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# Countering Weaponized Interdependence: US Critical Mineral Strategy and Greenland's Sovereign Agency

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**Abstract:** As critical mineral supply chains become central vectors of "weaponized interdependence," the United States (US) increasingly seeks to mitigate its structural vulnerabilities by securitizing the Arctic resource frontier. This article investigates Washington's strategic pivot toward Greenland. Employing a novel multidimensional Strategic Weight Index calibrated with 2026 USGS data, we quantitatively map the topology of US mineral reliance across variables of supply concentration, non-substitutability, and strategic application. The empirical analysis demonstrates that China's structural centrality confers latent "Panopticon" and "Chokepoint" capabilities, which can be operationalized as countermeasures against US defense and high-tech sectors. In response, Washington bypasses traditional multilateral mechanisms to unilaterally assetize Greenlandic rare earth and critical mineral deposits. However, this macrosecuritization collides with

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local ecopolitics in crucial ways. We reveal that Greenlandic civil society increasingly operationalizes environmental legislation as a mechanism of "reverse weaponization," leveraging Western supply-chain anxieties to advance indigenous self-determination. Ultimately, the systemic de-risking strategies of great powers are fundamentally constrained by local demands for distributive justice, demonstrating that marginalized resource frontiers wield substantial agential power in the contemporary technological Cold War.

**Keywords:** weaponized interdependence; critical minerals; Greenland; resource geopolitics; reverse weaponization

## 1. Introduction

The geopolitical landscape of the Arctic region is undergoing a profound reconfiguration with the advent of 2026. Historically, Greenland has been primarily conceptualized within international security discourse as a "military outpost." As the host of the US Pituffik Space Base (formerly Thule Air Base), it served as a critical node in the North American Aerospace Defense Command (NORAD) during the Cold War. However, driven by the accelerated melting of the ice sheet due to global warming and the exponential surge in material demands precipitated by the Fourth Industrial Revolution, Greenland's strategic ontological status has undergone a fundamental transformation.

The transformation is particularly pronounced in the recent policy realignments of major powers and corresponding industrial dynamics. The prelude to this resource-driven geopolitical contest was arguably set as early as 2019 by US President Donald Trump's startling proposal to purchase Greenland [1]. With the issuance of executive orders aimed at "Unleashing American Energy" [2] and restructuring critical mineral supply chains at the onset of Trump's second term, Washington's appetite for Arctic resources has escalated from tentative political rhetoric into a systematic national strategy. Beyond the state apparatus, the technology market imperatively demands stable raw material supply chains [3]. The aggressive expansion of NVIDIA in artificial intelligence (AI) computational power, alongside the expansion of Tesla and SpaceX in the renewable energy and aerospace sectors, has catalyzed an exponential demand for critical minerals such as rare earths, tantalum, graphite, and fluorspar. The very lifeblood of the "Silicon Age" frontier applications, championed by these technological behemoths, is fundamentally contingent upon the stable supply of upstream minerals [4].

In a high-profile move, the US government convened the inaugural Critical Minerals Ministerial in February 2026 [5]. Notably excluding China, the summit successfully mobilized the participation of 55 delegations,

culminating in the launch of the "Forum on Resource Geostrategic Engagement" (FORGE)—an initiative explicitly designed to construct an exclusionary trade bloc [6]. The resource strategies of major advanced economies have comprehensively shifted from a conventional economic logic to a security logic, seeking to restructure global critical mineral supply chains to their advantage through the cultivation of alliance and partnership networks [7,8]. Governed by this underlying logic, Greenland is actively being reimagined and reconstituted as the "Rare Earth Warehouse" of the Western world.

For Washington, Greenland's value has transcended traditional military and geopolitical security, becoming inextricably linked to the perpetuation of its technological hegemony in the Silicon Age. As AI, quantum computing, and advanced semiconductors emerge as the core arenas of great power competition, ensuring a stable supply of critical minerals — such as dysprosium, terbium, tantalum, and fluorspar—constitutes a vital component of national security [4]. Consequently, the pursuit of Greenland by the US is fundamentally a "supply chain defensive war" aimed at insulating its high-tech industrial base from geopolitical shocks.

Despite Greenland's increasingly prominent strategic position, academic discourse lacks systematic research that organically integrates the "resource-geopolitics-agency" nexus. Nuttall posits that the new landscapes exposed by climate change have been recoded by multinational corporations and political elites as a horizon of possibilities, which, however, frequently ignites fierce debates concerning public consultation rights and democratic legitimacy [9]. This corpus of research astutely captures the internal social tensions within Greenland, precisely reflecting the public unease regarding the lack of transparency in megaprojects. Area studies, despite their in-depth exploration of Greenland's internal governance, rarely subject it to scrutiny through the theoretical lens of "weaponized interdependence" [10,11]. Meanwhile, these works were largely authored during a period when the weaponization of global supply chains was not yet starkly apparent, and thus failed to fully anticipate the forceful penetration of great power competition into Greenland's local politics in the mid-2020s. The second strand of literature emphasizes the macroscopic dynamics of great power resource competition. Kalantzakos observes that the digital transformation and decarbonization processes have intensified the scramble for rare earths, lithium, and cobalt, while analyzing how China's Belt and Road Initiative (BRI) is reshaping the global resource landscape [12]. Recent scholarship further examines the critical mineral policies of the US and the European Union (EU) in Central Asia, indicating that Western nations are attempting to alter the traditional international division of labor and reshape the geographical distribution of global value chains through mechanisms like "C5+1" [13]. Similarly, the US and the EU are elevating supply chain security to the top of their strategic agendas, utilizing instruments such as Section 232 investigations and tariff barriers to fortify the supply capabilities of domestic industries and allied networks. While macro-geopolitical scholarship elucidates the urgency with

which the US and the EU are seeking global alternatives to Chinese supply chains, it frequently neglects Greenland [14]. Such analyses fail to articulate the underlying nexus between Greenland's specific mineral deposits and distinct US high-tech industries.

