Prospects for Coal in Europe

Hard Coal Mining – Present Day and Prospects
Katowice – 14th November 2006
Prospects for Coal in Europe

- EURACOAL – the voice of coal in Europe
- Coal in a world context
- Coal in Europe
- Coal and the EU Energy Green Paper
- Clean Coal
- Building a sustainable future for coal in Europe
EURACOAL’s Targets and Tasks

- Securing coal’s position in the European energy mix through appropriate regulations
- Cooperating in achieving equilibrium between
  - energy policy requirements,
  - market and
  - environmental policy initiatives (coal mining and coal utilisation)
- The voice of coal in Europe
  - Hard Coal – Lignite – Imported Coal
EURACOAL Members

- ZPWGK - Polish Hard Coal Employer´s Association (POL)
- DEBRIV - Deutscher Braunkohlenn-Industrie-Verein (GER)
- GVSt - Gesamtverband des deutschen Steinkohlenbergbaus (GER)
- COALPRO - Confederation of the UK Coal Producers (UK)
- Cdf - Charbonnages de France (FRA)
- PPC - Public Power Corporation (GR)
- CARBUNION - Federation of Spanish Coal Producers (ESP)
- ZSDNP - Czech Confederation of Coal and Oil Producers (CZT)
- PPWB - Confederation of the Polish Lignite Industry (POL)
- Mini Maritza Istok AG (BUL)
- MATRA - Matra Erömu Rt (HUN)
- PATROMIN - Federation of the Romanian Mining Industry (ROM)
- VDKI - Verein der Kohlenimporteure (GER)
- Hornonitrianske Bane Prievdza (SVK)
- Banovici Coal Mine (BOS)
- EPS - Electric Power Industry of Serbia (SER)
- ISSeP - Institut Scientifique de Service Public (BEL)
- University of Nottingham (UK)
- IMCL - International Mining Consultants Ltd. (UK)
- Coaltrans Conferences Limited (UK)
- Euriscoal (BEL)
- Fachverband Bergbaumaschinen im VDMA (GER)
EURACOAL: Contact Point and Interest Representation of Coal in Brussels
Perceptions of coal are changing...

The Economist - July 2002

Coal-fired electricity

The future is clean

Coal is costly, but coming back into favour—and cleaner

The Economist - September 2004
...as they are for gas!

“For us, our contracts are like a Holy Bible”  
(Alexander Medvedev, Gazprom Deputy CEO)
Reserves of coal are evenly distributed around the globe

Global Energy Reserves 2004

N. America
123/8/7

S. & Cent. America
9/14/6

Europe
16/2/5

Africa
34/15/13

FSU
117/17/53

Middle East
0/100/66

Asia Pacific
163/6/13

coal / oil / gas
(billion tonnes oil equivalent)

source: BP Statistical Review of World Energy 2005
World coal consumption is increasing

China, India and the developing world are basing their growth on coal – Europe must help make clean coal part of the solution to climate change

China already dominates world demand…

World Coal Consumption 2005 (including lignite)

Source: IEA
...and most of the world’s coal is produced ‘at home’

Top 8 Global Hard Coal Producers in 2005

Source: IEA
Europe is the world's third largest consumer of coal behind China and the US.
Coal is important in EU power generation …

Power-generation structures in selected EU-25 states

Gross power generation (TWh)  Share of Coal in %

- EU 25: 3,179  29%
- Poland: 154  92%
- Greece: 59  60%
- Czech Republic: 84  59%
- Germany: 607  48%
- UK: 280  28%
- Spain: 396  33%
- Hungary: 34  24%
- Italy: 303  15%
- Belgium: 85  11%
- France: 572  5%
- Bulgaria: 42  45%
- Romania: 57  38%

Data as per: 08/2006
Source: EUROSTAT – Energy / Yearly Statistics 2004
... with indigenous coal supply making a major contribution

EU25 Solid Fuel Supply 2005 (adjusted for calorific value)

Source: European Commission / Euracoal
Coal and lignite production is widespread in Europe

Source: IEA

2005 production (adjusted for heat)

UK
Others
Hungary
Spain
Bulgaria
Romania
Serbia
Czech
Poland
Greece
Germany

Hard Coal
Lignite (Heat Adjusted)

Source: IEA

Katowice, 14th November 2006, Figure 15
Indigenous coal has clear benefits

- The use of domestic coal deposits reduces import dependence, thereby increasing security of energy supply.

