MINUTES

ROUND TABLE ON COAL
Surging Global Demand For Coal: what it means for the EU
European Parliament (Brussels), 16 March 2011

Participants numbered around 50 and included:
Dr. Christian EHLER MEP (chair);
MEPs Tadeusz CYMAŃSKI, Norbert GLANTE and Bogdan MARCINKIEWICZ;
MEPs’ assistants;
European Commission officials (Mr. Jan PANÈK, Head of Unit, Dr. Marion WILDE and
Mr. Michael SCHÜTZ, Directorate-General for Energy, Unit B.3 – Coal and Oil);
Representatives from the national and regional permanent representations to the EU;
EURACOAL President, Dr.-Ing. Hartmuth ZEIß, Secretary-General, Mr. Brian Ricketts
and members;
Other representatives of the European coal and lignite industries, utilities, power
equipment suppliers, NGOs, trade associations, research institutes and universities.

1. Introduction and welcoming remarks – Dr. Christian Ehler MEP

Following the horrific earthquake in Japan, Dr. EHLER welcomed participants to a
“new world” in which the role of coal would be discussed in earnest. Nuclear would
be hotly debated in the EU, where some Member States had no alternative. A
nuclear incident at Fukushima in one of the most industrialised countries in the
world, would, he said, be viewed very differently from one behind the former Iron
Curtain at Chernobyl. Energy Commissioner OETTINGER had painted a bleak
picture, but the reaction of markets and public opinion would determine how this
played out globally.

Dr. EHLER congratulated EURACOAL’s new President, Dr. ZEIß on his appointment
and introduced the speakers.

2. Global Coal: trends and outlook – Dr.-Ing. Hartmuth ZEIß, President,
EURACOAL and Chairman of the Managing Directors, Vattenfall Europe
Mining AG & Vattenfall Europe Generation AG

Dr. ZEIß welcomed the fact that industry and the European Parliament were
discussing policy issues; however, unpredictable factors would influence policy, such
as the unfolding events in Japan.

Dr. ZEIß recalled that coal was the world’s fastest-growing source of primary energy
and the fuel of choice for power generation, its challenge being CO₂ emissions. In
China, coal use had soared since December 2001 when China joined the WTO. The
country now accounted for more than half of world hard coal consumption.
Partly in response to Chinese demand, seaborne coal trade had reached a record level in 2010 of close to one billion tonnes. A 24% surge in exports from Indonesia means that it will likely overtake Australia in 2011 to become the world’s top coal exporter. Across the Atlantic, the US depended on coal for half of its electricity production, indigenous coal being very competitive. Finally, he noted how developing countries looked to coal to electrify their economies, including Indonesia.

The EU itself relied quite heavily on coal exports from Russia, but had a diversity of suppliers according to Dr. ZEIß. Colombia and the US had filled a gap left by South Africa which had found more attractive markets in Asia; but imports were only half of the story. In the EU, where coal reserves represented 80% of indigenous fossil fuel reserves, lignite and hard coal exploitation made similar contributions to total primary energy supply, meeting 60% of EU coal demand.

Dr. ZEIß observed that prices had peaked in 2008, then crashed because of the global financial crisis. The crash also marked a turning point in that the highest spot market prices for coal are now seen at China’s major ports, not European ports.

He turned to examine the models used for energy forecasting. DG Climate had used seven models in its Roadmap for a low-carbon economy by 2050 and DG Energy relies on similar models for its 2050 Roadmap. The IEA’s respected World Energy Outlook, referred to in many presentations, had assumed in the mid to late 1990s that coal use would continue the same growth trend as seen from 1970 to 1990. A slowdown after the collapse of the FSU and, later, the Asian financial crisis, allowed Greens to put the accent on a more sustainable future with less growth in coal use. The IEA seemed also to assume that developing countries would remain “developing” such that their energy use would grow only slowly. In its most recent forecast, the 450 ppm scenario foresees a dramatic U-turn in coal demand around 2020 – responding to the international political agreement that global temperature rises should be limited to +2°C.

In the DG Climate roadmap, coal use would disappear by 2020-2030, but the rest of the world would not switch away from coal – the EU would be alone in compromising its competitive position, Dr. ZEIß remarked.

In its response to the challenge of climate change, Dr. ZEIß reported that EURACOAL had championed modernisation and CCS, where policy-makers still had a lot to do.

He asked where the world would be today if China had no coal? Energy security would surely be a much greater challenge. He observed that the EU debate on a 30% CO₂ reduction target by 2020 would save only what China emitted in 2-3 weeks. China must therefore be brought into any low-carbon future, he concluded.

