

International Cooperation on Supply Chains for Critical Materials: Aluminium

The global context

Global disruptions to markets for critical materials, from the COVID-19 pandemic to Russia's invasion of Ukraine, have joined long-standing international concern with the negative impacts of non-market policies and practices on trade and competition. At the same time, transition to global net zero greenhouse gas (GHG) emissions, which requires immense private sector investments, including in new sources of clean energy, are contingent on global markets being fair, open to competition, and free of excessive state influence. In response, like-minded governments are prioritizing working together to build more secure, sustainable, and resilient supply chains for a wide range of critical materials. Aluminium is recognized as a strategically essential material; it is the second most widely used metal in the world with a broad range of unique properties key to building a low carbon economy.

Recent international initiatives include but also go beyond G7 member governments. The *Joint Statement on Cooperation on Global Supply Chains (20/07/2022)* was agreed by 18 countries and identifies both immediate and longer-term actions that can be taken by participating governments to reduce disruptions to supply chains. This initiative is explicitly open to other economies that share this interest and to active collaboration with businesses and other stakeholders.

The *G7 Leaders' Communique (28/06/2022)* specifically pointed to China as the major provider of non-transparent and market-distorting industrial subsidies and pledged to formulate a coordinated response to mitigate the negative impacts on supply chains and global markets. China's non-market policies and practices across aluminium value chains have been well documented, most recently in a joint report by the IMF, OECD, WBG, and WTO (2022) and in earlier work by the OECD (2019, 2021).

Other important international initiatives include the *Trilateral Partnership (US-EU-Japan)* "...to address the global challenges posed by non-market policies and practices of third countries that undermine and negatively affect our workers and businesses"; the *Global Arrangement on Sustainable Steel and Aluminium (US-EU)* to address global market distortions that impact steel and aluminium output and climate change; and the *Trade and Technology Council (US-EU)* "to update the WTO rulebook with more effective disciplines on industrial subsidies, unfair behavior of state-owned enterprises, and other trade and market distorting practices".

The aluminium companies that we represent in the US, Europe, Canada, and Japan support fully each of these initiatives and stand ready to contribute their considerable knowledge and experience to ensure aluminium supply chains are more secure, sustainable, and resilient.

The situation today across aluminium supply chains

Across the US, Europe, Canada, and Japan the aluminium industry supports 1,750,000 direct and indirect jobs and over USD 200 billion of economic output. These are well paid jobs for skilled workers in often high unemployment and rural areas. In Europe 600 plants operate in 30 countries, supporting 1,000,000 direct and indirect jobs, while in Japan 84 plants and more than 2,400 companies operate with 99,000 workers. In the US, 634,000 jobs depend on a regionally integrated aluminium supply chain; in Canada, nine smelters operate with 8,800 workers and provide 70% of US imports of unwrought aluminium.

Aluminium is a big part of a greener future. Lightweight, durable and infinitely recyclable, aluminium can help solve many global energy and climate challenges. The aluminium supply chain operates in a growing global market, with demand expected to increase up to 80% by 2050. Beyond its traditional manufacturing base, the industry is a critical source of essential components for lightweight vehicles (cars, trains, airplanes, and even spacecraft), renewable energy (solar photovoltaic systems, batteries, hydrogen, and electricity transmission), energy-efficient buildings, and protective consumer and medical packaging.

These industrial ecosystems, the jobs they provide today, and future opportunities for employment and output growth are under threat. In 2019, OECD analysis highlighted the role of state support in China's surge in just two decades from a relatively minor global player to the world's largest producer of alumina, primary aluminium, and semi-fabricated aluminium products, accounting for 58% of global output. Between 2013-17 seventeen of the largest global companies operating along the aluminium value chain received up to USD 70 billion of government support, 85% of which went to just five Chinese owned firms. Chinese enterprises also benefited from an array of border restrictions, VAT rebates, and other forms of preferential treatment. In 2021, OECD analysis looked in-depth at below market finance provided by governments to thirty-two major aluminium companies. Their report estimated the value of support to have ranged between 4-7% of the annual revenue of Chinese firms. In contrast, the value of support to other global firms was estimated at just 0.2% of their annual revenue.

