

EUROPEAN COMMISSION DIRECTORATE-GENERAL FOR ENERGY AND TRANSPORT DIRECTORATE C - Conventional Energies Coal and oil

EURACOAL

European Association for Coal and Lignite



COAL DIALOGUE



INTRODUCTION

Participants from EU Member States, the European Commission, the European Parliament and also from the coal industry took part in the Commission's and EURACOAL's joint 2nd Coal Dialogue on 20th September 2005 in Brussels.

In his introduction, Chris Jones, Deputy Head of Cabinet of Commissioner Piebalgs, acknowledged the contribution of coal to security of energy supply in Europe. He described the excellent long-term and geographic availability of coal as advantages, especially compared with gas and oil. He also considered research in Clean Coal Technologies as vital. Furthermore, the European Commission acknowledged the request of the coal industry to make developments in emissions trade more visible in energy supply enterprises.

The President of the European Association for Coal and Lignite, Nigel Yaxley, described the impact of Emissions Trading on the coal industry and power generation in the EU. He noted that that in Europe generally there had been an under-allocation of emission certificates. Given the changed ratio between gas and coal prices, switching from coal to gas as a result of Emissions Trading in Europe would be neither sensible nor economic. The increasing costs of CO2 certificates were however jeopardizing European industry's competitiveness through increased electricity prices. It was therefore important to maintain a wide-ranging energy mix for power generation in order to secure an economic supply. It was essential for coal above all to invest in new installations with improved efficiency in the name of a clean coal strategy. Policy, however, must provide the required stable framework.

Matthias Hartung, Member of the Board (RWE Power) examined the impacts of the Emissions Trading System on investment decisions of an energy company from the point of view of one of the major European electricity producers. With examples from Germany, the UK and Hungary, he made clear which factors play a role when deciding on the future fuel for new installations.



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SECURITY OF ENERGY SUPPLY - COAL'S CHANCE AND CHALLENGE

CHRISTOPHER JONES, DEPUTY HEAD OF CABINET OF COMMISSIONER ANDRIS PIEBALGS After the publication of the Green Book on Energy Efficiency in the year 2000, the EU-Energy Commissioner Andris Piebalgs is now working on a more widespread review of Europe's energy policy to ensure a really coherent approach – ensuring that our energy policy really hits the right balance between sustainable development, security of supply and competitiveness.

The term "Renaissance of coal" is very appropriate in the sense that coal is available in abundant quantities and that it represents the major energy source for countries such as China, the USA and Australia. China increased its energy needs by 65% during the last 3 years. Currently, the Chinese put around one new coal-fired power plant into operation each week, while in Europe, coal consumption was expected to decrease in the next 30 years. But Europe needs coal if it wants to secure its energy supply and if it wants to fulfil the objectives of the Lisbon Strategy. Looking at the increasing oil prices (and specialists do not predict important reductions in the price of oil) coal must be an important issue on our agenda

Nevertheless Europe also has to face its CO₂ commitments: the emissions trading scheme and the resulting cost of carbon present a new challenge. Industry needs transparency and predictability regarding carbon trading and Europe needs investments in Clean Coal technologies, including carbon sequestration, to prevent global warming. It is also important that clean coal technologies figure amongst the priorities of the 7th Framework Programme. They would enable the export of European knowledge to third countries.

The Commission will certainly keep in mind that coal plays an important role in Europe's electricity generation, and above all in the new Member States. We must bear in mind that coal has many advantages: it is abundantly available, easily accessible and safely transportable, the prices for coal are relatively stable and predictable and Europe disposes of its own coal reserves. The challenge for Europe will therefore be to improve its know-how in the field of clean coal technologies (without forgetting short-term measures such as efficiency improvement of existing power plants to reduce CO_2 emissions) while aiming to reduce its current CO_2 emissions to the level of 1990.

E U R A C D A L European Association for Coal and Lignite



EMISSIONS TRADING AND THE PROSPECTS FOR COAL IN THE EU POWER SECTOR

NIGEL YAXLEY, PRESIDENT OF EURACOAL



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Emissions Trading and the Prospects for Coal in the EU Power Sector

2nd Coal Dialogue Brussels, 20th September 2005 Nigel Yaxley, President, EURACOAL 1. In his welcome address Mr Yaxley expresses his thanks to the Commission, especially to Mr Schmitt von Sydow, Mr Galanis and Mr Schneider, for having made this second Coal Dialogue with EURACOAL possible. Renewed concerns on petrol prices over the past few weeks show again that energy can rapidly become a major political issue. Euracoal's position on security of energy supply and on clean coal policy is well known. Today's presentation is dealing with Emissions Trading, a crucial subject for coal. Even if the subject could be a topic for an entire conference, this presentation will give an overview.

What can we agree? Short term Long term High and inflexible Electricity Rising demand Use of existing Coal's Modernisation capacity needed introduction of contribution clean coal technology Relies on fuel Emissions switching; Trading increases electricity prices Yaxley - 2nd Coal Dialog - Figure 2 EURACOAL

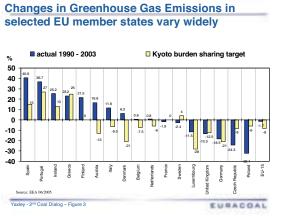
2. Energy is a basic need for Europe as for anywhere else. Energy shortages and prices should not limit economic growth or social welfare.

Electricity demand is high and relatively inflexible. Short term demands depend more on seasons and temperature than on price signals. Long term we expect a rising demand because a modern society is an electricity intensive society.

Coal's current position in the power market depends on the utilization of the existing capacity.

Coal is competitive today and will be tomorrow. Clean coal is a synonym for technology and a market-driven way into the future.

Emissions Trading is seen as one of the key instruments for tackling climate change but how will it deliver this in the long term?



Vyoto burden sharing target

3. This slide reminds us of the background to all this – percentage changes in emissions since 1990 and how this compares to the Kyoto commitments expressed through the burden-sharing targets.

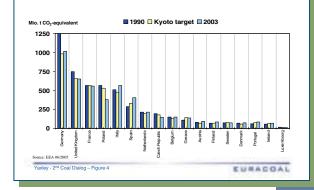
Wide variations between the different Member states depending on individual circumstances can be observed, as well as some big gaps. 4. The picture looks different when we show the absolute levels of emissions and targets. We observe that big economies and big coal generators dominate. Europe has a commitment to reduce CO2 emissions by 8% vs. 1990 levels until 2012 but until 2003, the reduction has only been of about 2%. There still must be done a lot and Emissions Trading is a key element in the strategy to reach this target.

