MCX
METAL & ENERGY
Trade with Trust

MCX INVESTOR PROTECTION FUND

ALUMINIUM
HEDGING BROCHURE



OVERVIEW

Aluminium has been used by man from the earliest times; pottery was made from clays rich in hydrated silicate of aluminium. Ancient middle eastern civilizations used aluminium salts for the preparation of dyes and medicines— they are used to this day in indigestion tablets and toothpaste.

Aluminium is one of the most abundant (8.13%) metallic elements in the earth's crust, and after oxygen and silicon, the third most abundant of all elements in the crust. Because of its strong affinity to oxygen, it is not found in the elemental state but only in combined forms, such as oxides or silicates. The metal derives its name from alumen, the Latin name for alum. Aluminium was also the accepted spelling in the United States until 1925 when the American Chemical Society officially reverted to aluminum. The first step in extracting aluminium was made by Paracelsus in the 16th century. This was the beginning of the aluminium world's triumph. While only 8,000 tonnes of the metal was produced in 1900, its production volume had reached 24 million tonnes one hundred years later.

PRICE RISK MANAGEMENT

Risk management techniques are of critical importance for participants, such as producers, exporters, marketers, processors, and SMEs. Modern techniques and strategies, including market-based risk management financial instruments like 'Aluminium Futures', offered on the commodity derivative platform can improve efficiencies and consolidate competitiveness through price risk management. The importance of risk management cannot be overstated; an expert committee setup by the government found that commodity derivative exchanges are efficiently fulfilling their functions of price discovery and price risk management.

HEDGING MECHANISM

Hedging is the process of reducing or controlling risk. It involves taking equal and opposite positions in two different markets (such as physical and futures market), with the objective of reducing or limiting risks associated with price change. It is a two-step process, where a gain or loss in the physical position due to changes in price will be offset by changes in the value on the futures platform, thereby reducing or limiting risks associated with unpredictable changes in price. In the international arena, hedging in Aluminium futures takes place on a number of exchanges, the major ones being London Metal Exchange (LME), Shanghai Futures Exchange (SHFE), and Chicago Mercantile Exchange (CME).

IMPORTANCE OF HEDGING

Hedging is critical for stabilizing incomes of corporations and individuals. Reducing risks may not always improve earnings, but failure to manage risk will have direct repercussion on the risk bearers' long- term income. To gain



Aluminium is a chemical element in the boron group with symbol Al and is the most widely used non-ferrous metal. Ancient Greeks and Romans used aluminium salts as dyeing mordants and as astringents for dressing wounds. It is a silvery white, soft, ductile metal. It makes up about 8% by weight of the earth's solid surface. By 1895, the metal was being used as building material in Sydney, in the dome of the Chief Secretary's Building. With the explosive expansion of the airplane industry during World War I (1914-17), all major governments demanded large shipments of aluminium for light, strong, airframes. They often subsidized factories and the necessary electrical supply system. At one point in time, aluminium was such a valuable commodity that rulers and the wealthy preferred impressing their guests with plates and cutlery made from aluminium rather than gold.

(Source: Wikipedia)

most from hedging, it is essential to identify and understand the objectives behind hedging. A good hedging practice, hence, encompasses efforts by companies to get a clear picture of their risk profile and benefit from hedging techniques.

PARTICIPANT HEDGERS

Commodity Exchanges offer a transparent hedging platform, besides bringing about economic and financial efficiencies by de-risking production, processing, and trade. Exchange's engagement has led to large efficient gains in supply chains, with exporters gaining a larger share of global prices, and producers getting better prices and better access to markets. Multiple variants of aluminium futures contract in terms of size i.e. 5 MT and 1 MT are offered by Commodity Exchanges, suiting varying needs of hedgers. All those who have or intend to take positions in physical aluminium are participant hedgers. These are:

- Importers
- Exporters
- Refiners
- Processors
- Stockists
- SMEs

FACTORS AFFECTING ALUMINIUM PRICES

- Prices ruling in the international markets
- Indian rupee and US dollar exchange rates
- Economic factors: industrial growth, global financial crisis, recession, and inflation
- Commodity-specific events: construction of new production facilities or processes, new uses or the discontinuance of historical uses, unexpected mine or plant closures (natural disaster, supply disruption, accident, strike, and so forth), and industry restructuring—all affect the price of the metal
- Government trade policies (implementation or suspension of taxes, penalties, and quotas)
- Geopolitical events
- As societies develop, their demand for metal increases based on their current economic position, which could also be referred to as the 'National Economic Growth Factor'