There are also significant environmental and climate costs. Subsidies along the aluminium value chain primarily support high GHG emitting production systems based largely on fossil fuels. CO₂ emitted per metric tonne of aluminium produced is ten times higher for coal than for hydro based systems. By displacing output from low GHG emitting systems, subsidies contribute to a much higher than otherwise global carbon footprint. Over the past twenty years, as China's share of global production grew from 8% to 58% its share of the aluminium industry's total CO₂ emissions grew from 12% to 71%. As a result, the average carbon footprint of Chinese primary aluminum production is at least three times higher than the North American and European average.

High levels of government support that benefit a few firms at the expense of many not only displaces production and harms the environment today it also discourages new investments by unsubsidized firms unable to compete with the deep pockets of the state. Increased private investment is essential to strengthen the resilience of our industrial ecosystems, to continue to provide skilled workers with good jobs, and to decarbonize aluminium supply chains. Analysis in 2021 by the International Aluminium Institute (IAI), emphasized that the industry's pathway to global net zero GHG emissions required massive new private investments in alternative clean energy systems and in energy-saving and waste-reducing recycling systems.

It is essential that more be done to limit global warming and many governments are turning towards more ambitious climate policies, including carbon pricing and carbon border adjustment schemes. Unfair competition undermines global decarbonization and circularity efforts, but simply layering new climate policies on top of distorted international markets risks exacerbating trade tensions without improving climate outcomes. Removing economically and environmentally harmful subsidies must be one element of comprehensive climate policy to accelerate progress towards climate neutrality.

Recent geopolitical threats posed by some countries with a dominant role in supply chains for critical materials have added to these economic, environmental, and climate concerns and underscore the urgency of international cooperation. The situation in magnesium markets, an essential raw material to produce aluminium alloys, illustrates well the supply chain risk of reliance on a single or a predominant input supplier. Over the past two decades China's share of global magnesium production increased from 12% to 87%, and it now supplies 95% of the magnesium needs in Europe. In the US, a single operator supplies 50% of domestic magnesium requirements. When China curtailed its output and its exports in late-2021, the price impacts were huge and immediate across the globe. The result, an increased uncertainty of supply that poses an existential threat to secure aluminium supply chains.

Magnesium is not an isolated example. Twelve of the alloying elements that the US aluminium industry relies on have been designated as critical on the United States Geological Survey's (USGS's) 2022 Critical Mineral List. China dominates global production of eight of these critical minerals and there is no US source for six. Much attention has rightly focused on China, but it is not the only country with aggressive industrial policies, huge natural endowments of critical minerals, or both. At the same time, no country - neither the US, Europe, Canada, Japan, nor China - can isolate itself from global input and output markets if it wishes to grow and to satisfy societal expectations at home.

The IMF, OECD, WBG, and WTO jointly produced a report in 2022 examining the prevalence of subsidies across multiple sectors, including aluminium, and called for action by the international community to address the negative impacts on trade and the global commons. It is not only the world's preeminent international organisations that are calling for action. As noted above, several other governments are joining with G7 members to agree actions that can be taken to reduce disruptions to supply chains for critical materials, and we urge other governments that share this interest to do so as well.

The member companies that we represent across the US, Europe, Canada, and Japan have a long history of working with governments to improve energy efficiency, reduce emissions, and level the playing field internationally. Today, for example, producing primary aluminum in North America is about 27 percent less energy intensive and half as carbon intensive as it was in the 1990s. Recent trade enforcement actions help to create a more level playing field for aluminum producers. This in turn has resulted in companies having the confidence to pursue substantial capital investments to increase their manufacturing capacity. Over the past 12 months, for example, US aluminium manufacturers alone have announced more than \$3.5 billion in new investments - a figure larger than total investment over the last ten years. Still, much more needs to be done by the private and public sectors, both working together and collaborating across borders.

