Welcome to Presentation on
Opportunities in Indian Mining & Mineral Sector

INDIA DAY
3rd MARCH 2014
PDAC-2014
Scheme of Presentation

• Opportunities in Indian Mining & Mineral Sector;
• Survey & Exploration: GSI;
• Detailed Survey: MECL;
• Aluminium Sector: NALCO;
• Copper Sector: HCL;
• Iron Sector: NMDC;
• Atomic Minerals: UCIL;
• Rare Earth: IREL;
• States: AP, Chhattisgarh, Odisha;
• Private sector: Tata Steel; and

• Q&A
Indian Mining Sector: An Overview

• India is endowed with rich mineral resources;
• Mining sector contributed around 2.31% to India’s GDP in 2012-13;
• India produces 87 minerals:
  • 4 fuels
  • 10 metallic
  • 47 non-metallic
  • 3 atomic and
  • 23 minor minerals (building and other materials)
Total value of mineral production (excluding atomic minerals) during 2012-13 was at INR 2,505 billion (US $ 46.15 billion).
<table>
<thead>
<tr>
<th>Mineral</th>
<th>Abundant</th>
<th>Adequate</th>
<th>Deficient</th>
<th>Scarce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metallic minerals (ferrous)</td>
<td>Iron ore</td>
<td>Chromite (metallic), Manganese</td>
<td>Chromite (refractory)</td>
<td>Nickel, Tungsten, Cobalt, Molybdenum</td>
</tr>
<tr>
<td>Metallic minerals (non-ferrous)</td>
<td>Bauxite (metallurgical)</td>
<td>Zinc</td>
<td>Bauxite (chemical grade), Copper, lead</td>
<td>Antimony, Gold, PGE</td>
</tr>
<tr>
<td>Industrial minerals</td>
<td>Dolomite, Gypsum, Limestone, Mica</td>
<td>Graphite</td>
<td>Coal Apatite, Rock Phosphate, Kyanite</td>
<td>Sulphur, Potash Met. Coal</td>
</tr>
<tr>
<td>Precious Stone Minerals</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>Diamond, Emerald, Sapphire, Ruby</td>
</tr>
</tbody>
</table>
## Resources of Important Minerals
(in Million Tons)

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Total Resource</th>
<th>Key States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bauxite</td>
<td>3,479</td>
<td>Odisha, Andhra Pradesh, Gujarat &amp; Maharashtra</td>
</tr>
<tr>
<td>Copper Ore</td>
<td>1,558</td>
<td>Rajasthan, Madhya Pradesh, Jharkhand</td>
</tr>
<tr>
<td>Iron Ore</td>
<td>28,526</td>
<td>Jharkhand, Chhattisgarh, Goa, Odisha &amp; Karnataka</td>
</tr>
<tr>
<td>Lead-Zinc Ore</td>
<td>685</td>
<td>Rajasthan, Jharkhand</td>
</tr>
<tr>
<td>Manganese Ore</td>
<td>429</td>
<td>Maharashtra, Madhya Pradesh, Odisha</td>
</tr>
<tr>
<td>Limestone</td>
<td>1,84,935</td>
<td>Odisha, Andhra Pradesh, Gujarat, Maharashtra, Rajasthan, Tamil Nadu, Karnataka</td>
</tr>
<tr>
<td>Chromite Ore</td>
<td>203</td>
<td>Odisha, Karnataka</td>
</tr>
</tbody>
</table>
### Details of top 10 Minerals Production in 2012-13

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Production</th>
<th>Value in Rs. Billion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>557.00 mt</td>
<td>719.28</td>
</tr>
<tr>
<td>Petroleum (Crude)</td>
<td>38.00 mt</td>
<td>691.40</td>
</tr>
<tr>
<td>Iron Ore</td>
<td>136.02 mt</td>
<td>332.26</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>39733 m cum</td>
<td>254.33</td>
</tr>
<tr>
<td>Lignite</td>
<td>46 mt</td>
<td>56.64</td>
</tr>
<tr>
<td>Chromite</td>
<td>2.95 mt</td>
<td>24.48</td>
</tr>
<tr>
<td>Zinc Concentrate</td>
<td>1.493 mt</td>
<td>23.95</td>
</tr>
<tr>
<td>Silver</td>
<td>3,74,046 kg</td>
<td>21.23</td>
</tr>
<tr>
<td>Manganese Ore</td>
<td>2.322 mt</td>
<td>12.64</td>
</tr>
<tr>
<td>Others</td>
<td>---</td>
<td>369.13</td>
</tr>
</tbody>
</table>
## India’s Contribution in Mineral Production (2011)

