

# Promoting Coal Mine Methane Activities in Kazakhstan: Policy and Project Development Issues

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In support of U.S. Environmental Protection Agency



# Presentation Outline

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- **Summary of Recent US EPA Activities in Support of GMI**
  - September 2015 workshop
  - June 2016 meetings
  - October 2016 Best Practices Workshop
  
- **Policy and Project Development Issues**
  - Changes in CMM/AMM ownership rules
  - Feed-in tariffs
  - GHG cap & trade program
  - AMM opportunities

# GMI Coal Mines Subcommittee

- **Coal Subcommittee members include the Ministry of Energy and KazTransGas**
  - Kazakhstan is an important member of GMI
- **US EPA in support of GMI (US EPA) funded studies on CMM project opportunities:**
  - 2011 Deep Gassy Coal Mines of Karaganda Coal Basin
  - 2013 Prefeasibility Study for Arcelor Mittal Coal Mines
  - 2015 Coal Mine Methane Policy in Kazakhstan
  - 2015 GMI Country Profile Update
- **Best Practices Guide for Effective Drainage and Use (Russian language version)**
  - Collaborative effort between GMI and UNECE



# CMM Activities in Kazakhstan – September 2015 Workshop

- **Promoting Coal Mine Methane (CMM) for Energy, Safety, and the Environment: Legislation and Project Development in Kazakhstan**
  - Hosted in Astana by US EPA and the Ministry of Energy of Kazakhstan
  - Presentation topics included policy mechanisms, CMM resource assessment, international best practices, and CMM project development
  - Roundtable discussions held
  - Meetings with government



Photo courtesy of PNNL

# CMM Activities in Kazakhstan – June 2016 Meetings

- **Promoting CMM for Energy, Safety, and the Environment: Legislation and Project Development in Kazakhstan**
  - Topics covered: policy mechanisms, CMM/AMM ownership and resource assessment, distributed generation, carbon markets, international best practices, and CMM project development
  - Participants included Pacific Northwest National Laboratory and GMI coal subcommittee members



Photo courtesy of PNNL

# CMM Activities in Kazakhstan – June 2016 Meetings

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- **Promoting CMM for Energy, Safety, and the Environment: Legislation and Project Development in Kazakhstan**
  - US EPA met with the following groups in Karaganda:
    - Karaganda Research and Development Institute of Industrial Safety
    - Karagandalikvidshakht
    - Arcelor Mittal
    - Government of Karaganda Region
  - US EPA met with the following groups in Astana:
    - Ministry of Energy
      - Climate Change Department, Department of Renewable Energy, Department for Electric Power and Coal Industry
    - Committee on Geology and Subsoil Use, Ministry of Investment and Development
    - KEGOC Dept. of Development of the National Electric Grid
    - KazEnergy
    - U.S. AID





# CMM Activities in Kazakhstan – October 2016 Workshop

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- **Best Practice Guidance for Effective Methane Drainage and Use in Coal Mines**
  - Hosted by US EPA and UNECE in Karaganda
  - Topics included:
    - GMI/UNECE partnership and recent activities in Kazakhstan
    - Best Practices Guide overview
    - State of CMM sector in Kazakhstan
    - Best practices in CMM utilization with international case studies
  - Roundtable discussions held with industry and government
    - Continued discussions surrounding CMM policies and project risk assessment

# Proposed Changes to the Mining Code

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- Addresses ownership, licensing, taxation, and royalties
- CMM currently considered “associated gas” with mining activities and not included in definition of a natural resource
  - APG utilization in petroleum section is currently mandated
- AMM not included in language
- KZ gas licenses requires a reserves analysis
- Questions to be answered:
  - Will a gas license be required together with a coal license?
  - Can CMM license be transferred to AMM license?
  - How do you separate CBM and CMM rules?



# Feed-in Tariff (FIT) Incentive

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- Adopted in 2013 to support renewable energy producers
- Approved Tariffs – June 2014
  - Solar projects = \$0.07 USD (22.68 KZT)/kW-hr
  - Wind projects = \$0.10 USD (34.61 KZT)/kW-hr
  - Small hydro projects = \$0.05 USD (16.71 KZT)/kW-hr
  - Biogas projects = \$0.10 USD (32.23 KZT)/kW-hr
- Requires connection to the electric grid and a purchase power contract
- Applicability to CMM/AMM Projects
  - Consider CMM/AMM an eligible renewable energy resource
  - Establish feed-in tariff price for CMM/AMM
- Program may be replaced in 2018 by Renewable Portfolio Standard
  - Renewable energy auctions would replace FIT

