ManufacturingToday
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Inside Vedanta's plan to fuel India's EV and auto growth

Vedanta spokesperson explains how critical metals, green aluminium and $1.2bn investments power India's EV and automotive future.

India's push towards electric mobility is reshaping how the automotive industry thinks about materials, sustainability and supply security. As electric vehicles gain pace and localisation becomes a national priority, access to critical minerals and transition metals is emerging as a decisive factor in building a resilient mobility ecosystem. Metals such as aluminium, zinc, copper and nickel are no longer just industrial inputs as they are the backbone of lightweighting, energy efficiency, battery performance and long-term sustainability.

Against this backdrop, Vedanta Limited, one of India's leading producers of critical minerals and transition metals, has been scaling up investments and capabilities to support the country's automotive and EV ambitions. With nearly USD 1.2 billion invested across aluminium, zinc, copper, steel, nickel and alloys, the company is strengthening domestic supply chains while aligning with India's clean energy and manufacturing goals.

In this interview, the **Vedanta Spokesperson** shares his insights on how these investments align with India's EV roadmap, the role of low-carbon and value-added materials, and how Vedanta is positioning itself as a key enabler of a self-reliant, future-ready automotive and electric mobility ecosystem.

Vedanta has invested nearly USD 1.2 billion across aluminium, zinc, copper, steel, nickel, and alloys. How do these investments align with India's automotive and electric mobility roadmap?

Vedanta's recent investments in aluminium capacity align closely with the trajectory of India's automotive and electric mobility roadmap, which prioritizes lightweighting, localization, and energy efficiency to support rapid EV adoption. With the Government of India targeting 30% EV penetration by 2030, the demand for lighter and more efficient materials is accelerating. A major share of our recent capex has thus been directed toward strengthening our aluminium business. This thrust is also in sync with the Vedanta 2.0 initiative, under which we are accelerating our evolution into a leading global player in transition metals, critical minerals, power and technology.

Vedanta Aluminium's ongoing expansion towards a 3.1 million tonne integrated capacity ensures a strong domestic supply base for domestic Original Equipment Manufacturers (OEMs) and EV manufacturers. We are expanding critical assets including the Lanjigarh alumina refinery (from 3.5 to 5 million tonnes) and the BALCO smelter (from 0.58 to 1 million tonnes). This deepens integration, lowers cost of production, and ensures that EV-grade aluminium, key for range enhancement and energy efficiency, is readily available to domestic automakers. This will also reduce import dependencies and support the success of national schemes such as FAME-II and the PLI programme for advanced automotive components.

Vedanta's aluminium operations already operate in the first quartile of the global cost curve with multiyear low production costs, reinforcing our importance as a reliable supplier of competitively priced low-carbon materials for the domestic auto sector. Our portfolio also aligns with India's broader industrial strategy, supporting the 'Make in India' and 'Viksit Bharat 2047' goals while enabling the auto industry to meet stringent sustainability benchmarks.

How is Vedanta's aluminium portfolio addressing evolving requirements across wheels, battery casings, EV frames, and HVAC systems?

We are presently focused on expanding the presence of value-added products (VAP) in our portfolio, with a clear roadmap of achieving a 90% share in our overall product range. Our offerings include high-performance primary foundry alloys for wheels and specialised billets for battery enclosures, among the rest. Each product line is developed in close collaboration with customers to meet application-specific mechanical, thermal, and safety requirements. We have a dedicated Customer Technical Services team that understands their unique needs and converts them into tailored offerings that are helping drive innovative industrial applications.

Lightweighting remains central to EV design, and aluminium plays a decisive role in offsetting battery mass. By enabling lighter wheels, stronger yet leaner EV frames, and efficient battery housings, our specialized aluminium solutions support improved energy efficiency. It is well established that reducing an EV's weight by about 100 kilograms can increase its driving range by roughly 10-15%, an important factor for both performance and consumer adoption in the Indian market. The superior strength-to-weight ratio of aluminium, combined with high corrosion resistance and strong crash energy absorption, makes it indispensable in next-generation mobility platforms.

Vedanta is the first Indian producer of low-carbon aluminium brands such as Restora and Restora Ultra. How strong is demand from automotive OEMs, and how do you see green materials shaping procurement decisions?

