Coalmine Methane Update and IEA’s Strategy and Activities

T Hotel, Cagliari, Sardinia, Italy
29-30 April 2008

Ming.Yang@iea.org
Energy Technology Economist
Outline

- Updating Coalmine Methane Resources in China
- Policy Supporting Coalmine Methane Capture and Use in China
- Coalmine Methane Project Financing in China
- Coalmine Methane Technologies in China
- IEA’s Activities in China and Russia
## China coalmine methane resources & emissions

### Chinese Gov Data: 30 bn m3 in 2006, Xie Zhen Hua of NDRC

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal production (bn tons)</td>
<td>2.54</td>
<td>2.73</td>
</tr>
<tr>
<td>Emission rate in coal production (m3/ton)</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Total resources (bn m3)</td>
<td>50.8</td>
<td>54.6</td>
</tr>
<tr>
<td>Shares of production: National</td>
<td>49.1%</td>
<td>49.1%</td>
</tr>
<tr>
<td>Provincial</td>
<td>12.8%</td>
<td>12.8%</td>
</tr>
<tr>
<td>Township</td>
<td>38.1%</td>
<td>38.1%</td>
</tr>
<tr>
<td>Shares methane capture: National</td>
<td>30%</td>
<td>40%</td>
</tr>
<tr>
<td>Provincial</td>
<td>20%</td>
<td>30%</td>
</tr>
<tr>
<td>Township</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Captured methane: National (bn m3)</td>
<td>7.48</td>
<td>10.72</td>
</tr>
<tr>
<td>Provincial (bn m3)</td>
<td>1.3</td>
<td>2.1</td>
</tr>
<tr>
<td>Township (bn m3)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total captured methane (bn m3)</td>
<td>8.78</td>
<td>12.82</td>
</tr>
<tr>
<td>Total released methane (bn m3)</td>
<td>42.02</td>
<td>41.78</td>
</tr>
</tbody>
</table>

**Keys:**
1. CMM increase 8%.
2. Released CMM will be stabilized due to CMM activities.
Chinese Policy Supporting Coalmine Methane Development

• National fundamental policy*
  • Save energy, Conserve resources, Protect the environment
  • Strengthen its capability in adapting climate change
  • Make new contribution to climate change mitigation

• CMM Policy
  • Compulsory to drain CH4 in coal production
  • Mandatory to drain CH4 before coal production (not valid)
  • NDRC policy: Management of CDM in CMM capture and use
  • Large power generation unit: > 500 kW/unit
  • Grid must buy extra CMM power from coalmine operators
  • Tariff subsidy policy: 0.25 Yuan/kWh (0.03 USD/kWh)

*Source: 17th Congress of the Chinese Communist Party
## China Coalmine Methane Project Financing

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Starting year</th>
<th>Equity (M $)</th>
<th>Government fund (M $)</th>
<th>Commercial loan (M $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Shui Cheng Coalmine</td>
<td>1992</td>
<td>0%</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>2. Deng Zhan Pin Coalmine Ltd. Si Chuan Province</td>
<td>2009</td>
<td>0%</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>3. Si Pin Coalmine No. 1</td>
<td>2008</td>
<td>0%</td>
<td>35%</td>
<td>65%</td>
</tr>
<tr>
<td>4&amp;5. North &amp; South Lu Ban Shan Coalmines Si Chuan</td>
<td>2006</td>
<td>0%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>6. Gu Lin Coalmine Western Area, Lu Zhou City</td>
<td>2005</td>
<td>0%</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>7. Gu-Lin County Shan He Coalmine Methane to Power Generation</td>
<td>2008</td>
<td>45%</td>
<td>0%</td>
<td>55%</td>
</tr>
<tr>
<td>8. Xu Yong Coalmine No. 2, Si Chuan Coal Group Co. Ltd. China</td>
<td>2009</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

Note: Commercial loan rate 7.5%/Yr for items 2, 3 and 4; and 7.8% for item 7.

**Key messages:** (1) Coalmines go to commercial banks
(2) CMM project financing is not a big challenge
Chinese Coalmine Methane Technologies

- Short of degasification technologies suitable for the Chinese coal seams
- Short of VAM use technologies
- CMM power generation: 500 kW ~ 1.5 MW/unit
- Transmission of gas with 8% concentration
IEA’s Strategy and Activities in China (1)

- Develop an Ally of CMM Stakeholders
  - USEPA, UNECE, OECD/IEA Member Countries
  - National, Provincial, City, & County Governments in China
  - Coalmine Owners and Operators
  - Technology Providers
  - Financial Institutions (World Bank, ADB)

- Policy Outreach
  - Articles and reports publication

- Facilitate Technology Transfer
  - Workshops, meetings and hotline communications
  - Assist USEPA’s feasibility study
IEA’s Strategy and Activities in China (2)

- Provincial Meetings and Coalmine Engagement
  - Workshops in Gui Zhou and Si Chuan
  - Meetings in Paris and Gui Zhou and Si Chuan
  - Hotline Communications

- Disseminate Results & Participate M2M activities
  - Book Publications: ETP 2008,
  - Review reports and the USEPA’s modeling
  - Make presentations at international forums
IEA’s Strategy and Activities in Russia

- **Goal:** regulatory analysis and policy outreach

- **Status of CMM in Russia**
  - No legal requirements to use CH4
  - Fragmented institutional structure
  - Regional initiatives to capture and use CH4

- **Activities**
  - Analysis of policy framework in Russia for CMM
  - Collection of information on CMM regulation and other requirements in selected IEA countries
  - Outreach activities in Russia (meetings & discussions)
Conclusions

- China’s coalmines provide 30-40 bn m³/Yr clean energy to harness
- Safety production and climate policies facilitated CMM, but policy to ban VAM needs to be active
- CMM project finance changing from government fund, to equity and commercial loans
- Lack of drainage and VAM technologies
- IEA helps in policy dialogue, project financing & technology transfer
- In Russia, IEA starting work on regulation and policy outreach