



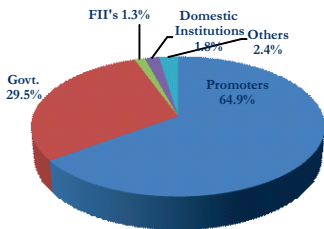
Recommendation	BUY
Target Price	144
CMP	125
Potential Upside(%)	14.7%
Industry	Mining & Non ferrous Metals
Market Cap (₹ Mn)	529,855
Shares O/S (Mn)	4,225
Face Value	2

Key Indices	
BSE Sensex	17539
BSE Metals	11123
NSE Nifty	5327

Stock Info	
BSE Code	HINDZINC
BSE Code No.	500188
NSE Code	HINDZINC
Bloomberg	HZ IN
Reuters Code	HZNC.BO
52-Week High	150
52-Week Low	107

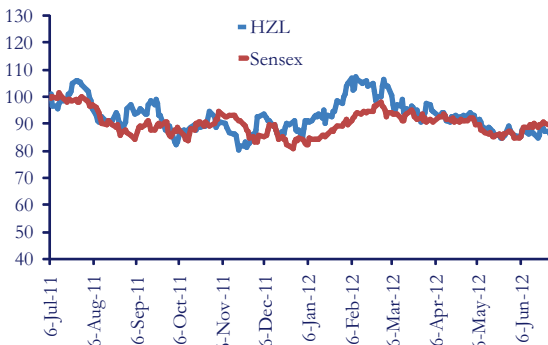
Market Stats	
Average Volumes	150,473
Average Trades	1,748
Average Turnover (₹ Mn)	20

**Shareholding Chart (as on 31/03/2012)**



Source: NSE, A C Choksi Institutional Research

**Share Price Movement (1yr)**



Source: BSE, A C Choksi Institutional Research

**Jinesh Sarat Sheth**  
[jinesh@acchoksi.com](mailto:jinesh@acchoksi.com)  
022 6159 5125

## Hindustan Zinc Limited

### Operations Visit & Management Meet Note

**We recently visited the mining and smelting operations of Hindustan Zinc Limited and also met key management personnel of the company.**

**We visited Rampura Agucha Mine & Mill, Sindesar Khurd Mine & Mill, Dariba Smelter and Chanderiya Smelter during our 2 day visit to Udaipur, Rajasthan.**

**We maintain our BUY Rating on the firm with target of ₹144.**

### Key takeaways from our interaction :

- Open cast mining in Rampura Agucha is planned upto 372m, currently at 220 m, beyond that it will go underground, capacity to remain at 6.15mt. OC strip ratio at its peak (1:13/1:14). Planning a vertical shaft at Agucha, currently using a spiral ramp. UG COP to remain at present OC COP levels.
- Geologists have found in Andhra Pradesh, patches of rock having similar characteristics to that of Udaipur and some mines in Australia.
- Exploration budget at \$10mn each year, focus on addition to R&R.
- Lead volumes to ramp up to 110-115 kt integrated and 150kt total. Lead ramp up to 185 kt in couple of years.
- SK mine silver ppm is targetted at 130 ppm, overall mine life average at 180 ppm. Silver grade to improve as SK goes deep underground.
- Silver volumes to ramp up to 350 tonnes from integrated and 450 in total, balance through custom smelter.
- Capex at 15,000mn - 18,000 mn, including sustaining capex of 3,500 mn.
- No communication from the Government on 29.5% residual stake offer from the promoters.
- Kayar Underground mine is under progress; production is expected to start from FY14.
- Company expects final SC verdict on renewal of mining lease for Zawar in couple of quarters time. All other approvals are in place.



## Mining Operations

### Rampura Agucha Mine

Location : 230 kms north of Udaipur, in the State of Rajasthan in India.

