

Coal Mines Subcommittee
7 November 2019
Geneva, Switzerland

MEETING MINUTES

Introduction

The Global Methane Initiative (GMI) held its 28th Coal Mines Subcommittee meeting on 7 November 2019 at the United Nations' Palais de Nations in Geneva, Switzerland. The meeting was held jointly with the 14th Session of the United Nations Economic Commission for Europe's (UNECE) Group of Experts on Coal Mine Methane (GoE-CMM) from 7-8 November 2019.

The UNECE provided the meeting space and simultaneous interpretation in English, French, and Russian. Sequential Chinese interpretation was also provided for Chinese participants by the China International Centre of Excellence on Coal Mine Methane (ICE-CMM).

14th Session of the Coal Subcommittee of the GoE-CMM

Sixty-three participants attended the Coal Subcommittee of the GoE-CMM meeting, representing 18 countries, the European Union, international organizations, the private sector, and non-governmental organizations. Major coal producing countries and countries with abandoned mine methane (AMM) that were represented included: Australia, China, Czech Republic, Germany, France India, Kazakhstan, Poland, Romania, Russian Federation, the United Kingdom, the United States, and Ukraine. The 2-day meeting featured several thematic discussions, including:

- Joint Session with the Group of Experts on Cleaner Electricity Systems (GoE CES) and the Role of Fossil Fuels in Decarbonizing Energy Systems
- Best Practice Guidance for Effective Methane Recovery and Use from Abandoned Coal Mines
- International Centre's of Excellence on CMM in Poland and China
- International Centre of Excellence in Russia
- AMM Recovery and Use in France
- Gender Issues in the Coal Mining Industry

All presentations and the meeting agenda can be found at <http://www.unece.org/index.php?id=51081>.

28th GMI Coal Mines Subcommittee Meeting

The 28th meeting of the Coal Mines Subcommittee meeting included 38 participants (see Annex 1) and was held from 12:00 to 18:00 on 7 November. The meeting opened with co-chairs Mr. Ravi Shankar Singh Yadav of India (acting for Mr. Shekhar Saran) and Mr. Liu Wenge of China (acting for Mr. Huang Shengchu) welcoming a new co-chair from the United States, Ms. Volha Roshchanka of the U.S. Environmental Protection Agency (EPA). The co-chairs provided introductory remarks followed by a review and approval of the meeting agenda. The co-chairs also acknowledged and expressed appreciation for the Subcommittee's long and productive partnership with the UNECE GoE-CMM.

All presentations and the meeting agenda can be found at https://globalmethane.org/news-events/event_detailsbyID.aspx?eventid=535.

Administrative Support Group (ASG) Updates and Global Methane Challenge

Following the opening remarks, Ms. Monica Shimamura, Director, GMI Secretariat, delivered an update on ongoing GMI activities that focused primarily on the 18-19 November 2019 GMI Steering Committee meeting, the Global Methane Forum scheduled for March 2020 (later postponed), and the Global Methane Challenge.

The next meeting of the **Coal Mines Subcommittee** is scheduled to occur during the Forum. Similarly, the Subcommittee meeting will again be conducted as a joint session with the GoE-CMM. Several participants in this Subcommittee meeting noted the importance of creating and participating in cross-cutting sessions during the Forum to exchange information on experiences and lessons learned in other methane sectors and to engage in areas of common interest, such as markets for emission reductions and regulatory barriers. Ms. Shimamura noted the importance of cross-cutting issues and indicated that cross-cutting sessions are planned at the Forum.

The **Global Methane Challenge**, launched in 2019, presents an opportunity for public- and private-sector organizations to highlight projects, technologies, and policies that lead to methane mitigation. Specific actions are showcased on the GMI website and will be highlighted at the Forum. Ms. Shimamura encouraged all participants to review the existing coal mine methane actions on the Challenge website and to submit new “stories” ahead of the Forum. She discussed the Ventilation Air Methane (VAM)-to-power projects in China as an example of a coal story available on the Challenge website.

