Competitiveness and the Green Transition in the Aluminum Industry: Finding Synergies or Balancing Trade-offs

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Executive summary

The aluminum industry stands at a crossroads. Demand continues to rise, driven by the global energy transition, as the imperative for decarbonization grows more urgent, evidenced by the proliferation of corporate climate commitments. In this context, aluminum producers must find ways to marry economic competitiveness with ambitious carbon reduction goals.

Persistent geopolitical volatility, supply chain disruption, and rapidly evolving trade and regulatory landscapes add further complexity. Industry leaders face a dual mandate: increase the production of low-carbon aluminum that enables decarbonization in downstream sectors while reducing their own carbon footprint. Despite impressive progress—such as the increased use of renewable energy and heightened industry collaboration—the sector's emissions trajectory remains inadequate, underscoring the indispensable role of breakthrough technology in achieving global climate goals.

Key aluminum-producing regions are charting different paths. Europe has the most mature carbon market instruments and advanced policy leadership, as shown by its Emissions Trading System (ETS) and Net-Zero Industry Act. Latin America and Australia have strong decarbonization momentum, fueled in large part by their adaptation of European initiatives and greater use of clean energy. In Africa, namely in Guinea, the world's second-largest bauxite producer, significant clean energy investment is critical to enhance limited electricity capacity and support ambitions to advance from mining to refining.

Asia and the Gulf region lag in low-carbon aluminum production. Major Asian producers such as China and India have relied heavily on coal for aluminum production. While China continues to expand its solar and wind capacity and further strengthens its hydropower capabilities, India has demonstrated minimal progress in developing a coordinated industrial decarbonization strategy. Gulf producers are poised to benefit from substantial government investments in clean energy, with several gigawatt-scale projects expected to come online before the end of the decade. However, green production initiatives have been largely reactive, as producers assess supply chain traceability obligations, often without the support of policy frameworks that promote sustainable production. Regional divergence creates both barriers and opportunities, especially in light of new policy initiatives such as the EU's Clean Industrial Deal and Carbon Border Adjustment Mechanism (CBAM), designed to reward low-emission producers.

Companies across the aluminum supply chain will proactively use this moment to get ahead with three key actions: ensure secondary aluminum is decarbonized in addition to primary aluminum to capitalize on momentum toward the low-carbon circular economy; deepen supply chain traceability through digital solutions; and turn global policy fragmentation into a market advantage. Treating competitiveness and carbon reduction as mutually exclusive priorities poses significant strategic risks. These three initiatives support both objectives while delivering on the rapidly changing needs of global aluminum supply and demand.

Introduction

The global aluminum industry plays a foundational role in manufacturing, construction, and the ongoing energy transition, serving as a critical material across a wide array of applications. Aluminum is also prevalent in everyday life, as manufacturing and construction activities depend on a stable supply to sustain the growth of built environments, transform industrial processes, and drive further electrification.

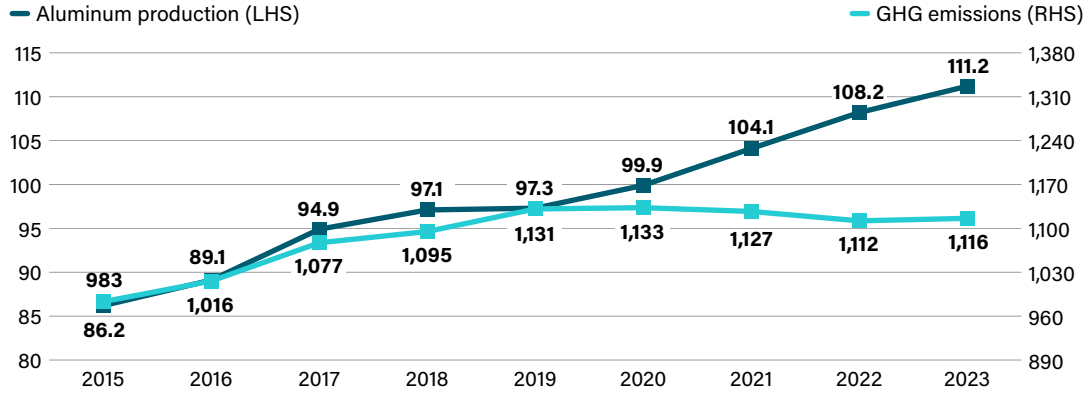
Aluminum's unique properties—including its high strength-to-weight ratio, strong thermal and electrical conductivity, and recyclability—make it particularly attractive for industries and policymakers seeking to reduce emissions and advance circular economy initiatives. As a primary component in technologies that support the energy transition, such as solar photovoltaic panels, wind turbines, and electric vehicle batteries, **aluminum facilitates global decarbonization, though its manufacturing contributes significantly to industrial emissions**. The International Energy Association (IEA) estimates the industry is responsible for approximately 3% of direct global industrial carbon emissions.[1]

