	4,451
France	4,542	3,733	3,446	2,077	2,946	2,363	2,716
Belgium/Luxembourg	1,600	2,580	2,927	680	1,298	1,179	992
The Netherlands	3,975	3,240	2,523	500	1,217	1,470	1,202
Italy	2,234	2,466	2,041	1,122	1,741	1,557	1,509
Great Britain	4,568	3,478	3,943	2,746	3,612	3,585	2,357
Denmark	0	0	0	151	0	0	0
Spanin	2,977	3,043	2,105	776	1,715	1,337	1,118
Portugal	0	0	0	0	0	0	0
Sweden	1,289	1,273	1,379	716	1,825	1,092	1,058
Other						364	323
since 2007: EU-27	26,557	27,709	24,730	12,904	18,657	17,227	15,726
Israel	300	348	824	672	592	498	678
Turkey	1,118	838	2,242	759	1,304	787	1,221
Romania		0	0	0	0	0	0
Other Europe[1)]	1,120	315	383	350	288	0	0
Europe	29,095	29,210	28,179	14,685	20,841	18,512	17,625
Japan	103,293	115,466	117,962	101,618	117,768	106,171	113,654
South Korea	23,576	22,096	36,797	41,662	43,629	46,037	46,199
Taiwan	22,653	25,463	24,385	22,517	28,706	26,878	24,291
Hongkong	0	0	303	1,175	440	895	679
India	18,938	22,511	25,694	27,092	32,862	30,224	31,934
China	7,450	3,957	3,295	46,546	37,069	34,000	62,856
Brasil	2,929	3,360	5,036	3,713	3,457	2,198	2,685
Chile	1,625	462	592	481	944	1,135	718
Other Countries	27,718	27,899	17,576	13,902	15,042	15,025	15,372
Export in Total	**237,277**	**250,454**	**259,819**	**273,391**	**300,758**	**281,075**	**316,013**

2012 preliminary figures, incl. Mediterranean countries

Source: McCloskey

Table 7

Hard Coal Export of Indonesia

1,000 t

Importing Countries	2006	2007	2008	2009	2010	2011	2012
Germany	1,509	1,168	513	86	69	34	0
The Netherlands	3,704	1,822	1,669	239	0	927	71
Italy	8,626	6,290	6,252	5,427	7,094	4,882	3,692
Great Britain	1,822	1,141	2,126	786	162	390	0
Irland	609	152	318	0	0	0	0
Denmark	0	0	0	0	0	0	0
Spain	4,033	4,226	3,826	4,361	2,115	1,877	5,634
Slovenia	1,562	1,242	2,032	840	840	559	332
Other	2,835	2,000	1,014	376	2,220	851	2,071
since 2007 EU-27	24,700	18,041	17,750	12,115	12,500	9,520	11,800
USA	2,646	2,962	2,956	2,025	1,240	1,180	469
Chile	1,733	1,600	498	437	980	483	160
Japan	32,842	34,135	39,719	32,109	26,040	24,950	31,800
South Korea	20,780	26,521	26,620	33,698	34,650	36,720	37,700
Hongkong	10,514	11,550	10,382	11,131	9,540	8,650	11,673
Taiwan	24,397	25,753	25,754	25,206	21,770	19,090	19,600
Malaysia	7,324	7,814	9,415	11,184	8,600	11,880	12,600
Philippines	4,113	4,290	6,160	7,066	5,160	6,050	9,300
Thailand	7,800	9,413	11,371	10,334	8,770	6,780	11,421
India	19,822	24,840	29,283	37,735	36,500	52,800	60,520
VR China	6,219	14,894	16,093	39,402	68,060	77,950	83,300
Other countries	8,049	7,492	6,259	7,844	6,164	13,836	13,657
Export in total	**170,939**	**189,305**	**202,260**	**230,286**	**239,974**	**269,889**	**304,000**

2012 preliminary figures

Sources: Own calculations, companies' information

Table 8

Hard Coal Export of Russia

1,000 t

Importing Countries	2006	2007	2008	2009	2010	2011	2012
Germany	9,100	8,367	7,800	9,449	10,308	10,731	11,227
Belgium/Luxembourg	1,747	1,327	1,867	0	0	0	0
Italy	1,522	818	1,723	1,017	862	2,346	2,600
Great Britain	22,701	19,828	21,434	15,501	7,332	11,592	14,600
Spain	2,761	905	2,623	1,439	768	1,917	2,300
Finland	4,440	5,080	3,745	4,770	2,900	5,111	2,700
Poland	3,327	5,000	5,267	1,766	1,402	1,389	1,700
Romania	1,505	982	1,009	222	308	438	450
Other	6039	8,029	5,533	11,325	13,532	12,802	10,200
since 2007 EU 27	53,142	50,336	51,001	45,489	37,412	46,326	45,777
Turkey	6,500	4,013	2,229	8,672	9,139	8,180	9,785
Europe	59,642	54,349	53,230	54,161	46,551	54,506	55,562
Japan	9,204	11,491	9,960	8,718	10,575	11,608	15,292
South Korea	1,071	6,358	7,495	4,541	8,574	13,100	11,438
Taiwan	1,305	1,329	1,203	1,652	1,116	3,498	3,330
China	1,030	269	760	12,122	11,660	10,836	20,183
Other countries [1)]	2,248	5,104	4,952	8,409	9,056	7,434	11,195
Export in total[2)]	**74,500**	**78,900**	**77,600**	**89,603**	**87,532**	**100,982**	**117,000**

[1)] 2006-2012 exports via Cyprus/Libanon; the quantities were partially exported in other not known countries
[2)] only hard coal exports (seaborne trade)
2012 preliminary figures

