

USEPA and the Global Methane Initiative in Mongolia and the Region

Mongolia Coal Mine Methane Recovery and Utilization Workshop

**Ulaanbaatar, Mongolia
18 June 2014**

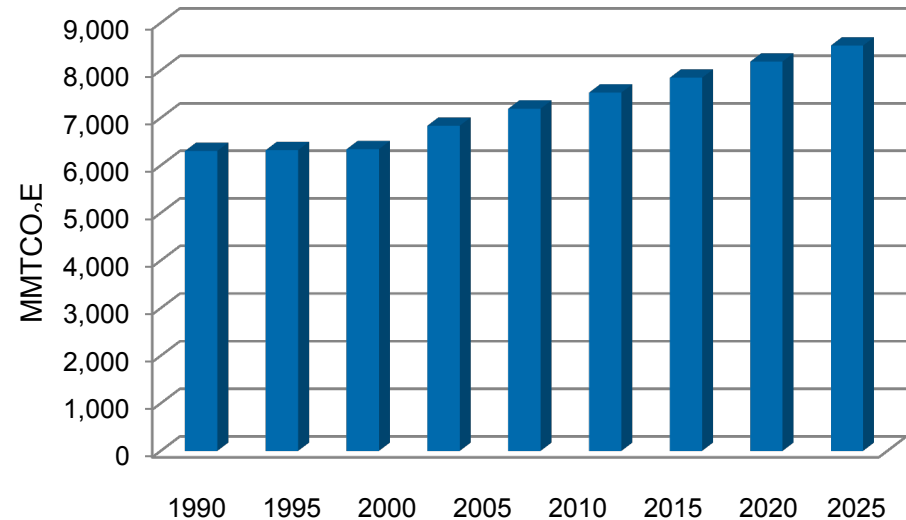
Felicia Ruiz, U.S. Environmental Protection Agency



Why is Methane (CH₄) Important?

- Short-lived climate forcer:
 - 100-year GWP = 25
 - Lifetime = 12 years.
- Primary component of natural gas.
- Many natural and anthropogenic sources:
 - Energy, agriculture & waste sectors
 - 50 - 70% anthropogenic
- Atmospheric CH₄ concentrations have increased by 150% in the last 260 years.
- Global anthropogenic methane emissions are projected to increase by more than 18 percent from 2010 to 2030.

Growth in Global Anthropogenic Methane Emissions: 1990 - 2030



Methane Reductions are Win-Win-Win

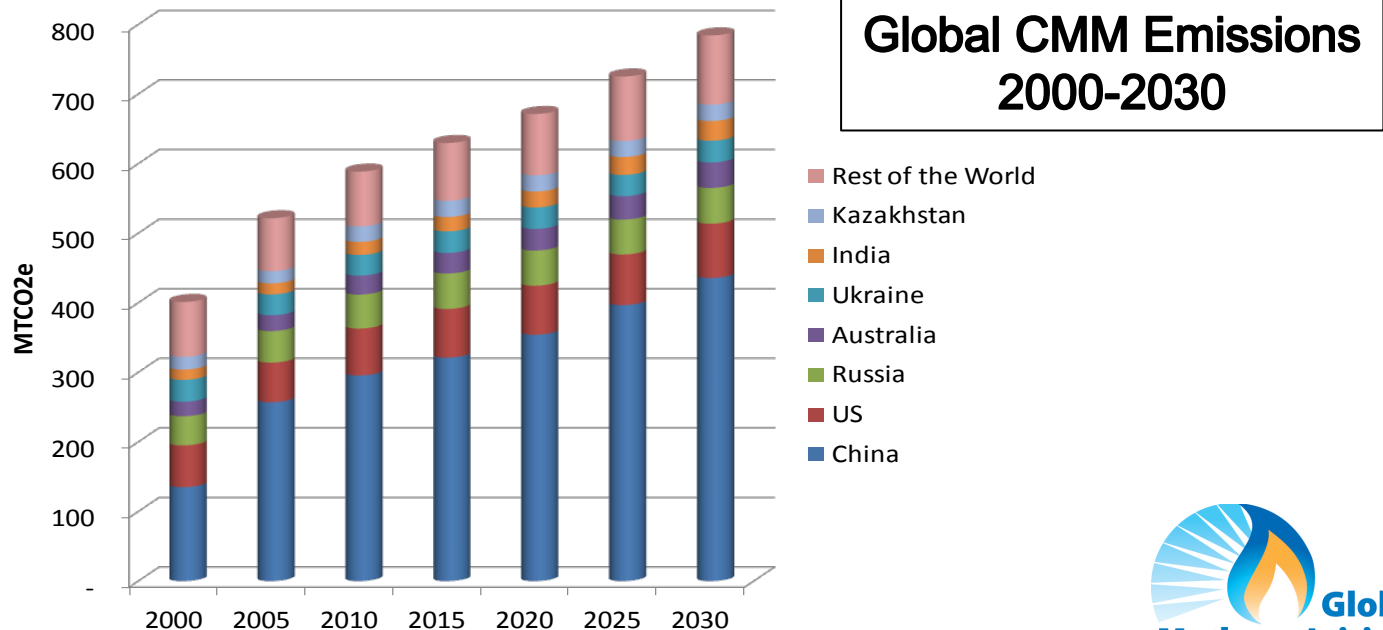
Methane is a potent, well-mixed greenhouse gas in the atmosphere, so reducing methane emissions anywhere has equal impact on climate.

