



**Metals in World Economy**  
**Case of Aluminium Industry in India**  
**Status & Constraints**

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## 1. What Are Metals?

Metals are mineral bodies that come in a variety of forms, from base metals to precious metals. Base metals are those that oxidize or corrode relatively easily. Within base metals, a distinction is made between ferrous and nonferrous metals. Ferrous metals typically iron, tend to be heavy and relatively abundant. Nonferrous metals do not contain iron in significant amounts. Generally more expensive than ferrous metals, nonferrous metals have desirable properties such as low weight (for example, **aluminium**), higher conductivity (for example, copper), nonmagnetic properties, or resistance to corrosion (for example, zinc and nickel). The term “base metals” is commonly used in contrast with “noble metals,” which unlike most base metals are resistant to corrosion or oxidation.

## 2. Metal Markets in World Economy

Metal markets impact world Economy for two reasons. First, at the global level, metals are at the heart of the world economy because they are key intermediate inputs in industrial production and construction. Metal markets are thus shaped by shifts in the volume and composition of global demand and supply. As such, transformations in metal markets also signal important changes in the world economy. Second, for some countries, metal exports are a large portion of their total exports, and fluctuations in metal prices can have important macroeconomic consequences.

From an economic point of view, Iron Ore is by far the most important base metal, with a \$225 billion annual industry in terms of global sales. Steel, which is produced from iron ore, is mostly used for construction, transportation equipment, and machinery. Copper is the second-most-important base metal by value—accounting for roughly a \$130 billion industry annually. Copper is used for construction and electrical wire. Chile is the largest producer, followed by China and Peru. **The third-most-important base metal is Aluminium** (with an annual \$90 billion industry). Aluminium is used in the aerospace industry as well as other industries requiring light metal. Large producers of aluminium are located where electricity is cheap and abundant. The largest producer is China, followed by Russia, Canada, and the United Arab Emirates. Recycling has become an important part of aluminium production because the recycling process is much less energy intensive than the production of primary aluminium. China consumes about half of the world’s production of primary aluminium. In contrast, advanced economies rely more on recycling and in turn have less influence over primary aluminium prices.

### **3. How Have Metal Markets Evolved?**

Over the past decades, metal markets have undergone dramatic shifts in the volume and structure of both demand and supply. Global production has increased across the board for most metals owing to the rapid investment in capacity in the 2000s. On the demand side, demand has shifted from West to East; that is, from consumption concentrated in advanced economies toward that concentrated in emerging markets—especially China on account of its rapid growth. On the supply side, the so-called frontier of extraction of nonferrous metals, including precious metals such as gold, has shifted from North to South—that is, from advanced to developing economies—because of the rapid improvement in the investment climate, first in Latin America and then in sub-Saharan Africa.

On the demand side, the most dramatic development explaining the shift from West to East is the formidable growth performance of China. China's growth in consumption of metals has been the main driving force behind global metal consumption since the early 2000s. As a result China is now the main consumption locus for most metals. Far behind, India, Russia, and Korea have also increased their metal consumption, while consumption in Japan has stagnated somewhat.

The rapid rise in demand from emerging markets has been a key driver of metal and other commodity prices. The pattern of global metal trade has evolved dramatically over the past decades, with the major destination countries shifting from West to East and the source countries from North to South. In 2002, metals were exported mainly from Canada and Russia to the United States or from Australia to Japan, Korea, and China. In contrast, by 2014 almost half of metal exports were going from Australia, Brazil, and Chile to China. **China has become the largest importer of metals, with its share increasing from less than 10 percent to 46 percent from 2002 to 2014.**

Many developing economies depend heavily on metal exports. These exports have risen sharply as a percentage of GDP, and the group of largest metal exporters (as a percentage of GDP) has changed substantially as a result. Metal exports from Chile, Mauritania, and Niger now account for more than half of these countries' total exports of goods. These countries are thus vulnerable to fluctuations in metal prices such as those that have recently occurred as a result of shifts in demand from large importers such as China. Discoveries of new metal deposits have expanded the list of resource-dependent countries that face new challenges in terms of macroeconomic management.