Sources: 2006-2012: information from companies, own calculations

Table 9

Hard Coal Export of the United States

1,000 t

Importing Countries	2006	2007	2008	2009	2010	2011	2012
Germany	2,191	2,065	5,662	5,104	5,727	8,140	9,809
France	1,475	2,162	3,213	3,052	2,788	3,615	3,720
Belgium/Luxembourg	1,959	1,907	2,746	2,503	2,080	2,783	2,360
The Netherlands	1,191	4,117	2,976	2,458	3,314	5,908	7,178
Italy	2,975	3,212	2,891	2,125	3,000	5,070	7,747
Great Britain	2,251	3,032	5,342	4,052	3,980	6,283	10,856
Irland	0	74	142	0	0	219	208
Denmark	348	72	283	291	73	146	0
Spain	1,472	1,337	2,161	1,581	1,837	1,551	1,975
Portugal	267	258	391	1,020	531	891	1,127
Finland	661	265	425	202	428	452	266
Sweden	426	483	667	434	676	633	613
Other	849	2,300	6,315	1,920	4,076	1,717	3,786
since 2007: EU-27	16,065	21,284	33,214	24,742	28,510	37,408	49,645
Israel	0	0	0	0	0	0	17
Turkey	1,106	1,306	1,736	1,295	2,296	2,670	4,871
Romania	1,002	0	0	0	0	937	607
Other Europe[1)]	1,240	4,087	5,414	2,033	3,069	6,330	5,951
Europe	19,413	26,677	40,364	28,070	33,875	47,345	61,091
Canada	18,030	16,625	20,589	9,509	10,528	6,022	6,393
Mexico	454	422	1,092	1,161	1,682	2,526	3,126
Argentina	317	273	331	417	281	233	471
Brazil	4,110	5,908	5,785	6,720	7,177	7,867	7,206
Japan	301	5	1,572	822	2,869	6,209	5,169
South Korea	515	201	1,225	1,562	5,237	9,479	8,250
Taiwan	2	2	71	77	227	0	227
Other countries	1,581	3,091	2,468	4,891	11,787	17,033	21,615
Export in total	**44,723**	**53,204**	**73,497**	**53,229**	**73,663**	**96,714**	**113,548**

1) incl. Mediterranean countries

2012 preliminary figures

Source: McCloskey

Table 10

Hard Coal Export (only Steam Coal) of Colombia

1,000 t

Importing Countries	2006	2007	2008	2009	2010	2011	2012
Germany	3,729	6,931	5,906	5,173	7,397	10,550	8,972
France	3,341	2,720	2,589	2,232	2,329	1,100	1,239
Belgium/Luxembourg	0	0	149	168	125	68	75
The Netherlands	6,031	5,554	5,986	10,726	9,061	7,412	13,053
Italy	1,993	1,887	2,026	2,080	1,715	1,593	1,916
Great Britain	2,511	3,003	4,041	4,471	4,417	4,198	6,365
Irland	1,129	475	661	980	1,048	1,942	1,729
Denmark	1,998	2,259	1,869	1,973	1,092	4,998	3,153
Greece	71	149	0	0	76	480	0
Spain	1,501	2,219	2,301	2,441	2,272	2,125	4,340
Portugal	2,920	2,590	1,903	1,929	1,553	2,069	3,212
Finland	158	0	130	72	277	459	0
Sweden	0	0	0	0	0	1,169	0
Slovenia	220	238	356	341	0	1,031	214
Other						858	0
since 2007: EU-27	25,602	28,163	28,359	32,587	31,362	40,052	44,268
Israel	3,371	3,527	2,092	2,549	3,770	5,595	5,713
Other Europe [1)]	2,898	3,437	3,901	3,718	3,006	10,222	8,424
Europe	31,871	35,127	34,352	38,854	38,138	55,869	58,405
Japan	27	28	31	30	119	145	220
Hongkong		0	0	0	0	0	0
USA	20,179	21,830	21,919	14,191	11,301	6,928	5,029
Canada	1,944	1,450	2,214	1,794	1,843	1,488	1,125
Brazil	268	208	1,038	750	1,123	1,631	1,776
Other countries	4,211	6,034	9,123	7,814	16,683	10,033	13,189
Export in total	**58,500**	**64,677**	**68,677**	**63,433**	**69,207**	**76,094**	**79,744**

2012 preliminary figures

1) incl. Mediterranean countries, Turkey
Sources: IEA, McCloskey, companies´ information

Table 11

Hard Coal Export of South Africa

1,000 t

Importing Countries	2006	2007	2008	2009	2010	2011	2012
Germany	8,189	6,505	8,190	5,231	3,363	2,644	1,972
France	4,267	4,799	5,450	2,050	1,030	1,190	1,060
Belgium/Luxembourg	1,512	1,088	1,140	300	500	430	320
The Netherlands	13,687	10,580	8,234	4,049	1,087	1,056	2,838
Italy	4,616	4,776	4,170	4,230	3,400	3,630	3,120
Great Britain	8,431	4,580	3,110	1,000	470	670	810
Irland	389	478	0	460	220	50	90
Denmark	2,300	2,130	1,140	1,080	780	1,380	630
Greece	0	0	0	0	50	0	80
Spain	7,585	6,724	5,981	5,062	3,670	2,470	2,360
Portugal	1,000	1,970	1,660	1,240	320	0	0
Finland	120	0	150	0	0	0	0
Other	170	535	185	680	170	180	400
since 2007: EU-27	52,266	44,165	39,410	25,382	15,060	13,700	13,680
Israel	4,780	4,520	3,720	3,250	2,490	3,180	4,770
Marocco	2,890	1,267	1,333	300	810	70	140
Turkey	1,913	1,349	1,350	1,106	3,182	2,760	2,890
Other Europe[1)]	9,583	7,136	6,403	4,656	6,482	6,010	2,760
Europe	61,849	51,301	45,813	30,038	21,542	19,710	24,240
Japan	0	440	50	390	300	620	470
South Korea	0	290	1,150	525	2,260	3,520	1,550
Taiwan	70	410	160	2,220	2,990	3,490	4,500
Hongkong	0	0	0	340	160	0	0
India	2,469	8,492	7,766	18,690	22,397	17,071	23,170
VR China	0	30	0	790	6,960	10,460	12,950
USA	0	100	0	0	170	40	490
Brazil	1,484	759	1,223	296	1,099	1,030	1,130
Other countries	3,064	6,068	6,493	8,927	10,534	11,380	15,140
Export in total	**68,936**	**67,890**	**62,655**	**62,216**	**68,412**	**67,321**	**76,190**

