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Greenhouse Gas & Renewables Markets

IEA Bioenergy Task 38

Leveraging the environmental markets

IEA Bioenergy Task 38 Conference

Östersund, Sweden, 30 September 2003

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About Natsource

- Trading floors globally
  - North America, Europe, Asia-Pacific
- Transactional services
  - Electricity, natural gas, coal
  - Greenhouse gases, renewables, SO2, NOx, weather
- Financial services
- Value & asset management
  - Buyers Pool
- Strategic consulting
  - Multinationals, EC, NL, UK, World Bank, etc.

➔ Dedicated to marking environmental markets work

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Natsource's credits

- Largest green markets broker
- Voted best broker many times
- 1st UK trade
  - Over 50% of the UK market
- 1st Danish trade
- 1st international swap of compliance tools
- 1st trans-atlantic trade
- 1st trans-pacific trade

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This presentation

1. Generating value for renewables
2. The renewable certificate markets
3. The greenhouse gas markets
4. Conclusions

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1. Generating value for renewables

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What value ?

- Power
- Renewables component
- Avoided GHG
- Security of supply
- Embedded benefits
- Local benefits

Power

- Liberalisation of electricity markets for several reasons
- Including more competitive power prices
- Small and intermittent power can only get discounted price
- Thus bad news for renewable generators?

Small benefits

- However, benefits exist for renewables
  - Security of supply by diversifying sources
  - Embedded benefits
- Market opening
  - Auto-generation
  - Market access for all

Renewables component

- Some countries have special renewables support systems
  - Feed-in tariffs
  - Certificates
  - Tax advantages
  - Voluntary demand (green power)

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Voluntary green markets

MKB energie

essent ENERGIE

GREEN POWER Network

NUON NATUURSTROOM

FUTURE ENERGY FOR TOMORROW TODAY

echte energie
the real energy providers

Green Power

GREENPEACE energy

Triodos Bank

juice™

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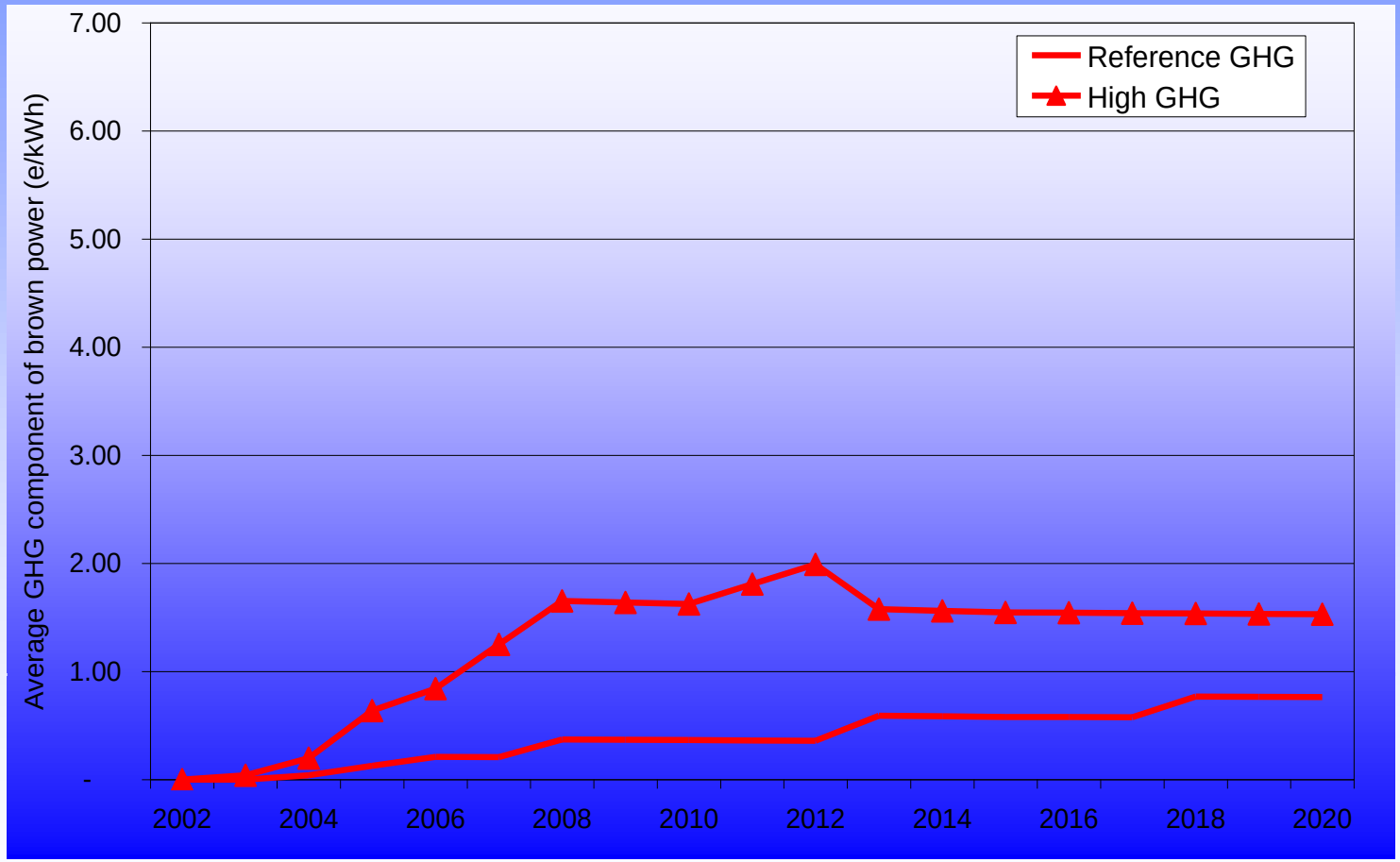
GHG component of power