Ms. Shimamura also briefed the Coal Mines Subcommittee about the next **GMI Steering Committee** meeting scheduled for 18-19 November 2019 in Paris, France. In particular, she highlighted ongoing discussions regarding the future of GMI beyond April 2020. The GMI charter was extended at the 2016 Forum to March 2021 with strong support from major coal producing countries. The Steering Committee is considering whether to recommend extension of the charter beyond 2021.

In addition to these topics, Ms. Shimamura highlighted enhancements to **GMI’s communication strategies**, especially improvements to the GMI website including upgrades to the coal sector home page and active use of social media to promote GMI and its activities.

Subcommittee Report

The co-chairs presented the 2019 Coal Mines Subcommittee report to the participants which included identifying tasks and accomplishments during the year:

- Completed CMM pre-feasibility studies in China, India and Colombia (all pre-feasibility studies are posted on the EPA website at <https://www.epa.gov/cmop/international-activities>). It was noted that the in-mine directional drilling program that was proposed in the China pre-feasibility study is being successfully implemented at the TengHui Mine in Shanxi Province, which has led the mine operator to implement the same program at another nearby mine. Gas-fired generator sets have been ordered for the TengHui Mine and emission reductions are expected to begin in 2020.
- Completed two CMM markets studies: India and Colombia (<https://www.epa.gov/cmop/international-activities>).
- Updated GMI Country Profiles for seven GMI countries.
- Released two reports analyzing CMM Ownership and Legal Status: *Status of CMM Ownership and Policy Incentives in Key Countries* and *Legal and Regulatory Status of AMM in Selected Countries* (<https://www.epa.gov/cmop/international-activities>).
- Prepared and delivered a detailed, hands-on training course on Pre-Feasibility Study Report Preparation for the China ICE-CMM.
- Initiated work on a CMM Project Development Online Course based on the Pre-feasibility Study Report Training (under development).
- Delivered CMM workshops in India and Colombia.
- Participated in and supported Best Practice workshops in Turkey, Poland, and Ukraine.

- Reviewed and edited the UNECE *Best Practice Guidance for the Effective Methane Recovery and Use from Abandoned Coal Mines* (publication expected in December 2019).
- With Commonwealth Scientific and Industrial Research Organisation (CSIRO) Australia, planned and delivered the Expert Dialogue on Ventilation Air Methane in Melbourne, Australia in October 2018. (https://globalmethane.org/documents/res_coal_VAM_Dialogue_Report_20181025.pdf). In addition, a brief oral summary of the Dialogue was conducted.
- Due to staff changes at EPA, the U.S. Government shutdown in January 2019 and other factors, most action items identified were not pursued in 2019 except for the scheduling of a VAM Study Tour in China, which will be held in December 2019.

Partner Country Updates

China, India, Poland, and the United States provided country updates during the Subcommittee meeting. These updates are traditional parts of the meeting agenda and provide participants with a current perspective on the state of the coal industry, CMM/AMM emissions, policies affecting CMM/AMM, and CMM/AMM recovery and use projects. All presentations are available at https://globalmethane.org/news-events/event_detailsbyID.aspx?eventid=535.