DOMESTIC SCENARIO

Production of aluminium metal in the public sector unit i.e. National Aluminium Company Ltd. (NALCO) and private sector units, namely, Bharat aluminium Company Ltd. (BALCO), Hindustan Aluminium Company Ltd. (HINDALCO) and Vedanta Limited in the country was as follows:

Figs. in MT

ALUMINIUM PRODUCTION IN INDIA	
COMPANY	**2018-19**
NALCO	4,40,242
BALCO	5,71,814
HINDALCO	4,09,037
VEDANTA LTD.*	5,44,651
TOTAL	**19,65,744**

**Data of plant-2 of Vedanta is not reflected in the table | Source: Ministry of Mines*

HEDGING EXPERIENCES

1. Alcoa is the world's third largest aluminium producing company. Aluminium and alumina represent more than three-fourths of Alcoa's revenue.

"Derivatives are held for purpose other than trading and are part of a formally documented risk management program. For derivatives designated as fair value hedges, Alcoa measures hedge effectiveness by formally assessing, at least quarterly, the historical high correlation of changes in the fair value of the hedged item and the derivative hedging instrument."

Source: Annual Report 2018.

2. Siemens India Limited

"The Company uses Commodity Future Contracts to hedge against fluctuation in commodity prices."

Source: Annual Report, 2018.

3. Antofagasta is a Chilean mining group with significant by-product production and interests in transport and water distribution.

"The Group monitors the commodity markets closely to determine the effect of price fluctuations on earnings, capital expenditures and cash flows. From time to time, the Group uses derivative instruments to manage its exposure to commodity price fluctuations where appropriate."

Source: Antofagasta plc, Annual Report and Financial Statements 2018.

FACTS ON HEDGING

- Understand the risk profile and appetite while formulating clear hedging objectives
- Hedging can shield the revenue stream, profitability, and balance sheet against adverse price movements
- Hedging can maximize shareholder value
- Under 'International Financial Reporting Standards' (IFRS) beneficial options arise for effective hedges
- Common avoidable mistake is to book profits on the hedge while leaving the physical leg open to risk
- Hedging provides differentiation to companies in a highly competitive environment
- Hedging also significantly lowers distress costs in adverse circumstances confronting a company
- A properly designed hedging strategy enables corporations to reduce risk. Hedging does not eliminate risk, it merely helps to transform risk
- To gain most from hedging, it is essential to identify and understand the objectives behind hedging and to get a clear picture of the risk profile

APPRECIATING THE BENEFITS OF HEDGING

Situations prevailing in the aluminium industry are given below, which will demonstrate how the commodity exchange platform may be used by participants to manage price risk by entering into Aluminium Futures contracts. We will look at the effect of price movement in either direction.

THE SITUATION

Alum Foundry is an exporting company and has to procure aluminium from the physical market routinely to meet export orders. It currently have an export order of 50 tonnes. The aluminium market has been extremely unpredictable due to the price volatility, which is a reflection of international and domestic factors. The company procures "just-in-time" to meet production schedule—this would essentially mean that input prices would keep changing given the volatility in aluminium prices. Aluminium prices are influenced by global fundamental factors and currency movements. The company hedges on commodity exchanges to effectively manage its commodity price risk.

HEDGING ILLUSTRATION

GOING LONG: Scenarios where prices either rise or fall (All prices are in ₹/kg)

Alum Foundry has put forward the following facts:

1. The company decides on 12th October to procure 50 tonnes of aluminium
2. It has structured its purchase, such that 10 tonnes will be physically bought every week at the prevailing price
3. The first purchase of 10 tonnes is bought physically on 12th October 2014. Thus, the first order does not undergo any price change
4. The remaining 40 tonnes will be bought in subsequent weeks in lots of 10 tonnes every week at ruling prices.

The company hedges for 40 tonnes.