With global investment in the energy transition reaching a record $2.1 trillion in 2024—an 11% year-on-year increase[2] —**the corresponding demand for aluminum is set to rise dramatically**. Projections suggest that demand will increase 40% by 2030 and by 80% by 2050 compared to 2020 levels.[3]

To meet rising demand, the industry has made notable decarbonization improvements, reducing aluminum production's emissions intensity by roughly 2% per year over the past decade.[4] However, this pace falls short of the 4% annual reduction target set by the IEA for achieving a net-zero scenario by 2050.[5] The path to industrial decarbonization is unlikely to be linear. Instead, progress will occur in step changes, with periods of limited advancement punctuated by the adoption of breakthrough technologies. Across most metals, decarbonization efforts are not meeting net-zero benchmarks.[6] For example, emissions intensity in steel production has stabilized in recent years but has not fallen further;[7] primary aluminum faces a similar risk of plateauing unless transformative technologies emerge.

Aluminum's emissions intensity has steadily declined in recent years, peaking in 2020

Metric tons



Source: International Aluminum Institute

1 IEA (2023), Tracking Clean Energy Progress 2023, IEA, Paris https://www.iea.org/reports/tracking-clean-energy-progress-2023, Licence: CC BY 4.0

2 Bloomberg NEF, Energy Transition Investment Trends 2025, January 30, 2025.

3 International Aluminum Institute, Material Flow Model 2021.

4 IEA (2023), Tracking Clean Energy Progress 2023.

5 Ibid.

6 Ibid.

7 Ibid.

Looking ahead, the aluminum industry must find ways to accelerate its decarbonization progress while meeting a sharp rise in demand. This must be done while navigating several key industry trends that are poised to reshape how aluminum is produced, sourced, and consumed. These include: **an accelerating global push for green transitions; widespread supply chain disruptions; and an evolving trade policy environment.**

Against this backdrop, this paper addresses the following key questions: How can the aluminum industry successfully align competitiveness with the ambitious requirements of the global green transition? What policy trends must the aluminum industry be aware of as it sets a continued course on carbon reduction? What key risks and opportunities for low-carbon aluminum production must established players and new entrants be aware of?

Types of low-carbon aluminum products

	Type	Key features
	Hydro-powered primary aluminum	Produced mostly or entirely using hydropower; large-scale smelting operations in countries such as Canada, Norway, Russia, and Iceland
	High recycled content aluminum	≥75% post-consumer scrap; drastically reduces energy use and emissions
	Blended primary + scrap content	Mix of primary and recycled metal; optimized for footprint and performance
	Solar and/or wind-powered aluminum	Solar is currently dependent on the use of Renewable Energy Certificates, but there is a growing opportunity in regions with significant solar investments, such as China and the Gulf Wind is already a partial solution for smelters in countries such as Norway and Australia; however, it needs to be supplemented by other power sources
	Carbon-neutral via offsets	Net-zero emissions claimed through verified carbon credits or removals
	Low-carbon alumina-linked products	Aluminum products made from low-emissions alumina inputs, reducing total upstream footprint

