

Aluminium: From Bauxite to Can

Aluminium is a lightweight, durable, and highly versatile metal that has become indispensable to the modern global economy. It plays a central role in the packaging, automotive, aerospace, construction, renewable energy, and advanced technology sectors. The transformation of bauxite into metallic aluminium, and then into finished products, illustrates a complex, energy-intensive industrial chain, but also a strategic one for investors seeking to capture growth in industrial and sustainable markets.

1. A Strategic Raw Material

Aluminium is not found in its native state: it is derived from bauxite ore, which is rich in aluminium oxide. The main deposits are located in tropical and subtropical regions, particularly in Guinea, Australia, China, Brazil, and India. In 2025, Guinean bauxite exports increased sharply, largely due to robust demand from China, which fuels its aluminium production capacity.

Interest in bauxite is no longer limited to extraction: integrated alumina plant projects are emerging to process the raw material locally before further transformation.



2. From Bauxite to Aluminium: The Production Chain





The manufacture of aluminium involves several stages:

01	02	03
Bauxite Extraction	Conversion to Alumina	Electrolysis (Hall-Héroult process)
Open-pit mines in the main producing areas	Industrial processes (Bayer) that purify aluminium oxide	Electrical reduction of alumina into primary aluminium, a very energy-intensive stage
04	05	
Secondary Production	Transformation into Finished Products	
Recycling of used aluminium, much less energy-intensive than primary production	Manufacture of ingots, sheets, cans, parts for transport and construction	

The extraction of primary aluminium requires a large amount of electricity, which directly influences production costs and the profitability of installations. In contrast, recycling consumes up to 95% less energy than production from bauxite, a competitive advantage that is increasingly valued.

3. Industrial Uses and Applications

Aluminium stands out for a set of properties that make it a preferred choice for many industries:

 Lightweight and mechanical strength A key criterion for automotive and aerospace	 Corrosion resistance Suitable for infrastructure and packaging
 High thermal conductivity and recyclability Essential for sustainable materials	 Virtually infinite recyclability Aluminium can be reused without significant loss of properties, which enhances its ESG (Environmental, Social, Governance) appeal

Packaging (e.g., cans) and the automotive industry represent structuring segments of global demand.

4. Global Production & Major Players (2025)

Primary aluminium (from bauxite via electrolysis) is produced at historically high levels:

- In 2024, global production was estimated at over 111 million tonnes, with continuous annual growth.

China largely dominates this production, accounting for over 50% of the world total and playing a major role in global supply chains. The increase in its alumina and aluminium production capacity continues to shape the global market in the short and medium term.

In addition to China, major producers include India, Russia, Canada, and several countries in the Middle East and Africa, contributing to the diversification of global supply.

5. Market Dynamics & Prices (2024–2025)

The aluminium market experiences strong interaction between primary and secondary production, driven by global industrial demand.

- The reduction in Chinese primary aluminium exports in 2025 eased pressure on global supply, supporting prices, which stood at around 0.75 CHF/kg (~2,900 USD/tonne on the LME, according to the Metals Market) in December 2025.
- However, macroeconomic uncertainties (moderated global growth and fluctuating trade policies) led some analysts to revise their price forecasts for 2025, with a rather gradual recovery expected in the coming years.
- The rise in recycled production and growing interest in "low-carbon" aluminium are expected to continue influencing price dynamics in the coming years.

6. Volatility Factors & Investment Risks

For investors, several key factors influence the aluminium market:

Energy dependence & industrial costs Primary production is very electricity-intensive, exposing players to variations in energy costs and climate policies.	Geopolitical and trade pressures Customs duties, trade agreements, and environmental regulations can alter export and recycling flows in key areas.
Concentrated supply chains The strong dominance of production in China and the concentration of bauxite resources in a few countries create risks of transnational disruptions.	Energy transition & ESG standards Demand for recycled and low-carbon aluminium is growing, influencing industrial strategies and investment decisions.

7. Outlook & Opportunities (2025–2035)

The aluminium market shows structurally positive prospects, with several growth drivers:

 Increased demand in lightweight automotive, renewable energy, and sustainable packaging Segments where aluminium is favoured for its technical and environmental properties.	 Expansion of the recycling market A sustained trend, with expected medium-term growth, strengthening supply security and reducing energy costs.
 Innovation & industrial efficiency Automation technologies, smart production, and traceability, as well as renewable energy sources, improve efficiency and can reduce cost-related risks.	 Expected growth in the global market Market reports indicate continued expansion of the sector over the next decade.

For investors, these combined dynamics suggest that aluminium remains a strategic asset, particularly sensitive to industrial, energy, and ESG transitions.

Conclusion

From bauxite extraction to the manufacture of finished products like cans or automotive components, aluminium is an essential metal for the global economy. Its importance continues to grow, driven by the energy transition, the rise of modern infrastructure, and sustainable demand. For investors, aluminium offers long-term growth opportunities, although subject to volatility factors, notably energetic, geopolitical, and regulatory. A detailed understanding of primary production, recycling, and global market dynamics is essential for formulating relevant allocation strategies.

Sources

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