DATE	PHYSICAL MARKET	FUTURES PLATFORM	OPEN INTEREST in lots on FUTURES MARKETS
12th October	BUY 10 Tonnes	BUY 40 lots of Aluminium Mini Futures Contract of 1 Tonne each	40
19th October	BUY 10 Tonnes	SELL 10 lots of Aluminium Mini Futures	30
26th October	BUY 10 Tonnes	SELL 10 lots of Aluminium Mini Futures	20
2nd November	BUY 10 Tonnes	SELL 10 lots of Aluminium Mini Futures	10
9th November	BUY 10 Tonnes	SELL 10 lots of Aluminium Mini Futures	0

DATE	ALUMINIUM SPOT PRICES	Aluminium Mini Futures Prices (expiry 30th November 201X)
12th October	105	106
19th October	108	109
26th October	101	102
2nd November	113	114
9th November	102	103

DATE	SPOT MARKET ACTION		FUTURES MARKET ACTION		Profit/Loss per kg in FUTURES MARKET	NET PURCHASE PRICE/KG
12th October	BUY	10 MT @ 105	BUY	40 lots @ 106		105
19th October	BUY	10 MT @ 108	SELL	10 lots @ 109	3 (Profit)	105(108-3)
26th October	BUY	10 MT @ 101	SELL	10 lots @ 102	4 (Loss)	105(101+4)
2nd November	BUY	10 MT @ 113	SELL	10 lots @ 114	8 (Profit)	105(113-8)
9th November	BUY	10 MT @ 102	SELL	10 lots @ 103	3 (Loss)	105(102+3)

EXPLANATION

The Treasury Team of Alum Foundry, buys 40 lots of Aluminium Mini (1 lot = 1 tonne) 30th November contract on 12th October and squares the position in a staggered manner in subsequent weeks, whenever the company lifts aluminium from the physical market at the prevailing spot market price. The company, by hedging its position and making a staggered exit from the futures contract, makes the net buying price at ₹105 per kg, which is the budgeted price.
Objective is to lock price. And, NOT profit from the rise/ fall in prices.

THE SITUATION

ABC Extrusions is a company involved in the manufacture and retail sales of aluminium extrusions. Significant boom in the housing segment has led to a sharp growth in consumer durables segment in the volume and sales. Price volatility is of big concern to the company. A consultant appointed by the management has recommended that price risk should be managed by taking up position on futures market.

HEDGING DOMESTIC SALE

GOING SHORT: Scenarios where prices either rise or fall

The company, ABC Extrusions has requirement of 20 metric tonnes of aluminium every week to conduct routine production. Based on experience, the company has put forward the following facts:

1. The company purchases 20 tonnes of aluminium every week to conduct routine production
2. The processed material will be ready to be sold in 2 weeks
3. The sale price of finished goods will be as per prevailing price at the time of final sales
4. It is difficult to predict the sales price 2 weeks ahead
5. The company's objective is to lock prices

SCENARIO 1: IF PRICES WERE TO FALL (All prices are in ₹/kg)



DETAILS	FUTURES PLATFORM	PHYSICAL MARKET
12-10-201X	SELL Aluminium Mini Futures Contract	
26-10-201X	BUY Aluminium Mini Futures Contract	Processed material sold at ruling price

The net position of the above transactions will negate price risk

DATE	ALUMINIUM SPOT PRICE	ALUMINIUM MINI FUTURES PRICE (expiry 31st October 201X)
12-10-201X	105	106
26-10-201X	94	95

Futures	12-10-201X	SELL	106	26-10-201X	BUY	95	11 (profit)
Spot	12-10-201X	BUY	105	26-10-201X	SELL	94	

Net selling price: ₹105 (₹94 + ₹11)

EXPLANATION

The Treasury Team of ABC Extrusions, short sells 20 lots (1 lot = 1 tonne) of Aluminium Mini 31st October contract on 12th October and squares the contracts on 26th October. The value of raw material in the finished goods sale is ₹18,80,000 (94*20*1000) and cash inflow from futures markets due to fall in prices is ₹2,20,000 (11*20*1000). Thus, the net value realized from the sale of finished goods is ₹21,00,00 (18,80,000 + 2,20,000), making the net selling price ₹105 per kg (21,00,000/20,000), which is the budgeted price.