#### **4. What Lies Ahead?**

The slower pace of investment in China, that country's sharp stock market decline since June, and the ample supply of metals have been exerting downward pressure on metal prices. Considering that the decline in metal prices started much earlier, it makes sense to ask what should be expected. As mentioned earlier, futures markets point to lower prices, though the decline is projected to bottom out.

#### **5. Aluminium Industry in India**

**5.1** India is richly endowed with bauxite resources, which is the basic raw material for aluminium production. Estimated bauxite reserves of the country (proven and probable) stand at 593 million tonnes. The country occupies 7th place in the world in terms of bauxite reserve base.

**5.2** The total domestic production of aluminium metal during FY 2013-14 was about 1.7 million tonnes and in FY14-15, it is expected to increase to about 2 million tonnes. The total domestic consumption of primary aluminium metal in 2013-14 was 1.6 million tonnes and is expected to remain the same during 2014-15. The Indian primary aluminium industry consists of three major players i.e. National Aluminium Company Limited (NALCO), HINDALCO Industries and the Sesa Sterlite Group, having total installed smelting capacity of about 2.9 million tonnes, presently. The domestic aluminium majors are now keenly pursuing brownfield and green field expansion programmes and it is expected that in the next few years, the aluminium capacity in the country would grow to more than 4 million tonnes.

**5.3** The aluminium per capita consumption level in India continues to be very low i.e. it stands currently at around 1.4 kg as against the world average of roughly 8kg. However, the demand for aluminium in India is projected to grow, largely in line with the annual GDP growth rate of about 5.5 % per annum. In India, the power sector continues to be the major consumer of aluminium. Besides this, demand growth is also likely to be high in transport, packaging, building and construction sectors.

**5.4** The total domestic production of aluminium metal by aluminium producers in the years 2012-13 to 2014-15 is at Table 1. The sales figures of aluminium (Domestic Sales of Aluminium & Export Sales of Aluminium in India) are given in Table 2 and Table 3.

**Table 1****Production of Aluminium in India**

(Figs. in MT)

SI No.	Producer	2012-13	2013-14	2014-15 (Apr-Dec'14)	Jan- Mar'15 (Estimated figures)
1	NALCO	4,03,384	3,16,492	243,572	81,191
2	HINDALCO	5,47,416	6,18,286	589,606	-
3	VEDANTA GROUP	7,73,946	7,95,355	648,766	-
	<b>TOTAL</b>	<b>17,24,746</b>	<b>17,30,133</b>	<b>14,81,944</b>	<b>81,191</b>

(Note : Production figures pertaining to other primary producers are based on available market data ; Estimated figures for Jan'15-Mar'15 have been provided for NALCO only and details pertaining to other primary producers are not available with NALCO)

**Table 2****Domestic Sales of Aluminium**

(Figs. in MT)

SI No.	Producer	2012-13	2013-14	2014-15 (Apr-Dec'14)	Jan- Mar'15 (Estimated figures)
1	NALCO	2,58,941	2,18,420	1,96,323	54,850
2	HINDALCO	4,57,844	4,73,651	3,57,438	-
3	VEDANTA GROUP	6,61,933	5,47,251	3,68,916	-
	<b>Total</b>	<b>13,78,718</b>	<b>12,39,322</b>	<b>922,677</b>	<b>54,850</b>

**Table 3****Export Sales of Aluminium**

(Figs. in MT)

SI No.	Producer	2012-13	2013-14	2014-15 (Apr-Dec'14)	Jan- Mar'15 (Estimated figures)
1	NALCO	144,161	1,01,243	44,489	26,400
2	HINDALCO	89,586	1,38,366	214,120	-
3	VEDANTA GROUP	111,012	247,472	265,193	-
	<b>Total</b>	<b>3,44,759</b>	<b>4,87,081</b>	<b>523,802</b>	<b>26,400</b>

(Note : Sale figures pertaining to other primary producers are based on available market data ; Estimated sale figures for January, 2015 March 2015 for NALCO are based on RE 2014-15 ; Estimated figures for January-March, 2015 for other primary producers are not available with NALCO)

