



# Methane to Markets

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***Global Overview of Policies Affecting  
Coal Mine Methane (CMM) Recovery and Utilization***

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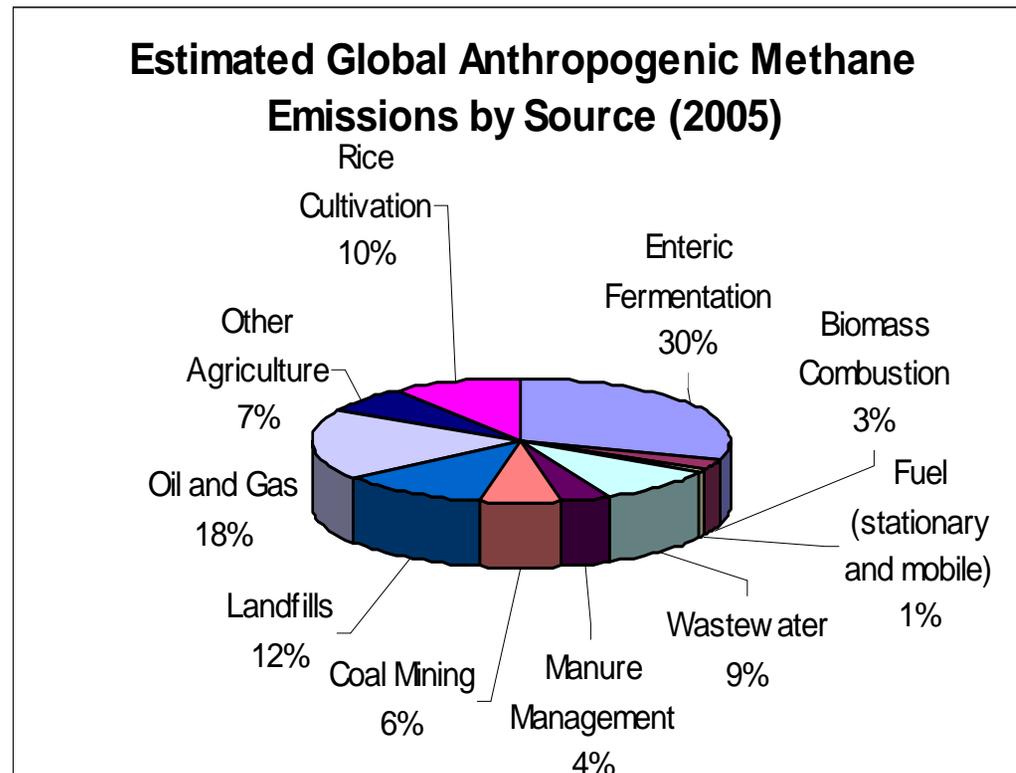
## Outline

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- Introduction
- Policies that support CMM project development
- Examples of approaches taken by coal-producing countries
  - Australia
  - US
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- Conclusions: Implications for Mongolia

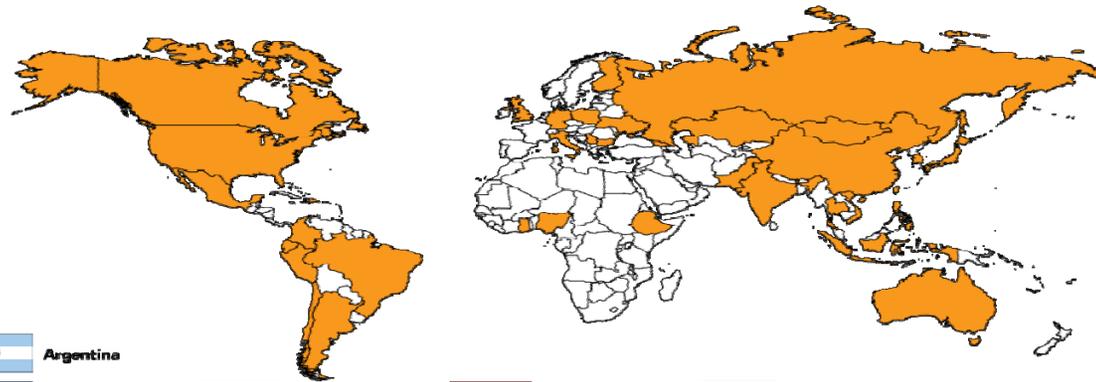
# Introduction: Methane is a Key Greenhouse Gas

