



Part 1 - Creating Greenhouse Gas Assets

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Reminder - The CO₂ Commodity

- Typical commodity markets are underpinned by a real physical substance, such as oil, wheat or gold.
 - ✓ The market knows much about the supply of and demand for this substance, both now and for many years into the future.
 - ✓ As a result, participants in the market have the confidence to trade forward, often buying and selling years ahead.
 - ✓ Future trading in such markets supports long term investment decisions.
- “Emitting CO₂” is not a physical commodity. It doesn’t exist.
 - ✓ It must be created through legislation by establishing a “scarcity”.
 - ✓ The enactment of such legislation shapes the commodity and the resulting market.

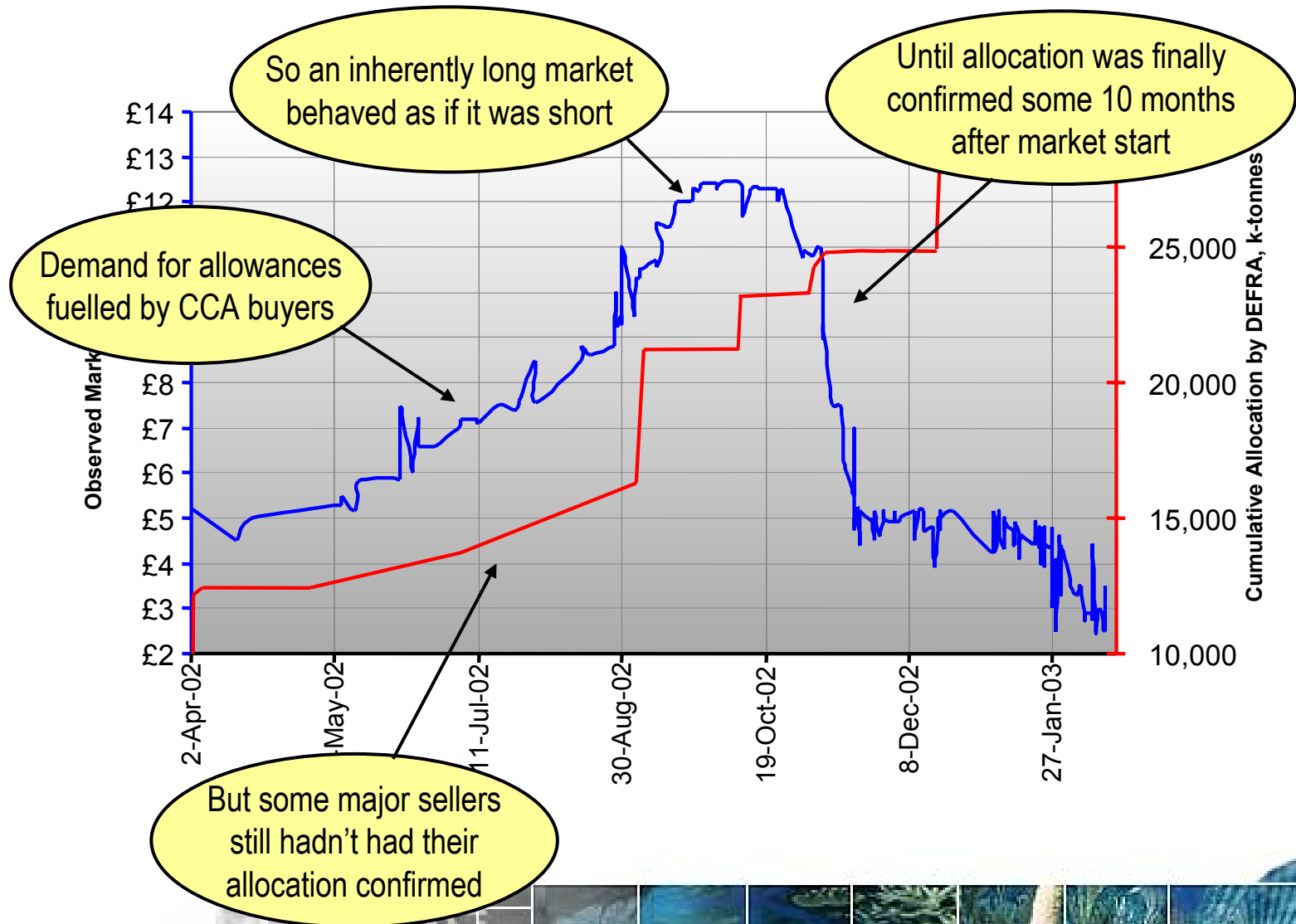