5. But Emissions Trading only tackles a part of the problem: the cap and trade system for CO2 was introduced on 1st January 2005, covering the basic industry and power generation which emits 53% of the total CO2 emissions. We see that the power generation is by far the largest covered sector; within which coal is highly exposed.

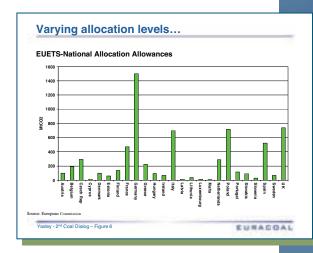
6. The EU-Emissions Trading scheme does not cover all the 6 so-called Greenhouse Gases but only CO2. The allocation of 6.57 billion allowances covers 11,400 installations. The Commission has cut 290 million allowances from the notified National Allocation Plans. Regarding the National Allocation Plans, there are large varieties:

Germany – the allocations are based on 95% of real needs and there exist mechanisms to encourage investment which will be covered in detail later. Poland – the allocations are based on government forecasts. The Commission reduced the NAP by 47Mt CO2 so there now is a risk that Poland, often expected to be one of the sellers, will in fact be a buyer. UK – the allocations are based on government forecasts but aiming for greater reductions than required by Kyoto. Therefore the power stations have been allocated 28% less than they emitted in 2004.

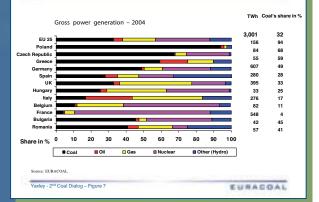
Absolute Greenhouse Gas Emissions in selected EU member states vary widely



EUETS has a major effect on electricity generation 100% = 2,200 Mio 100% = 3,950 Mio t Pulp&Paper × Refining Other Energy 24 12 Other 13 23 Transport 14 Cement Sectors 55 53 in ETS Power Generation EU25 CO2 emissions EU25 CO2 emissions in EU ETS ata McKincac/bCo. Juna 200 Yaxley - 2nd Coal Dialog – Figure 5 EURACOAL



Different power generation composition...

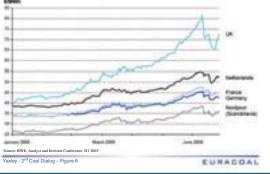


7. This rather busy graphic illustrates the diversity of the generation mix across the European Union. Many Member states have a significant reliance on coal: Poland over 90%, Greece over 60% and Germany around 50%. UK is close to the EU average at around one third.

These different mixes will be differently impacted by the EUETS.

Development of 2006 full-year baseload electricity prices

Leading to varying electricity prices



8. This slide shows the trend during 2005 of forward base-load prices for the whole of 2006 in some important EU-markets. Prices will go up, but this increase is not uniform. One reason lies in the growing energy prices – particularly gas. In addition we have to recognise the effect of emissions trading and the different power generating structures. The UK for example has a surplus in gas generation capacity and therefore some fuel switching between coal to gas is possible. The allocation of CO2 to coal-fired power plants is far below the 2004 coal burn. The UK has the choice to burn expensive gas or to try to buy more CO22 on the EU market to burn cheaper coal.

Neither Germany nor France are so dependent on gas and the CO2 allocations have been more generous with relation to need.

Scandinavia is dominated by hydro and nuclear power, so there are less demand and costs for CO2 . But all in all the trend to higher prices is apparent.

The EUETS is not a true commodity market

- Timescale of Phases so short, cannot respond to market signals
- Rules of EUETS potentially can change at each Phase
- No certainty that long term investment will be rewarded
- Fuel switching between surplus capacity only short-term option
- Allowance prices therefore dependent on the price of gas

9. In a commodity market, supply and demand influences prices and prices feed back signals to reduce or increase production.

With emissions trading the first part of this works but it is a closed system apart from CDM mechanisms.

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10. A big question mark was put on the first slide and here are the current questions with regard to investments in the coal sector, to security of energy supply and to Emissions Trading.

What are the current questions?

- Who will be the sellers of allowances within the trading scheme?
- ❑ How high will the price of CO₂ allowances reach?
- □ How will the gas-coal price spreads influence CO₂ prices?
- □ What effect will weather, availability of generation capacity have?
- How to maintain a secure and affordable electricity supply at a time of high oil and gas prices?
- How to remove uncertainty and promote investment in the energy sector?

Yaxley - 2nd Coal Dialog - Figure 10

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11. This is just a simple illustration of how allocation prices affect the costs of marginal generation. Taking into account typical efficiencies as well as the basic chemistry, coal emits roughly twice as much CO2 as gas. Therefore, the rising allocation prices for CO2 affect the cost of marginal generation of coal-fired power plants more than the cost for oil- or gas-fired power plants.

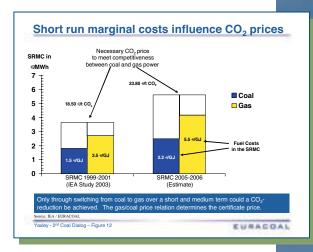
12. The different costs can feed through to electricity prices. In May 2005 the prices for certificates rose sharply and reached between 15 and 20. Many environmental economists had expected prices between

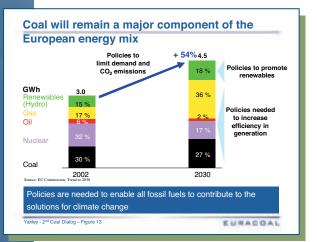
5 and 10. A possible explanation for this development could be the increasing price for gas. This slide shows on the left side the average short run marginal costs between 1999 and 2001. The IEA expected a necessary CO2 price about 20 to equal the competitiveness between coal and gas power. Now the price for gas has risen and to close this gap a CO_2 price of about 33.80 will be necessary at this estimated fuel prices. The price for electricity including the CO_2 costs has to reach up to 55 /MWh to make gas power competitive with coal power. Price impacts like these will not be acceptable for

politicians, responding to angry industry and voters.





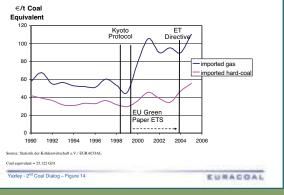




13. The European Commission predicts that electricity generation will grow by 54% until 2030. All EU-Member States want to develop the generation of electricity from renewables and many policies are in place to achieve this. The share of approximately 15 % renewables in 2003 relies for more than 80 % on large hydro. Targets to increase the share of renewables are therefore extremely ambitious and can only provide part of the answer. Policies to reduce demand will also not be sufficient.