- 2nd most important greenhouse gas behind CO<sub>2</sub>
- Methane's global warming potential (GWP) = 23
- Relatively short atmospheric lifetime: ~12 years



# Introduction: Methane to Markets Partnership

- International public-private partnership (established in 2004) to reduce greenhouse gas emissions by increasing the capture and use of methane.
- Coal mines, landfills, agriculture, oil & gas



# US EPA's Coalbed Methane Outreach Program



- Voluntary program since 1994
  - Part of EPA's Climate Change Division
- Our mission
  - To promote the profitable recovery and use of coal mine methane by working cooperatively with coal companies and related industries
  - Domestic and international outreach
  - Collect information, develop analytical tools, conduct pre-feasibility and feasibility studies, support technology demonstration
- Our focus
  - Greenhouse gas emission reduction opportunities: coal mine methane (CMM) – methane released from mining activities
  - We do not focus on coalbed methane (CBM) from unmined coal seams

## Policies that support CMM recovery and utilization

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- Different roles for different governmental levels may be appropriate
  - Central (national) or state (province)
- Clear roles are important
  - Inconsistent or conflicting state or local level regulations may cause confusion and provide negative incentives

# A range of policies can support CMM recovery and utilization

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1. Set regulatory requirements - options include:
  - Require mitigation of CMM emissions (e.g., require oxidization or flaring)
  - Require recover and use of CMM for energy
  - Require use of a certain technology
  - Set an emissions or recovery standard (i.e., “best practices”)
2. Include CMM under a greenhouse gas emissions “cap”
  - Emissions limit for total greenhouse gases at a state, regional, or national level
  - A market-based system could allow trading of emissions reductions
3. Include CMM as a possible “offset” under an emissions trading program
  - Sources required to reduce greenhouse gas emissions could pay for emissions reductions from CMM projects.

## A range of policies can support CMM recovery and utilization (2)

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- Establish financial incentives:
  - Provide subsidies for CMM-generated power and/or CMM gas that is recovered and used
  - Provide tax breaks to CMM gas producers or project developers
  - Provide price guarantees or other incentives, such as:
    - Price guarantee for CMM-generated electricity
    - “Renewable” energy portfolio standard requiring certain percentage of energy to be provided from mix of sources
- Provide research and development funding
- Support technology demonstration projects
- Support development of infrastructure
  - E.g., natural gas pipelines or LNG facilities