# Domestic GHG Market Incentives

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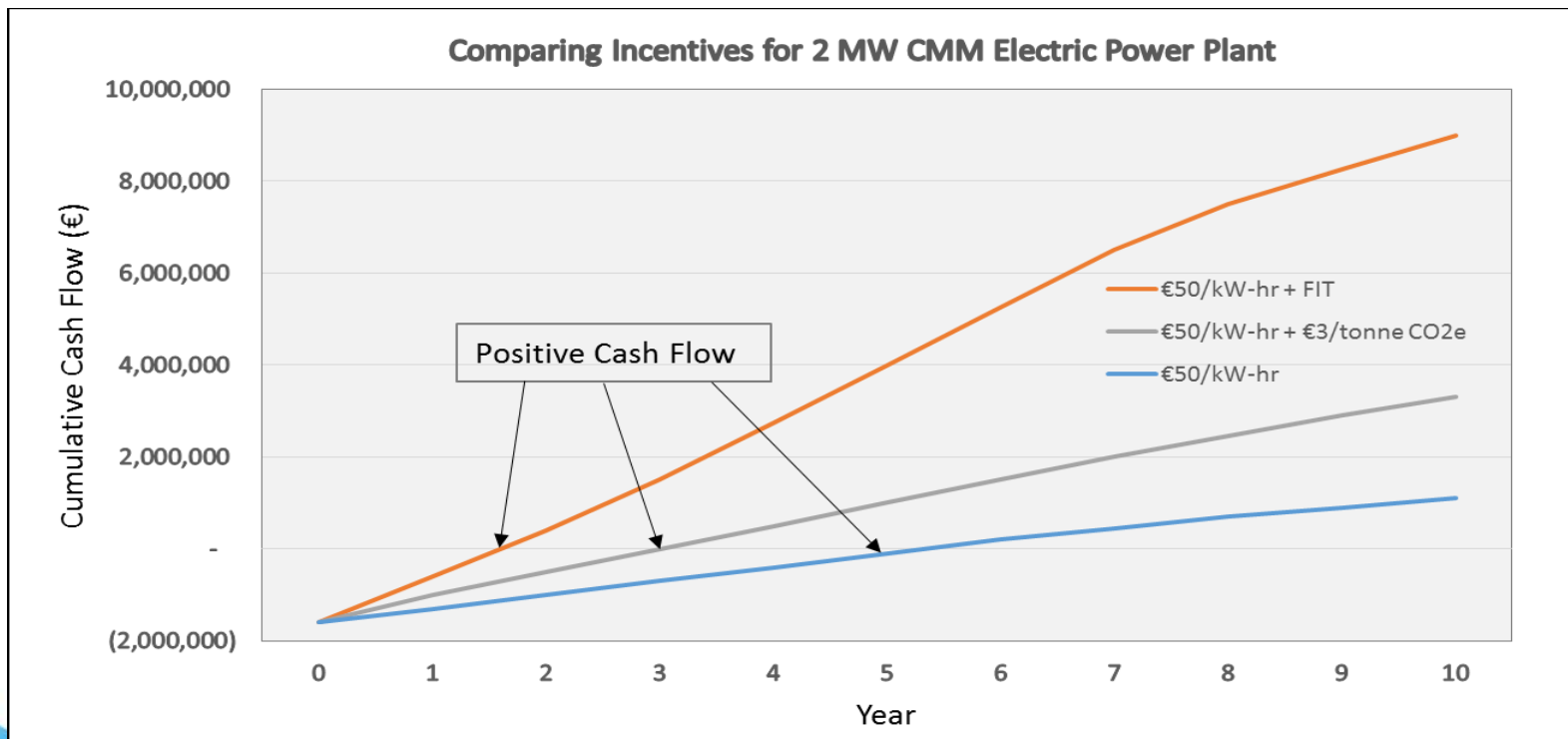
- March 2016 - Phase III of Cap & Trade Program delayed until 2018
  - Allowances traded at \$2.06 in 2015
    - Currently no demand for offsets, only 35 trades in 2015
- Mine methane considered eligible offset type
  - No new CMM protocol in development
  - Program will accept ACM0008 methodology
- Steps for project approval by government
  - Project package submittal includes:
    - resource assessment and financial analysis, signed agreements with coal mine, developer, and investors, purchase power agreements, and a completed project design document

# Domestic GHG Market Incentives

- Other domestic GHG market drivers include National Determined Contribution (NDC)
  - Kazakhstan signed and expected to ratify by the end of 2016, when it will begin to work out the details of implementation
  - Reduce GHG emissions 10% below 1990 levels by 2030
    - Unconditional target (including LULUCF) is 15% below 1990 levels by 2030
  - Conditional targets of 20% below and 25% below 1990 levels (incl. LULUCF)
    - These targets are subject to “additional international investments, access to low carbon technologies transfer mechanism, and green climate funds...”
- Projections:
  - GHG emissions are expected to increase from 2012 to 2030
  - Methane may become regulated in future ETS

# Impacts of Incentives on CMM Electric Power Projects

- “Embedded” renewable energy the preferred option for CMM power projects
  - Technical issues with grid interconnect
  - Grid-based electricity sales not economic