District : Bhilwara

Lease area : 1,200 Ha

Capacity : 6.15 Million Tonnes (MT)

Production in FY 12 : 5.9 MT

Mine Access : Open Cast

Method of working : Drill, blast, load and haul

Mine Life : Open Pit 6 Years , Underground 30 Years

Rampura Agucha Mine is the world's largest zinc mine with an annual ore production capacity of 6.15 million metric tonnes & is one of the lowest cost zinc producer globally. It was commissioned in 1991. It is stratiform, sediment-hosted, high grade zinc & lead deposits. It is an open cast mine. In FY 2012, it produced 649.58 kt of contained zinc and 59.90 kt of contained lead. It has a zinc grade of 13.7% and lead grade of 1.9%. The average feed grade of zinc has fallen from 13.09% in FY 11 to 11.98%. The average feed grade of lead was 1.77% in FY 12 as compared to 2.15% in FY11. Reserves and resources of Rampura Agucha Mine as on 31st March 2012 are 110.4 MT. The reserve grade of Silver is 64 ppm. Utilisation of HEMM is at par with global standards.

HZL is planning to go underground in Q4 FY13, beyond the ultimate open pit depth of 372 m from the surface. Open cast mining in Rampura Agucha is planned upto 372m, currently at 220 m, beyond that it will go underground, capacity to remain at 6.15mt. Planning a vertical hoisting shaft at Agucha, currently using a spiral ramp. Current strip ratio is at 1:13 (1:14), much higher than the mine strip ratio of 1:7. It is at its peak. This is one of the main reasons for going underground, which shall not be cost accretive as per company.

<b>Rampura Agucha Mine</b>					
<b>Open Cast Mine</b>	<b>FY08</b>	<b>FY09</b>	<b>FY 10</b>	<b>FY 11</b>	<b>FY 12</b>
<b>Udaipur - Rajasthan</b>					
Ore Mined (kt)	4,068	4,953	5,136	6,149	5,947
Ore Milled (kt)	4,076	4,916	5,152	5,856	5,982
<b>% Milled (over Mined)</b>	100%	99%	100%	95%	101%
<b>Zinc</b>					
Feed Grade (%)	13.03%	13.09%	12.92%	13.09%	11.98%
Metal In Ore	531	643	666	767	717
Mill Recovery	92.19%	91.96%	92.07%	88.37%	90.64%
Milled Metal (kt) (MIC)	490	592	613	677	650
Growth (%)		21%	4%	11%	-4%
<b>Lead</b>					
Feed Grade (%)	1.91%	1.91%	1.80%	2.15%	1.77%
Mined Metal (kt)	48	57	55	69	60
Growth (%)		20%	-3%	25%	-13%
<b>Growth (%)</b>					
Ore Mined		22%	4%	20%	-3%
Ore Milled		21%	5%	14%	2%

Source: HZL, A C Choksi Institutional Research



## Mining Operations

### Sindesar Khurd Mine

Location : 82 km north-east of Udaipur.  
District : Rajsamand  
Capacity : 2.0 MT  
Production in FY 12 : 1.3 MT  
Mine Access : Two Ramps (5.5m wide x5.0m Height) and (4.3m wide x3.0m Height)  
Method of working : Blast hole open stoping with Paste filling  
Ore haulage : Up to a depth of 400/450m through ramps & below that through shaft.  
Explored Depth : 1,100 km

Sindesar Khurd , commissioned in 2006, is the largest underground mine in India. It is a Silver rich mine with Silver reserves and resources of 416 Million ounces. In FY 2012, it produced 51.15 kt of zinc and 25.14 kt of lead. Zinc grade is 4.5%, lead grade is 2.7%. The average feed grade of zinc and lead was 4.44% & 2.21%. Reserves and resources of the SK mine as on 31st March 2012 are 81.4 MT. Management expects to maintain current silver grade of 130ppm for FY 13. The reserve grade of Silver is 180 ppm over the life of mine. Silver ppm to improve gradually as the mine goes deep underground. COP at mill is \$520/t consisting of Milling cost of \$140/t, mining at \$184/t & royalty at \$196. Silver EBITDA margin at over 90%.

