



Current state of coal sector of Mongolia and its future trends

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CONTENT:

- **Current status coal sector of Mongolia** (coal resources, coal production, domestic coal consumption, coal exports, coal sector development tendencies, State policy in coal sector (in relation to investments , in relation to coal exports in relation to regulation to regulation framework
- **Status of CMM resources assessment and CMM emission inventory development of Mongolia** (main problem of CMM development including barriers and ways for solution)
-

Current status of coal sector of Mongolia

Coal is the main source of energy, steel and iron, LPG production and vitally important asset that drives the economic development of the country

Current state of coal sector of Mongolia

Mongolia's geological probable reserves of coal constitute 173,3 billion tons in total with prospects of further increase. There are over 300 deposits and occurrences in 15 different basins at which over 21,5 billion tons of coal reserves are determined through prospecting and detailed exploration work. These reserves place Mongolia among top 10 countries in terms of coal resources.

Mongolia's coal resources

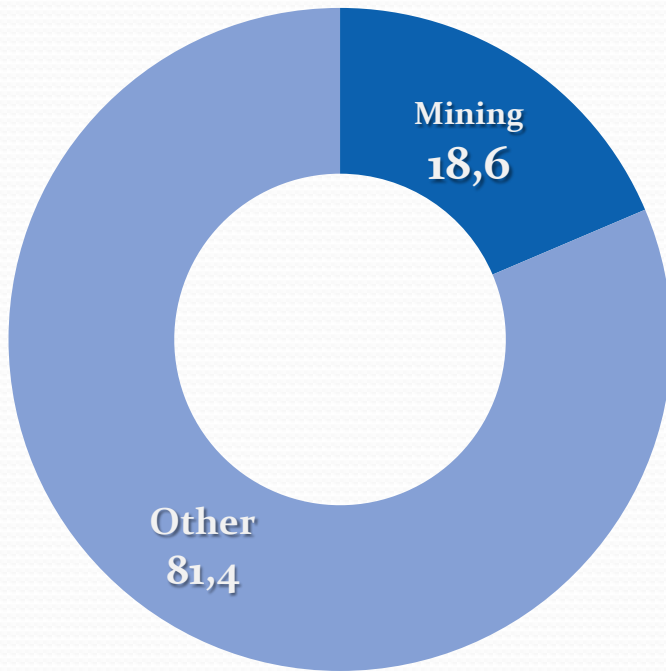
(173,3bt in probable reserves)



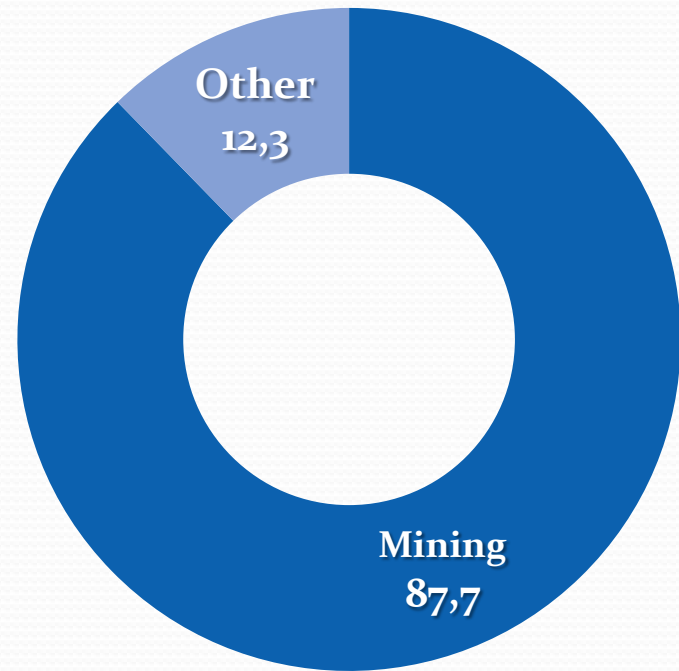
In 2012, **4,9bt** of coal reserves were newly registered in state registries

