

ENVIRONMENTAL FOOTPRINT OF NORTH AMERICAN ALUMINUM

LIFE CYCLE ASSESSMENT REPORT OVERVIEW



A new critical-reviewed life cycle assessment (LCA) report documents the potential life cycle impact of primary, recycled and semi-fabricated aluminum product. The report is based on aluminum and aluminum products manufactured in North America in 2016.


This report quantifies all material, energy use and environmental release impacts over the entire aluminum life cycle from raw material acquisition to end-of-life recycling and/or disposal. The study considers cradle-to-gate and cradle-to-grave life cycle stages.

Semi-fabricated aluminum product is an "intermediate good" that has undergone significant manufacturing, but requires additional work before it is shipped to consumers.

- Semi-fabricated products included in this study are: extruded aluminum (including generic product and product for automotive applications), aluminum sheet (including generic product and product for automotive applications), aluminum foil, and die cast products. In addition, primary aluminum ingot and recycled aluminum ingot are included as raw material inputs for the semi-fabricated products.

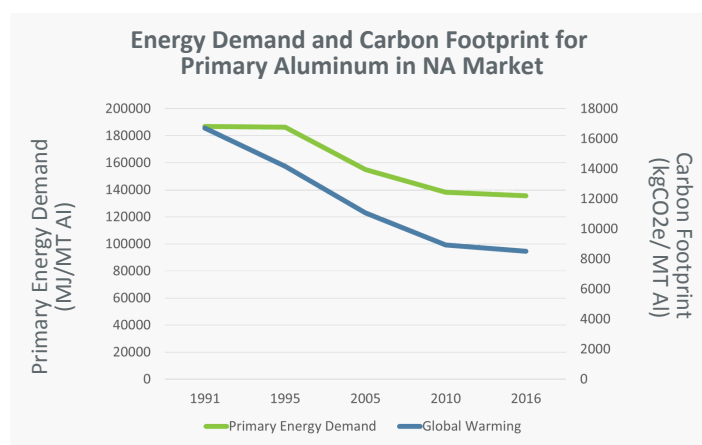
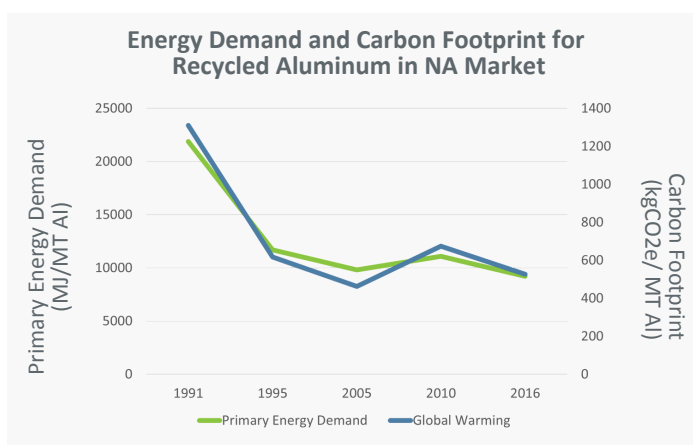
ENVIRONMENTAL IMPACT

The overall environmental impacts of North American aluminum production have declined significantly since 1991. Raw material production – including both primary and recycled ingot – represents the single largest area of industry environmental impact and has improved most substantially. Both energy demand and carbon footprint of semi-fabricated aluminum has also improved in recent years. Technological advancements including better manufacturing process controls; efficiency improvements due to economies of scale; the phasing out of older smelting technologies; and the substitution of renewable for coal-fired energy in smelting have all contributed to this trend.