#### Sindesar Khurd Mine

Underground Mine	FY08	FY09	FY 10	FY 11	FY 12
<b>Udaipur - Rajasthan</b>					
Ore Mined ('000 tonnes)	295.20	300.00	444.72	654.05	1303.05
Ore Milled ('000 tonnes)	293.88	299.91	442.87	607.43	1370.34
<b>Growth (%)</b>					
Ore Mined		2%	48%	47%	99%
Ore Milled		2%	48%	37%	126%
<b>Zinc</b>					
Feed Grade (%)	4.85%	4.84%	5.44%	5.38%	4.44%
Mined Metal ('000 tonnes)	11.60	11.87	19.75	26.69	51.15
Growth (%)		2%	66%	35%	92%
<b>Lead</b>					
Feed Grade (%)	2.80%	2.29%	2.29%	2.18%	2.21%
Mined Metal ('000 tonnes)	6.37	5.35	8.04	10.41	25.14
Growth (%)		-16%	50%	29%	141%

Source: HZL, A C Choksi Institutional Research



## Smelting Operations

### Chanderiya Lead-Zinc Smelter

Location: 110 Kms North of Udaipur.

District: Rajsamand

Technology: Roast-Leach-Electro winning technology

Chanderiya Lead-Zinc Smelter (CLZS) is one of the largest Zinc smelting complexes in the world. It was commissioned in the year 1991 with an initial production capacity of 70,000 tonnes per annum of Zinc and 35,000 tonnes per annum of Lead. The main products are special high grade (SHG) zinc, continuous galvanizing grade (CGG) Zinc, prime western (PW) zinc and pure lead. It also produces valuable by-products including silver and cadmium. The complex includes two Hydrometallurgical Zinc Smelter (420,000t/a) one Pyrometallurgical Lead-Zinc Smelter (Zinc 105,000tpa ; Lead 35,000t/a ) and one Ausmelt Lead plant (50,000t/a ). Sindesar Khurd mine and Rajpura Dariba mine are in the vicinity of the complex. Recovery stands at 97%. Coal based CPP at 234 MW. The refined Silver production from the new Silver refinery was 43,616 kg in FY 12. The Lead Smelter produces Anode Slime which is a residue containing Silver, which is refined at HZL's new Silver refinery. In FY 2012, it produced 27.79 kt of zinc and 5.55 kt of lead.

#### Chanderiya Lead-Zinc Smelter

Smelter (in tonnes)	FY 08	FY 09	FY 10	FY 11	FY 12
<b>Udaipur - Rajasthan</b>					
<b>Refined Zinc</b>	<b>293,540</b>	<b>413,457</b>	<b>436,909</b>	<b>424,418</b>	<b>464,021</b>
<b>Growth (%)</b>		41%	6%	-3%	9%
Refined Saleable Lead	58,247	60,322	64,319	57,294	61,684
Captive Consumption	5,319	5,010	7,308	5,898	6,625
<b>Refined Lead : Total</b>	<b>63,566</b>	<b>65,332</b>	<b>71,627</b>	<b>63,192</b>	<b>68,309</b>
<b>Growth (%)</b>					
Refined Saleable Lead	31%	4%	7%	-11%	8%
Captive Consumption	-6%	-6%	46%	-19%	12%
Refined Lead : Total	27%	3%	10%	-12%	8%
Refined Saleable Silver	80	105	139	148	163
Captive Consumption	0	27	38	31	35
<b>Refined Silver : Total</b>	<b>80</b>	<b>132</b>	<b>176</b>	<b>179</b>	<b>198</b>
<b>Growth (%)</b>					
Refined Saleable Silver		31%	32%	7%	10%
Captive Consumption		#DIV/0!	42%	-18%	13%
Refined Silver : Total		64%	34%	2%	11%
<b>Saleable Sulphuric Acid</b>	<b>576,491</b>	<b>611,870</b>	<b>641,313</b>	<b>600,753</b>	<b>661,640</b>
<b>Growth (%)</b>		6%	5%	-6%	10%

Source: HZL, A C Choksi Institutional Research



## Smelting Operations

### Dariba Smelter

Location : 75 kilometers north-east of Udaipur.