In response to these empirical and theoretical lacunae, this paper posits that the escalating US intervention in Greenland's sovereignty and resource development cannot be simplistically ascribed to traditional territorial expansionism or commercial predation. Instead, it represents a defensive grand strategy in the era of "weaponized interdependence." This paper argues that, confronted with China's structural dominance in rare earth refining and permanent magnet manufacturing, the US is actively seeking the assetization of Greenland, transforming it into a strategic counterweight to fracture Chinese control. By securing command over Greenland's critical minerals, Washington aims to neutralize its competitor's capacity to exploit "central nodes" within global supply chain networks for coercive purposes. However, the operationalization of this geostrategy encounters a profound paradox when it collides with Greenland's local logic, which prioritizes ecological justice and political independence. This structural misalignment between global security imperatives and local political realities constitutes the central contradiction of contemporary Arctic resource politics.

## 2. Theoretical Framework

Drawing upon the conceptual framework of the Copenhagen School, securitization manifests as a speech act—a process whereby political actors deliberately extract specific issues from the domain of normal politics and rearticulate them as existential threats, thereby legitimizing the invocation of extraordinary, extra-political measures [15]. This dynamic is starkly evident in the Greenlandic context. Western industrial policy is undergoing a paradigm shift from an "efficiency-first" approach to a "resilience-first" imperative [16–19]. Governed by this novel logic, Greenland's minerals transcend their status as mere commodities; they are fundamentally redefined as the material substratum essential for sustaining the liberal international order. By framing the dependence on rare earth elements as a direct and immediate threat to national security, the US government has successfully elevated its intervention in Greenlandic mining development—an activity conventionally relegated to the sphere of commercial investment—to a high-stakes diplomatic and security agenda. This securitizing discourse consequently endows the state with the necessary legitimacy to bypass traditional market mechanisms, facilitating interventions such as the direct provision of state financing and the orchestration of bilateral security pacts.

Over the past three decades, the prevailing narrative of globalization has been anchored in a core assumption: that economic interdependence mitigates the costs of conflict, thereby engendering peace. However, a seminal strand of scholarship fundamentally upended this epistemic consensus. It demonstrates that when network structures exhibit profound asymmetry, interdependence inherently morphs into an instrument of coercion [20].

Farrell and Newman further extrapolate this theoretical framework to global financial networks and fundamental internet infrastructure. They posit that these networks display an endogenous tendency to evolve into "hub-and-spoke" topologies, characterized by a highly concentrated array of central nodes. States that secure command over these critical nodes—predominantly the US—subsequently acquire two distinct forms of structural power: the "panopticon effect" and the "chokepoint effect" [21]. The US has long leveraged this network control to contain its adversaries. However, within the physical supply chains of clean energy and advanced computational hardware, these roles have been structurally inverted. Through sustained industrial policy, China has constructed highly dense central nodes in rare earth refining, graphite processing, and permanent magnet manufacturing, effectively replicating the structural advantage the US wields in the financial sector. This asymmetry engenders a deeper strategic anxiety than the mere prospect of supply disruptions, compelling Washington to establish a "clean" supply chain subject exclusively to its own or its allies' surveillance.

## 3. Materials and Methods

### 3.1 Data Sources

Drawing upon the *Mineral Commodity Summaries 2026* by the US Geological Survey (USGS) [22], this paper constructs a multidimensional Strategic Weight Index model. Moving beyond mere trade volume metrics, this model precisely quantifies the structural dependence of the US on other nations and further substantiates the physical potential of Greenlandic resources in mitigating this asymmetric structure.

### 3.2 Strategic Weight Index Model

To calculate the relative weight occupied by individual countries within the US critical mineral supply chains, this paper employs the following equation:

$$S_j = \sum_{i=1}^{n} (P_{ij} \times \alpha_i \times \beta_i \times \gamma_i) \times 100$$

This formula calculates the aggregate strategic weight, $S_j$ of country $j$. The computational process involves a summation across $n$ minerals, where each term is the product of four pivotal variables:

- $P_{ij}$ denotes the proportion of mineral $i$ supplied by country $j$, specifically its share of the total import volume for that particular mineral.
- $\alpha_i$ represents the degree of non-substitutability for mineral $i$, operationalized as: 3.0 (virtually or entirely irreplaceable), 2.0 (substitutes exist but entail cost premiums), and 1.0 (readily available substitutes).
- $\beta_i$ reflects the critical application significance of mineral $i$, categorized by sector as: 3.0 (national defense, aerospace, and advanced

semiconductors), 2.0 (energy transition), and 1.0 (general industry/agriculture).

- $\gamma_i$ is determined by the degree of net import reliance for mineral $i$, scaled as: 2.0 (100% reliance), 1.5 (>75%), and 1.0 (50%–75%).

