

Coal Mines Subcommittee

Updates and Plans for 2020

Subcommittee Co-chairs

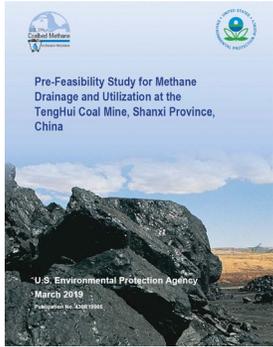
GMI Steering Committee Meeting, 18 November 2019



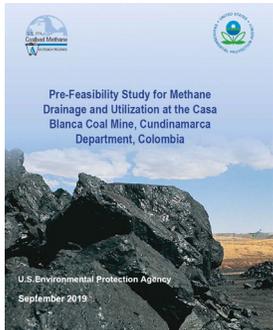
2019 Highlights



Conducted Prefeasibility Studies



- Methane Drainage and Utilization at the Tenghui Coal Mine, Shanxi Province, China
 - Part of an integrated Best Practices training program for the China ICE-CMM

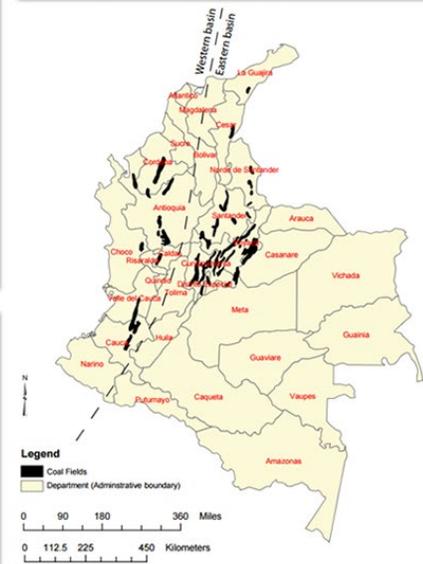
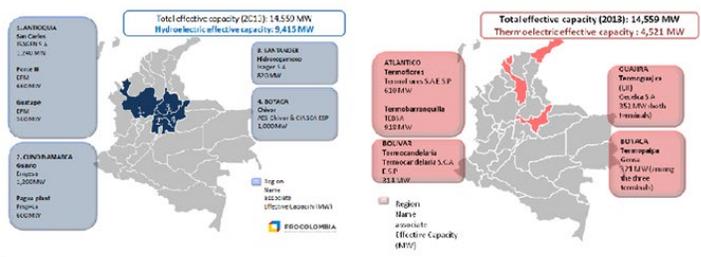
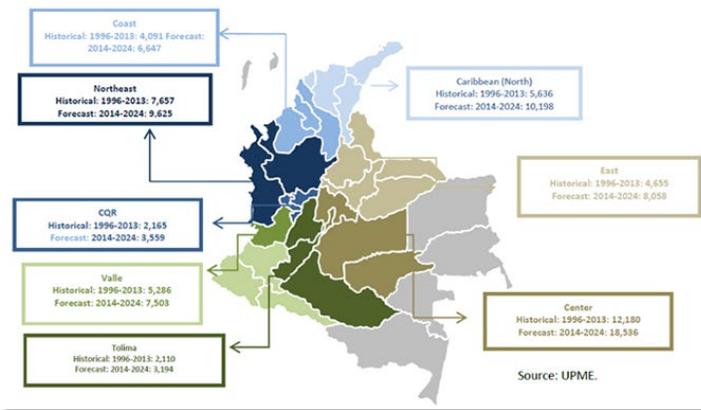


- Methane Drainage and Utilization at the Casa Blanca Coal Mine, Colombia
 - One of the largest mining complexes in the country
 - Completed to determine the feasibility of a CMM capture and utilization project

- Methane Drainage and Utilization at the Pootkee Colliery, Damodar Valley, Jharkhand State, Dhanbad District, India