Current state of coal sector of Mongolia

The mining sector's share as of end of 2012:



Gross domestic product



Total exports

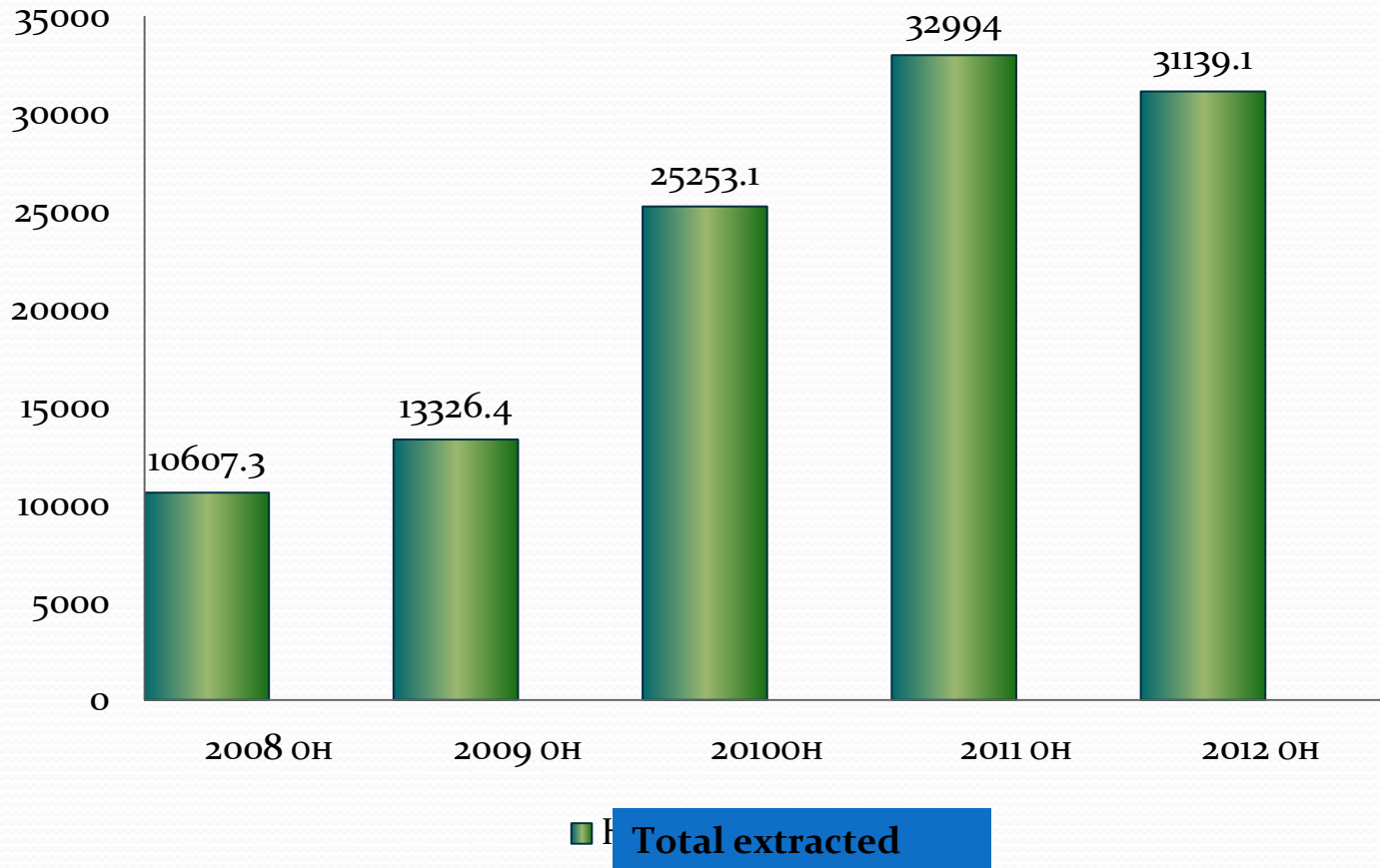
Current state of coal sector of Mongolia

