



## **Public Comments on Section 232 National Security Investigation of Imports of Processed Critical Minerals and Derivative Products**

**Submitted by:           Climate Leadership Council  
                                  Center for Climate & Trade Executive Director, Catrina Rorke**

The White House has taken a strong interest in securing U.S. critical minerals supplies through expanding domestic capacity and international partnerships. The Department of Commerce’s investigation into processed critical mineral and derivative product imports<sup>i</sup> provides a unique opportunity to explore trade flows, market structures, and potential interventions that may help scale, diversify, and stabilize critical mineral supply chains.

Prior actions by the administration, including the series of executive orders issued by President Trump, have accurately identified two key challenges in critical mineral supply chain security:

First, China's dominance over vital portions of the global supply chain is the most significant headwind to scaling, diversifying, and stabilizing the U.S. critical mineral supply chain. China controls 60% of worldwide production and continues to tighten control of upstream mineral capacity, driving \$24.1 billion to global mining investments through the Belt and Road Initiative last year.<sup>ii</sup> China also controls 85% of global critical mineral processing capacity,<sup>iii</sup> the accumulation of decades of export restrictions, substantial subsidies, industrial innovation, and market manipulation. The U.S. and market economies struggle to compete for market share against Chinese state-owned enterprises. This position has resulted in the U.S. being fully import-reliant for 12 critical minerals and more than 50% import reliant for another 28.<sup>iv</sup>

Second, the primary objective in securing critical mineral resources is to support the domestic industrial base for defense, energy, aerospace, information, and other advanced technologies. The growing U.S. advanced manufacturing sector is a prominent consumer, and its appetite is growing. Supply chain security needs to account for several factors, including the costs to domestic manufacturers who require these inputs for their products. Balancing the needs of actors across the full supply chain will require sophisticated, mineral-specific analysis and policy.

The Climate Leadership Council has identified three broad priorities to secure critical mineral supply chains: maximize efforts to develop domestic mining and processing capacity, leverage international partnerships with mineral-rich nations, and drive innovation across the critical mineral supply chain.<sup>v</sup> These priorities have been shaped by our exploration of trade flows and meaningful opportunities to scale, diversify, and stabilize supplies for U.S. manufacturers.

This memo shares a short collection of our findings to inform the Department of Commerce’s 232 investigation. In addition to observing that each critical mineral has different characteristics and market dynamics that require unique policies, we wish to share four key findings:

1. U.S. companies have already begun diversifying mineral supplies where possible.
2. Diverse mineral sourcing may obscure significant exposure to Chinese market control.
3. Where the U.S. is dependent upon Chinese imports, we can see significant market manipulation that can impede domestic investment.
4. Where the U.S. is dependent upon Chinese imports, U.S. industries strive to invest in supply chain resiliency.

What follows is an analysis of 2023 trade data for cobalt, lithium, graphite, and rare earths.<sup>vi</sup> These minerals are on one or both of the U.S. Geological Survey’s Critical Mineral<sup>vii</sup> and the Department of Energy Critical Material<sup>viii</sup> lists. Analysis of each mineral flow highlights a different finding and suggests the complexity, challenges, and opportunities of each trade flow.

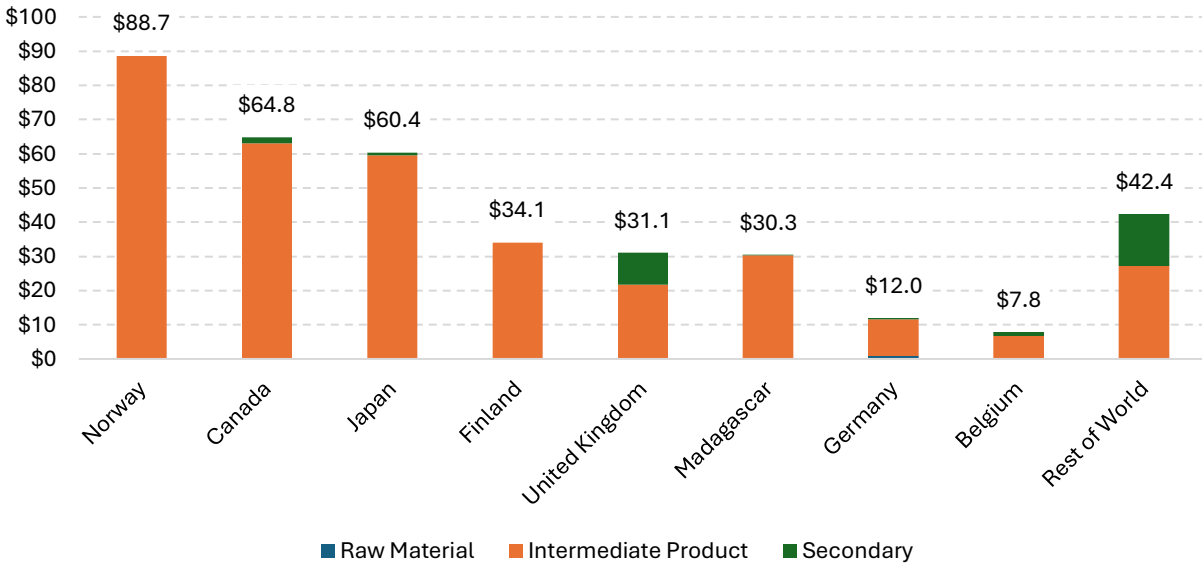
## **1. U.S. companies have already begun diversifying mineral supplies where possible.**

