

Preferential Policy and International Action of CBM/CMM Development in China

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Outline

- 1. Preferential Policies**
- 2. International Actions**
- 3. CBM/CMM Development in China**
- 4. Conclusions**



1. Preferential Policies for CBM/CMM Development

(1) Fund for Coal Mine Safety

Since 2005 the Central Government have provided coal mining companies with 3 billion RMB of special fund for mine safety, in particular for coal mine gas control projects.

- Allow coal mining companies to raise mine safety funds from incomes based on tons of coal sales before pay taxes.
- Raised 50 RMB per ton of coal in many companies including the Huainan Coal Mining Company of Anhui province, Furong Coal Company of Sichuan province and Jincheng Anthracite Coal Company of Shanxi province.



(2) Financial Subsidy

Providing 0.2 Yuan/m³ subsidy for CMM utilization. And providing 0.25 Yuan/kWh subsidy for incentives CBM/CMM Utilization for Power Generation, same level for biomass power generation.

- Since 2007, the central government has awarded subsidies of 1.839 billion yuan to support for CBM/CMM development, which accounted for 9.195 billion cubic meters.
- Shanxi, Jiangxi, Sichuan, Yunnan and other provinces have received accordingly power generation subsidence with 0.509 Yuan/kW , 0.622 Yuan/kW , 0.583 Yuan/kW and 0.505 Yuan/kW.



(3) Preferential Tax

- Exempt prospecting and mining right fee of CBM development, no levy royalty up to 2020.
- Return VAT on CBM/CMM sale to coal mining companies, and no income-tax.



(4) National CBM/CMM Development & Utilization Plan

By 2015, the CBM/CMM development volume should reach 30 billion cubic meters. The CBM recovery with surface well should reach 16 billion cubic meters, which will be utilized outright. CMM drainage Volume should be up to 14 billion cubic meters, which utilization rate will be more than 60%. Gas power generation capacity is over 2.85 million kW, the number of civilian users is over 3.2 million.

- “12th Five-Year ”Plan made it clear that coal mine gas mainly used for on-site power generation and civil uses; high concentration CMM should be used fully.
- low concentration CMM power generation technology would be promoted; accelerated the implementation of the VAM projects demonstration and the gas distributed projects demonstration.
- It will be strengthened that the key technology and equipment research on the use of the low concentration CMM and VAM utilization.



2. International Action in CBM/CMM Development

International Cooperation for CBM/CMM Development in China

- China Coalbed Methane Clearinghouse
- GMI
- CDM
- APP
- Other International Cooperation Projects



(1) China Coalbed Methane Clearinghouse



China Coalbed Methane Clearinghouse was established in 1994, A cooperative project office at CCII with support of the US A Environmental Protection Agency. A

Identifying potential CBM/CMM cooperation opportunities and undertaking pre-feasibility studies on CBM/CMM projects

- Technical reports, e.g. feasibility study reports, policy and economic study reports, technical assessment reports
- Projects with financial support of World Bank and Asian Development Bank and cooperated with other international organizations, governments and companies
- Organizing international CBM/CMM Conferences in China for technology cooperation
- Joining the Methane to Markets Partnership in 2004, changed into the new program - Global Methane Initiative (GMI) in 2010



2007 Methane to Markets Expo

- M2M Partnership, Initiated by USA 2004
- 4 Sectors
 - Coal
 - Landfill gas
 - Natural gas and oil
 - Agriculture
- 830 participants from 34 countries attended the Expo on Oct. 30 to Nov. 1, 2007, Beijing.
- Co-hosted by NDRC and USEPA, Organized by CCII.



Main Projects of CBM/CMM Development

- Study on CBM/CMM Development and Utilization Policies
- Study on CBM/CMM Economic Policy for the Twelfth Five-year Plan
- Research on Best Options and Policy Framework for CMM Utilization Demonstration of Power Generation Using Low Quality Coal Mine Methane
- Technical Assessment of Coal Mine Gas Recovery and Utilization in China
- CMM Power Generation Potential Market and Project Opportunity Research in China
- Low CMM and VAM Investigation Project in China
- Feasibility Study on VAM Utilization in Jincheng Anthracite Mining Group
- Feasibility Study for CBM Drainage in Anhe Coal Field
- Feasibility Study and Preliminary Design for CMM Drainage Technology Using in Coal Mine
- Feasibility Study on Low Quality CMM and VAM Utilization in Jiaomei Company of Henan Coal Chemical Industry Group
- Medium and Long-Term Plan for CBM/CMM Development and Utilization of Hebi Coal Industry Group
- Medium and Long-Term Plan for CBM/CMM Development and Utilization of Yangquan Coal Industry (Group) Co., Ltd
- Other projects