[1)] incl. Mediterranean countries 2012 preliminary figures

Sources: South African Coal Report, own calculations

Table 12

Hard Coal Export of Canada

1,000 t

Importing Countries	2006	2007	2008	2009	2010	2011	2012
Germany	1,608	1,733	1,708	1,070	1,203	1,736	1,516
France	372	598	569	117	166	104	55
Belgium/Luxembourg	0	0	0	0	48	55	0
The Netherlands	1,194	1,047	272	300	696	267	412
Italy	1,178	1,013	1,084	465	1,016	1,000	767
Great Britain	1,418	1,492	1,123	317	284	505	99
Denmark	0	0	0	0	0	0	0
Spain	175	227	235	1	64	120	1
Portugal	0	0	0	0	0	0	0
Finland	494	345	426	258	416	422	303
Sweden	0	0	0	0	0	0	60
Other					59	221	0
since 2007: EU-27	6,439	7,086	5,587	2,528	3,952	4,430	3,213
Other Europe [1)]	1,582	1,203	1,426	952	840	182	500
Europe	8,021	8,289	7,783	3,480	4,792	4,612	3,713
Japan	8,676	10,548	11,482	8,765	10,615	9,265	9,526
South Korea	4,975	6,078	6,736	7,381	6,553	8,611	6,360
Taiwan	1,221	1,130	1,154	795	638	1,070	1,005
Brazil	1,584	1,545	2,020	936	1,693	2,281	1,813
USA	1,750	1,758	1,725	1,045	1,470	1,330	898
Chile	721	702	411	214	259	216	253
Mexico	274	230	695	283	697	400	183
Other countries	344	369	468	4,931	5,944	5,602	10,761
Export in total	**27,566**	**30,649**	**32,474**	**27,830**	**32,661**	**33,387**	**34,512**

2012 preliminary figures
[1)] incl. Mediterranean countries

Sources: McCloskey, own estimations

Table 13

Hard Coal Export of China

1,000 t

Importing Countries	2006	2007	2008	2009	2010	2011	2012
Germany	0	43	14	5	7	11	9
France	0	166	216	0	0	0	0
Belgium/Luxembourg	189	170	143	0	14	0	0
The Netherlands	245	51	57	5	0	0	0
Italy	0	0	0	0	0	0	0
Great Britain	34	0	0	0	0	0	0
Spain	292	0	104	0	0	0	0
Greece	0	0	0	0	0	0	0
EU-15	760	430	534	10	21	11	9
Japan	20,586	15,548	13,337	6,391	6,436	6,222	4,147
South Korea	18,779	19,225	16,457	9,919	7,207	5,559	3,814
Taiwan	13,258	12,690	10,597	4,870	4,418	2,197	1,316
Hongkong	855	674	475	122	395	1	0
India	5,001	539	1,006	0	0	173	0
Malaysia	36	37	52	12	12	6	0
Thailand	28	1	1	0	0	0	1
North Korea	576	237	228	52	224	205	172
Philippines	1,035	1,019	1,119	839	2	0	0
Brazil	191	283	156	0	0	0	0
Other countries	2,127	2,435	1,309	133	225	127	114
Export in total	**63,232**	**53,118**	**45,271**	**22,348**	**18,940**	**14,501**	**9,573**

2012 preliminary figures

Source: several, i.a. MCR, CCR

Table 14

Hard Coal Export of Poland

1,000 t

Importing Countries	2006	2007	2008	2009	2010	2011	2012
Germany	7,330	4,651	3,834	2,649	3,659	2,659	2,406
France	762	340		358	597	10	212
Belgium	291	1	1	79	232	1	80
The Netherlands	320	70	1	165	81	0	0
Italy	248	111	0	0	0	0	0
Great Britain	1,008	277	197	565	598	634	89
Irland	235	255	266	240	257	206	140
Denmark	523	350	151	82	455	60	60
Spain	150	64	0	0	23	20	20
Portugal	0	0	0	0	0	0	0
Finland	513	273	88	224	220	37	148
Austria	1,233	1,807	906	853	883	435	786
Sweden	283	288	60	59	134	84	105
Czech Republic	1,642	2,365	1,017	746	1,444	1,820	1,540
Slovakia	1,030	617	64	71	638	568	302
Hungary	249	259	127	58	118	133	98
Other	72	8	1,029	1,970	557	10	383
							0
since 2007: EU27	15,889	11,736	7,741	8,119	9,896	6,677	6,369
							0
Other countries	620	364	559	581	480	101	667
Export in total	**16,509**	**12,100**	**8,300**	**8,700**	**10,376**	**6,778**	**7,036**

2012 preliminary figures

Sources: McCloskey, Federal Statistical Office and own calculation

Table 15

Hard Coal Imports of EU-Countries: Imports inclusive internal trade of Member States 1,000 t

	2006	2007	2008	2009	2010	2011	2012
Germany	46,500	47,480	44,000	36,800	41,000	44,200	44,900
France	20,700	19,200	19,400	16,200	18,900	15,300	17,600
Italy	24,500	24,600	26,200	22,000	22,700	24,000	25,900
The Netherlands	12,000	13,000	12,100	10,800	11,800	11,700	12,400
Belgium	9,000	8,000	6,000	4,100	3,500	4,000	3,500
Luxembourg	150	150	150	200	200	200	200
Great Britain	49,000	45,300	43,200	38,100	26,500	31,700	44,800
Irland	3,000	3,000	2,300	2,300	2,200	1,900	2,100
Denmark	7,000	8,000	7,700	4,400	4,100	6,100	4,000
Greece	800	800	800	400	600	600	100
Spain	22,550	20,800	16,500	17,100	12,800	15,300	21,400
Portugal	5,700	5,500	3,800	3,100	2,700	3,600	5,000
Finland	7,000	7,000	4,600	6,000	5,900	7,000	4,000
Austria	4,000	4,000	4,200	4,000	4,000	3,800	3,200
Sweden	3,000	3,200	2,500	2,400	3,000	2,700	2,100
Poland	5,200	5,800	9,900	10,000	10,000	15,500	10,100
Czech Republik	1,900	2,500	2,200	1,700	1,900	2,400	1,500
Hungary	1900	2,000	1,900	1,400	1,800	1,500	1,500
Slovakia	5,600	5,300	4,900	3,200	3,500	3,400	4,000
Slovenia	600	500	600	600	600	500	500
Lativa	300	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Lithuania	700	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Estonia	100	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Cyprus							
Malta							
Bulgaria	(1,600)	1,400	1,300	3,500	2,900	3,300	2,300
Romania	(3,300)	3,300	3,200	1,200	1,400	1,200	1,300
EU-25 **EU-27 since 2007**	**231,200** **236,100**	**230,830**	**217,450**	**189,500**	**182,000**	**199,900**	**212,400**
Coke	thereof coke: 11,000	thereof coke: 12,000	thereof coke: 11,000	coke: 8,000	coke: 8,000	coke: 8,000	coke: 6,000