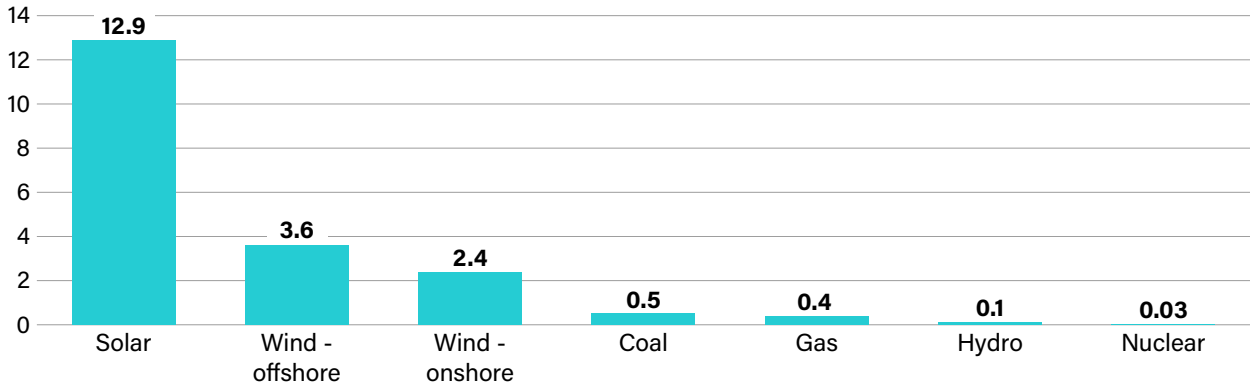
Balancing economic competitiveness with the green transition: An impossible challenge?

Aluminum industry leads as executives double down on decarbonization

Most executives, according to a December 2024 survey commissioned by the We Mean Business Coalition and others, **support a rapid transition to renewables despite ongoing geopolitical reshuffling, trade volatility, and environmental regulatory uncertainty.** Multiple factors drive the shift toward decarbonization, including risk management, energy security, carbon costs, increasingly complex stakeholder expectations, and long-term competitiveness concerns. In fact, the aforementioned survey found that more than half of nearly 1,500 business leaders from medium and large companies across 15 countries **plan to relocate operations in the next five years to secure better access to renewable resources.** Almost unanimously, these executives expressed support for reducing their companies' reliance on fossil fuels. While the aluminum value chain is difficult to reorient geographically, executives' push to secure renewable energy supplies underscores the increasingly close relationship between business expansion and renewable energy development.

Aluminum is a critical input for renewable energy sources, with an outsized influence in solar

Aluminum intensity of different energy sources, t/MW



Source: International Aluminum Institute & CRU Group

The aluminum industry has demonstrated robust sector-wide organization and leadership in advancing decarbonization goals. Prominent companies have set ambitious climate commitments and participate in collaborative platforms, including the Mission Possible Partnership and the International Aluminium Institute, helping drive industry progress. Alcoa stands out in this regard, with 86%[8] of its smelters powered by renewable energy, underscoring the industry's broader reliance on low-cost, low-carbon energy sources like hydroelectric power.

Industry collaboration has accelerated through platforms such as the Mission Possible Partnership, an alliance of climate leaders focused on mobilizing efforts to decarbonize some of the world's highest-emitting industries in the next ten years. Momentum is evident: **The number of net-zero aligned aluminum projects announced in 2024 tripled compared to the previous year, underscoring a growing consensus on the need for ambitious climate action.** Moreover, the First Movers Coalition, and its parallel First Suppliers Hub repository, a global initiative facilitating the purchase of cleaner products from hard-to-abate industries, has encouraged major manufacturers and buyers to commit to procuring at least 10% of their primary aluminum from near-zero-emissions processes by 2030. These developments illustrate the industry's increasing willingness to make advanced commitments and share risks to accelerate the adoption of new technologies.

However, significant barriers to scaling renewable energy remain. Slow permitting processes for renewable projects and rising grid transmission costs, which now rival the cost of energy production in some regions, highlight a key challenge: the need to lower overall energy costs in an increasingly competitive market.