Dr. EHLER recalled that debate on the revised ETS Directive had focused on its internationalisation. In addition to China, Russia was also a potential emissions trading partner.
3. **Russian Coal: Europe’s new energy challenge** – *Dr. Kevin Rosner, Institute for the Analysis of Global Security (www.iags.org), Potomac, Maryland, USA*


Dr. ROSNER recalled that IAGS, established in Washington 10 years ago, focuses on energy security and how this links with geopolitics, trade and terrorism. The institute makes recommendations to the US Congress and, like the Russian coal study, is apolitical.

After 30 years of research on the economics and politics of Russian oil and gas, this study on coal and its environmental impacts was something of a departure for Dr. ROSNER. He highlighted two important points:

- although the Russian coal industry is now largely privatised, coal subsidies remained very high until recently (second largest single government expense in 1991); and
- coal, like oil and gas, was still perceived by the government as a strategic commodity.

Coal supply in Russia depends heavily on rail transport. This dictates costs and allows the government to control the private coal industry through the state-owned RZD rail monopoly. Dr. ROSNER noted that transporting coal in Russia is 3-4 times more expensive than in the US, and even then, it is less profitable for RZD than transporting oil.

The low wholesale price of natural gas (up to >80% less than in the EU in mid-2008), again controlled by the government, hampers demand for coal. Russian industry is generally very energy-intensive and per-capita emissions high, with huge scope to save energy. Given the EU’s concern about GHG emissions, Dr. ROSNER recommended more co-operation with Russia. Since 2006, an energy policy had been advocated with domestic power production based on coal and nuclear, freeing up oil and gas for export, as described in the *Russian Energy Strategy to 2020* (published by the Ministry of Energy in 2003). Although he recognised that Europe should not lecture Russia on how to power its economy, he believed that a dialogue on energy efficiency and coal-to-liquids (CTL) was possible. Events at Fukushima in Japan could, he said, lead to anti-nuclear attitudes, and Russia would have to review its own nuclear safety.

Dr. ROSNER noted that the world’s rising population required power from all sources. He concluded that there was a certain lack of attention to Russia which offered an opportunity to be capitalised on by the European Union.
Dr. István KALMÁR (Calamites Engineering) made four observations:

- on the life cycle emissions from gas use, it was not right to mention downstream only, upstream emissions also mattered;
- CCS was just taking shape and would be needed for the future;
- Europe seemed to not to want to use its own energy resources; and
- innovation was too often left to companies, with no strategic push from governments.

In response to Dr. ROSNER’s report, Mr. Oleg PERTSOVSKIY (SUEK – Siberian Coal Energy Company) remarked that, although not a priority, climate policy and GHG emissions were an issue in Russia since energy and economic efficiency had to be boosted. The problem was that energy efficiency projects were often not economically viable, given the low wholesale gas and electricity prices in Russia. Even climate-friendly projects undertaken by SUEK to reduce methane emissions from mines were at risk post-2012, depending on the future framework for Joint Implementation projects.

He said that if, as suggested in the report, a cap-and-trade system were created for GHG emissions in Russia, the effect would be devastating for both consumers and producers. Bi-lateral mechanisms needed to be developed, similar to those under the Kyoto Protocol, together with access to technologies and to long-term and affordable financing from the international financial institutions. Coal consumption in Russia would grow, but probably not at the pace forecast in its energy strategy, although he noted that Russia was considering exporting electricity to China from new power plants built near the Chinese borders. He estimated that only if natural gas prices rose to more than twice the level of coal prices (on an energy basis) would coal become the preferred option.

Mr. PERTSOVSKIY wanted to properly understand the coal situation in Europe. He saw growing demand in Asia and an interesting market for Russian coal in Europe today, but what was Europe’s long-term position on coal? In any event, he observed that SUEK would move quickly to secure its markets in Asia. In the EU, a mix of fuel sources was surely desirable and opportunities for further co-operation had to be sought, he concluded.

Dr. EHLER reported that Commissioner OETTINGER had dealt with a lot of questions related to nuclear in the EP’s ITRE Committee. It had been pointed out that nuclear installations in Belgium and the Netherlands lay below sea level and at risk of catastrophic flooding. He estimated that the reaction to current events would take about six months. Interestingly, Commissioner Oettinger had said, “we should talk about coal”. After events in Japan, new ideas on energy strategy and energy mix would be developed before the end of 2011, even in Russia and China, Dr. EHLER concluded.
4. China’s Coal Demand Boom: the end of cheap coal for Europe? – Mr. Moritz Paulus, Institute of Energy Economics (EWI – www.ewi.uni-koeln.de) at the University of Cologne, Germany

In his presentation, Mr. PAULUS examined projections for coal use in China and the repercussions of these on European coal prices.

