

## DIVISIONAL REVIEW ALUMINIUM

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WE ACHIEVED RECORD PRODUCTION OF ALUMINIUM AND ALUMINA, LEADING TO A STRONG GROWTH IN REVENUES AND EBITDA WITH RAMP UP OF CAPACITIES.



**ABHIJIT PATI**  
CEO, ALUMINIUM, JHARSUGUDA



**VIKAS SHARMA**  
CEO, BALCO

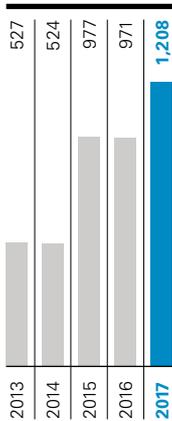
### The year in summary:

We can look back on FY2017 with satisfaction: we achieved record production of aluminium and alumina, leading to a strong growth in revenues and EBITDA with ramp up of capacities. This was despite pot outages at Jharsuguda and BALCO. However, many were returned to production during the reporting year and we anticipate all being back in service by Q3 this year.

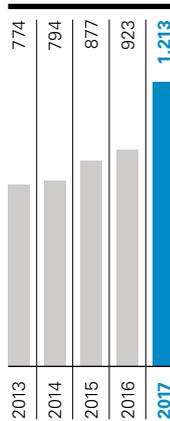
Indeed, we are now well on the way to achieving our target aluminium volume of 1.5 to 1.6mtpa (excluding trial run) in FY2018, with lower costs aided by improving supplies of local bauxite and coal. The higher volumes will also deliver valuable economies of scale.

Employee at the BALCO sheet rolling shop

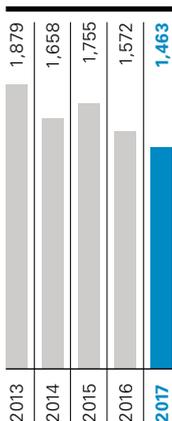
**PRODUCTION – ALUMINA**  
(KT)



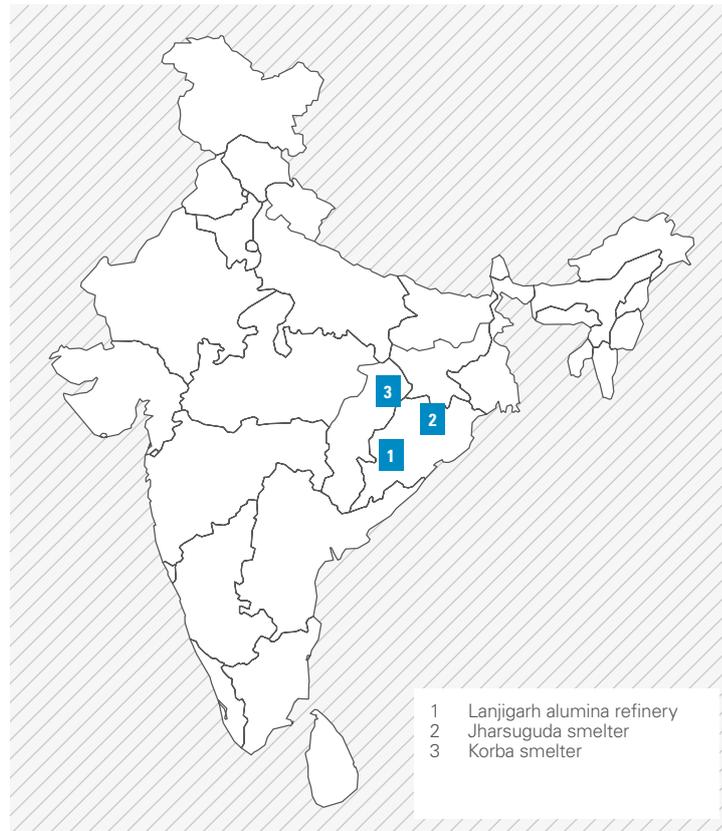
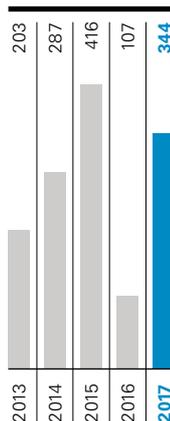
**PRODUCTION – TOTAL ALUMINIUM**  
(KT)



**UNIT COSTS – HOT METAL PRODUCTION**  
(US\$ PER TONNE)



**EBITDA**  
(US\$ MILLION)



- 1 Lanjigarh alumina refinery
- 2 Jharsuguda smelter
- 3 Korba smelter

“ We achieved record annual production of 1.2 million tonnes of aluminium in FY2017, with an exit run-rate of 1.4 million tonnes per annum (excluding trial run production) in March 2017.