Policies are also needed to enable fossil fuels to contribute to the solutions for climate change. Simply achieving this by switching from coal to gas is an illusion – it reduces security, cannot achieve "deep cuts" as gas is also a hydrocarbon, and many instruments such a Emissions Trading ignore the overall supply chain – e.g. loss of gas from pipelines.

Price relativities for power generation have moved dramatically since conception of EUETS



14. When we discussed the Kyoto-Protocol, new or flexible instruments, followed by the Green Paper on the CO2-cap and trade-system within the EU, the world of energy looked different from today. In a look back on the 90's, this time was fortunate: low prices, abundant supply.

There was hope for well-performing energy markets. The Internal Market for electricity and gas was at the top of the EU-agenda. Reliable and secure supply of fuels seemed to be no question.

The geopolitical situation has changed and the future of the oil- and gas-markets indicates a high-price-period.

Measures are required to promote long term investment

Euracoal believes

- Good reasons to maintain a diversified generation portfolio
- Recognize growing uncertainty about prices of fuel and CO2
- Fuel switching from coal to gas is not a long-term solution

Euracoal recommends

- Increase efficiency through investment
- Remove financial uncertainty to promote investment eg. German solution

Mechanism to support Clean Coal approach needed

Yaxley - 2nd Coal Dialog - Figure 15

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15. To maintain a secure and affordable electricity supply is a long term task. There is no easy or quick solution. The first phase of the EUETS, could be considered in some ways as an experiment. But the timescale is too short and the uncertainty beyond is too great compared with timescales of significant power station investments. Planning –design – build and recovery of investment is not years but decades. Looking at the bullet points in slide 15, EURACOAL asks the European institutions to support the Clean Coal approach and to discuss a legal framework or mechanisms here in Brussels and in the Member States – an example is the German system. 16. In Germany any power plant operator who wants to replace an old plant with a new one will be entitled to free emission rights for the first four years in an amount he would have needed to cover the emissions for his old installation. This period is followed by a 14-year period during which the certificates are allocated free of charge and according to demand. Allocation is geared to fuels and technology. There is a difference between coal and gas because fuel switch is not the aim.

The reason behind this is that those who want to invest on the basis of best available technology have to manage cost, price and technical risk in the market. The CO_2 -risk or the CO_2 -cost is taken away because the government wants to encourage investors.

17. The EU-Member states have now to work out their

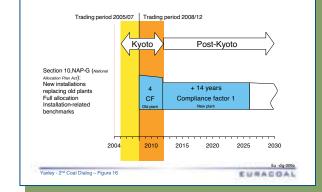
they will have to present until mid-2006. The slide shows the major demands which are to be taken into consideration in order to achieve security of supply.

investment security and climate protection

simultaneously.

NAPs for the second trading period (2008-2012) which

Emissions Trading in Germany gives security for investors beyond Kyoto



Looking to Phase II it is important to maintain security of supply

- □ Allocations should be free of charge based on historic emissions "grandfathering"
- □ Harmonised system same effect on all similar plant across EU
- Regulation to promote long term investment
- Benchmarking for new plant should be fuel, technology and plant specific based on best available technology

The European energy market is complex, we must avoid unwanted side-effects.

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18. Finding solutions in the frame of the EU-Emissions Trading scheme which would allow long-term investments is the main challenge. Clean Coal technologies - building through increasing efficiencies in the short and medium term to CO2 capture and storage in the long term – show the way for coal and lignite to become part of the solution for Europe's energy mix.

EURACOAL's Conclusions

- EUETS has had a dramatic effect on electricity sector
- The increasing price differential between gas and coal has led to a new situation in the power market
- CO₂ reduction through fuel switching has become increasingly more expensive and will jeopardize European competitiveness
- □ Little investment in power plant is forthcoming existing capacity will be required to meet demand over the short term
- Clean coal technology must be part of the the long term solution
- Regulation including emissions trading needs to stimulate this investment

Yaxley - 2nd Coal Dialog - Figure 18



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ENERGY EFFICIENCY INVESTMENTS IN RWE POWER **GENERATION - EXAMPLES**

MATTHIAS HARTUNG, EXECUTIVE VICE PRESIDENT, RWE POWER AG



1. THE RWE GROUP

RWE's core business is the production of electricity and the mining of fossil fuels. With annual power output totalling some 238 TWh, RWE is number two on Europe's generation market.

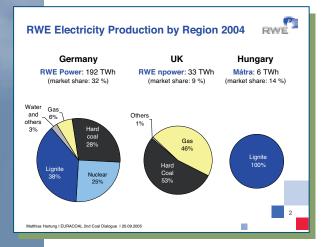
Energy genera	tion, 2004	ł	Support of the local division of the local d	Con line	
Electricity**	237.5	TWh	the lot		
Capacity**	44	GW	THE R	1	
Raw-material of	output, 20	04	12		
Lignite	107	mill. t	and and	202	
Natural gas	2.2	bn m³	Sec. 1	- 12-	
Oil	5.6	mill. m³		A States	

In extracting energy resources, too, RWE plays a leading role. Of special significance here is lignite, which we mine at low cost in opencast operations in Germany and Hungary. What is crucial in this respect is the fact that lignite is a domestic energy source that is available in sufficient quantities and also able to remain competitive without subsidies. With lignite output totalling 107 million tonnes in 2004, RWE is the world's largest lignite producer.

To this must be added annual output of about 2.2 billion m^3 of natural gas and some 5.6 million m^3 of oil.

2. RWE'S POWER GENERATION PORTFOLIO

RWE's activities in power generation have their focus on Germany, the UK and Hungary.



In Germany, our Group Company RWE Power is in charge of electricity generation. Here, RWE Power backs a broad primary energy mix of lignite, hard coal, nuclear energy, gas and renewable sources.

With a share of some 40%, **domestic** lignite is pivotal. It ensures a secure energy supply that is independent of imports, while offering high economic efficiency.

A further important pillar in RWE Power's energy mix is **hard coal**. It makes a contribution of about 30% toward power generation. In our plants, we use both domestic and imported hard coal.

Accounting for a current share of roughly 25%, **nuclear energy** is the third-strongest energy source at RWE Power, and we consider its long-term use to be a sensible option.

In addition to coal and nuclear energy, RWE Power also uses **gas** in its units, albeit in much lower quantities. Still, we view gas as an attractive energy source, above all in the peak load and as balancing energy, and we are also expanding in this segment – I will return to this point.

Finally, RWE Power's portfolio also includes renewable energy sources.

On the **British market**, our Group Company RWE npower is responsible for generating electricity and backs a mix of hard coal and gas.

About one half of the power produced is based on **hard coal**. In the power plants, both domestic British and imported hard coal is used.