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Kyoto Protocol

- Greenhouse gas emission reductions targets
  - Targets for industrialised countries
  - 5% reductions from 1990 level
  - ‘Flexible mechanisms’

Environmental markets

- Greenhouse gases
  - Denmark
  - UK
  - (C)ERUPT
  - Other governments
  - PCF
  - VERs
  - EU allowances
  - Kyoto mechanisms
- Renewables
  - Netherlands
  - UK
  - Sweden
  - Italy
  - Belgium
  - Austria
  - RECS
  - EU Directive
  - US & Australia
  - Jo'burg (WSSD)
  - Energy security

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Drivers for early trading

Buyers

- Hedge risk
- Proprietary trading
- Green public image
- Policy development
- Diversify portfolio
- Green Power

Sellers

- Monetise asset
- Finance projects & technology
- Brand Recognition
- Policy development
- Capture revenue in case of Kyoto failure

Environmental markets = Risks & opportunities

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2. The renewable certificates markets

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UK ROCs

- Started: April 2002
- Annual obligation increases:
  - 3% in 2003
  - 10.4% by 2010 (indicative 18% in Scotland)
  - & 20% by 2020 (?)
- Strong demand, shortage of supply
  - Short in the first 3–4 years
  - Trend: short until at least 2010
- Existing installations mostly under NFFO
- No Imports, limited banking

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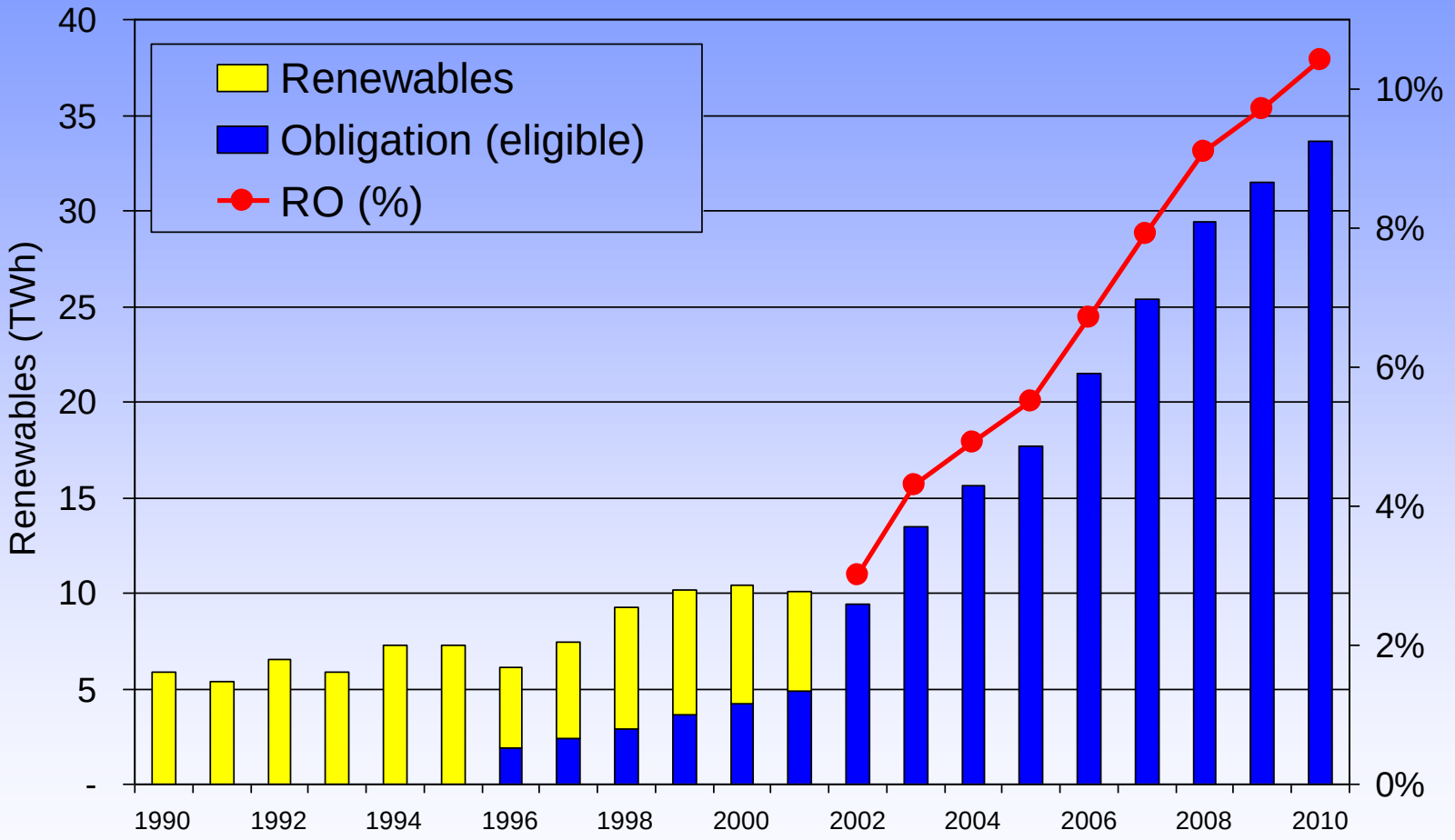
The UK ROCs market