Globally, we see the automotive industry moving towards more stringent emissions norms, stronger ESG commitments, comprehensive lifecycle-based sustainability assessments, and greener input materials. As India's first low-carbon aluminium range, Restora is well positioned to cater to this emerging need. Restora and Restora Ultra are Vedanta Aluminium's low-carbon and ultra-low carbon product offerings, engineered to deliver the same high metallurgical quality as conventional aluminium while enabling downstream customers to dramatically lower their emissions.

Restora is produced in our world-class smelters using a significantly higher share of renewable power and efficiency-enhancing technologies, giving it a verified greenhouse gas intensity of 4 tonnes of CO_2 equivalent per tonne of aluminium. Environmentally, Restora Ultra goes a step further by recovering aluminium from dross and achieving one of the lowest carbon footprints globally while supporting a zero-waste and a circular value chain.

This combination of certified low-carbon performance and technology-led innovation is increasingly shaping procurement decisions. Automotive OEMs are now selecting suppliers not just on their material performance but also on their sustainable provenance. Vedanta Aluminium's ability to offer Restora and Restora Ultra across categories such as billets, ingots, slabs, wire rods and primary foundry alloys allows seamless adoption across key applications. As green materials become central to

procurement frameworks, OEMs are also engaging with us on co-developing specialized low-carbon alloys and mobility focused solutions, reinforcing a shift toward deeper collaboration and long-term partnerships.

Beyond conventional applications, aluminium-air batteries are gaining attention globally. What role can aluminium play in next-generation energy storage?

Aluminium is a material that has always been at the forefront of human innovation, be it in aerospace, mobility or energy generation and storage. It is now emerging as a key enabler in next-generation energy storage, particularly through aluminium-air batteries that deliver energy densities up to 8 kWh/kg, surpassing lithium-ion systems for extended EV ranges and grid backups. These mechanically rechargeable batteries leverage aluminium's abundance, recyclability, and safe, non-flammable chemistry, while ongoing advancements address corrosion and efficiency challenges. In addition, aluminium's ductility and malleability allow it to be deployed in several forms of energy storage.

How is Vedanta leveraging products such as HZDA grades and EcoZen to support durability and sustainability in automotive manufacturing?

Advanced zinc offerings such as Hindustan Zinc Die Casting Alloys are engineered to deliver superior strength, corrosion resistance and dimensional stability, which are essential for long-life automotive components. These properties directly contribute to improved vehicle safety and durability while enabling manufacturers to optimise material usage. Our low-carbon 'green' zinc EcoZen further strengthens this proposition by offering a low-carbon alternative without compromising on performance. Together, these products reflect Vedanta's focus on delivering materials that support both engineering excellence and responsible manufacturing.

Zinc-based chemistries are being explored for battery applications. How do you assess their long-term potential alongside lithium-ion technologies?

Zinc-based battery chemistries hold meaningful long-term potential, particularly in applications where safety, affordability and sustainability are key considerations. Unlike lithium-ion systems, zinc offers inherent advantages such as greater thermal stability, non-flammability and the ability to leverage an established recycling ecosystem. These attributes make zinc-based solutions especially relevant for stationary energy storage, grid balancing and certain mobility use cases.

As energy storage requirements diversify, multiple chemistries will coexist, each serving distinct use cases. With its leadership in zinc production and ongoing research into downstream applications, Vedanta is well-positioned to support the development of alternative energy storage technologies over the long term.

How strategic is nickel for India's EV ambitions, and how is Vedanta preparing for demand growth beyond 2030?

Nickel is a critical enabler of India's EV ambitions, particularly for batteries that require higher energy density and longer driving range. As EV adoption accelerates, demand for responsibly sourced nickel is expected to rise sharply beyond 2030.

Vedanta is strengthening its focus on critical minerals by advancing resource development, building technology partnerships and embedding sustainability across extraction and processing. This positions the company to support India's long-term EV and clean energy goals with secure and reliable supply.

With EVs consuming significantly more copper than ICE vehicles, how is Vedanta strengthening its copper value chain to support electrification and charging infrastructure?

Copper is fundamental to electrification, spanning EV powertrains, batteries and charging infrastructure. Vedanta is strengthening its copper value chain by improving operational efficiency, expanding secondary refining and increasing the use of recycled inputs.

This approach enhances domestic supply resilience while aligning with sustainability priorities, ensuring reliable availability of high-quality copper to support India's EV rollout and broader electrification ecosystem.

How important is material innovation in improving range, safety, and lifecycle performance of electric vehicles?

