Strategies for suppliers in a carbon constrained world

Coaltrans, October 2004

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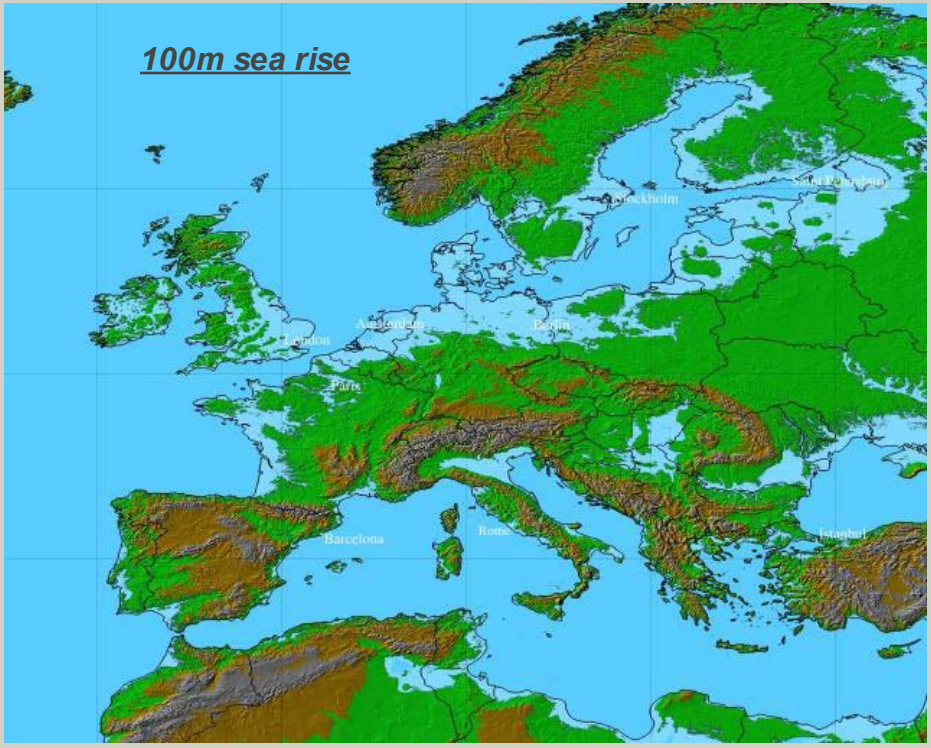
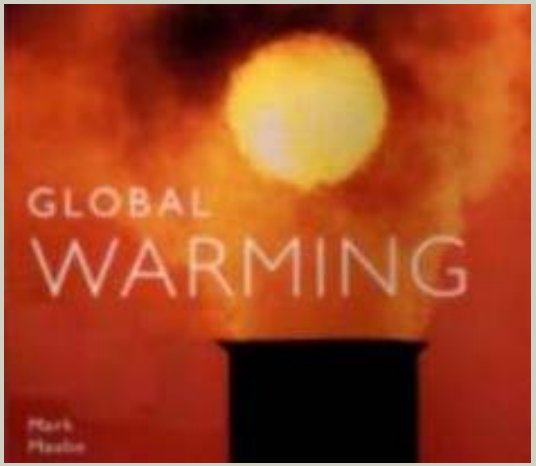
“Dethroning King Coal” *

- **Environmental enemy no. 1**
- **Google results 1 - 10 of about 1,960,000 (English) pages for global warming**
- **Google results 1 - 20 of about 17,100 images for global warming**

* Economist, July 4, 2002



Lawrence Williams- An End to Global Warming



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Carbon constrained world a reality

- evidence of global warming due to anthropogenic GHG emissions is mounting
- increasingly clear that a carbon constrained world will become a reality
- multiple initiatives are under way to realise this:
  - UNFCCC (1992) and the Kyoto Protocol (1997) were first steps
  - EU Emissions Trading Scheme (ETS) is the first multilateral trading schem
    starts January 2005
    will go ahead even if Kyoto is not ratified
  - NSW in Australia commenced emissions trading scheme January 2003
  - Japan and Canada plan to implement their own emissions trading schemes
  - in the USA, support for a scheme to reduce GHG emissions is growing

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Technological developments will address this over time

- coal has become cleaner over time: efficiency and emissions reductions

- continuing efforts to improve coal power efficiency levels… both absolute and relative to gas
  - ultra-super critical combustion, oxygen fired combustion, circulating moving bed

- many research programmes for clean coal technologies
  - IGCC
  - chemical looping integrated to CO2 sequestration

