Indian Copper Sector
Opportunities & Challenges
Copper Reserves In India

- Copper Mineralization Area: 60,000 Sq Km
- Area Covered By Exploration: 20,000 Sq Km
- Area Awaiting Exploration: 40,000 Sq Km

<table>
<thead>
<tr>
<th>Category</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserves</td>
<td>369.4 mt @ 1.19 % Cu (4.8 mt copper)</td>
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<tr>
<td>Resources</td>
<td>1,024.9 mt @ 0.68 % Cu (7.0 mt copper)</td>
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<tr>
<td>Total</td>
<td>1,394.4 mt @ 0.81 % Cu (12.3 mt copper)</td>
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HCL HOLDS ALL EXISTING MINING LEASES FOR COPPER ORE RESERVES IN INDIA & THE ONLY COPPER MINING COMPANY IN INDIA
### Mining Assets

<table>
<thead>
<tr>
<th>Khetri Copper Belt (KCB)</th>
<th>Geological Reserves</th>
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<tbody>
<tr>
<td>Khetri</td>
<td>32 Mt @ 1.13% Cu.</td>
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<tr>
<td>Kolihan</td>
<td>19.5 Mt @ 1.33 5 Cu.</td>
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<tr>
<td>Banwas</td>
<td>25 Mt @ 1.6% Cu.</td>
</tr>
<tr>
<td>Chandmari</td>
<td>18 Mt @ 1.0 Cu.</td>
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<tr>
<td><strong>Total</strong></td>
<td>94.5 Mt</td>
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<thead>
<tr>
<th>Singhbhum Copper Belt (SCB)</th>
<th>Geological Reserves</th>
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</thead>
<tbody>
<tr>
<td>Surda</td>
<td>41 Mt @ 1.2 %Cu</td>
</tr>
<tr>
<td>Kendadih</td>
<td>156 Mt @ 1.05% Cu.</td>
</tr>
<tr>
<td>Chapri-Sideswar</td>
<td></td>
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<tr>
<td>Rakha</td>
<td></td>
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<tr>
<td><strong>Total</strong></td>
<td>197 Mt</td>
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<thead>
<tr>
<th>Malanjkhand Copper Belt (MCB)</th>
<th>Geological Reserves</th>
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</thead>
<tbody>
<tr>
<td><strong>Geological Reserves</strong></td>
<td><strong>331 MT @ 1.05 % Cu</strong></td>
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</tbody>
</table>

**Resources & Reserves**

623 Mt Proved & Probable - 411 Mt
Industry Profile

Hindustan Copper Limited (HCL) - Only vertically integrated primary copper producer in the country

- Sterlite Industries
  - Imported copper concentrate raw material - Shore based Plant

- Hindalco Industries (Birla Copper)

- Jhagadia Copper Limited (JCL) - Plant based on secondary route (Mainly copper scrap)
Refined Copper Production Capacity

‘000 T Cu.

- Birla: 500
- Sterlite: 400
- HCL: 50
- Jhagadia: 50
Projected Copper Production - Mines

‘000 tonnes (metal content)

India imports 94% of its copper requirement as concentrate
India is a Net exporter of Refined Copper
Copper Concentrates: Dependent on imports

Global majors are key supplier to Indian smelters
Refined Copper Consumption Growth

India to turn net importer

'000 T Cu.

Further smelting capacity addition needed to support growth beyond 2017
Key Challenges

- Securitizing access to feedstock to support growth of copper smelting in India:
  - Acquisition of mining assets abroad.
  - Resource nationalism in copper rich countries poses significant risk to supply.

- Development and growth of copper semis industry to meet domestic requirements:
  - Access to capital and technology on competitive terms.
  - Skill development and quality certifications.

- Up-gradation of smelting technology and processes:
  - Capability to process low grade and complex concentrates in a cost effective manner.

- Driving Sustainable Growth:
  - Technology, feed stock & Renewable energy focus.
Hindustan Copper Initiatives

- **Enhance Mine Production Capacity.**
  - HCL to quadruple its mine capacity to 12.4 Mta by 2017;
  - Investment of US$ 750 mn planned;
  - Eight mine projects rolled out concurrently

- **Exploration in Existing Mines for Discovering Additional Reserves.**
  - Annual investment of US$ 2mn planned

- **Thrust on Green field exploration.**
  - 20 fresh PL/ML application covering around 10,000 sq. Km
  - Joint Venture for exploration/exploitation of copper and gold mineral planned with State Government of Rajasthan

- **Looking for commercially viable technology for low grade sulfide ore & extraction of minerals from copper ore tails.**
Indian Copper Industry Opportunities

- India is net exporter of refined copper and importer of concentrate.
- 100 million tonne ore required for meeting installed smelting/refining capacity against annual production of 3 million tonne.
- All major deposits explored in sixties and seventies.
- Huge opportunity exists in green field exploration & development of new mines.

Looking for opportunities for securing its long term requirement of copper concentrate
Opportunities
Mining & Engineering

- EPC contract for Mine Development and copper ore Beneficiation Projects.

- Long Term Contract Mining for underground mining - *Four mines to come up in 2015.*

- Mine equipment - High capacity low profile dumpers, loaders and locos - *30 T Dumper & 10 T loaders.*

- Project Management & Technical Consultancy - Reduce project time and cost for underground mine construction.
Opportunities
Technology

- Sharing of latest technology for exploration with special emphasis on deep seated copper ore reserves in the existing mining lease of HCL.

- Sharing of know-how on beneficiation technology to improve ore enrichment & energy efficiency and water consumption.

- Transfer of technology for extraction of minerals from copper ore slag and tails
THANK YOU

Contact:
Mr. K.D. Diwan
Email - Diwan_kd@hindustancopper.com
hindcopper@hotmail.com
Tel: +91 33 2283 2725; +91 33 2283 2296
Website: www.hindustancopper.com