**6. Domestic Demand**

During 2009-10 to 2014-15, demand for aluminium posted a CAGR of 5%, in line with the growth recorded by the power and automobile sectors. In 2014-15, demand rose 8% to 2 million tonnes, as demand from the key end-user sectors (automobiles, power and consumer durables – together accounting for 65-70% of domestic demand) improved by 8%. As of 2014-15, aluminium consumption in India was dominated by the power (39%), automobiles

(23%) and construction (15%) sectors. Demand for aluminium is likely to rise 7-8% in 2015-16 and 2016-17, as demand from key end-user sectors increase.

## **7. Domestic Supply**

A continuous rise in aluminium capacity amidst weak demand is expected to crimp capacity utilisation between 2013-14 and 2015-16 – aluminium capacity rose to 2.65 million tonnes in 2015-16 from 1.8 million tonnes in 2013-14, which is a y-o-y increase of 21%. In 2015-16, an additional 0.38 million tonnes of capacities are slated to come on-stream. This will see the industry's utilisation level, which stood at 95% in 2013-14, contracting to 86% in 2015-16. The situation is expected to improve over the next five years as the ramp up in capacities slows down owing to unfavourable global conditions, falling prices and insufficient raw material supply (bauxite). Up to 2019-20, effective capacities as well as output are projected to increase 8-9%, thereby improving the utilisation level to 93%. New capacities totalling 1 million tonnes were commissioned in 2014-15. Hindalco's Aditya smelter (0.359 mtpa) and Balco's Korba II expansion project (0.325 mtpa) were commissioned in the first quarter of 2014-15. Vedanta Aluminium commenced its first pot line of 0.312 mtpa of the 1.25 mtpa Jharsuguda-II smelter in the third quarter of 2014-15. As these new capacities are expected to ramp up slowly, no new smelter capacities are being planned by Indian aluminium players over the next 5 years.

## **8. Industries Demand**

### **8.1 Imposition of Export Duty on Alumina**

Around 80-85% of total alumina exports from India in 2013-14 were destined for Middle East countries. At the same time, imports from Middle East have surged from 308kT in FY11 to 528kT in FY15 with a CAGR of 14%. This means that the Indian companies are helping Middle East smelters run and export back value added product to India. In India, Aluminium smelters of 1.5 million tons capacity are ready but have not been commissioned due to non-availability of alumina. In case the indigenous requirement of alumina is fulfilled from domestic sources (instead of exporting the same to Middle East), India will be able to export aluminium which will fetch more value. This will also save outflow of foreign exchange and reduce load on infrastructure. It is accordingly suggested that export duty of 5% be imposed on export of alumina.

### **8.2 Reducing Import Duty on Aluminium Fluoride**

India is net importer of Aluminium fluoride. Aluminium industry is importing 100% of its requirement of AlF<sub>3</sub>. Contribution of Aluminium fluoride in cost of production of aluminium metal is around 1.5%. The demand for AlF<sub>3</sub> will increase with the operationalization of expansion projects. Duty correction on AlF<sub>3</sub> will not have any impact on any other industry. Hence, it is recommended to reduce import duty on Aluminium Fluoride from 7.5% to 2.5%.

### **8.3 Reducing Import Duty on Coal Tar Pitch**

Coal Tar Pitch is a crucial raw material for aluminium to be used as binding material for manufacturing anodes for the electrolysis process with the aluminium industry using a substantial quantity of total production / imports of CT Pitch. Its contribution in the total cost of production of aluminium is around 3.5-4%. It is suggested to reduce import duty on CT Pitch from 5% to 2.5%.

### **8.4 Increasing of Export Duty on Bauxite**

India's alumina production capacity is 6.1 million tonnes per annum. The requirement for bauxite is around 18 million tonnes per annum. Since no new major bauxite mines could be started in the last 20 years, Alumina refineries in India are finding it difficult to source indigenous bauxite and are forced to import. On the other hand merchant miners are exporting huge quantities of bauxite. Even though the government has increased the export duty to 20% on bauxite in Union Budget 2014-15, it has failed to stem the outflow of bauxite. Bauxite exports in FY14 and FY15 were 3.3 and 6.4 million tonnes respectively. To ensure domestic value addition within India, export of bauxite must be discouraged. It is therefore suggested to increase export duty on bauxite from 20% to 30%.

