

## KN02 - Growth of Indian Aluminium Industry and Vedanta

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### Abstract

This article provides an overview and characterization of the Indian aluminum industry and its importance to the economy and focuses on Vedanta's contribution in significantly shaping Indian Aluminum scenario. The growth of Indian Aluminum Industry over the years has significantly contributed towards the overall development of the country. India being the third largest producer of Primary Aluminum (approximately 3.74 million tonnes) in the world with a share of 5.8 % of the total world's production of 63.1 million tonnes per annum is fast emerging as hub of primary aluminum in the global context. Even with the domestic market's dependency on aluminum import especially scrap, emerging trends indicated optimistic scenario wherein aluminum consumption in India expected to double to 7.2 Mt in next 5 years backed by strong reforms and focus on domestic production. India still remains highly under-utilized market with current per-capita aluminum consumption of 2.5 kg against the world average of 11 kg. With India's focus on self-reliance, use of aluminum is expected to rapidly grow in diversified sectors of Indian economy. Vedanta's aluminum operation has significant contribution in this context. Its production has grown to 1.91 Mt in FY20 (Fiscal Year, 12 months ending at March 31, 2020) with compound annual growth rate (CAGR) 15.6 % (From FY16 - FY20) with the ramp up of the Special Economic Zone (SEZ) Smelter at Jharsuguda. With our operations based out of Odisha and Chhattisgarh, our Aluminium division currently reached 83 % of installed capacity with our portfolio focusing more on value added products (VAP). We have successfully commissioned Billet Plant in SEZ to achieve 120 % of design capacity within two years and gained global acknowledgement for our product quality. Vedanta poised for its next phase of growth with potential aluminum production ramp up to 2.3 Mt which will support Government of India's drive to be self-reliant through its flagship program "ATMANIRBHAR BHARAT" that aims to drive Indian GDP to 5 trillion US dollars economy.

**Keywords:** Indian aluminum market, growth of aluminum business, Vedanta growth history, Vedanta product portfolio, Atmanirbhar Bharat.

### 1. Indian Aluminium Scenario and Growth Potential

India holds a fair advantage in production and conversion costs in steel and alumina. Its strategic location enables export opportunities to the developed as well as fast-developing Asian markets. India produces 95 minerals – 4 fuel-related minerals, 10 metallic minerals, 23 non-metallic minerals, 3 atomic minerals and 55 minor minerals (including building and other minerals).

Rise in infrastructure development and automotive production are driving growth. Power, cement and aluminum industries are also aiding growth for the sector.

#### 1.1. Primary Aluminium Growth

Primary production is also growing in the same tune of 8.4 % CAGR (from FY16 to FY20), which is almost ~ 93 to 98 % of total consumption. Aluminum consumption is growing at a CAGR of 2.7%, from 3.25 Mt in FY16 to 3.72 Mt in FY20. Installed capacity reached to 4.1 Mt with an investment of ~ 18.5 B\$ in both upstream and downstream.

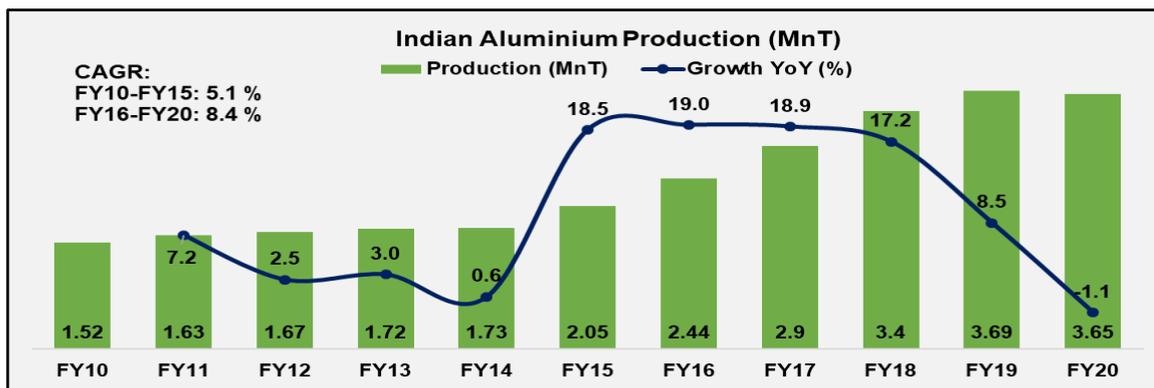


Figure 1. Indian Aluminium Production (Mt).

### 1.2. Aluminum Consumption Overview

- 43% of total demand is met through own primary production and 57 % of balance demand is managed through import route. Out of total import, 62 % is scrap, which is increasing at CAGR of 9.2 % (from FY16-FY20).
- Total primary consumption (own and import), remain at similar level over last 5 years of 1.8 Mt.