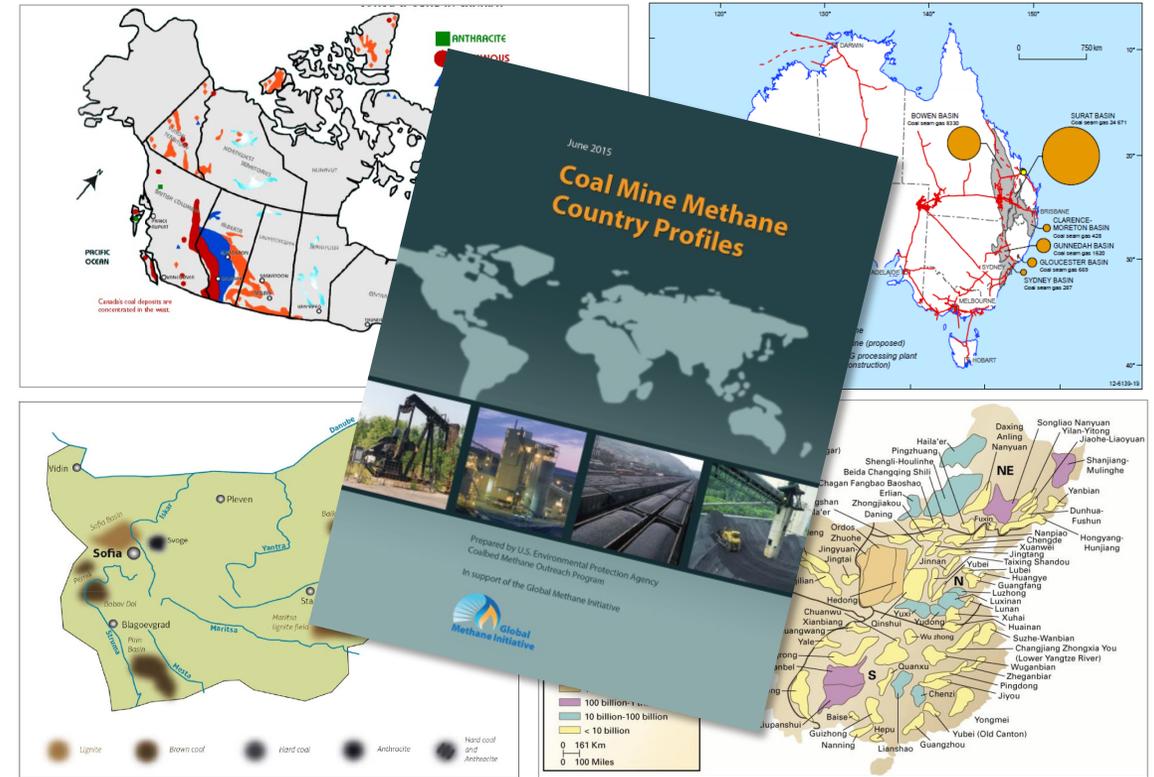
Completed Coal Mine Methane Market Studies



- Completed two CMM Market Studies in 2019
 - India
 - Colombia
- The studies provide an overview of each country's energy markets and:
 - Summarize current CMM and CBM projects and CMM emissions
 - Identify opportunities for CMM utilization and emissions reduction projects
 - Outline challenges and benefits of implementing CMM and CBM projects

Updated GMI Country Profiles

- Comprehensive profiles that characterize the coal and coal mine methane sectors
- Contain summary tables that include statistics on:
 - Coal reserves
 - Coal production
 - Methane emissions
 - CMM project activity
- Profiles were recently updated for 7 countries and will be posted on the GMI website soon



Prepared Reports Analyzing CMM Ownership, Legal Status



- Status of CMM Ownership and Policy Incentives in Key Countries
 - Presents cases studies about building capacity, developing strategies and markets, and removing barriers for CMM recovery and utilization projects
- Legal and Regulatory Status of AMM in Selected Countries
 - Presents case studies on countries that have an enabling environment for AMM recovery and utilization projects
- Supported by US EPA under the auspices of GMI

CMM Project Development Online Course

- Introduces principles for assessing the potential of developing projects to capture and/or use CMM
- Course will benefit project developers, mining company personnel, governmental officials, or other 3rd parties
- 8 modules under development and expected to be released in early 2020

Module 1

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Are You Ready to Initiate a Pre-feasibility Study?