**ABHIJIT PATI**  
CEO, ALUMINIUM, JHARSUGUDA

“ In FY2018, aluminium volume is expected to be in the range of 1.5 to 1.6 million tonnes (excluding trial run) with the fully ramped-up BALCO II smelter and the progressive ramp up of balance lines at the 1.25 million tonnes Jharsuguda-II smelter.

**VIKAS SHARMA**  
CEO, BALCO

**SAFETY**

We have recorded 15 lost time injuries in FY2017 (FY2016: 13). The frequency rate was increased to 0.32 compared to 0.29 in the previous year. We are targeting an improvement, on the back of a number of safety programmes initiated during the year to promote employee health, safety and well-being.

These activities included an extensive Making Better Risk Decisions (MBRD) programme where we trained our 200 frontline leaders across the Aluminium businesses including BALCO. We also focused on identifying and mitigating risks, conducting workshops on Experience Based Quantification (EBQ).

**ENVIRONMENT**

Controlling emissions was a focus during the year with workshops on high PM emissions and pot line FTP stack emissions.

Waste management is also an area where we are seeking continuous improvement. During FY2017 we recycled 37.1% of waste products. This compared to 34% in the previous year.



# DIVISIONAL REVIEW CONTINUED

## ALUMINIUM

### PRODUCTION PERFORMANCE

	FY2017	FY2016	% change
<b>Production (kt)</b>			
Alumina – Lanjigarh	<b>1,208</b>	971	24.4%
Total aluminium production	<b>1,213</b>	923	31.4%
Jharsuguda I	<b>525</b>	516	1.9%
Jharsuguda II <sup>1</sup>	<b>261</b>	76	–
BALCO I	<b>256</b>	257	(0.4)%
BALCO II <sup>2</sup>	<b>171</b>	75	–
BALCO 270 MW <sup>3</sup>	–	169	–
Jharsuguda 1800MW (surplus power sales in million units) <sup>3</sup>	<b>511</b>	–	–

1 Including trial run production of 95kt in FY2017 vs. 51kt in FY2016

2 Including trial run production of 47kt in FY2017 vs. Nil in FY2016

3 Jharsuguda 1,800MW and BALCO 270 MW have been moved from the Power to the Aluminium segment from 1 April 2016.

### PRICES

	FY2017	FY2016	% change
Average LME cash settlement prices (US\$ per tonne)	<b>1,688</b>	1,590	6.2%

### UNIT COSTS

	FY2017	FY2016	% change
Alumina cost (ex-Lanjigarh)	<b>282</b>	315	(10.6)%
Aluminium hot metal production cost	<b>1,463</b>	1,572	(6.9)%
Jharsuguda CoP	<b>1,440</b>	1,519	(5.2)%
BALCO CoP	<b>1,506</b>	1,659	(9.2)%

### FINANCIAL PERFORMANCE

(IN US\$ MILLION, UNLESS STATED)

	FY2017	FY2016	% change
Revenue	<b>2,040.0</b>	1,694.3	20.4%
EBITDA	<b>344.2</b>	106.7	–
EBITDA margin	<b>16.9%</b>	6.3%	–
Depreciation and amortisation	<b>141.0</b>	101.8	38.5%
Operating profit before special items	<b>203.2</b>	4.9	–
Share in Group EBITDA (%)	<b>10.8%</b>	4.6%	–
Capital expenditure	<b>290.9</b>	118.9	–
Sustaining	<b>28.0</b>	11.6	–
Growth	<b>262.9</b>	107.3	–

### OPERATIONS

#### ALUMINA REFINERY: LANJIGARH

At Lanjigarh, production ramped up with the restarting of the second stream of the refinery during Q1 FY2017. In FY2017, the alumina refinery produced 1,208,000 tonnes, up 24% on FY2016. We ended March 2017 at a run rate of 1.4 million tonnes. The refinery currently has a debottlenecked capacity of 1.7-2.0 million tonnes per annum. Approval was received to expand to 4 million tonnes per annum, and this will be considered when we have further visibility on bauxite sources.

#### ALUMINIUM SMELTERS

We achieved record annual production of 1.2 million tonnes of aluminium in FY2017, with an exit run-rate of 1.4 million tonnes per annum (excluding trial run production) in March 2017.