Chinese hard coal consumption rose by >150% in the 10 years to 2009, whereas coal consumption remained relatively stable in OECD countries. At the same time, China’s coal imports had increased dramatically, reaching around 20% of the global steam coal market in 2010. For the future, China’s 12th Five-Year Plan, released on 5 March, implies coal production of 4.0 billion tonnes for 2015, but demand could reach 4.7 billion tonnes, depending on GDP growth (a more modest 7% p.a. is assumed by government), and on growth in power generation from nuclear, hydro, renewables and natural gas (from 110 bcm today to 250 bcm in 2015).

In China, the principal coal supply regions are distant from the major demand centres, so transport is a challenge, adding to costs. Mr. PAULUS estimated that in 2010, an average of 40,000 truck loads of coal per day were hauled from the central coal bearing provinces to the Beijing area and beyond, creating congestion on Chinese roads, consuming diesel inefficiently and adding to air pollution. With rising domestic coal supply costs, imports have become more attractive. Looking ahead, China has two options:

- coal-by-train – difficult and expensive because of the size of the country; and
- coal-by-wire – hindered by weak influence of national plans on local decision taking and requires new remuneration and investment incentive schemes for Chinese transmission system operators (TSOs).

In both cases, coal prices would increase in Europe, but by different amounts. Decisions taken in China impact coal prices in Europe, with a coal-by-train policy pushing up European prices up by 10% (+USD 11/tonne). China’s import-export balance will have a growing impact on global coal trade, on the competitiveness of coal in Europe and on which countries Europe imports from. Mr. PAULUS concluded that China’s energy strategy mattered, not only for international oil and gas trade, but also for global coal trade. Its monthly swings in import demand have been equivalent to 10% of global trade, leading to price volatility.

Dr. ROSNER asked if water availability had been included in the EWI analysis as China’s large coal deposits lie in the western deserts. Dr. Marion WILDE (DG Energy) asked about demand assumptions and whether these included other uses of coal (e.g. coal-to-chemicals and CTL). Mr. PAULUS replied that the report was based on demand assumptions made by the US Energy Information Administration which included assumptions on future CTL demand in China (International Energy Outlook 2010). He explained that water scarcity was the reason for assuming that coal would

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1 Overall, the share of coal in the energy mix is expected to fall from 72% to 63%.
be moved by rail to central China, even in the coal-by-wire scenario, as the arid regions of western China don’t allow for large-scale coal-based electricity generation.

Mr. Götz BARTKOWIAK (Total Gas & Power) warned against assuming that China would stop importing: competitive coal imports could buffer local supply disruptions and prolong the life of indigenous resources. In any event, he suggested that other Asian countries would increase their coal imports. Mr. PAULUS agreed, but noted that the import demand of other countries was far more predictable compared to China.

Dr. EHLER thanked the speakers and all participants, noting that the presentations and minutes would be distributed to MEPs, including members of the Coal Round.

The next Roundtable on Coal was planned for 1 June 2011, and would examine coal-to-liquids and coal-to-chemicals – both interesting within the context of the ongoing debate about the shape of the EU’s future FP8 research programme.

He foresaw that events in Japan would create a lot of work in the field of energy before then and hoped for a positive outcome.

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Global Coal: trends and outlook

13th European Round Table on Coal
“Surging Global Demand for Coal: what it means for the EU”
European Parliament

16 March 2011

Dr.-Ing. Hartmuth ZEIß – President EURACOAL
Chairman of the Managing Directors
Vattenfall Europe Mining AG &
Vattenfall Europe Europe Generation AG
Coal in total primary energy supply, 2008

World: 12 267 Mtoe

EU-27: 1 751 Mtoe (14.3%)

Coal 27.0%
Oil
Gas
Combustible renewables & waste
Nuclear
Hydro
Other

Sources: IEA Key World Energy Statistics 2010 and IEA databases

Coal Round, 16 March 2011 – Slide 2
Fuel sources for electricity generation, 2008

World: 20 181 TWh

EU-27: 3 341 TWh (16.6%)

sources: IEA Key World Energy Statistics 2010 and IEA databases
Coal use in EU-27, China and USA, 1970-2010

China joins WTO

Tong Mei Datang Tashan coal mine: 15 Mt annual production

source: Coal Information 2010, OECD/IEA (with 2010 estimates)
Australian & Indonesian coal exports, 1970-2010

sources: IEA Coal Information 2010, OECD/IEA and McCloskey Coal Report, IHS McCloskey
EU-27 coal imports by origin, 1978-2009

sources: IEA Coal Information 2010, OECD/IEA and EUROSTAT databases
EU-27 indigenous coal production, 2010

- Tong Mei Datang Tashan coal mine: 15 Mt annual production

Note: TPES: total primary energy supply

Sources: EURACOAL and IEA databases

Germany
Greece
Poland
Czech Republic
Romania
Bulgaria
Hungary
Slovenia
Slovakia

Hard Coal
134 Mt
112 Mtce

Brown Coal
397 Mt
122 Mtce

~60% of coal use
~20% of all energy production
~10% of TPES

Coal Round, 16 March 2011 – Slide 7
Coal prices in EU and China, 2004-2011

USD/tonne (6,000 kcal/kg net)