Sources: McCloskey, Euracoal, own calculations
2012 preliminary figures

Table 16

Primary Energy Consumption in Germany in M TCE

Energy Sources	2006	2007	2008	2009	2010	2011	2012
Hard Coal	65.6	67.4	61.4	50.1	57.9	55.3	57.0
thereof Import Coal	(43.8)	(44.8)	(43.2)	(36.2)	(44.4)	(43.4)	(45.8)
Lignite	53.7	55.0	53.0	51.4	51.6	53.3	56.1
Mineral Oil	176.7	157.9	166.4	159.3	160.0	154.8	154.0
Natural Gas	112.1	106.6	104.4	100.3	107.1	99.3	100.8
Nuclear Energy	62.3	52.3	55.4	50.2	52.3	40.2	37.0
Hydro and Wind Power	6.3	7.4	7.5	7.1	7.2	8.1	8.1
Foreign Trade Balance Electricity	-2.4	0.2	0.0	-1.8	-2.2	-0.8	-2.8
Other Energy Sources	23.2	25.6	36.0	41.8	47.9	51.0	55.4
Total	**497.5**	**472.4**	**484.1**	**458.4**	**481.8**	**461.2**	**465.6**

shares in %

Energy Sources	2006	2007	2008	2009	2010	2011	2012
Hard Coal	13.2	14.3	12.7	10.9	12.0	12.0	12.2
thereof Import Coal	(8.8)	(9.5)	(8.9)	(7.9)	(9.2)	(9.4)	(9.8)
Lignite	10.8	11.6	11.0	11.2	10.7	11.6	12.1
Mineral Oil	35.5	33.4	34.3	34.8	33.2	33.6	33.1
Natural Gas	22.6	22.6	21.6	21.9	22.2	21.5	21.6
Nuclear Energy	12.5	11.1	11.4	11.0	10.9	8.7	8.0
Hydro and Wind Power	1.3	1.5	1.6	1.6	1.5	1.8	1.7
Foreign Trade Balance Electricity	-0.5	0.0	0.0	-0.4	-0.5	-0.2	-0.6
Other Energy Sources	4.6	5.5	7.4	9.0	10.0	11.0	11.9
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Sources: The Working Group on Energy Balances, The Federal Statistical Office of Germany, own calculations
2012: preliminary

Coal Handling in German Ports

1,000 t

	2004	2005	2006	2007	2008	2009	2010	2011	2012
North Sea Ports									
Hamburg	4,944	4,636	4,963	5,781	5,195	5,189	5,276	5,805	5,111
Wedel - Schulau	700	600	871	0	0	0	0	530	239
Bützfleth	12	19	13	6	4	9	5	8	6
Wilhelmshaven	1,672	1,520	1,332	1,360	2,229	2,404	1,843	1,924	1,597
Bremische Häfen	1,505	1,216	1,715	1,965	1,668	1,410	1,796	1,599	1,783
Brunsbüttel	393	273	622	749	874	500	434	424	710
Emden				5	5	1	2	-	-
Nordenham	2,058	1,915	2,129	2,162	1,889	2,284	2,235	2,792	2,240
Papenburg	289	214	170	143	149	121	141	0	-
Other North Sea Ports S,H,	126	37	70	632	574	502	610	0	-
Other North Sea Ports N,S,	-		-	-	-	-	7	3	-
Total	**11,699**	**10,430**	**11,885**	**12,803**	**12,587**	**12,420**	**12,349**	**13,085**	**11,686**
Baltic Sea Ports									
Rostock	1,187	1,145	1,251	993	1,443	823	1,200	1,345	1,335
Wismar	42	33	30	22	35	26	34	0	-
Stralsund	1	3	0	0	1	-	-	-	1
Lübeck	-	-	-	-	-	-	-	-	-
Flensburg	343	325	275	246	301	230	209	237	235
Kiel	418	402	193	123	291	453	479	271	503
Saßnitz				7	3	1	5	1	1
Wolgast				2	-	-	-	-	-
Other Baltic Sea Ports	4	2	3	-	1	-	-	-	-
Total	**1,995**	**1,910**	**1,752**	**1,393**	**2,075**	**1,533**	**1,927**	**1,854**	**2,075**
Tonnage Total	**13,694**	**12,340**	**13,637**	**14,196**	**14,662**	**13,953**	**14,276**	**14,939**	**13,761**

Source: Federal Statistical Office

Table 18

Hard Coal Sales in Germany

1,000 t

	2006	2007	2008	2009	2010	2011	2012
Total Sales[1] in Hard Coal, Coke and Briquettes							
Power Stations	53,800	55,400	52,300	43,700	45,800	44,400	43,300
Iron and Steel Industry	18,400	18,800	17,700	12,900	18,400	16,800	15,800
Heating Market/Others[2]	1,300	1,600	1,700	1,400	1,800	1,900	2,200
Total	**73,500**	**75,800**	**71,700**	**58,000**	**66,000**	**63,100**	**61,300**
Thereof Import Coal							
Power Stations[3]	27,300	33,400	34,900	30,900	34,400	33,600	32,700
Iron and Steel Industry	11,300	14,700	13,600	10,000	14,700	14,400	14,700
Heating Market	700	1,000	1,300	900	1,300	1,500	1,800
Total Imports	**39,300**	**49,100**	**49,800**	**41,800**	**50,400**	**49,500**	**49,200**

[1] Domestic Sales [2] incl, Consumption of Mines, Benefits

[3] Imports of power plants accord. to "K-Bogen" (BAFA, Division 431), own calculations

Sources: Statistik der Kohlenwirtschaft, 2012 own calculations

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

Table 19

Consumption, Import/Export and Power Generation in Germany

	2006	2007	2008	2009	2010	2011	2012
Gross Electricity Consumption in TWh	617.1	618.1	614.6	578.1	610.9	602.6	594.5
Electricity Foreign Trade in TWh							
Exports	65.9	63.4	62.7	54.9	59.9	56.0	67.3
Imports	46.1	44.3	40.2	40.6	42.2	49.7	44.2
Balance	-19.8	-19.1	-22.5	-14.3	-17.7	-6.3	-23.1
Gross Electricity Generation in TWh	636.9	637.2	637.1	592.4	628.6	608.9	617.6
Utilization of Energy Sources for Power Generation in TWh							
Hard Coal	137.9	142.0	124.6	107.9	117.0	112.4	118.0
thereof Import Coal [1]	(85.4)	(86.2)	('86.4)	(76.3)	(86.8)	(84.9)	(89.1)
Lignite	151.1	155.1	150.6	146.5	145.9	150.1	159.0
Natural Gas	73.4	75.9	86.7	78.8	86.8	82.5	70.0
Fuel Oil	10.5	9.6	9.2	9.6	8.4	6.8	9.0
Nuclear Energy	167.4	140.5	148.8	134.9	140.6	108.0	99.5
Hydro / Wind Power	50.7	60.9	61.0	57.6	58.8	66.6	67.2
Other	45.9	53.2	56.2	57.1	71.1	82.5	94.9
Total	**636.9**	**637.2**	**637.1**	**592.4**	**628.6**	**608.9**	**617.6**