Reducing methane has other very important benefits:

- **Economic**
 - Mitigation costs are lower than for CO₂ and can often be cost-effective.
- **Energy Supply and Reliability**
 - Mitigation makes methane available for local energy purposes, thereby strengthening energy security, enhancing local economies and fostering sustainability.
- **Environmental Quality and Public Health**
 - Local water quality improvements due to improved management of agricultural wastes.
 - Reduction of local emissions of VOCs from landfills, agriculture, and oil and gas systems.
 - Reduction of ground-level ozone through reduced methane emissions.
- **Industrial Safety**
 - Methane is explosive. Reducing methane concentrations improves worker safety in the coal and oil & gas sectors.

Coal Mine Methane (CMM)

- Methane released as a result of coal mining activities
- Methane is a greenhouse gas and coal mines are one of the largest anthropogenic sources of methane
- CMM emissions are growing with increased coal production in emerging economies and as mining moves to deeper, more geologically complex coal seams



Source: USEPA

EPA's Domestic Methane Programs

- **EPA's domestic voluntary methane programs provide unique and widely-recognized expertise**
 - Strong relationships with key industry sectors
 - Robust technical knowledge of mitigation options, deployment challenges
- **Objectives**
 - Partnering with companies, governments, communities, and organizations to achieve cost-effective emissions reductions
 - Helping partners implement GHG-reducing technologies, processes, and best-management practices – yielding economic and environmental benefits
- **Accomplishments**
 - Reduced GHG emissions by 66 MMTCO₂e in 2009 alone
 - Since 1993, substantial energy benefits have been achieved across the U.S. economy





US EPA Coalbed Methane Outreach Program (CMOP)



■ Our Mission

- To work with the private sector to cost-effectively reduce CMM emissions through recovery and use projects

■ Our Focus

- Greenhouse gas emission reduction opportunities: *coal mine methane (CMM)* rather than coalbed methane (CBM)

■ Our Activities

- Identify profitable opportunities for CMM recovery
- Identify and help overcome market, regulatory, technical barriers
- Offer technical and analytic support where appropriate
- Conduct direct outreach to coal mines

■ Our Accomplishments

- The U.S. CMM industry is robust. Over 80% of methane from U.S. coal mine degasification systems is recovered and used today, compared to ~25% in 1993.

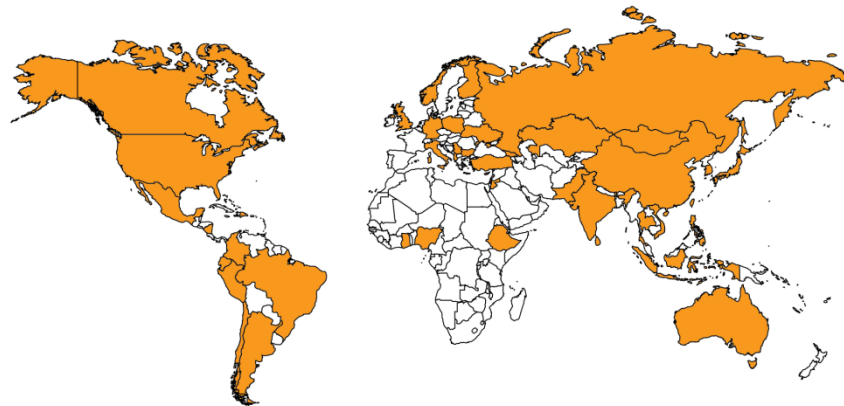


Global Methane Initiative (GMI)