Clarify study objectives & scope Confirm commitment of mine management Verify project type

Conduct pre-feasibility study

Answer these questions to clarify the objectives and scope of the study:

- Is it a pre-feasibility or full feasibility study?
- Is it at one mine or multiple mines?
- What are the expected outputs of the study?

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[Back](#) [Next](#)

Workshop and Event Participation



- Delivered CMM workshops in India and Colombia
- Contributed to Best Practice workshops/panels in Ukraine, Poland, and Turkey
- Also participated in:
 - Greenhouse Gas Control Technologies-14
 - 18th International CBM/CMM Symposium in China
 - North American Coalbed Methane Forum
 - International Pittsburgh Coal Conference

Report on Expert Dialogue on VAM

- Summarizes discussion from the Expert Dialogue on VAM held in Melbourne, Australia in October 2018
- Explores the technical, market and policy barriers that are inhibiting VAM project implementation
- Provides details on achievable tasks/action items to help eliminate barriers to increase VAM project development
- Available on GMI website:
https://globalmethane.org/documents/res_coal_VAM_Dialogue_Report_20181025.pdf



Expert Dialogue on Ventilation Air Methane (VAM) Melbourne, Australia 25 October 2018 Meeting Report

Sponsor

Commonwealth Scientific & Industrial Research Organization (CSIRO) of Australia

Supporters

Global Methane Initiative
U.S. Environmental Protection Agency

Agenda

The agenda is included as Appendix A.

Participants

The list of participants is included as Appendix B.

Background and objectives of the Expert Dialogue

Methane is the second largest source of anthropogenic greenhouse gases (GHGs), accounting for 16 percent of global GHG emissions.¹ Reduction of these emissions has become a policy priority in recent years due to methane's high global warming potential (GWP) which is 28 to 34 times greater than that of CO₂.² In addition to the climate benefits of lower emissions, mitigation of methane emissions also results in important economic, safety, and environmental co-benefits.

Coal mines are a leading source of methane, accounting for 9% of global methane emissions, making the mining industry the fourth largest anthropogenic source. The Global Methane Initiative (GMI) estimates that current global coal mine methane (CMM) emissions total 800 million tonnes of CO₂ equivalent (MTCO₂e), with the largest share of emissions coming from ventilation shafts at underground coal

¹ IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.

² IPCC, 2014.



Recent Accomplishments in China



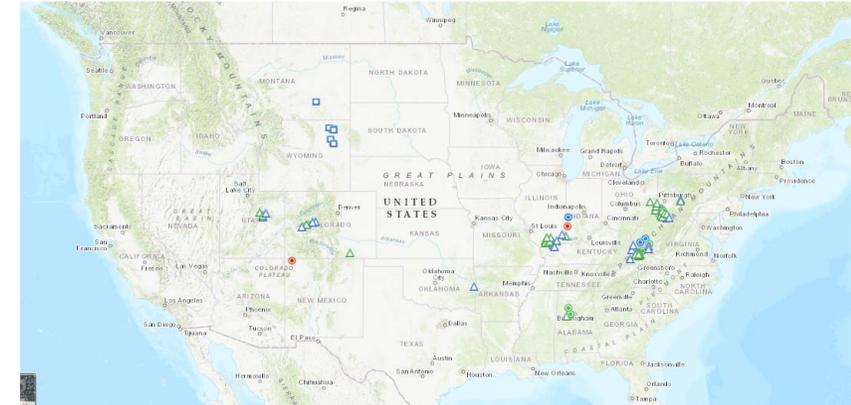
- Three projects related to policy recommendations, feasibility studies and commercialization of AMM development have been conducted since 2014
- Conducted a major consulting research project *Strategic Research on Abandoned Mine Resource Development and Utilization in China*
- The China National Energy Administration is beginning to draft the 14th Five-Year Plan on CBM/CMM development in China
- With the rapid increase of the CMM/CBM drainage and utilization, the death toll caused by gas accidents in China has dropped significantly