**Cobalt Case Study:** Cobalt is an essential input to a range of technologies and industries, including batteries,<sup>ix</sup> and jet engines.<sup>x</sup> Although not the global leader, the U.S. remains a significant importer.

- U.S. net import reliance: 75%<sup>xi</sup>
- Estimated Chinese control, upstream materials (2022): 62%<sup>xii</sup>
- Estimated Chinese control, midstream materials (2022): 95%<sup>xii</sup>
- Chinese share of U.S. imports: 3%

The U.S. imports cobalt from a wide variety of partners; most imports come from Norway, Canada, and Japan, accounting for a combined 58% of imports. Imports were primarily intermediate goods, i.e., materials processed beyond the raw ore or concentrate stage but not yet in their final, refined, or end-use form.<sup>xiii</sup>

## U.S. Cobalt Imports (2023 USD billions)



Includes HTS codes: 260500 for raw material, 810520, 282200 for immediate product, 810530 for secondary.

### Observations:

- The U.S. has a diverse set of cobalt exporting partners, including OECD countries.** Norway, Canada, and Japan all have active processing industries. Where the market presents an opportunity to do so, the U.S. market has already been selecting for reliable trade partners more attenuated from Chinese ownership and market manipulation.
- The U.S. is a prominent player further down the supply chain.** The U.S. is the top exporter of cobalt articles—such as cobalt-based machine parts—accounting for 36% of global exports. The U.S. is also the top exporter of cobalt waste and scrap, accounting for 23% of global exports. The U.S. imported very little raw material, around 17 MT in 2023, demonstrating a vanishingly small processing sector.<sup>xiv</sup> To assure continued U.S. success in downstream cobalt products, it's crucial to maintain affordable access to processed and derivative products.

### Helpful context:

- Diverse import sourcing obscures the key supply chain vulnerability.** The upstream segments of the cobalt supply chain are dominated by the Democratic Republic of Congo, which exports nearly 70% of all upstream cobalt ores and concentrates and 53% of midstream unwrought cobalt and cobalt powder. China has significant influence in that market and is estimated to control 72% of the DRC's cobalt and copper mines.<sup>xv</sup>

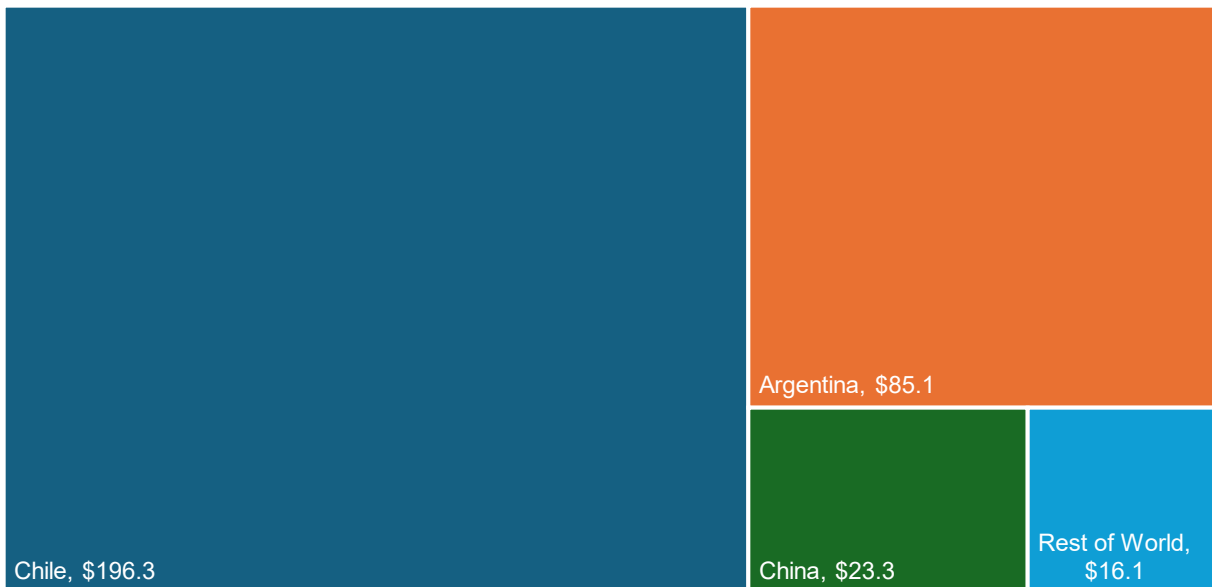
## 2. Diverse mineral sourcing may obscure exposure to Chinese market control.

