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From the Editor

The national economies of the world require strategic resources to prosper. But they also need strategic resources to survive. Likewise, the armed forces of the world are dependent on strategic resources for the technology in their weapons systems, vehicles, communication, satellites, and many other requirements. Countries have become concerned about two key facts. One is their growing dependence on strategic resources for economic wellness and national security. The second is the efforts by great powers to control access to strategic resources both for defensive national purposes and to be able to restrict access to foreign competitors.

The new Donald J. Trump administration has made strategic resources an even more important issue. From pursuing a deal for Ukraine's strategic resources to demanding control of Greenland's strategic resources, Trump has brought unprecedented attention to the role of strategic resources in U.S. national security and the global competition for them. This issue of JAMS examines timely questions about strategic resources and national security.

The strategic resources most often discussed are critical materials. The Energy Act of 2020 defines critical materials as "a material or mineral that serves an essential function in the manufacturing of a product and has a high risk of a supply disruption, such that a shortage of such a material or mineral would have significant consequences for United States economic or national security."¹ The Department of the Interior created a list of 50 elements it identifies as critical minerals.² To make the issue more challenging, the Department of Defense produced a list of 45 elements it identifies as strategic materials.³

The federal government has been involved in strategic resources since it created the Bureau of Mines in 1910.⁴ This bureau was closed in 1996 and some have called for it to be renewed.⁵ The United States took a more comprehensive approach to strategic resources with the Strategic and Critical Materials Stock Piling Act of 1939.⁶ This played an important role in managing strategic resources to produce the massive U.S. war arsenal during World War II. The next big step, the Defense Production Act of 1950, was a result of another war,

this time in Korea.⁷ This legislation had lasting results for managing strategic resources during the Cold War.

The Trump administration has declared that “[c]ritical minerals, including rare earth elements, are essential for national security and economic resilience.”⁸ Even during the limited time this administration has been in office, it has made U.S. dependence on strategic materials a top priority. The Trump administration is particularly concerned that, “[t]he United States remains heavily dependent on foreign sources, particularly adversarial nations, for these essential materials, exposing the economy and defense sector to supply chain disruptions and economic coercion.” Trump has gone so far as to issue an executive order about strategic resources that invoked the 1950 Defense Production Act.⁹

The articles in this issue provide new research and analysis on the critical issue of strategic resources. Although, the United States has incrementally improved its management of strategic resources, vulnerabilities remain and much more needs to be done. The articles that follow also show that the problem is bigger and more complex than many believe.

Bert Chapman provides a valuable foundation for addressing the continuing challenges of strategic resources. His article, “Recent U.S. Government Policy Literature on Critical and Strategic Minerals,” helps update the reader on the different approaches the U.S. government has taken to improve its management of strategic resources. This highlights one of the biggest impediments to tackling the issues of strategic resources: the lack of one unified and cohesive U.S. approach. Instead, the United States has multiple and sometimes competing approaches, with various agencies, such as the Departments of Defense, Commerce, Energy, Interior, and State playing important roles in the U.S. management of strategic resources. Chapman also makes recommendations for improving the U.S. response to these problems.

Gregg Etter takes a more comprehensive look at strategic resources by examining the problems of food security and how it has been weaponized by great powers. He focuses on the often-overlooked case of the Holodomor. The Holodomor was a major example of weaponizing food security through a man-made famine imposed on Ukraine by the Soviet Union. Millions of Ukrainians lost their lives during the brutal effort by Moscow to use famine to strengthen its control over Ukraine and its other valuable strategic resources.

This issue of JAMS also examines how other major actors such as China and the European Union (EU) are increasing their efforts to better manage strategic resources. In their work, “The Winds of Change: How China’s Focus on Rare Earth Minerals Reshapes the World,” Kevin Johnston and Ian Murphy provide valuable information and analysis of how China, the greatest competitor to the United States, is mixing the economic and security elements of strategic resources. An essential ingredient for improving the U.S. approach to strategic

resources is an accurate understanding of the differences in how China deals with the issues of strategic resources. Johnston and Murphy offer recommendations for how the United States can respond better to China's comprehensive, aggressive, and longer-term efforts for strategic resources.