SCENARIO 2: IF PRICES WERE TO RISE (All prices are in ₹/kg)



DETAILS	FUTURES PLATFORM	PHYSICAL MARKET
12-10-201X	SELL Aluminium Mini Futures Contract	Raw material bought
26-10-201X	BUY Aluminium Mini Futures Contract	Processed material sold at ruling price

The net position of the above transactions will negate price risk

DATE	ALUMINIUM SPOT PRICE	ALUMINIUM MINI FUTURES PRICE (expiry 31st October 201X)
12-10-201X	105	106
26-10-201X	116	117

Futures	12-10-201X	SELL	106	26-10-201X	BUY	117	11 (loss)
Spot	12-10-201X	BUY	105	26-10-201X	SELL	116	

Net selling price: ₹105 (₹116 - ₹11)

EXPLANATION

The Treasury Team of ABC Extrusions, short sells 20 lots (1 lot = 1 tonne) of Aluminium Mini 31st October contract on 12th October and squares the contract on 26th October, making a loss of ₹11 per kg. The value of raw material in the finished goods sale is ₹23,20,000 (116*20*1000) on 26th October and cash flow outgo on futures markets due to rise in prices is ₹2,20,000 (11*20*1000). Thus, the net value realized from the sale of finished goods is ₹21,00,00 (23,20,000 – 2,20,000), making the net selling price ₹105 per kg (21,00,000/20,000), which is the budgeted price.

Note: The objective is to lock in prices, to obtain protection from unwanted price volatility, which affects the balance sheet of the company. This has been achieved through hedging in futures markets in both the scenario of rising and falling prices, by which ABC Extrusions has been able to sell the finished material at the budgeted price itself.

REGULATORY BOOSTS FOR HEDGERS

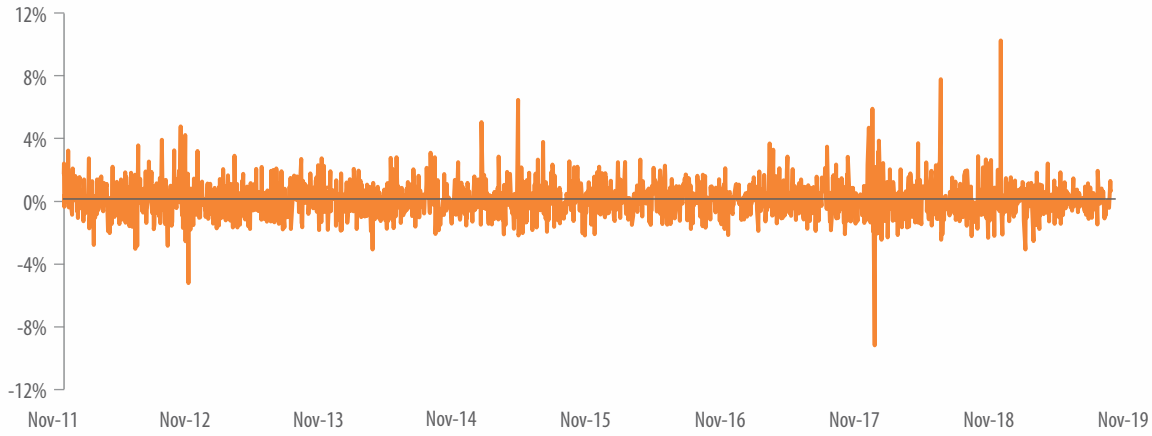
1. Income tax exemptions for hedging. The Finance Act, 2013 has provided for coverage of commodity derivatives transactions undertaken in recognized commodity exchanges under the ambit of Section 43(5) of the Income Tax Act, 1961, on the lines of the benefit available to transactions undertaken in recognized stock exchanges. This effectively means that business profits/losses can be offset by losses / profits undertaken in the commodity derivatives transactions. This enhances the attractiveness of risk management on recognised commodity derivative exchanges and incentivizes hedging. Hedgers are no longer forced to undertake physical delivery of commodities in order to prove that their transactions are in the nature of hedging and not 'speculation'.

2. Limit on open position as against hedging. Genuine hedgers having underlying exposure that exceed the prescribed OI limits given in the contract specifications can be allowed higher limits based on approvals. This enables hedgers to take positions to the extent of their exposure on the physical market and is allowed to take position over and above prescribed position limits on approval by the exchange.