**Lithium Case Study:** Lithium is a key input to lithium-ion batteries, electronics, drones, and glass production.<sup>xvi</sup>

- U.S. net import reliance: 50%<sup>xvii</sup>
- Estimated Chinese control, upstream materials (2020): 80%,<sup>xviii</sup>
- Estimated Chinese control, midstream materials (2020): 70%<sup>xviii</sup>
- Chinese share of U.S. imports: 7%

The U.S. imports intermediate lithium products primarily from Chile (61%), a free trade partner of the U.S. for more than 20 years, Argentina (27%), and China (7%). As with cobalt, existing U.S. sourcing obscures a greater degree of Chinese exposure than meets the eye.

### U.S. Intermediate Lithium Product Imports (2023 USD millions)



Includes HTS codes: 283691, 282520, 280519

Observations:

- **More than three-quarters of U.S. imports are from two resource-rich partners in the “Lithium Triangle.”** Chile and Argentina have significant mining capacity, accounting for a combined 29% of global lithium production.<sup>xix</sup> Both countries are also prominent processors of the U.S.’s most imported products.

Helpful context:

- **China is increasing its presence in areas where the U.S. has prominent import reliance for mineral resources.** China is already involved in six of Argentina’s sixteen active lithium projects.<sup>xx</sup> In Chile, China’s Tianqi Lithium became the second-largest

shareholder of the Chilean company SQM, which controls around 46% of global lithium production.<sup>xxi</sup> While the U.S. trades preferentially with Latin American markets, its exposure to Chinese market manipulation may be increasing thanks to these investments.

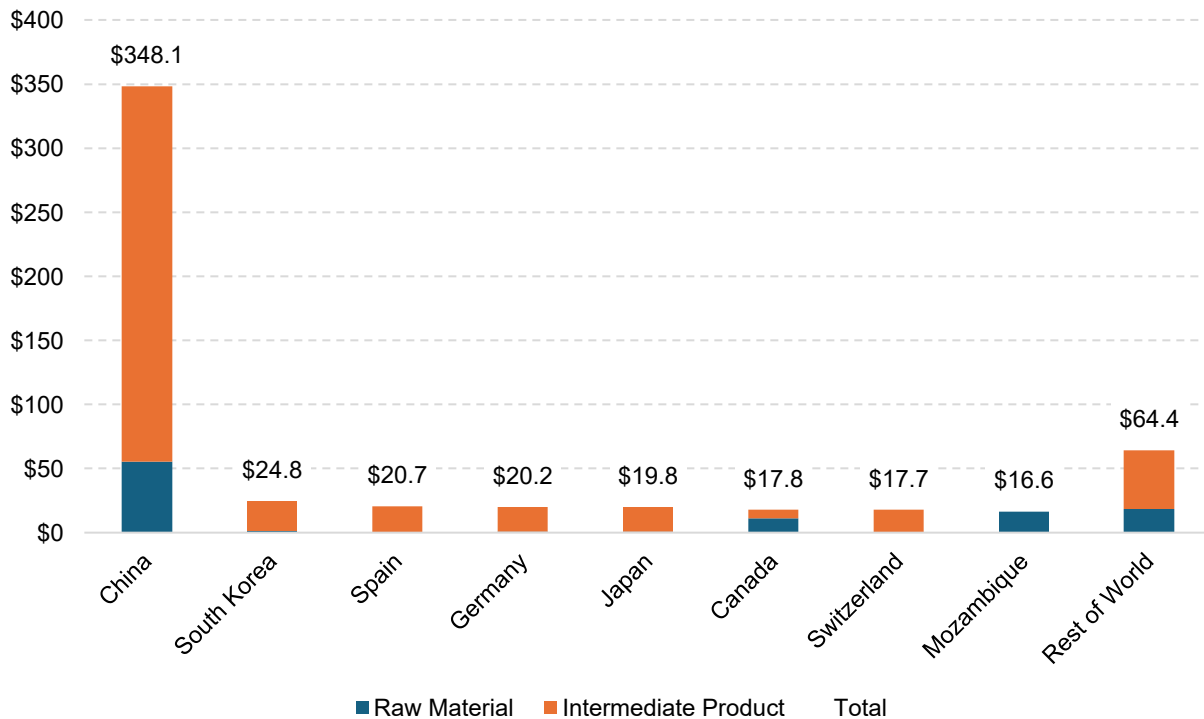
### 3. Where the U.S. is dependent upon Chinese imports, we see significant market manipulation that can impede domestic investment.