In essence, a nation's strategic weight is contingent upon its proportional supply of various minerals, compounded by the intrinsic non-substitutability of these resources, the strategic sensitivity of their application domains, and the inherent vulnerabilities of net import reliance (The empirical data regarding the supply proportions held by various countries, alongside the rationale for assigning weight coefficients to different minerals, are derived from the USGS Mineral Commodity Summaries 2026.)

Through systematic evaluation, the weight coefficients for each critical mineral were determined as follows:

| Commodity | $\alpha_i$ | $\beta_i$ | $\gamma_i$ | Commodity | $\alpha_i$ | $\beta_i$ | $\gamma_i$ | Commodity | $\alpha_i$ | $\beta_i$ | $\gamma_i$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 3.0 | 3.0 | 2.0 | Cobalt | 2.0 | 2.0 | 1.5 | Silver | 1.0 | 2.0 | 1.5 |
| Gallium | 3.0 | 3.0 | 2.0 | Palladium | 2.0 | 3.0 | 1.0 | Fluorspar | 1.0 | 1.0 | 2.0 |
| Yttrium | 3.0 | 3.0 | 2.0 | Barite | 3.0 | 1.0 | 1.5 | Indium | 1.0 | 1.0 | 2.0 |
| Manganese | 3.0 | 2.0 | 2.0 | Bismuth | 1.0 | 3.0 | 1.5 | Lithium | 1.0 | 2.0 | 1.0 |
| Niobium | 2.0 | 3.0 | 2.0 | Chromium | 3.0 | 1.0 | 1.5 | Tungsten | 2.0 | 1.0 | 1.0 |
| Scandium | 3.0 | 2.0 | 2.0 | Magnesium | 1.0 | 3.0 | 1.5 | Tin | 1.0 | 1.0 | 1.5 |
| Tantalum | 2.0 | 3.0 | 2.0 | Potash | 3.0 | 1.0 | 1.5 | Aluminum | 1.0 | 1.0 | 1.0 |
| Platinum | 2.0 | 3.0 | 1.5 | Rhenium | 1.0 | 3.0 | 1.5 | Copper | 1.0 | 1.0 | 1.0 |
| Rare earths | 3.0 | 3.0 | 1.0 | Titanium | 2.0 | 1.0 | 2.0 | Zinc | 1.0 | 1.0 | 1.0 |
| Graphite | 2.0 | 2.0 | 2.0 | Germanium | 1.0 | 3.0 | 1.0 | | | | |
| Antimony | 2.0 | 2.0 | 1.5 | Silicon | 1.0 | 3.0 | 1.0 | | | | |

**Table 1.** Weighting coefficients of critical minerals of 2025 (import dependency > 50%)

The study applies this theoretical framework to the domain of Arctic critical minerals. Within mineral supply chains, a chokepoint can be described as a node where an actor can sever a competitor's flow of critical resources at minimal cost. This extends beyond the mere extraction of raw materials; crucially, it hinges upon the processing capacity for intermediate goods. When the refining capacity for specific minerals is concentrated within a single state, that state acquires the capability to paralyze a rival's downstream industries through export quotas or embargoes. The core logic underlying the US's pursuit of control over Greenland's Kvanefjeld and Tanbreez deposits is precisely to construct parallel supply chains, physically circumventing potential chokepoints.

The "panopticon effect" denotes the capacity of a central node's proprietor to surveil all flows within the network. Translated to the military mineral supply chain, this implies that if the US defense industrial base is highly dependent on Chinese magnet components, China can not only control the supply but also reverse-engineer the production schedules and technological bottlenecks of sensitive US weapon systems through the volume and trajectory of order flows.

## 4. Results

### 4.1 China's Mineral Dominance and Greenland's Counterweight Capacity

By aggregating the products of the supply proportions of specific critical minerals provided by each country to the US and their respective weight coefficients, the following data are derived:

| Rank | Country | Weight | Rank | Country | Weight | Rank | Country | Weight |
|---|---|---|---|---|---|---|---|---|
| 1 | China | 4638.50 | 13 | Australia | 288.00 | 25 | Turkey | 64.50 |
| 2 | Canada | 1946.00 | 14 | Gabon | 276.00 | 26 | Poland | 63.00 |
| 3 | Japan | 1945.00 | 15 | India | 175.50 | 27 | Peru | 62.50 |
| 4 | South Africa | 1072.50 | 16 | Norway | 156.00 | 28 | Bolivia | 56.50 |
| 5 | Germany | 908.50 | 17 | Republic of Korea | 156.00 | 29 | Thailand | 48.00 |
| 6 | Brazil | 894.00 | 18 | Austria | 144.00 | 30 | Estonia | 45.00 |
| 7 | Malaysia | 813.00 | 19 | Finland | 123.00 | 31 | Czechia | 40.50 |
| 8 | Mexico | 449.00 | 20 | Mozambique | 104.00 | 32 | Vietnam | 40.00 |
| 9 | Morocco | 373.50 | 21 | Israel | 90.00 | 33 | Saudi Arabia | 32.00 |
| 10 | Chile | 330.50 | 22 | Argentina | 86.00 | 34 | Indonesia | 22.00 |
| 11 | Russia | 324.00 | 23 | Kazakhstan | 81.50 | 35 | United Arab Emirates | 8.00 |
| 12 | Belgium | 321.00 | 24 | Italy | 72.00 | | | |

