ADB CMM-CBM Projects in PRC

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ADB CMM-CBM Projects in PRC

Completed
- L1715: Shanxi Environment Improvement

Ongoing
- L2112: Liaoning Environmental Improvement
- L2146: Coal Mine Methane Development

Potential
- Opportunities for new projects in Shanxi and Henan
L1715: Shanxi Environment Improvement

- $102 million loan for 3 subprojects including construction of methane gas storage and distribution network in Yangquan ($40 million project cost, $23 million ADB loan)
- Recovery of about 94 million m$^3$ of methane gas per yr from an existing coal mine for residential, commercial and industrial use
- Replacement of about 76,000 tons of coal per yr
L2112: Liaoning Environmental Improvement

- $70 million loan for 7 subprojects in six cities including a CMM/CBM development and utilization project in Fuxin ($32 million project cost, $17 million ADB loan)
- Recovery of about 46 million m$^3$ of methane gas per year for residential, commercial and industrial use
- Agreement for sale of carbon credits signed with 2 buyers (ICTJ Limited and a consortium led by Natsource)
- Replacement of about 37,000 tons of coal per year
L2146: Coal Mine Methane Development

- $117.4 million loan for 3 subprojects in Jincheng city, Shanxi province
- Part A – 120 MW CMM power plant; CMM drainage; CBM surface well development
- Part B – Gas Transmission and Distribution
Part A – 120 MW CMM power plant; CMM drainage; CBM surface well development

- Power plant will be the biggest in the world
- Recovery of about 182 million m$^3$ of methane gas per year from an existing coal mine
- Agreement for sale of carbon credits signed with buyers. Potential benefits could offset major portion of project cost
- Replacement of about 291,000 tons of coal per yr
L2146: Coal Mine Methane Development
Part B – Gas Transmission and Distribution

- Transmission: 84 km pipeline (with capacity of 314 million m$^3$ per yr); 4 gas gathering and four transmission stations; control system. CMM to be supplied by 4 existing coal mines

- Distribution: 2 gas storage tanks; 2 gas storage stations; 112 km low pressure pipelines; 517 km of in-house pipelines; control system; household meters

- Will supply gas to 90,000 households, commercial and industrial customers; replace 138,000 tons of coal

- Sale of potential carbon credits being explored. CDM benefits could be $50-60 million
Possible New Projects in Shanxi and Hehan Provinces

- Candidate CMM/CBM project for Carbon Market Initiative (CMI)—approx 70% of the total project cost can be recovered through carbon revenues, half of it upfront

- Typically carbon revenues are-15% for hydro, 12% for wind, 18% for biomass power - of the total project cost

- APFEE can provide low cost financing; CMI can provide up to 50% of the total carbon revenues upfront
<table>
<thead>
<tr>
<th>ADB Assistance thru CMI</th>
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<tbody>
<tr>
<td>■ CMI provides 25-50% of CER value upfront</td>
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<tr>
<td>■ There is no other fund which provides this level of upfront payment. Existing funds purchase credits on “pay-on-delivery” terms, i.e. annual payments as CER’s are issued</td>
</tr>
<tr>
<td>■ Only available to ADB financed projects</td>
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<tr>
<td>■ ADB’s continuous project monitoring allows it to assume ‘risk’ of non-delivery</td>
</tr>
</tbody>
</table>
Carbon Market Initiative

An ADB Initiative to

support Clean Development Mechanism

1. Asia Pacific Carbon Fund
   - Innovative mechanism to give developers access to CER’s during construction
   - Gives developer access to CER’s upfront for construction as opposed to annual payments during operation.

2. Carbon Credit Marketing Service
   - Brokerage service for residual credits

3. CDM Technical Support
   - Grant facility - covers all upstream and downstream CDM development costs

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Bridging the Gap: Necessary Timing of Funds

Carbon Co-financing Modality

“Pay-on-Delivery” Modality

Project phase:

Financing

Commercial

Year: 2006 07 08 09 10 11 12

$ CERs CERs $
Carbon Market Initiative: 3 Components

Credit Marketing Facility
- Credits uncommitted to the Fund: 50–75%

Projects with Carbon Content
- First credits: 25–50%

Asia Pacific Carbon Fund

Technical Support Facility

ADB Financing and Services

Participant A

Input/Output

Participant B

Participant C

CERs

$
Sample Project Financing Plan

ADB Project with Carbon Content
Illustrative Financing Plan - Debt

<table>
<thead>
<tr>
<th>Source of Finance</th>
<th>$</th>
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<tbody>
<tr>
<td>ADB Loan Finance</td>
<td>70</td>
</tr>
<tr>
<td>CARBON FUND</td>
<td>20</td>
</tr>
<tr>
<td>Host country/Others</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
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Credits pre-purchased by the Fund (“Initial Credits”)

Marketing Service

Residual Credits

Asia Pacific Carbon Fund

Carbon Credits
Carbon Market Initiative

Based on actual ADB projects in PRC, CMI can provide the following upfront down-payment for project financing.

<table>
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<th>Energy Source</th>
<th>Down-payment</th>
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<tbody>
<tr>
<td>Hydropower</td>
<td>8-11% project cost</td>
</tr>
<tr>
<td>Biomass</td>
<td>7-10% project cost</td>
</tr>
<tr>
<td>CMM/CBM</td>
<td>47-66% project cost</td>
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Note: 2008 project, $10-14 tCO2e

- CMI approved by the ADB Board
- Participation agreement signed.
- 1st project in 2007 in PRC
Thank you

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