COAL RESOURCES DEVELOPMENT AND ITS USE IN MONGOLIA

M.Mendbayar, Head of Coal Research Department, Mineral Resources Authority, Mongolia
CONTENT:

• GOVERNMENT SUPPORT FOR COAL INDUSTRY:
• ENSURING VALUE FOR MONGOLIAN COAL
• STRENGTHENING TIES WITH COAL CONSUMERS
COAL PRODUCTION AND EXPORT PROJECTION

<table>
<thead>
<tr>
<th>Year</th>
<th>Internal consumption</th>
<th>Export</th>
<th>Total production</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>6772.3</td>
<td>16835.8</td>
<td>25296.6</td>
</tr>
<tr>
<td>2011</td>
<td>6209.1</td>
<td>26785.3</td>
<td>32994.4</td>
</tr>
<tr>
<td>2012</td>
<td>8340</td>
<td>30000</td>
<td>38340</td>
</tr>
<tr>
<td>2013</td>
<td>9635</td>
<td>33000</td>
<td>42635</td>
</tr>
<tr>
<td>2014</td>
<td>13355</td>
<td>40000</td>
<td>53355</td>
</tr>
<tr>
<td>2015</td>
<td>14580</td>
<td>50000</td>
<td>64580</td>
</tr>
<tr>
<td>2020</td>
<td>16587</td>
<td>65000</td>
<td>81587</td>
</tr>
<tr>
<td>2025</td>
<td>19010</td>
<td>75000</td>
<td>94010</td>
</tr>
</tbody>
</table>
Current major Coal exporters are located in the Southern part of Mongolia, close to China = 50 - 270 km

<table>
<thead>
<tr>
<th></th>
<th>Coking coal</th>
<th>Thermal coal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Calorific value:</strong></td>
<td>6500-8500 kcal</td>
<td>4500-6500 kcal</td>
</tr>
<tr>
<td>Sulfur</td>
<td>0.6%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Ash</td>
<td>10%</td>
<td>20-33%</td>
</tr>
<tr>
<td>Moisture</td>
<td>8.5%</td>
<td>8.5%</td>
</tr>
</tbody>
</table>
COAL EXPORT MAINLY TO CHINA

1. Tavan Tolgoi Co: 6.2 mln
2. ER Co: 7.0 mln
3. Erdenes TT: 0.8 mln

In 2011 total of 14.0 mln tons
COAL EXPORT MAINLY TO CHINA

1. MAK Co: 5.3 mln
2. Qinhua –MAK: 1.7 mln
3. South Gobi Sands: 4.5 mln

In 2011 total of 11.5 mln tons
<table>
<thead>
<tr>
<th>№</th>
<th>Index</th>
<th>Central region</th>
<th>Mountainous region</th>
<th>Gobi region</th>
<th>Western region</th>
<th>Eastern region</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Number of deposits</td>
<td>13</td>
<td>13</td>
<td>20</td>
<td>23</td>
<td>16</td>
<td>85</td>
</tr>
<tr>
<td>2.</td>
<td>Reserves /million ton/</td>
<td>26528.1</td>
<td>7704.1</td>
<td>49785.3</td>
<td>27157.9</td>
<td>51165.1</td>
<td>162340.5</td>
</tr>
<tr>
<td>3.</td>
<td>Share in the total</td>
<td>16.5%</td>
<td>4.7%</td>
<td>30.6%</td>
<td>16.7%</td>
<td>31.5%</td>
<td>100%</td>
</tr>
</tbody>
</table>
OTHER POTENTIAL COAL DEPOSITS:

LOCATION MAP OF COAL DEPOSITS IN MONGOLIA

NAME OF COAL BASINS
1 - Kharhiraa
2 - Mongol-Altai
3 - Uvurkhangai
4 - Ikh Bogd
5 - Ongiin gol
6 - Umnugovi
7 - Nyalga-Choir
8 - Dundgovi
9 - Choibalsan
10 - Sukhbaatar
11 - Domogovi
12 - Tamsag
13 - Orkhon-Selenge
14 - Altai-Chandmanii
15 - Bayan-Ulgii

