Financing Coal Methane Projects
- Methane to Markets Coal Subcommittee Meeting -

The World Bank
Carbon Finance Unit

May, 2006
Carbon Finance and The WB
Nature of Carbon Financing Contract

Carbon Finance:
Resources provided to projects generating (or expected to generate) greenhouse gas (or carbon) emission reductions in the form of the purchase of such emission reductions.

Power Purchase Agreement

Emission Reduction Purchase Agreement

Carbon Credits

Investor

Equity

Banks

Debt

Electricity

Carbon Fund

2

2

Nature of Carbon Financing Contract

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Resources provided to projects generating (or expected to generate) greenhouse gas (or carbon) emission reductions in the form of the purchase of such emission reductions.
<table>
<thead>
<tr>
<th>Sector</th>
<th>Impact (%) @ price = $6.5/ton CO2e</th>
<th>CF impact (% range)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Purchase 7y</td>
<td>Purchase 10y</td>
</tr>
<tr>
<td>Landfill</td>
<td>5.5 - 46.8%</td>
<td>13.9 - 48.8%</td>
</tr>
<tr>
<td>CH4 from coal</td>
<td>7.6%</td>
<td>9.7%</td>
</tr>
<tr>
<td>Biomass</td>
<td>1.9 - 3.5%</td>
<td>2.3 - 5.1%</td>
</tr>
<tr>
<td>Forestry</td>
<td>0.4 - 4.6%</td>
<td>0.9 - 5.7%</td>
</tr>
<tr>
<td>Renewable energy</td>
<td>0.2 - 1.7%</td>
<td>0.3 - 2.2%</td>
</tr>
<tr>
<td>District Heating</td>
<td>0.5%</td>
<td>0.6%</td>
</tr>
</tbody>
</table>
World Bank Carbon Funds & Facilities
Total funds pledged = US$ 1.6 billion (13 governments, 56 firms)


- **Netherlands Clean Development Mechanism Facility.** $249.2 million (closed). Netherlands Ministry of Environment. CDM energy, infrastructure and industry projects.

- **Community Development Carbon Fund.** $128.6 million (closed). Multi-shareholder. Small-scale CDM energy projects.

- **BioCarbon Fund.** $53.8 million (Tranche One closed). Multi-shareholder. CDM and JI LULUCF projects.

- **Italian Carbon Fund.** $45.4 million (open to Italian participation). Multi-shareholder (from Italy only). Multipurpose.

- **Netherlands European Carbon Facility.** $38 million (closed). Netherlands Ministry of Economic affairs. JI projects.

- **Spanish Carbon Fund.** $202.7 million (open to Spanish participation). Multi-shareholder (for from Spain only). Multipurpose.

- **Danish Carbon Fund.** $64.1 million (closed). Multi-shareholder (for from Denmark only). Multipurpose.

- **Umbrella Carbon Facility.** [$677.1 million] (Tranche One closed). 2 HFC-23 projects in China.
Carbon Market Overview

• Carbon is now a financial commodity
  – Growth of market and has brought in the biggest names in the financial sector, including investment banks and speculators

• Multi-Billion Dollar Overall Market Value
  – Over US$ 10 billion in 2005 and US$ 7.5 billion for 1Q ‘06
  – Volumes and Price both up
  – EUA trades dominate market in value – 75% (2005); 87% (1Q ‘06)

• Meaningful Participation of Developing Countries
  – 49.2% of total volume (2005); 23.2% of total value (2005)
  – 26.2 and 11.7% (1Q ‘06)
Volume Traded Through Projects: Scaling up

![Graph showing the annual volume of project-based emission reductions traded, with a significant increase in 2005 reaching 11.45 $/tCO₂. The graph includes data points from 1998 to 1stQ06, with notable increases in 2004 and 2005.]
An acceleration in value transacted
Market hates regulatory risks: low JI contractual flow

<table>
<thead>
<tr>
<th>Year</th>
<th>CER (US$/tCO₂e)</th>
<th>ERU (US$/tCO₂e)</th>
<th>CER (US$/tCO₂e)</th>
<th>ERU (US$/tCO₂e)</th>
<th>CER (US$/tCO₂e)</th>
<th>ERU (US$/tCO₂e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>5.2</td>
<td>6.0</td>
<td>4.6</td>
<td>4.6</td>
<td>11.6</td>
<td>7.2</td>
</tr>
<tr>
<td>2005</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2006</td>
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</tbody>
</table>
Main Buyers: Europe and Japan, mostly firms
In percent of volume purchased


Supply: China has the dragon’s share

Share in volume

- China: 66%
- R. of Latin America: 7%
- India: 3%
- EIT: 3%
- Other: 2%
- USA&Canada: 1%
- R. of Asia: 4%
- Brazil: 10%
- Africa: 2%

Share in number of projects

- China: 11%
- R. of Latin America: 16%
- USA&Canada: 7%
- Australia/NZ: 11%
- Brazil: 10%
- EU-15: 2%
- Other: 6%
- EIT: 13%

Jan 05 – Mar 06
Non-CO$_2$ Gases still Dominate

**Share in volume**
- HFC: 58%
- Agro-forestry/LULUCF: 1%
- Energy Efficiency: 2%
- Animal Waste: 2%
- Other Renewables: 1%
- Biomass: 3%
- Wind: 3%
- Hydro: 3%
- Other: 9%
- CMM: 6%
- N2O: 3%

**Share in number of projects**
- Other: 15%
- Hydro: 13%
- Wind: 8%
- Biomass: 8%
- Other Renewables: 15%
- LFG: 15%
- Animal Waste: 5%
- Energy Efficiency: 7%
- Agro-forestry/LULUCF: 4%
- N2O: 3%
- CMM: 13%

Jan 05 – Mar 06

Jan 05 – Mar 06
Prices move up

Jan. 04 – Apr. 05

Jan. 05 – Mar. 06
Carbon Finance in Coal Methane Sector
Baseline and Baseline Methodology

- The **baseline** (scenario and emissions) for a CDM project activity is the scenario that reasonably represents GHG emissions that would occur in the absence of the proposed project activity.
- Difference between the baseline emissions and GHG emissions after implementing the CDM project activity (project emissions) is **emission reductions**.
- Baseline emission under the selected baseline scenarios shall be calculated in accordance with **approved methodologies** (AMs) or new methodologies (NMs).
• Approved in December, 2005.
• Expected acceleration of development of coal methane related CDM/JI projects. Early projects will be registered as CDM this year.
• CMM and VAM recovery, power generation, flaring, and industrial/city gas supply through pipelines are covered.
• ACM0008 does not apply to project activities with any of the following features:
  – Operate in open cast mines;
  – Capture methane from abandoned/decommissioned coalmines;
  – Capture/use of virgin coal-bed methane, e.g. methane of high quality extracted from coal seams
  – Independently of any mining activities;
  – Use CO2 or any other fluid/gas to enhance CBM drainage before mining takes place.
WB in Coal Methane Projects

• Jincheng
  – Capture of CMM and power generation by 120MW combined cycle in Shanxi, China.
  – Generates 19.5 million tCO2e of carbon credits over 7 years.
    WB purchases 9.5 million tCO2e.

• Qinshui
  – CMM gas pipeline project in Shanxi, China. Expected to generate around 8 million tCO2e over 7 years.

• Further development of coal methane projects
  – Possible UCF new tranche for coal methane projects
    Key issues:
      CMM: Competition with other carbon funds and private sector
      VAM: Technology
      AMM: Methodology
  – Lending by the WB
Thank you

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