In contrast, Gleb Trufanov analyzes the efforts of an ally, instead of a competitor, the European Union. He also expands assumptions about strategic resources by asking the reader to consider media security as one of the fields of competition between great powers. His article, "The European Integration as a Strategic Source for the Ukrainian Democratic Media and the EU in Countering Russian Propaganda," examines the value of media security both to the EU and the conflict in Ukraine. Trufanov also identifies ways to improve EU-Ukraine cooperation in media security.

Major Philip Murphy addresses a key vulnerability in the U.S. management of strategic resources—China's current dominance of the international value chain for lithium batteries. Lithium batteries are essential parts of advanced technology in both the civilian and military sectors. Over the years, China saw them as a higher priority than the United States and developed a near monopoly over access to the components in the global supply chain for lithium batteries. His research, "Power Play: Charging Up Strategic Competition over Lithium Battery Value Chains," draws attention to this major challenge to the U.S. economy and military forces.

Finally, Michael Cecire highlights one of the biggest elements of the U.S. government's approach to strategic resources. As mentioned earlier, the Defense Production Act has had both historical and recent importance in how the United States improves its management of strategic resources. In "Reauthorizing the Defense Production Act in the Era of Defense Mobilization and Supply-Side Industrial Policy," Cecire focuses on the continuing value of the Defense Production Act as one of the most influential tools for managing strategic resources. He also points out policy options for how the United States can use the Defense Production Act to better tackle the challenges of strategic resources.

All of the articles presented make this an important issue of the *Journal of Advanced Military Studies* because they tackle one of the most important challenges to national security and the U.S. economy. They remind us of how the United States has wrestled with these issues and the continuing vulnerabilities to materials so essential to our security and economic needs. Fortunately, they also identify options and recommendations for how the United States can better manage strategic resources now and in the future.

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Endnotes

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Power Play

Charging Up Strategic Competition over Lithium Battery Value Chains

Major Philip Murray, U.S. Army

Abstract: This article examines the strategic implications of the People's Republic of China's (PRC) dominance over the global lithium value chain and the resulting vulnerabilities for the U.S. Department of Defense. During several decades, through sustained strategic investments, the PRC has achieved a controlling position in the lithium market, encompassing mining, refining, and battery manufacturing. This control allows the PRC to influence lithium pricing and availability globally, posing significant economic and strategic risks to nations reliant on these supply chains, particularly the United States.

Keywords: lithium, batteries, China, strategy, energy, defense

Lithium, often dubbed “white gold,” is a critical mineral for national security in both the People's Republic of China (PRC) and the United States due to its essential role in modern technology and energy solutions. Lithium is a highly significant element in modern energy storage technologies due to its unique properties. As the lightest of all metals, lithium has an exceptional electrochemical potential, allowing it to store substantial energy relative to its weight. This attribute makes lithium batteries particularly valuable for portable electronic devices and electric vehicles, where weight and efficiency are crucial. Furthermore, lithium's ability to repeatedly accept and release electrons during charging and discharging cycles contributes to the durability and longevity of

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lithium-ion batteries.¹ These properties, combined with a relatively stable discharge voltage, ensure that lithium remains a cornerstone material in the development and optimization of rechargeable battery technology. For the United States, lithium resources and technologies are foundational to national security since they undergird expeditionary military capabilities, power almost all satellite systems, are an integral component in nuclear weapons and fusion nuclear power, and are essential to modern life in American civil society. Even with their clear importance, the United States failed to recognize the strategic value of lithium early on and is now in a precarious situation of strategic weakness regarding key aspects of the lithium value chain and associated technologies.