The Greenhouse Gas Asset

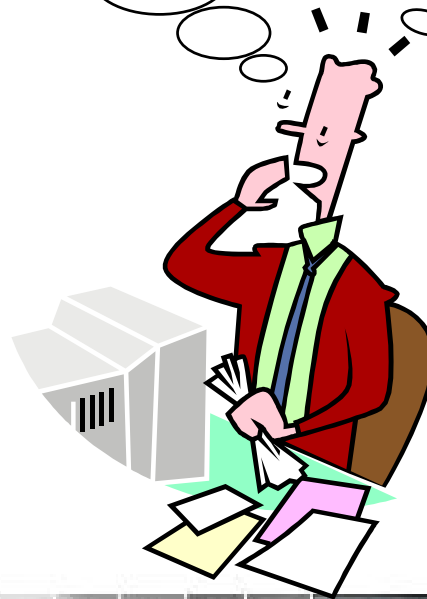
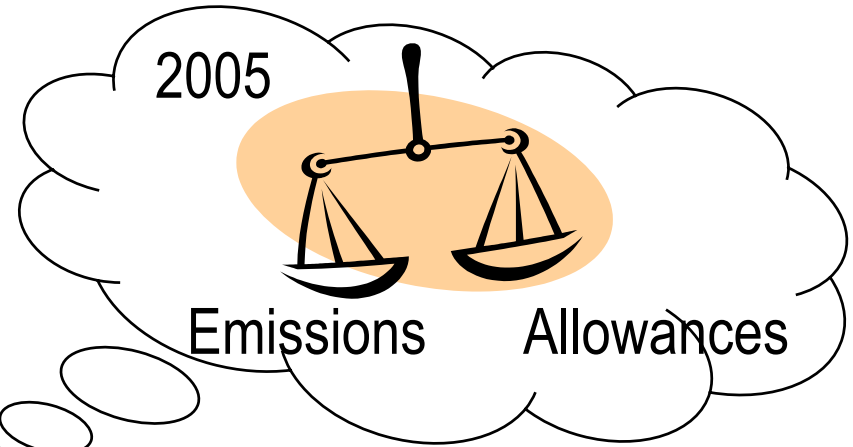
- The GHG asset is established through the distribution of allowances created by the party establishing compliance targets.
- The value of the asset is established by:
 - ✓ The number of allowances allocated
 - ✓ The “rules of the game” e.g. EU Trading Directiveand also by the behaviour of the market participants, which is affected by:
 - ✓ How the allowances are distributed.
 - ✓ When the allowances are distributed.



Example - Allocation in the UK ETS (2002)



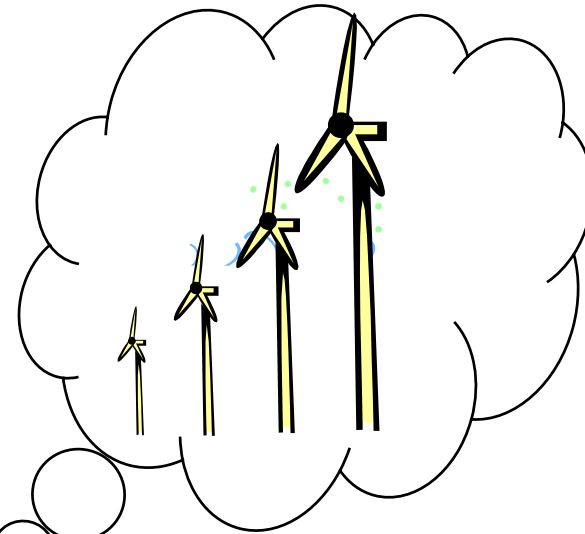
Do we want this type of market ??



Or this one ??

CO₂ Prices

2006	12.5
2007	13.2
2008	14.4
2009	15.1
2010	15.8
2011	16.5
2012	17.9



How does the market reduce emissions?