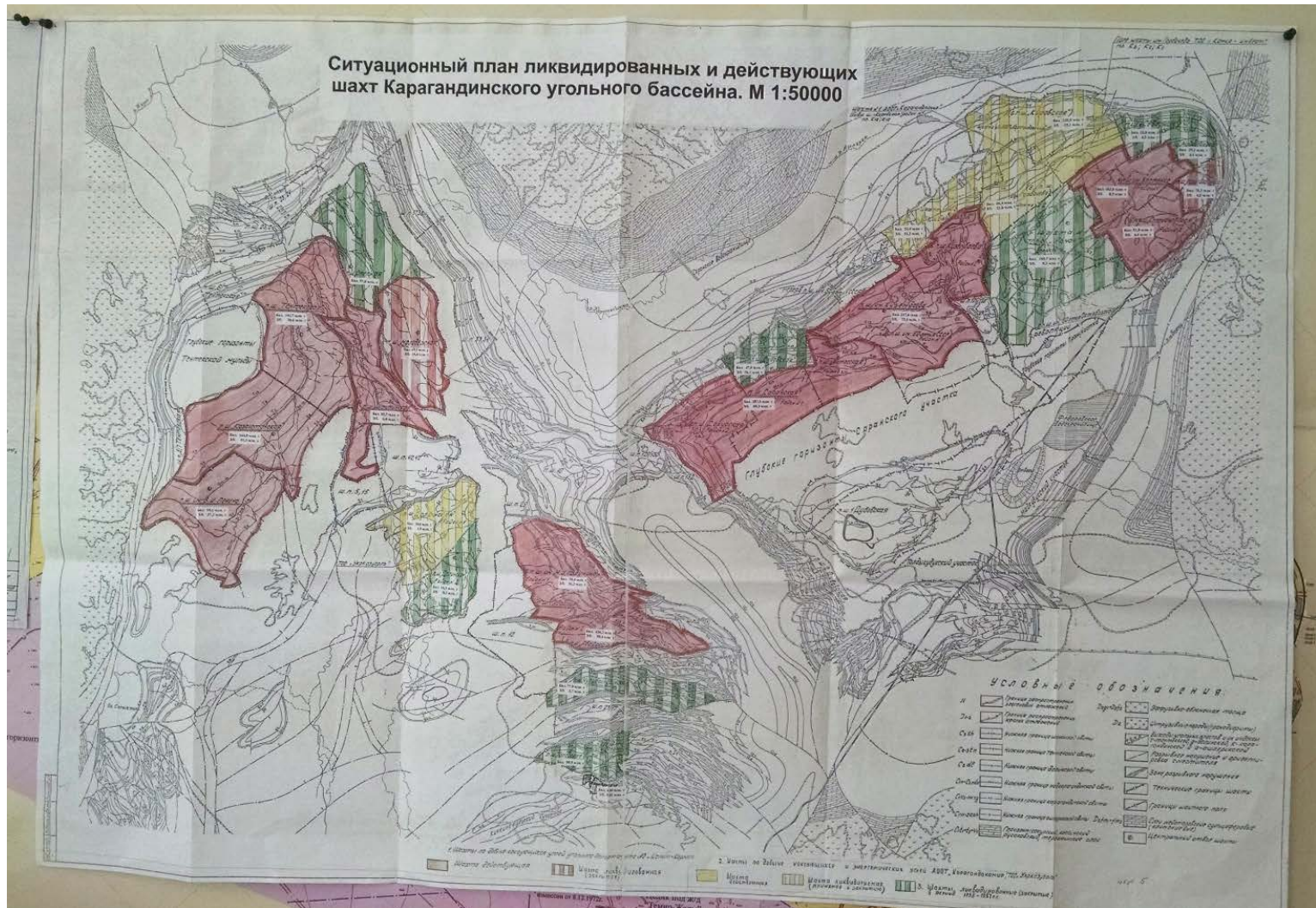
# AMM Project Opportunities

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- Karagandalikvidshakht manages majority of abandoned coal mines (13) in Karaganda region
  - Mined closed from 1995-2007
  - 5 mines have flooded, 7 mines continue to emit methane
  - Methane measurements at “Mine named after 50-year anniversary of October Revolution” show methane concentrations up to 75% CH<sub>4</sub>
- Arcelor Mittal controls 3 abandoned mines (embedded together with their active underground mines)
  - Dewatering at active mines keeps abandoned mines from flooding
- Karagandalikvidshakht interested in training on how to conduct AMM resource assessments
- Future training on mine closure techniques could ensure that mines are closed in a way that prepares them for utilization projects in the future
- Further clarity needed for AMM ownership



# AMM Project Opportunities – Abandoned Mines Adjacent to Active Coal Mines





# AMM Project Opportunities – Existing Vent Pipes



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# Conclusions and Implications for Kazakhstan

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- International commitment to reduce CMM emissions under the NDC framework
- Advancement of Kazakhstan's domestic ETS would support linking to other international carbon markets
- FIT a valuable incentive, but changes are needed to include embedded CMM projects
- Exchanges on best practices and peer-to-peer connections accelerate adoption of best practices
- Karagandalikvidshakht is eager to view AMM as a project opportunity rather than just a safety expense
- Implement CMM project as part of Future Energy Expo 2017?

# For More Information

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