A GLOBAL PERSPECTIVE ON COAL

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EURACOAL Conference Renaissance Brussels Hotel, 21 June 2010

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Coal plays an important and growing role in global energy supply and power generation





Global Primary Energy Supply, 2007

	TPES	coal's share
World	12 029 Mtoe	26.5%
OECD	5 433 Mtoe	20.9%
USA	2 340 Mtoe	23.7%
China	1 956 Mtoe	65.7%
India	595 Mtoe	40.8%

Global Electricity Generation, 2007

	elec. gen.	coal's share
World	19 771 TWh	41.5%
OECD	10 645 TWh	37.1%
USA	4 323 TWh	49.0%
China	3 279 TWh	81.0%
India	803 TWh	68.4%

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sources: IEA Key World Energy Statistics 2009 and IEA databases

China's coal production and use could rise enormously



note: * shows only German hard coal production sources: Cleaner Coal in China, OECD/IEA 2009 and IEA World Energy Outlook 2009

3

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The importance of coal in meeting recent growth in energy demand

Increase in primary demand, 2000-07



Demand for coal has been growing faster than any other energy source and is projected to account for more than a third of incremental global energy demand to 2030. © OECD/IEA, 2010

4

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World coal production (to 2008) and CO_2 emissions from fossil fuel use (to 2007)



sources: IEA Coal Information 2009 and IEA CO₂ Emission from Fossil Fuel Combustion 1971-2008

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Coal production accounts for ~20% of energy production and ~10% of TPES in EU-27

Brown Coal, 2008



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6

Hard coal imports into EU-27, 1978-2008



EU-27 imported 43% of its coal needs in 2008, compared with 19% of

source: IEA databases

7

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China became a net importer for the first time in 2009

Chinese coal imports & exports to 2009



Net imports of c.100 Mt by 2015, forecast in IEA World Energy Outlook 2007, have been reached 6 years earlier.

sources: IEA Coal Information 2009; IEA World Energy Outlook 2007; and IEA databases

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162

International steam coal prices have fallen from the peaks of mid-2008

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



Asian spot prices underpinned by demand from China. Lower spot prices elsewhere reflect drop in demand with strong competition from natural gas for power generation.

9

Global financial crisis has not changed basic outlook for energy

Shares of incremental energy demand Reference Scenario, 2008-2030





source: IEA World Energy Outlook

Long term, there is no such thing as "business-as-usual"



source: IEA World Energy Outlook 2009 - climate change excerpt

Efficiency measures account for two-thirds of the 3.8 Gt of abatement in 2020, with renewables contributing close to one-fifth and CCS about 3%.

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World primary coal demand by scenario



In the 450 Scenario global coal demand plateaus by 2015 and declines progressively, returning to 2003 levels by 2030 - a level almost 50% lower than in the Reference Scenario.

12

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The rationale for CCS

- Without new policies, global emissions increase by 130% by 2050, leading to a 4-7°C temperature rise.
- CCS provides one-fifth of the needed CO₂ reductions in 2050: 9 GtCO₂ captured from over 3000 plants each year.
- Without CCS, cost of stabilization rises by 70%.
- CCS is the only low-carbon solution for gas/coal, cement, and iron & steel sectors.
- 7 plants operating today; over 70 integrated projects planned.



Near-term actions for governments

- Clarify CO₂ transport, storage property rights/access rights.
- Establish regional storage exploration programmes, and policies to encourage commercial exploration.
- Develop national CO₂ storage capacity estimates.
- Expand human capacity in CO₂ storage site assessment.
- Fund RD&D programmes on CCS technologies.
- Ensure provision of regular, transparent data from early projects.
- Establish CCS education/outreach programmes for the general public.



Near-term actions for industry stakeholders

- **Take more risk in funding near-term demonstration projects.**
- Develop international sector-specific CCS working groups to address CO₂ capture and CCS generally.
- Share demonstration data more widely; transparent data will improve public confidence.
- Ensure adequate public engagement in all CCS projects.



Conclusions

- Global coal trade patterns are shifting east after enormous demand growth since 2000, driven by non-OECD countries, it is the growing import demands from China and India that are now shaping the market.
- The reduction of industrial production in Europe, Japan and the US weakened demand for electricity and steam coal in 2009.
- Low natural gas prices and renewables growth will keep demand weak for imported coal in Europe and the US.
- With economic recovery, coal supply chains will become more stressed, as in 2004-08. Coal prices are likely to become higher and more volatile.
- CCS is a budding technology, but crucial for coal market prospects. The next vital step is full-sized demonstrations.

