



Methane to Markets

Coal Mine Technical Subcommittee Report to
Steering Committee

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28 January 2009
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Overview

- **Sector Action Plan Summary**
- **Activities since the 2007 Beijing Meeting**
 - Recent Subcommittee meetings
 - Partnership Expo Project Updates
 - Selected Subcommittee Achievements
 - Activities by Country
- **Next Steps and Conclusions**

Background and Sector Action Plan Overview

- **Key barriers to coal mine methane (CMM) project development include:**
 - Lack of understanding of legal, regulatory issues
 - Lack of technology, technical knowledge to implement projects
 - Lack of site-specific feasibility studies, technology demonstrations
 - Lack of financing or ability to obtain financing
- **Coal Subcommittee and country-specific activities to address these barriers**
 - Development of country-specific action plans, or strategies
 - Informational work products (reports, white papers, databases)
 - Technology transfer activities (workshops, training seminars)
 - Feasibility studies, technology demonstration projects
 - Capacity building and facilitating financing capacity

Subcommittee Achievements since November 2007

- **8th Session of the Coal Subcommittee**
 - 29-30 April 2008, Cagliari, Sardinia, Italy
 - 44 attendees representing 9 countries
 - Country-specific strategies
 - Six country strategies presented at the meeting, posted online.
 - Encouraged remaining countries to submit strategies.
 - Site visit hosted by Carbosulcis S.p.A. to the Italian Center of Coal Culture in Carbonia as well as the Carbosulcis coal mine
 - Ideas for improving Project Network participation:
 - Future meetings in conjunction with workshops or conferences.
 - Highlight and recognize successful projects through case studies presented online, in outreach materials, and at meetings.

Subcommittee Achievements since November 2007 (cont'd)

- **M2M Expo Update**
 - Outreach to Expo project contacts regarding project activity.
 - Progress reported for 12 of 20 project opportunities featured at 2007 Expo (projects in China, India, Mexico, Nigeria, Russia, and Ukraine).

- **Global Overview**
 - Revised, including new country profile for Mongolia (summer 2008).
 - Comprehensive, country-specific profiles characterizing coal and coal mine methane sectors for 33 countries.

Subcommittee Achievements since November 2007 (cont'd)

- **International CMM Projects Database**
 - 238 projects in 13 countries.
 - User can search on seven categories and export results to an Excel spreadsheet.
 - Enhancement: new function allows any user to update or add project information.

- **New technical reports available**
 - VAM mitigation technologies
 - CMM recovery opportunities at U.S. abandoned mines
 - CMM recovery opportunities at U.S. surface mines
 - UNECE white paper on CMM / CBM terminology

Subcommittee Achievements since November 2007 (cont'd)

- **Successful project-finance capacity building initiative with UNECE**
 - Four-year effort focused on coal mines in former Soviet Union (Russia, Kazakhstan, Poland, Ukraine).
 - Included outreach missions, technical workshops, data collection.
 - Culminated in road show in London with Russian mine.

- **Financial Model (Developed by U.S. EPA)**
 - Online tool to provide first-cut analysis of CMM project cash flow and economics.
 - Launched online fall 2008.
 - Enhancements under development. Feedback welcomed.

Subcommittee Achievements since November 2007 (cont'd)

- **Created Guidance Documents for Country-Specific Strategy Development**
 - Six countries have developed strategies (posted online)

- **Methane to Markets Coal Sector Web Site**
 - Fact Sheets available in 5 languages
 - Case studies, analyses, reports
 - Project ideas
 - Ongoing projects and activities
 - Database of CMM projects
(~ 240 projects planned or operational globally)
 - Database of technologies

Subcommittee Achievements since November 2007 (cont'd)

- **Best Practices Guide for Coal Mine Methane Drainage and Recovery**
 - Initiative with World Coal Institute, the UNECE Ad Hoc Group of Experts on Coal Mine Methane, and US EPA, launched summer 2008.
 - End product will be best practices guidance document for CMM degasification for coal mines, project developers, and investors.
 - Technical experts drafting group met in December 2008.
 - Document will undergo several levels of review before launch in early 2010.