In the US, cumbersome permitting procedures extend development timelines, with energy projects averaging 4.5 years to complete and transmission projects stretching to 7.5 years.[9] In the EU, after the November 2023 Renewable Energy Directive, member states lag behind in transposing permit-granting language into national law—stalling progress on permitting reform.[10]

8 Calculated using location-based scope 2 accounting methods.

9 American Clean Power Association, April 2024.

10 SolarPower Europe (2025): *EU Renewable Energy Permitting: State of Play, 2025*

Navigating regional risks and levers in aluminum industry decarbonization

In Europe, a heightened focus on competitiveness is challenging the green transition agenda. Moreover, governments are prioritizing increased defense spending amid increased geopolitical tensions and budget pressures, particularly among NATO members who recently committed to increasing defense spending over the next decade. Nevertheless, support for the green transition remains strong among European business leaders. The region continues to expand renewable energy generation, rising from 34% of total electricity output in 2019 to 47% in 2024.[11] Broader public sentiment remains optimistic as well: The 2024 Eurobarometer survey found that 79% of respondents anticipate European climate targets will generate new jobs and attract clean energy investment, while 62% endorse diversifying energy sources, including renewables.[12]

In February 2025, the European Commission launched the Clean Industrial Deal, which aims to create "lead markets" for products that are made in the EU and meet a high sustainability standard. **This type of enabling policy that rewards the use of certain materials holds significant potential to accelerate the industry's transition toward decarbonization.** Emerging EU Green Deal initiatives such as the Ecodesign for Sustainable Products regulation—which will require origin, recycled content, and environmental impact disclosure, among others—will further reinforce the process.

In Latin America, striking the right balance between economic competitiveness and green transition commitments is increasingly important, particularly as the region's aluminum industry suffers the direct and indirect effects of ongoing global tariff disputes. For example, Brazil, which will host the upcoming UN climate summit (COP30), offers a competitive advantage for industries seeking low-carbon options: 93%[13] of its electricity grid powered by renewables. Building on its success in expanding agricultural market share during trade shifts involving China, Brazil is now seeking to attract additional investment in heavy industry. This trend is not unique to Brazil; eight other Latin American and Caribbean countries generate over 75% of their electricity from renewable sources.[14]

Within Gulf Cooperation Council (GCC) countries, authorities are leveraging large sovereign wealth funds to invest in clean energy and decarbonize their aluminum and steel industries as part of broader economic diversification strategies. In Asia, home to the world's dominant aluminum producers and consumers, a continued reliance on coal for production creates headwinds for decarbonization. China, which accounts for more than half of global primary aluminum production[15], continues to heavily subsidize coal-powered aluminum production.[16] Although efforts are underway to relocate smelters to regions with abundant hydropower, this transition is slow and faces potential grid capacity constraints. Meanwhile, emissions from captive coal plants in China—the primary energy source for aluminum production—are projected to rise, as many of these plants have 20–30 years of operating life remaining.[17] At current levels of production, emissions are not expected to peak until 2045. India has a similarly heavy reliance on coal for aluminum production, with a less robust, more decentralized policy environment for decarbonization than in China. While some companies are exploring low-carbon aluminum products, scaling renewables to become widely accessible for industry is a significant challenge in India.

11 Rosslowe, Chris, and Beatrice Petrovich. *European Electricity Review 2025.* Ember, January 23, 2025.
12 European Commission, *Special Eurobarometer 555: Europeans' attitudes toward EU energy policy.* September 2024.
13 Brazilian Ministry of Mines and Energy, 2024.
14 Latin American Energy Association, *Electricity Generation Report in Latin America and the Caribbean.* April, 2025.
15 International Aluminum Institute, 2025.
16 OECD (2025), *How Governments Back the Largest Manufacturing Firms, OECD Trade Policy Papers*, No. 289, OECD, Paris.
17 TransitionAsia, *The Chinese Aluminum Sector: Challenges and Opportunities for Decarbonisation*, April 2025.

Europe and Latin America maintain strong decarbonization momentum

High – Active investments, policy push, renewable use, and recycling leadership.
Medium – Transition underway but dependent on fossil power or facing policy/tech barriers.
Low – Minimal progress or early-stage decarbonization.