Recent Accomplishments in India

- Pre-drainage efforts at Moonidih UG mine (BCCL), Jharia Coalfield is under planning to recover methane to enhance safety, coal production, and utilization of gas
- GAIL is laying gas pipeline at the URJA Ganga Project to provide infrastructure to evacuate CBM/CMM for optimum utilization (expected completion by December 2020)
- Four International Workshops have been organized by the CMM/CBM Clearinghouse related to the development of coal based non-conventional energy resources in India, including the International Workshop on “Optimum Utilization of CMM/CBM in India” that was organized with GoI, CMPDI, US EPA & GMI in April 2019
- Training on reservoir simulation for project personnel and an International Workshop on “Pre-mine drainage” is being proposed in January - February 2020

Recent Accomplishments in the United States

- Developed several U.S.-focused resources in 2019:
 - Online [map](#) of US CMM Opportunities
 - [Coal Mine Methane Developments in the U.S. \(PDF\)](#)
 - [Coal Mine Methane \(CMM\) Finance Guide \(PDF\)](#)
 - [State Renewable Energy Programs \(PDF\)](#)
 - [Emerging Financial and Regulatory Incentives for CMM Emission Reduction Project Development \(PDF\)](#)
 - [U.S Coal Mine Methane Project Cash Flow Model](#)
- Conducted a Webinar on “Abandoned Mine Methane as an Energy Source”
- Continued support of the GoE on CMM that furthers the dissemination of best practices
- Currently collaborating on development of an AMM Best Practices Guidance Document



Coal Mines Subcommittee Action Plan: Future Priorities



Adopted Subcommittee Action Plan



Global Methane Initiative Coal Subcommittee – Action Plan

Coal Subcommittee Action Plan

Adopted by Subcommittee: 24 September 2018

Introduction

The Global Methane Initiative (GMI) Terms of Reference (TOR)¹ states that each Subcommittee should develop and execute an Action Plan that aligns with the TOR and current needs of the Subcommittee and Project Network members, as well as GMI's overarching goals of advancing project implementation, facilitating investment, and creating appropriate policy frameworks that support methane abatement, recovery, and use.

The Coal Subcommittee Action Plan provides a blueprint for the important activities and priorities of the Coal Subcommittee to advance coal mine methane (CMM) projects. The Action Plan recognizes and takes into account the Subcommittee's work and accomplishments to date, while also acknowledging the dynamic and rapidly changing environment affecting the global energy sector, particularly the coal industry, and also global carbon and environmental attributes markets.

In 2006, the Coal Subcommittee developed an Action Plan for the Subcommittee's specific activity (the '2006 Action Plan'). In 2014, the Coal Subcommittee drafted and adopted a Statement of Purpose which clarified the focus of its work, as well as the roles and responsibilities of Subcommittee and Project Network members. In 2015, the Coal Subcommittee adopted a new Action Plan.² The 2015 Action Plan recognized the necessary evolution of the Subcommittee's work from a foundational focus on project identification and policy development to identification and dissemination of best practices for effective methane management in coal mines worldwide. The 2015 Action Plan also recognized the Subcommittee's support for public-private, regional International Centres of Excellence (ICE) on CMM. The ICE model, in concert with dissemination of best practices, is the foundation for a stronger and more sustainable results-driven model for emission reductions. Collectively, the 2006 and 2015 Action Plans and Statement of Purpose were instrumental in providing a framework for the projects and activities of the Coal Subcommittee.