In 2012, Mongolia produced **31,1 million tons of coal**, of which **20,5 million** were exported bringing in **MNT828.5 billion** to the central budget of the government

Current status of coal sector of Mongolia

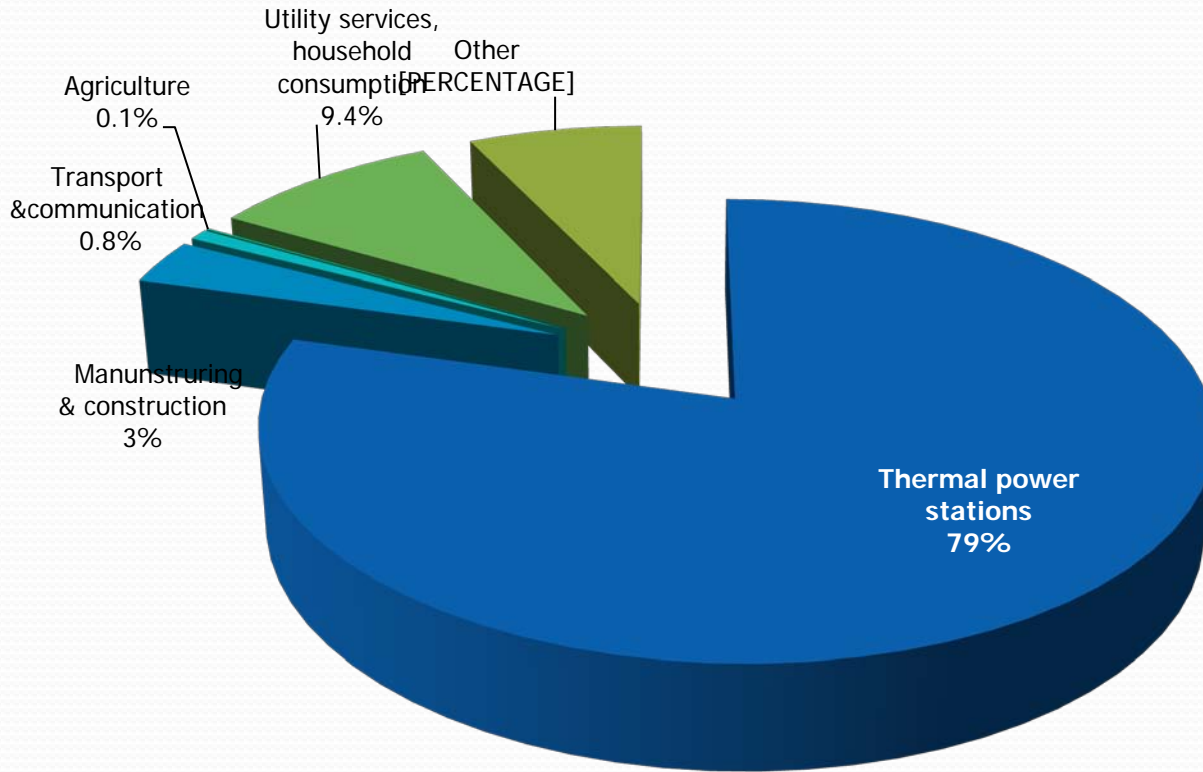
Today, we have around 60 companies, including wholly state-owned Erdenes TT, partly state-owned Baganuur, Shivee Ovoo, locally owned Tavantolgoi, Bayanteeg, Mogoin gol joint-stock companies, as well as national and foreign invested private sector companies such as Energy Resources LLC, Tavantolgoi JSC, MAK LLC, Qinhua-MAK-Nariin sukhait LLC, Southgobi Sands LLC, COAL LLC, MoEnco LLC, Chingisiin har alt LLC, etc., that are engaged actively in the production and marketing of coal. Presently, there are about 20 coal exporters exporting unprocessed and processed coals.