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Unit</th>
<th>Production</th>
<th>Contribution %</th>
<th>India’s rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barytes</td>
<td>000 T</td>
<td>9000</td>
<td>19.1</td>
<td>2(^{nd})</td>
</tr>
<tr>
<td>Talc/ Steatite/Pyrophyllite</td>
<td>000 T</td>
<td>7800</td>
<td>15.4</td>
<td>2(^{nd})</td>
</tr>
<tr>
<td>Chromite</td>
<td>000 T</td>
<td>26300</td>
<td>14.3</td>
<td>3(^{rd})</td>
</tr>
<tr>
<td>Coal &amp; Lignite</td>
<td>MT</td>
<td>7739</td>
<td>7.5</td>
<td>3(^{rd})</td>
</tr>
<tr>
<td>Iron Ore</td>
<td>MT</td>
<td>3012</td>
<td>5.5</td>
<td>4(^{th})</td>
</tr>
<tr>
<td>Kynaite, Andalusite &amp; Sillimanite</td>
<td>000 T</td>
<td>460</td>
<td>13.5</td>
<td>4(^{th})</td>
</tr>
<tr>
<td>Manganese Ore</td>
<td>MT</td>
<td>47.3</td>
<td>5.0</td>
<td>6(^{th})</td>
</tr>
<tr>
<td>Bauxite</td>
<td>MT</td>
<td>248</td>
<td>5.2</td>
<td>6(^{th})</td>
</tr>
</tbody>
</table>
Major Minerals being imported

- Rough Diamond
- Gold
- Copper concentrate
- Zinc concentrate
- Nickel/Tin
- Tungsten
- Rock phosphate
- Potash
- Thermal Coal
- Metallurgical Coal
- Crude & Natural Gas
## Exploration opportunities in India

### Geological Environment (in sq. Km.)

<table>
<thead>
<tr>
<th>Geological Environment</th>
<th>Area covered by prospecting and future opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold: 112,000</td>
<td>20% to 30% of the potential area prospected; significant scope for prospecting and exploration in virgin areas.</td>
</tr>
<tr>
<td>Base metal: 182,000</td>
<td></td>
</tr>
<tr>
<td>Diamond and Gemstone: 300,000</td>
<td></td>
</tr>
<tr>
<td>Iron ore: 5,135</td>
<td>Geological mapping and delineation of potential area- 90% completed for hematite ore, 80% for manganese ore and 40% for chromite ore. Resource assessment carried out in the early eighties. Most areas covered under lease or forest; free areas may be taken up.</td>
</tr>
<tr>
<td>Manganese ore: 4,600</td>
<td></td>
</tr>
<tr>
<td>Chromite ore: 2,690</td>
<td></td>
</tr>
<tr>
<td>PGE: 8,130</td>
<td>1% to 2% area covered by prospecting, virtually an untapped field.</td>
</tr>
<tr>
<td>Coal &amp; Lignite: 60,215</td>
<td>70% explored up to 900 meters depth for coal and 40% explored between the depth of 300 to 500 meters for lignite.</td>
</tr>
</tbody>
</table>
• Word’s second oldest geological survey organization;
• Getting modernized with state-of-the-art facilities and additional skilled manpower;
• Ocean Research Vessel, Helicopter and Twin Otter Aircrafts with modern gadgets added to enhance capacity;
• Identified 0.571 million Sq Km area as Obvious Geological Potential (OGP);
• Mandated to map the OGP up to G4 and G3 levels of UNFC Classification in 5 years; and
• GSI shares all Information through its Website.
## Mapping Done

Total land area: 3.28 M Sq Km; and EEZ: 2.015 M Sq Km

<table>
<thead>
<tr>
<th>Mapping Type</th>
<th>Area</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geological Mapping</td>
<td>3,098,264 sq km</td>
<td>98.48%</td>
</tr>
<tr>
<td>Specialized Thematic Mapping</td>
<td>204,755 sq km</td>
<td>6.24%</td>
</tr>
<tr>
<td>Geochemical Mapping</td>
<td>399,281 sq km</td>
<td>12.17%</td>
</tr>
<tr>
<td>Geophysical Mapping</td>
<td>220,819 sq km</td>
<td>6.73%</td>
</tr>
<tr>
<td>Marine/Bathymetric survey</td>
<td>1,981,478 sq km</td>
<td>98.34%</td>
</tr>
</tbody>
</table>