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UK ROCs

- Trades
  - Few publicised trades, no details public
  - Most trades between existing partners
  - Natsource has brokered several trades with various structures
- Price
  - £42 – £48 (stand-alone)
  - NFPA auction ~£64 (bundle)
  - £30 buy-out, recycling, levy exemption, embedded benefits
- Most plants tied in with NFFO

Difficulties in the ROC market

- Value of recycle
  - TXU & BE
- Other price risk
- Political risk
  - changes to LECs, criteria, technologies
- Contracts:
  - No standards, length, volume, credit risk

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Dutch green certificates

- Green tariff based on tax exemption
- Voluntary, no target (yet)
- Started in July 2001
- Many trades in 2002
- Prices varied depending on techno/location

- *Problem*: too much imported from existing plants
- Substantial changes announced this month
- Tax exemption was €60/MWh, now €30
- Will be €15 and €0 in 2005

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Belgium:

- Carbon weighted certificates
  - Walloon scheme include cogeneration
- Certificates from other Belgium regions are not accepted
- Penalty €75 & going up
- Minimum guaranteed prices by technology
  - Off-shore wind, €90
  - On-shore wind , €50
  - Hydro , €50
  - Sun , €150
  - Other (including biomass) , €20
  - Network operator will auction these certificates

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Other markets

- Italy:
  - Obligation on generators and importers, 2% of previous year's fossil fuel power
  - Reciprocal imports
  - Post-1999 power only
  - Does not include CO_2 value

Other markets

- Sweden:
  - Start in 2003
  - Starting at 6% in 2003 increasing to 15% in 2010
  - Prices Skr 200 – Skr 220
- Austria:
  - Small hydro certificates
  - Different obligations for the Länder

Other markets

- US:
  - California
  - New Jersey
  - Pennsylvania
  - Massachusetts
  - Texas
- Australia
  - Finished and over taken by green power
- Worldwide

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RECS

- Renewable Energy Certificate System
- European-wide initiative
- Voluntary
- Infrastructure is used by markets
- Trades have taken place
- Slow market
- Low prices (€1 – €10 per MWh)

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3. The greenhouse gas markets

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Historic demand

- **First transactions from 1997 (Kyoto)**
  - ERs Emission Reductions
  - VERs Verified Emission Reductions

- **Early transactions**
  - Some 100 MtCO2e
  - Voluntary commitments & forward contracts
  - Prices low: $1 – $2 / tCO2e

Current buyers

- World Bank Prototype Carbon Fund
- Dutch government Erupt & Cerupt
- Private funds
- Other governments:
  - Austria, Sweden, Finland, US States, etc.
- Private companies
  - Voluntary
  - Compliance regimes (UK, Dk, EU)

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Danish compliance market

- Electricity sector CO2 emissions only
- Started with 8 participants, now only 4
  - ⇨Thus confidential prices
- No CDM in the Danish market
- But buy-out penalty/cap at ~€4
  - ⇨Thus low market prices
- In operation from 2001 to 2003
  - ⇨Folding into EU ETS

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UK ETS – Some Facts

- Over 300 trades have occurred to date
  - Majority 2002 spot trades
  - Many forward trades for ’03
  - Few forward trades for ‘04
- Total volume traded:
  - About 1,500,000 allowances
- Prices today at ~ £3.00 per allowance
- Highest trade ~ £12.40 end-Sept

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UK ETS – Some Facts

- Who has been trading
  - Direct Participants
  - Trading Companies
  - CCA Participants
  - Individuals
- Majority of early trades (April – June) involved direct participants and traders
- CCA Participants more active from July onwards
- Direct participants have provided the major source of supply in the market
- CCA participants have been the major buyers
  - ~40% of all allowances traded

