

# Coal Technical and Policy Session Summary

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## Policy and regulatory impacts on project development

- Perspectives presented from several countries (Australia, China, India, Mexico, Ukraine).
- Case studies were presented.
- Much of the regulation relating to CMM capture and use involves legislation that has been implemented in order to meet Kyoto protocol commitments.
- National or state/regional programs have also been enacted to provide incentives for project development, such as tax incentives, grants, and subsidies. Additionally, various trading schemes are in place or are being developed to encourage project development. However, many challenges still exist, such as:
  - Incentive programs not enough to bridge the gap between initial funding and total upfront costs; more investment required
  - Investments restricted in many areas due to post-2012 uncertainty
  - Ambiguous allocation or transfer of methane rights
  - Limited access to gas pipeline networks
  - Low coal permeability
  - CDM process is complicated and may slow development in some case

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## Trends in Project Development

Some country-specific trends include:

- Previous CBM policy in India spurred the development of CBM as an energy source, but now CMM is a priority area of focus. There are not yet specific CMM development regulations.
- China's energy market is taking note of CMM as a valuable energy resource; a large power project has been developed, and CNG and LNG projects are likely to become commonplace.
- Project development in the U.S. is primarily driven by natural gas and electricity prices; Voluntary carbon market impacts on CMM project development have been minimal.
- Poland has a unique natural gas pipeline system that should allow widespread use of CMM, but a lack of government incentives and plan for development leaves potential for growth uncertain.
- China: Carbon market is developed, but CDM process has slowed development, many investors and mine owners have suggested voluntary market.

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## Technology Development

### Rich Gas:

- Fuel Cell Stacks (South Africa) for CH<sub>4</sub> concentrations  $\geq$  60%
- Dual Fuel Engines that can use compressed natural gas (from CBM) to power Indian railways
- Modular power generation systems (operational projects in China, UK, and Australia)

### Lean Gas or Ventilation Air Methane (VAM):

- Thermal Oxidation (such as VOCSIDIZER or VAMOX)
  - Full scale and pilot projects in Australia, China, and U.S.
  - Concentrations as low as 0.3% CH<sub>4</sub>
- Catalytic Oxidation (such as VAMCAT)
  - Gas turbine with a catalytic combustor and a recuperator
  - Concentrations around 1% CH<sub>4</sub>
  - Prototype tested and to be moved to Chinese mine in 2011 for trials

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## **CMM drainage and utilization best practices**

- Voluntary effort by Methane to Markets, UN Economic Commission for Europe, and US EPA to develop comprehensive set of recommended principles and standards for methane recovery and utilisation.
- Safety should be the main driver of CMM drainage.
- Discussed best mine practices for maintaining high-purity gas, which yields safer mining environment (selection of drainage system, installation standards, system maintenance, monitoring, and management).
- Discussed best drilling practices based on results from modelling study.
- Discussed case studies of model projects in China.