### **8.5 Increase in Basic Customs Duty on Aluminium Products from 5% to 10%**

Indian Aluminium industry has seen a huge surge in imports in recent years. The market share of domestic manufacturers has dropped to 44% in 2014-15 with imports nearly doubling to 15.63 lakh tonne from 8.81 lakh tonne in 2010-11. The threat of imports is primarily from two locations: Middle East and China. Both these locations have a huge capacity surplus. Further, the domestic capacity of 41 lakh tonnes per annum is currently operating at 50%. The consumption of aluminium in India is expected to grow at 10-11% CAGR over the next decade. To cater to such huge demand potential, Indian primary aluminium industry has announced ambitious growth plans involving massive capital outlay for increasing the capacity to 5 million TPA by 2020. The rising imports are, however, endangering the very basis of these large investments and their viability. The surge in imports is happening at a time when the industry has been already squeezed by subdued realizations and incessant increase in cost of production. With such adversities it is recommended that the



import of aluminium products into India should be controlled by increasing the basic customs duty on aluminium products (HS codes 7601, 7603, 7607) from 5% to 10%.

#### **8.6 Customs duty on Aluminium Scrap at par with the duty on the Metal Products**

For all base metals other than Aluminium, import duty on scrap in India is the same as the duty on the metal. It is only in case of Aluminium that the duty on scrap is 2.5%, while duty on aluminium products is at 5%. In most of the Aluminium downstream products, scrap and primary aluminium can be used almost interchangeably. The differential duty structure seems to be, therefore, leading to a substitution of primary aluminium by scrap – reflected in a sharp rise in imports of scrap (CH 7602). Scrap imports are causing an immense harm to the Indian aluminium industry due to market diversion. It is recommended that the basic customs duty on Aluminium Scrap (CH 7602) be raised and brought on par with the duty on Aluminium products.

#### **8.7 Inclusion of Aluminium Ingots under Interest Subvention Scheme**

In order to encourage exports, Government has widened the Interest Subvention Scheme by including 134 engineering products vide a circular dated January 14, 2013 issued by RBI. While this list includes Aluminium wire rods and Aluminium sheets, it does not include the primary product, i.e. Aluminium Ingots (HS 7601). Exports of aluminium ingots from India have been nearly stagnant over the last three years at around 200 tonnes per annum. These exports may get some leverage if ingots are included under the above scheme. It is, therefore, recommended that Aluminium Ingots (HS 7601) be included under the Interest Subvention Scheme.

### **9. Our Assessment**

#### **9.1 Global aluminium prices to plunge further in 2016**

Global aluminium prices fell 15% y-o-y during January-November 2015, due to a 30% y-o-y drop in prices from June-November 2015. Deceleration in demand from China, speculations of increase in the US Federal Bank rate and a stronger rupee resulted in a sharp fall in global aluminium prices. The decline in prices also reflected strong negative investor sentiments towards aluminium. Further, the Chinese government devalued yuan three times in a row in August 2015, exerting further pressure on prices. All these factors will continue to push prices downwards during the year. As a result, aluminium prices (LME + premium) are estimated to decline 17% to \$1,850 per tonne. In 2016, aluminium prices are forecast to fall by further 10-12% as production will continue to surpass demand.

#### **9.2 Low realisation will stress financials**

The profitability of aluminium players is expected to narrow considerably in 2015-16, on account of a sharp drop in realisation. As the global demand supply gap widens, global aluminium prices are expected to decrease 15-17%. A weaker rupee, though, will support domestic prices to some extent. Consequently, aluminium players may incur EBIT losses. Profitability will be strained further in 2016-17 with overall power cost rising 6-7%, as Hindalco and Balco's aluminium smelters begin to run on high cost captive coal, awarded in the February 2015 auction.

