



# Methane to Markets

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Coal Mine Technical Subcommittee Report to  
Steering Committee

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# Overview

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- **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

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- **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

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- **8<sup>th</sup> 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)

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- **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)

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- **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)

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- **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)

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- **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)

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- **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*

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### ■ **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)*

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- **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)*

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- **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 8<sup>th</sup> International Symposium on CMM / CBM and Carbon Trading in China.

## *Activities by Country (cont'd)*

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### ■ **China (cont'd)**

- Ongoing projects funded through US EPA M2M grant solicitations (2007-2008):
  - Demonstration project for VAM destruction at a Tiefu 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 Sichuan Province.
- Continued US EPA support for China Coalbed Methane Clearinghouse, hosted by China Coal Information Institute (CCII)

## *Activities by Country (cont'd)*

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### ■ **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)*

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### ■ **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)*

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- **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 8<sup>th</sup> Session of the Coal Subcommittee in Cagliari, Sardinia, in April 2008.



## *Activities by Country (cont'd)*

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### ■ **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)*

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### ■ **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)*

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### ■ **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)*

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### ■ **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)*

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### ■ **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)*

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### ■ **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)*

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- **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](http://www.epa.gov/cmop).

## Next Steps

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- **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

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- **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.**