central technologies already proven

….. process of integrating them and improving system economics

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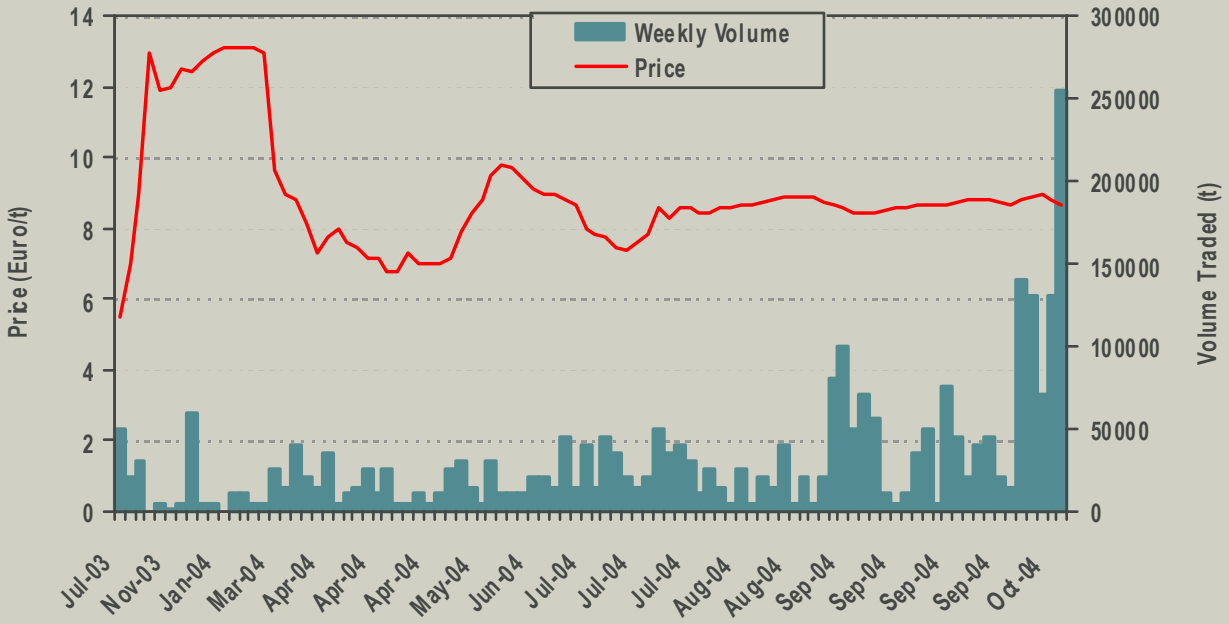
The EU ETS is a prototype for the future

- in coal marketing and environment related issues, the EU is a leading market
  - to widely use a coal index for swap trading and pricing purposes
  - to implement renewable electricity generation targets and emissions trading scheme

- belief that the EU ETS will become a successful and liquid market
- EU emissions trading scheme is a prototype for implementation elsewhere



Source: TFS

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Coal is a major contributor to GHG emissions

- power an easy target for emissions reduction legislation
  - large CO_2 emission intensive assets in regulated industry
- within power industry, coal-fired generation (CF) is the most carbon intensive…. increasingly under threat from gas fired generation
  - CF generation emits 0.9 t CO_2/MWh
  - CCGT gas-fired generation emits 0.4 t CO_2/MWh

- globally, CF generation emits 6 066 Mt CO_2 or 26 % of global CO_2 emissions
- across the EU, CF generation represents 20 % of all CO_2 emissions
- CF generation represents 36 % of the emissions in the EU ETS

→ Coal fired generators AND coal suppliers are facing a significant challenge in the changing regulatory environment

Source: IEA CO2 from Fuel Combustion 1971 - 2001, 2003 Edition

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Strategic decisions for coal suppliers

- carbon-constrained world is real…. but policies and regulations remain a moving target
- suppliers must choose response to changes in regulation and fuel markets
- pre-position your company and respond to uncertainty
  - scenarios of the future vary widely
  - strategies need to be flexible and adaptable
  - danger of being left behind…..but also of being too far in front

- the greater the uncertainty, the higher the value of flexibility
- portfolio approach to fuel supply is the optimal approach – coal plus increasing role for renewables and emissions credits

three generic choices:

Wait and see/ Participate / Embrace the opportunity

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Strategic choices for coal suppliers

- **Wait and see**
  - monitor the regulatory environment
  - wait for clarity on rules
  - comply
- **Participate**
  - internal structures in place, small scale trading (even before regulation is fully in place)
  - participation in Clean Development Mechanism (CDM) activities
- **Embrace the opportunity**
  - help shape the development of regulation and the market
  - integrate emissions into business
  - new product development
  - global participation

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Embrace strategy

- aim to become a market leader in the field

How ?

  - shape the development of and influence market structure
  - new products assist customers to run coal plants optimally

    …….. and burn the maximum amount of coal
  - create a liquidly traded market to increase transparency

    ……. reduces the cost of compliance

- but this strategy has its drawbacks:
  - will make mistakes and pay some “school fees”
  - accept some regulatory uncertainty and volatility
  - requires upfront investment without the guarantee of returns

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What can be structured?

- An example is the guaranteed delivery of CDM credits
  - access a large number of global projects
  - due diligence and contract negotiation
  - manage the credit and delivery risk
  - aggregate credits for multiple utilities
  - carbon credits become “fuel” component
  - augment/ replace utilities’ own reduction activities and credit purchases
  - product has the most value as a long term stream of credits

    ……. especially when combined with long term coal contracts

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Your CO_2 emissions ?

Coal buyer 2004- 216 g/km of CO2

Driver career commute- 130 000t

Coal seller 2004- 9 g/km of CO2 *

Driver career commute- 1 800t

* [based on cyclist consuming 6.3g of rice and using 22 Kcal/ km]

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Conclusions

- carbon-constrained world is a reality

- largest impacts of climate change are yet to come:
  - initial responses are **behavioural**

    …. involving energy efficiency improvement, fuel switching, emissions credits
  - **fundamental** investment shifts will follow

    switch to gas, nuclear and renewable generation capacity……

    and clean coal

- the climate change perspective has to be addressed by coal producers and power generators working together

Together embrace the change and shape the (our) future market

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