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BACKGROUNDER

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Securing Critical Mineral Supply Chains Is a Defense Priority

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KEY TAKEAWAYS

The Department of Defense relies on Chinese-sourced critical minerals for components of many weapons systems.

The Department of the Interior and the Environmental Protection Agency are blocking mining projects needed for both defense applications and for green technology.

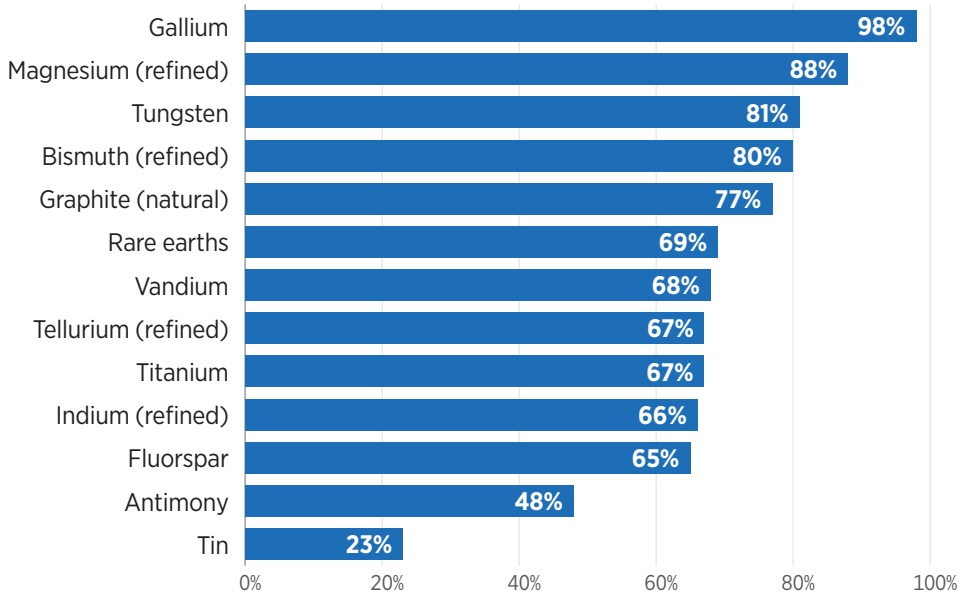
Championing green technologies but refusing to diversify the supply of critical minerals is illogical and hypocritical.

When Allied forces faced fuel shortages in World War II, General George Patton famously remarked, "My men can eat their belts, but my tanks gotta have gas."[1] Eventual Allied success drew, in part, from a rich supply of minerals. While Axis powers were limited in mineral supplies, the United States and Great Britain maintained the greatest wealth of such resources in the world. Russia and France were similarly well endowed, though to a lesser extent.[2]

Critical minerals play a crucial role in missile systems, military aircraft, ammunition, and semiconductor production, enabling unique combat capabilities and essential inputs to the industrial base.[3] The United States is almost fully reliant on imports for several key strategic defense critical minerals—including cobalt, rare earth elements, gallium, arsenic, and antimony—with a concerning share of production centered in foreign entities of concern.[4]

CHART 1

Share of Critical Mineral Production Controlled by China, 2023



SOURCE: U.S. Geological Survey, "Mineral Commodity Summaries 2024," 2024, https://tableau.usgs.gov/views/MCSDashboardWorkbook_2024-01-30/MCSDashboard?%3Aembed=y&%3AisGuestRedirectFromVizportal=y#7 (accessed August 8, 2024).

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China Has Cornered the Market

The Chinese Communist Party's five-year plan explicitly details how "becoming a science technology powerhouse is an issue of national security."[5] China dominates the world's refining of rare earth elements, with the capacity to cut off 40 percent to 50 percent of global supply at will, which would have significant impacts on advanced components in Department of Defense systems.[6] Over the past decade, China has shifted its engines of economic growth from home appliances, clothing, and furniture to solar panels, lithium-ion batteries, and new energy vehicles.[7] In 2023, clean energy investment rose by 40 percent in China to a total of $890 billion, while new energy sectors (including the value of production) contributed $1.6 trillion to the Chinese economy.[8]

Non-Chinese mineral supplies are currently extremely limited in U.S. defense supply chains, and Chinese stockpiles dwarf American counterparts. Chinese strategic reserves carry 7,000 metric tons of cobalt, for

example, while the United States currently maintains a strategic stockpile of only 300 metric tons.[9] Cobalt is essential in military function for munitions, aerospace alloys, smart guns, aircraft, precision-guided missiles, and high-capacity batteries.[10] Currently, China refines over 80 percent of all cobalt.[11]