No other nation has recognized the value of lithium as much as the PRC. During several decades of investment, the PRC gained a strategic advantage over global lithium value chains. Their advantages in the lithium market permeate through major stages of the lithium value chain, from extraction and refining to manufacturing. As a result, most nations are now almost completely reliant on the PRC for the critical manufacturing materials and lithium-ion batteries. Given the PRC's demonstrated willingness to impose trade tariffs and restrictions, as evidenced by recent measures on gallium and 17 other rare earth minerals, the strategic risks of continued reliance on the PRC for lithium become increasingly clear for nations like the United States.²

The U.S. government and industry rely on lithium-based technologies for many strategic capabilities and initiatives. Modern military operations rely on rechargeable lithium-powered batteries for communications, sustainment, transportation, and increasingly for drones and direct/pulse energy weapons as well. Every part of American society depends on thousands of lithium batteries in satellite constellations, which harness energy from the sun to enable position, navigation, and timing (PNT) technology, satellite communications, meteorological data, remote sensing, and intelligence collection on adversaries. Lithium 6, when bombarded by neutrons in a reactor, produces the radioactive isotope tritium, an essential ingredient in both nuclear weapons and emerging fusion energy projects. Additionally, it is required for all the devices in American homes and offices that operate on rechargeable lithium batteries. On 30 September 2020, Executive Order 13953, "Addressing the Threat to the Domestic Supply Chain from Reliance on Critical Minerals from Foreign Adversaries and Supporting the Domestic Mining and Processing Industries," mandated that securing lithium supply chains free of Chinese control is a national security priority.³ Given the strategic nature of lithium and the U.S. government's clear admission of the importance of lithium in multiple policy documents and executive orders, how did the United States cede this advantage to the PRC?

In part, the answer lies with the adoption of electric vehicle (EV) manufacturing. In contrast to the hesitant adoption of electric vehicles in the Unit-

ed States, the PRC fully embraced the EV transition in transportation and achieved 38 percent of market share of sales for new vehicles in 2023 and 60 percent of all new EVs worldwide were Chinese manufactured. The PRC was an early adopter of EV technologies to reduce their overall petroleum imports and stabilize their energy security away from reliance on imports. The adoption was top-down and not market driven, starting shortly after the East Asian market crisis of 1998 and involved a \$14.7 billion dollar investment in the electric vehicle industry by state owned industries. Within a short amount of time, the PRC emerged as a global leader of EV manufacturing and sales, and by necessity of that industry, a leader in lithium battery technology manufacturing.

The PRC has consistently invested in the lithium processing supply chains irrespective of prices, which was always aimed at fueling the auto industry, reducing petroleum imports, and leading lithium technology versus delivering on stockholder returns—the typical priority for capital-driven market economies.⁷ The PRC understood early on that some commodities are worth more than their cost due to their importance to national security. The PRC's strategy has decreased the number of market competitors in the industry through artificially low lithium prices and tight market control of most downstream activities involved in refining lithium into usable materials (99.6 percent purity lithium hydroxide and lithium oxide). Pursuit of this strategy resulted in enormous waste in the form of unprofitable state-owned companies, but it also earned the Chinese dominance within the entire lithium value chain.⁸

How the PRC's Lithium Chain Put the United States in a Bind

So why does it matter to national security in the United States if the PRC is the leader of lithium value chains and EV manufacturing? As the world's leader in EV manufacturing and exporting, the PRC has gained the industrial capabilities to lead all associated lithium battery industries. The advantage of leading the EV industry and market is that the costs associated with smaller lithium technologies (e.g., those used in portable electronic devices and phones) are subsidized and reduced by the massive scales in which the PRC orders raw materials and manufactures components. For decades, American-led globalization prioritized cost savings and efficiency over supply chain security for most resources, leading to huge export profits in lithium technology for the PRC. This dominance has translated into American industries' reliance on PRC lithium value chains, which are inarguably the cheapest and most cost effective, but also represent the greatest strategic risk to the U.S. Department of Defense technology acquisition value chains in the face of emerging global tensions.