- Regional prosperity and employment are created.
  - A 500 MW power station operating 7000 h/p.a. and selling electricity for 40 €/MWh anchors 3 bn € in the region over 20 years.
  - With indigenous coal, the added value remains in the region.

- The additional economic prosperity enables the regions to develop their economic structure without any disruptions, but with a long term vision.
New European energy policies are emerging

- Energy Green Paper published March 2006
  - Security – Sustainability – Competitiveness

- Strategic Energy Review
- Communication on Sustainable Coal

Consultation

Early 2007
The Green Paper was largely preoccupied with non-coal issues...

"Coal and lignite, for example, presently account for around one third of the EU’s electricity production: climate change means that this is only sustainable if accompanied by commercialised carbon sequestration and clean coal technologies on an EU level"
…but coal responds well to the Green Paper priorities (1)

- Energy for growth and jobs in Europe: completing the internal European electricity and gas markets
  - Coal already has a fully functioning market – aiding competitiveness

- An internal market that guarantees security of supply: solidarity between member states
  - Coal can be safely transported and stored and is not subject to the major foreign policy concerns of oil and gas

- Tackling security and competitiveness of energy supply: towards a more sustainable, efficient and diverse energy mix
  - Coal provides a unique contribution to security of supply
  - Reasonable and relatively stable prices of coal help competitiveness
Coal responds well to the Green Paper priorities (2)

- An integrated approach to tackling Climate Change
  - Continuous modernisation and major efficiency improvements help reduce emissions significantly in the short and medium term
  - Carbon Capture and Storage in coal-fired power plants and geological storage to be developed for 2020 and beyond

- Encouraging innovation: a strategic European energy technology plan
  - The coal industry backs the ZEP and SMR Technology Platforms
  - EURACOAL welcomes planned coal-based pilot and demonstration plants with CO₂ Capture and Storage

- Towards a coherent external energy policy
  - Indigenous coal reduces import dependency
  - Imports are from diverse sources
Clean coal comes in three stages

Clean coal I
Retrofit and new-build in line with state of the art, increase in efficiency, reduction of $\text{SO}_2$, $\text{NO}_x$, and dust

Clean coal II
Research and development for increase in efficiency to $> 50\%$

Clean coal III
$\text{CO}_2$ capture and storage

Investment in ultra-modern technology
Continuous modernization and increased efficiency is a pre-requisite to CCS...

The right approach: continuous power plant modernization/renewal

The zero-CO$_2$ power plant

Feasible today

Possible tomorrow

Conceivable day after tomorrow

25 - 31 %
31 - 36 %
40 - 45 %
45 - >50 %

Δη~+30%

Unit size in MW

50, 150, 300
300, 600 up to 1,100

1950 - 1970
1970 - 1990
1990 - 2010
2010 - 2020 after 2020
...ultimately leading to the “hydrogen economy”

Also useable as H$_2$, SNG, Methanol, or fuel generation

Oxygen → Gasification → CO$_2$ → CO$_2$ sequestration via pipeline
Coal → Gasification → Hydrogen → Gas- and Steam turbine → Electricity 450 MW gross

*IGCC = Integrated Gasification Combined Cycle
ZEP Technology Platform proposes 10-12 large scale CCS projects

- Several coal projects are already planned
  - RWE (UK and Germany) – E.ON (UK) – GE (Poland)
  - Vattenfall (Germany) – Powerfuel (UK) – etc

- Necessary to provide urgent short and long term commercial incentives for these to go ahead
  - Inclusion in EUETS
  - Clarification of state aid issues
  - Early mover funding mechanisms for pilot projects
  - Long term sustainable mechanisms for full deployment

- Establish robust R&D funding under FP7 and National programmes
Political as well as technological action is needed to make CCS a reality

- EU - Elements of a Directive on CCS
  - Management of the environmental risks associated with CCS
  - Effective and reliable permitting of storage sites
  - Liability for CCS activities

- International maritime and national legal frameworks

- Public Acceptance
  - Less than 10 % heard of CCS – Before explanation only 13 % were positive, after explanation 55 % agreed
  - An early information campaign is necessary to get public support for the large scale implementation of CCS
Coal Industry‘s Policy Requirements

- Acknowledge the unique role of coal to security of supply and its contribution to competitiveness
- Further commitment to the vision of CCS including financial support of pilot and demonstration plants
- Support adoption of a legal framework for CO2 storage
- Recognise that increased plant efficiency and continuous modernisation have the potential to preserve resources and reduce CO2 in the short and medium terms
- Acknowledge efficiency increase as a pre-requisite of CCS

Coal as a sustainable part of the EU energy mix
Thank you