LEGEND
- Capital city
- Provincial capital
- State border
- Provincial border
- Railway
- Bituminous, subbituminous
- Lignite
- Bituminous coal deposits
- Lignite coal deposits
- Coal mines
<table>
<thead>
<tr>
<th>№</th>
<th>Coal basins and area</th>
<th>Geological resources, million tons</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Proven</td>
<td>Geological</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Kharkhiraa</td>
<td>172.5</td>
<td>4592.7</td>
<td>4765.2</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Mongol Altai</td>
<td>49.0</td>
<td>10040.6</td>
<td>10089.6</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Altain Chanad</td>
<td>3.1</td>
<td>12300.0</td>
<td>12303.1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Uvurkhangai</td>
<td>4.2</td>
<td>1221.9</td>
<td>1226.1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Ikh Bogd</td>
<td>5.2</td>
<td>3450.0</td>
<td>3455.2</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Ongyin Gol</td>
<td>42.6</td>
<td>1471.1</td>
<td>1513.7</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Orkhon-Selenge</td>
<td>408.8</td>
<td>7295.3</td>
<td>7704.1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>South-Govi</td>
<td>2960.0</td>
<td>10070.0</td>
<td>13030.0</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Nyalga-Choir</td>
<td>5932.0</td>
<td>14401.1</td>
<td>20333.1</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Dundgovi</td>
<td>104.1</td>
<td>13117.2</td>
<td>13221.3</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Sukhbaatar</td>
<td>68.0</td>
<td>4190.2</td>
<td>4258.2</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Choibalsan</td>
<td>213.2</td>
<td>14700.7</td>
<td>14913.9</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Tamsag</td>
<td>190.0</td>
<td>31803.0</td>
<td>31993.0</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Dornogovi</td>
<td>23534.0</td>
<td>23534.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>10152.7</td>
<td>152187.8</td>
<td>162340.5</td>
<td></td>
</tr>
</tbody>
</table>
PROBLEMS FACED

- Infrastructure: electricity, water, transportation
- Finance: high interests, short term
- Lack of qualified personnel and equipment
- Inappropriate coal pricing and trading
- Border station capacity
GOVERNMENT POLICY ON 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:
  – Target Markets: China, Japan, Korea, Taiwan

• Introduction of value added production:
  – Preparation, Washing plants
  – Lignite upgrading: semi-coke
  – Gasification and Liquefaction

• Responsible mining principles
COAL SECTOR: MARKET / CUSTOMER ORIENTED APPROACH:

• Effective Integration of:
  – Coal resources
  – Coal Mines
  – Logistics
  – Marketing: Target markets: China, Japan, Korea, Taiwan

• Supports needed from:
  – Government and non government organizations: MMRE, MRAM, Coal Association and new bodies establishment when necessary
  – Information technology
  – Financial institutions
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
STRENGTHENING TIES WITH COAL CONSUMERS:

• Coal pricing, trading, marketing
• Coal quality: classification, side expertise
• Coal processing
• Public private partnership
• Negotiation contracts
• Mutual exchange of experiences
• Regular sector meetings
• etc
STRENGTHENING TIES WITH COAL CONSUMERS:

- First Tianjin Mongolia Coal Meeting 2011-1-20
- Main purpose: to study opportunity of delivering Mongolian coal to Tianjin and other Chinese consumers through Tianjin port and then to third market.
- About 20 representatives from 10 coal mines from Mongolia participated
- MoU on Cooperation between Mongolian Coal Association and Tianjin Coal Association signed
- Field visit to Tianjin port Bulk Exchange Center, Coal loading center
STRENGTHENING TIES WITH COAL CONSUMERS:

• Other major ports:
  – Qinhuangdao port is close to east Inner Mongolia. Also, it is close to Easter part of Mongolia – Huut – Bichigt and Huut Rashaant railway line planned
  – Huanghua port - one of main ports for coal transportation
Possible 3 routes:
1. Zamin Uud – Erlian – Tianjin
2. Bichigt – Zuun hatavch – Qinhuangdao
3. Numrug – Rashaan - Jinzhou
THANK YOU FOR YOUR ATTENTION

Contact details:
E-mail: mendbayar@mram.gov.mn
Tel: + 976 – 51 – 263965
Mineral resources Authority of Mongolia