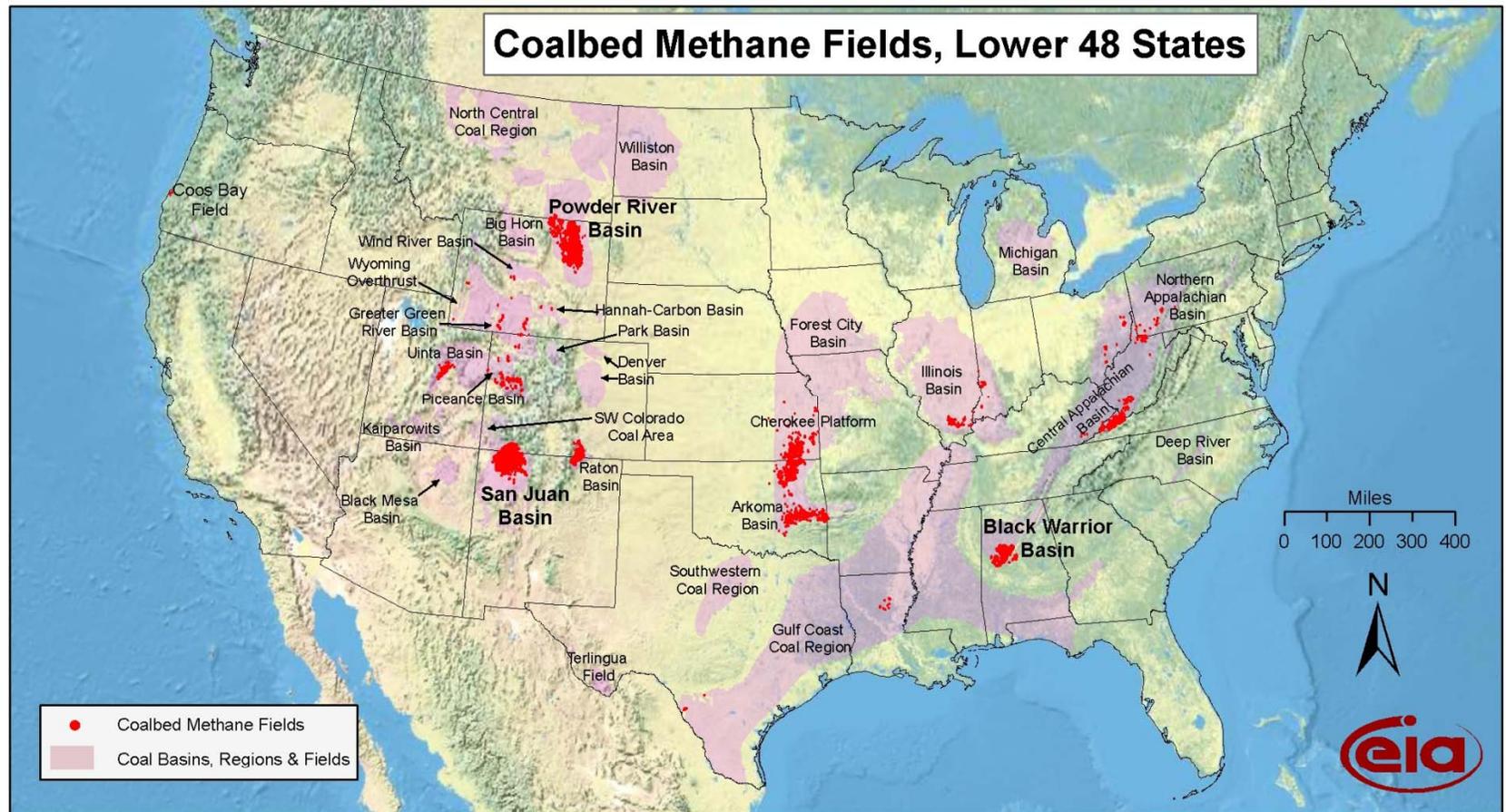
# Policies must be clear about gas ownership and applicability

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- Ownership of coal seam gas must be clarified before, during, and after mining. Potential parties with a claim to the gas include:
  - Mine operator
  - Owner / lessee of coal estate
  - Owner / lessee of gas estate
  - Surface owner
- Ownership of carbon emission reduction credits must also be clarified and legally established.
  - Statutes or regulations may be silent about carbon credits because they pre-date the existence of a carbon market.
- Legal oversight or regulation of a CMM project may depend on other factors:
  - **End use**: Ventilation, flaring, and energy recovery of CMM may all be considered distinct activities or covered under different statutes or regulatory agencies.
  - **Status of mine**: Operating (active) mines or abandoned (closed) mines



# United States of America



Source: Energy Information Administration based on data from USGS and various published studies  
Updated: April 8, 2009



