Indian Lead Industry and Contribution of Hindustan Zinc Ltd
Overview of Vedanta

- Vedanta is one of the world’s leading diversified and fastest growing Natural Resource Groups with interest in aluminum, copper, zinc, lead, silver, iron ore, oil and gas and commercial energy
- Listed on the LSE; A FTSE 100 company
- Operations in India, Australia, UAE, Zambia, Ireland, South Africa & Sri Lanka.
- Group revenue for FY 2012 was USD 14 Billion
- Over 100,000 employees including contract employees and 9600 professionals
- About 2.7 million people in 550 villages have benefitted with our programmes like livelihood development, education, women empowerment and healthcare
Overview of HZL

- Hindustan Zinc is a Vedanta Group Company in Zinc, Lead, Silver and wind power business
- World Largest integrated producer of Zinc and Lead
- Leading silver producer in world
- Current installed Capacity of 823 KTPA of Zinc and 185KTPA of Lead
- 474 MW of Coal based thermal captive power plants
- 274 MW of Wind energy production capacity

Vision

Be the world’s largest and most admired Zinc-Lead & Silver Company
HZL is the sole Zinc-Lead miner in India.

Major Lead Assets of HZL in India

- Rampura Agucha Mine
- Chanderiya Smelting Complex
- Rajpura Dariba Mine
- Sindesar Khurd Mine
- Dariba Smelting Complex
- Kayar Mine
- Zawar Mining Complex
- Zinc Smelter Debari
HZL Journey – Lead

Installed Capacity of 185000 TPA

- Lead Smelter Tundoo, 8,000 TPA (1942)
- Lead Smelter Vizag TPA 22,000 TPA (1979-80)
- ISF Chanderiya 35,000 TPA (1990)
- Ausmelt Lead Plant Chanderiya 50,000 TPA (2005)
- Dariba Lead Smelter 100,000 TPA (2011)
## Current Mine Reserves & Smelter Capacities

### MINE RESERVES

<table>
<thead>
<tr>
<th></th>
<th>Unit</th>
<th>Rampura</th>
<th>Agucha</th>
<th>Sindesar Khurd</th>
<th>Rajpura</th>
<th>Dariba</th>
<th>Zawar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ore produced</td>
<td>Mn MT</td>
<td>6.15</td>
<td>1.58</td>
<td>0.55</td>
<td>0.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of Mine</td>
<td></td>
<td>Open Cast &amp; UG</td>
<td>Underground</td>
<td>Underground</td>
<td>Underground</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reserves</td>
<td>Mn MT</td>
<td>62.7</td>
<td>21.4</td>
<td>10.6</td>
<td>9.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resources</td>
<td>Mn MT</td>
<td>28.8</td>
<td>52.7</td>
<td>29.2</td>
<td>42.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ore Production Capacity</td>
<td>Mn MT pa</td>
<td>6.15</td>
<td>2</td>
<td>0.9</td>
<td>1.2</td>
<td></td>
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</table>

### SMELTER CAPACITIES

<table>
<thead>
<tr>
<th></th>
<th>Unit</th>
<th>Chanderiya</th>
<th>Dariba</th>
<th>Debari</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zinc</td>
<td>‘000 MT</td>
<td>443</td>
<td>165</td>
<td>68</td>
</tr>
<tr>
<td>Lead</td>
<td>‘000 MT</td>
<td>60</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Capacity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zinc</td>
<td>‘000 MT</td>
<td>525</td>
<td>210</td>
<td>88</td>
</tr>
<tr>
<td>Lead</td>
<td>‘000 MT</td>
<td>85</td>
<td>100</td>
<td></td>
</tr>
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</table>
Lead – Introduction & Uses

- Lead is highly corrosion-resistant, ductile and malleable blue-grey metal
- Found in association with Zinc, silver as well as Copper ores
- One of the most recyclable and sustainable commodities
- Recycled lead accounts for more than 60% of total lead production
- In 2012 India production increased by 8.9% and consumption growth at 15.6%
- Automobile industries, Hospitality, educational institutes, computerization and Banking sector are backbone for growth of Lead demand

75% of Lead produced is used for manufacturing of Lead acid batteries specially the one used in automobiles, motorcycles, electric cars and bicycles

Ongoing clean energy initiatives such as wind power and solar cells give further market for lead acid batteries

Source: Planning commission & ILZA
Indian Lead Market

Lead output has seen sharp increase in the last few years on new smelter capacity additions.