(2) GMI Mechanism

- The Initiative focuses on methane recovery and use opportunities in the agriculture (animal waste management), coal mine, landfill, and oil and gas system sectors.
- In the past five years, 9 CMM development and utilization projects were awarded in Chinese coal sectors, which greatly promote the development of CMM development and utilization. The information of projects in China are bellow:



Year	Project Developer	Title	Sector	Country
2010	China Coal Information Institute (CCII)	Further Promotion of M2M in Coal Sector of China	Coal	China
2009	China Coal Information Institute (CCII)	Technical Assessment of Coal Mine Gas Recovery and Utilization in China	Coal	China
2009	University of Colorado	Methane Emissions from Abandoned Coal Mines in China	Coal	China
2009	Guizhou International Cooperation Center for Environmental Protection	Coal Mine Methane (CMM) Recovery and Utilization Initiative In Guizhou Province, China	Coal	China
2008	Jackson Hole Center for Global Affairs	The Methane Connection: Coal Mining Safety & Clean Power Production in China	Coal	China
2008	Virginia Tech	Development of Guidelines & Evaluation Technical for Degassing Coal Mine Methane in Advance of Mining to Reduce Methane Emissions in the Southern Shanxi Province of China	Coal	China
2007	China Coal Information Institute (CCII)	Demonstration of power generation using low quality coal mine methane	Coal	China
2007	Australia's Commonwealth Scientific and Industrial Research Organization (CSIRO)	A feasibility study on mitigating and utilizing diluted mine methane by using a monolithic catalytic combustor at Tiefa	Coal	China
2007	Guizhou International Cooperation Center for Environmental Protection	Coal Mine Methane (CMM) Recovery and Utilization Initiative in Guizhou Province, China	Coal	China



Methane to Market Partnership in China (2007-2011)



The major results of the program included:

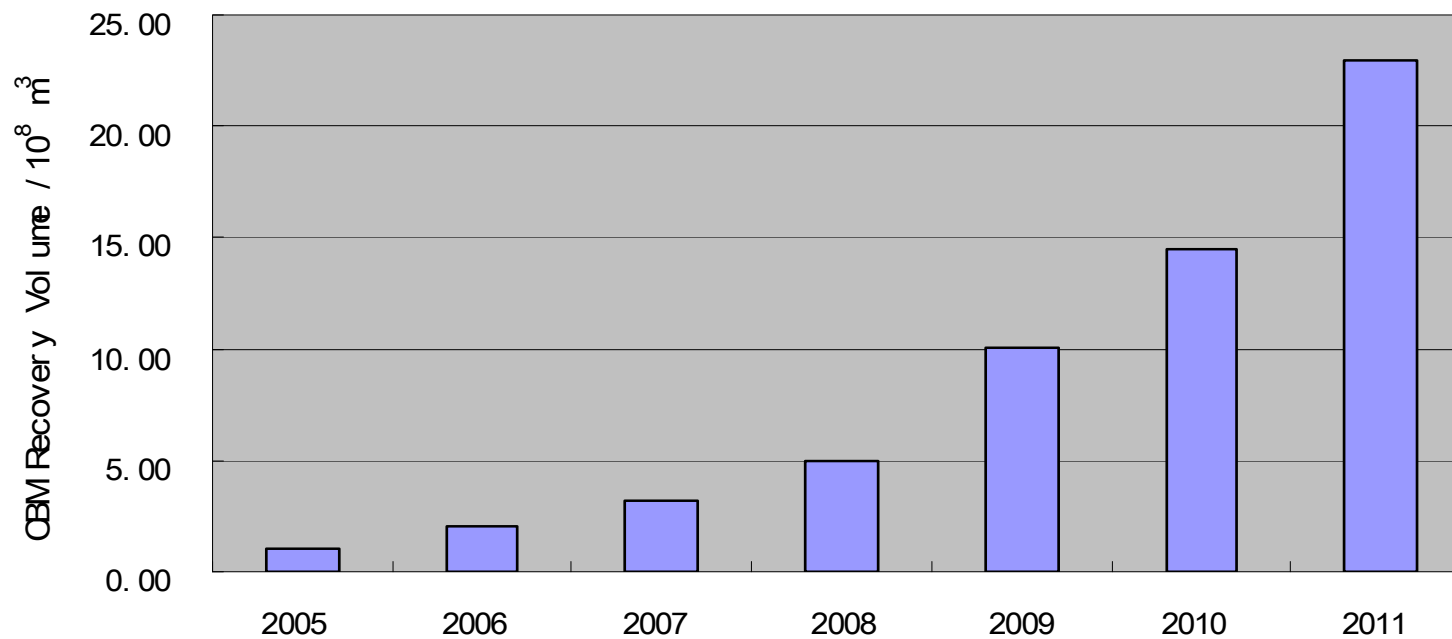
- completed 10 project feasibility reports and industry opportunity research reports
- held 4 technology workshops, and 6 international symposiums, hosted 4 large international conferences and expos, organized over 30 people abroad for study tours and exchange
- established CMM project database and the Chinese website of Methane to Markets, provided consulting services for over 100 enterprises and organizations
- published over 10 papers on domestic and international conferences and academic journals



