Investments into exploration in Kazakhstan
<table>
<thead>
<tr>
<th></th>
<th>Increasing the transparency of subsoil use sphere</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Accession to the global Extractive Industries Transparency Initiative (EITI) in 2013</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Transition from current subsoil use system to the Western Australian model</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Transition to evaluation of reserves and resources of solid minerals to the international JORC standard</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Introduction of international reporting standards system on solid minerals reserves CRIRSCO (Committee for Mineral Reserves International Reporting Standards)</strong></td>
</tr>
</tbody>
</table>
Kazakhstan has a rich mineral resources base

<table>
<thead>
<tr>
<th></th>
<th>World ranking by reserves</th>
<th>World ranking by mining</th>
<th>Share in world production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tungsten</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Uranium</td>
<td>2</td>
<td>1</td>
<td>39,6%</td>
</tr>
<tr>
<td>Chrome ore</td>
<td>2</td>
<td>3</td>
<td>16,2%</td>
</tr>
<tr>
<td>Manganese ore</td>
<td>4</td>
<td>8</td>
<td>2,7%</td>
</tr>
<tr>
<td>Silver</td>
<td>4</td>
<td>10</td>
<td>3,6%</td>
</tr>
<tr>
<td>Lead</td>
<td>5</td>
<td>11</td>
<td>0,7%</td>
</tr>
<tr>
<td>Zinc</td>
<td>5</td>
<td>8</td>
<td>2,5%</td>
</tr>
<tr>
<td>Coal</td>
<td>8</td>
<td>8</td>
<td>1,6%</td>
</tr>
<tr>
<td>Bauxite (aluminum)</td>
<td>10</td>
<td>8</td>
<td>1,7%</td>
</tr>
<tr>
<td>Titanium</td>
<td>10</td>
<td>19</td>
<td>0,4%</td>
</tr>
<tr>
<td>Tin</td>
<td>10</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Iron ore</td>
<td>11</td>
<td>13</td>
<td>1,0%</td>
</tr>
<tr>
<td>Copper</td>
<td>12</td>
<td>11</td>
<td>2,6%</td>
</tr>
<tr>
<td>Gold</td>
<td>15</td>
<td>21</td>
<td>1,7%</td>
</tr>
</tbody>
</table>

Source: Committee of Geology and Subsoil use, World Mining Data, 2016
General information of mining operations in Kazakhstan

Companies in total: – 1 997, small-size – 1 778; middle-size – 113; large – 106.

- Coal
- Oil and gas
- Oil
- Uranium
- Iron ore
- Manganese ore
- Chrome ore
- Titanium ore
- Nickel and cobalt ore
- Tungsten and molybdenum ores
- Aluminum ore (bauxite)
- Copper ore
- Lead and zinc ore
- Gold
- Tin, bismuth and beryllium ore

JSC «KAZGEOLOGY»
Priority activities of JSC "Kazgeology"

1. Attraction of investments and new technologies into exploration

2. The geological study of subsoil, prospecting and exploration of mineral deposits

3. Creation of the Geology Centre of Competence
# Granting subsoil use rights in Kazakhstan

## Types of subsoil use rights
- State geological study of the subsoil;
- Exploration;
- Mining;
- Combined exploration and mining.

## Ways of granting subsoil use right

<table>
<thead>
<tr>
<th>Competition</th>
<th>Tender</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ministry for Investments and development (Solid minerals, ground water)</td>
</tr>
<tr>
<td></td>
<td>Ministry of Energy (Petroleum, uranium, coal)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Direct negotiations</th>
<th>Kazgeology – Solid minerals</th>
</tr>
</thead>
</table>

- Subjects of Forced Industrial-Innovative Development Program
- Exploration using simplified procedures
Our partners

Negotiations:

The volume of investments
- Within the framework of the current 6 projects - 20 million USD;
- Within the planned projects - 100 million USD.
Our opportunities