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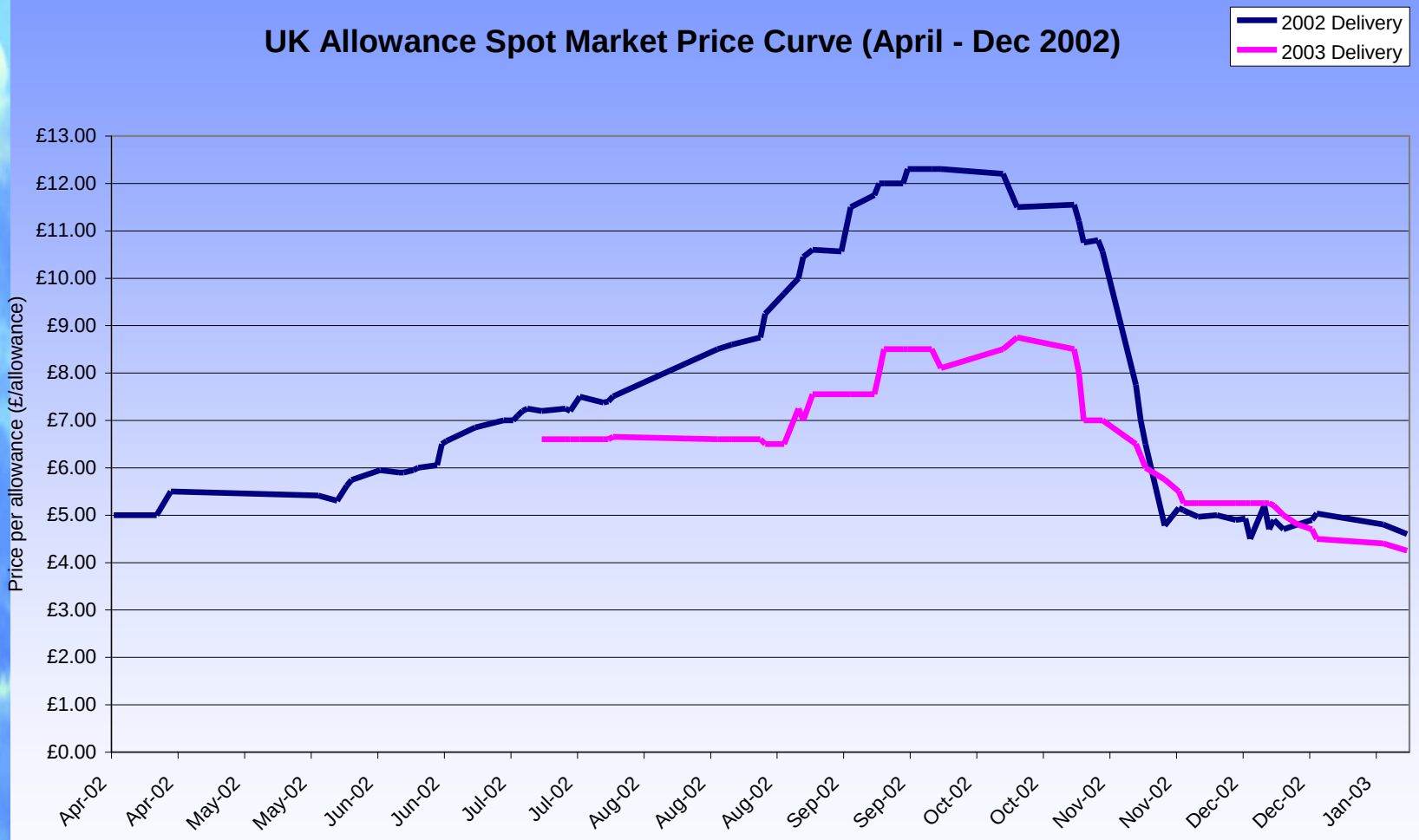
UK Prices



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EU ETS

- Gases
  - CO2-only 1st phase (2005–2007)
  - All gasses may enter 2nd phase (2008–2012)
- Allocations
  - At least 95% free 1st phase
  - Allocation plans still to be decided
- Penalties
  - €40 /tCO2e 1st phase
  - €100 /tCO2e 2nd phase
- Limited banking and borrowing
- Reporting

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EU ETS

- Trading in allowances in the EU
- Sectors (energy, metals, cement, minerals, paper & pulp, opt-out)
- Gases (CO2-only first)
- Allocations (free, but plans to be decided)
- Penalties, banking, borrowing, reporting
- Trading TODAY
- Uncertainty remains (who's long, who's short?)

EU ETS projects

- Limited scope for CDM and JI
- Kyoto credits allowed to be converted into EU Allowances
  - Not LULUCF
  - Not Nuclear
  - Large hydro under conditions
- 6% trigger for review to cap
  - 8% cap?