Moreover, the Department of Defense found that one *Virginia*-class submarine exacts 9,200 pounds of rare earth elements and one Aegis destroyer 5,200 pounds.[12] China controls production of around 60 percent of rare earth elements.[13] Furthermore, 90 percent of refined rare earth elements on the market originate from China.[14]

Advanced semiconductors—which are essential components of "missile guidance systems, cyberwarfare, and artificial intelligence capabilities"—expose a further vulnerability in U.S. defense supply chains.[15] The mechanisms require gallium and arsenic for production, critical minerals with Chinese-controlled production at rates of 98 percent and 94 percent, respectively.[16]

Antimony, another rare earth mineral, is a key component of nuclear weapons, night-vision equipment, and infrared missiles.[17] China leads antimony imports to the United States, accounting for "nearly half of all production and 60 percent" of imports.[18]

Human Rights Abuses

The U.S. government has linked aspects of China's grasp on critical mineral supply chains to forced labor. China has subjected Uyghurs and other Muslim minority groups to genocide, forced labor, and crimes against humanity in the Xinjiang Uyghur Autonomous Region.[19] China's state-owned paramilitary force, Xinjiang Production and Construction Corps, manages much of the region's agriculture and industry, holding connections to global supply chains[20] and dominating many sectors, including energy, mining, chemicals, processing, and oil and gas extraction.[21] The U.S. government has placed sanctions on the corps, finding it to be an active participant in suppressing Uyghur life and identity through internment and imprisonment, land expropriation, forced migration, social policing, and forced labor.[22] Between 800,000 and 2,000,000 Uyghurs are imprisoned in concentration camps, where they are forced to participate in indoctrination programs and subjected to physical violence, sexual assault, forced sterilization and abortion, torture, and rape.[23]

China maintains a less-than-green record on environmental responsibility. Presently, China is the top global emitter of greenhouse gases,

accounting for almost one-third by International Energy Agency metrics.[24] Moreover, China's air pollution has reached extreme levels.[25] China faces water scarcity, soil contamination, desertification, and nuclear waste pollution.[26]

China also exploits conflict-ridden nations for resources by engaging in predatory financing and humanitarian violations. Consider, for instance, the Democratic Republic of the Congo, where Chinese companies own 80 percent of cobalt output.[27] The country produces 68 percent of the world's cobalt.[28] Mining in the country is riddled with unsafe worksites and often relies on child labor, forced labor, and human trafficking.[29] According to the United Nations, over 40,000 children work in harsh cobalt mines in the Katanga province alone.[30] Moreover, China is linked to ongoing violent conflict in Congo, supplying drones and weaponry to the existing government in exchange for extraordinary access to natural resources.[31] Further, cobalt mining harms local landscapes, depletes soil fertility and crops, pollutes the air, and triggers birth defects.[32]

Environmental Abuses

The American push for climate action presents a classic case of NIMBY—"not in my backyard." Many environmentalists better fit the BANANA acronym—build absolutely nothing anywhere near anyone. However, recent U.S. policies have simply exported emissions to China rather than eliminating emissions altogether.

China, for every ton of rare earth elements extracted, produces 2,000 tons of toxic waste.[33] Critical mineral extraction has devastated forested land in China, and coal-fired power plants are run at astonishing rates to produce solar panels, electric vehicles, and battery components.[34] China notoriously perpetrates the worst records in the world for marine debris, illegal fishing, and trafficked wildlife and timber.[35]

Ultimately, NIMBY mentalities outsource pollution to China—with an added touch of gross human rights abuse—while crippling American critical mineral defense supply chains.

Regulatory Obstacles

Many regulatory obstacles block common-sense solutions to the crisis surrounding critical defense material reliance on China. As Diana Furchtgott-Roth, the director of the Center on Energy, Climate, and Environment for The Heritage Foundation, testified before the Oversight and Investigations

Subcommittee of the House Committee on Natural Resources, "The rush to a green energy future, driven more by politics and virtue-signaling than economics and emissions reductions, will only enrich China at America's expense and place vital energy supply chains at mercy of Beijing."[36]

