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BUILDING A SUSTAINABLE FUTURE WITH 'GREEN METAL' ALUMINIUM

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Over the past decade, there has been a paradigm shift in global consciousness as the world population increasingly adopts a cleaner, greener and more sustainable lifestyle. With the ever-growing population demanding constant improvement in the support structures sustaining its lifeblood, the foreseeable future is increasingly turning out to be a story of sustainability, efficiency and environment-friendliness. And if there is a metal that seamlessly fits into this 'performance plus sustainability' equation, it is aluminium, the green metal.

The lifecycle of aluminium is an account in sustainability, from bauxite mining, which is sustainable and eco-friendly, to the metal's infinite recyclability. Coupled with the fact that aluminium has superlative properties like high strength-to-weight ratio, high corrosion resistance, supreme formability, superb ductility and conductivity, aluminium is undoubtedly the 'Metal of the Future' for a more sustainable world.

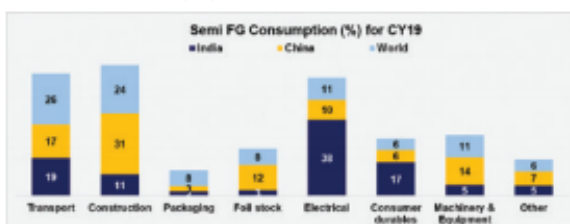
The 'green metal' of many needs

Aluminium is a metal of strategic importance to a country's national security and socio-economic development, with diverse applications spanning core industries such as aerospace, space exploration, national defence, building and construction, transportation, automotive, electrical distribution and packaging, among others. Aluminium is the second most important metal in the world today and it has the potential to become the most important commercial metal in the near future.

Backed by the world's fifth largest reserves of bauxite and coal, India has the second largest aluminium production capacity in the world at 4.1 million tonnes per annum (MTPA). While the country's primary production grew at about 8.4% CAGR (FY16-FY20), aluminium consumption grew at a much lower CAGR of 2.7% in the same period. 43% of total demand in the country is met through domestic production whereas a staggering 57% is imported, of which aluminium scrap is 62% and growing at 9.2% CAGR (FY16-FY20).

Today, the world per capita consumption of aluminium is 11.6 kgs, whereas in sharp contrast India is at a mere 2.7 kgs. India's aluminium consumption is heavily concentrated in electrical segment (38%) on account of large-scale rural and urban electrification. This is followed by transportation (21%) and consumer durables (16%), and finally construction, machinery, packaging, etc. which are yet to

explore aluminium as a preferred alternative to traditional materials. Clearly, there is a huge growth opportunity for aluminium in India.



Building a globally competitive aluminium industry

Richly endowed with natural resources and technically skilled workforce, India has the potential to create a globally competitive aluminium industry. India's has significant primary aluminium production and downstream processing capacities, which provides a good platform for exploring new applications of aluminium as well as catering to domestic demand without any reliance on imports.

This needs to be driven on four fronts. First, promotion of aluminium usage in govt. projects should be prioritised. With the aim to make India a USD 5 trillion economy, the central govt. is rolling out numerous high-impact projects like Make in India, National Capital Good Policy, Smart Cities, renewable energy capacity enhancement, 100% electrification of railways, building indigenous capability in defence equipment and space exploration, reforms in mining and coal sectors, etc., all of which are can boost India's aluminium consumption.

Second, the domestic industry needs to build R&D and innovation capabilities in order to tap into emerging market needs with new products and product variants perfectly tailored to meet customers' requirements.

Third, the potential of aluminium industry should be acknowledged, and the industry should be recognised as core sector with a National Aluminium Policy that will encourage, protect and boost the domestic aluminium industry.

Finally, domestic capability needs to be harnessed for critical sectors. It is crucial that the entire potential of the aluminium value chain, from mining to end usage, is leveraged. Besides enhancing domestic capacity, reducing import dependency and trade deficit, it will also generate huge employment opportunities in our country.