Coal production in Mongolia



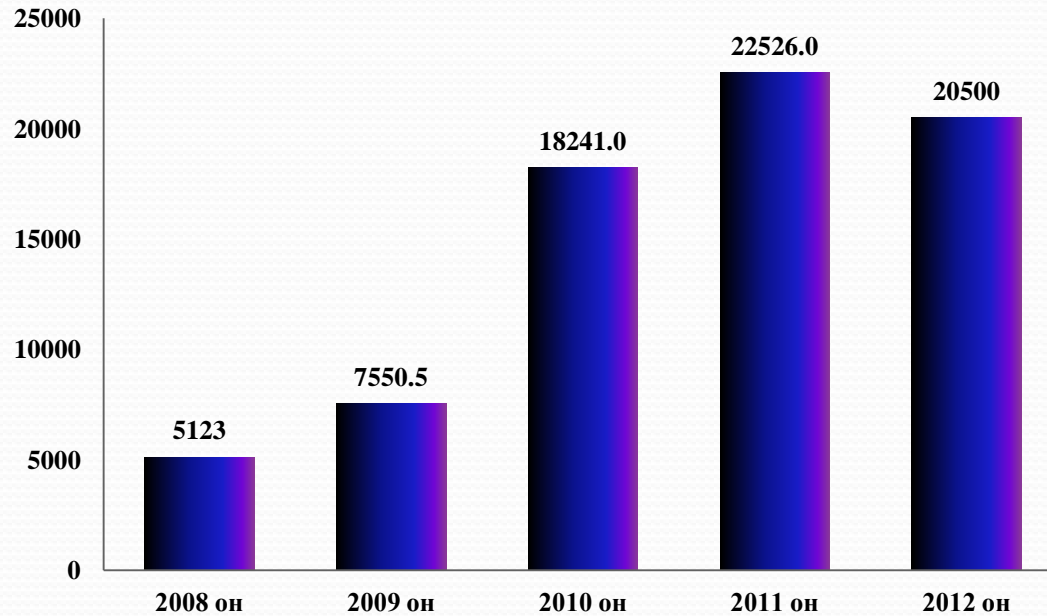
Domestic coal consumption

Coal supplies to power stations and households are provided by public and private sector coal producers.
Coal consumption is shown as follows:



Mongolia's coal exports

Total exported coals /thous.tons/
/2008-2012/



Ps: Total 2012 exports of 20,5mt represent 91,1% of total exports of the previous year

ENSURING MARKET VALUE FOR MONGOLIAN COAL

First Coal washing plant opened 11 June 2011 :

- Energy Resources – National Company
- Total Capacity: 10 mtpa
- Over 150 job creating



Tavan Tolgoi West and East Tsankhi:

- 2 x 15 – 30 mtpa capacity washing plant
- About 200 job creating



State Policy in Coal sector

Coal sector of Mongolia has full potential to lead economic development of the country and strengthen further this position, as a sector that possesses most important competitive advantage on international scale.

The Government shall provide strong support to the sector in terms of new solutions – technological, management and investment related.

State policy in coal sector

- Improve legal environment:
 - Amendment into Minerals Law
 - Regulations: environmental issues, licensing, taxation
- Increase of exploration budget and intensify geological survey
- Increase of production and export
- Introduction of value added production:
 - Preparation, Washing plants
 - Lignite upgrading: semi-coke
 - Gasification and Liquefaction
- Responsible mining principles

State policy in coal sector

- ❖ Opportunities exist in developing coal gasification facilities producing gas products of natural gas equivalent quality based on world standard, most advances technologies.
- ❖ Certain part of coal revenues is to be dedicated to geological studies conducted nationwide and designed to continuously increase and detail the total reserves.