A comprehensive Hedge Policy Document is available at:
https://www.mcxindia.com/docs/default-source/market-operations/trading-surveliance/reports/hedge-policy.pdf?sfvrsn=fa90ca90_2

DAILY AVERAGE VOLATILITY OF ALUMINIUM*

*MCX near month prices



YEAR	2011	2012	2013	2014	2015	2016	2017	2018	2019*
ANNUALISED VOLATILITY	17.06%	13.87%	18.49%	15.79%	18.16%	15.96%	15.47%	24.45%	17.89%

till 27 Nov., 2019

ALUMINIUM FACTS

Aluminium is theoretically 100% recyclable without any loss of its natural qualities. According to the International Resource Panel's Metal Stocks in Society report, the global per capita stock of aluminium in use in society (that is in cars, buildings and electronics) is 80 kg. Much of this is in more-developed countries (350 kg–500 kg per capita) rather than in less-developed countries (35 kg per capita). Knowing the per capita stocks and their approximate lifespans is important for planning recycling.

Low density and strength make aluminium ideal for the construction of aircraft, lightweight vehicles, and ladders. Easy shaping and corrosion resistance make aluminium a good material for drink cans and roofing material. It is a good conductor of heat which leads to its use in boilers, cookers, and cookware. Good conduction of electricity leads to its use for overhead power cables, and its low density gives it an advantage over copper.

By consumption, aluminium is next to steel. It is an important contributor to national economies of mature, newly developed, and developing countries.

(Source: Wikipedia, European Aluminium Association)

SALIENT SPECIFICATIONS OF MCX ALUMINIUM FUTURES CONTRACTS

Symbol	ALUMINIUM	ALUMINI
Trading Unit	5 MT	1MT
Contracts Listing	Contracts are available as per the Contract Launch Calendar.	
Contract Start Day	1st day of contract launch month. If 1st day is a holiday then the following working day.	
Last Trading Day	Last calendar day of the contract expiry month. If last calendar day is a holiday then preceding working day.	
Trading Period	Monday to Friday: 9.00 a.m. to 11.30 p.m. / 11.55 p.m.* (*based on US daylight saving time period)	
Quotation / Base Value	1 kg	
Maximum Order Size	150 MT	
Price Quote	Ex-Warehouse Thane district (excludes only GST).	
Tick Size	5 paise per kg	
Daily Price Limit	The base price limit will be 4%. Whenever the base daily price limit is breached, the relaxation will be allowed upto 6% without any cooling off period in the trade. In case the daily price limit of 6% is also breached, then after a cooling off period of 15 minutes, the daily price limit will be relaxed upto 9%. In case price movement in international markets is more than the maximum daily price limit (i.e. 9%), the same may be further relaxed in steps of 3% and inform the Regulator immediately.	
Initial Margin*	Minimum 4% or based on SPAN whichever is higher	
Extreme Loss Margin	Minimum 1%	
Additional and/ or Special Margin	In case of additional volatility, an additional margin (on both buy & sell side) and/ or special margin (on either buy or sell side) at such percentage, as deemed fit; will be imposed in respect of all outstanding positions.	
Maximum Allowable Open Position**	For individual client: 25,000 MT or 5% of the market wide open position whichever is higher, for all Aluminium contracts combined together. For a member collectively for all clients: 2,50,000 MT or 20% of the market wide open position whichever is higher, for all Aluminium contracts combined together.	
Due Date Rate	The Final Settlement Price (FSP) shall be arrived at by taking the simple average of the last polled spot prices of the last three trading days viz., E0 (expiry day), E-1 and E-2. On the day of expiry the trading shall be allowed up to 5pm.	

DELIVERY AND SETTLEMENT PROCEDURE FOR ALUMINIUM CONTRACTS

Trading Unit	5 MT	1MT
Delivery logic	Compulsory Delivery	
Delivery Unit	5 MT with tolerance limit of + / - 10%	1MT with tolerance limit of + / - 10%
Tender Period	Last 5 working days of the contract Expiry and 1st working day after expiry of the contract	
Delivery period (including delivery pay-out of commodities)	1st working day after expiry of the contract.	
Tender Period Margin	5% incremental margin for last 5 working days of the contract on all outstanding positions in addition to the initial, special and / or any other additional margin, if any.	

Continue...

