“BASE METALS IN INDIA - the Next Super-Cycle?”

“PROSPECTS FOR COPPER IN INDIA”

by Dr. D. De Sarkar
Chief Executive Officer
INDIAN COPPER DEVELOPMENT CENTRE

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Joint Study Groups’ Seminar
“BASE METALS IN INDIA - the Next Super-Cycle ?”

PRESENTATION OUTLINE

- Overview of copper usage in India
- Existing important end use sectors
- Key drivers for demand growth prospect
- Prospect in existing major end use sectors
- Prospects through newer opportunities
- Conclusion
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### ESTIMATED TOTAL COPPER USAGE*

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantity (tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1956</td>
<td>33,800</td>
</tr>
<tr>
<td>1970</td>
<td>55,000</td>
</tr>
<tr>
<td>1980-81</td>
<td>117,000</td>
</tr>
<tr>
<td>1990-91</td>
<td>207,000</td>
</tr>
<tr>
<td>2000-01</td>
<td>484,000</td>
</tr>
<tr>
<td>2010-11</td>
<td>730,000</td>
</tr>
<tr>
<td>2017-18</td>
<td>~ 1,000,000</td>
</tr>
</tbody>
</table>

* Total usage of copper include Primary Refined Copper (Cathode + CCR + Wire Bars) + Imported Copper & Copper Alloy Semis + Secondary Copper (including scrap)
IMPORTANT END USE SECTORS

➢ Electrical
➢ Transport
➢ Process Industry
➢ General Engineering
➢ Consumer Durables
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SECTORWISE USAGE PATTERN

- Elec & Tel: 11%
- Transport: 7%
- General Engg.: 6%
- Process Ind: 8%
- Cons. Durable: 7%
- Bldg & Constn: 7%
- Others: 56%
KEY DRIVERS

• Natural Growth
  – Market expansion due to urbanisation
  – Improved life style
  – Introduction of newer technologies in end use sectors

• Government’s Priority for
  – Infrastructure development/upgradation
  – Electricity for all (24x7)
  – SMART Cities
  – Affordable housing for all

• Quality consciousness – “Value for Money”

• Newer Opportunities
EXISTING MARKET WITH HIGH GROWTH PROSPECT

– A FEW EXAMPLES
ELECTRICAL

• Increase in demand for electricity
• Proposed addition to generation capacity
• Effort to improve power quality and reduce T&D loss
• Increased awareness on Safe House Wiring System
• More usage of Energy Efficient Motors
• Growing popularity of Energy Efficient Consumer Durables
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### PER CAPITA ELECTRICITY CONSUMPTION

<table>
<thead>
<tr>
<th>Year</th>
<th>kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013-14</td>
<td>924</td>
</tr>
<tr>
<td>2015-16</td>
<td>1075</td>
</tr>
<tr>
<td>2017-18</td>
<td>1149</td>
</tr>
<tr>
<td>2040</td>
<td>2027</td>
</tr>
</tbody>
</table>

### ELECTRICITY GENERATION CAPACITY

<table>
<thead>
<tr>
<th>Year</th>
<th>Capacity (GW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012-13</td>
<td>221</td>
</tr>
<tr>
<td>2018 (31.08.2018)</td>
<td>345</td>
</tr>
<tr>
<td>2022</td>
<td>548</td>
</tr>
<tr>
<td>2040</td>
<td>1204</td>
</tr>
</tbody>
</table>
TRANSPORT

Automobile
• Growth in production of vehicles
• Increased usage in auto electricals

Railways
• Government’s plan to electrify all tracks
• Introduction of more AC coaches
• Fast implementation of “Metro Railways” in many cities
<table>
<thead>
<tr>
<th></th>
<th>B.G.</th>
<th>M.G.</th>
<th>N.G.</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railway Track (Route KM)</td>
<td>61,680</td>
<td>3,479</td>
<td>2,209</td>
<td>67,368</td>
</tr>
<tr>
<td>Electrified</td>
<td>30,212</td>
<td>-</td>
<td>-</td>
<td>30,212</td>
</tr>
<tr>
<td>Unelectrified</td>
<td>31,468</td>
<td>3,479</td>
<td>2,209</td>
<td>37,156</td>
</tr>
</tbody>
</table>
TARGET FOR ELECTRIFICATION vis-a-vis COPPER DEMAND

2018-19 : 7,500 KM (≈ 49,000 tonnes copper)
2019-20 : 10,500 KM (≈ 68,000 tonnes copper)
2022-23 : 20,000 KM (≈ 130,000 tonnes copper)

Thus 5 year average demand ≈ 49,000 tonnes/year
# AUTOMOBILE PRODUCTION IN INDIA

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PASSENGER VEHICLE</td>
<td>30,87,973</td>
<td>32,21,419</td>
<td>34,65,045</td>
<td>38,01,670</td>
<td>40,10,373</td>
</tr>
<tr>
<td>COMMERCIAL VEHICLE</td>
<td>6,99,035</td>
<td>6,98,298</td>
<td>7,86,692</td>
<td>8,10,253</td>
<td>8,94,551</td>
</tr>
<tr>
<td>THREE &amp; TWO WHEELERS</td>
<td>1,77,13,157</td>
<td>1,94,38,330</td>
<td>1,97,64,331</td>
<td>2,07,17,460</td>
<td>2,41,68,968</td>
</tr>
<tr>
<td>GRAND TOTAL</td>
<td>2,15,00,165</td>
<td>2,33,58,047</td>
<td>2,40,16,068</td>
<td>2,53,29,383</td>
<td>2,90,73,892</td>
</tr>
</tbody>
</table>
AIR-CONDITIONING & REFRIGERATION

- Concept change for domestic AC – “Luxury” → “Basic Needs”
- Preference for Split AC over Window AC
- Technology change, viz., introduction of VRF
- Demand growth in commercial establishment including “Cold Chain”
AC & R SECTOR
PROJECTED
DEMAND GROWTH

15 – 20% pa
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Estimated Demand Projection - Copper Tube for Air Conditioners

<table>
<thead>
<tr>
<th>Year</th>
<th>Demand (Tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016-17</td>
<td>0</td>
</tr>
<tr>
<td>2017-18</td>
<td>10,000</td>
</tr>
<tr>
<td>2018-19</td>
<td>20,000</td>
</tr>
<tr>
<td>2019-20</td>
<td>30,000</td>
</tr>
<tr>
<td>2020-21</td>
<td>40,000</td>
</tr>
</tbody>
</table>

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Estimated Annual Demand Projection for Copper Tube

<table>
<thead>
<tr>
<th>Year</th>
<th>2016-17</th>
<th>2017-18</th>
<th>2018-19</th>
<th>2019-20</th>
<th>2020-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tonnes</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

ICDC
NEWER OPPORTUNITIES

- E-vehicle
- Copper motor rotor
- Hospital gas pipe line
CONCLUSION

- Prospect for copper in India is very bright
- Annual projected demand growth ≈ 6-8%
- ACCORDING TO MARKET ANALYST: Total Copper Demand in India may even reach 1.5 – 1.8 MMT by 2022
Thank You
NAMASKAR