➔ EU private sector demand for CDM/JI credits

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Kyoto Protocol

- Great uncertainties
- Prices?
- Emissions trading
- Joint implementation (JI)
- Clean development mechanisms (CDM)
- LULUCF

Institutional buyers

- World Bank's Prototype Carbon Fund
  - Payment on delivery
  - Wide host country & technology portfolio
  - Purchase price range: $2.5 – $4 /tCO2e
  - Portfolio outcome: ~ $5.6 / tCO2e
- Netherlands (Erupt and Cerupt)
  - Take on risks, early market entry (thus pay less)
  - Payment on delivery
  - Early prices: €5 – €9 /tCO2e
  - Current price range: €3 – €5 /tCO2e
- Other World Bank funds

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Recent developments

- Changes in demand structure
  - National trading schemes
  - Marrakesh Accords & 117 Parties
  - Emission constraints become reality

→ Affected companies begin looking for Compliance Tools

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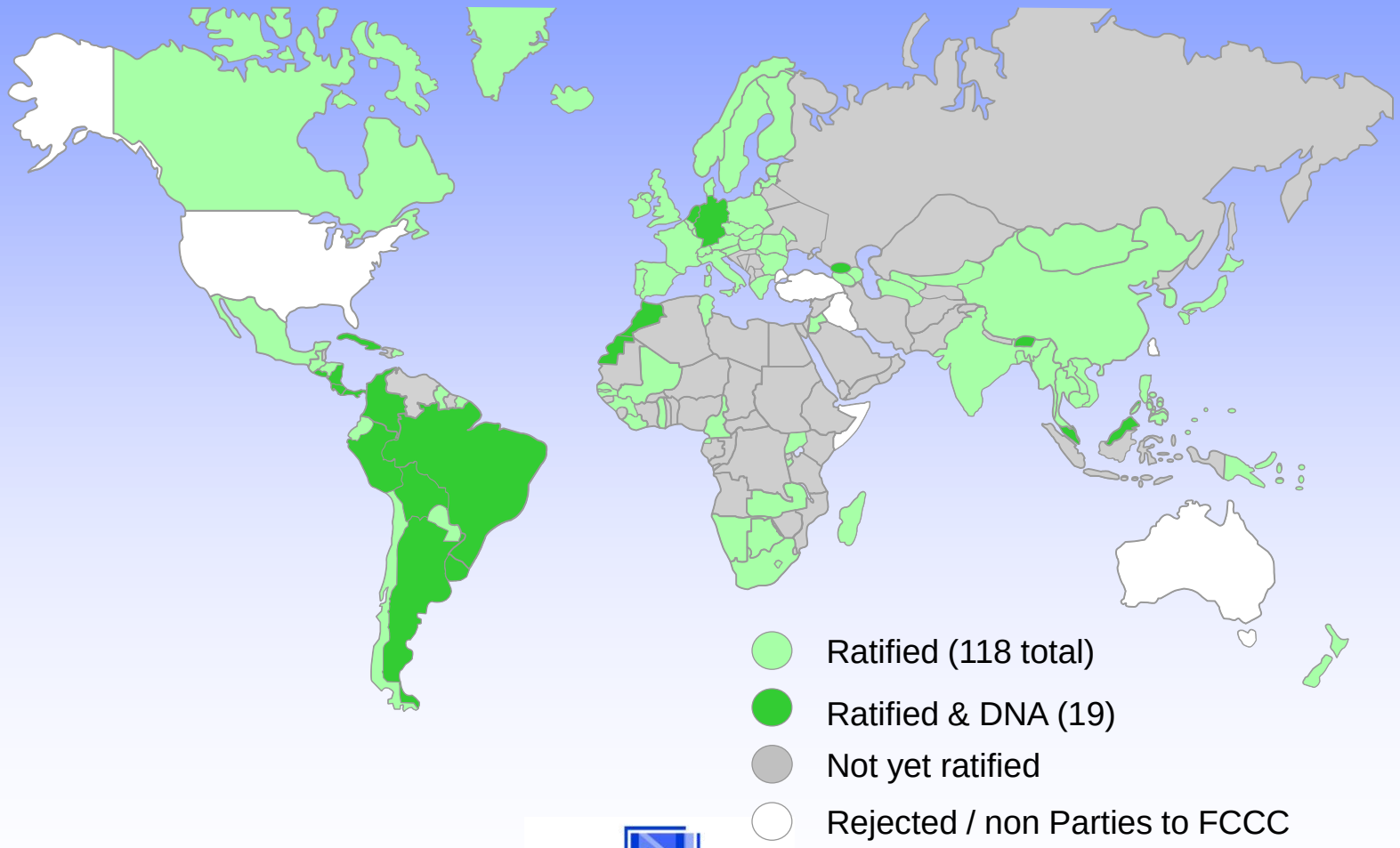
Ratification status



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25 Sep 03

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Price v. risk

- Guaranteed Kyoto Compliance Tools
  - Sellers risk: project, volume and price risk, Kyoto eligibility and credit worthiness
  - Buyers risk: credit and price

  - Buyer will discount for risk & time
  - Seller might have to contract emergency replacement reductions on the market