Note: The year mentioned is Calendar Year. Refinery Production includes Smelter and Secondary Production. Much larger amounts of Lead recycled in India.

Source: Wood Meckenzie
Lead acid Battery market India

- Lead acid battery market in India will go up at rate of 10-12% between 2012-2020
- Lead acid battery market will grow with Automobile market & new emerging uses of batteries for Solar, electric vehicles and UPS/Inverter market growth in India
- In line with Lead acid battery, demand of Lead will also go up at the rate of 6%
- Increased Lead demand will be met by expansion of Mines as well ramp up of 100 kmt Lead smelter at Dariba
- Electric vehicle market is expected to witness phenomenal growth in India, Increasing fuel costs, rise in pollution level and government support will further boost

Source: Wood Meckenzie
Indian Automobile market-Boost to Lead demand

- Indian Automobile industry has emerged as sunrise industry in Indian economy
- India is fifth largest commercial vehicle manufacturer
- Car sale for FY14 is expected to rise 3-5%
- Utilities vehicles, which has seen good growth are expected to clock 11-13% growth
- Major development and investment by major automobile players will further give sustainable growth to Lead acid batteries demand
- Increase of Per capita income of India contribute to increase the purchase power for automobile in India
- FDI from Apr’2000 to Jan’2013 – was US$7653, 4% of total FDI in India

**INDIA GDP PER CAPITA**
GDP per capita USD at Constant prices since 2000

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<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>511.5</td>
<td>546.0</td>
<td>588.8</td>
<td>634.6</td>
<td>711.9</td>
</tr>
<tr>
<td></td>
<td>766.4</td>
<td>822.8</td>
<td>837.8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Production**
- FY 2011-12: 20,382,026
- FY 2012-13: 20,626,227
  - 1.20% growth

**Domestic Sale**
- FY 2011-12: 17,361,769
- FY 2012-13: 17,815,618
  - 2.61% growth

Source: ACG & RBSA –Automotive sector analysis 2012 & DIPP, ministry of commerce
India has shortage of Power in terms of energy as well as peak availability

Energy shortfall is around 8.7% in India and peak power supply gap of 9.0%

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Energy (MU)</th>
<th>Peak (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirement</td>
<td>998,114</td>
<td>135,453</td>
</tr>
<tr>
<td>Availability</td>
<td>911,209</td>
<td>123,294</td>
</tr>
<tr>
<td>Shortage</td>
<td>86,905</td>
<td>12,159</td>
</tr>
</tbody>
</table>

(%)

8.7

9.0

Power shortage is contributing to the increase demand of UPS/Inverters

Power plant in India area mostly based on Coal as source of power generation

Recent reform in Power sector will take some time for implementation

Source: Softdisk & FMCG News
UPS system is Back up during power contingencies

Electricity shortfall in India is 8.5 to 9.8% during 2010-11 and 10.3% during 2011-12

Increasing Power deficit, Low and erratic quality of power supply and unanticipated power cut throughout the country is driving the growth of backup power supply

UPS industry grew by 11% and will grow by 13% in coming year

Development of education system, Computerization and automation of Indian corporate and Industry will account for significant growth of Back up power system in coming year

Growth of UPS industry will support for sustainable growth of Lead Industry in India

<table>
<thead>
<tr>
<th>Vertical</th>
<th>% Share</th>
<th>Revenue by 2013, Million Rs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banking, Insurance and Finance</td>
<td>9%</td>
<td>4680</td>
</tr>
<tr>
<td>Research &amp; Educational Institutions</td>
<td>6%</td>
<td>3120</td>
</tr>
<tr>
<td>IT/ITES, BPO's &amp; Services</td>
<td>18%</td>
<td>9360</td>
</tr>
<tr>
<td>Corporate Sector</td>
<td>16%</td>
<td>8320</td>
</tr>
<tr>
<td>Government</td>
<td>18%</td>
<td>9360</td>
</tr>
<tr>
<td>Health Care &amp; Hospitals</td>
<td>5%</td>
<td>2600</td>
</tr>
<tr>
<td>Hospitality &amp; Hotels</td>
<td>4%</td>
<td>2080</td>
</tr>
<tr>
<td>Industrial &amp; Plant Automation</td>
<td>17%</td>
<td>8840</td>
</tr>
<tr>
<td>SMB</td>
<td>7%</td>
<td>3640</td>
</tr>
</tbody>
</table>