<table>
<thead>
<tr>
<th>Ground geophysics</th>
<th>Airborne geophysics</th>
<th>Drilling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wireless 160 channel Electromagnetic geophysical system («Phoenix Geophysics Ltd.», Canada)</td>
<td>Aeroelectromagnetic VTEM, ZTEM systems, with exploration depth range from 800 m to 10 km for solid minerals («Geotech», Canada)</td>
<td>Drilling units with drilling depth up to 1500 m («Atlas Copco», Sweden)</td>
</tr>
<tr>
<td>High-precision gravimeters CG-5 Autograph («SCINTREX LTD.», Canada)</td>
<td></td>
<td>Drilling units for integrated drilling up to 1200 m («Dando Drilling», UK)</td>
</tr>
<tr>
<td>High-precision magnetometer GSM-19W («GEM Systems, Inc.», Canada)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surveying equipment («Trimble», USA)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
New technologies: airborne geophysical surveys

QAZGEOLOGY

49%

KAZGEOTECH
Airborne geophysical survey
Joint venture

51%

(Canada)

➢ Conducting airplane and helicopter airborne geophysical surveys, with VTEM, ZTEM systems unique in their technical characteristics

➢ Technologies
  1) VTEM  up to 800 m
  2) ZTEM  up to 2, 5 km
Plans for 2018 - 2019

Creation of a National database of geological information

**Computerized services from Government Bodies (GB)**
- Committee of geology and subsoil use: 
  - Collection and storage of data
  - Formation of geological information set
  - Reports and analytics
- Department of Subsoil use: 
  - Granting subsoil use rights, concluding contracts
  - Monitoring contract terms execution

**Private services market**
- Lab tests and core storage
- Geological exploration and modelling

**Government services**
- Operator of National database information platform JSC "Kageology"

**Commercial services**
- Investors

**Investors**
- Business opportunities analysis
  - Interactive map
  - Geological information
  - Application procedures and getting subsoil use right

**Private services market**
- Mining companies
- Oil companies

**Sharing economy model**
- One stop principle (GB interaction)
  - Transparency
  - Computerized reports
  - Corporate data storage
  - Access to commercial services market

**PROJECT EFFECTS:**
- Increase in investments
- Transparency by business-process automation
- Introduction of International standards
- Control of contract terms execution by subsoil users
- Development/increase in geological information, exploration area, reserves etc.

- Fraser Institute Access to Data rating increase (from 114 to 50)
- Fraser Institute Investment Attractiveness Index increase
- World Bank Doing Business rating increase (50th position)
- Corruption Perception Index Decrease
Plans for 2018

2. Creation of a commercial geochemical laboratory

**Stage:** concept development

**Objective:** laboratory with international accreditation, the results of which will be trusted by the international financial institutions.

**Potential partners:** ALS (Australia), SGS (Switzerland)

**Parties Investments:**

JSC "Kazgeology" - laboratory equipment;

Partner - the construction of buildings, accreditation, management etc.

<table>
<thead>
<tr>
<th>№</th>
<th>Name</th>
<th>Amount/quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Laboratory capacity:</td>
<td>- 100,000 samples/year - 200,000 samples/year</td>
</tr>
<tr>
<td></td>
<td>- Minimal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Optimal</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Number of employees</td>
<td>80-100</td>
</tr>
<tr>
<td>3</td>
<td>Investments for 100,000 samples / year</td>
<td>$5,000,000</td>
</tr>
<tr>
<td>4</td>
<td>Land area</td>
<td>1,5-2 ha</td>
</tr>
<tr>
<td>5</td>
<td>Analyses Cost (gold, copper, polymetals)</td>
<td>$15-25</td>
</tr>
<tr>
<td>6</td>
<td>Building area</td>
<td>2,000 square m.</td>
</tr>
<tr>
<td>7</td>
<td>Payback period</td>
<td>3-5 years</td>
</tr>
</tbody>
</table>
Thank you for your attention!

National Exploration Company
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