Activities by Country

■ **Australia**

- Country update at Cagliari meeting highlighted Australian climate change policy and new government initiatives.
- Australian Government policies aimed at widespread deployment of low emission coal technology by 2020:
 - National Low Emission Coal Strategy
 - Global Carbon Capture and Storage Initiative
- Carbon Pollution Reduction Scheme
 - Emissions trading scheme to commence 1 July 2010 to cover fugitive emissions from coal mines.
 - Coal sector transitional adjustment measures:
 - \$750m package over the period 2010/11 to 2014/15, to assist coal mines with high fugitive emissions.
 - Includes \$250 million to support technology deployment.
- World's first project converting mine ventilation air methane to electricity in full operation for over a year (West Cliff Colliery).

Activities by Country (cont'd)

■ **China**

- Strategy submitted to ASG and presented at Cagliari meeting.
 - Four CMM demonstration projects and a long distance CBM pipeline network are proposed.
 - Plan to popularize and apply key technologies for surface drainage, underground drainage, and gas utilization.
- Project development is robust.
 - China hosts world's largest CMM power generation project (120 MW) at Sihe Mine, Jincheng, Shanxi Province.
 - Number of projects is growing quickly.

Activities by Country (cont'd)

■ **China (cont'd)**

- China and U.S. agreement to work together to develop up to 15 large-scale CMM projects in China under the Strategic Economic Dialogue (SED).
 - US EPA is providing financial support for three feasibility studies:
 - Hebi coal mining area in Henan Province
 - Songzao Coal Mining area in Chongqing
 - Liuzhuang coal mine in Anhui Province
- Ongoing collaboration with Australia Department of Climate Change.
 - Successful workshop held in December 2008 in conjunction with CCII 8th International Symposium on CMM / CBM and Carbon Trading in China.

Activities by Country (cont'd)

■ **China (cont'd)**

- Ongoing projects funded through US EPA M2M grant solicitations (2007-2008):
 - Demonstration project for VAM destruction at a Tiefa coal mine.
 - Low quality gas destruction technology demonstration project.
 - Outreach to small and medium mines in Guizhou Province, including a conference in July 2008.
 - Capacity building to promote mine-mouth CMM power generation projects in southern Shanxi Province.
 - Development of coal basin database for Shanxi Province.
- Successful training workshop “Coalbed Methane and Coal Mine Methane Power Generation,” Dalian City, May 2008
 - Organized by USEA and NDRC, funded by USTDA
- IEA project to identify project opportunities in Sinchuan Province.
- Continued US EPA support for China Coalbed Methane Clearinghouse, hosted by China Coal Information Institute (CCII)

Activities by Country (cont'd)

■ **India**

- Strategy submitted to ASG and presented at Cagliari meeting.
 - Primary focus is on capacity building through India Coal Mine/Coalbed Methane Clearinghouse.
- India Coal Mine Methane / Coalbed Methane Clearinghouse formally launched November 2008.
 - Kickoff workshop hosted by Central Mine Planning and Design Institute, Ranchi, India, supported by Coal India Ltd. on behalf of Ministry of Coal, US TDA and US EPA.
 - An international workshop on Development of CBM/CMM in India: An opportunity area conducted in November 2008.

Activities by Country (cont'd)

■ **India (cont'd)**

- A UNDP/GEF/Govt. of India funded CBM/CMM demonstration project for Recovery and Utilization of methane has been successfully implemented at Moonidih mine of BCCL.
 - CBM is being produced from 1 well here and being utilized for generating electricity (500 Kw), which is supplied to the local mine colony.
 - Production from one more well and gas is likely to be produced soon.
- In addition, CMPDI is pursuing a R&D project for identification of prospective areas for CMM development within the command areas of Coal India Ltd.

Activities by Country (cont'd)

- **Italy**
 - Currently evaluating potential for project at the “Miniera Monte Sinni” Coal Mining Concession.
 - Only active coal mine in Italy.
 - Studies on VAM recovery from main return wells.
 - Preliminary studies on abandoned mine methane (AMM) potential in abandoned areas of the underground mine.
 - Possibility for pre-mine drainage project.
 - Hosted 8th Session of the Coal Subcommittee in Cagliari, Sardinia, in April 2008.

Activities by Country (cont'd)

■ **Mexico**

- Strategy submitted to ASG and presented at Cagliari meeting.
 - Barriers include lack of information and of financial incentives.
 - To overcome barriers, plan to:
 - Carry out studies to determine a national inventory of coal, coal mine gas, and gassy mines.
 - Produce portfolio of feasible projects to promote mining investment.
 - Increase the exchange of technical information through the establishment of a strategic database and training programs.
 - As of December 2008, new regulations have been instituted
 - Mexican Official Standards to state the conditions under which CMM can be recovered and used will be ready soon.
- U.S. EPA funding a demonstration project (CMM to LNG) in the Sabinas coal basin.