Region	Current status	Key decarbonization strategies	Risks	Opportunities	Decarbonization momentum
 **Asia**	• Largest producer (China) • Early transition	• Gradual hydro relocation (China) and renewable adoption (India) • Recycling • International partnerships	• Energy instability (for example, Yunnan drought) • Coal dependence • Regulatory unpredictability	• Large market scale • Government incentives • Export potential	**Medium**
 **Gulf (GCC)**	• ~10% of global output[18] • Mid-transition	• Solar integration • EGA recycling plant • CBAM-driven reforms	• Limited hydro potential • Fossil-heavy grids • Export barriers under CBAM	• Transition to less fossil-dependent production and the use of carbon capture utilization and storage (CCUS) on gas-powered plants • Solar investment scale • Proximity to EU/Asia	**Medium**
 **Europe**	• Low primary output • High sustainability leadership	• High recycling • Clean energy (hydro, wind) • Carbon pricing (ETS, CBAM)	• High power costs in some areas • Heavy reliance on imports • Regulatory intensity	• First-mover in green certifications • Premium demand (auto, packaging)	**High**
 **North America**	• Moderate output • Green transition momentum has decreased	• Hydro-powered smelters (Canada) • High recycling (US)	• Aging infrastructure • Market exposure to global carbon rules • IRA incentives and permitting paralyzed	• Renewable access (Canada)	**Medium**
 **Latin America**	• Hydro-dominant electricity • Green leader in raw power	• Hydro-based smelting (Brazil) • Export-oriented strategy • Regional renewables growth	• Political uncertainty • Infrastructure/ logistics limits	• Naturally low emissions • Green aluminum export potential • Regional integration	**High**

Source: Eurasia Group

18 International Aluminum Institute, 2025.

The impact of green policies on trade and supply chains

Moving from policy design to real-world effects in 2025 and beyond

The year 2025 marks a decisive shift from the design of ambitious national policies and corporate decarbonization strategies to on-the-ground implementation. National governments and companies are now moving beyond net zero roadmaps, Scope 1–3 targets, and transition planning to focus on project delivery, supply chain decarbonization, and verified emissions reductions. As these initiatives progress, scrutiny of the aluminum industry is intensifying from regulators, civil society, and investors alike. The industry must now carefully assess how new requirements—ranging from stricter emissions standards to renewable content thresholds and more robust monitoring and reporting obligations—will affect every stage of the aluminum value chain, from mining through to final fabrication.

A central policy to watch is the EU's CBAM, which will take full effect in 2026. The CBAM introduces carbon-linked tariffs on imported products, altering the competitive landscape for aluminum exporters to the EU. While the mechanism is designed to incentivize lower-carbon production, three critical aspects of the current policy design may have unintended effects. First, the "scrap loophole"—which assigns zero emissions to imported, re-melted aluminum regardless of its origin or production method—risks shifting emissions outside of EU accounting rather than actually reducing them, disadvantaging genuinely low-carbon producers in the process. Second, the CBAM's proposal to phase out Indirect Carbon Cost Compensation could disadvantage even highly efficient EU producers who are exposed to pass-through Emissions Trading System costs from power generators. Third, CBAM's limited coverage of finished downstream aluminum products may enable carbon leakage. Provided its design avoids hurting clean producers and complicating aluminum production in the EU, CBAM has the potential to reinforce the EU's climate leadership. This evolving regulatory environment poses clear risks for high-emissions producers, but it also presents significant opportunities for companies able to innovate and reorient their supply chains toward low-carbon and recycled materials.