- An emission cap is established. If short, companies have a choice of:
 - ✓ Investing in new technology and capital stock to make emission reductions internally, or
 - ✓ Buying allowances in the market
- The ONLY way emissions are reduced are from investment & implementation of new technologies.
- Companies MUST make this decision efficiently. It is essential to compare:
 - ✓ The market cost of allowances, against
 - ✓ Marginal costs of abatement over time
- But investments may take several years. Hence we need prices for the future. This is called the “forward curve”.
- A lack of liquidity and poor forward curve means inhibited and inefficient investment.



A market which fosters investment needs. . .

- Policy stability which gives the market confidence in the value of the “commodity”.
- Transparent and simple allocation of allowances for many years ahead.
- Widely inclusive participation.



Which gives rise to -

- A real and liquid forward market
- A robust forward price curve
- Real investment and emission reduction



Unexpected GHG Assets

- Legislation (i.e. “rules of the game”) may create additional opportunities beyond standard trade in CO2 allowances.
- Some rules may create secondary markets.
- A player in the market may find his portfolio has additional value beyond its GHG allowance value, simply as a result of a new rule imposed by legislation.

For example:

- A government in Country A (Annex 1) imposes a rule which disqualifies “hydroelectric CDM” CERs.
- But Country B allows “hydroelectric CDM” CERs.
- A company has “wind-power CDM” CERs on its registry in Country B.
- The company offers “wind/hydro” CER swaps in Country B at \$ X / t.



Some Potential Future Unexpected Assets

EU Trading System

- 6% ceiling on CERs / ERUs
- Limited banking from 2007 to 2008
- Different rules between member states on banking

Canadian System

- C\$ 15 per tonne ceiling

McCain-Liebermann

- 20% international credit limit
 - Maximum borrowing period
 - 10% CAFE limit
- etc.....



Shell Climate Change



Part 2 - Trading Platforms

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An Overview of Trading Platforms



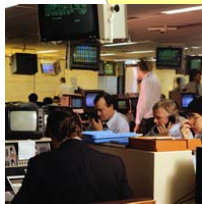
Exchange, standard contracts

- e.g. Nymex, CBOT etc.
- Mixed constituency of players
- Credit intermediary



Electronic platform, (semi)standard contracts

- e.g. Intercontinental Exchange (ICE)
- Credit clearance (e.g. LCH)
- Contracts must remain standard



Brokered, standard / semi-standard contracts

- Usually a small community of players
- Seeking some anonymity
- May require credit negotiation
- Volume still small or contracts complex with caveats



Brokered, exotic swaps & options

- Simplest approach to complex, small volume, high value trade

Trading Volume ↑



Some Examples



Exchange

New York Mercantile Exchange

The Chicago Board of Trade

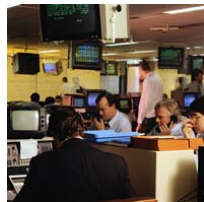
Y-COM
Yokohama Commodity Exchange
横浜商品取引所

cme
Chicago Mercantile Exchange



Electronic platform

IntercontinentalExchange



Brokered trade

NATSOURCE

Man Financial



change

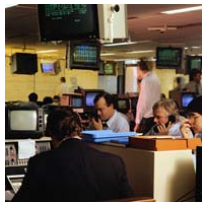
Moving Up The Ladder



Exchange



Electronic platform



Brokered trade



- Market players broaden
 - ✓ Locals
 - ✓ Funds
 - ✓ Large investors
 - ✓ Risk managers
 - High volume trade
 - Core commodity for economy
-
- Contracts become highly standardised (no government rule changes)
 - Liquidity grows in individual contracts
 - Credit clearance organised (e.g. LCH)
 - Many participants (hence effectively anonymous trade)
 - Benefit to platform in setting it up (time/money etc.)



The Greenhouse Gas Market



Exchange

Not in the short or medium term. Strong established market needed. Possible long term objective.



Electronic platform

Possible in the EU in the medium term, maybe 2006

- Stable contracts, no rule changes.
- Introduction of many new participants to LCH, considerable effort needed.



Brokered trade

Current starting point. Likely to remain the case as the market develops and players become used to the new commodity and its behaviour.