[1] Sales to power stations

2012: preliminary figures

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

Table 20

Imports of Hard Coal and Coke into Germany

Countries	2009 Steam C.	Coking C.	Anthr.	Coke	Total	2010 Steam C.	Coking C.	Anthr.	Coke	Total
Poland	2,489	24	0	1,712	4,225	3,650	8	1	2,399	6,058
Czech Republik	151	0	0	129	280	63	0	0	379	442
Spain	0	0	0	0	0	0	0	0	86	86
France	0	0	0	408	408	0	0	0	179	179
Other	459	0	89	427	975	1,007	74	170	490	1,741
EU-27	3,099	24	89	2,676	5,888	4,720	82	171	3,533	8,506
GUS	8,696	478	260	102	9,536	9,295	730	317	248	10,590
Norway	1,321	0	0	0	1,321	856	0	0	0	856
USA	3,207	1,897	0	0	5,104	2,742	2,956	29	0	5,727
Canada	0	1,070	0	0	1,070	0	1,203	0	0	1,203
Colombia	5,105	68	0	21	5,194	7,397	191	0	39	7,627
South Aprica	5,246	4	0	0	5,250	3,330	0	1	0	3,331
Australia	447	3,311	0	0	3,758	289	4,014	0	0	4,303
China	3	0	2	141	146	7	0	0	199	206
Indonesia	86	0	0	0	86	70	0	0	0	70
Venezuela	346	0	0	7	353	410	20	0	2	432
Other Third Countries	1,687	0	10	2	1,699	2,236	3	0	93	2,332
Third Countries	26,144	6,828	272	273	33,517	26,632	9,117	347	581	36,677
Total	**29,243**	**6,852**	**361**	**2,949**	**39,405**	**31,352**	**9,199**	**518**	**4,114**	**45,183**

2012 preliminary

Sources: Federal Statistical Office, BAFA, own calculations

Imports of Hard Coal and Coke into Germany

1,000 t

2011					2012				
Steam C.	Coking C.	Anthr.	Coke	Total	Steam C.*	Coking C.	Coke	Total	Countries
2,646	11	1	2,481	5,139	2,397	9	1,565	3,971	Poland
27	0	3	330	360	7	0	316	323	Czech Republik
			33	33			7	7	Spain
			62	62			48	48	France
620	20	196	595	1,431	1,638	38	679	2,355	Other
3,293	31	200	3,501	7,025	4,042	47	2,615	6,704	**EU-27**
9,574	863	294	361	11,092	10,474	753	319	11,546	GUS
857	0	0	0	857	395	0	0	395	Norway
5,079	3,036	24	0	8,139	7,072	2,737	0	9,809	USA
43	1,693	0	0	1,736	0	1,516	0	1,516	Canada
10,550	214	0	62	10,826	8,972	347	33	9,352	Colombia
2,644	0	0	0	2,644	1,972	0	0	1,972	South Africa
206	4,074	0	0	4,280	308	4,143	0	4,451	Australia
6	0	5	184	195	9	0	2	11	China
0	34	0	0	34	0	0	0	0	Indonesia
132	29	0	0	161	111	0	1	112	Venezuela
1,261	1	7	120	1,389	1,985	64	5	1,356	Other
30,352	9,944	330	727	41,353	31,298	9,560	360	41,218	**Third Countries**
33,645	**9,975**	**530**	**4,228**	**48,378**	**35,340**	**9,607**	**2,975**	**47,922**	**Total**

*Steam Coal inclusive Anthracite

European / International Price Quotations

		2006	2007	2008	2009	2010	2011	2012
Crude Oil Prices								
USD/Barrel Brent		65.14	72.52	96.99	61.51	79.47	111.26	111.63
USD/TCE		335.00	373.26	499.21	316.60	409.04	572.66	574.57
Source: MWV								
Natural Gas Prices: Free German Border								
€/TCE		191.00	180.00	237.00	198.00	185.00	230.00	263.00
Source: Statistik der Kohlewirtschaft								
Steam Coal Marker Prices 1 %S. CIF NW Europe								
USD/TCE		74.41	101.03	174.74	81.75	107.16	142.81	109.15
€/TCE		59.23	73.17	118.29	58.69	81.01	102.49	84.40
Source: McCloskey								
Sea Freight Rates Capesize Units - Port of Destination ARA (Amsterdam. Rotterdam. Antwerp)								
South Africa	USD/t	15.94	32.33	30.36	13.66	12.41	10.74	8.13
USA/East Coast	USD/t	14.87	34.47	32.65	16.68	15.06	12.01	9.62
Australia/NSW	USD/t	24.07	51.77	50.91	22.46	22.15	19.43	15.05
Colombia	USD/t	14.89	33.55	31.71	16.25	14.75	11.89	9.63
Sources: Frachtcontor Junge, own calculations								

Table 22

Germany – Energy Prices / Exchange Rates

	2006	2007	2008	2009	2010	2011	2012
Exchange Rates							
EUR/USD	0.7965	0.7296	0.6799	0.7169	0.7543	0.7184	0.7783

Source: Deutsche Bundesbank

Cross Border Pricse for Coking Coal and Coke - €/t

Imported Coking Coal	105.88	96.22	132.62	173.75	174.78	185.30	188.42
Imported Coke	166.79	175.55	281.20	196.91	259.37	319.78	258.72

Sources: Coking Coal - Federal Statistical Office
Coke: Federal Statistical Office

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

	1. Q	2. Q	3. Q	4. Q	Annual value
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
2011	105.30	105.22	106.22	110.44	106.97
2012	100.21	93.09	92.01	86.62	93.02

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

Energy Prices free power station €/TCE

Energy Sources	2006	2007	2008	2009	2010	2011	2012
Natural Gas	220.00	209.00	269.00	246.00	222.00	256.00	260.00
Heavy Fuel Oil	203.00	198.00	275.00	208.00	270.00	355.00	394.00
Steam Coal	67.00	73.00	117.00	84.00	90.00	112.00	98.00