- Started as Methane to Markets (M2M) Partnership in November 2004 with 14 countries – Mongolia became 24th member in 2008
- USEPA serves as the secretariat for GMI and hosts the Administrative Support Group (ASG), by providing administrative and logistical support and serving as an information clearinghouse
- Focus on methane emission reductions in 5 sectors including coal mining
- Focus on methane because emission reductions are cost-effective and are high impact due to a higher global warming potential than CO₂

GMI Partners

- Grown from 14 to 42 countries, plus European Commission
- 9 of top 10 coal producing countries including top 6 coal producing countries accounting for 81% of global coal production
- Represent nearly 70% global anthropogenic methane emissions



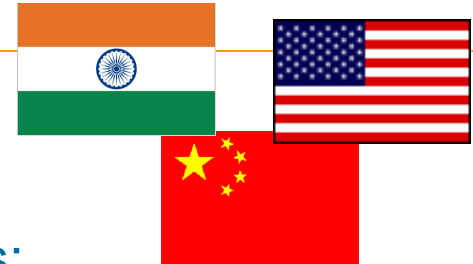
GMI Strategies for Success

- Promote international cooperation on methane reduction
- Facilitate the availability of reliable methane emission data
- Support capacity building in partner countries
- Assist in the removal of barriers for methane project development
- Identify cost-effective opportunities for methane projects
- GMI activities support data collection and feasibility studies, etc. to build a “pipeline of projects” and other capacity building efforts – not direct project investment



GMI Coal Mines Subcommittee

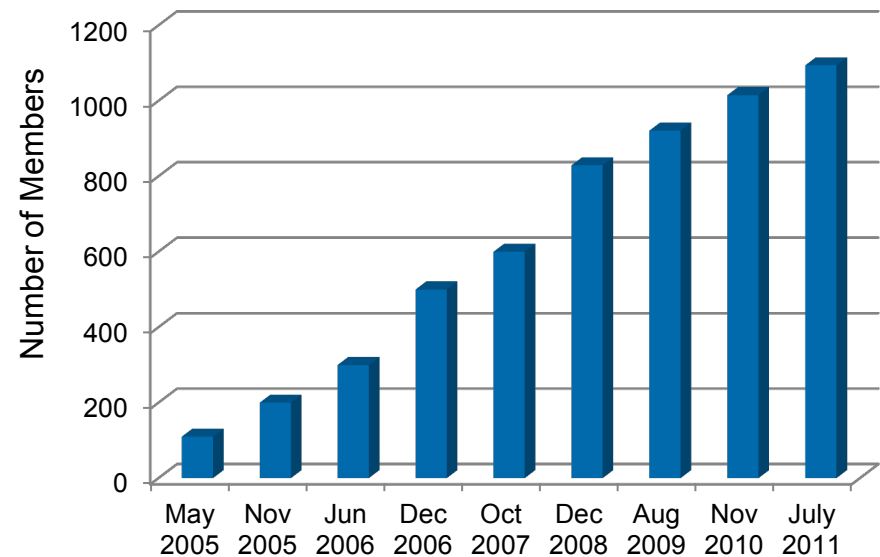
- Co-Chaired by China, India and the U.S.
- Forum for discussing technical, policy issues; showcasing project opportunities and technologies
- Support the development of online tools:
 - International coal mine methane (CMM) database of over 300 projects
 - CMM Country Profiles of 37 coal-producing countries
 - Technology (end use) database
 - Flaring position paper
 - Technical presentations and Fact Sheets
 - Additional resources: <http://www.globalmethane.org/coal-mines/index.aspx>
- In Mongolia, Coal Subcommittee members include the Ministry of Mining, the Mineral Resources Authority, and MNEC



GMI Project Network

- Brings private sector, NGO, multilateral investment community together to implement reduction projects.
- More than 1,200 diverse organizations from six continents.
- By joining the Project Network, you can:
 - Reduce costs and generate profits through methane abatement, recovery, and use projects
 - Participate in GMI activities & meetings
 - Gain direct access to technical expertise and assistance
 - Benefit from cutting-edge news and info
 - Identify and secure funding for projects
 - Submit project ideas and activities to the subcommittees