The second pillar for electricity generation at npower is gas. **Gas**, mainly from the North Sea, produced approx. 46% of npower's electricity in 2004.

On the **Hungarian** electricity market, RWE is represented in generation by the mining and power plant company Mátra. Mátra operates a lignite-fired power station in Hungary which is supplied with coal from 2 opencast mines belonging to the company. Mátra is the second-biggest power generator in Hungary.

3. UNDERLYING CONDITIONS OF POWER GENERATION

RWE's current portfolio is now facing a re-adjustment. Owing to the age structure of its existing power plants, the Group is having to replace power station capacity totalling some 4 GW by 2010.

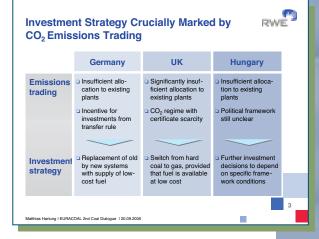
The specific decisions on upcoming investment in our power generation capacities are determined very largely by underlying political conditions. This is because these conditions have a huge impact on the profitability and, hence, on the commercial sense of any investment.

In this connection, the launch of CO2 emissions trading is of outstanding importance.

Trade in CO2 certificates is causing RWE substantial extra expense.

In view of these costs, the modalities for allocating CO2 certificates play a decisive role not only for the operation of existing plants, but also for the decisions to be taken on investing in new systems. This is very specifically true of our core countries.

In **Germany**, existing plants are positively under-supplied with certificates. With the so-called transfer rule applying in Germany, however, an instrument has been created that provides an incentive to replace existing plants with more efficient new systems. This is because the supply of certificates for old plants can be transferred to replacement systems – and, thanks to the higher efficiency of these replacement plants, any certificates no longer needed can be used to offset the under-provisioning of other systems or can even be sold.



It is against this background that we have to take a decision on which fuel to use in the new plants. In addition to the fixed and variable costs of an investment, the CO2 certificate price, too, is factored in. The problem here is that this certificate price must be estimated not only on today's basis, but also with an eye to further perspectives – and this is only possible today subject to qualifications or not possible at all, since estimates can hardly be given beyond the first period of the National Allocation Plans.

So, we must accept: certificate prices are hard to estimate. The costs of input energies like hard coal or gas imported to Germany are very volatile, and they are bound to rise rather than fall in future, given the worldwide demand for energy. From this there follows for RWE Power a clear preference to be given to the country's low-cost domestic energy source, lignite.

In **Great Britain**, the allocation of CO2 certificates until 2007 is based on the historical emissions of its plants. At the moment, there is a serious under-supply of certificates for existing systems. In principle, this CO2 regime of a certificate scarcity favours a fuel switch from hard coal to gas, wherever other underlying conditions permit this. Of crucial importance in this connection will be the further developments in fuel prices. At present, the price of gas is too high for a switch from hard coal to gas – in fact, we are experiencing in places a switch from gas to hard coal with corresponding implications for the prices of the certificates that will be increasingly needed here!

In **Hungary**, creation of the framework for trading in CO2 emissions is still work in progress. The requisite investment decisions here depend on the final shape given to the National Allocation Plan. Any decisions on the use of the domestically available energy source, lignite, need dependable ancillary conditions which must not lead to competitive disadvantages for coal. Specifically, this concerns stipulations on transfer rules, compliance factors and benchmarks.

In Hungary, we are also pursuing the route of co-combusting CO2-neutral biomass in existing systems. This can be done without any great investment and leads to a better CO2 balance.

In the following, the decision scenarios outlined for our investments are illustrated using practi-



cal results for the various countries.

4. INVESTMENT EXAMPLES AT RWE

RWE Power's central project in renewing its power plants in Germany is the construction of a second **lignite-fired power station** with optimized plant engineering at the Neurath location in the Rhineland. The investment volume for the planned twin-unit plant with a total capacity of 2,100 MW and efficiency of over 43% is some 2.2 billion euros. On 16 September 2005, RWE AG's Supervisory Board took a decision in principle in favour

of this investment, the expectation being that Germany's allocation rules for old and replacement systems applying to the emissions-trading period 2005 to 2007 will remain unchanged for the period 2008 to 2012.

A further project being implemented is the erection of two topping gas turbines at the Weisweiler lignite-fired power plant. These turbines increase the power plant's flexibility, enabling it to provide electricity during peak times at short notice. Construction has already started at Weisweiler; commissioning is scheduled for 2007.

Depending on further energy-policy directions - specifically as regards the shape given to the next emissions-trading periods - RWE Power is keeping two more options open for building new power plants in Germany: a gas-fired power station at the Lingen location, on the one hand, and the construction of a hard coal-based plant at the Westfalen site, on the other.

With these investment projects, for which RWE Power's medium-term budget includes a total of 3 billion euros, RWE Power is making a crucial contribution toward climate protection, as it is toward ensuring security of supplies in Germany.

Our British Group Company RWE npower is pursuing the following projects in the power plant area subject to the underlying conditions pertaining there:

At present, hard coal- and gas-fired stations are being retrofitted. The aims of this retrofit are both an extended service life and improved efficiency for the units. In this

connection, the alternatives as regards the implementation of the Large Combustion Directive for coal-fired power plants are currently being vetted, which might require further capital spending.

If the underlying conditions are right, we intend to invest in new power plants in the UK as well in the coming years. Uncertainties exist here in the especially ambitious implementation of

emissions trading on the part of the British government and in additional cost-intensive environmental stipulations after 2008.

Still, Great Britain certainly remains an interesting and attractive location. It must be assumed that, by year's end-2015, one third of the UK's entire power generation capacity will go off stream and will have to be replaced. We wish to exploit the opportunities this opens up at an early date. For example, RWE npower has recently filed a request for approval by way of precaution to possibly build a 2,000-MW gas-fired power plant at the Pembroke location in Wales.

mplementation	Lignite: Retrofit 100 MW Units	 Lifetime extension + increase in capacity Completion: 06/2005 Budget: €15 mill. 	
	Lignite/gas: Topping gas tur- bines (95 MW)	 Start of construction: 11/2005 Expected commissioning: end-2006 Budget: € 64 mill. 	
Option	New unit, lignite or gas-fired (400 MW)	 Construction option: kept open Status: conceptual phase Expected commissioning: 2012 	ļ

	rrent Status o /E npower in l	f Power Plant Projects JK	RWE
Implementation	Hard coal/gas: Investment in existing fleet	 Lifetime extension Increase in capacity 	
Option	Gas: CCGT Pembroke plant (2,000 MW)	 Construction option: kept open Status: application filed in 2004 	
		ependent on environmental legislation.	