Seizing opportunity amid global trade and political uncertainty

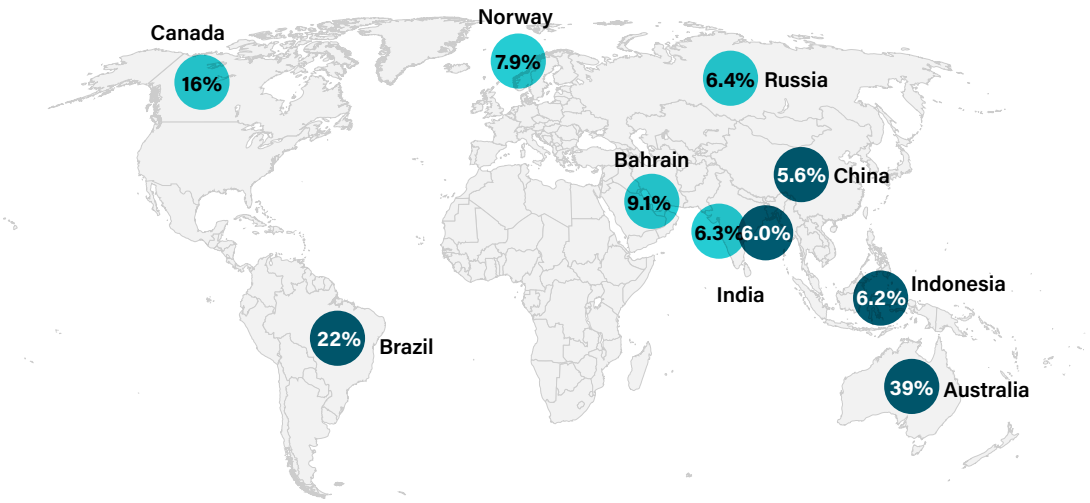
Meanwhile, persistent trade wars and rising geopolitical tensions are likely to accelerate the emergence of "green protectionism," with governments enacting measures that target certain industries. Such policies undermine the stability needed for long-term investments in decarbonization. For the aluminum industry, this climate demands proactive mapping of supply chains and comprehensive scenario-planning for potential shifts in tariffs, export controls, and new sourcing requirements. This need is particularly acute in the US, given its dependence on imports to meet domestic aluminum demand.

To expand domestic aluminum production, the US will likely need greater access to low-cost energy and increased imports of alumina, making it essential to understand the geopolitical dynamics and profiles of major alumina-exporting countries. More broadly, aluminum's status as a strategic critical mineral—with key applications in both defense and the energy transition—necessitates robust strategies for potential increased demand and supply chain resilience.

The transformation of alumina into finished aluminum depends on a globally interdependent network of refining and smelting capabilities that are increasingly vulnerable to geopolitical shocks.

North American and European aluminum production depend on alumina imports from other regions

Alumina trade flows

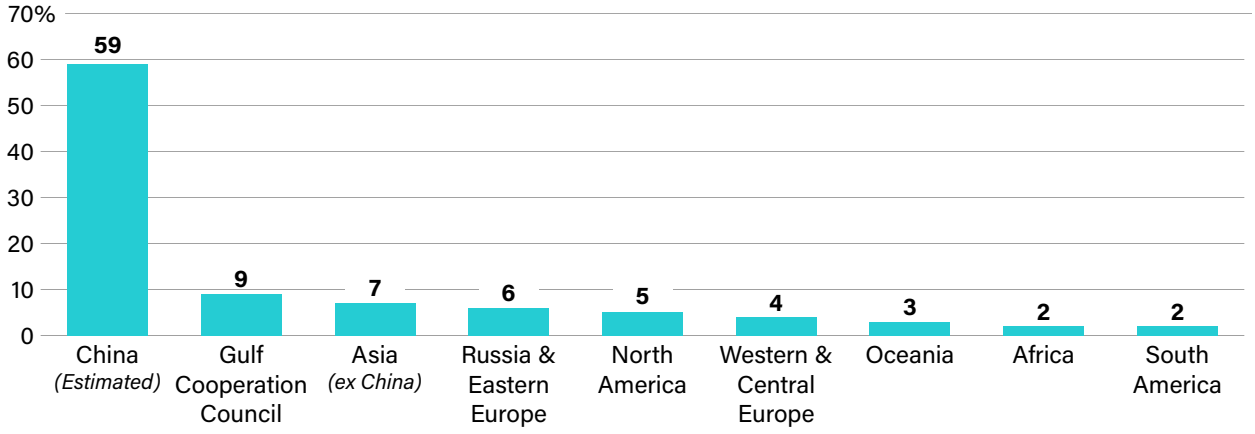


Source: Australia Aluminum Council

While defense applications are not the biggest drivers of aluminum demand, policymakers are likely to treat aluminum assets and supply chains as strategically critical in response to mounting global volatility. It is important to note that China produced nearly 60% of global aluminum in 2024. Only two NATO countries, Canada and Norway, were among the top ten producers in 2024, together accounting for roughly 7% of global production. A production imbalance of this magnitude quickly becomes a risk in an unpredictable geopolitical environment.