**Graphite Case Study:** Graphite is a vital input to battery anodes,<sup>xxii</sup> naval vessels,<sup>xxiii</sup> and the metal scrap industry.

- U.S. net import reliance: 100%<sup>xxiv</sup>
- Estimated Chinese control, upstream materials (2024): 82%<sup>xxv</sup>
- Estimated Chinese control, midstream materials (2024): 90%<sup>xxvi</sup>
- Chinese share of U.S. imports: 63%

The U.S. supply chain for natural and artificial graphite is dominated by China. Across natural graphite and intermediate product imports, it remains the dominant global supplier. Other top U.S. trade partners include Mozambique (natural graphite producer), European partners (prominent shared processing capacity), and Japan and South Korea (which have stable and growing synthetic graphite capacity).<sup>xxvi</sup>

U.S. Raw Material and Intermediate Product Graphite Imports (2023 USD millions)



Includes HTS: 250410, 250490, 380120, 380110

Observations:

- **China dominates U.S. imports and global export flows of natural and artificial graphite.** Their market position has left the U.S. and other partners exposed to the non-market practices of the CCP, which cripples the ability of domestic firms to compete in the graphite materials space. Last December, the American Active Anode Material Producers (AAAMP) called on the Department of Commerce and the ITC to investigate whether China is dumping artificially low active anode material (for both natural and artificial graphite) on the U.S. market, alleging dumping margins between 828% and 921%.<sup>xxvii</sup>
- **The U.S. has established trade flows with other countries, although these are marginal in comparison with China.** The U.S. imports raw graphite materials from Mozambique and Madagascar. OECD countries have a limited but established presence in the global export market for intermediate products, representing nearly 30% of global exports and 31% of U.S. imports of artificial graphite.

#### **4. Where the U.S. is dependent upon Chinese imports, U.S. industries strive to invest in supply chain resiliency.**

**Rare Earth Elements Case Study (REE):** REEs are a group of 17 metallic elements. These elements are critical inputs used in advanced energy technologies, electronics, batteries, and defense equipment.

- U.S. net import reliance: up to 100%<sup>xxviii</sup>
- Estimated Chinese control, upstream materials (2024): 61%<sup>xxix</sup>
- Estimated Chinese control, midstream materials (2024): 92%<sup>xxxiii</sup>
- Chinese share of U.S. imports: 65%

China is a dominant producer and refiner of REE and accounts for over 90% of U.S. imports of REE metals and nearly 70% of imported REE compounds and mixes. Other leading exporters were Malaysia, Japan, and Estonia, although with significantly less volume.

U.S. import reliance for processed materials and products obscures a key market segment where the U.S. is expanding; domestic REE extraction and processing industry now accounts for more than 9% of global production capacity—and is growing.<sup>xxx</sup> To support the development of those domestic resources, American producers have relied on the Chinese market, with its relatively low costs and high technical aptitude, for onward processing. This has allowed the domestic mining industry to expand and create market space for domestic investment in processing and manufacturing that is beginning to come online.

## U.S. REE Imports (2023 USD millions)



Includes HTS codes: 284610, 284690, 280530

### Observations:

- **Globally, China dominates throughout the supply chain.** China is estimated to control 61% of global REE production and over 90% of global REE processing.<sup>xxxii</sup> The CCP is further consolidating control through state-owned enterprises. In December 2021, a merger was approved of three major state-owned rare earth firms to form the China Rare Earth Group. This new conglomerate controls up to 25% of global rare earth mineral resources.<sup>xxxii</sup>
- **The U.S. has a significant import dependence on China.** The proportion of U.S. imports from China reflects the dominant market position of the CCP and highlights the acute vulnerability of downstream industries. The CCP's history of supply and price shocks and export controls makes the U.S. market position troubling.