Tender and Delivery Period Margin Exemption	Sellers are exempted from payment of all types of margins, if goods are tendered as Early Pay In with all the documentary evidences. However, MCXCCL shall continue to collect mark to market margins from Sellers
Delivery Period Margin**	Delivery period margins shall be higher of: 3% + 5 day 99% VaR of spot price volatility or 25%
Delivery Center	Ex-Warehouse at Thane district in Maharashtra
Tender notice / Delivery Pay-in	The seller will have to do the delivery pay-in through Electronic receipt settlement module by earmarking his existing valid commodity balance in the Electronic receipt settlement module towards the pay-in obligation. All outstanding long and short positions shall be marked for delivery at the expiry of the contract.
Delivery pay-in of Commodities	E+1 working day: 11:00 a.m. (E=expiry date)
Delivery pay-out of Commodities	E+1 working day: 2.00 p.m.
Pay-in of funds	E+1 working day: 11.00 a.m.
Pay-out of funds	E+1 working day: 2.00 p.m.
Quality Specifications & Shape#	Primary Aluminium Ingots with minimum purity of 99.70% of LME approved brands only. For the purpose of quality assessment, reliance shall be placed by the WSP on the test certificate(s) issued by the producer.

 # Only London Metal Exchange (LME) approved brands (including Indian producer's brands approved by LME) of Aluminium Ingots as per the list specified by LME at the time of deposit will be accepted for deposit by the depositor/seller at MCXCCL Accredited Warehouses (MAW). It should be Primary Aluminium with impurities no greater than the chemical composition of one of the registered designations:

- *P1020A in the North American and International Registration Record entitled "International Designations and Chemical Composition Limits for Unalloyed Aluminium"*
- *Al 99.70 in the GB/T 1196-2008 Standard entitled "Unalloyed aluminium ingots for remelting"*

In case LME/MCXCCL delists a particular brand of Aluminium Ingot, the same shall not be acceptable by the MAW.

*The Margin Period of Risk (MPOR) shall be 2 days in accordance with SEBI Circular no. SEBI/HO/CDMRD//DRMP/CIR/P/2016/77 dated September 01, 2016 accordingly, the initial margin shall be scaled up by root 2. | ** As per SEBI directive SEBI/HO/CDMRD/DRMP/CIR/P/2016/77 dated Sep 01, 2016

Note: Please refer to the exchange circulars for latest contract specifications
MCX also offers a Aluminium Mini (1 MT) Futures contract. Refer to MCX circular for its Contract Specifications

ALUMINIUM IN INDIA (in tonnes)

	Production	Import	Export
2013-14	1516	1348	707
2014-15	1598	1595	1033
2015-16	1628	1671	1153
2016-17	1745	1751	1547
2017-18	1843	1958	2012
2018-19*	1966	2137	2129

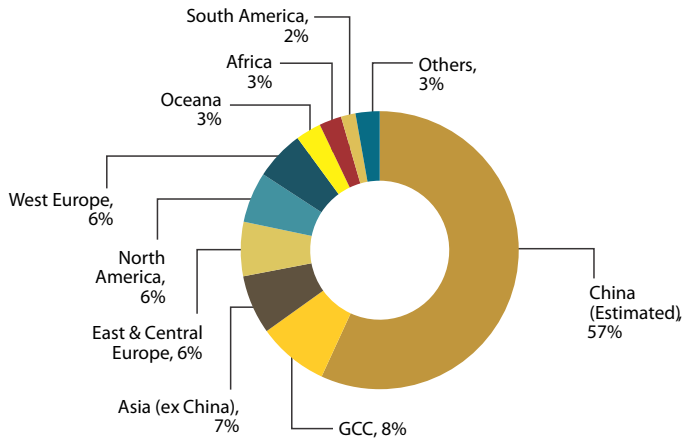
**From Apr-Feb 2019 for Exports/Imports* *Sources: Indian Bureau of Mines, Ministry of Commerce & industry, GoI*

MAJOR PRODUCERS OF PRIMARY ALUMINUM ('000 TONNES)

	2013	2014	2015	2016	2017	2018*
China	26,500	28,300	31,400	31,873	32,300	33,000
Russia	3,601	3,300	3,530	3,561	3,580	3,700
Canada	2,969	2,858	2,880	3,209	3,210	2,900
India	1,703	1,939	2,355	2,723	3,270	3,700
UAE	1,864	2,341	2,464	2,500	2,600	2,600

**Estimated* *Source: USGS Mineral Commodity Summaries*

WORLD MAJOR ALUMINIUM PRODUCING REGIONS - 2018



Source: International Aluminium Institute

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