2012 preliminary Sources: BAFA, Statistik der Kohlenwirtschaft, own calculations

Table 23

Hard Coal Market in Germany

Quantities and Prices 1957-2012

Quantities

Imports of Hard Coal and Coke t=t				Domestic Mining of Hard Coal Mill. t usable output			
Year	Mill t	Year	Mill t	Year	Mill t	Year	Mill t
1957	18.9	1987	8.8	1957	149.4	1987	75.8
1958	13.9	1988	8.1	1958	148.8	1988	72.9
1959	7.5	1989	7.3	1959	141.7	1989	71.0
1960	7.3	1990	11.7	1960	142.3	1990	69.8
1961	7.3	1991	16.8	1961	142.7	1991	66.1
1962	8.0	1992	17.3	1962	141.1	1992	65.5
1963	8.7	1993	15.2	1963	142.1	1993	57.9
1964	7.7	1994	18.1	1964	142.2	1994	52.0
1965	8.0	1995	17.7	1965	135.1	1995	53.1
1966	7.5	1996	20.3	1966	126.0	1996	47.9
1967	7.4	1997	24.3	1967	112.0	1997	45.8
1968	6.2	1998	30.2	1968	112.0	1998	40.7
1969	7.5	1999	30.3	1969	111.6	1999	39.2
1970	9.7	2000	33.9	1970	111.3	2000	33.3
1971	7.8	2001	39.5	1971	110.8	2001	27.1
1972	7.9	2002	39.2	1972	102.5	2002	26.1
1973	8.4	2003	41.3	1973	97.3	2003	25.7
1974	7.1	2004	44.3	1974	94.9	2004	25.7
1975	7.5	2005	39.9	1975	92.4	2005	24.7
1976	7.2	2006	46.5	1976	89.3	2006	20.7
1977	7.3	2007	47.5	1977	84.5	2007	21.3
1978	7.5	2008	48.0	1978	83.5	2008	17.1
1979	8.9	2009	39.5	1979	85.8	2009	13.8
1980	10.2	2010	45.2	1980	86.6	2010	12.9
1981	11.3	2011	48.4	1981	87.9	2011	12.1
1982	11.5	2012	47.9	1982	88.4	2012	10.8
1983	9.8			1983	81.7		
1984	9.6			1984	78.9		
1985	10.7			1985	81.8		
1986	10.9			1986	80.3		

Prices

Steam Coal from non-EEC Countries[1]				Domestic Industrial Coal[2]			
Year	€/TCE	Year	€/TCE	Year	€/TCE	Year	€/TCE
1957	40	1987	46	1957	29	1987	132
1958	37	1988	42	1958	29	1988	134
1959	34	1989	49	1959	29	1989	137
1960	33	1990	49	1960	29	1990	138
1961	31	1991	46	1961	29	1991	139
1962	30	1992	42	1962	30	1992	147
1963	30	1993	37	1963	30	1993	148
1964	30	1994	36	1964	31	1994	149
1965	29	1995	39	1965	32	1995	149
1966	29	1996	38	1966	32	1996	149
1967	29	1997	42	1967	32	1997	149
1968	28	1998	37	1968	30	1998	149
1969	27	1999	34	1969	31	1999	149
1970	31	2000	42	1970	37	2000	149
1971	32	2001	53	1971	41	2001	149
1972	31	2002	45	1972	43	2002	160
1973	31	2003	40	1973	46	2003	160
1974	42	2004	55	1974	56	2004	160
1975	42	2005	65	1975	67	2005	160
1976	46	2006	62	1976	76	2006	170
1977	43	2007	68	1977	76	2007	170
1978	43	2008	112	1978	84	2008	170
1979	46	2009	79	1979	87	2009	170
1980	56	2010	85	1980	100	2010	170
1981	84	2011	107	1981	113	2011	170
1982	86	2012	93	1982	121	2012	180
1983	75			1983	125		
1984	72			1984	130		
1985	81			1985	130		
1986	60			1986	130		

2012: preliminary figures, since 1991 Eastern Germany included, euro values are rounded

[1] Price free German border (BAFA Div. 432), since 1996: BAFA Div. 432, since 2010: BAFA Div. 422
[2] Estimated cost-covering price

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

Glossary

"API#2 Index (All Publications Index)"	Price index for hard coal with a calorific value of 6,000 kcal/kg when delivered within the ARA territory. The financial quotation is shown including CIF (cost, insurance and freight) and NAR (net as received) in US$ per tonne.
"API#4 Index (All Publications Index)"	Price index for hard coal deliveries FOB (free on board) Richards Bay (South Africa)
ARA	Oil and coal trading area in the triangle formed by the cities Amsterdam-Rotterdam-Antwerp. Alternative designations are NWE (North West Europe) or "Rotterdam".
Ask, offer	Price at which a seller is prepared to sell securities or products. Antonym: bid.
BAFA	German Federal Office of Economics and Export Control
Base (base load)	Electric power supplied during a standardized delivery period (month, quarter, year) over 24 hours of any given day as constant output. Synonym: fixed quantity deliveries
BDEW	German Federal Association of the Energy and Water Industry
bearish	A situation in which prices on the market are expected to fall. The bear is a symbol for pessimists on exchanges. Antonym: see "bullish""
BEE	Black Economic Empowerment
Bid	Price at which a buyer is prepared to buy securities. As a rule, the bid price is lower than the offer price.
Bid-ask spread/ Bid-offer spread	Difference between the offer and asking price on a market. See also "spread".
Bilateral trade	See OTC market.
GDP	Gross domestic product
Broker	Person who buys and sells on an Anglo-American exchange. In contrast to the German broker (Börsenmakler), brokers are permitted to act on behalf of private clients as well. They are not themselves the contracting party. They are interested solely in the conclusion of the transaction and receive a brokerage fee for their services which is determined by the volume of the transaction. In the energy sector, there are brokers on the EEX, for instance. These so-called "certified brokers" have been admitted to the EEX and offer third parties a means of gaining access to this market.
BTU (British Thermal Unit)	Trading unit on the American gas market. 1,000 BTU = 1,055 kilojoules or 0.2931 kWh = 0.036 kg TCE.
Bullish	A situation in which prices on the market are expected to rise. The bull is a symbol for optimists on exchanges. Antonym: see "bearish"
Capacity options	Options to buy or sell additional capacities. The prices for the contracted energy deliveries are not set until the purchase or sale is actually carried out.
Capesize	Size designation for bulk carriers between 100,000 and 150,000 DWT

Glossary

CCS (Carbon Capture and Storage)
Separation of CO_2 from the emissions of fossil fuel-fired power plants and the geological storage of the separated CO_2 in suitable rock formations; it is one of the climate protection measures.