#### JHARSUGUDA I & II SMELTERS

The Jharsuguda-I smelter was stable at 525,000 tonnes during FY2017. However, it suffered an unfortunate pot outage incident in April 2017. 228 pots out of the total 608 pots were taken out of production. There were no injuries in the incident. The impacted pots will be repaired over the next few months, and put back into production. The commissioning of pots at the first line of the 1.25 mtpa Jharsuguda-II aluminium smelter was completed at the end of July 2016. However, this line was impacted by pot outages during the year. The impacted pots are currently being rectified, with 80 of 336 pots restarted in May 2017, and we expect to be fully ramped up during Q3 FY2018. The second line is fully completed with 336 pots operational and the ramp up of the third line began

at the end of December 2016. Currently 139 pots are operational, and full ramp up is expected by Q3 FY2018.

#### BALCO I & II SMELTERS

Production was stable at 256,000 tonnes in BALCO-I during the year. The BALCO-II smelter was fully commissioned, with all 336 pots operational in August 2016. However, this was impacted by a pot failure incident in September 2016 and 168 pots were taken out of production. All 336 pots are fully operational by the end of March 2017 and expected to be capitalised in Q1 FY2018, upon stabilisation.

The rolled product facility at BALCO, which was temporarily shut down in Q2 FY2016, restarted operations during Q2 FY2017 following optimisation of its cost structure. Production was 18,000 tonnes during the year.

#### CAPTIVE POWER PLANT

##### JHARSUGUDA – 1,800MW

Power sales from the Jharsuguda 2,400MW (4x600MW) power plant were historically reported in the Power segment until Q4 FY2016. However, effective from 1 April 2016, the surplus power sales from 1,800MW of the capacity has been reported in the Aluminium segment, since the plant has been converted to a captive power plant (CPP) for the Jharsuguda-II smelter. One unit of 600MW, which has been tied up for power to sales to GRIDCO, will continue to be reported in the Power segment.

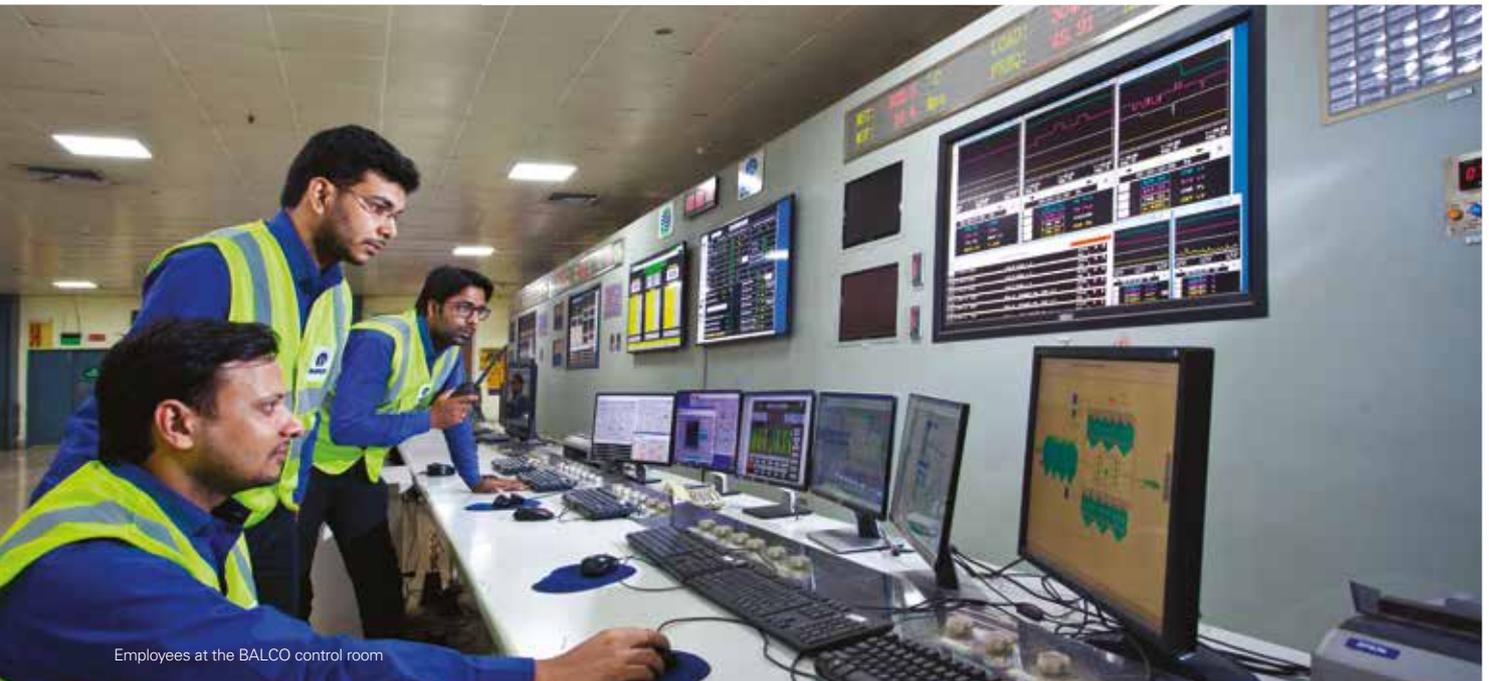
During FY2017, there were lower external sales of 511 million units from the 1,800MW Jharsuguda power plant due to a weak short-term power market. However, the plant loading factor (PLF) will continue to increase as we ramp up the Jharsuguda-II smelter.