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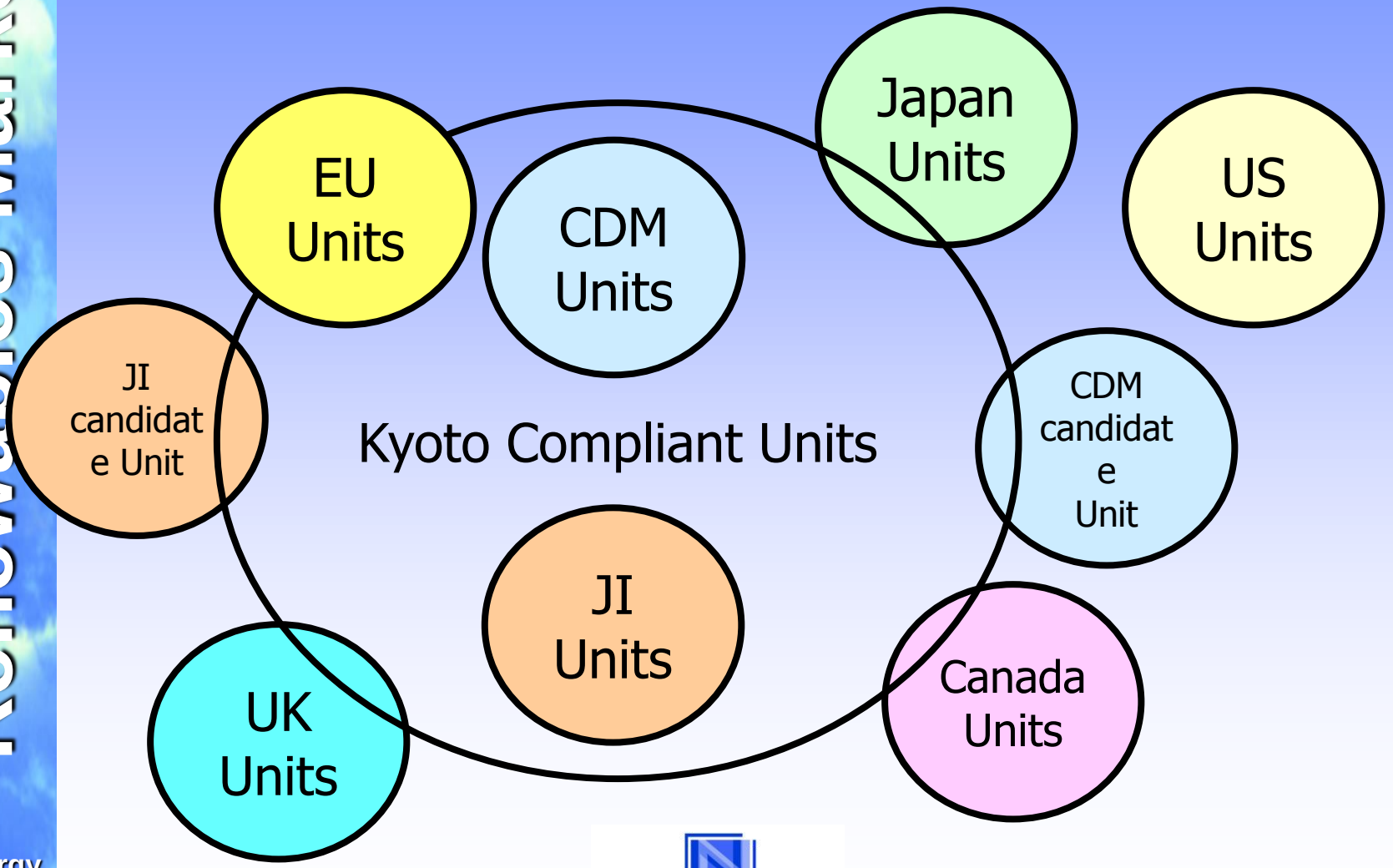
Quest for Compliance Tools