### **9.3 Growth in exports will also moderate**

As India's position shifts towards the right of the global cost curve, we expect aluminium exports to moderate at 10-13% CAGR during 2014-15 to 2019-20. Also, owing to unfavourable global conditions and falling prices, most of the Indian aluminium manufacturers are expected to ramp up production slowly from their new capacities. They will focus more on the domestic market. As a result, the gap between domestic demand and capacity addition will narrow. Therefore, the share of exports in domestic production would rise marginally to 44-45% by 2019-20 from 42% in 2014-15.

### **9.4 Industries Demand and Key Budget Proposals - Union Budget 2016-17**

In Union Budget 2016-17 certain proposals related to Aluminium Industry have been announced. The proposals and their estimated impact are as follows:

- Customs duty on aluminium increased to 7.5% from 5%
- Clean environment cess doubled to Rs. 400 per tonne
- Export duty on bauxite reduced to 15% from 20%

### **9.5 Estimated Impact**

- Hike in customs duty on aluminium will narrow the gap between landed cost of aluminium and domestic aluminium prices, thereby curbing aluminium imports
- Doubling of clean environment cess to Rs 400 per tonne will have negative impact as aluminium manufacturers' power cost is expected to rise further.
- Lowering of export duty on bauxite may benefit exporters such as Nalco, though this is against the stated EXIM Policy.

## Data Tables

### A. Demand supply - India

#### Demand-supply

##### Aluminium - Demand-supply

(Tonnes)	Production	Imports	Exports	Consumption
2000-01	575,250	100,000	170,000	505,250
2001-02	604,320	110,000	144,000	570,320
2002-03	634,200	126,781	181,861	579,120
2003-04	679,989	80,924	218,233	542,680
2004-05	782,736	126,329	227,070	681,995
2005-06	998,544	215,584	214,001	1,000,127
2006-07	1,150,072	212,316	243,768	1,118,621
2007-08	1,234,542	328,829	289,840	1,273,531
2008-09	1,327,325	331,675	357,270	1,301,730
2009-10	1,525,171	406,801	399,733	1,532,239
2010-11	1,619,455	433,799	345,423	1,707,831
2011-12	1,667,634	519,767	380,851	1,806,550
2012-13	1,757,319	630,302	430,648	1,956,973
2013-14	1,723,100	681,120	594,749	1,809,471
2014-15	2,031,835	780,955	867,750	1,945,040

Source: CRISIL Research, DGFT

### B. Demand supply – Global

#### Production of selected countries

Aluminium - Production of selected countries											
('000 tonnes)	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014E
US	2,516	2,481	2,284	2,554	2,658	1,727	1,726	1,986	2,070	1,946	1,720
Australia	1,900	1,900	1,930	1,960	1,970	1,940	1,930	1,950	1,860	1,780	1,680
Brazil	1,460	1,500	1,498	1,660	1,660	1,540	1,540	1,440	1,440	1,300	960
Canada	2,590	2,890	3,050	3,090	3,120	3,030	2,960	2,980	2,780	2,970	2,940
China	6,670	7,800	9,350	12,600	13,200	12,900	16,200	18,100	20,300	22,100	23,300
Mozambique	547	555	564	564	236	545	557	562	564	570	560
Norway	1,320	1,370	1,330	1,300	1,360	1,130	800	1,070	1,150	1,100	1,200
Russia	3,590	3,650	3,720	3,960	3,800	3,820	3,950	3,990	3,850	3,720	3,500
South Africa	863	851	895	899	811	809	807	809	665	822	735
Venezuela	624	610	610	610	610	610	335	-	-	-	-
Other countries	7,720	8,293	8,469	8,803	9,575	9,249	9,995	11,513	11,221	11,292	12,705
<b>World</b>	<b>29,800</b>	<b>31,900</b>	<b>33,700</b>	<b>38,000</b>	<b>39,000</b>	<b>37,300</b>	<b>40,800</b>	<b>44,400</b>	<b>45,900</b>	<b>47,600</b>	<b>49,300</b>

E: Estimate

Source: USGS