CER (Certified Emission Reductions)
CO_2 emissions rights from successful CO_2 reduction projects in developing countries (Clean Development Mechanism (CDM) projects).

CIF (cost, insurance and freight; named port of destination)
CIF, just like CFR and FOB, is an abbreviation for INCOTERMS. The seller accepts the same obligations in the CIF clause as in the CFR clause.

CIS
Confederation of Independent States

Clearing
Balancing of mutual claims between two or more partners, whereby the balance is settled by payment or crediting of the amount. Clearing may refer to trading transactions on exchanges and to forward transactions on OTC markets.

Compliance
Acting in accordance with applicable laws and regulations in accordance with requirements from government supervisory authorities, usual practice on exchanges etc. The goal of compliance is to ensure certain forms of behaviour in conformity with laws and regulations and to regulate conflicts of interest accordingly.

Contango
Forward curve for a base value; the prices for short-term contracts are lower than the prices for long-term contracts. The contrary market situation is known as backwardation.

Dark spread
See “spread”.

Day ahead (today for tomorrow transaction)
In day-ahead trading, transactions are concluded for delivery and payment on the following day. These types of transactions are frequently attributed to the spot market and not to the forward market. The day-ahead trading on many power and gas exchanges is more significant than the intraday trading. Day-ahead transactions are frequently traded on the OTC market as well.

Derivative
Financial instrument derived from a trade agreement.
At the point of time of its performance, the product itself (e.g. energy) is not delivered; instead, financial compensation dependent on the settlement price of the underlying base value is paid. Options and futures are important derivatives.

DIW
German Institute for Economic Research

ECE
Economic Commission for Europe

EE
Renewable energies

EEG
German Renewable Energy Act

EEX (European Energy Exchange)
European Energy Exchange, located in Leipzig. Electric power has been traded on the spot market here since the summer of 2000. Buy and sell bids for specific hours and blocks can be placed on the day-ahead auction market. The Phelix® is determined as a daily electric power index on the basis of the hourly spot market prices. Besides the day-ahead auction market, there is continuous day-ahead trading where buy and sell orders for blocks on base load and peak load are placed. Standardized futures can be traded on the EEX futures market. Monthly, quarterly and annual futures are offered with the Phelix® as the base price. Besides electric

Glossary

	power, gas, coal and emissions certificates are traded on the EEX.
EFET (European Federation of Energy Traders)	Federation of about 60 European energy trading companies from 15 countries, headquarters in Amsterdam. The goals of the Federation of Energy Traders are the promotion of energy trade in Europe, the development of standards in the energy trade sector and the sharing of experience and information with the energy industry and government institutions.
EFET General Trader Agreement	General trader agreements of the EFET for the European power and gas trade regulate the general, essential rights and obligations of the parties; the subject of these agreements is the delivery of electric power and gas. Price and quantity of the concrete transactions are set forth in the separate trade agreements and not in the general trader agreement. Both are documented in the confirmation.
ETS	Emissions Trading Scheme
ERU (Emission Reduction Units)	CO_2 emissions rights from successful CO_2 reduction projects in other industrialised countries (Joint Implementation (JI) projects).
ETS (Emissions Trading Scheme)	European Union trading scheme for CO_2 emissions rights. The trading scheme was implemented per 01/01/2005 for plant operators in the areas of combustion plants (especially power plants), refineries, coking plants, iron and steel mills, and the cement, glass, lime, tile, ceramics, pulp and paper industries. The first trading period encompassed the period from 2005 to 2007; the second began in 2008 and ended in 2012. See also “EUA”.
EUA (European Union Allowances)	CO_2 emissions rights under the European Emissions Trading Scheme.
EWEA	European Wind Energy Association
FOB (free on board; named port of shipment)	Clause from the so-called INCOTERMS for maritime shipping of goods. The seller assumes the obligation to clear the goods through customs and to load them on board a ship specified by the buyer in the designated shipping port at its expense. The risk and any further shipping costs transfer to the buyer at the moment the goods cross the ship’s railing.
Forward	Individually drafted futures transaction not traded on an exchange (see OTC) in which the parties mutually agree on the price of the traded object, the delivery quantities and the point in time at which performance becomes due or the delivery period. Furthermore, the security provisions are also agreed individually because, in contrast to a futures transaction, the business partners rather than the clearing office bear the counterparty risk.
Forward curve	Course of the current futures prices for various maturity dates. The forward curve shows the price at which futures contracts (forward and futures transactions) for a base value with varying maturity dates can be concluded at this time. See also backwardation, contango and HPFC.
Future	Contractual obligation to purchase or supply a pre-determined volume of power at a fixed price during a future delivery period. A future is a standardized forward contract, generally traded on the exchange, for which a financial exchange

Glossary

	(cash settlement) between the trader and the exchange as the contract parties is effected. The amount corresponds to the difference to the price of the underlying transaction during the delivery period.
GVSt	German Hard Coal Association
ICER	International Certified Emission Reduction
IEA	International Energy Agency
Hedging	A reduction of the risk of unfavourable market developments by the conclusion of trade transactions. Depending on the selected hedging strategy and available trade products, a party can hedge against rising or falling prices, against unfavourable weather conditions or other risks. The basic types of price increase hedges include long transactions (future, forward, swap, call, cap and collar); short transactions (future, forward, swap and collar) can be used as strategies to protect from price declines.
HFO	Heavy fuel oil
ICE (Intercontinental-Exchange)	The ICE in Atlanta/USA is on of the largest electronic commodity exchanges for natural gas, petroleum, precious metals, energy and weather derivatives; it is the owner of the International Petroleum Exchange (IPE) in London.
INCOTERMS (International Commercial Terms)	The INCOTERMS were established for the purpose of defining international rules for the interpretation of contract wordings in foreign trade contracts, avoiding misunderstandings arising from differences in trade practices and regulating the transfer of risk and costs from the seller to the buyer. The CIF, FOB and CFR clauses regulate contracts for maritime shipping, including the shipping of steam coal and other products.
Indexing/Index linkage	The price of a product is tied to an index. Prices for power and gas deliveries for a certain delivery period, for instance, can be tied to a contractually agreed index. It is important in this case that the index in use be transparent and observable for both parties (i.e. published).
kWh	kilowatt hour
CHP	Combined heat and power
LNG (Liquefied Natural Gas)	Natural gas which has been liquefied by cooling it to a temperature of -161° C. Liquefication reduces the volume to about 1/600 of the volume of the natural gas under normal pressure (standard cubic metre), making it possible to transport large quantities of natural gas by ship.
Mark-to-Market	Measurement method used to measure the outstanding items in futures contracts at the current market prices.
MENA	Middle East North Africa
Minute reserve	See Balancing power
mt	Metric tonne
NAR	net as received
NER	New Entrants Reserve
NPS	New Policies Scenario in the WEO 2012 issued by the IEA
OECD	Organisation for Economic Co-operation and Development
Off-peak	Hours when the load in the power grid is low; opposite is peak hours. There are 108 off-peak hours