- China
 - China remains the largest producer of coal and the largest CMM emitting country accounting for more than 50 percent of global emissions.
 - The quantity of mine gas drainage in 2018 was 13 billion cubic meters (Bm³) with utilization of drained gas increasing slightly to 5.3 Bm³ over 2017.
 - The presentation identified four new CMM utilization projects in Shanxi Province (Gaoping, Zuoquan, Duanhe, and Jincheng) and one new project in Guizhou Province (Laoshatian).
 - China is directing more effort to identify and exploit AMM resources. Two projects under development are at the Wulan Coal Mine and the Qingshui No. 2 Mine.
 - The China Coal Information Institute (CII) published guidance on the development of China's AMM resources in 2018.
 - China National Energy Agency (NEA) is drafting the CBM/CMM strategy in the 14th Five Year Plan.
- India
 - India is targeting an increase in coal production up to 1 billion tonnes by 2024 (from 730 million tonnes in 2018).
 - Development of CMM/AMM/CBM resources is vital to meet growing energy demand and sustaining economic growth.
 - CMM emissions are estimated at 1.2 Bm³ per year.
 - The Coal Mine Planning & Development Institute (CMPDI) is the lead agency for development of CMM in India, and it also houses the India CBM Clearinghouse with support from the EPA.
 - Exploration licenses have been granted for a number of blocks to identify CBM and mine pre-drainage potential, and pre-feasibility studies have been completed for several mines.
 - In 2020, the CBM Clearinghouse will host training workshops on reservoir simulation and best practices for AMM recovery and use.
- Poland
 - Poland continues to be the largest hard coal producer in Europe, accounting for 83 percent of Europe's production.
 - Although coal production has decreased by 24 percent and the number of mines has decreased by 33 percent since 2008, methane emissions from mining operations have increased by 4 percent, indicating that existing mines are moving into deeper and gassier coal seams and specific emissions are increasing.
 - About 35 percent of CMM emissions are from gas drainage systems and 65 percent are VAM.

- Two-thirds of drained gas, or 203 million cubic meters (Mm³), is used mostly in 34 gas engines with nameplate capacity of 72 MW.
- In partnership with Russia, Poland is conducting a major research, development and deployment project to test directional drilling and hydraulic fracturing technology.
- United States
 - The U.S. remains the world's second largest coal producer, although production has declined by 33 percent since 2008. The number of operational underground mines has decreased by 41 percent.
 - Demand for thermal coal has declined with plentiful supplies of low-cost natural gas, but the market for metallurgical coal and coal exports is still reasonably strong.
 - CMM emissions have declined by only 21 percent since 2008 as high production longwall mines account for the largest share of underground production and CMM emissions from underground mines.
 - Currently, there are 19 CMM projects using gas from 13 active mines and 20 AMM projects drawing gas from 51 abandoned mines, mostly gas pipeline sales.
 - New CMM project development at active mines has declined; however, there has been a substantial increase in AMM projects, especially flaring projects.
 - Most CMM/AMM/VAM projects can generate and sell offsets into the California Cap-and-Market with current prices at US\$14.50 per ton CO₂e.
 - The U.S. has one operating VAM project that has generated 1.47 million offsets through 2018.

Upcoming Events and Planning for the Global Methane Forum

The Subcommittee identified the following upcoming events for GMI member and Project Network member participation. *Note – Some workshops and conferences are by invitation only and may not be open to general participation.

- 19th International CBM/CMM Symposium (Beijing, China) – 11 December 2019
- China VAM Study Tour hosted by the China International Centre of Excellence (ICE-CMM) (Yangchuan, China) – 12 December 2019
- Poland School of Underground Mining (Kracow, Poland) – 24-16 February 2020
- UNECE/Poland ICE-CMM AMM Best Practices Workshop (Kracow, Poland) – 1 day 24-26 February 2020
- Global Methane Forum, GMI Coal Mines Subcommittee meeting, and 15th Session of the UNECE Group of Experts on CMM (Geneva, Switzerland) – 23-27 March 2019 (now postponed)
- India AMM Best Practices Workshop (Ranchi, India) – Spring 2020
- Poland Silesia CMM workshop sponsored by the Poland ICE-CMM – June 2020
- Vietnam CMM workshop sponsored by the Poland ICE-CMM – scheduled 2020
- 16th Session of the UNECE Group of Experts on CMM (Geneva, Switzerland) – Spring 2021
- North American Mine Ventilation Symposium (Rapid City, SD USA) – 12-16 June 2021
- World Mining Congress (Brisbane, Australia) – 20-22 July 2021
- International Pittsburgh Coal Conference (India) – Autumn 2021

With respect to the Global Methane Forum, the co-chairs identified opportunities to assist in the preparation and planning for the Coal Mines Subcommittee meeting at the Forum, requesting that GMI members and Project Network members submit ideas for topics and themes. Recommended topics included:

- Financing CMM or AMM projects
- Monitoring, Reporting, Verifications (MRV) methodologies for CMM or AMM

The co-chairs also strongly encouraged submissions for the Global Methane Challenge.