Finally, a look at Hungary: our Mátra affiliate is pursuing various projects to boost energy efficiency and to make sparing use of resources in its power plant.

This year, two power plant units have been retrofitted. With the simultaneous increase in the performance of the flue gas desulphurization system, all of the EU's emissions directives are now met. A total of some 15 million euros was spent on these measures.

Also, with an investment volume of 64 million euros, the power generation capacity of the Mátra power plant will be significantly raised by end-2006 thanks to the installation of two topping gas turbines. This will turn Mátra into a full supplier on the Hungarian market in the base and balancing load with power generation on the basis of lignite and gas.

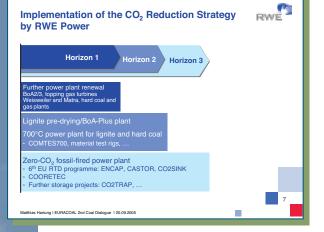
To further enhance its CO2 balance, Mátra also co-combusts CO2-neutral biomass.

Viewed against a backdrop of an obsolete Hungarian power plant fleet and the 100% market opening decreed for 2007, Mátra is currently vetting new-build lignite- and gas-fired power stations. Here, further lignite-based power plant development is favoured at the moment. The reasons are the same as those mentioned for Germany.

5. LONG-TERM PERSPECTIVES OF FOSSIL-FUEL POWER GENERATION

This overview of our power plant projects in Germany, the UK and Hungary has shown that, in future as well, our focus will continue to be very much on fossil fuels. This does not contradict the goals of climate protection to obtain a perceptible reduction in CO2 emissions. In fact, the already achieved innovations in power plant engineering and the foreseeable further development steps are key to any efficient prevention of climate change. So the most recent examples show that modern, fossil-fired power plants reach efficiencies of between 43 and 58% today already, whereas the worldwide average for fossil-fired plants is around 30%, so that CO2 emissions can definitely be lowered with the state-of-the-art power plants that we already have.





power plants envisages three horizons.

In horizon 1, we will be using state-of-the-art technologies for replacing old power stations or in building additional new ones. However, implementation needs adequate allocation of emission certificates to the plants on the basis of the grandfathering system.

In horizon 2, which is geared toward the medium term, what matters is that we develop even more efficient power plant technologies. So, thanks to highly efficient lignite pre-drying and to a transition to higher steam parameters, we expect to increase the efficiency of new lignite-fired power plants to about 50% by the end of the next decade. Hard coal-based power stations in a new design, too, will then achieve efficiencies on the same scale.

The long-term horizon 3, which must be pursued in parallel, aims at developing a feasible, mature and accepted technology from the vision of a zero-CO2 fossil-fired power plant. This cannot be done by increasing efficiency alone, but needs secondary measures for CO2 capture and storage. The core issues here are being dealt with jointly within the scope of national and European cooperative projects along with partners from the manufacturing industry, power producers, universities and institutes.

6. UPSHOT

The German, but also the British and Hungarian power producing sectors find themselves at the beginning of a long-term investment cycle. In view of the scale of the investment of about 12 billion euros required at RWE alone in the next 15 years, we need underlying political conditions that we can rely on for the long haul.

Of special importance for the upcoming decisions are the allocation rules to be anchored in the second phase of the National Allocation Plans. This is because the power plants for which concrete investment decisions must be made now will not go on stream until the trading period 2008 to 2012, and will reach final amortization in the periods that follow.



- safeguards investment certainty for coal-fired power plants
 - Efficiency strategy in CO₂ reductions must take precedence over any substitution strategy.
 - So: anchoring of fuel-specific regulations
 - Ensuring allocation of free CO₂ certificates in line with needs, for a sufficiently long period of time as regards replacement units and new power plants.

ate-protection policy must not become a locational disadvantage for

- Climate targets (post-Kyoto) shaped to be compatible with the economy
 - No going-it-alone in energy policy
 - Less bureaucracy for JI/CDM

tthias Hartung | EURACOAL 2nd Coal Dialogue | 20.09.2005

The decisive issue in the construction of new coal-fired power plants is that, in implementing the stipulations of the Kyoto Protocol and of the EU's burden sharing, we back a strategy of increased efficiency, and not one of replacing coal with gas. In concrete terms, this means: the National Allocation Plans must embody fuel-specific arrangements to avoid any discrimination of coal over gas. This also includes ensuring an allocation of free CO2 certificates for a sufficiently long period and in line with requirements, and this for both the replacement and the new units.

In the climate targets that must be agreed for the long term, meaning the post-Kyoto phase, an eye must be kept on the following aspects:

- 1 the targets must be compatible with economic developments;
- 2 going it alone in climate policy must be avoided in Europe.

Also, the instruments – specifically CO2 emissions trading and project-related mechanisms – must be unbureaucratic and flexible.

The energy and environmental-policy challenges we are currently facing involve shaping the energy source mix in such a way that we do justice in the long run to the exacting requirements of an economically efficient and secure power supply that is at the same time environmentally compatible. This is a demanding task for energy policy – at national level, but also in a larger, European context.



E U R A C D A L European Association for Coal and Lignite



RENAISSANCE OF BROWN COAL IN THE CZECH REPUBLIC

PETR PUDIL, CEO CZECH COAL A.S.