### Helpful context:

- **U.S. import reliance belies ongoing investments in resiliency.** As the U.S. has ramped up domestic mining, industry has cultivated a nascent domestic processing industry. After Beijing imposed 125% tariffs on U.S. imports in April 2025, U.S. producer MP Materials halted exports to China and is now stockpiling concentrate and scaling up domestic refining and manufacturing.<sup>xxxiii</sup>

## Conclusions

Through analysis of existing market conditions, we can understand the complexity and diversity of challenges to improving supply chain security for critical minerals. Across a diverse set of minerals, we see the U.S. economy invest in diverse and resilient supply chains wherever possible. These investments in critical mineral supply chain security, however, continue to face significant headwinds thanks to ongoing and aggressive investment by the CCP across the global critical mineral supply chain.

Mining the trade data provides insights into specific markets where U.S. industry has cultivated more secure critical mineral supply chains—and where the U.S. remains especially vulnerable to ongoing market manipulation. As the U.S. advances its toolkit to scale, diversify, and stabilize critical mineral supplies, it must respond to the specific conditions of individual critical mineral markets. Doing so will ensure that policy supports the growing domestic advanced manufacturing sector with reliable, affordable critical material inputs.

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<sup>i</sup> Department of Commerce, Bureau of Industry and Security, “Notice of Request for Public Comments on Section 232 National Security Investigation of Imports of Processed Critical Minerals and Derivative Products,” *Federal Register*, Vol. 90, No. 79, 17372-17373, April 25, 2025.

<sup>ii</sup> Brooke Escobar, Ammar A. Malik, Sheng Zhang, Katherine Walsh, Alexandra Joosse, Bradley C. Parks, Jacqueline Zimmerman, and Rory Fedorochko, *Power Playbook: Beijing’s Bid to Secure Overseas Transition Materials*, AIDDATA Research Lab at William & Mary, January 2025, <https://www.aiddata.org/publications/power-playbook-beijings-bid-to-secure-overseas-transition-minerals>.

<sup>iii</sup> Bonnie Glaser and Abigail Wulf, *Review of China’s Role in Critical Mineral Supply Chains*, German Marshall Fund, podcast, August 2023, <https://www.gmfus.org/download/article/22418>.

<sup>iv</sup> U.S. Department of the Interior, U.S. Geological Survey, *Mineral Commodity Summaries 2025*, Version 1.2, March 2025, <https://pubs.usgs.gov/periodicals/mcs2025/mcs2025.pdf>.

<sup>v</sup> Catrina Rorke, “The Council’s Letter on Securing Critical Mineral Supply Chains,” Climate Leadership Council, February 2025, <https://clcouncil.org/report/letter-on-securing-supply-chains>.

<sup>vi</sup> 2023 global trade and U.S. import data from Observatory of Economic Complexity (OEC) database [i <https://oec.world/en>]. This analysis examined data by 6-HTS code, 260500, 810520, 282299, 810530, 283691, 282520, 280519, 250410, 250490, 380120, 380110, 284610, 284690, and 280530.

<sup>vii</sup> Department of the Interior, Geological Survey, “2022 Final List of Critical Minerals,” *Federal Register*, Vol. 87, No. 37, 10381-10382, February 24, 2022.

<sup>viii</sup> Department of Energy, “Notice of Final Determination on 2023 DOE Critical Materials List,” *Federal Register*, Vol. 88, No. 149, 51792-51798, August 4, 2023.

<sup>ix</sup> Cobalt Institute, “Why Is Cobalt Important,” *Cobalt Institute*, accessed May 15, 2025, <https://www.cobaltinstitute.org/essential-cobalt-2/>.

<sup>x</sup> Katrina Seatter, “What Is Cobalt? Everything You Need to Know,” *Coda Minerals*, January 10, 2025, <https://www.codaminerals.com/blog/what-is-cobalt/>.

<sup>xi</sup> U.S. Department of the Interior, U.S. Geological Survey, *Mineral Commodity Summaries 2025*, Version 1.2, March 2025, <https://pubs.usgs.gov/periodicals/mcs2025/mcs2025.pdf>.