Asia dominates aluminum production, primarily for domestic consumption

Global aluminum production rankings



Source: Australia Aluminum Council

Challenge	Opportunity	Industry best practice/ongoing initiatives
Sourcing lower-carbon aluminum across complex, global supply chains	Redesigning supply chains for greater sustainability and traceability	Committing to verified energy efficiency initiatives across global smelters
Exposure to geopolitical and trade-related risks	Leveraging new and diversified trade partnerships	Forming long-term contracts with suppliers in low-risk, renewable-heavy regions (for example, Brazil and Canada)
Limited transparency on material provenance and sustainability performance	Increasing traceability through digital solutions	Alcoa's development of digital solutions and product passports is improving material traceability and transparency across supply chains
High carbon intensity in key regions (for example, China)	Encouraging supplier transition to renewable energy	Alcoa's Supplier Sustainability Program is working with higher intensity suppliers to measure product carbon footprints, identifying intensity and opportunities for improvement.
Pressure from customers and regulators for low-carbon materials	Communicating and verifying sustainability commitments	Use of Environmental Product Declarations and third-party certifications, and the creation of lead markets, to enable green premiums
Fragmented regulatory frameworks across regions	Advocating for harmonized standards and cross-border collaborations	Participation in Mission Possible Partnership and First Movers Coalition
License to operate, especially in host communities	Building strong corporate responsibility and community engagement practices	Alcoa's local community programs and transparent sustainability reporting
Uncertainty around supply chain disruptions (for example, shipping, raw material access)	Building stockpiles and fostering supplier flexibility	Strategic stockpiling of bauxite or alumina and multi-source procurement agreements
Barriers to renewable energy (for example, slow permitting and rising grid costs)	Investing in grid modernization and policy reform to accelerate renewables	Public-private partnerships to streamline permitting and co-invest in grid upgrades (for example, joint renewable projects between utilities and industry)

Recommendations

Align on a definition for low-carbon aluminum to boost production

While low-carbon aluminum products have been marketed for nearly a decade, **the absence of a formal, internationally recognized definition of "low-carbon" continues to hinder policymakers and industry leaders from making coordinated progress toward decarbonization.** A threshold of 4 tons of carbon equivalent per ton of material produced ($t/CO_2e/t$) has emerged as an informal industry benchmark, but a consensus is lacking on how to define the boundaries of the value chain—whether to count only smelter emissions or encompass the full value chain from mining to metal production—and on carbon accounting methods for scope 2 emissions and pre- and post-consumer scrap aluminum. The industry urgently needs to determine whether to adopt this threshold, and if so, to establish a standardized, transparent methodology for measuring emissions intensity. With currently available technology, achieving less than 4 $t/CO_2e/t$ is feasible only for primary aluminum emissions spanning scope 1 and 2. If scope 3 were to be included, a realistic threshold for primary aluminum would be closer to 5-6 $t/CO_2e/t$.

Achieving alignment among buyers, suppliers, and leading industry associations—ideally through widely endorsed standards—will be critical in enabling more efficient product development, credible labeling, and increased market uptake of low-carbon aluminum.

In parallel, policymakers should work alongside industry to codify these standards and enable demand signals for low-carbon aluminum through targeted incentives. Policymakers, especially in jurisdictions with robust climate ambitions, can accelerate adoption by updating public procurement rules to require or strongly favor low-carbon material inputs, expanding the scope of green public procurement programs, and leveraging

regulatory instruments such as the EU's End-of-Life Vehicles Directive for private procurement. Additionally, industry and government should collaborate to establish transparent disclosure frameworks and verification systems, building confidence among buyers and enabling consistent market pricing for low-carbon aluminum. International cooperation—especially among major producing and consuming economies—will be important for minimizing the risk of market fragmentation or the proliferation of incompatible standards.