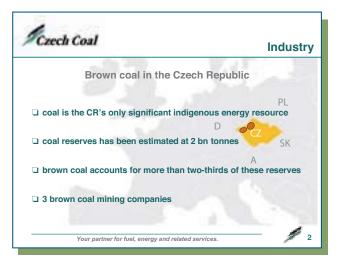


Renaissance of brown coal in the Czech Republic

Case Study of the MUS Mining Company

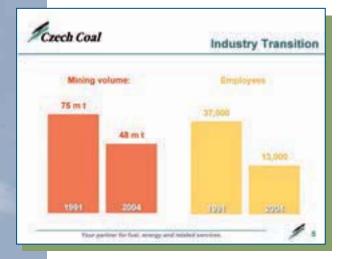


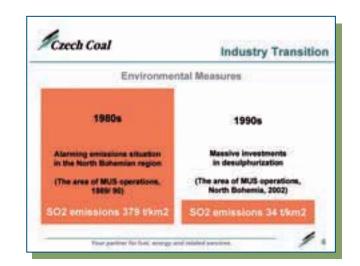


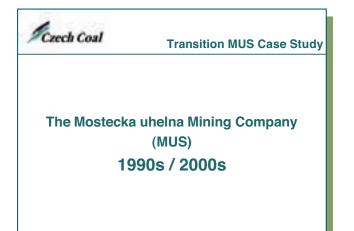


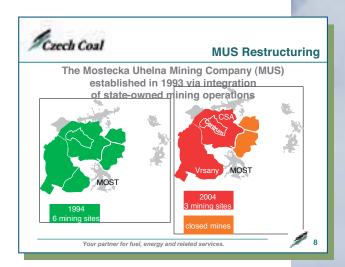


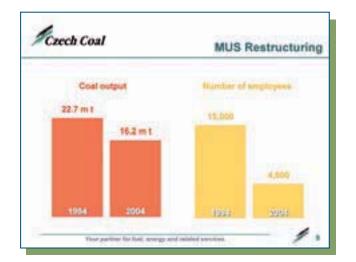


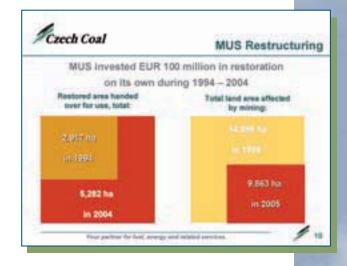


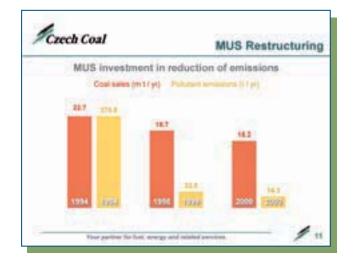


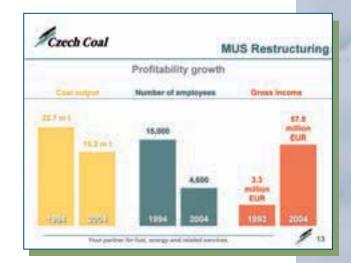


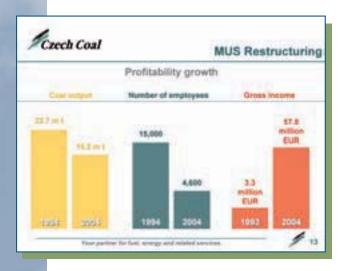










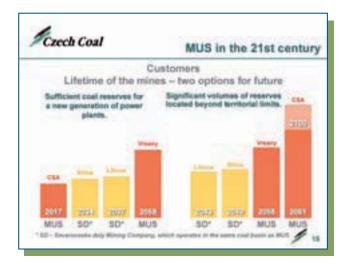




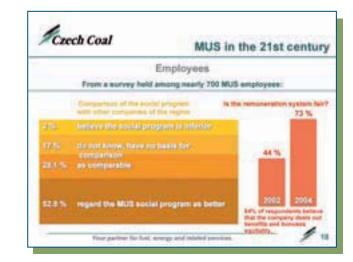


Government

Czech Coal



In 1991 an Act prohibiting mining beyond certain fixed territorial limits was passed in the Czech Republic. At present, discussions are under way whether to allow an extension of mining beyond these limits, provided that all potential environmental and social issues are resolved in compliance with the sustainable development approach.



Should mining be extended beyond the territorial limits the villages of Horní Ji_etín and _ernice, having a total population of about 2,000, will have to be involved in negotiations leading to a solution consisting of their complete resettlement

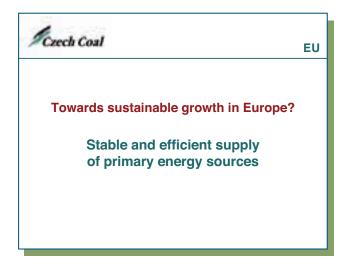
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MUS in the 21st century





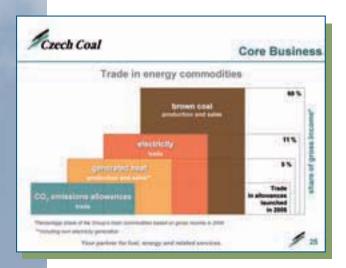
The vicinity with a strong and stable MUS, the largest employer in the region, have also effects in social area. One of the most interesting findings of a recent regional survey is that communities close to operating mines are flourishing in terms of population growth and housing development.

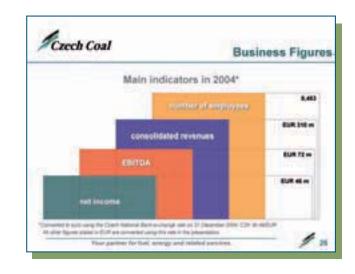














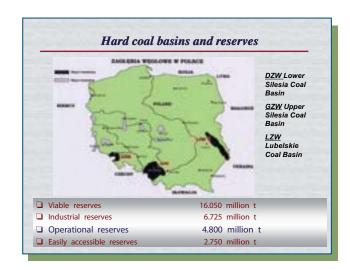
EURACOAL European Association for Coal and Lignite



RESTRUCTURING OF HARD COAL IN POLAND 1990 - 2010

JAN BOGOLUBOV, POLISH MINISTRY OF ECONOMY AND LABOUR

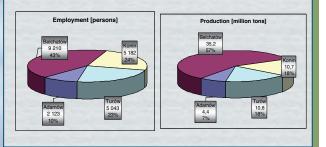




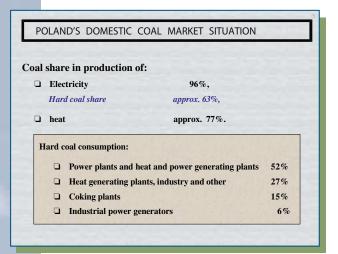
BROWN COAL INDUSTRY IN POLAND IN 2004

 $\Box At$ the end of 2004 the employment in brown coal industry amounted to 21 558 persons.

 $\hfill The 2004$ production of brown coal was 61,1 million tons



	sumption structure
Primary energy	
Hard coal	51,7%
Brown coal	12,7%
Oil	19,9 %
Gas	10,8 %
Renewable energy and	energy generated from
wastes	4,9 %



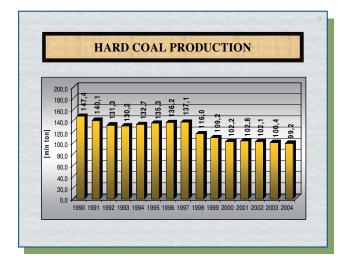


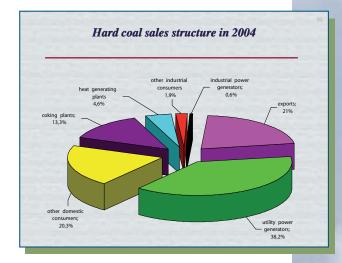
Reasons for hard coal mining restructuring in Poland

