



Methane to Markets Subcommittee Report Mongolia



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Consortium**

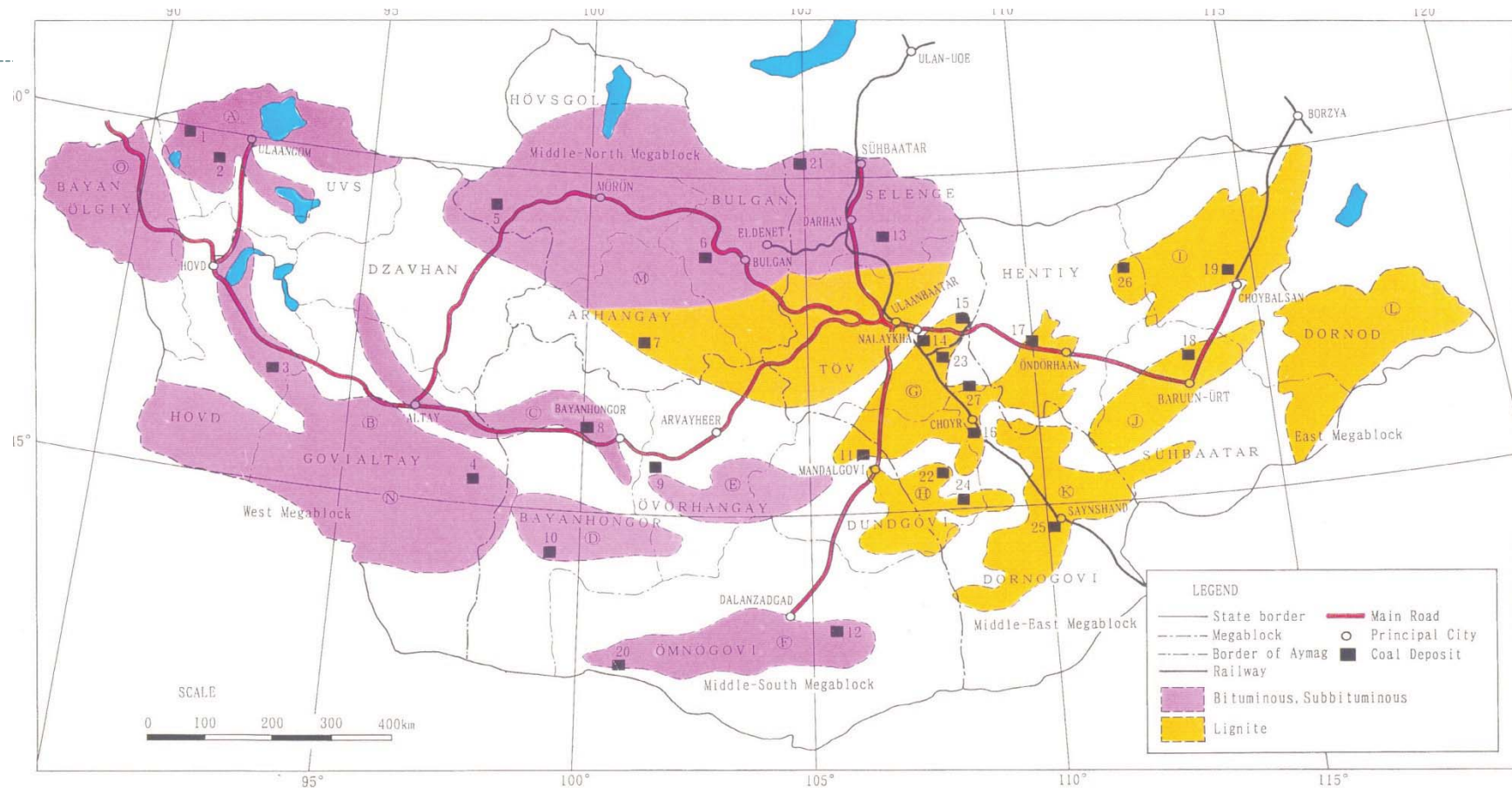
Beijing, October 21, 2010

Coal Mining in Mongolia



- Mongolia contains vast coal resources within 15 large-scale coal bearing basins
- There are around 320 coal deposits and occurrences (80 deposits and 240 occurrences)
- Total geological coal resources are estimated at approx.150 billion tons,
- Major coal deposits:
 - Tavantolgoi, Ulaan-Ovoo, Khushuut, Naryn Sukhait located close to Chinese border