Source: Softdisk & FMCG News
HZL Journey for Sustainable growth of Lead in India

Near-term (0-2 years)
- Total primary Lead production increasing from the current run-rate from 100kt to 185kt
- Expansions of mining operations at Sindesar Khurd Mine and Zawar Mines
- Opening of greenfield mine at Kayad by HZL; Production expected in 2014

Mid-term (2-5 years)
- Expansion of mining operations at Sindesar Khurd, Rajpura Dariba, Kayar, and Zawar mines
- Progressive commissioning of Rampura Agucha underground mine project

Long-term (5+ years)
- Greenfield exploration leading to identification and development of new large deposits

HZL Lead Production

<table>
<thead>
<tr>
<th>Year</th>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009-10</td>
<td>64</td>
</tr>
<tr>
<td>2010-11</td>
<td>57</td>
</tr>
<tr>
<td>2011-12</td>
<td>92</td>
</tr>
<tr>
<td>2012-13</td>
<td>118</td>
</tr>
</tbody>
</table>

Ore Production Capacity Additions, mtpa

<table>
<thead>
<tr>
<th>Mine</th>
<th>Capacity Addition, mtpa</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAM UG</td>
<td>3.75</td>
</tr>
<tr>
<td>Rajpura Dariba</td>
<td>0.3</td>
</tr>
<tr>
<td>Sindesar Khurd</td>
<td>1.75</td>
</tr>
<tr>
<td>Kayad*</td>
<td>0.65</td>
</tr>
<tr>
<td>Zawar</td>
<td>3.8</td>
</tr>
<tr>
<td>Bamnia Kalan</td>
<td>0.5</td>
</tr>
</tbody>
</table>

MIC Production Profile (Mn MT)

- 10% CAGR
- FY 2013: 1.0
- Near-term Target: 1.5
- Mid-term Target: 2.0
Future Lead Resource Potential in India

- India has a well know Zinc – Lead resource belt in the state of Rajasthan
- Several players have undertaken exploration program in Zinc – Lead with pan-India activities
- Government has streamlined procedure to conduct exploration and develop new deposits
- Significant resource potential at existing mines, which are being explored
- India also recycles Zinc & Lead from the inevitable waste arising like used lead batteries, Zinc Dross, scrap etc., in an environment- friendly manner

Aiming to discover world class Lead-Zinc deposits in Rajasthan

Active project generation to identify new Lead- Zinc belts
Regulations for Lead Industry in India

- All stakeholders like manufacturer, importer, re-conditioner, assembler, recyclers and consumers etc to register and file returns to state pollution control boards as defined in battery management and handling rule 2001.
- All acid battery dealers to furnish returns of sales and purchase to manufacturer.
- Strict compliance to Pollution control board norms.
- Monitoring of work force working in Lead industry, Like Blood sampling and analysis.
- Emission norms less than 10mg/Nm3.
- Collection target fixed for battery manufacturer for spent batteries:
  - 1st year - 50% (of new Batteries)
  - II year - 75%
  - After II year - 90%
Way forward to meet Regulatory Challenges

- All authorized lead industry shall do the business with registered recyclers
- Compliance for furnishing the details of Batteries sales and purchase to manufacturer
- Lead association to come forward to tackle the problems of backyard smelting and unauthorized battery making and recyclers
- Manufacturing capacity approval based on fixed norms for spent battery collection
- Automation of Lead battery breaking industry and recyclers units
- Up gradation of technology of secondary smelting units to reduce the pollution
- Special Economy Zone for Battery breaking and recycling industry to concentrate lead industry in common area
- Creation of recycling park to create long term, sustainable and eco-friendly business model
- Formulation of disposal and collection policy for secondary and metal scraps
- Strict enforcement and monitoring of Lead industries by Local government bodies like pollution control boards
Corporate social responsibility

- Reaching to more than 5 Lacs people in Rajasthan through On-going & Hi-impact projects
- Positively impacting the lives of 54209 families in 180 Villages
- 150 Members dedicated team comprising of CSR Professionals & field level functionaries
- CSR initiatives prioritized on local needs which focus on
  - Health & Nutrition
  - Water & Sanitation
  - Education
  - Sustainable Livelihood
  - Agriculture & Animal Husbandry
  - Women Empowerment
  - Infrastructure Development
Thank you!