## US federal government role

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- Not a signatory to Kyoto Protocol
- Congress has considered but has not passed federal legislation to limit national greenhouse gas emissions. Some proposals include CMM as potential offsets under a “cap and trade” program.
- Federal tax incentives for CBM/CMM gas production expired.
- Funding (Department of Energy) for research and development on carbon capture and sequestration, fossil energy exploration and production
- Environmental Protection Agency promotes cost-effective recovery and use of coal mine methane through voluntary industry outreach (CMOP)
  - Funded technology demonstration of ventilation air methane project at
  - Supports pre-feasibility and feasibility studies; technical, economic analyses
  - Supports capacity building and project development abroad through Methane to Markets Partnership

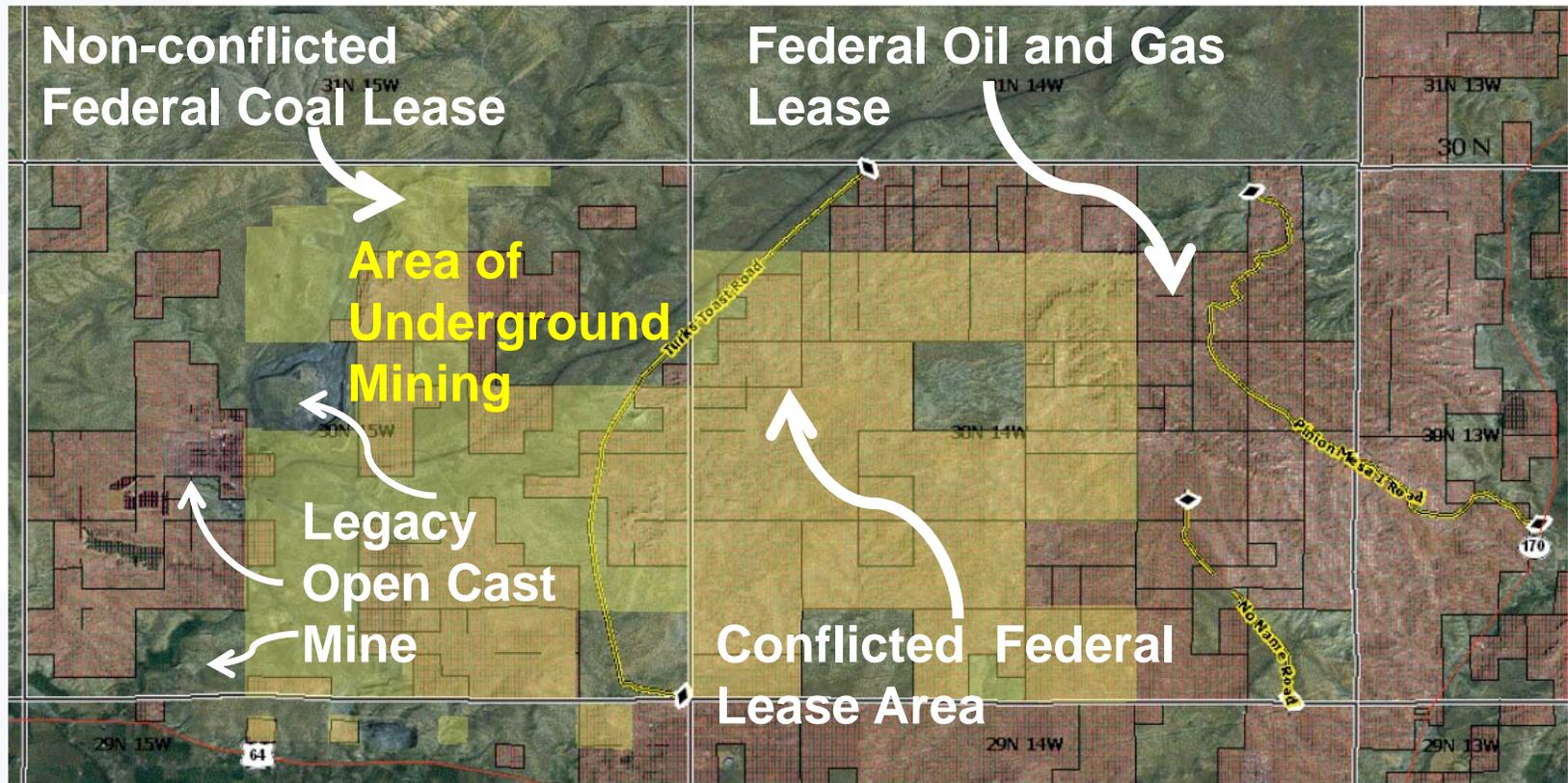