**Table 2.** Weighting Values by Country of 2025

*Notes. This table does not constitute a comprehensive inventory of all suppliers of critical minerals (import dependency > 50%) to the US. It is restricted to countries for which disaggregated data are available. Other supplying nations are excluded owing to data constraints in the source report.*

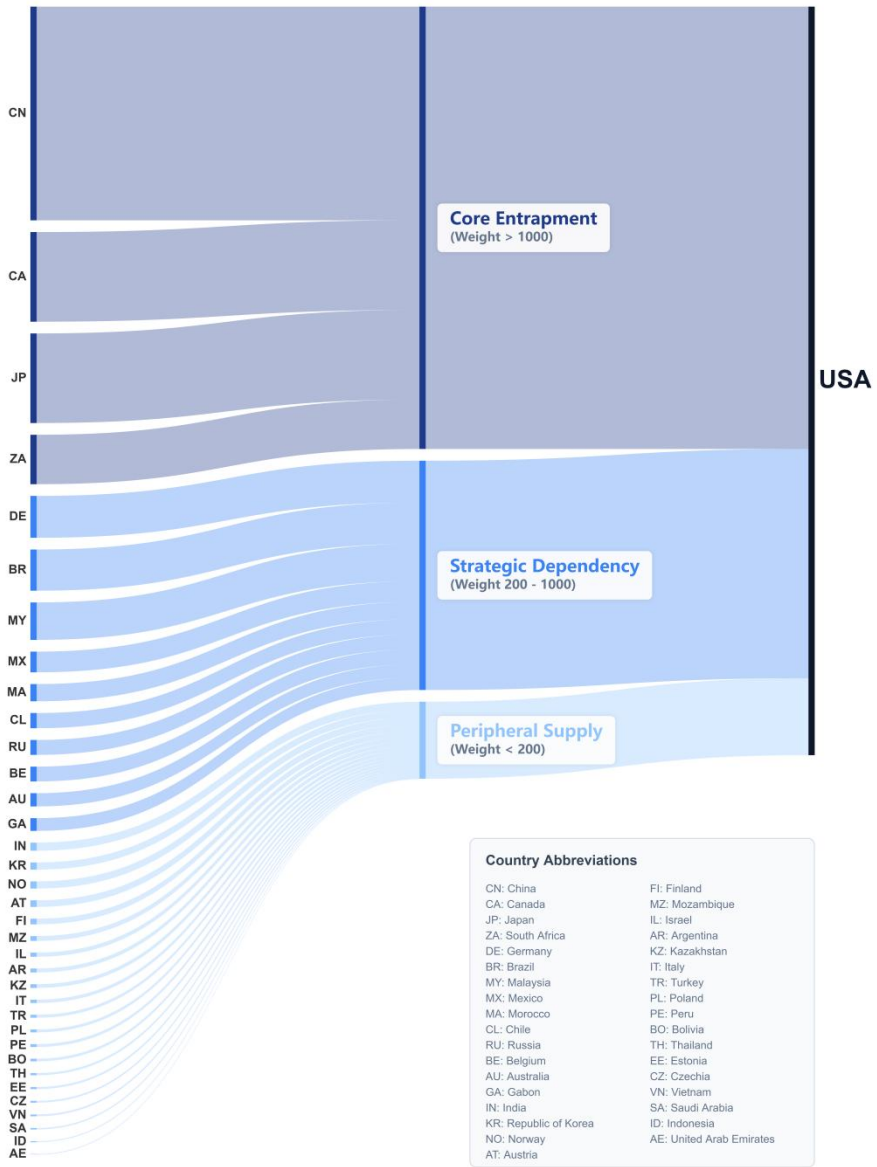


**Figure 1.** Weight distribution of supplier countries for critical minerals (import dependency > 50%)

To visually elucidate the variance in $S_j$ scores across global suppliers, this study presents a map of the US critical mineral supply chain (see Figure 1). The computational results reveal a striking unipolar structure. The visualization intuitively demonstrates that, despite the imposition of rare-earth export controls in 2025 [23], China retains its primacy as the supplier, commanding a strategic weight 2.38 times that of Canada. More critically, China's aggregate score is predominantly driven by minerals characterized

by peak coefficients ($\alpha = 3.0$ and $\beta = 3.0$). This indicates that Beijing exercises control not merely over bulk commodities, but over the critical arteries of the US high-tech industrial ecosystem. This structural asymmetry endows China with dual capabilities.

First, the "panopticon effect", predicated on high $\beta$ values. The model indicates that both arsenic and tantalum register a maximum $\beta$ value of 3.0, denoting their overwhelming allocation to the defense and semiconductor sectors. China's monopolization of these minerals confers a form of informational power that transcends mere commercial interests. As Farrell and Newman articulate, central nodes possess the inherent capacity to surveil network flows. When the capacitors of US F-35 fighter jets are highly reliant on Chinese-produced tantalum powder, or when its AI semiconductor manufacturing is exclusively dependent on Chinese high-purity gallium arsenide, Beijing does not merely control the literal supply switch. Through the granular analysis of trade data, it can also deduce the production ramp-up rates and technological bottlenecks of cutting-edge US weapon systems. This fundamental asymmetry engenders a strategic anxiety in Washington that runs significantly deeper than the mere threat of supply disruptions.