The strategic usage of materials greatly impacts a product's durability, efficacy, and quality. For instance, aluminium's exceptional strength-to-weight ratio makes it an ideal choice for lightweighting vehicles, where every kilogram used reduces overall weight by the same amount, crucial for EVs, as cutting 100 kg extends driving range by 10-15%, driving up to 27% more aluminium usage in hybrids and full electrics versus internal combustion engine vehicles.

At Vedanta, we have invested in extensive R&D facilities and NABL-certified labs at our plant locations to identify new applications with stringent quality controls. In addition, we are working with top organizations such as NITI-AAYOG and CSIR towards cross-industry innovation efforts.

Sustainability is a shared priority for OEMs and material suppliers. How is Vedanta integrating decarbonization, circularity, and resource efficiency across its metals portfolio? How do you see Vedanta's role evolving in building a resilient, self-reliant automotive and EV materials ecosystem for India?

Vedanta Aluminium is embedding decarbonization, circularity, and resource efficiency across its metals portfolio to support the evolving needs of OEMs and material suppliers. We are advancing the adoption of low-carbon aluminium through our Restora and Restora Ultra ranges, supported by a target of 1,500 MW of renewable energy capacity by 2030 and an 8.96% reduction in GHG intensity since FY21. This is backed by definitive steps such as a partnership with GAIL to supply natural gas for powering our casthouse operations and deploying biomass briquettes for co-firing applications at our BALCO smelter and Vedanta Lanjigarh alumina refinery. Together, these initiatives position Vedanta as a key enabler of a resilient, self-reliant automotive and EV materials ecosystem for India, aligned with the Net Zero ambition for 2050.

What challenges do Indian manufacturers face in securing critical minerals domestically, and how can industry–policy collaboration address these gaps?

India is heavily reliant on imports for critical minerals which makes the country vulnerable to geopolitical tensions, especially with mineral-rich countries curbing their exports. While the government's push for critical minerals is a step in the right direction, India's processing and refining prowess needs to be strengthened. The discovery and recovery of critical minerals is difficult owing to their nature. At present the auction regime approaches critical mineral blocks in a similar fashion as we approach bulk mineral blocks. Rather, we should see them as an opportunity to bring India's best metals and critical minerals companies to the forefront to explore these blocks. Once the exploration efforts bear viable fruit, the authorities can opt for price discovery model. This will mitigate the key challenge of limited geological exploration data and turn this sector into an investor-friendly one. The other key challenge is the refining infrastructure for these critical minerals, with lower recovery rates. Therefore, strengthening these complex processes is a must for Indian companies planning to venture into this segment.

How do you see Vedanta's role evolving in building a resilient, self-reliant automotive and EV materials ecosystem for India?

Vedanta is poised to play a central role in building a resilient and self-reliant automotive and EV materials ecosystem in India by ensuring reliable domestic supply of critical metals like aluminium. Through capacity expansion, development of value-added products, and low-carbon material offerings, Vedanta supports automakers in meeting performance, efficiency, and sustainability goals.

A key part of this effort is the indigenization of products that were once only available from foreign manufacturers, forcing domestic manufacturers to rely on imports. In response, Vedanta has expanded offerings to include products such as Primary Foundry Alloy (PFA), which is extensively utilized by the automotive industry for manufacturing auto components like wheels, engine blocks, cylinder heads, and transmission housings. Our PFA products, produced using technology from Spain and Italy, are on par with international standards and have been certified by industry bodies such as the International Automotive Taskforce.

By building domestic access to world-class products, we are directly supporting the resilience and competitiveness of India's automotive industry.

How does the theme "Steel, zinc, and nickel: The hidden backbone of electric mobility" reflect Vedanta's long-term vision for the sector?

With EV sales in India reaching around 2.3 million units in 2025, signifying nearly 8% of all new vehicle registrations, electric mobility is scaling rapidly, backed by tailwinds such as conducive government policies, rising investments, and an expanding charging network. However, this growth needs to be supplemented with easier access to the critical inputs that go into building the modern electric vehicle, such as aluminium, zinc and nickel. For example, nearly 350 kgs of aluminium is needed to produce an electric SUV. By expanding domestic capacity, advancing value-added products, and offering low-carbon aluminium solutions, Vedanta is helping build a resilient, future-ready electric mobility supply chain aligned with India's manufacturing and decarbonisation priorities.