## USA: legal framework

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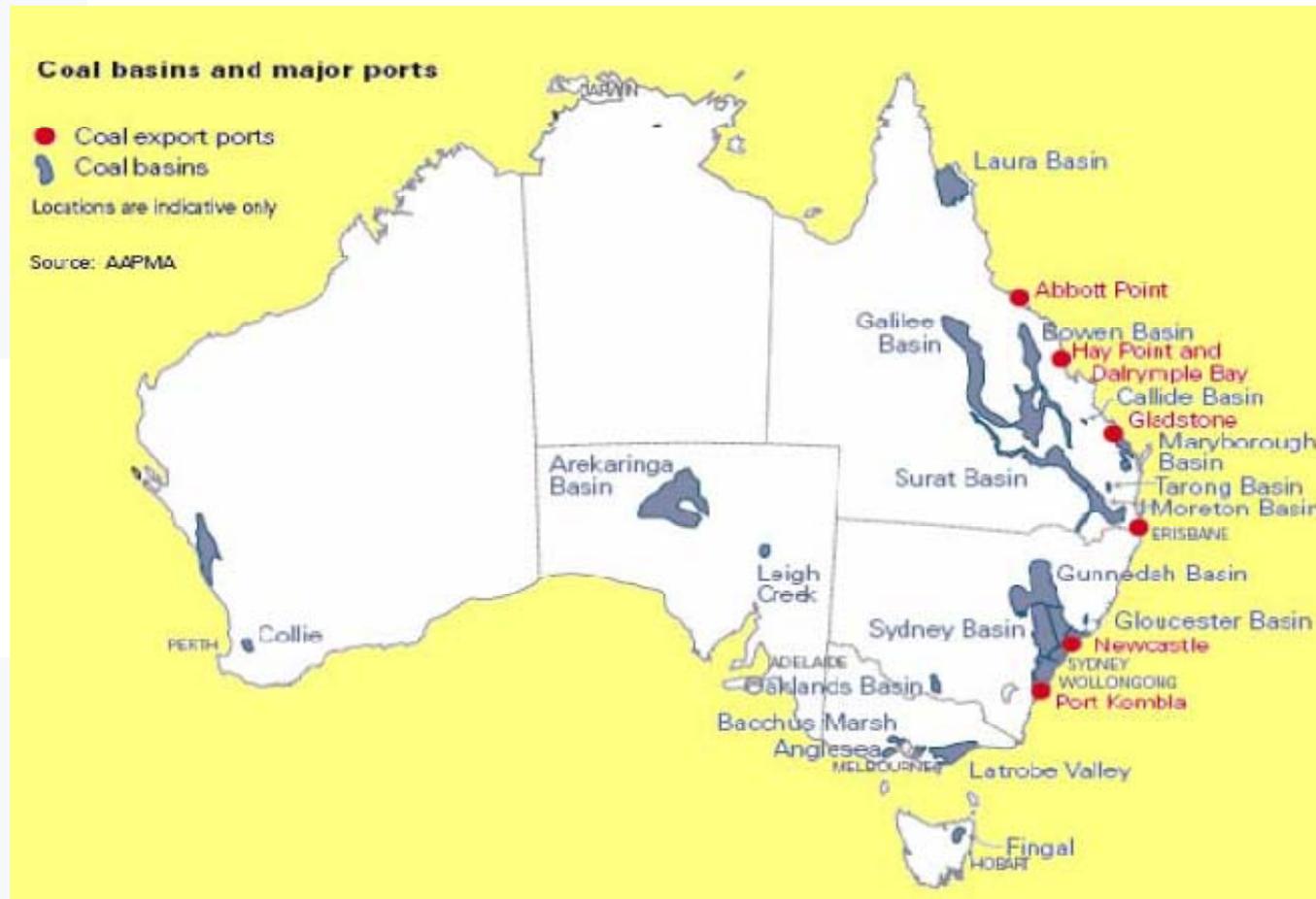
- On Federal lands (much of western US), federal government owns mineral leases (coal, oil, gas).
  - Oil & gas estates are separate from coal estate, so the right to use CMM is not automatically granted to the coal mine.
  - Currently, no regulatory policy requires or encourages CMM to be used or destroyed (flared).
  - Extensive coalbed methane production and surface mining co-exist in Wyoming's Powder River Basin, creating conflicts.
    - US government agency (Bureau of Land Management) created an incentive (reduced royalty payments to the US government) to encourage pre-mine gas drainage prior to surface mining.
- On private (“fee”) lands, ownership of coal seam gas depends on laws of each state.
  - Several states have enacted legislation to clarify ownership.
  - In general, the coal mine has the right to the gas.
  - Many disputes are resolved through legal challenges and negotiations.

