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The Clean Development Mechanism: Status, prospects, with focus on forestry projects

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Key Points

• Carbon markets are growing rapidly, in activity, size and complexity

• The EU Emissions Trading Scheme is the largest component of the market, followed by the Clean Development Mechanism (CDM)

• Although supply is large, forestry projects currently represent a very small share of the CDM

• This situation may evolve, but probably not before 2012—unless demand from voluntary and non-Kyoto markets increases substantially
Outline

1. Regulatory Drivers of the Carbon Market
2. The State of the Carbon Markets
3. Why is the share of LULUCF projects in the CDM so small?
4. Outlook
Why a Carbon Market?

• Because of regulatory pressure (present or anticipated) or for voluntary reasons, firms, governments, and even individuals constrain their greenhouse gases (GHGs) emissions

• Since GHGs mix in the atmosphere, it does not matter where emissions are reduced

• Both in-house mitigation and purchase of outside “GHG commodities” can thus be used
The Kyoto Protocol

- Assigns GHG emission targets to Annex B countries between 2008 and 2012

- 3 Flexibility Mechanisms
  - Emissions Allowance Market
  - Joint Implementation
  - Clean Development Mechanism

Annex B
Non-Annex B
European Trading Scheme

- Caps over 40% of EU CO₂ emissions
- 2 phases: 05-07 and 08-12

- “Linking Directive”: most JI and CDM authorized
- Bulk of the effort on Govts
- California: Market-based mechanisms to reduce emissions to 1990 levels by 2020
- Regional Greenhouse Gas Initiative (RGGI): carbon market among 7 NE States
- Chicago Climate Exchange (CCX), private allowance market
New South Wales GHG Abatement Scheme, imposes benchmarks on emissions by power distributors in the State; with cap-and-trade system and projects
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Methodology

• Limited information on carbon transactions is publicly available

• This presentation is based on World Bank State and Trends of Carbon Market studies (Capoor and Ambrosi, 2006a,b)

• Database of 750 project-based transactions (signed ERPAs) + aggregated data on allowance markets
Structure of the Carbon Markets in 2006

Project-Based Transactions

Primary JI & CDM
226 MtCO$_2$e

Secondary JI & CDM
764 MtCO$_2$e

Allowance Markets

EU Emission Trading Scheme

New South Wales Certificates
16 MtCO$_2$e

Chicago Climate Exchange
8 MtCO$_2$e

UK ETS
2 MtCO$_2$e

Voluntary & Retail
8 MtCO$_2$e

Other Compliance
8 MtCO$_2$e

Data source: Capoor and Ambrosi (2006a et b)
The EU ETS is booming

Data source: Capoor and Ambrosi (2006a et b)
Prices on the EU ETS are very volatile

Source: European Climate Exchange (ECX)
Project-based transactions: a rapidly growing market (MtCO$_2$e)

Most of the demand stems from European firms
(% of volumes purchased between 01/2005 and 09/2006)

Data source: Capoor et Ambrosi, 2006a, b.
China dominates supply
(% of volumes sold between 01/2005 and 09/2006)

Data source: Capoor et Ambrosi, 2006a, b.
Non-CO$_2$ gases represent most of the volumes exchanged
(% of volumes sold between 01/2005 and 09/2006)

Data source: Capoor et Ambrosi, 2006a, b.
There is no standard CDM contract

• Most contracts are forward purchases of CERs.
• Until 2005, most contracts were fixed price, with a wide range of risk sharing between buyer and sellers (country risk, project risk, non-registration risk).
• Contrat diversity is increasing:
  – Indexed pricing (see below)
  – Wider range of contractual arrangements to guarantee carbon
  – Mixed contracts combining equity or debt, technology transfer, and carbon
Prices depend on contractual terms (2006 prices)

**Secondary CERs**
- Maximum observed price: $27
- Average secondary CER price: $21
- Liquidated damages: +10-30%

**CERs**
- Average Price: $10.50
- Standard contract (plain vanilla): $7 - 9
- Pre-CER (no methodology approved): -10-25%

**Voluntary markets**
- Minimum price observed: $4

Data source: Capoor et Ambrosi, 2006a, b.
The quality of carbon finance matters as much as its quantity

• Payments for carbon usually come from highly credit-rated sources, and in strong currencies (EUR, USD, YEN)

• In capital-constrained countries, project developers can use carbon finance to leverage additional financing or get better terms to close financial structuring of deal

• This requires, however, that financial institutions recognize ERPAs as collaterals, which remains the exception rather than the rule.
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The scope for LULUCF in the CDM is limited

• Only **afforestation** and **reforestation** activities are eligible
  – Avoided deforestation, forest management or agroforestry are excluded

• The volume of emission reductions that can be acquired through LULUCF CDM projects is **capped**
  – 1% of base year (1990) emissions per year per country

• Rules regarding LULUCF were adopted in **2003 only**, i.e. two years after rules governing other CDM activities
LULUCF projects are excluded from the EU ETS

- The “linking directive” allows entities under the EU ETS to purchase Certified Emission Reductions from CDM projects and use them against their EU ETS targets.
- Demand from EU firms drives the CDM market
- Nuclear energy and LULUCF projects are excluded from the linking directive
- LULUCF is de facto excluded from the CDM (even in non-EU countries), except for limited set of buyers
Why have there been so much restrictions placed on LULUCF?