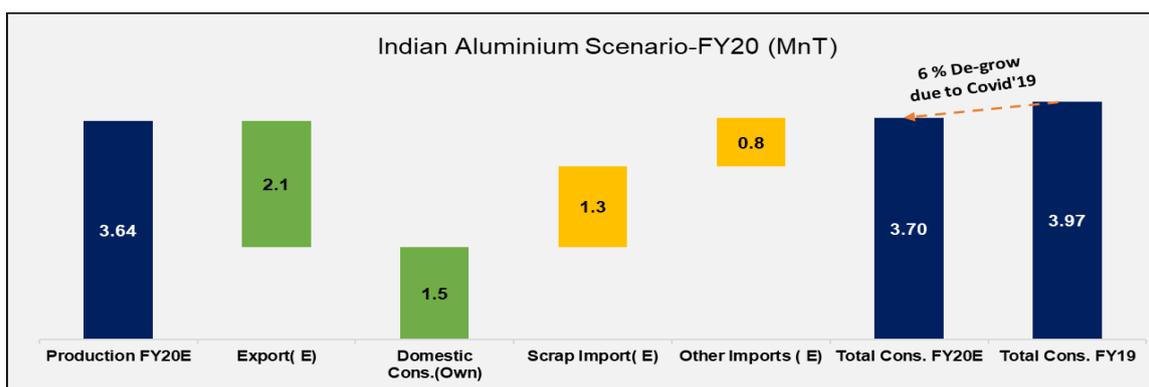


Figure 2. Indian Aluminium Production & Consumption balance.

### 1.3. Bauxite and Aluminum Growth

India has the 7<sup>th</sup> largest bauxite reserve (3 896 million tonnes: reserve-656 million tonne and 3240 million tonne-remaining resources in FY19) in the world. With this abundant bauxite, India is self-sufficient to meet domestic and export demand. Over the period of last 5 - 10 years, production has increased at a CAGR of 5.3 % from FY10 at 14.1 Mtpa to FY19 at 23.7 Mtpa, CAGR from FY15 at 22.5 Mtpa to FY19 at 23.7 Mtpa is 1 % level. In FY19, production is in place from 154 major mines, distributed over all states. Odisha contributes almost 71 % of total production of the country.

Over the period of last 6 years, alumina production is increasing at a CAGR of 4.6 %. Hindalco, NALCO and Vedanta are producers for alumina. Major growth in production is driven by ramp up of Vedanta Lanjigarh refinery from 0.98 Mtpa in FY15 to 1.18 Mtpa (10.8 % CAGR). Currently, all 3 primary players are planning for expansion of existing refineries in next 1 - 2 years by 1.7 - 2 Mtpa capacity. All these expansions are being supported by availability of domestic bauxite (majorly from Odisha).

- ISO 50001:2011 Energy Management System
- ISO 55001:2014 Asset Management System
- ISO 27001:2013 Information Security Management System
- ISO 22301:2012 Business Continuity Management System
- IATF 16949:2016 International Automotive Task Force (Automotive Quality Management System)
- ISO 17025:2005 Laboratory Management System

ASTM standards are being followed for testing parameters in chemical analysis, conductivity measurement and Ultimate tensile strength (UTS), elongation and diameter measurement.

#### **2.2.4. Digitization and Technology**

Out of the five operating pot lines, efficiency of potlines has been improved to 94-95 % level over last three years with process optimization. To improve further efficiency and new product following Digitization and R & D initiatives are being planned/under progress.

- Implementation of Manufacturing Execution System (MES) for all KPIs.
- Establishment of Smart Pot: Development of Digital Twin to reduce Specific DC Power consumption and specific AlF<sub>3</sub> consumption through efficiency improvement, partnering with General Electric.
- Automatic Furnace Planning to improve furnace cycle time.

### **3. Conclusions**

In the global aluminium industry, utilization is steady at 81 % at current level. Post pandemic recovery, demand across all sectors is poised to grow, like in China where the recovery is almost V-shaped. Total demand is expected to grow to ~95-100 million tonnes in next 4 to 5 years from current level of ~82-85 million tonnes through growth in various sectors. This will be mainly driven by less raw material costs from power to upstream, different consumption avenues in construction, packaging, transport and energy sector, majorly renewable energy. All primary producers are aiming for higher profit margin through strategic raw material sourcing and switching to renewable energy sources, planning to ramp up capacity. India's primary industry is self-sufficient to meet the expected demand growth of 4.1 Mtpa by CY 2024.

Vedanta Jharsuguda has plans to continue ramp up to unlock installed capacity in next 2 to 3 years along with maximizing VAP production capabilities beyond design level. With the implementation of digital solutions, advanced process control system, exploration of renewable energy options, strategic sourcing, and the dedication of young and talented workforce, Vedanta will sustainably continue to be in first quartile of cost curve with best quality of production. Backed by a diverse product portfolio, R&D capabilities and customer-technical support, the company is committed to support its illustrious global clientele as well as fulfill the national vision for 'Atmanirbhar Bharat'.

### **4. References**

1. CRU Report
2. Annual Report, Vedanta Limited
3. Govt. of India Reports