The evidence of the PRC's dominance in the lithium value chain is well represented in the International Energy Agency's (IEA) statistics and projec-

tions for growth. As of 2023, the PRC retains 65 percent of the world's lithium refining capacity, 1.20 terawatt-hours (TWh) of the global 1.57 TWh battery manufacturing capacity, and 1781 gigawatt-hours (GWh) of 2173 GWh EV battery manufacturing is either in the PRC or owned by a PRC company.⁹ In 2023, the PRC exported \$9.8 billion (USD) in manufactured batteries to the United States—a number that has almost consistently doubled annually since 2018.¹⁰ Also, with control of 156 out of 211 mega lithium-ion battery factories worldwide, the PRC possesses a gravitational weight on the market of raw lithium sales that took decades to establish and will not be easily displaced.¹¹

The PRC's commanding lead of the lithium-ion technology market and a willingness to defy market trends with state-owned industry subsidies are a massive strategic advantage in the lithium value chain competition. Current projections in industry estimate that the PRC will control upward of 35 percent of the global extraction supply chain outright, even more through shared ownership, and account for 60 percent or more of the global refining by the beginning of 2025.¹² IEA projections estimate that 74 percent of manufacturing capacity of lithium batteries will be in the PRC by late 2025.¹³ Relying solely on market forces and profit-based decision-making, the United States and its allies cannot overtake the PRC in most aspects of the lithium value chain, especially considering that the U.S. Department of Defense only commands approximately 1 percent of American market demand for batteries and many are used for critical expeditionary functions.¹⁴ Any instance of a prolonged trade war with export restrictions on manufactured lithium technology, or outright conflict with the PRC, could put U.S. Department of Defense capabilities at risk.

In several scenarios, the U.S. Department of Defense could lose critical capabilities due to the PRC's dominance of lithium value chains and/or could be cut off from some variants of lithium batteries only manufactured in East Asia. These scenarios range from intense conflict between the two nations and a potential trade war, to more severe outcomes like the demographic and economic collapse of the PRC, as predicted by prominent geostrategist Peter Zeihan.¹⁵ From the United States' perspective, the current sources of downstream lithium technology represent a strategic risk to national security capabilities. The United States either needs to accept this current arrangement and inherent risk or actively seek to develop new sources of lithium refining and manufacturing to support Department of Defense capabilities.

This article outlines the risks and opportunities for the United States and Department of Defense vis-à-vis the PRC's value chain dominance across the mining, refining, manufacturing, and emerging technology sectors. The United States is at an extreme strategic disadvantage in the lithium value chain when it comes to Department of Defense capabilities and acquisition, but these disadvantages have clear short- and long-term solutions.

Geopolitics of Lithium Extraction

Among the extracted raw lithium resources in the world, most of the hard rock mined sources and more than one-half of the lithium carbonate from brine are used in the PRC.¹⁶ The PRC's demand for raw lithium is a powerful strategic asset when it comes to shaping the market, but also a strategic vulnerability since all the capital investments further downstream of the lithium extraction rely on continued supply. Lithium is an abundant resource in the lithosphere around the world, but not every source is economically feasible for extraction to bring to a refinery. Raw lithium is the part of the value chain the United States is best positioned to compete and seek alternatives outside the PRC value chain because of its low cost and abundance.

The most economically feasible locations for lithium extraction are geographically concentrated in such a way that there are clear blocks of producers and consumers. The current global market for lithium greatly favors the PRC since they are the market of choice for exporting nations and are third in the world for mining lithium. With 90 percent of unrefined lithium originating from Australia, Chile, and the PRC, the market is heavily concentrated in a few nations.¹⁷ The "Lithium Triangle," which includes Argentina, Bolivia, and Chile, collectively possess the world's largest concentration of lithium in salt lakes—this makes them the geographic center for future strategic competition over lithium resources. The PRC has already made important inroads in all the Lithium Triangle markets, including an exclusive contract with Bolivia, which has long struggled to develop its industries.¹⁸ The PRC enjoys a comfortable, strategic advantage in the quest for ownership of the world's lithium mines and continues to invest in diverse sources to gain value chain security, but the competition in this sector provides opportunities for challenges to their strategic position in the value chain.