3. CBM/CMM Development in China

(1) CBM Recovery with Surface Well

- 5,400 surface wells were drilled during the 11th Five-Year in China and produced 2.3 billion m³ of CBM in 2011.

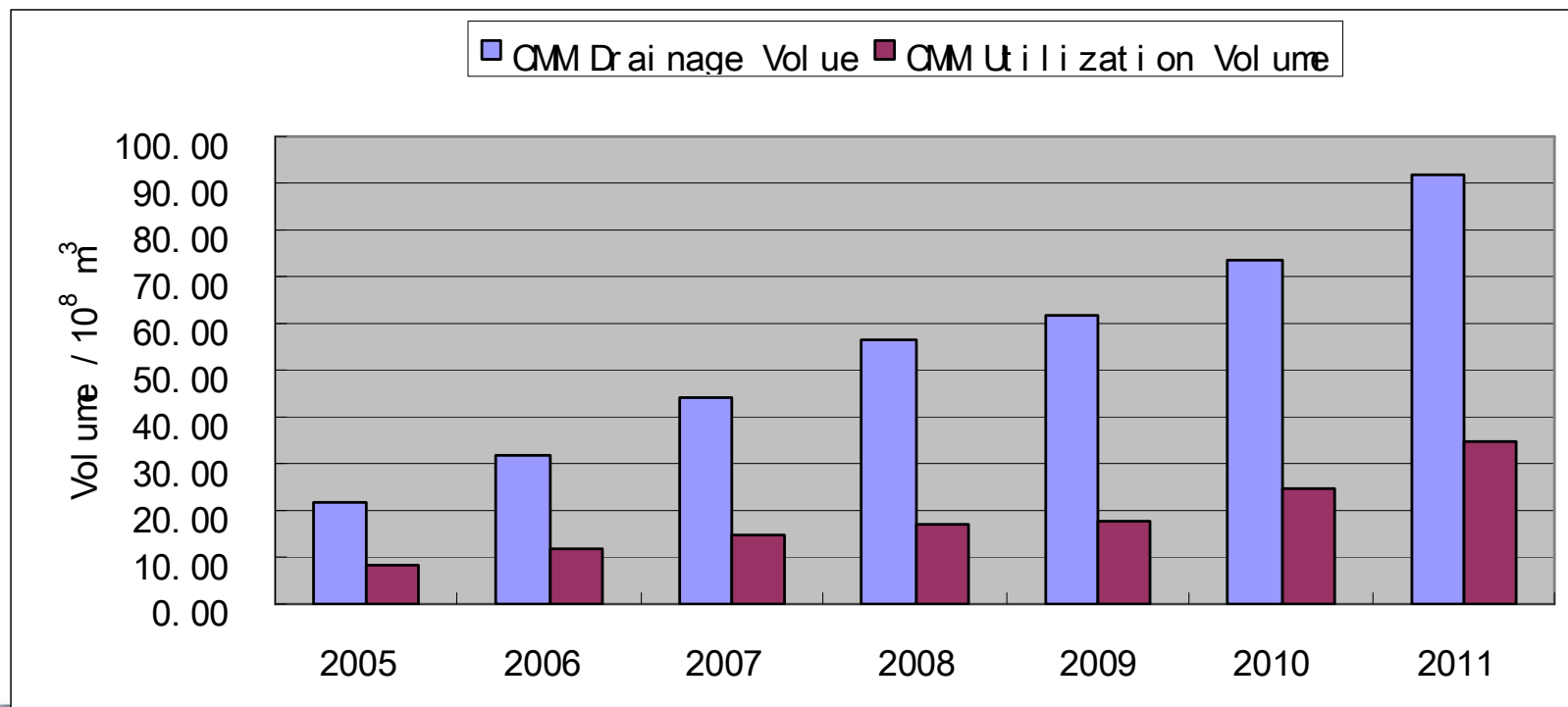


CBM Recovery with surface well from 2005 to 2011 in China



(2) CMM Drainage and Utilization

- Underground CMM drainage increased from 2.2 billion in 2005 to 9.2 billion m³ in 2011.
- The volume of CMM utilization: 3.5 billion m³ in 2011. About 5 billion m³ of gas are available for more gas utilization projects