State policy in coal sector

IN RELATION TO INVESTMENTS

- ❖ Support domestic and foreign investments into the coal sector providing the basis for implementation of development objectives
- ❖ Adhere to policies of providing equitable legal and regulatory framework for both national and international investors in the coal sector of Mongolia
- ❖ Provide support to investments and transfers of technology into development of coke-chemical, coal-chemical facilities, the production of value-added coal products sought after internationally
- ❖ Provide favorable regulatory, fiscal and business environment for investors investing in coal and related infrastructure sectors

State policy in coal sector

IN RELATION TO COAL EXPORTS

- ❖ Efforts shall be made to bring coal processing and trading practices closer to international standards and benchmarks, as coal and coal products are the country's key export products

- ❖ Adhere to policies of limiting exports of unprocessed raw coals and promoting exports of washed coals, semi- and fully-processed finished products shall be provided

State policy in coal sector

IN RELATION TO COAL EXPORTS

- ❖ In efforts to sell coals at prices close to international market price levels implement new transportation and logistics policies such as railway policies boosting competitiveness of Mongolian coals in import markets
- ❖ Within frameworks of single window policies in coal exports, initiate “Coal Exchange” program and put in place required regulatory framework

State policy in coal sector

IN RELATION TO REGULATORY FRAMEWORK

- ❖ Principles of equal treatment of coal sector's national and international investors from fiscal, tax and tariff perspective shall be strictly enforced
- ❖ To ensure efficient implementation of set policies, a review of related laws, rules and regulations, guidelines and standards shall be undertaken for further enhancement and alignment with adopted policy concepts

CMM and CBM development in Mongolia

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

Main problem/barriers for CBM/CMM development in Mongolia

- We have not experienced companies in Mongolia to manage CBM/CMM work
- Lack of technology and technical knowledge mining site.
- Lack of financing or capacity to obtain financing.
- Lack of legal and regulatory issues, especially coal and gas ownership in Mongolia
- Lack of pilot projects to demonstrate site –specific economic recovery & utilization



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 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*)

What was done on CMM activities in Mongolia in last few years.

A EPA, USA helps to start activities on CMM development in Mongolia since 2009

There were implementing 3 grant awards :

1. Pre-feasibility study on methane recovery and use in Nalaikh mine site(2009-2010)
2. CMM workshop for capacity building in Mongolia (2010)
3. EPA's grant on award on coal mine methane (CMM) resources assessment and emission inventory development in Mongolia (2010 - 2013). Grant award has two interrelated objectives
 - To estimate CMM resources assessment at coal basins throughout Mongolia in order to identify prospective CMM project sites
 - To develop an accurate, high-quality CMM emissions inventory within Mongolia to both identify potential project areas as well as to track progress of future CMM projects

Pre-feasibility study on CMM Nalaikh mine site

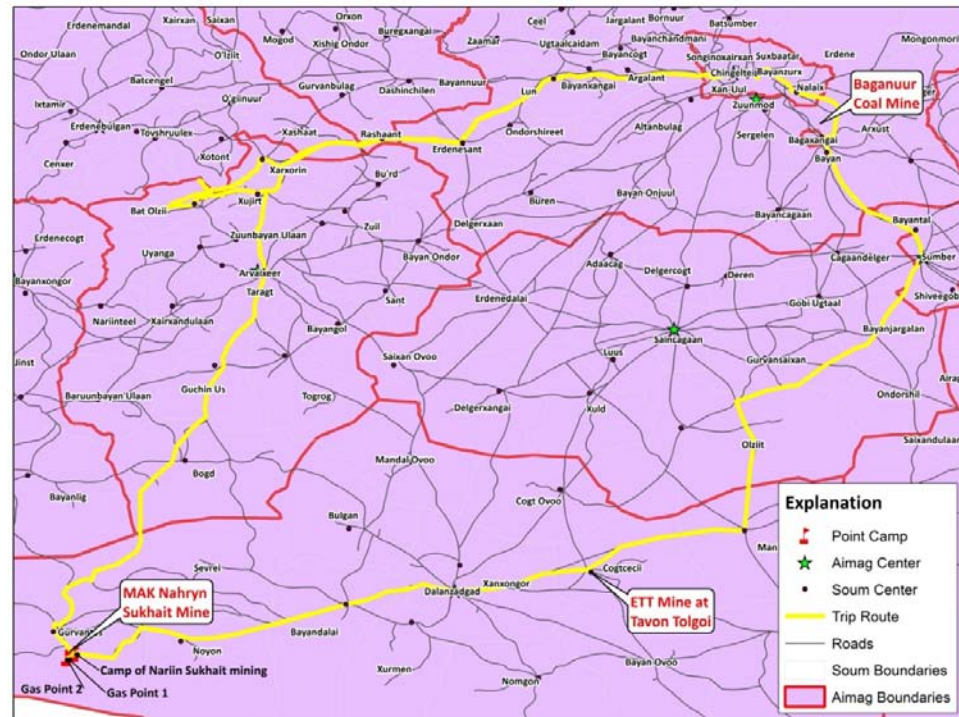
- Pre-feasibility study on CMM in Nalaikh mining financed by EPA. USA
- **Results:**
 - Geological and mine condition of Nalaikh mining identified
 - Preliminary study on methane resources in Nalaikh mining conducted
 - Methane recovery and utilization Project developed and submit it to Global Environment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