District : Rajsamand

Zinc Smelter Technology : Hydro metallurgy(Roast, Leach &Electro-winning process)

Lead Smelter Technology : SKS, Bottom blowing Technology

Dariba Smelting Complex (DSC) includes Hydrometallurgical Zinc Smelter and the newly commissioned SKS technology based Lead Smelter. Sindesar Khurd mine and Rajpura Dariba mine are in the vicinity of the complex. The refined Silver production from the new Silver refinery was 43,616 kg in FY 12. The Lead Smelter produces Anode Slime which is a residue containing Silver, which is refined at HZL's new Silver refinery. In FY 2012, it produced 27.79 kt of zinc and 5.55 kt of lead.

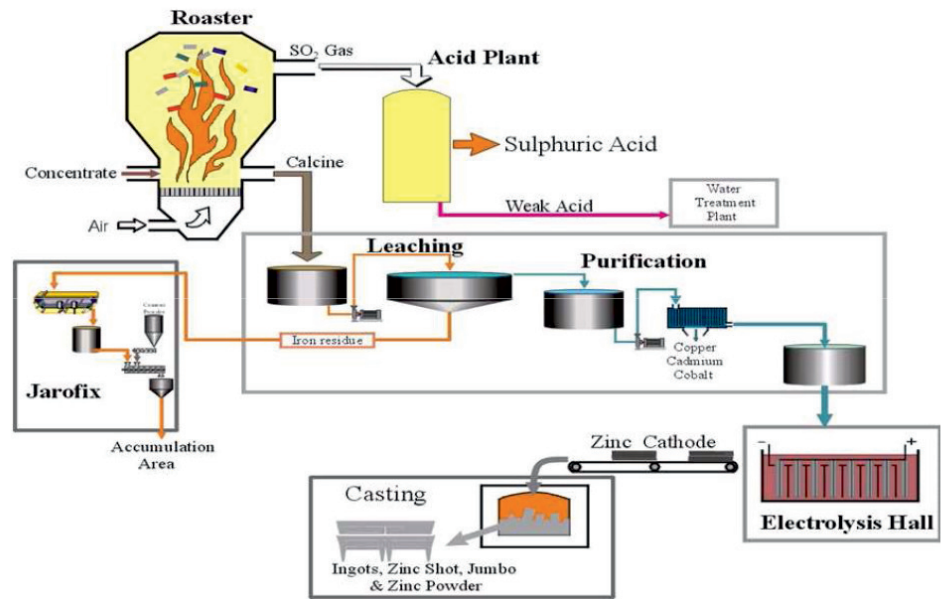
<b>Dariba Smelter</b>	<b>Capacity</b>	<b>Production</b>	<b>CU(%)</b>
Zinc	210,000	198,204	94.4%
Lead	100,000	30,415	30.4%
Sulphuric Acid		266,671	
Coal based CPP (MW)	160		
Waste Heat Recovery (MW)	4.3		

<b>Dariba Smelter</b>		
<b>Smelter (in tonnes)</b>	<b>FY 2011</b>	<b>FY 2012</b>
<b>Udaipur - Rajasthan</b>		
Refined Zinc	164,551	198,204
<b>Growth (%)</b>		20%
Saleable Sulphuric Acid	218,483	266,671
<b>Growth (%)</b>		22%
Lead		30,415