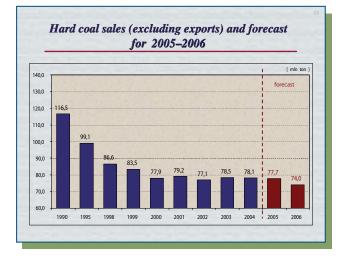
- Excessive production capacity
- Overemployment and employment structure
- Management system
- Ownership structure
- High indebtedness
- Environmental impact
- Low competitiveness
- Technical condition of machines and equipment
- Lack of own sources, time

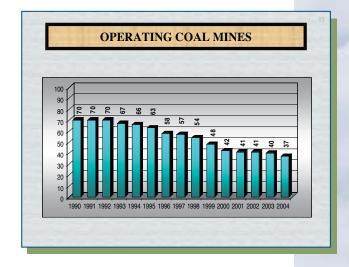
SECTOR RESTRUCTURING STAGES

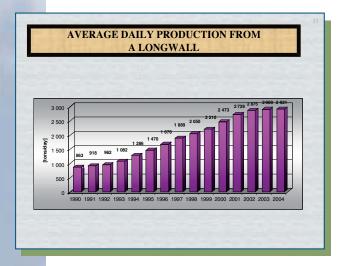
- Stage I 1989 1993
- Stage II 1994 1995
- Stage III 1996 1997
- Stage IV 1998 2002
- Stage V 2003 2006

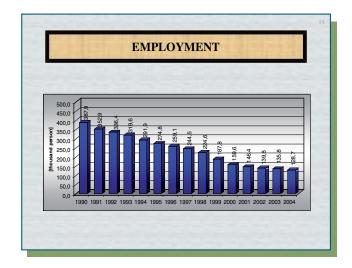


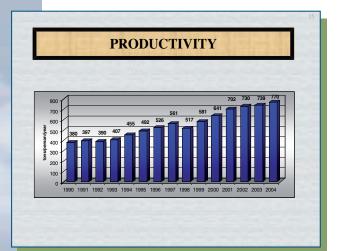


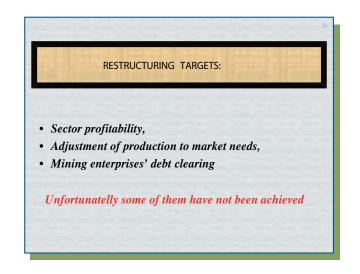






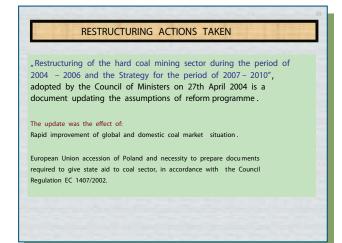


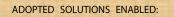












- Annulment of legal public liabilities.
- Postponement of legal public liabilities.
- Organizational change of sector by structure simplification

Debt restructuring - dramatic change

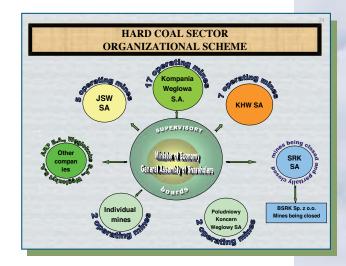
- Full debt restructuring of legal public liabilities
- Timely payments
- Cost and revenue generating liabilities
- Shifting financial streams region

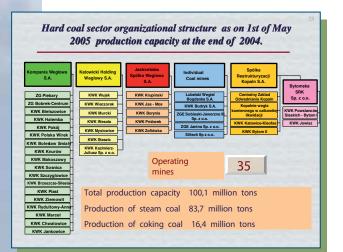
Activation – employer from outside of sector, Cost – effectiveness - realization

		2004			
2		-	-		
۱o.		unit	2003	2004	change %
1	2	3	4	5	6
1	Total production	min ton	100,4	99,2	98,8
	Total sales	min ton	98,5	98,7	100,2
2	Domestic sales	min ton	78,5	77,9	99,2
	exports	min ton	20,0	20,8	104,0
3	Reserve stock of coal at the end of period	min ton	2,9	2,0	69,0
4	Profit/loss on sales of coal	min zi	109,2	3 005,8	2 752,6
5	Remuneration of coal mine employees according to statistical office	zl/person	3 885,12	4 064,98	104,6
6	Net profit	min zi	9 666,6	2 659,4	27,5
7	Accounts payable	min zi	2 345,9	2 105,2	89,7
8	Liabilities	min zi	8 896,5	8 255,9	92,8

	ployment at the end ployment reduction	•		
				[persons]
		Employ	Employment at:	
		31.12.2003	31.12.2004	
1		2	3	4
	Total	136 456	127 097	- 9 359
	underground	105 127	97 438	- 7 689
including:	surface	31 329	29 659	- 1 67(
	including: coal processing	12 543	12 429	- 114

COAL SECTOR EMPLOYMENT







RESTRUCTURING IN 2004 - 2006 target status

- business entities will function in an economically effective manner ø
- mining entities will, as their utmost priority, secure the home demand for coal ø
- mining undertakings will be realizing economically effective exports z
- costs will be adjusted to revenues ø
- employment in mining undertakings will be adjusted to the production capacity, and the production capacity will be adjusted to sales possibilities
- modernization and investment tasks of entities will be realized up to their own financial sources
- mining entities will not benefit from any form of state aid, acknowledged in international contracts as non-permissible
- mining entities will comply with the requirements of environment protection and work safety standards

RESTRUCTURING 2004 – 2006 Targets and tasks:

- Maintenance of the energy security of the country and co-operation in improving the standard of energy security of the European Union;
- Maintenance by mining enterprises of sustainable profitability, economic effectiveness and competitive advantage on the uniform market of the EU:
- Securing satisfactory level of financial liquidity and creditwor thiness in order to ensure sustained operation and development of mining enterprises;
- Balancing of funds so as to enable current payment of liabilities, in particular those due to public sector creditors;
- Adjustment of production capacity to the local market demand and economically viable exports to the uniform EU market and elsewhere;
- Adjustment of employment to the actual production needs, along with ensuring a greater productivity and efficiency;
- Actions towards a rational cost structure Privatisation of mining enterprises .