In 2016, the GMI TOR was modified and extended for an additional five years. Updating the Coal Subcommittee Action Plan was discussed at the 24 October 2017 and 18 April 2018 Coal Subcommittee meetings. To better align with the new GMI TOR and more accurately reflect the Coal Subcommittee's

¹ See: <http://www.globalmethane.org/about/terms.aspx>

² See: https://www.globalmethane.org/documents/Coal_Subcommittee_Action_Plan_Oct2015.pdf

- Adopted by the Subcommittee in September 2018
 - Previous Coal Subcommittee Meeting
- Available on GMI website:
https://globalmethane.org/documents/Coal_Subcommittee_Action_Plan_September2018.pdf
- 3-year cycle
- Open to suggestions and feedback



Subcommittee Action Plan: Objectives

- Objectives:
 1. Development of Overview Materials
 2. Identify and Address Key Barriers to Project Development
 3. Identifying Country-Specific Needs and Opportunities
 4. Establish Long-Term Relationships that Promote the Coal Subcommittee Objectives

Subcommittee Action Plan: Potential Activities

- Potential Activities:
 - Update additional CMM Country Profiles
 - Update the International CMM Projects List
 - Update other tools and resources on the GMI website
 - Host delegations for CMM study tours
 - Support information Centres or clearinghouses
 - Participate in and sponsor delegates from Subcommittee members to participate in quality technical symposia
 - Continue cooperation with the China & Polish International Centres of Excellence
 - Identify sources of finance and engage with financial institutions
 - Hold project capacity building finance workshops
 - Create link between prospective CMM projects and sources of finance and investment

Subcommittee Action Plan: Potential Activities (Cont'd)

- Potential Activities:
 - Provide tools and guidance that help Partner Countries identify national level actions, supportive policies, and priority project opportunities
 - Contact members about upcoming activities and events
 - Contact GMI Partner Countries to encourage nominations to Coal Subcommittee
 - Provide information to members to show that GMI and the Coal Subcommittee provide added value to their methane management efforts
 - Encourage members to provide updates on their methane management activities and Action Plans
 - Continue cooperation in support of dissemination and publication of “Best Practice Guidance for Effective Methane Drainage & Use in Coal Mines” and AMM BPG

Upcoming Events for GMI Coal Mines Subcommittee Participation



Members' Planned Events:

19th International Symposium on CBM/CMM in China

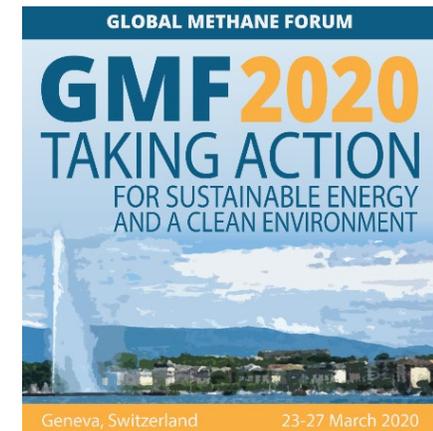
- Organizer: China Coal Information Institute (CCII)
- When: 11 December 2019 in Beijing, China
- A platform to promote the development of the CBM/CMM industry through strengthening technical and economic cooperation in CBM/CMM recovery and utilization at home and abroad.

Global Methane Forum 2020

- 23 – 27 March 2020 in Geneva, Switzerland
- Co-hosted with UNECE
- GMI Meetings:
 - Oil & Gas Subcommittee
 - Coal Mines Subcommittee
 - Biogas Subcommittee
 - Steering Committee
 - Plenary Session
- Capstone event to celebrate the Global Methane Challenge

Recommendations for topics

Send recommendations to
ASG@Globalmethane.org



Other Upcoming Events

- International Mining Forum 2020, Krakow, Poland
- [North American Mine Ventilation Symposium](#)
 - 12-16 June 2021 - Rapid City, South Dakota (USA)
- [World Mining Congress](#)
 - 20-22 July 2021 - Brisbane, Australia
- International Pittsburgh Coal Conference
 - 2021 – India



Coal Mines Sector Challenge Submissions

- China
 - China International Centre of Excellence on Coal Mine Methane
- Mongolia
 - Mongolian Nature & Environment Consortium (MNEC), Developing a Coal Mine Methane Emissions Inventory
- Poland
 - Poland International Centre of Excellence on Coal Mine Methane

Country	Coal
Canada	0
China	1
Colombia	0
Denmark	0
India	0
Kazakhstan	0
Mexico	0
Mongolia	1
Poland	1
Serbia	0
USA	0