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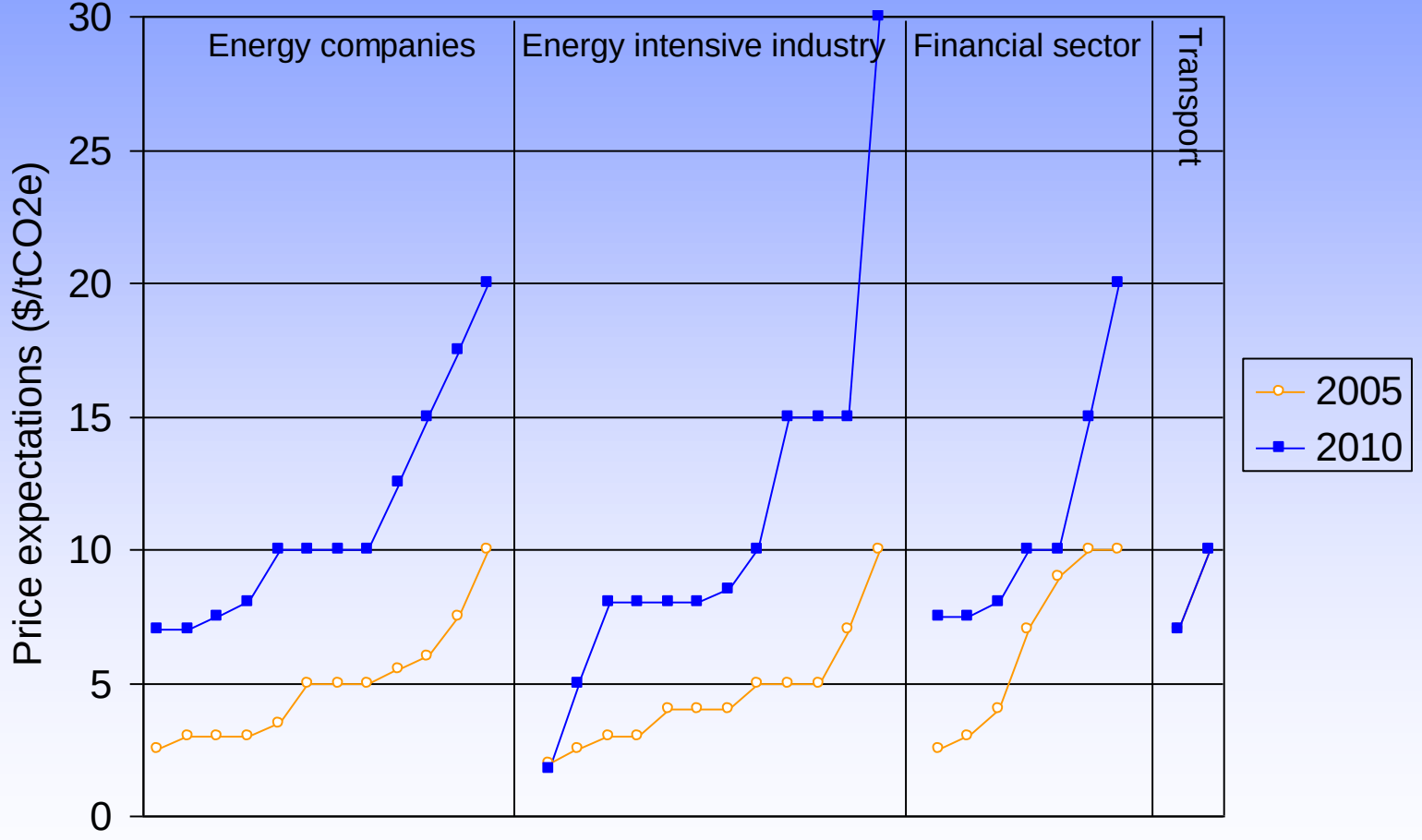
Price expectations



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4. Conclusions

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The Climate Investment Partnership

- The CIP evolved from Vienna Group which Natsource was leading
- Original Vienna Group members
  - Swiss Re
  - EBRD
  - Austria Wirtschaftsservice
  - Finfund
  - Etc.

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Other investment initiatives

- Natsource is working with others to channel investment into renewables (and emission reductions)
- Using Natsource's experience in negotiating Purchasing Agreements for bundles of power and environmental aspects
- Buyers pool

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Lessons from the market

- CDM/JI projects deliver credits for 2008 – 2012 period
- Creditworthiness is key
  - Financial crisis / Enron scandal
  - Financing/insuring
  - Added project risks?
- ‘Additionality’
- Inherent project difficulties

- Very hard to generate additional value for renewables projects

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Getting Ready

- Risk management team
  - Environmental and Finance Dept interacting
- Preferred hedging tools/appetite for risk
- Construct and verify CO2/GHG emission baselines
- Develop target scenarios for EU scheme or Kyoto period
- Market acceptance/timing of structure

