Coal Mine Technical Subcommittee Progress Report

1st GMI Steering Committee Meeting

12-13 October 2011

Krakow, Poland

Acting Co-Chair Guoquan Zhao (China)
Acting Co-Chair B.N. Basu (India)
Co-Chair Pamela Franklin (United States)

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Overview

- Subcommittee Activities Update
- Country activity highlights
- Subcommittee responses to Steering Committee directives:
  - Subcommittee Leadership Review
  - Methane Abatement
  - Partner Country Action Plans
- Summary and Conclusions

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Subcommittee Activities Update

- **12th Session of the Coal Subcommittee**
  - 21 October 2010, Beijing, China, in conjunction with CCII's 10th International Symposium on CBM/CMM
  - Approximately 25 attendees representing 10 countries
  - 7 Partner countries plus the European Commission and several Project Network members provided updates on CMM activities
- **13th Session of the Coal Subcommittee**
  - 30 June 2011, via webinar and teleconference
  - Approximately 32 attendees representing 11 countries
  - 7 Partner countries and several Project Network members provided updates on CMM activities

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Subcommittee Activities Update *(continued)*

- **UNECE Ad Hoc Group of Experts on Coal Mine Methane** ***Best Practice Guidance for Effective Methane Drainage and Use in Coal Mines (published 2010)***
  - Disseminated results through successful workshops in China (October 2010), Kazakhstan (May 2011), and Ukraine (September 2011)
- **Work in progress**
  - White paper evaluating the appropriate role of flaring of CMM
  - Revised, expanded technology database for CMM degasification, abatement, and end uses
- **New, updated technical reports available**
  - *Global Overview of Coal Mine Methane Opportunities* (updated)
  - International CMM Projects Database (updated)
  - *Partnership and Mitigation* fact sheets (revised)

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Highlights of CMM Activities

- **Australia**
  - Working with Chinese government to increase gas drainage and thus improve mine safety
  - World leader in innovative CMM projects, including world's first VAM to electricity (6 MW) project
  - Supporting CMM capture and VAM utilization projects in China
- **China**
  - CMM industry is rapidly expanding
  - Strong leadership from China Coal Information Institute (CCII), and good collaboration with other countries including US and Australia
  - Emphasis on data collection, feasibility studies, technology demonstration projects, and installation of new ventilation air methane mitigation projects
  - A feasibility study at the Songzao Coal Mines led to establishment of a joint venture to produce LNG from coal mine methane
  - Capacity building efforts underway in Guizhou, Shanxi provinces

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Highlights of CMM Activities (2)

- **India**
  - Rapidly expanding its development of CBM , with production underway
  - Strong leadership of the CBM/CMM Clearinghouse by the Central Mine Planning and Design Institute (CMPDI), which has generated data about ventilation air methane for several mines
  - Successful implementation of CMM recovery and utilization at Moonidih mines, proved CMM extraction technology works in Indian geo-mining conditions and generating electricity.
- **Japan**
  - New Energy and Industrial Technology National Development & Development Organization (NEDO) and China's National Development & Reform Commission (NDRC) are collaborating to implement CMM projects in China, including site selection, feasibility analysis, design, and acquiring major equipment for CMM and VAM projects

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Highlights of CMM Activities (3)

- **Mexico**
  - Opportunities for CMM recovery and utilization project at a specific mine (showcased at Partnership Expo) is now being discussed and considered by international financing groups
- **Mongolia**
  - Mongolian Nature and Environment Consortium completed a pre-feasibility study on methane recovery and utilization at a now-closed underground mine.
  - Based on these results, governments of Korea and Mongolia partnered to undertake a formal CMM reserves assessment, including core drilling
  - MNEC held a training workshop in 2010 for the Mongolian mining industry

Highlights of CMM Activities (4)

- **Poland**
  - Institute for Ecology of Industrial Areas (IETU) completed a feasibility study of converting methane from the closed underground Zory mine to LNG.
  - Central Mining Institute of Katowice completed assessment of ventilation air methane emissions at 10 gassy mines.
- **Russia**
  - Technical workshop focusing on CMM technologies and practices (June 2011, Kemerovo)
  - Uglemetan is initiating new effort to assess opportunities for ventilation air methane mitigation in the Kuzbass

Highlights of CMM Activities (5)

- **Turkey**
  - Assessment of coal mine degasification options for bituminous and lignite coal mines in Turkey, including development of database of relevant information
  - Collaborative effort between Virginia Center for Coal and Energy Research and Turkish Coal Enterprises, funded by US EPA
- **Ukraine**
  - International Investment Forum: Funding of CMM Projects in Ukraine (held in Donetsk, June 2010)
  - Training on degasification in advance of mining and utilization of ventilation air methane (Donetsk, September 2011)
  - Alternative Fuel Center has begun to work on a VAM survey for a range of Ukrainian mines

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Highlights of CMM Activities (6)

- **United States**
  - Continued successful domestic efforts to promote coal mine methane recovery and use through US EPA Coalbed Methane Outreach Program
  - US EPA is funding on-going assessments, studies, and data collection efforts in China, Poland, Mongolia, India, Ukraine, Russia, and Turkey
  - Supported dissemination of UNECE “Best Practices” workshops in China, Kazakhstan, and Ukraine
  - US Trade Development Agency, US EPA partnering for a Definitional Mission to assess CMM opportunities in Kazakhstan (newly announced)

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Subcommittee Responses to Steering Committee Directives

- Leadership Review
  - Consensus that leadership (three co-chairs from China, India, and the US) was satisfactory and Subcommittee should continue with the current leadership for now.
  - Issue of leadership had recently been reviewed when China's role was elevated from Vice-Chair to Co-Chair.
  - Australia indicated possible interest in participating in a leadership role in the future.

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Subcommittee Responses to Steering Committee Directives (continued)

- Role of Methane Abatement
  - "Flaring" CMM Projects:
    - Subcommittee has developed a white paper under review and discussion. Supports flaring in cases where energy recovery is not feasible.
  - Ventilation air methane (VAM) mitigation-only projects are inherently different.
    - Because of the dilute nature of VAM, energy recovery is extremely difficult and expensive (although it has been demonstrated).
    - VAM emissions constitute the majority of all coal mining related emissions and VAM mitigation projects therefore will play a critical role.

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Subcommittee Responses to Steering Committee Directives (continued)

- Country Action Plans
  - Country-level methane action plans would be helpful in identifying and setting priorities for countries and for incentivizing collaboration within national governments.
  - The Subcommittee welcomes the opportunity to support Country Action plans.

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Summary and Conclusions

- CMM project developments and assessments of new opportunities continue to expand globally, driven by need to conserve precious energy resources and economic incentives.
- The Subcommittee supports abatement opportunities in cases where energy recovery may not be feasible, especially in the case of ventilation air methane and in appropriate circumstances flaring of CMM.
- The Subcommittee welcomes participation from new Partner Countries Indonesia and Turkey, as well as newly-expressed interest from Colombia.