Glossary

	a week on the German market: Monday to Friday between midnight and 8 a.m. and between 8 p.m. and midnight, and Saturdays and Sundays from midnight to midnight.
Option	By taking an option, a party acquires the right, but not the obligation, to buy or sell a defined quantity of a product at a price fixed in advance during the term of the contract or at the exercise date upon its expiration.
Option premium	The option premium is the price of an option. The value corresponds to the total of the intrinsic value and fair value.
OTC market (over-the-counter market)	Off-market contract trading. The contracts can be adapted to specific requirements and are not as highly standardized as it is the case in on-market trading. An over-the-counter market is not localised and does not have fixed trading times. Negotiations are conducted nationally and internationally on computer monitors or over telephone systems. The transactions are usually handled by brokers. There is a spot and a forward market for the OTC market.
Panamax	Size designation for bulk carriers between 50,000 and 90,000 DWT
PCI	Pulverised coal injection
Peak / Peak load	Hours with high demand for electric power. There are 60 hours of peak load a week on the German market: between 8 a.m. and 8 p.m. on the weekdays Monday to Friday. See also “Off-peak”.
Phelix® (Physical Electricity Index)	"EEX's electric power price index for the day-ahead market. A distinction is made between Phelix Base and Phelix Peak. Phelix Base reflects the average price in the hours 1 to 24, weighted according to hour. It is calculated for all calendar days during the year. Phelix Peak is an average price, determined by the hour, for the hours 9 to 20 (i.e. 8 a.m. to 8 p.m.) on the weekdays Monday to Friday. "
Physical electricity trading	Transactions in physical electricity trading involve an actual exchange of performance. A certain quantity of energy is traded and delivered at a defined price within a fixed period of time.
PEC	Primary Energy Consumption
QLD	Queensland
Balancing power	Since electricity cannot be stored, the demand for power must be covered in the power grid by the generation of the corresponding output at every moment. The power grid operator is responsible for each balancing zone. It procures output reserves and activates them when the total of the actual output deviates from the total of the reported schedules. The use of balancing power enables the power grid operator to secure an even output balance and stable frequency in the power grid of its balancing zone. A distinction is made: – The primary balancing power is automatically activated all across Europe at a local level within seconds by the participating power plants. – The secondary balancing power is automatically activated within a maximum period of 10 minutes to ensure that the schedules are maintained across the borders of balancing zones and to replace the primary balancing reserve. – The tertiary balancing power/ minute reserve is supposed to

Glossary

	take over from the secondary reserve in the event of disruptions over a longer period of time and is initiated manually. The power grid operators procure the balancing power (performance, work) at auctions where – in contrast to the day-ahead market – compensation is based on the pay-as-bid principle.
Sintering coal	Low-volatile coal or coke breeze, used in sintering plants
TCE	Tonne of coal equivalent (7,000 kcal/kg = 29,307 kilojoules)
Spot market (spot exchange, cash market)	Wholesale trading market where short-term transactions (off- or on-market) are concluded. Delivery, acceptance and payment of spot transactions must be completed within a short period of time.
Spread	Generally refers to the difference between two prices. 1. The bid-ask spread is the difference between the best buying and selling prices for a product/security at a certain point in time. 2. Generation margin for electricity corresponding to the difference between the power price and fuel costs for the generation of the power. A distinction is made: Spark spread: margin for natural gas-fired power plants; Dark spread: margin for coal-fired power plants; Clean spread: margin taking into consideration the costs for emissions certificates.
st	short ton (= 0.90719 mt)
Strike	Agreed price for exercise of the option in an option agreement.
Swap	Agreement between two parties to exchange payment flows in the future. The action is strictly a financial transaction; there is no physical delivery. The agreement defines how the payments will be charged and when they will be carried out.
t	Tonne
t/a	Tonnes per year (annually)
Therm	Trading unit on the British gas market. 1 therm = 105.5 GJ or 29.31 MWh.
Power grid	Electricity network used to transport electric power to subordinated distribution networks. As a general rule, German power grids have voltage levels between 220 kV and 380 kV. The electricity networks at lower voltage levels belong to the distribution networks as a rule.
Power grid operator	Operator of an electric power transmission network who is responsible for the safe and dependable operation of a power grid.
Volatility	Measurement of the degree of fluctuation in price of a security or index from its mean value within a certain period of time.
Full load hours	Quotient of the annual energy volume (in kWh) and maximum output (in kW). The term is used for power plants and in contracts for electricity. In the natural gas trade, the term usage hours is used.
WCI	World Coal Institute
WEO	World Energy Outlook
Wholesale market	Wholesale market
WKA	Wind farm

Organisations/Links

AGEB (Arbeitsgemeinschaft Energiebilanzen)
www.ag-energiebilanzen.de
American Coal Council
www.americancoalcouncil.org
APFCR (Association of Coal Producers and Suppliers of Romania)
www.apfcr.ro
Australian Coal Association
www.australiancoal.com
Australian Institute of Energy
www.aie.org.au
BREE (Bureau of Resources and Energy Economics)
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BRGM (Bureau de Recherces Géologiques et Minières)
www.brgm.fr
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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 Importsrs)
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 Lignite)
www.Lignite.de
DTEK (Ukrainian Coal Producer)
www.dtek.com
EIA (Energy Information Administration)
www.eia.doe.gov
EMAG (Institute of Innovative Technologies)
www.emag.pl
Enel (Enel Group)
www.enel.com
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
Geocontrol
www.geocontrol.es
GIG (Central Mining Institute)
www.gig.eu
Golder (Golder Associates Ltd.)
www.rmtltd.com
GVSt (Association Hard Coal, e.V.)
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
RMU Banovici D.D. (Bosnian Coal Producer)
www.rmub.ba
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 Association
www.worldcoal.org
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