Second, the "chokepoint effect" contingent upon high $\alpha$ and $\gamma$ values. In domains such as graphite and scandium, the $\gamma$ coefficient peaks at 2.0, alongside an $\alpha$ coefficient ranging between 2.0 and 3.0. Such minerals constitute the "Achilles' heel" of the supply chain. Devoid of viable short-term substitutes, China, functioning as the central node, wields the capacity to execute an interdiction strategy at marginal cost. The 2025 Chinese export controls on rare earths served precisely as a countermeasure against the US tariff war, weaponizing this high $\alpha$-value characteristic. This maneuver was explicitly designed to demonstrate Beijing's capability to paralyze the physical layer of the US energy transition and its domestic semiconductor manufacturing apparatus.

Although the US nominally possesses a diversified portfolio of import sources (e.g., Canada and Japan), calibrating for $\alpha$ and $\beta$ weighting factors reveals that the locus of core power inexorably collapses onto a single node: China. This demonstrates that Washington's much-touted "allied supply networks" remain relatively fragile within critical high-tech mineral sectors, structurally incapable of counterbalancing Beijing's centrality.

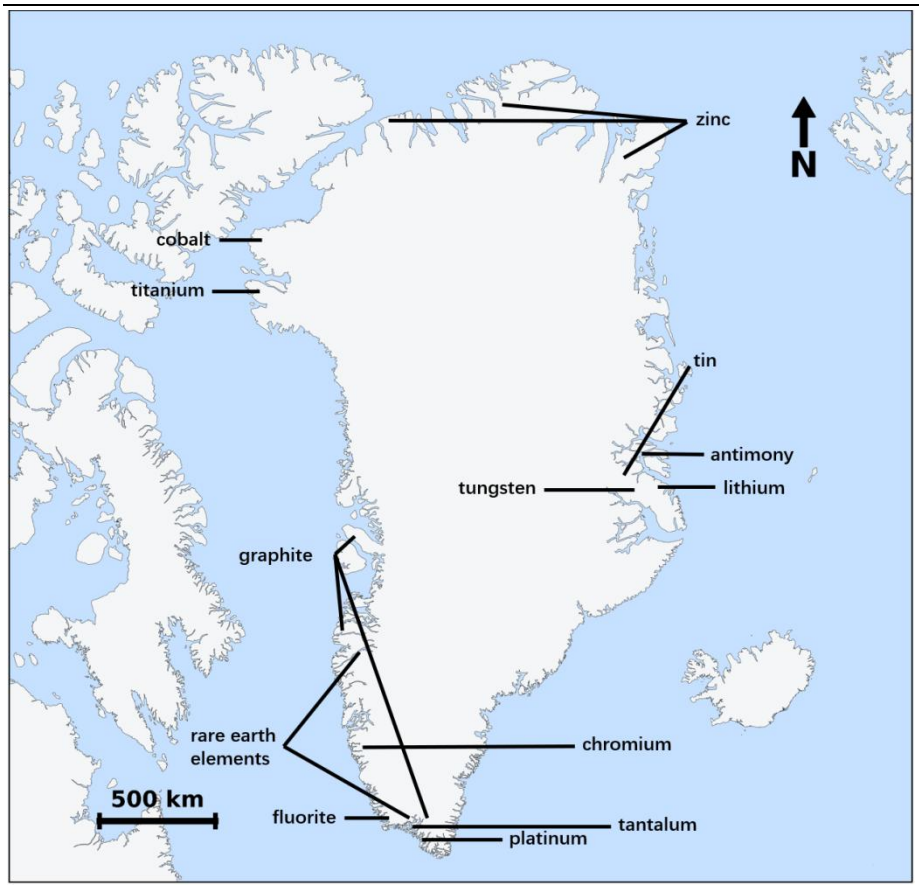


**Figure 2.** Distribution of critical minerals in Greenland essential to the US (The mineral location information shown in the image is sourced from GEUS Greenland Portal and GEUS report)

The global drive toward decarbonization and electrification is precipitating an exponential surge in the demand for critical minerals—with the demand for battery materials alone projected to skyrocket by over 450% by 2050 [24]. Catalyzed by this macroeconomic megatrend, Greenland is rapidly metamorphosing from a peripheral Arctic island into an emerging mining hotspot in the global geopolitical scramble for resources. While no single comprehensive assessment encapsulates the entirety of Greenland's mineral wealth, fragmentary exploration records offer a compelling glimpse into its vast potential [25]. According to current official data, across several exploration zones, Greenland notably harbors a variety of critical mineral deposits required by the US, and these minerals possess substantial total resource reserves (see Figure 2). Further, according to a JORC-compliant mining report for the Tanbreez Rare Earth Oxide (REO) Project, the Tanbreez Fjord and Tanbreez Hill areas alone harbor 44.9 million tonnes of mineral resources. This deposit features a rare earth oxide grade of 0.38%, with heavy rare earth elements (HREE) comprising over 27% of the total rare earth profile. By-products also include zirconium dioxide ($ZrO_2$) at a grade of 1.39% and

niobium pentoxide ($Nb_2O_5$) at 0.14% [26]. Consequently, Washington's pivot toward Greenland is not merely a quest for simple quantitative augmentation; rather, it is a strategic pursuit of targeted substitution for specific high-weight minerals. By mapping Greenland's primary mineral deposits against the US critical minerals list, this study demonstrates that Greenland possesses the physical potential to attenuate China's $S$ value substantially.