Subcommittee Action Plan

The co-chairs noted that the current Subcommittee Action Plan was adopted at the previous Coal Mines Subcommittee meeting in September 2018 and that the Plan is available on the [GMI website](#). The Action Plan is intended to guide the Subcommittee's work for the current 3-year cycle through 2021, but the co-chairs acknowledged that they are open to suggestions and feedback.

The co-chairs then led a discussion about the prioritization of tasks to be undertaken by the Subcommittee in 2020 as well as future priorities. The bullets below summarize the discussions.

- Development of Overview Materials
 - Updating Country Profiles, the GMI CMM Technology Database, the International projects list, and other tools and resources.
 - It was noted that several tools are used widely by GMI and Project Network members to identify CMM project opportunities, especially the Country Profiles and the CMM Projects List. Participants strongly encouraged GMI to update these documents regularly.
- Identify and Address Key Barriers to Project Development
 - Favored continuing support for and cooperation with international CMM clearinghouses and the China and Poland ICE-CMM's as these institutions are on the front lines of promoting best practices to the mining industries in their regions and countries.
 - Agreed that further engagement with the financial sector was critical since limited access to finance can be a major barrier to CMM or AMM project development.
 - Agreed to continue supporting and participating in workshops, conferences, and other meetings that provide value to the participants.
 - Agreed to participate in and host study tour delegations in GMI Partner countries.
 - Noted the importance of the CMOP Cash Flow model as a quality first line project evaluation tool to estimate project costs, revenues and returns. Participants suggested that the Cash Flow Model be reviewed and possibly updated.
- Identifying Country-Specific Needs and Opportunities
 - Where appropriate and if requested, the Subcommittee agreed to assist members with the identification of Country-Specific Needs and Opportunities through policy or technical evaluations, workshops, pre-feasibility studies, and market studies. This could entail support to include CMM recovery and use in Nationally Determined Contributions (NDCs).
- Establish Long-Term Relationships that Promote the Coal Subcommittee's Objectives
 - Acknowledged the importance of following up with members and the Project Network on CMM project status and value-added support provided by GMI, both in quantitative measures (e.g., emission reductions and MW installed) and qualitative terms (e.g., policy and institutional support).
 - Agreed on the importance of continued support for dissemination of the *Best Practice Guidance for Effective Methane Drainage and Use in Coal Mines* and the *Best Practice Guidance for Effective Methane Recovery and Use from Abandoned Coal Mines*.

Expert Panel on CMM Incentives and Market Opportunities

The Subcommittee organized a panel session on incentives for CMM projects. The panel was moderated by Richard Mattus of Sweden, and three presentations were conducted: *Market incentives for CMM and AMM projects in China* (presented by Han Jiaye), *Incentives for CMM/AMM and carbon markets in the United States* (presented by Phil Kong), and *Global carbon markets and incentives for CMM projects in countries other than China and the U.S.* (presented by Clark Talkington). The presentations were followed by a discussion among all participants.

The panelists examined different incentives that have been used to promote CMM and AMM project development, focusing on the most popular incentives to date which have been carbon markets, feed-in tariffs,

direct subsidies and renewable energy credits. Currently, the California Cap-and-Trade prices in the United States are resulting in several new AMM flaring projects with strong carbon prices between US\$14 - \$15. At these prices, payback is quick relative to other CMM use technologies and project returns are very attractive. In South Korea, international offsets are now allowed into the Korea Emissions Trading Scheme. The current price range of US\$20-30 has resulted in some interest in international CMM projects, although projects must be registered as Clean Development Mechanism (CDM) projects, which adds considerable administrative burden.