Rank and location of coal occurring in Mongolia's coal basins



Names of basins

- (A): Kharkhiraa (C)
- (B): Mongol Altay (C)
- (C): South Khangay (P)
- (D): Big Bogdyn (J)
- (E): Ongiyngol (J)
- (F): South Govi (P)
- (G): Choir-Niarga (K)
- (H): Middle Govi (K)
- (K): Choybalsan (K)
- (L): Sukhe Bator (K)
- (M): East Govi (K)
- (N): Tamsak (K)
- (O): Orkhon-Selenge (J)
- (P): Altay-Chandmani (C)
- (Q): Bayan-Ulegei (C)

* C-Carboniferous, P-Permian, J-Jurassic, K-Cretaceous

Names of deposits

- | | | |
|--------------------------|-------------------------|------------------------|
| 1 Nuurshotgor Deposit | 11 Tevshingovi Deposit | 21 Ulaan-Ovoo Deposit |
| 2 Khartarvagatai Deposit | 12 Tavantologoi Deposit | 22 Khoot Deposit |
| 3 Khusheet Deposit | 13 Sharyngol Deposit | 23 Tsaidamuur Deposit |
| 4 Zeegt Deposit | 14 Nalaykha Deposit | 24 Ovdok-Huduk Deposit |
| 5 Mogoingol Deposit | 15 Baganuur Deposit | 25 Sainshand Deposit |
| 6 Saihan-Ovoo Deposit | 16 Shivee-Ovoo Deposit | 26 Hulstnuur Deposit |
| 7 Bayantsagaan Deposit | 17 Chandagantal Deposit | 27 Tugrugnuur Deposit |
| 8 Uburchuluut Deposit | 18 Talbulag Deposit | |
| 9 Bayanteeg Deposit | 19 Aduunchuluun Deposit | |
| 10 Shinjinst Deposit | 20 Naryns Hait Deposit | |

Why is the Mongolia interested in development CBM/CMM Utilization



- Potential to reduce Green House Gas emissions and reduce the global impacts of climate change.
- Opportunity to increase power generation and gas utilization whilst at the same time achieving improvements in GHG emissions
- Potential to improve mining safety
- CBM/CMM is a new and exciting area of further sustainable development of Mongolia
- CDM methodology, ACM0008 revised to include CMM recovery from open cast mines.

Coal production growth in Mongolia



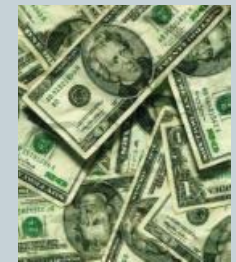
No.		2010	2012	2014	2016	2018	2020
1	Production, mln tonnes	14.0	18.0	25.0	35.0	43.0	50.0
2	Consumption of country, mln tonnes	6.45	8.0	10.3	11.1	12.3	13.0
3	Export , mln tonnes	7.55	10.0	14.7	23.9	30.7	37.0

Potential Methane Emissions from coal mining

No.		2010	2012	2014	2016	2018	2020
1	Methane Leakage, million m³	210.0	270.0	375.0	525.0	645.0	750.0

Main problem/barriers for recovery and use CBM/CMM development in Mongolia

- We did not have experienced companies in Mongolia to manage CBM/CMM work. But, now many company are looking for possibilities to get CDB/CMM development
- Lack of technology and technical knowledge (resources assessment, technology selection, formulating feasibility studies) . First technical knowledge got from EPA pre-feasibility study which was conducted in Nalaikh mining site.
- Lack of financing or capacity to obtain financing. But now donors such WB, ADB, European development Bank interested to finance in CBM/ CMM activities if there are available methane resources
- Lack of clarify about legal and regulatory issues, especially coal and gas ownership in Mongolia
- Lack of pilot projects to demonstrate site –specific economic recovery & utilization
- Not yet developed the investment opportunities in coal mine methane project in Nalaikh mine