In 2023 alone, the Biden Administration blocked several critical mineral mining projects, including copper and gold in Alaska, copper and nickel in Minnesota, and radionuclides in Arizona.[37] In both the Obama and Biden Administrations, domestic mining projects have sharply declined due to regulatory constraints and over-reliance on foreign entities of concern flooding world markets with cheap prices. This raises serious issues for defense supply chains.[38] To ultimately gain mining approval in the United States, a company must submit a proposal to state and federal authorities and comply with environmental reviews through the National Environmental Policy Act and applicable state environmental policy.[39]

Consider the Department of the Interior and Department of Agriculture block of the Twin Metals mine in Minnesota under the Biden Administration. This halted the extraction of taconite, copper, nickel, cobalt, and platinum-group elements, among others.[40] Representative Pete Stauber (R–MN) asserted, "America needs to develop our vast mineral wealth, right here at home, with high-wage, union protected jobs instead of continuing to send American taxpayer dollars to countries like the Congo that use child slave labor. The only winner here is China, as Joe Biden continues to hand our foreign adversaries every advantage possible."[41]

Under the Biden Administration, the two departments also blocked the Ambler Road mining project in Alaska, a project federally approved during the Trump Administration to secure critical mineral supply chains. The mines would have strengthened access to copper, zinc, cobalt, germanium, gallium, and other critical minerals "essential for our nation's tech-focused economy, green energy products, and military effectiveness."[42] The project's creation would have generated over $5 billion in wages and over $1 billion in state and local revenues over the lifespan of the mines, furthering economic development and supply chain resilience.[43] The Biden Administration blocked an opportunity to galvanize the Alaskan economy while bolstering critical defense mineral supply chains.

Securing Defense Supply Chains

The United States should expand domestic mining projects to strengthen critical defense material supply chains. For example, while beryllium is primarily produced in China, Kazakhstan, and Russia, Utah domestically

extracts and refines the mineral, which is used in the nuclear energy industry as a neutron moderator.[44] Beryllium production presents a strong strategic positive for the U.S. military, supplying components of essential military parts for fixed-wing aircraft and fighters, advanced surveillance, targeting, and optical systems, guided missile defense systems, military communications, and complex surveillance tools.[45]

The limited production capacity and mineral reserves of the United States will require that America seek the support of partners and allies.[46] Reshoring, nearshoring, and friendshoring are appropriate remedies to China's dominance of military mineral supply chains. Moreover, expanding trade deals with the Global South can mutually benefit the United States by diversifying critical defense imports while galvanizing local economies and removing strict dependence on often disadvantageous and exploitative Chinese trade conditions.[47] The United States should look to existing or potential partners such as Angola, Argentina, Bolivia, Chile, Colombia, the Democratic Republic of the Congo, Malawi, Mozambique, Namibia, Peru, and South Africa.[48] For instance, vast reservoirs of lithium—which is used in batteries found "in nearly every weapons system used by the U.S. Department of Defense"—may be found in the Central Andes, where Argentina, Bolivia, and Chile meet.[49] Developing further partnerships in Latin America would further diversify key defense materials while strengthening regional diplomatic ties and economies.

Policy Recommendations

- **Remove regulatory obstacles for domestic mining projects.** The United States should secure supply chains through the robust extraction of the critical minerals available domestically, first and foremost by removing regulatory barriers put up by the Department of the Interior and the Environmental Protection Agency.

- **Increase incentives for domestic mining projects.** Another series of studies by the Department of Defense is not going to fix the problem. The removal of federal regulations should be paired with incentives (or, where considered necessary, directives) for defense contractors to use domestically sourced supplies.

- **Invest in alternative supply chains.** The United States needs to actively seek mutually beneficial partnerships in the resource-rich Global South. Reshoring, nearshoring, and friendshoring should be

undertaken with diversified global supply chains in friendly nations. National security interests will be doubly bolstered as the United States strengthens ties with the Global South through investment and trade while securing supply chains of critical defense minerals.

Conclusion

America should stop working against itself through extraneous, counterproductive regulatory measures. The United States should restore its position as a global producer of energy, furthering national security for America and its allies. America should reduce reliance on China and other foreign entities of concern in critical defense supply chains, as this reliance exposes the United States to considerable military vulnerabilities.

Chinese dominance in critical defense minerals, exacerbated by the green energy transition championed by the Biden Administration, jeopardizes key defense supply chains. The United States should turn to domestic processing where possible and reshoring, nearshoring, and friendshoring where it is not. Investing in new partnerships will be essential for critical mineral security in a new era of U.S.–China competition. However, certain regulatory obstacles must be addressed before these strategies can be implemented.

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