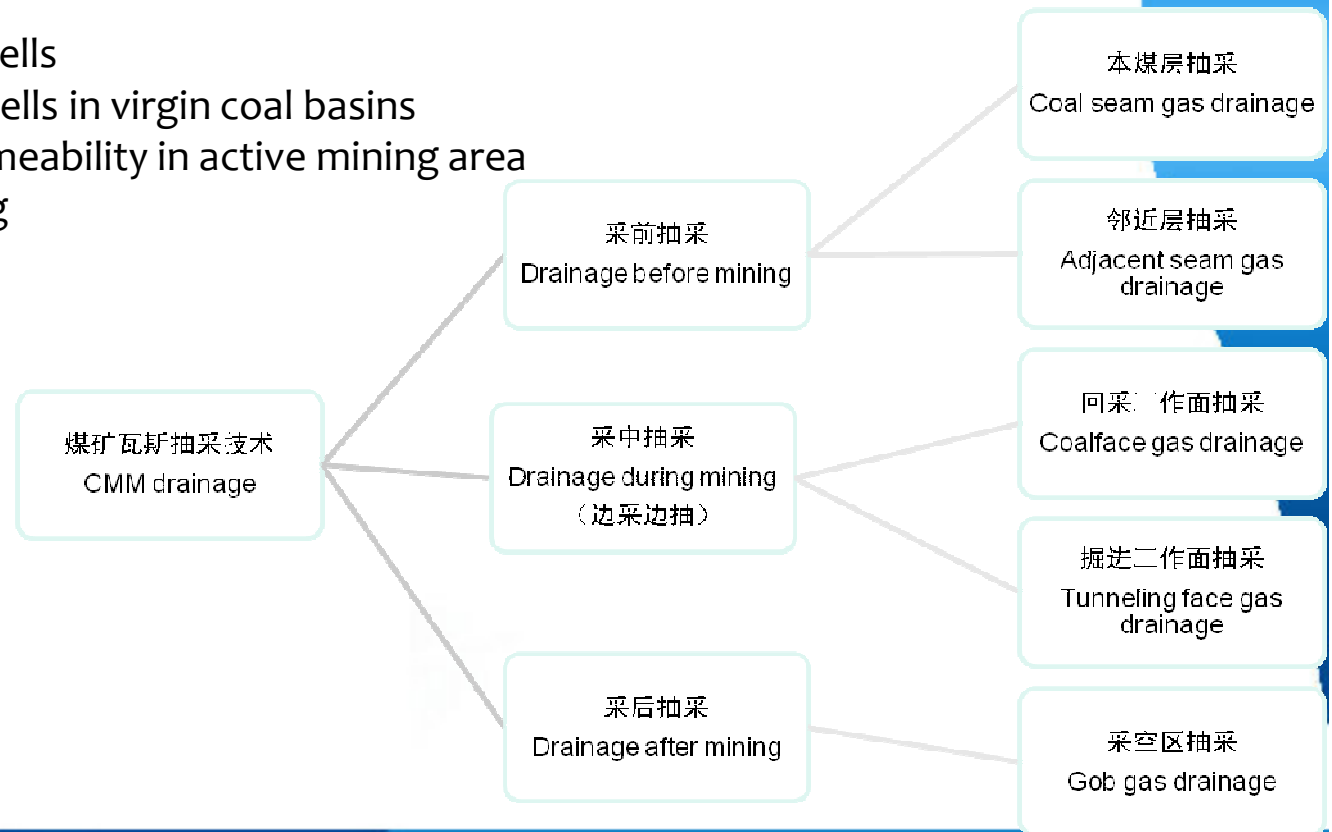
The CMM drainage and utilization volume from 2005 to 2011 (10⁸ m³)