How to remove the above problems/ barriers



- **Mobilize resources to Conduct Pre-feasibility and feasibility studies for CBM/CMM projects in Mongolia** (*identify promising sites for CMM project and conduct technical, economic and environmental feasibility assessments*)
- **Develop and implement Demonstration projects** (*including drilling to assess CMM resources, detailed site data collection, and selection of best technology for CMM utilization*)
- **Develop and improve existing oil and petroleum legislation** (*technical safety standards and degasification requirements, coal and gas ownership issues, possible tax and other incentives, and clarify data sharing procedures between Government and companies which drilled for CMM resources*)
- **Create national human capacity building** (*seminars/ workshops on CMM issues*)
- **Make resources mobilization for CMM projects** (*get support from donors , use the fund allocated for reduction of UB air pollution and get loan from Private sector*)

1. Current CMM activities in Mongolia



- Pre-feasibility study on methane recovery and utilization of Nalaikh mining financed by EPA. USA
- **Results:**
 - Geological and mine condition of Nalaikh mining identified
 - Preliminary assessment of economic and environment benefits of use methane in Nalaikh mining conducted
 - Preliminary study on methane resources in Nalaikh mining conducted
 - Methane recovery and utilization Project developed and submit it to Global Environment facility (GEF) for approval
 - National capacity of CBM has been promoted
 - Nalaikh mine power generation and heating project prepared.

Nalaikh mine power generation and heating project



- **Planned activities are:**
- Private coal company holds mining licenses in western part of Nalaikh deposit area
- Coal reserve of this area is 24 million tonnes
- Designed production capacity of mine will be 600,000 tones per year for service period of 17 years
- A 3.6 MW power plant anticipated
- Cost for implementation of power project are estimated to be US dollar 5 million
- Estimated annual emission reductions: 96,390 T CO₂ E
- This project will be needed to further elaborated



2.1. Current CMM activities in Mongolia



Drilling in Nalaikh mine area started up.

Results:

- The results of EPA's pre-feasibility study helps to identify three drilling sites in the Nalaikh mine area
- EPA's grant acted as seed money for developing CMM activities in Nalaikh mine
- Drilling in Nalaikh mining area being financed by Korean Gas Company of Republic of Korea

2.2. Current CMM activities in Mongolia



- Korean Gas Company is drilling in three sites in Nalaikh mine area in order to detailed estimate of methane resources

Participants in “Mongolia coal mine methane (CMM) project development” workshop examine samples from drilling at Nalaikh mine area





- Mongolian house where installed equipment for processing data of drilling in Nalaikh mine

Visit of participants in “Mongolia coal mine methane (CMM) project development “ workshop held in Ulaanbaatar, Mongolia on 30-31 September , 2010 to Nailakh site



3. Current CMM activities in Mongolia



- CMM workshop has organized in Mongolia
- Workshop sponsored by the US EPA in support of the Methane to Markets Partnership, in collaboration with Mongolia's Ministry of Nature, Environment and Tourism and Ministry of Mineral Resources and Fuel, organized by the Mongolian Nature and Environment Consortium August 30-31, 2010
- Main subject of workshop were:
 - Assessment and development of CMM resources
 - CMM end-uses
 - Policy and ownership issues
 - A moderated panel discussion regarding the needs of Mongolian mining companies such as regulatory clarity, technical assistance, and other issues.
 - Mongolian government plans for large scale development of coal resources and policies impacting methane recovery
- Workshop participants included representatives of government, private sector, universities, research institutes and NGOs. (35 persons)

Plan of activities 2011-2012



- Continue activities for detailed estimation of methane resources in Nalaikh mine
- Improving and creating basic legal frameworks, that ensures flexible economic incentives to develop CMM development and attract foreign direct investment in the related field
- Capacity building and international cooperation, focusing on personnel training, resource evaluation and investigation facilities
- Collect geological data from each basin. Geological information relates to coal rank, quality and depth of occurrence and thickness will be collated and used as a basis for resources
- Improve CMM emissions inventory assessment for each mining region

Thank you for your attention



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