Global Cooperation on Key Challenges for the Aluminium Industry

Miles Prosser
Secretary General
International Aluminium Institute, London, United Kingdom
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Abstract

This paper reviews six key challenges for the global aluminium industry. The challenges are:

1. Producing enough (primary) aluminium – given that China has now capped primary aluminium production capacity.
2. Improved recycling – requiring not just higher scrap collection rates but also improved sorting, segregation and closed-loop recycling.
3. Decarbonising the industry – addressing challenges of technology development and, more critically, investment.
4. Demonstrating sustainability – across a range of issues with greater consistency of metrics.
5. Managing bauxite residue – which is the most significant waste stream from the aluminium supply chain.
6. Delivering product to customers – where existing global supply chains are under pressure from trade policy.

There is a role for global cooperation among participants of the aluminium industry on all these issues, with cooperation of greatest importance on the issues of: improved recycling, demonstrating sustainability, and decarbonising the industry.

Keywords: Sustainability, Decarbonisation, Bauxite Residue, Global aluminium industry.

1. Introduction

This paper examines the major challenges currently faced by the aluminium industry and the role of collaboration within the global industry in addressing those challenges.

1.1 Opportunity

Opportunity for the aluminium industry comes from key trends at a macro level, such as:

- The transition to renewable energy sources of electricity.
- Increased market share for electric vehicles in the automotive market.
- Consumer pushback on impacts of packaging waste, particularly from single-use plastics.

The aluminium industry will benefit from these trends because aluminium products can deliver key benefits due to the innate properties of the metal. Some properties qualify aluminium for use in certain applications – aluminium's conductive properties qualify it for use in electrical application; aluminium's protective properties qualify it for use in food, drink and medicine packaging.

Some qualities make aluminium particularly efficient – formability and lightweight make aluminium an efficient material in vehicle design; these properties and durability make aluminium an efficient material in building and construction.
In all applications, aluminium's high recyclability increases the appeal of the material.

1.2 Market Growth

The result is a positive market outlook for aluminium with good demand growth for this decade, projected in four key markets [1]:

- Electrical
- Transport
- Packaging
- Construction

In the electrical market, the International Energy Agency (IEA) forecasts strong demand for both copper and aluminium [2].

In the transport market electric vehicles are expected to use greater levels of aluminium than internal combustion engine vehicles [3].

And in food & drink packaging, aluminium can address concerns about waste and single-use plastics [4].

So, there is a positive outlook for aluminium and a healthy growth in demand to be met, if the industry can meet expectations associated with production. Those expectations form the basis of the six key challenges that this paper examines:

1. Producing enough (primary) aluminium
2. Improved recycling
3. Decarbonising the industry
4. Demonstrating sustainability
5. Managing bauxite residue
6. Delivering products to customers

2. Global Challenges

2.1 Producing Enough (Primary) Aluminium

The first challenge will be to produce sufficient primary aluminium (recycling is challenge #2) to meet growing demand. Specifically, what will be the basis for the construction of additional green-field primary aluminium capacity?

This has not been a challenge for the global industry for more than two decades. Approximately 90 % of the growth in primary aluminium production capacity over that period has occurred in China, driven by strategic objectives of the Chinese Government. The bulk of the remainder of new capacity has been installed in the Middle East.

Decarbonising the industry

Decarbonising the industry will require the development and rapid widespread implementation of new technologies. This will happen faster and more efficiently with higher levels of cooperation. There are roles for many different forms of cooperation from information sharing at pre-commercial stages, to formal joint ventures to develop and implement new technology.

Demonstrating sustainability

While individual companies are doing a good job of demonstrating sustainability, the ability to compare suppliers and to aggregate data to demonstrate whole-of-industry performance will be enhanced through greater levels of cooperation. The technology and techniques needed to improve sustainability performance may also be best developed through collaborative means.

Managing bauxite residue

Cooperation between companies to develop technology and management approaches for bauxite residue has already been significant and this will need to continue if the industry is to meet expectations of communities, stakeholders and customers.

Delivering products to customers

The development of supply chains to deliver products to customers inherently includes cooperation. It is in the interest of the aluminium industry to allow cooperation and trade of this type to continue.

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