



Hindalco Decarbonisation Efforts and Impact

Hindalco Industries Limited is the metals flagship company of the Aditya Birla Group and an industry leader in aluminium and copper. It is positioned as the world's largest flat-rolled products player and recycler of aluminium. In India, the company operates across the value chain comprising bauxite mining, coal mining, captive power plants alumina refining, aluminium smelting and downstream rolling, extrusions and foils. Globally, Hindalco ranks among the global aluminium majors as an integrated producer, along with its subsidiaries Novelis and Aleris in aluminium downstream products and a footprint in 10 countries outside India.

In terms of energy consumption and carbon intensity of aluminium as a sector, there are two key parallel narratives to be understood:

1. **Aluminium making is an energy intensive process:** refined ore aluminium oxide (alumina) is electrolysed, the only commercially known process used to manufacture aluminium globally. This electrolysis in aluminium smelter is very energy intensive. In India, in absence of Hydro power linkage and or gas availability, all smelters are dependent on captive thermal power plants.
2. **Aluminium is infinitely recyclable and light-weighted metal:** Recyclability of aluminium means, the recycled metal consumes 95% less energy to produce as compared to primary metal. Its light weight offers opportunity to reduce energy consumption and carbon footprint in other sectors. For example, it offers reduction in vehicular GHG emissions, very useful in building & construction and to replace plastic packaging for food, pharmaceuticals. Aluminium not only delivers significant energy and CO₂ savings in the use phase and has the potential to be produced in a carbon-neutral way.

Hindalco has based its decarbonization strategy to address these two aspects and relies on three levers:

1. **Reducing energy consumption and changing energy mix:** Through these initiatives, Hindalco has achieved 24% reduction in energy consumption from FY06 Base & 15% reduction from FY15 Base. Similarly, in GHG Emissions, a 22% reduction from FY06 Base & 17% reduction from FY15 Base.
 - a. Technology driven growth: The two new aluminium smelters are with state of the art AP-360 technology and Utkal alumina refinery is one of the most energy efficient globally.
 - b. Energy efficiency improvement of existing facilities through specific improvement projects, e.g. use of copper inserted collector bar at Hirakud is a global first on a low amperage smelter and has been patented.
 - c. Renewable Energy Projects: The company have so far implemented Renewable projects at five locations totalling 48.7 MW which includes first Smelter in the country with 30 MW Solar Plant Synchronized at 220 KV with Thermal CPP Set up over a Fly ash filled waste land. We have projects at different phases of its implementation to take the total renewable capacity to 100+ MW.
2. **Future growth focus in downstream and use of recycled aluminium:** Hindalco, through subsidiary Novelis has invested heavily in developing Aluminium recycling and leads global aluminium recycling with **60%** of its products coming from recycled Aluminium. Our closed-loop Aluminium recycling system allows us to take back as much of our customer's scrap as possible, turning it back into the same product again thus supports in developing circular economy.
3. **Product Stewardship towards aluminization of global economic growth:** Aluminium delivers energy and CO2 savings in many sectors, e.g., it is used to produce solar panels, wind turbines, lightweight vehicles, energy-efficient buildings, and transmission cables for the transfer of renewable electricity. In India, apart from traditional supply to above areas, we are developing products that have huge CO2 reduction potential. We have launched all **Aluminum bulker** which promotes greater fuel efficiency than conventional bulkers and also has longer life. We have also launched India's' first **all-aluminium freight trailer** which is 50% lighter, saves considerable fuel and has 70% higher scrap value.