# Conflicting Ownership: Coal and Oil & Gas Leases in San Juan Basin New Mexico, USA





# Australia



# Australia

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- Active central government role
  - Signatory to Kyoto Protocol
  - Developing national Carbon Pollution Reduction Scheme (CPRS) that includes fugitive emissions from coal mines
  - Support for research: low-carbon technologies, carbon capture & storage
  - Financial support for domestic CMM projects
    - \$43.47 million to support CMM power generation at 4 sites
    - \$15.9 million grant funding for CMM project developers
  - International outreach: Methane to Markets Partner
    - Bilateral work with China on CMM includes feasibility study (power generation from Ventilation Air Methane) and technology demonstration (advanced gas capture techniques)



## Australia: legal framework

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- Strong role for states.
  - Each state has its own legal framework for regulating coal seam gas capture and use, resource ownership, leases, and licensing.
  - Queensland:
    - Coal mining lease does not provide rights to coal seam gas.
    - Mining and oil/gas leases can co-exist but royalties must be paid.
  - New South Wales:
    - Special lease arrangements are needed to permit extraction of coal seam gas. CMM is considered a byproduct of coal mining.
    - Pre-mining and post-mining drained CMM may not be vented: the gas must be flared or used.



# China





## China

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- Strong role of central government
- Signatory to Kyoto Protocol
  - Hosts many Clean Development Mechanism projects: 27 registered CMM projects
  - National Development Reform Commission (NDRC) is responsible agency for approving CDM projects.
- 11<sup>th</sup> Five Year Plan encouraged CBM / CMM Development
  - National output to reach 10 billion cubic meters by 2010
  - Price management for CMM transported via city pipelines
  - Electricity from CMM prioritized for the grid and a subsidized price
  - Financial subsidies for onsite use, residential use, chemical feedstock
- State Council requires CMM drainage at coal mines
- Ministry of Environmental Protection establishes emission standard for CBM / CMM (April 2008)
  - Prohibits emission of methane from CBM drainage systems
  - CMM drainage systems with > 30% methane concentration must use or flare the gas



## China: legal framework

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- Central government owns the rights to CMM.
- CMM is considered an associated mineral of coal, so CMM rights are included with coal exploration and production.
- For CDM projects, foreign ownership is limited to 49%.
- Central government requires fee: 2% of carbon credits.

## Conclusions: Implications for Mongolia

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- There are a broad range of government policies, regulations, and incentives that can be used to promote CMM projects
- Countries with successful CMM and CBM industries have taken very different approaches: there is no one “right” way.
- Legal and regulatory frameworks, particularly with respect to ownership, are the most important (and often difficult) to assess.



Methane to Markets

# Thank you!

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