Deepen supply chain traceability and digital innovation

The carbon intensity of aluminum production is heavily influenced by each facility's energy mix, with locations in North and South America generally able to leverage cleaner energy sources compared to production centers in countries such as India. Alcoa exemplifies industry leadership in this area; the company currently sources 86%[19] of its electricity from renewables such as hydropower at its smelting facilities. Replacing the remaining 14% of conventional power use presents significant challenges, particularly in locations where renewable alternatives are not readily available. Addressing the clean energy gap requires significant public and private funding. Potential options could include government subsidies and blended finance to de-risk energy transition projects and help accelerate decarbonization efforts.

The industry should promote its successes throughout this transformation. Highlighting examples and disseminating best practices in digital monitoring—such as digital product passports—and in clean energy procurement will provide valuable guidance to others. By innovating in these areas and communicating on their impacts, aluminum producers can offer effective models for other hard-to-abate industries seeking to accelerate their own green transitions.

Turn global policy fragmentation into market advantage

The aluminum industry faces an uneven playing field owing to diverging decarbonization policies, regulatory frameworks, and government subsidies across regions. Acknowledging these structural disparities and developing a strategy that accounts for their market implications will be important, especially as regional regulation and green transition initiatives evolve. For instance, producers in regions with high renewable grid penetration, such as Brazil and Canada, may achieve lower embedded emissions at comparable cost, while counterparts in regions with carbon-intensive power mixes or policy-constrained environments face higher abatement costs and competitive pressures. Recognizing these asymmetries will prove critical for interpreting cost curves, procurement strategies, and investment signals in emerging low-carbon aluminum markets.

In North America, the US government is increasingly relaxing environmental regulations to attract heavy industry, setting itself up as a destination for energy-intensive manufacturing. However, declining investment in renewables has created uncertainty about the US's ability to meet rising energy demand from electro-intensive industries, particularly expanding data center operations. Meanwhile, public awareness of slow permitting processes is increasing pressure on policymakers to overhaul and expedite permitting requirements of transmission projects, presenting an opportunity for industry engagement.

In Europe, companies should take advantage of an emerging Clean Industrial Deal and the rollout of Green Deal regulations. Europe's commitment to industrial competitiveness provides opportunities to incentivize low-carbon aluminum. For instance, the EU's Clean Industrial Deal is a key policy mechanism supporting Europe's ambition to be a leader in low-carbon materials markets. This initiative could establish standards for low-carbon aluminum through public or private procurement and regulatory measures, such as the Ecodesign for Sustainable Products regulation, the End-of-Life Vehicles directive, the Construction Products regulation, and the EU Battery regulation.

19 Calculated using location-based scope 2 accounting methods.

Across all regions, the aluminum industry should advocate for policies that increase the supply of clean energy and ensure it remains competitively priced. By promoting faster permitting processes for renewable energy development, the industry can not only further decarbonize energy grids but also increase energy supply and reduce the cost of aluminum production. Public policy must also address heightened competition for clean energy access amid an AI-driven data center boom. Policymakers should ensure that clean electricity remains affordable for industries reliant on it to achieve meaningful decarbonization.

Successfully navigating this patchwork of global policies will require agility, up-to-date market intelligence, and the capacity to tailor investment strategies to each region's regulatory and stakeholder environment. **Through proactive engagement with policymakers, the aluminum industry can send a clear message to its public sector counterparts that an enabling policy environment is paramount to the green transition.** Clear advocacy in support of policy outcomes—whether regional initiatives such as the EU's Clean Industrial Deal or targeted local measures—can reduce the greenwashing risk that companies face around the world.

Conclusion

For aluminum producers, treating competitiveness and carbon reduction as mutually exclusive objectives poses significant strategic risks—especially as market demands, regulations, and supply chain requirements continue to evolve. Companies that invest early in building resilient supply chains and advancing circularity initiatives will be best positioned to secure first-mover advantages. In this era of trade uncertainty, regulatory change, and mounting societal expectations, collaboration within the industry and with the public sector is increasingly vital. Public-private collaboration will be necessary to accelerate the introduction of transformative technologies—for example, to refine lower-quality bauxite or increase scrap reutilization rates—that will allow the industry to move more swiftly along the path of decarbonization.

Going forward, aluminum companies must focus on making strategic investments, developing innovative partnerships, and participating actively in policy dialogues to continue meeting evolving customer expectations and driving growth.

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