*Source: HZL, A C Choksi Institutional Research*

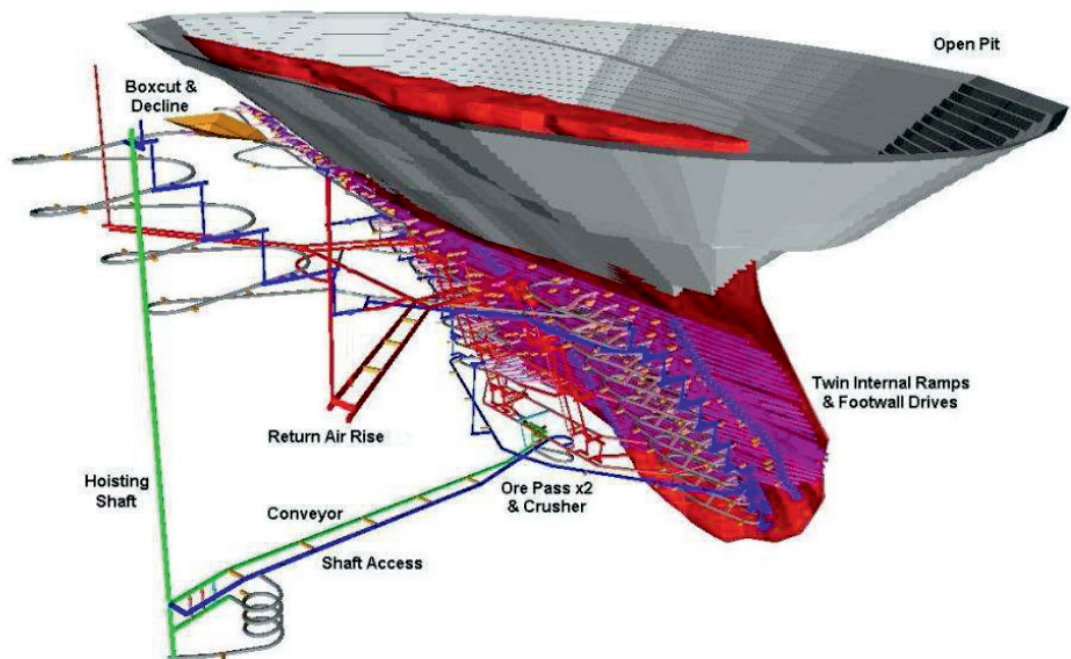


### Hydro-metallurgical route of zinc production - CLZS



Source: HZL

### Isometric View of Rampura Agucha



Source: HZL

**Key Assumptions**

	FY 2012 A	FY 2013 E	Growth(%)
<b>Sales Units</b>			
Zinc	758,499	764,386	0.8%
Lead	91,701	141,868	54.7%
Silver (Kg)	206,000	341,777	65.9%

*Source: HZL, A C Choksi Institutional Research*

**Valuation & Outlook**

We expect the zinc volumes to remain flat ~764kt for the year on the back of lower ore grades from Agucha and rampdown of Vizag. Lead volumes to increase to ~142kt. We expect the silver volumes at 342t.

We maintain our coverage on Hindustan Zinc Limited with a BUY Rating and target price of ₹144 giving it an upside potential of ~14% from current price of ₹125. It is currently trading at an EV/EBITDA of 5.8 (x), EV/Sales of 3.1(x) and P/E of 9.6 (x) its FY 12 earnings. We have valued Hindustan Zinc at an EV/EBITDA of 6.0 (x) to its FY 13 E EBITDA ₹64,651 mn.



**Jinesh Sarat Sheth**  
Senior Research Analyst  
+ 91 22 6159 5125  
[jinesh@acchoksi.com](mailto:jinesh@acchoksi.com)

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<b>Disclosure of Interest</b>	
Analyst ownership of the stock	NO
Broking Relationship with the company covered	NO
Investment Banking relationship with the company covered	NO
Discretionary Portfolio Management Services	NO