→ **Speak to Natsource & other providers**

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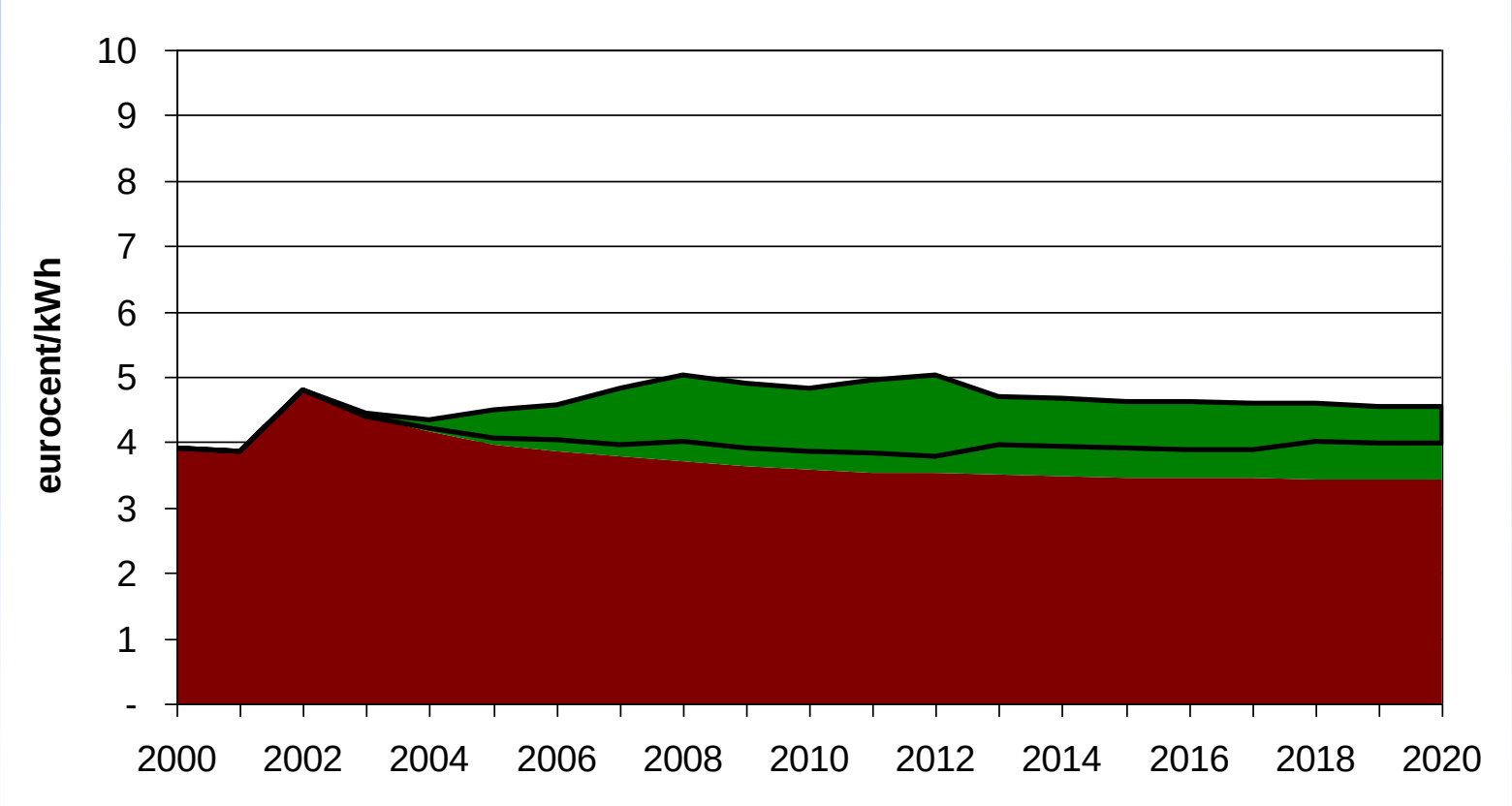
Brown power price may decline, but GHG component goes up



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Conclusion

- Market developments will be influenced by:
  - The pace of Ratification of the Kyoto Protocol
  - The pace of Harmonisation of domestic programmes
  - The Launch schedule of the EU trading scheme
  - Actions and attitudes in the US, Canada, Japan and Russia
  - Real world market examples to build Confidence
- Markets will benefit from:
  - Clear policy
  - Harmonisation

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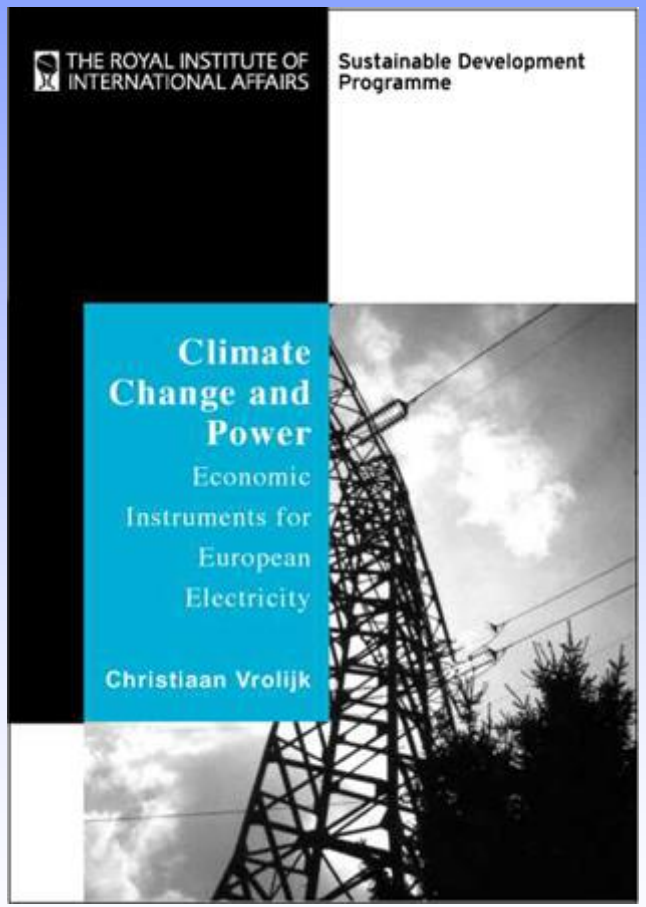
Climate Change and Power



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