The introduction of the $S_j$ weight index empirically validates the mathematical reality of "weaponized interdependence" within the critical minerals domain: Washington's reliance on Beijing is not merely quantitative, but acutely concentrated in the most irreplaceable and strategically sensitive sectors. The strategic salience of Greenland resides in the capacity of its resource endowment to substantially offset the specific critical variables—namely tantalum, rare earths, and graphite—that disproportionately inflate China's $S$ score [27]. Consequently, securing control over Greenlandic mineral assets constitutes, in essence, a systemic endeavor explicitly engineered to diminish the $S_{China}$ value.

### 4.2 The Geopolitical Strategy: Breaking the Chinese Grip

China's centrality within global critical mineral networks confers upon it formidable structural power. Confronted with this weaponized interdependence, Washington's strategic calculus has decisively pivoted from conventional military defense toward the physical reconstitution of supply chains [8].

The genesis of Greenland as a flashpoint in great power resource competition traces back to the early strategic deployments of Chinese capital. As early as the 2010s, Chinese enterprises — most notably Shenghe Resources—penetrated Greenlandic rare earth projects, such as Kvanefjeld, under the auspices of commercial investment. Beijing's strategy of vertical integration along the industrial value chain, designed to consolidate its status as a global central node, constituted the opening gambit in this geopolitical resource contest [28]. However, Chinese mining expansion in Greenland was subsequently thwarted by a dynamic of mutually reinforcing securitization. Apprehensions harbored by Washington and Copenhagen regarding Beijing's potential dominion over Arctic strategic chokepoints and sensitive minerals were rapidly crystallized into a potent securitizing discourse. This discourse did not merely gestate at the NATO level; it deeply permeated Greenland's domestic political arena. The US acutely capitalized on Greenlandic societal apprehensions toward multinational mining conglomerates, wielding these local anxieties as strategic leverage to assert its influence [29,30].

Furthermore, the increasingly congested geopolitical landscape of the Arctic has exacerbated this securitization anxiety. In his analysis of the discursive controversies precipitated by the Russian honorary consul, Klausen posits that Greenland's political discourse is highly susceptible to interpreting routine diplomatic or commercial conduct as security threats [31].

Within this atmosphere of hyper-vigilance, the US successfully reframed China's purely commercial mining investments in Greenland as a direct challenge to the Western military alliance and supply chain security. This discursive reconstruction subsequently furnished the political legitimacy requisite for Washington's counter-moves and interventions (e.g., exerting pressure to halt Chinese-backed infrastructure projects and mining bids).

The core objective of the US grand strategy is to ensure that its high-tech and defense industrial bases remain insulated from paralysis under extreme geopolitical scenarios (such as a complete supply disruption triggered by contingencies in the Taiwan Strait or the South China Sea) [32]. Consequently, Greenland has been endowed with the role of a Strategic Backup.

The first dimension of this strategy involves the geopoliticized allocation of capital. Amidst the resurgence of trade protectionism and resource nationalism in 2025–2026, global mineral exploration investment—despite undergoing overarching structural adjustments—is accelerating its concentration in critical minerals in secure jurisdictions [33]. The US government, leveraging the Defense Production Act (DPA) and associated financial instruments, alongside its Western allies, is proactively channeling capital into Greenland's tantalum, fluorspar, and rare earths projects. This counter-cyclical capital injection is engineered to guarantee the translation of Greenlandic ore deposits into operational capacity prior to the eruption of any potential supply crisis.

The second dimension entails the securitized control of infrastructure networks. The extraction of ore constitutes merely the initial phase; the establishment of a logistics network autonomous from Chinese control is equally paramount. In an analysis of securitization and de-securitization processes surrounding Greenlandic infrastructure, Sejersen argues that physical spaces such as airports and deep-water ports are being actively reconfigured as instruments of geopolitical competition [34]. Washington's scrutiny extends far beyond mining concessions; it is intensely focused on identifying the actors constructing and controlling the deep-water ports and aviation hubs destined to transport these ores to North America. By subsuming logistics infrastructure into its securitization calculus, the US endeavors to construct a closed, end-to-end secure supply chain loop within the Arctic [35].

In recent years, Western discourse has extensively debated the utility of "friend-shoring" as a panacea for supply chain vulnerabilities—namely, the reliance on allied nations (such as NATO member Denmark) to safeguard resource security. However, concerning Greenland, the US has increasingly recognized the severe limitations inherent in strategies contingent upon multilateral or indirect mechanisms [36]. Traditional multilateral governance frameworks, such as the United Nations or NATO, frequently prove sluggish and contradiction-ridden when confronting emerging security threats [37]. Confronted with the immediate threat of supply disruptions engendered by "weaponized interdependence," Washington perceives the decision-making chain of indirectly influencing Greenlandic mining policy through

Copenhagen as excessively protracted and highly susceptible to the vagaries of Danish domestic politics [38].