2. CMM workshop organized with financial support of EPA, USA

- CMM workshop has organized in Mongolia in 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*
- **The results:**
- It helps to promote capacity of Mongolia in term of CMM development including resources assessment , policy ownership issues and others topics

What was done on CMM development in 2011 -2012

The project team consists of experts from MNEC and Raven Ridge Resources, Incorporated (RRR) of the USA. The team organized a field trip in the Gobi area for collecting coal samples. The team collected samples from core drilling to perform desorption testing.



Route of field trip in Gobi areas of Mongolia

What was done on CMM development in 2011 -2012

Desorption testing.

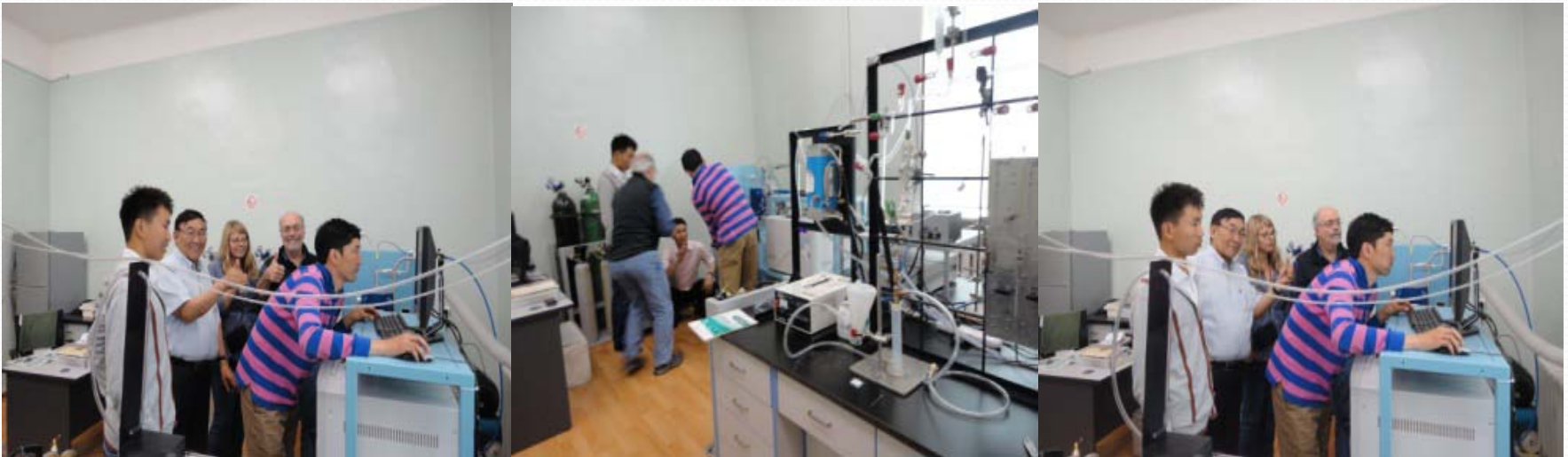
- Collected samples in mine sites of Nariin Sukhait, ETT and Baganuur.
- Coal samples were obtained by rotary drilling at each of the mine sites.
- Methane desorption tests are used to determine the gas content of coal.
- which is then used in combination with geologic data to calculate gas resources.