Proposed actions

Building more secure, sustainable, and resilient aluminium supply chains requires both international cooperation to ensure a global level playing field, open to fair competition, and free of non-market policies and practices, and strategic public-private collaboration to incentivize the needed private sector investment. The following two action areas target G7 plus like-minded countries (and businesses) as a practical matter, but international collaboration should remain open to others that demonstrate an interest and willingness to engage constructively in building a modern multilateral rules-based trading system that is transparent, predictable, and non-discriminatory.

i. Increase international public-private cooperation across the aluminium industry, with the voluntary participation of like-minded governments and industry representatives. Priority activities could include the following.

- Analyze global supply, demand, and trade trends, map existing supply chain bottlenecks, and simulate future risk scenarios, thereby facilitating contingency planning for critical material supply chains at national, regional, and international levels.
- Share information on the evolution of policy measures that might impact supply, demand, and trade. Doing so would inform timely, effective, and evidence-based responses nationally (such as trade remedy measures) and internationally (such as a development of a regional and multilateral agreements).
- Greater collaboration and information sharing would enhance the benefit of existing international, regional, and national initiatives to estimate and monitor the carbon content of production and trade flows, and in due course to aligning trade and climate policies. This would contribute to highlighting feasible pathways towards global net zero GHG emissions across aluminium supply chains.
- Stress testing aluminium supply chains would help identify specific vulnerabilities, such as excessive concentration of sourcing for critical minerals, for early attention as well as enable lessons learned to be widely shared across sectors and countries.
- Some governments have expressed interest in improving environmental, social, and governance (ESG) standards for critical supply chains and for their own public procurement practises. For individual businesses, responsible sourcing is a matter of good corporate governance and a key element of strategically securing essential sources of supply. International cooperation to establish shared ESG standards could instill confidence in sourcing global supplies, but only if the standards are high, objective, and science-based – ESG standard definition and design matter.

ii. Enable greater circularity across all stages of the aluminium supply chain, from upstream critical alloying elements to downstream consumer, industry, and defense products. Increased demand for finite mineral resources necessitates increased circularity in their use (and re-use). Initial priorities include the following.

- Recycling education and incentives for consumer recycling, as well as investments in material recovery facilities, would increase recovery rates and provide huge and immediate environmental and climate benefits. Aluminium is 100% recyclable, and recycling requires just 5% of the energy needed to produce the primary metal.

- Increased public and private investment in innovation and R&D would advance the technological improvements needed to sort and segregate valuable alloys contained in post-consumer scrap effectively.
- Intergovernmental R&D initiatives could target shared public interest in a more circular economy, including financial support measures but also new technology transfer and licensing arrangements.
- International cooperation to enable the efficient recycling of end-of-life products, with equivalent environmental and social conditions in place across trading partners, could support circularity globally.
- An exchange platform of best practices for developing the most efficient and advanced collection and sorting systems for end-of-life products could contribute to greater circularity across all stages of the aluminium supply chain.

Recent disruptions to global supply chains serve as a stark reminder that while integrated markets provide enormous global benefits, they also transmit global shocks. Today the high concentration in just a few countries of critical minerals that are essential inputs for aluminium production implies major supply risk, whether from export restrictions, unforeseen mine closures, unexpected conflict, or even “geo-economic fragmentation”. In Europe, soaring energy costs following on from Russia’s invasion of Ukraine threaten the very existence of even well-established production facilities. There are also major risks further downstream in the aluminium supply chain. China alone, largely due to high levels of state support, accounts for over one-half of global output of alumina, primary aluminium, and semi-fabricated aluminium products – which in turn are key inputs to a variety of strategic renewable products for consumer, industry, and defense markets.

To further elaborate, refine, and advance priority actions that would enable more secure, sustainable, and resilient aluminium supply chains, our four associations are exploring international interest in an **aluminium industry leaders’ summit** in 2023. The economic, environmental, climate, and security benefits of working together to ensure a responsibly produced supply of aluminium for growing markets are enormous – and the high costs of inaction unacceptable.

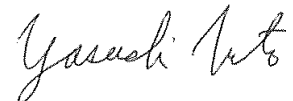



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