Caught in the geopolitical crossfire among the US, China, and Russia over Greenland, Denmark finds itself ensnared in a profound security dilemma. While Copenhagen relies heavily on US military protection, it simultaneously harbors deep anxieties that excessive, direct American intervention in Greenland might undermine its metropolitan authority and potentially catalyze Greenland's absolute independence [39]. Washington's assertive ambitions in the Arctic—ranging from demands to expand the operational scope of the Pituffik Space Base to the aggressive pursuit of critical minerals—have exerted immense pressure on Denmark's standing within NATO. Cognizant of the inherent limits of friend-shoring, the US has adopted a radical strategy of circumventing Copenhagen to establish direct bilateral influence within Greenland [40]. As Jacobsen and Olsvig note in their historical tracing of US securitization vis-à-vis Greenland, the overt intentions expressed by the Trump administration to "purchase the island" in 2019, coupled with Mike Pompeo's reopening of the US consulate in Nuuk and the provision of direct economic assistance, were not erratic whims; rather, they constituted a coherent and persistent grand strategy [41].

This strategic logic underwent a systemic upgrade post-2025. The US has explicitly elevated critical minerals to the foundational bedrock of sustaining its "Energy Dominance." To circumvent the structural constraints of a weak domestic industrial base and prohibitively high extraction costs, Washington is accelerating the reconfiguration of its supply chains through aggressive bilateral initiatives [42]. This policy pivot provides the latest manifestation of America's pursuit of exclusive, vertical control over Greenland. The essence of this strategy is the deliberate attempt to execute the assetization of Greenland's physical and resource space. Greenland's subterranean resources are not merely geological bodies subject to exploration; they have been actively transmuted into "geopolitical security spaces" molded by external powers [43]. It is precisely through this direct diplomatic intervention and economic enmeshment—bypassing Copenhagen entirely—that the US seeks to irrevocably shatter the resource stranglehold of its competitors in the technological Cold War of the "Silicon Age."

## 5. Discussion

As elucidated in the preceding sections, the US endeavors to achieve supply chain de-risking via the securitization and assetization of Greenland's mineral wealth. However, this grand strategy—anchored in great power competition and realist geopolitics—encounters a profound logical rupture within Greenland's local context. This section explores the central paradox animating this Arctic resource contest: the irreconcilable disjuncture between global-scale strategic imperatives and local-level ecopolitics.

The strategic calculus of the US and its Western allies toward Greenland is fundamentally a systemic reactive response to "weaponized interdependence." Driven by the imperative to extricate itself from the

chokepoints and the Panopticon constructed by China within critical mineral networks, Washington faces an urgent necessity to restructure the architecture of global supply chains [6]. Consequently, this defensive grand strategy is predicated upon an extreme form of macrosecuritization. As with the climate politics surrounding the Greenland ice sheet, the Global North exhibits a pronounced propensity to construct Greenlandic security narratives on a planetary scale [44]. Within this macro-discursive framework, Greenland's physical space undergoes profound instrumentalization: it is conceptualized either as a hazardous ice mass threatening global sea level, or as a critical mineral repository capable of neutralizing a competitor's "weaponized" advantages and salvaging the Western high-tech industrial base.

The fatal flaw inherent in this grand narrative lies in its abstraction of Greenland into a mere resource receptacle designed to resolve global crises, thereby egregiously marginalizing Greenland's internal political subjectivity. When Washington endeavors to expedite Greenlandic mineral extraction under the auspices of "safeguarding the Free World's Silicon Age" or "shattering authoritarian supply chain monopolies," these global security imperatives inevitably and violently collide with Greenland's local ecological and political security. This collision has engendered the perception of Green Colonialism [45,46]. Within the local political lexicon of Greenland, large-scale open-pit mining operations are not embraced as a gospel of de-risking. Rather, they are perceived as a direct assault on the traditional hunting culture, the ecological integrity of local fisheries, and the broader indigenous way of life.

The quintessential empirical case study illustrating this phenomenon is the Kvanefjeld (Kuannersuit) project in southern Greenland. Although the project harbors immense substitution potential capable of destabilizing China's monopoly over light rare earths, the radiation risks associated with its uranium by-products catalyzed fierce local environmental resistance. In 2021, the left-wing environmentalist party Inuit Ataqatigiit secured an electoral victory and subsequently enacted Act No. 20, instituting a comprehensive ban on uranium mining, thereby effectively terminating the project [47,48]. This watershed event signifies that, when confronted with supply chain restructuring agendas imposed by great powers, Greenlandic civil society possesses the political agency to exercise a veto power through legislative mechanisms. The demise of the Kvanefjeld project is not an isolated anomaly. It elucidates the intricate mechanisms of "Security Transfigurations across Sectors" within securitization theory, while simultaneously exposing the micro-level backlash effects of weaponized interdependence.

External agendas regarding climate or animal conservation are frequently transfigured domestically into security threats to Self-Determination under Greenlandic securitization dynamics [49]. This logic seamlessly translates to the domain of critical minerals: as the US macro-securitizes Greenlandic ore deposits within the military/economic security sector—attempting to operationalize them as instruments against competitors' "weaponized" networks—Greenland's political elites and public rapidly

transfigure this external coercion into internal threats within the environmental security and political security sectors. This dynamic effectively engenders a nuanced form of "reverse weaponization." As Washington endeavors to leverage Greenland to decouple from Beijing, it inevitably cultivates a novel dependency on Greenlandic resources. Greenlandic civil society has acutely recognized its ascendant status as an obligatory passage point within Western supply chain networks [50]. The veto power they wield via environmental legislation fundamentally seizes upon the West's acute desperation for secure supply chains, transmuting this new asymmetric dependency into a geopolitical bargaining chip to advance political self-determination and resist external economic exploitation. In other words, the external supply chain crises of great powers have been successfully reconfigured by Greenland into a novel battleground for defending its national autonomy.