##### BALCO 270MW

Similarly, the 270MW CPP at BALCO was moved to the Aluminium segment from 1 April 2016. This power unit will be used as a backup power source for the smelters, and will remain on standby. Sales were therefore nil during the year.

#### COAL LINKAGES

The Company has secured coal linkages of 6mtpa through auctions in Q2 FY2017 for the CPPs at BALCO and Jharsuguda. Supply from these linkages started in November 2016, and 2.0 million tonnes of coal were received during the year.



Employees at the BALCO control room

Average LME prices for aluminium for the year stood at US\$1,688 per tonne, up 6.2% on the previous year's US\$1,590 per tonne. During the year, aluminium traded at a two-year high of US\$1,900 per tonne. Support was driven by the Chinese Government's pledge in late 2016 to clamp down on pollution, as well as expectations of a significant increase in infrastructure spending following the US presidential election.

During FY2017, the alumina cost of production (CoP) was US\$282 per tonne, compared with US\$315 per tonne in FY2016. The decrease was mainly due to double-stream operations leading to cost optimisation, a lower bauxite cost driven by higher quality bauxite, lower caustic cost with better silica and operating efficiencies, and rupee depreciation.

In FY2017, the total bauxite requirement of about 3.4 million tonnes was met from three sources: captive mines (31%), domestic sources (23%) and imports (46%). In the previous year, each made an equal, one-third contribution. The other key raw material – coal – was secured from a combination of secured coal linkages, e-auctions, ad-hoc allocation and imports.

The hot metal CoP at Jharsuguda was US\$1,440 per tonne, down from US\$1,519 in FY2016. The decrease was primarily due to lower alumina cost, volume ramp up, rupee

depreciation and the implementation of various cost-saving initiatives. These were partially offset by regulatory headwinds of the Clean Energy Cess, electricity duty and power imports required during power outages.

The cost of production at BALCO reduced to US\$1,506 per tonne from US\$1,659 in FY2016. This decrease was due to lower power costs driven by secured coal linkages; the shifting of power generation to the more efficient, newly constructed 600MW CPP; input commodity deflation; currency depreciation; and various cost saving initiatives.

EBITDA was higher at US\$344 million compared with US\$107 million in FY2016, driven mainly by volume ramp up, increased LME, input commodity deflation, improved product mix, Indian rupee depreciation and cost savings initiatives. FY2016 EBITDA was impacted by an additional one-off charge of US\$36 million relating to renewable power obligations, incurred in the previous financial years.

#### OUTLOOK

##### VOLUME AND COST

In FY2018, aluminium volume is expected to be in the range of 1.5 to 1.6 million tonnes (excluding trial run) with the fully ramped-up BALCO II smelter and the progressive ramp up of balance lines at the 1.25 million

tonnes Jharsuguda-II smelter. With continued focus on cost reduction, a hot metal cost is expected to be in the range of US\$1,475-1,500 per tonne with Q1 FY2018 likely to be higher.

##### ALUMINA

During FY2018, the Company will continue to double-stream operations to support the aluminium pot ramp ups with debottlenecked capacity of 1.7-2.0 million tonnes per annum. The main sources of bauxite will be a mix of mines at BALCO, and the balance will be met from laterite mines, other domestic sources and imports.

##### COAL

Multiple initiatives are being taken to meet our coal requirements. We will source our overall coal mix from the secured 6 million tonnes of coal linkages, low-cost imports and auctioned coal to optimise the cost in FY2018.

##### STRATEGIC PRIORITIES

- › Full capacity ramp up at the Jharsuguda-II and BALCO-II smelters to 2.3mtpa;
- › Bauxite sourcing and supply chain;
- › Expanding the Lanjigarh refinery to 4 million tonnes; and
- › Reducing hot metal cost by optimising raw material sourcing, and through various cost reduction initiatives.