Project Network Annual Totals



GMI Support for CMM Activities

■ Project identification, preliminary evaluations

— Partnership-wide

- Conducted identification, initial data gathering for more than 100 potential CMM projects showcased at Project Expos
- Recently launched 12 new pre-feasibility studies in China, India, Mongolia, Kazakhstan, Poland, Turkey, Russia and Ukraine

— China

- Comprehensive CMM feasibility studies at five sites
- A summary of China's Energy Markets in Anhui, Chongqing, Henan, Inner Mongolia and Guizhou Provinces

— Mongolia

- Conducted pre-feasibility studies on methane recovery and utilization for the Baganuur Mine, Naryn Sukhait Mine, and Nalaikh Coal Mine
- Coal Mine Methane Resource Assessment and Emissions Inventory Development in Mongolia

— Poland

- Supported feasibility study and assessment of converting abandoned mine methane (AMM) to liquefied natural gas (LNG)
- Funded study to characterize VAM emissions and mitigation potential from 10 gassy mines

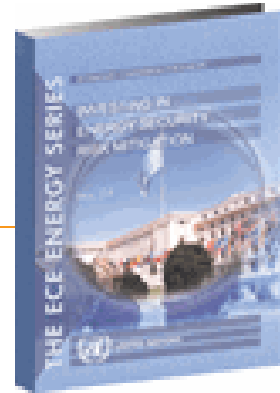


GMI Support for CMM Activities

- **Capacity building: national and regional efforts**
 - CBM/CMM Clearinghouses created in China, India and Russia

- **Technology transfer, training, investment and policy forums**
 - **Turkey**
 - Assessment of coal mine degasification options for bituminous and lignite coal mines in Turkey, including development of database of relevant information
 - **Russia**
 - Technical workshops focusing on CMM technologies and practices
 - New effort underway to assess opportunities for ventilation air methane mitigation in the Kuzbass
 - **Ukraine**
 - International Investment Forum: Funding of CMM Projects in Ukraine (Donetsk, June 2010)
 - Training on degasification in advance of mining and utilization of ventilation air methane (Donetsk, September 2011)
 - Policy roundtables with Ukrainian Parliament to address CMM policy options

UNECE - *Best Practices Guidance*



Best Practices Guidance for Effective Methane Drainage and Use in Coal Mines

- Drafted by international CMM technical experts; peer reviewed
 - Collaborative project between GMI and UNECE Ad Hoc Group of Experts on Coal Mine Methane
 - US EPA financially supported outreach workshops organized by UNECE in China (October 2010), Kazakhstan (May 2011), and Ukraine (September 2011)
- **Adoption of best practices will:**
- Strive to achieve a goal of zero fatalities, injuries, and property losses from methane related accidents.
 - Demonstrate global coal industry's commitment to mine safety, climate change mitigation, corporate social responsibility, and good citizenship.
 - Establish a global dialogue on CMM capture and use.
 - Create critical linkages among coal industry, government, and regulatory officials.
 - Incorporate effective CMM capture as a part of an effective risk management portfolio.

Coming soon in Mongolian!

GMI in Mongolia

- CMM pre-feasibility studies
 - Baganuur Mine
 - Naryn Sukhait Mine
 - Nalaikh Coal Mine
- Coal Mine Methane Resource Assessment and Emissions Inventory Development in Mongolia
- Capacity Building:
 - Developing capacity for professional testing services
 - Training sessions on data collection and testing procedures, CMM recovery and utilization opportunities
 - GMI in Mongolia publication
- Workshops on CMM Recovery and Utilization in 2008 and 2010
- Publications
 - GMI in Mongolia
 - Coal Mine Methane Opportunities in Mongolia
- GMI Coal Mine Methane Country Profiles and a global CMM projects database

Mark Your Calendar!

- **GMI Coal Subcommittee Meeting**
 - 22 October 2014, Geneva, Switzerland
- **2014 U.S. CMM Conference**
 - November 18-20, 2014 in Pittsburgh, PA, USA
- **9th Session of the UNECE Group of Experts on CMM**
 - 23 October 2014, Geneva, Switzerland
- **2014 International Symposium on CBM/CMM and Shale Gas**
 - 6-7 December 2013, Beijing, China



Contact Information

U.S. EPA Coalbed Methane Outreach Program

www.epa.gov/cmop

Global Methane Initiative

www.globalmethane.org

Get involved – join the Project Network!

<http://www.globalmethane.org/project-network/index.aspx>

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