Although incentives have catalyzed project development, challenges with carbon markets and other incentives were also discussed, with the panel noting the uncertainty created by government-driven price signals rather than market-driven signals (e.g., the negative impact on CMM projects resulting from the end of the Kyoto Protocol markets in 2012). Limits on offset volumes allowed into the markets in California and the uncertainty of the future role of offsets in Korea are also inhibiting project development, especially for projects where payback is over a long period of time, despite the strong price signals in those markets. The Subcommittee also debated the value of subsidies and feed-in tariffs, noting the success of these incentives in spurring CMM emission reductions, especially in China and Germany. They also agreed that these incentives can lead to market distortions if not planned and implemented effectively.

Close of the GMI Coal Mines Subcommittee meeting

The co-chairs concluded the meeting by thanking all of the participants and the UNECE, and they indicated that there will be follow-up conversations with the members and the Project Network to plan for the Global Methane Forum.

ANNEX I

Coal Mines Subcommittee Meeting Participants

| | |
|--------------------------|--|
| Evgeny Alexeyev | Aqueria Energy |
| Clemens Backhaus | A-TEC Anlagentechnik GmbH |
| Yuriy Bobrov | The Association of Mining Towns of Donbass |
| Iva Brkic | United Nations Economic Commission for Europe (UNECE) |
| David Creedy | Sindicatum Sustainable Resources |
| Michal Drabik | United Nations Economic Commission for Europe (UNECE) |
| Scott Foster | United Nations Economic Commission for Europe (UNECE) |
| Charlotte Griffiths | United Nations Economic Commission for Europe (UNECE) |
| Stephanie Held | United Nations Economic Commission for Europe (UNECE) |
| Ahmad Irshad | Central Mine Planning & Design Institute Ltd (CMPDI) |
| Lucas Janssen | European Commission, Directorate General for Research and Innovation |
| Baoqiang Jia | Beijing Sindicatum Clean Energy Technology and Services Co |
| Han Jiaye | China Coal Information Institute (CCII) |
| Janusz Jureczka | Polish Geological Institute |
| Ake Kallstrand | MEGTEC Systems, Inc. |
| C. Ozgen Karacan | U.S. Geological Survey |
| Piotr Kasza | Oil and Gas Institute (INIG) of Poland |
| Kyeong Kong | Advanced Resources International, Inc. (ARI) |
| Lukasz Kroplewski | Polish Oil and Gas Company |
| Richard Mattus | RM Business Consulting |
| Branko Milicevic | United Nations Economic Commission for Europe (UNECE) |
| Julien Moulin | Francaise de L'energie |
| Raymond Pilcher | Raven Ridge Resources, Inc. (RRR) |
| Jia Qingrong | Shanxi Coking Coal Group |
| Volha Roshchanka | U.S. Environmental Protection Agency (EPA) |
| Elzbieta Salzmann | Business Intelligence in Oil & Gas |
| Monica Shimamura | U.S. Environmental Protection Agency (EPA) |
| Sergey Shumkov | Skochinsky Institute of Mining |
| Jacek Skiba | Central Mining Institute |
| Clark Talkington | Advanced Resources International, Inc. (ARI) |
| Florin Tobescu | Romanian Energy Regulatory Authority (ANRE) |
| Grant Wach | Dalhousie University |
| Bo Wang | China Coal Information Institute (CCII) |
| Liu Wenge | China Coal Information Institute (CCII) |
| Barry Worthington | U.S. Energy Associates |
| Ravi Shankar Singh Yadav | Central Mine Planning & Design Institute Ltd (CMPDI) |
| Valerii Zakharov | Russian Academy of Sciences |
| Jin Zhixin | Shanxi Coking Coal Group |