RESTRUCTURING 2004 – 2006

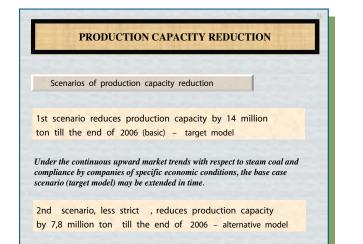
These objectives will be achieved through:

- Cost reduction in all business segments
- Marketing policy that enables reduction of sale costs, direct customer contacts, an effective competition with imported coal, along with blocking settlements by netting, or other barter practices, which reduce revenues and cause pathology and irregularities.
- Reduction of production capacity
- Reduction of employment using the protective and adaptation and activation measures referred to in the Law on Hard Coal Mining Sector Restructuring, to the level matching the actual requirements, between 2004 and 2006.
- Streamlining the organisation structure of mining.
- Streamlining the organisation structure of mining. . Introduction of innovative management practices and optimisation of company organisation structures, along with pursuing of a rational employment policy; and Maintenance of supplies to the uniform EU market and export leve Is to third countries at between 20 million and 17.5 million tones, assuming break even operation of the given production unit or group of production units.

MINING ENTERPRISES PERFORMANCE

Mining enterprises performance:

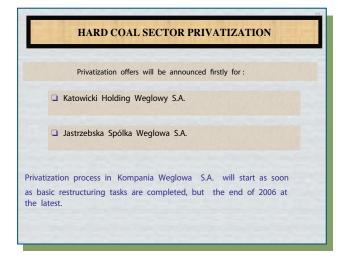
- Merger of mines,
- Closure of mines.
- Transformation of mines into commercial companies,
- Simplification of organizational structure and liquidation of useless subsidiaries.
- Sale of shares in needless subsidiaries,
- Gradual disposal of needless property,
- Settlement of legal status of grounds.



PRODUCTION CAPACITY REDUCTION

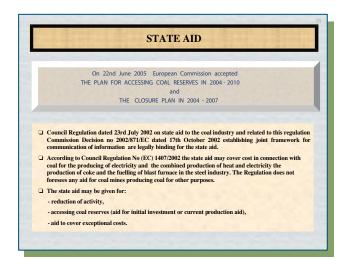
Conditions of realization of target model :

- Generating net loss in the period of three consecutive months or during the period of six not consecutive months within a single accounting period
- □ Change of the coal market situation involving a decline in coal sales revenue during three consecutive months in the total amount of, at least, 10% relative to the same period of the previous year .
- Delay in execution of payments due to public creditors within the period of three consecutive months or six non-consecutive months within one accounting year.



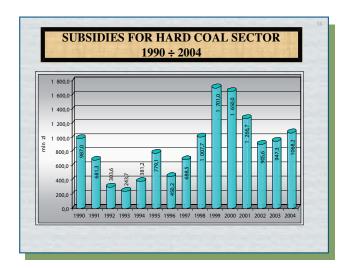
Creation of Coal -Coke Group The Coal-Coke Group will consists of the following companies: - Jastrzebska Spółka Wegłowa S.A., - Koksownia Przyjazn sp. z o.o., - Kombinat Koksochemiczny "Zabrze" S.A.,

- Zaklady Koksownicze "Walbrzych" S.A.
- The purpose of transformation is creation of Coal-Coke Group with Jastrzebska Spółka Weglowa S.A. as a dominant company due to its strategic position in coking coal and coke sector.
- These entities are much related with Jastrzebska Spólka Weglowa S.A. through commercial and cooperation links
- The Group will be the owner of Polski Koks S.A. dealing mainly with exports of coke and coking coal.





in 2004					
No.		Value [mln zl]			
1	Total budget sources including :	1 068,2			
2	- Mine closure	215,2			
3	- Repair of mining damages	39,0			
4	- Employment restructuring including:	617,1			
4a	Transferred effects of employment restructuring performed in years 1998-2002	478,6			
5	- Other tasks	196,9			



CONCLUSIONS

- Changing is neither popular nor easy
- Needs persistence and consistency
- Often results in loss of popularity
- Invokes conflicts
- Is a threat of making a mistake

Today there is no way back

RESIGNATION = FAILURE



PANEL DISCUSSION

After the presentations, a Panel Discussion took place, during which participants focused on the following issues:

- **Mr. Glante** (MEP) stressed that the objectives of security of energy supply and environmental protection, in particular Climate Protection, were being pursued on an equal basis. The focus was on how to improve the more efficient use of energy. Mr. Glante therefore wanted to commit himself within the European Parliament so that energy efficiency issues also became the object of European research.
- Dr. Libicki recalled that back in the 1990s when the Kyoto Protocol and its instruments such as Emissions Trading were discussed, the energy world looked quite different. The price for a barrel of oil was about USD 12, China has no economic importance, India, which was a rural country, belonged to the Third World and Europe has an economic growth of 3 %. Nobody thought that China's and India's economies would explode as they did, that the oil peak would be reached much earlier than expected. Besides that, the geopolitical situation is different today. Due to all these changes, Dr. Libicki invited the Commission, the Member States and the European Parliament to reconsider if the Emissions Trading Scheme would be the right instrument to reach the Kyoto targets.
- Mr. Schmitt von Sydow confirmed that the Communication of the European Commission on the Security of Energy Supply was planned for the end of 2005/beginning of 2006. The objectives of the Kyoto Protocol would certainly be maintained in this Communication. However, an energy mix including hard coal and lignite as major contributors would remain necessary in the long term. The main role of coal was for the introduction of Clean Coal Technologies to avoid its environmental disadvantages.

By their comments and questions, the participants mainly addressed the following aspects; among others, Messrs. Buzek, Glante, Henningsen, Kavouridis, Libicki, Linkohr, Milojcic, Reichel, Schmitt von Sydow and Yaxley took part in the discussion.

- The EU has a share of the worldwide CO2 emissions of approximately 14 % compared with 50 % for the states of the Asia-Pacific rim. When establishing the Emissions Trading Directive, one assumed for instance that the USA would introduce this instrument. This however has not been the case to date. The question will therefore arise at the latest in a few years if the models "ET-caps" and "specific emissions reductions" could be pursued jointly, without putting an important burden on the economy of the EU who is in a leading position.
- Several participants referred to Clean Coal Technologies as a solution to be preferred; partially in respect of the demonstration power station that Vattenfall planned for the year 2008 to capture CO2 by oxyfuel combustion.

According to the European Commission's draft, the 7th Framework Program for Research and Development of the EU for the period 2007-2013, contrary to the 6th Framework Program, has earmarked research funds for Clean Coal Technologies. Industry had been again encouraged to take part in multi-national Community projects.

The European Commission was invited to ask the Member States for regulations in the National Allocation Plans from 2008 to 2012 that make investments in the construction of power stations possible or easier (for example regulations which would allocate to power plant operators enough CO2-certificates over several trading periods).

Mr. Schmitt von Sydow and Mr. Yaxley thanked the speakers as well as all those who had contributed to the discussion. They both hoped to pursue the discussion at a 3rd Coal Dialogue in the autumn of 2006.



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