(3)Improvements of CBM/CMM Development Technology

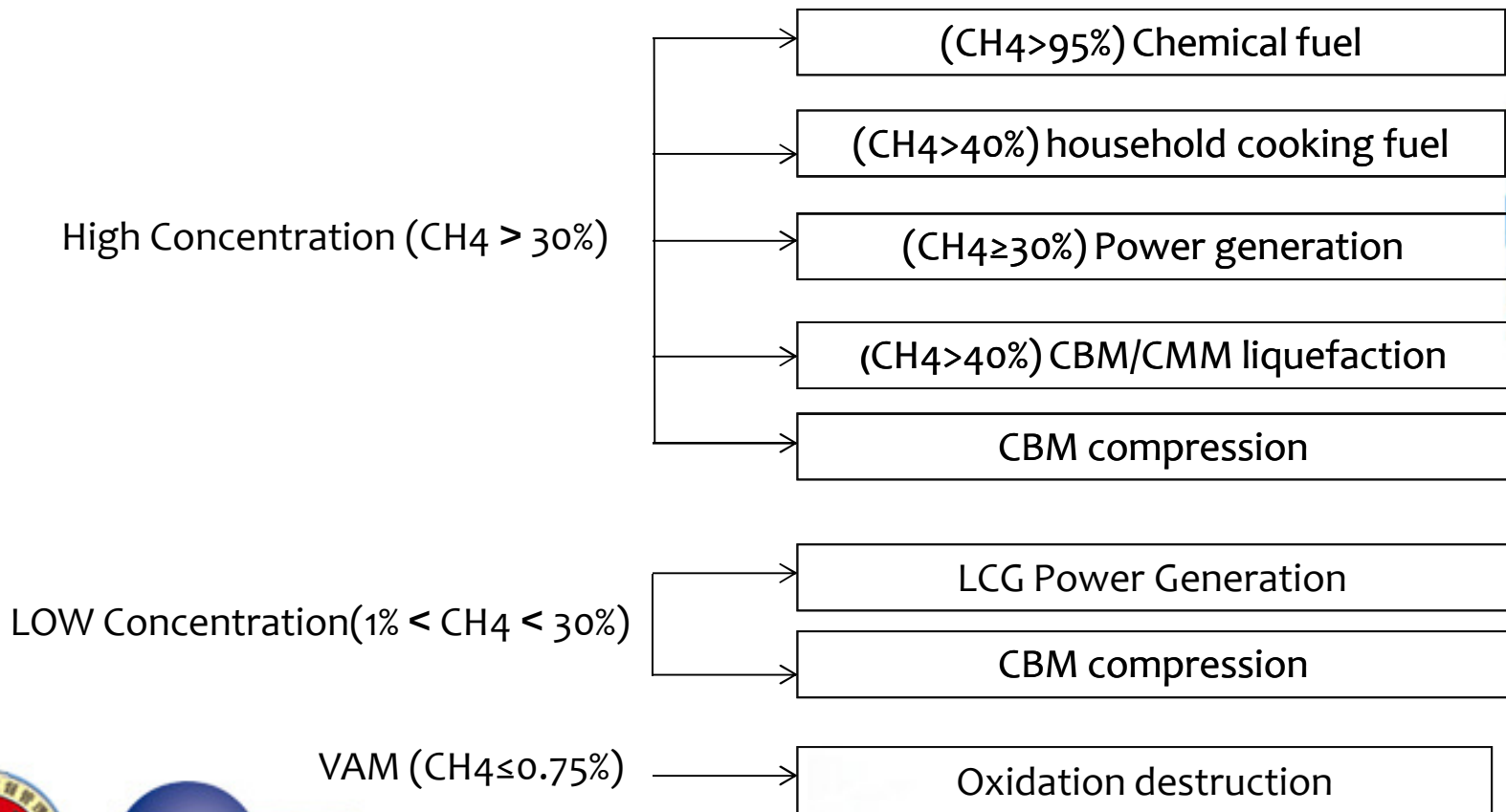
- Successful Implementation of key technologies, the multi-branch horizontal well drilling, underground long directional drilling, low concentration CMM and VAM utilization.

a. Options for CBM/CMM drainage in different area and coal mine

- CBM recovery from surface wells
- CBM recovery with surface wells in virgin coal basins
- Gob wells with increased permeability in active mining area
- Multi-lateral horizontal drilling



b. Options for CBM/CMM utilization in different concentration.



4. Conclusion

- The Chinese Government issued a series of preferential policies for development of gas recovery and utilization. More funds will be provided for CMM R&D projects. These policies will further encourage development and deployment of technologies to reduce fugitive methane emissions from coal mining.
- The International Cooperation Mechanism, such as GMI, which supported lots of Pre-feasibility research projects, greatly promote CBM/CMM development and fugitive methane emission reduction in china.
- With China's 12th Five-year Plan on CBM/CMM, CBM/CMM recovery will reach 30 billion m³ and utilization of CBM/CMM will reach 24 billion m³ annually in 2015, offering great opportunities for investment companies and technology owner to make investment and develop technical cooperation in CBM/CMM in China.





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