- LULUCF is complex, and it was difficult to include within the Kyoto framework, even for developed countries (Art.3.3 and 3.4 of the KP)
- Flexibility mechanisms were strongly opposed by many stakeholders. And among flexibility mechanisms, the CDM was particularly suspect because it generates new credits
- Among CDM activities, LULUCF was the most controversial
  - Perceived methodological weaknesses: measurement, baseline, leakage, permanence
  - Perceived risk of being “flooded by green credits”
  - Brazil and others opposed to avoided deforestation
  - Perceived risk of large-scale monospecific plantations of non-native species
- The structure of the negotiation was not favorable to LULUCF
Temporary credits are perceived as complex and risky by buyers

- Credits from LULUCF projects are temporary, thus creating a long-term liability
  - Valid for 5 years (tCERs) or 20 years (ICERs)
  - Renewable at expiration if carbon is still sequestered, up to 60 years.
  - If the temporary credit is not renewed, the buyer’s account is debited by one unit – which has to be replaced either by another temporary credit or by a permanent credit.
- What is the price of temporary credits?
Temporary credits have important implications for contracts

- Individual buyers may have strategic advantages to purchase temporary credits
  - For example, aligning carbon constraint with investment cycle
- Absent such opportunities, only buyers with bearish view of the carbon market should invest in temporary credits (Chomitz and Lecocq, 2004)
- Buyers with non-bearish views of the market will look for carbon credits that are basically equivalent to emission reductions in the energy sector
- But it is difficult for the project sponsor to guarantee sequestration in the very long run. Symmetrically, most buyers do not like very long-term liabilities
- Possible solutions:
  - Strong guarantees in case of accidental carbon release (e.g., fire)
  - Guarantees on long-term oversight
  - Opt-out mechanisms based on, e.g., options for permanent credits
  - Bundles of temporary credits and permanent ones
Carbon revenues accrue slowly over course of projects

- Except with fast growing species, sequestration trajectories are relatively slow
- Carbon revenues can still make an important impact on projects financials because revenues from LULUCF projects (say timber) typically accrue only at end of revolution
- In rural areas, sustainable development benefits of even small but stable cash payments can make huge difference
- Relatively long-term contracts (7 to 10 years) are often necessary
As a result, there are few buyers of LULUCF assets today

Non-exhaustive list, based on internet-gathered data:

- World Bank BioCarbon Fund (Tranche I: 53.8 m$, Tranche II opened): 8 ERPAs signed, 15 projects under development as of 20/11/2006
- Italian Government
- Japanese firms (e.g., Ricoh Ltd, Oji Paper Co. Ltd, etc.)
- NGO supported projects (Plan Vivo, etc.)
- CarbonPositive: claim to have secured 450m$ for LULUCF and energy CDM projects, projects being developed in Brazil (150,000 ha), Columbia, and other countries

There are also LULUCF projects undertaken under non-Kyoto regimes

- New South Wales, Australia
- Retail market in Europe (Future forests, etc.)
- U.S. market (e.g., TNC project for GM in Brazil, etc.)
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What future for the carbon market?

- There is a growing understanding that climate change is a high-priority issue that requires important action.
- Carbon markets are likely to remain an important part of the mix of policy options that the international community uses to tackle climate change.
- However, the road towards higher constraints on carbon may not be linear (e.g., future of the KP).
What future for the CDM?

• Volumes exchanged on the CDM are slowing down because of uncertainty about post-2012 signal

• The CDM experience can be considered positive on environmental, development and policy fronts

• Yet the CDM is unable to provide large-scale sectoral emission reductions necessary in the future

• An expanded CDM may remain a complement to larger agreements between OECD countries and large emitters among developing countries.
What future for LULUCF?

• Growing understanding that climate change is a high-priority that requires action, **with no silver bullet**
  – A **portfolio** of action is required

• Growing understanding that LULUCF could play a role
  – The CDM was not flooded with ‘green credits’
  – Early LULUCF projects show it is possible to build projects that are economically, socially and environmentally sound
  – Negotiations on **avoided deforestation** are under way

• LULUCF may provide a way to balance climate resources across developing countries (particularly in Africa)

• Non-Kyoto markets may spearhead development of LULUCF

• Return of the US to negotiations may boost LULUCF
Carbon will become an integral part of forestry

- Eventually, forestry projects are likely to become an integral part of mitigation measures
  - All forestry beyond afforestation / reforestation
  - Avoided deforestation
  - Carbon stored in wood products
- Rapid development of LULUCF unlikely before 2012.
- Carbon will become an integral part of forest management, both in Europe and in developing countries
  - **Constraint**: additional demands placed on the forester
  - **Opportunity**: new financing to compensate for the diminution of old ones
Thank you!

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References


ENGREF Nancy is the most important forestry school in France, with about 200 MSc., post-MSc. and PhD students (www.engref.fr).

Since January 2007, ENGREF is a school of AgroParisTech, the Institute for life sciences and the environment—the largest such engineering school in France with 2000+ MSc. and PhD students in these fields (www.agroparistech.fr).

INRA is the leading European agricultural research institute and one of the foremost institutes in the world for agriculture, food and the environment. INRA has a staff of about 11,000, of which about 4,500 researchers and engineers (www.inra.fr).

The Laboratory of Forestry Economics (LEF) is a joint research unit between ENGREF Nancy and INRA. It works primarily on the valuation of non-market goods and services from forests, the forest-carbon interface, the structure of the forest sector and the competition between wood and non-wood material (lef.nancy-engref.inra.fr).