<sup>xii</sup> Andrew L. Gulley, “The Development of China’s Monopoly over Cobalt Battery Materials,” *Mineral Economics* 37 (2024): 619–631, <https://doi.org/10.1007/s13563-024-00447-w>.

<sup>xiii</sup> HTS 810520, 282200

<sup>xiv</sup> World Bank. “United States Imports of Cobalt Ores and Concentrates (HS 260500), 2023.” *World Integrated Trade Solution (WITS)*. <https://wits.worldbank.org/trade/comtrade/en/country/USA/year/2023/tradeflow/Imports/partner/ALL/product/260500>.

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- <sup>xv</sup> Desmond Egyin, "Addressing China's Monopoly over Africa's Renewable Energy Minerals," Wilson Center, May 2024, <https://www.wilsoncenter.org/blog-post/addressing-chinas-monopoly-over-africas-renewable-energy-minerals>.
- <sup>xvi</sup> Grand View Research, *U.S. Lithium Market Size, Share & Trends Analysis Report by Product (Carbonate, Hydroxide), By Application (Automotive, Consumer Electronics, Grid Storage, Glass & Ceramics), And Segment Forecasts, 2024-2030*, <https://www.grandviewresearch.com/industry-analysis/us-lithium-market-report>.
- <sup>xvii</sup> U.S. Department of the Interior, U.S. Geological Survey, *Mineral Commodity Summaries 2025*, Version 1.2, March 2025, <https://pubs.usgs.gov/periodicals/mcs2025/mcs2025.pdf>.
- <sup>xviii</sup> BloombergNEF. "China Dominates the Lithium-ion Battery Supply Chain, but Europe Is on the Rise." September 16, 2020. <https://about.bnef.com/blog/china-dominates-the-lithium-ion-battery-supply-chain-but-europe-is-on-the-rise/>.
- <sup>xix</sup> International Energy Agency, *Critical Minerals Dataset*, IEA, Paris <https://www.iea.org/data-and-statistics/data-product/critical-minerals-dataset>.
- <sup>xx</sup> 3GIMBALS. "Understanding China's Role in South America's Lithium Supply Chain: Strategic Investments and Geopolitical Implications." *3GIMBALS Insights*. <https://3gimbals.com/insights/understanding-chinas-role-in-south-americas-lithium-supply-chain-strategic-investments-and-geopolitical-implications/>.
- <sup>xxi</sup> Eric Ng. "Sichuan Firm Poised to Control Lion's Share of the World's Battery Metal." *South China Morning Post*, May 23, 2018. <https://www.scmp.com/business/commodities/article/2147232/sichuan-firm-poised-46-cent-grip-worlds-battery-metal-us41>
- <sup>xxii</sup> Aqua Metals, "What Is Graphite, and Why Is It So Important in Batteries?" *Aqua Metals Recyclopedia*, <https://aquametals.com/recyclopedia/why-is-graphite-so-important-to-lib/>.
- <sup>xxiii</sup> Benedetta Girardi, Irina Patrahau, Giovanni Cisco, and Michel Rademaker, *Strategic Raw Materials for Defence: Mapping European Industry Needs*, The Hague Centre for Strategic Studies, January 2023, <https://hcss.nl/wp-content/uploads/2023/01/Strategic-Raw-Materials-for-Defence-HCSS-2023-V2.pdf>.
- <sup>xxiv</sup> U.S. Department of the Interior, U.S. Geological Survey, *Mineral Commodity Summaries 2025*, Version 1.2, March 2025, <https://pubs.usgs.gov/periodicals/mcs2025/mcs2025.pdf>.
- <sup>xxv</sup> International Energy Agency, *Critical Minerals Dataset*, IEA, Paris <https://www.iea.org/data-and-statistics/data-product/critical-minerals-dataset>.
- <sup>xxvi</sup> Mordor Intelligence, *Synthetic Graphite Market Size & Share Analysis—Growth Trends & Forecasts (2025-2030)*, n.d. <https://www.mordorintelligence.com/industry-reports/synthetic-graphite-market>.
- <sup>xxvii</sup> Bernd Janzen, Matthew Nicely, Yujin Kim McNamara, Devin Sikes, Daniel Witkowski, Julia Eppard, Yuzhe PengLing, and Sydney Stringer, "New Antidumping and Countervailing Duty Petitions on Active Anode Materials from China," Akin Gump, December 2024, <https://www.akingump.com/en/insights/alerts/new-antidumping-and-countervailing-duty-petitions-on-active-anode-materials-from-china>.
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