[Total EEZ coverage including TW]
Indian Bureau of Mines

- Regulator to approve Mining Plans and Mine Closure Plans keeping in mind conservation of minerals;

- Maintains Data Bank for Minerals & Ores;

- Facilitator and Consultant for mineral beneficiation;

- Development & Regulation of Offshore Mineral Deposits; and

- Protection of mining environment.
Salient Features of National Mineral Policy, 2008

- **Participatory**
  - Encouraging private sector participation in exploration;
  - Induction of high-end technology for exploration and mining; and
  - Introduction of new concession Large Area Prospecting License (LAPL).

- **Regulatory**
  - Right of grant of concession to the prior applicant;
  - Seamless movement from RP to PL/ LAPL to ML;
  - Full transferability to encourage specialized exploration;
  - Mine closure and sustainable development; and
  - Creation of independent Mining Tribunal
Salient Features of NMP (Contd.)

• **Facilitator**
  - GSI to do regional exploration to facilitate private sector;
  - Online tenement Registry; and
  - Encourage venture capital and FDI.

• **Equitable**
  - Protection of stakeholder interests of local population; and
  - Sustainable development.
Regulatory Framework

• Overall Law & Regulations framed by the Federal Government – Mines & Minerals (Development & Regulation) Act, 1957 & Rules thereunder;

• Marine mining, Coal & Lignite administered by the Federal Government;

• Minerals in their territories belong to Provinces and they administer the Mining Laws & Regulations; and

• For ten Major Minerals and Atomic Minerals Provinces need to seek prior clearances from Federal Government for granting licences.

• Mineral Concessions in Offshore areas are governed by Federal Government- Offshore Areas Minerals (Development & Regulation) Act 2002 & Rules thereunder.
Grant of concessions under MMDR Act, 1957

- Mineral Concessions are granted by the State Government;
- For grant of any type of concession,
  - The person should be an Indian National, or
  - Company should be registered Indian company
- Area Limits:
  - Reconnaissance Permit (R.P.) – 10,000 sq. km
  - Prospecting Licence (P.L.) – 25 sq.km.
  - Mining Lease (M.L.) – 10 sq.km.
- Area limits can be relaxed by the Central Government;
- Periods of Concessions:
  - Reconnaissance Permit (R.P.) – 3 years
  - Prospecting Licence (P.L.) – 3 years + 2 years (max. -5 yrs.)
  - Mining Lease (M.L.) – 30 yrs. (max.) / 20 yrs. (min.)
Grant of concessions  (Contd.)

- State Government may notify an area for inviting applications without competitive bids;

- Notification mandatory only if area relinquished after exploration or surrendered;

- States allowed complete discretion to grant concessions after comparative analysis of the applicants in notified areas;

- State Governments can use discretionary power to give preference to a later applicant over the first-in-time applicant under certain conditions;

- Priority is given in obtaining next stage concession in case conditions of a licence are met; and

- Grant of concession for coal or lignite through auction by competitive bidding.
MMDR Bill, 2011: Salient Features

• Introduced in Parliament in December, 2011;

• Mining lease can be granted directly in notified areas only through competitive bidding;

• Provides for a new exploration licence for investors focused on deep-seated mineralization;

• Timelines fixed for Government agencies to deliver;

• Assured and seamless transition from exploration to mining;
Salient Features of Bill, 2011(Contd.)

• Mining lease can be granted directly in notified areas only through competitive bidding;
• Facilitates Transferability of concessions;
• Level playing field - reservation only for conservation;
• Facilitating flow of venture capital (Domestic/Foreign);
• Ensures greater acceptability by local community for mining activities, through sharing of royalty for local area development; and
• Independent regulation and Tribunals to address grievances/complaints.
A Destination, A Consumer & An Investor

- 3rd largest Economy in the world in PPP terms;
- Growth @8% for the last decade but has slowed in the current year;
- Sustainability challenges are being addressed;
- Young and skilled population;
- Rapid urbanization and infrastructure growth;
- Rule based Democratic Governance;
- 100% FDI through Automatic Route; and
- FDI for 2012-13 was US$ 18,286 Million.
THANK YOU

www.mines.gov.in

(Email: jse-mines@nic.in)