NW Europe (ARA) CIF

FOB Qinhuangdao

source: IHS McCloskey

Coal Round, 16 March 2011 – Slide 8
15 years of IEA World Energy Outlooks for coal

- **1995-1998**: Extrapolation of historic trend line
- **2000-2004**: Spectacular failure to forecast rise of China
- **2007-2009**: More realistic coal-sector analysis
- **2010**: Responsive to political rhetoric

Coal Round, 16 March 2011 – Slide 9
Continuous power plant modernisation and new CCS-ready plants.

source: VGB PowerTech e.V.

photo courtesy of Vattenfall

Nordjyllandsværket, Denmark
Conclusions

- Coal is the world’s fastest-growing source of primary energy and the No.1 fuel for power generation.

- Coal is safe, reliable, affordable and becoming ever-more sustainable. Low CO$_2$ emissions can be achieved with CCS.

- Imported coal provides energy diversity. Indigenous coal reduces energy import dependence and generates wealth.

- Coal improves security of electricity supply around the world.

Coal is an important part of a balanced energy mix.
Thank you!

Dr.-Ing. Hartmuth ZEiß
President
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CHINA’S COAL DEMAND BOOM – THE END OF CHEAP STEAM COAL FOR EUROPE?

Coal Round, European Parliament
Brussels, March 16th, 2010

Moritz Paulus

Institute of Energy Economics at the University of Cologne (Germany)
Chinese hard coal demand grew by more than 150% in the last ten years.
Chinese imports will make up ~20% of global trade market in 2010

China monthly imports

- China became a net importer of coal in 2009 (roughly 110 Mt net).
- In 2010, Chinese imports were around 147 Mt.

Source: IEA
Chinese coal demand key for future imports and therefore global coal prices

- Chinese coal production is likely to be planned around 4 Bt for 2015 but transport will be a challenge
- GDP growth, development of energy intensity, and deployment of nuclear, gas and renewables will be the key factors in determining coal demand.

Source: IEA
## Future scenarios for coal-based energy transport in China

### Current situation in China
- More than 60% of coal is transported via railway, another 15% by trucks
- Some HVDC lines for mine mouth coal-fired power plants already exist
- Coal imports are cost competitive compared to domestic production in Chinese coastal demand centres

### Future

#### Coal-by-train
- May cover the largest part of future coal supply
- Massive expansion of railway capacity during last years

#### Coal-by-wire
- **Until now:** Several demonstration HVDC projects
- **Hindrances**
  1. Weak central planning institutions
  2. Remuneration schemes of Chinese TSOs do not give enough investment incentives
Chinese import volumes are heavily influenced by inland transportation costs and capacities

We analyze two scenarios with different assumptions on Chinese domestic transport infrastructure:

**Coal-by-train 2030**

- Supply regions: Xinjiang, Shanxi, Henan, IMAR
- Demand Hub: Beijing, Shanghai, Hong Kong
- Conventional transport

**Coal-by-wire 2030**

- Supply regions: Xinjiang, Shanxi, Henan, IMAR
- Demand Hub: Beijing, Shanghai, Hong Kong
- HVDC lines

Development of coal demand and oil price levels are based on IEO 2010 (EIA)
Fundamentals support supply costs of 110+ $/t for European imports

Long run marginal costs - Europe

Long run marginal costs - China

Prices - reference

LRMC „coal-by-wire“

LRMC „coal-by-train“
Europe: In the “coal-by-wire” scenario, the role of the marginal supplier switches from the US to Russia.

![Graph showing coal-by-train and coal-by-wire scenarios with contributions from South Africa, Russia, Colombia, USA, and Venezuela.]
China: In the “coal-by-wire” scenario, China is able to cover its coal consumption through domestic production.
Besides coal-by-wire, several other developments influence if China will be able to cope with its growing coal import dependency

Measures to cope with coal consumption in new 12th 5-Year Plan:

- More “moderate” economic growth rates planned
- Planned reduction of energy intensity
- Strong increase of gas-fired power generation until 2015
- Massive expansion of renewables and nuclear plants
Broader context and implications for Europe

It now matters “if a sack of rice topples over in China”

Future European coal import prices will be set in the Pacific, by Chinese im- and exports

Future import prices for steam coal may not be as cheap and stable in the future as anticipated by many. This has implications on fuel switching potential and new coal-based power generation in Europe

Chinese energy strategy is not only relevant for global oil and gas markets, but also for global coal markets
Thank you for your attention

Moritz.Paulus@uni-koeln.de
Welfare effects of HVDC investments are positive, especially if we look at China only.