Desorption Testing



What was done on CMM development in 2011 -2012

The team of the MNEC and RRR made measurements of gas compositions contained in the coal seam using gas chromatographs of the coal research centre of the Mongolian National University.



Measurement of gas composition in coal samples in coal research center of Mongolian University.

What was done on CMM development in 2011 -2012

Adsorption isotherm test:

- Adsorption isotherm testing is performed on the desorbed coal sample at the end of the desorption test. Adsorption isotherm testing requires a laboratory with specialized equipment and high pressure/purity gases.
- But, Mongolia did not have relevant laboratory equipment for adsorption isotherm testing. Therefore, after desorption of gas from the coal samples, samples were dried and sent to the Xi'an Research Institute of China Coal Technology & Engineering Group for adsorption isotherm testing.
- Now MNEC with support of RRR, USA is processing and analyzing results of adsorption isotherm test.

Training organized by the RRR. Co.Ltd, USA on concept of CMM resources assessment and CMM emission inventory

Results:

1. Training sessions were organized at the mine sites. (management team of mining companies, geologists and drillers working in mine sites.)
2. Training organized in Ulaanbaatar (decision makers, university teachers, company directors) .



Workshops organized in mine sites and Ulaanbaatar.

Training organized by MNEC:

Results:

Relevant staff of mining companies have enough capacity on use of coal sampling and desorption testing equipment.



Coal sampling and desorption test training

What was done on GMI development in 2011 -2012

Public awareness of GMI activities in Mongolia

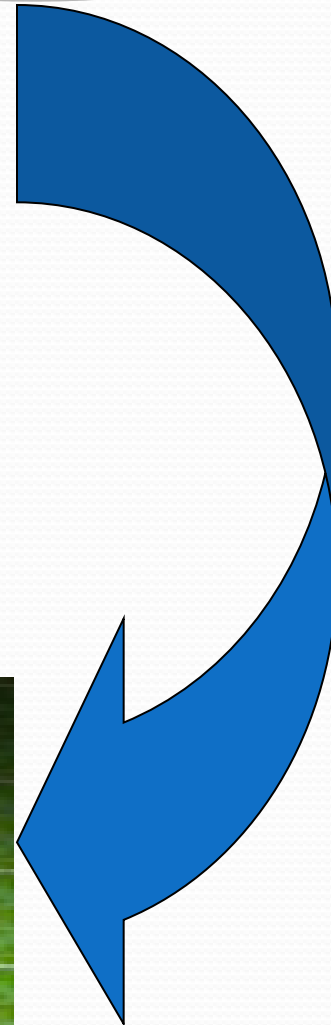
- MNEC prepared, published small brochure on GMI in Mongolia that published in Mongolian and English that distributed to decision makers, scientists and public in order to introduce them GMI activities.

Contents were:

1. Mineral resources development
2. Climate change policy strategy of Mongolia
3. Terms references for the global methane initiatives
4. Some relevant publications from CBM news
5. Needs to determine methane sources in Mongolian coal mines
6. Presentations used for training

Plan of activities 2013-2014

- Continue activities for detailed estimation of methane recourses in selected 5 Mining sites in Mongolia.
- 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
- Improve CMM emissions inventory assessment for each mining region
- Once this analysis is complete, and gas contents and emission factors are determined, a set of spreadsheets will be developed that will facilitate completion of an annual inventory.



**THANK YOU FOR
YOUR ATTENTION**