Vedanta Aluminium, driving India's self-reliance

Vedanta's Aluminium Business is India's largest producer of aluminium and value-added products, commanding 40% market share in the country. The business produced more than half of India's aluminium at 1.9 million tonnes per annum (MTPA) in FY20. With its world-class smelters, alumina refinery and power plants across India, the company fulfils its mission of spurring emerging applications of aluminium, the 'Metal of the Future' for a greener, more sustainable tomorrow.

Vedanta Aluminium's assets include a world-class alumina refinery in Lanjigarh (Odisha) and aluminium smelters in Jharsuguda (Odisha) and Korba (Chhattisgarh). Vedanta's 2 MTPA alumina refinery in Lanjigarh feeds its aluminium smelters. This highly efficient, world-class refinery has the lowest greenhouse gas (GHG) emissions by any such thermal power fuelled refinery in the world. The refinery is widely hailed as having transformed one of the most impoverished regions of the country to bring it into the socio-economic mainstream of the state of Odisha.

Vedanta operates the world's largest single-location aluminium plant, ex-China, at Jharsuguda. With 1.6 MTPA aluminium production capacity and associated 3615 MW thermal power generation facility, it is the only Indian smelter in the global '1 Million Tonne' production and export club.

BALCO (Bharat Aluminium Company Limited) is India's iconic aluminium producer and was conceived as a temple of modern India. It is owned 49% by the Government of India and 51% by Vedanta Limited. BALCO operates a 0.57 MTPA aluminium smelter in Korba, Chhattisgarh. The company has seen approximately a growth of roughly 6 times since the government divested a 51% stake, one of India's greatest disinvestment and privatisation success stories. From 100 KTPA (kilo tons per annum) in FY 01 to 575 KTPA in FY20, the company has clocked unprecedented quantum growth.

Both Jharsuguda and BALCO plants produce high quality primary aluminium and value-added products in the form of ingots, billets, wire rods, rolled products, primary foundry alloys (PFA), flip coils etc. All of Vedanta Aluminium's products are global leaders in their respective segments. The business integrates intelligent automation, smart innovation, best-in-class technology, environmental safeguards and sustainability-focused operating procedures to create value for the nation.

An edge, unmatched

Vedanta Aluminium's highly advanced R&D capability has allowed it to produce sophisticated alloys such as PFA for the automotive industry and AISi3 ingot for the steel industry for the very first time in India. These alloys were being entirely imported into India until Vedanta produced them domestically.

State-of-the-art engineering technologies deployed at the plants ensure highest quality metal and superior products, at par with global standards. Hawk-eyed quality assessment of raw material and finished products make Vedanta one of the most preferred suppliers of aluminium to developed markets. Parallely, the company has a laser-like focus on evolving Customer Relation Management (CRM) solutions, making them more intuitive to ensure complete customer fulfilment.

Vedanta's Jharsuguda smelter is India's first, and the world's third smelter, to deploy Digital Smelter Solution. It uses digital twin technology, which allows for remote monitoring and control of potline operations, enhances energy efficiency, reduces raw material consumption and arrests wastage of material through remote advisory system. Deep Learning algorithms and various advanced model techniques, which are first-in-the-industry, allow Advanced Asset Performance Management at both smelters and power plants.

The business has developed an end-to-end digitally enabled Logistics Control Tower that enables simulation-based planning to reduce costs and pilferages and improve efficiencies. Automations and robotic technologies have been extensively used across plant operations to unlock greater speed and efficiency while safeguarding employees and business partners. Vedanta has already embarked upon the journey of using vision analytics and contextual analytics in multiple plant sites like identification of hot spots for improving asset reliability.

Implementation of SAP and Manufacturing Execution System (MES) across all the aluminium plants ensures visibility of all critical plant operations and allows for decision making remotely through mobile applications. Vedanta Aluminium is also the first in India's metal and mining sector to implement full scope of S4HANA thus automating all functional processes.

As the Indian industry rallies to overcome the impact of COVID-19 and revive the economy, Vedanta Aluminium is determined to work in close collaboration with its technology partners, consultants and customers to lead a globally competitive aluminium industry in the post-pandemic world. In the journey towards USD 5 trillion economy, aluminium has a significant role to play in supporting critical industries and as India's largest producer of aluminium, Vedanta is poised to fulfil 'desh ki zarooratein', transforming millions of lives in the process.