

KN04 - Long Term Sustainability of the Aluminium Sector (2020-2050)

Christopher Bayliss¹, Marlen Bertram², Pernelle Nunez³, Katy Tsesmelis⁴ and Linlin Wu⁵

1. Deputy Secretary General

2. Director - Product Stewardship

3. Manager - Sustainability

4. Manager - Mining & Refining

5. Manager - Statistical Analysis

International Aluminium Institute, London, United Kingdom

Corresponding author: bayliss@world-aluminium.org

Abstract

Global demand for aluminium is projected to grow at between 2 to 4% compound annual growth rate (CAGR) to 2050, to meet societal needs in transportation, the built environment, energy infrastructure and food and medical supply and security systems. This demand will be met increasingly by recycled scrap but will also require significant volumes of primary aluminium. At the same time as demand is growing for metals (including aluminium), societal expectations for low impact, responsibly sourced, environmentally and socially friendly materials is growing. Indeed, the growth in demand is predicated on supply demonstrating its sustainability. Meeting society's expectations requires an industry-wide response. This paper, drawing on the International Aluminium Institute's material flow analyses, life cycle analyses, waste and environmental management experience and over 50 years of industry statistics, will explore:

- 1) 2050 demand projections (by segment and by region) for aluminium, including recycled share, in a post COVID-19 world;
- 2) Challenges associated with security and quality of supply of raw materials, including scrap and bauxite;
- 3) Environmental challenges presented by the volumes of material required, including bauxite residue and other wastes management, energy supply, water consumption and potential technological and policy innovations to meet these;
- 4) Greenhouse gas pathways for the aluminium sector, including potential routes for decarbonisation of existing as well as required additional primary aluminium capacity and the potential (and limits) of recycling.

Keywords: Green House Gases (GHG), residue, demand, sustainability, 2050.