Activities by Country (cont'd)

■ **Mongolia**

- Mongolia Nature and Environment Consortium awarded a U.S. EPA M2M grant for pre-feasibility study at the Nalaikh mine
 - Held kickoff workshop in Ulaanbaatar (September 2008).
 - Possible Global Environment Facility follow-on project.

■ **Nigeria**

- Strategy submitted to ASG.
 - Major barriers are technical and financial limitations and lack of knowledge of CMM benefits.
 - Priorities to overcome barriers include:
 - Holding workshops to educate stakeholders.
 - Conducting pre-feasibility studies.
- U.S. EPA awarded grant (2007)
 - Pre-feasibility studies at the Onyeama and Owukpa mines in the Enugu coal field.

Activities by Country (cont'd)

■ **Poland**

- Update on CMM activities submitted to ASG.
 - Primary focus has been on pushing for incentives for CMM energy projects.
 - First steps have been taken in preparation for new legislation needed to classify energy production from CMM as “green” energy.
- Workshop held in Szczyrk (February 2008).
 - Sponsored by UNECE, US EPA.
- U.S. EPA awarded two grants (2008).
 - Assessment of VAM resources at Polish mines.
 - Demonstration project converting CMM to LNG.

Activities by Country (cont'd)

■ **Russia**

- UNECE project promoting CMM project financing in former Soviet Union focused on Russia (site visits, scoping missions).
 - UNECE workshop to address financial barrier (Kemerovo, June 2008).
 - One Russian mine participated in “road show” with potential investors in CMM project (London, September 2008).
- IEA to develop policy recommendations for CMM and share with government stakeholders at roundtable discussion.
 - Funded by US EPA, launched 2008.
 - Roundtable to be held in 2009.

Activities by Country (cont'd)

■ **Ukraine**

- Strategy submitted to ASG.
- Belozerskaya Mine
 - USAID support for in-mine drilling project.
 - Workshop at mine (October 2007).
- ARENA-ECO to develop policy recommendations for CMM and share with stakeholders.
 - Work coordinated by Battelle, sponsored by US EPA.
 - Training session or roundtable planned for 2009.

Activities by Country (cont'd)

■ **United States**

- Strategy submitted to ASG, presented at Cagliari meeting. Focuses on promoting CMM development in the US and internationally:
 - Support for mine degasification “best practices” guide initiative
 - Continued enhancement of financial model
 - Preparation of a CMM project financing resources guide.
 - Technical and analytic support for new projects in US and internationally.
- Technology demonstration project on ventilation air methane mitigation using thermal oxidizer successfully completed (October 2008).
 - Hosted by CONSOL Energy at abandoned mine site.
 - Funded by US EPA, US DOE.
- US EPA currently soliciting grant proposals to support Partnership.
 - <http://epa.gov/methanetomarkets/pressreleases.htm#12-22-08>

Activities by Country (cont'd)

- **United States (cont'd)**
 - Support for international projects
 - 12 new and ongoing projects in China, India, Poland, Mexico, Mongolia, Nigeria.
 - 3 full-scale feasibility studies underway in China.
 - Support for capacity building initiatives.
 - China and India Clearinghouses.
 - Russia and Ukraine in-country organizations.
 - 2008 U.S. CMM Conference
 - Pittsburgh, PA, October 28-30, 2008.
 - Outreach tools, documents, newsletters available on US EPA Coalbed Methane Outreach Web site, at: www.epa.gov/cmop.

Next Steps

- **Next Subcommittee Meeting**
 - 12 October 2009 hosted by the UNECE at Palais des Nations in Geneva, Switzerland,
- **Focus will be on identifying project opportunities to showcase at 2010 Partnership Expo.**
- **Will also identify topics and themes for technical and policy program as part of Expo.**

Summary and Conclusions

- **The Subcommittee welcomes participation from new partner countries Mongolia, Vietnam, and Kazakhstan.**
- **The Subcommittee continues to focus on country-specific needs and opportunities to promote CMM projects.**
- **The Subcommittee continues to engage with the private sector and seek ways to be more useful to the Project Network.**
- **The Subcommittee is focusing on planning for a successful Partnership Expo in 2010.**