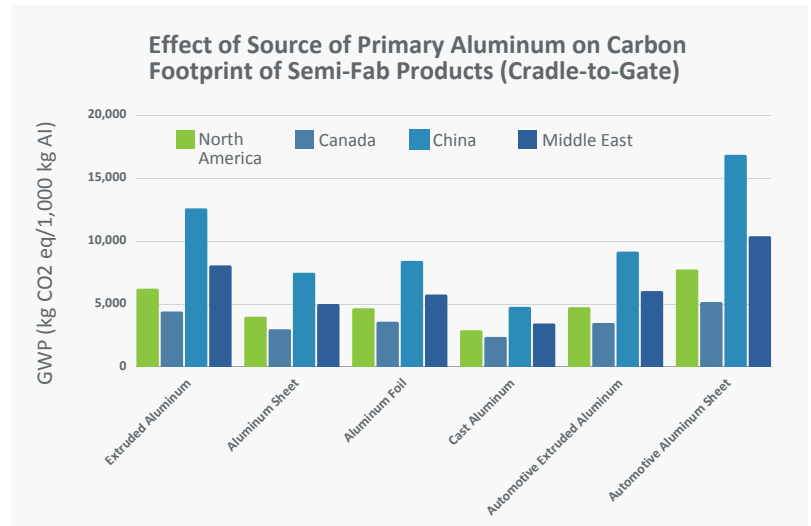
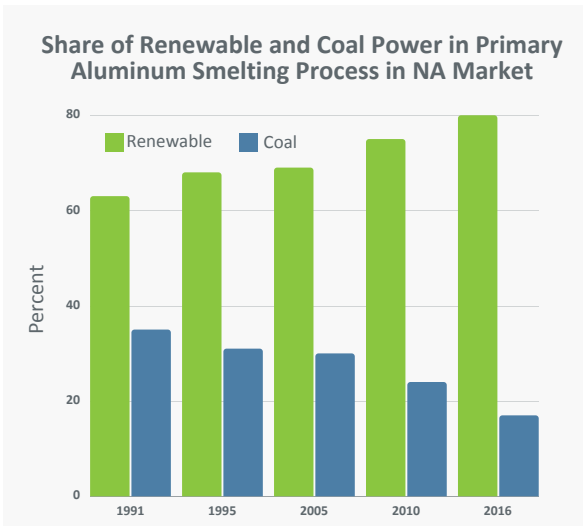
49% REDUCTION IN CARBON FOOTPRINT FOR PRIMARY ALUMINUM

60% REDUCTION IN CARBON FOOTPRINT FOR RECYCLED ALUMINUM



PRIMARY ALUMINUM SOURCING


Not all primary aluminum is created equal. The report shows that primary aluminum sourced from different countries and regions will lead to significant differences in the cradle-to-gate carbon footprint of aluminum production. Primary aluminum sourced from hydropower and renewable energy dominant regions result in the lowest carbon footprint of products.



REDUCING THROUGH RECYCLING

One of the most important ways to make additional progress in reducing aluminum's carbon footprint and improving the energy efficiency of the aluminum value chain is to increase the use of recycled aluminum and improve the end-of-life (EOL) recycling rate.

Aluminum is the perfect metal for recycling - it can be recycled over and over again without losing functionality. The report shows that a one percent increase in EOL recycling rate can reduce the overall carbon footprint by 80 kg CO₂e for 1,000 kg of products - roughly equivalent to the impact of driving 200 miles.



A 1% increase in EOL recycling can reduce the overall carbon footprint by 80 kg CO₂e for 1,000 kg of products

RECYCLING ADVOCACY EFFORTS

The Aluminum Association is committed to increasing aluminum recycling rates, and is working on multiple fronts to accomplish its goal. This includes advocating for recycling infrastructure improvements and other policy changes to incentivize the increased collection and capture of used aluminum. Unfortunately, more than a million tons of aluminum is lost in landfills every year in North America alone. Improving recycling rates will not only help the aluminum industry reach its sustainability goals, but will reduce energy usage and bring us closer to the ultimate goal of totally sustainable development.

To read the full Semi-Fabricated Aluminum Life Cycle Assessment Report, and to read additional resources on the industry's sustainable efforts, visit aluminum.org/SustainabilityReports
For additional resources, please contact Marshall Wang at jwang@aluminum.org