

Strategies for suppliers in a carbon constrained world

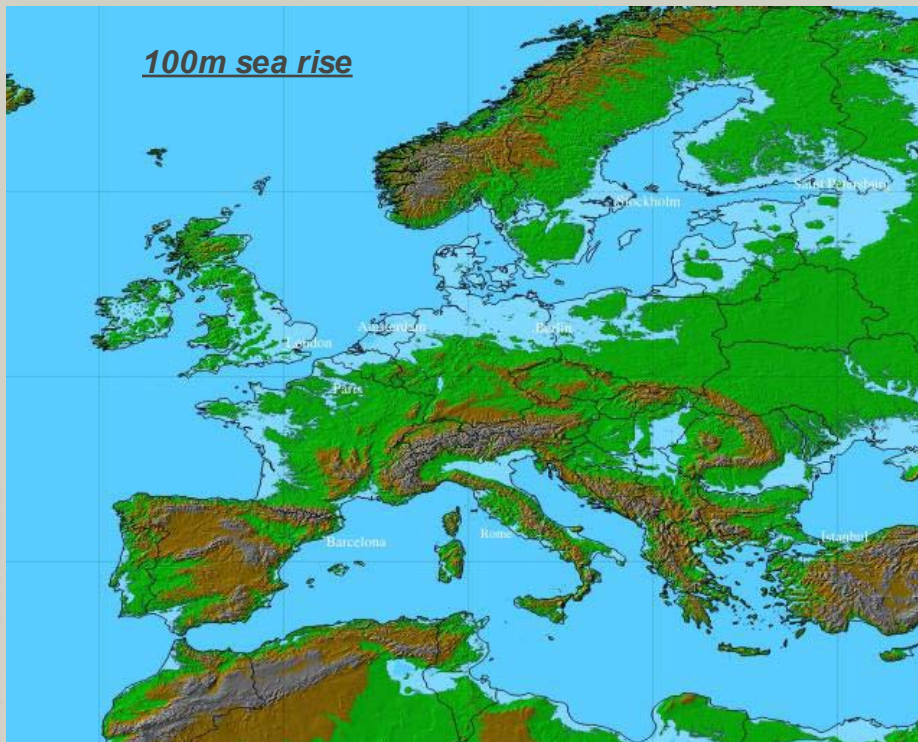
Coaltrans, October 2004

Jon Dudas



“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



Lawrence Williams- An End to Global Warming



* Economist, July 4, 2002



Mark Maslin

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 scheme
 - 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

Technological developments will address this over time

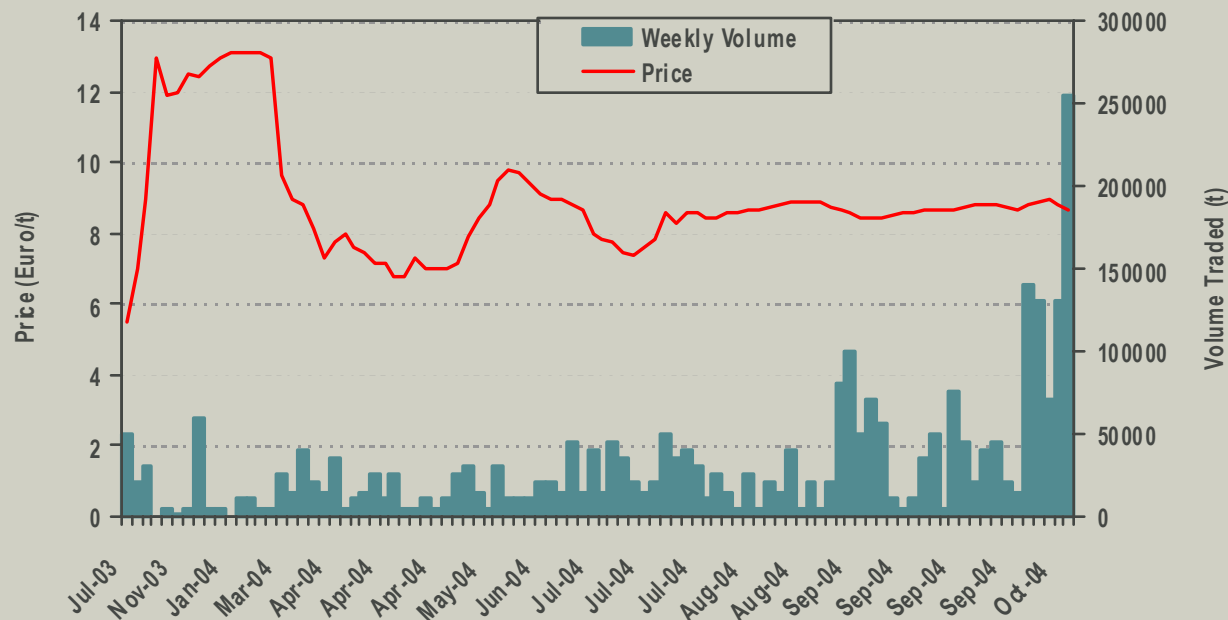
- coal has become cleaner over time: efficiency and emissions reductions
- continuing efforts to improve coal power efficiency levels... both absolute and relative to gas
 - ultra-super critical combustion, oxygen fired combustion, circulating moving bed
- many research programmes for clean coal technologies
 - IGCC
 - chemical looping integrated to CO₂ sequestration

central technologies already proven

..... process of integrating them and improving system economics

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

Coal is a major contributor to GHG emissions

- power an easy target for emissions reduction legislation
 - large CO₂ 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 CO₂/MWh
 - CCGT gas-fired generation emits 0.4 t CO₂/MWh
- globally, CF generation emits 6 066 Mt CO₂ or 26 % of global CO₂ emissions
- across the EU, CF generation represents 20 % of all CO₂ 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

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

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

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

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

Your CO₂ 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]

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