This conflict yields profound implications for the US strategy of hegemonic preservation. Conventional geopolitics posits that sufficient capital and hegemonic influence can effortlessly secure structural control through outright acquisition or diplomatic coercion [51]. However, within the political ecology of a semi-autonomous island like Greenland, the mechanics of power are far more complex than the unilateral imposition of force. Genuine supply chain security cannot be actualized merely through cartographic enclosure movements on geological maps; it must fundamentally address the imperative of distributive justice for indigenous populations. If, during the process of de-risking, the US and its allies fail to institutionalize a benefit-sharing mechanism that accommodates local ecological carrying capacities, unequivocally respects the free, prior and informed consent of indigenous peoples, and tangibly fosters Greenlandic economic independence, then any grand strategy aimed at evading weaponized interdependence will ultimately be subverted by the "reverse weaponization" of local resource nationalism.

Washington's endeavor to dismantle weaponized interdependence in the Arctic has become ensnared in a multidimensional security paradox. The extractive and control measures deployed to mitigate the risks of structural supply chain ruptures confronting the Western world concurrently precipitate ecological and political crises at the local level in Greenland. Paradoxically, this dynamic endows Greenland with a potent "reverse leverage" over the US. This disjuncture between the logic of global hegemony and the logic of island indigeneity eloquently illustrates that Greenland's role in the "technological Cold War" is by no means that of an easily accessible "static backup repository." Rather, it is a highly agential, complex actor whose internal political dynamics possess the formidable capacity to engender profound blowback against great power grand strategies.

## 6. Conclusion

The international community must reassess Greenland's geopolitical role in the contemporary era. This study demonstrates that the US's resource

assertiveness in the Arctic is a defensive campaign to preserve its technological hegemony. Quantitative analysis confirms that regarding critical minerals vital to the national defense and semiconductor industries—such as rare earths, tantalum, and graphite—the US is deeply entrenched in an asymmetric network dominated by a single competitor. Confronted with the dual advantages of the "Panopticon" and "Chokepoint" effects wielded by China, Washington faces an urgent imperative to physically reconstitute the topological architecture of its supply chains. Greenland, endowed with massive reserves of heavy rare earth elements, tantalum, and high-grade graphite, precisely constitutes the perfect geological hedge capable of diluting the competitor's strategic weight and operationalizing supply chain de-risking.

To transmute this geological potential into tangible security leverage, the US has adopted a radical geostrategy. Cognizant of the sluggishness of traditional NATO frameworks and friend-shoring initiatives in mitigating the risks of immediate supply disruptions, Washington seeks to circumvent Copenhagen. Through the securitized control of infrastructure, counter-cyclical capital injections, and direct diplomatic penetration, the US attempts to execute the assetization of Greenland's physical space, striving to establish an exclusive, vertical bilateral influence. However, this paper equally exposes the inherent security paradox embedded within this hegemonic logic, which is predicated on realist great power competition. When the US superimposes the macrosecuritization of supply chains onto Greenland, it precipitates fierce ecological and political resistance from the local society. Greenland is not a passive static backup repository in the grand chessboard of great powers; its indigenous political elites and local communities have astutely seized upon the West's acute desperation for critical minerals, executing a sophisticated "reverse weaponization." By operationalizing environmental legislation to veto great power strategies, they have successfully leveraged this asymmetric dependency as a bargaining chip to advocate for expanded political self-determination and distributive justice.

Furthermore, the theoretical framework derived from the Greenlandic case extends beyond the Arctic theater, offering a crucial analytical prism for understanding the broader geopolitical landscape of the "Silicon Age." As advanced economies aggressively restructure global supply chains under the banner of "de-risking," they invariably encounter similar frictions in the Global South. For instance, in the "Lithium Triangle" of South America, the Global North's decarbonization imperatives frequently clash with indigenous water rights and resource nationalism [52]. Similarly, in the nickel-rich archipelagos of Southeast Asia and the cobalt hubs of Sub-Saharan Africa, local governments and civil societies are increasingly exercising their political agency, leveraging their indispensable status in the supply chain to resist mere raw extraction and demand environmental justice [53,54]. Consequently, Greenland is not an isolated anomaly, but rather a microcosm of a new global paradigm. It reveals a universal geopolitical reality: the ultimate constraint on reshaping weaponized interdependence is not merely the strategic

maneuvers of rival great powers, but the formidable, awakening agency of the resource peripheries themselves.

In the end, Greenland's ultimate political status and developmental trajectory will be largely contingent upon the evolution of the global "technological Cold War." As long as the structural demands for critical minerals driven by AI, renewable energy, and advanced weapon systems persist, the great power scramble for Arctic resources will remain unabated. Yet, what remains certain is that future supply chain security will no longer be dictated solely by the actor possessing the most formidable naval fleets or the deepest reservoirs of capital. Rather, it will depend on the capacity to genuinely bridge the rupture between global strategic imperatives and island-centric ecological realities within this planetary-scale geopolitical contest. For the US and its allies, learning to pursue resource security while unequivocally respecting indigenous autonomy constitutes the unavoidable test in the Arctic geopolitical theater of the "Silicon Age."

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