According to the National Mining Association, the United States imports roughly 25 percent of its lithium needs—most of the import sources are from the Western Hemisphere.¹⁹ Already, United States' Albemarle has secured salt flat brine mining rights in Argentina and invested in the development of several domestic mines.²⁰ Combining the estimated imports from foreign sources from the U.S. Geological Survey statistics with the National Mining Association import estimates places American production at around 13 million tons of lithium in 2022. This would make America the fifth leading producer globally behind Australia, the PRC, Chile, and Argentina.²¹ This means that raw lithium is not much of a strategic vulnerability for American consumers due to the reliability of the trading relationships and number of lithium reserve sites within the Western Hemisphere.

When it comes to market power, the United States does not hold as much power over producers as the PRC and this cedes important market advantages

in the mining sector of the lithium value chain. Combined with imports, American lithium consumption is around 15.4 million tons a year. Comparatively, the PRC is the largest consumer of unrefined lithium with their net consumption around 37 million tons in 2023—33 million mined domestically and 4 million imported.²² The PRC's main trading partners for imports are Australia, Brazil, and Zimbabwe.²³ The United States and the PRC are key players in the competition for unrefined lithium resources, but the PRC's dramatic 1.5 times overall consumption and double import demand give them a significant advantage as the premier market of choice for raw lithium.

PRC diversification of sources for lithium imports is viewed as a strategic hedge against risk and their state-owned industries work to secure advantages through a variety of methods. Examples of the PRC's strategy to secure lithium resources abroad for their massive lithium value chain industry abound—the PRC retains 25 percent of Sociedad Química y Minera de Chile (SQM) controlling shares and the Chinese lithium refining giants Ganfeng and Tianqi Lithium control between 40 percent and 51 percent of shares of most Australian mining interests such as the mines in Greenbushes and Mount Marion.²⁴ The growth of the Australian and Chilean lithium industries are due in part to Chinese demand and investment, so the presence of Chinese capital is not surprising. The other sneaky method to secure resources abroad by the PRC is evidenced in examples like Zimbabwe, where the state's public and publicly guaranteed debt (PPG) exceeds \$12 billion to the PRC and are often repaid in the form of guaranteed commodities pricing and deliveries.²⁵ Reliance on foreign imports, much like the PRC's reliance on petroleum, fuels the desire of PRC economic planners to continue diverse investments abroad for more controlling shares in all sectors of the value chain. Much like their strategy for oil, which includes developing domestic production and discovering proven reserves, the PRC's lithium value chain strategy includes securing resources from a variety of actors across the globe to insulate from geopolitical risk.²⁶

One of the reasons the PRC finds willing and accessible partnerships around the globe is the nature of the unrefined lithium market. The price fluctuations based on demand from quarter to quarter and year to year are difficult to forecast, which makes investment in new mines risky from a free-market investment model. One only need look at the recent price collapses in 2023 and 2024 to see why new mines are struggling to secure financing or are being absorbed by larger mining conglomerates at bargain rates.²⁷ The prices for lithium have increased steadily alongside PRC manufacturing output since 2018, but now the massive glut in raw lithium exceeds global refining capacity.

The price collapse has driven many of the smaller mines out of operation and scared away venture capital from further investments at present, even though market watchers like Benchmark expect demand to surge in the next

decade.²⁸ The PRC also decreased its lithium extraction to keep prices stable, to no avail.²⁹ This makes the market hostile to new start-ups without large state sponsors since the return on investments is not guaranteed and vulnerable to market shocks. This particularly applies to the United States, where plentiful amounts of new raw lithium have been discovered, but banks and local communities are hesitant to support domestic mining for both economic and ecological reasons.

Despite shaky markets, long-term projections for lithium extraction profit margins are favorable during the next decade and beyond. Market forecasts from both the International Energy Agency and McKinsey & Company anticipate average growth in lithium battery value chain to increase 30 percent annually from 2022 to 2030 and stabilize in price growth until 2045.³⁰ The likelihood that the boom-and-bust trend of the lithium market continues is high given the current market arrangements with distinct separations in the value chains, from extraction all the way to EV car sales. This adds significant risk in any nonsubsidized capital investments and favors large established mining majors. Conservative estimates place the potential annual profit in future lithium value chains at \$400 billion by 2030—a significant value for entities like the PRC who have continued investment despite market demands and trends that keep new capital and private equity out of the market.

Recycled lithium offers a strategically attractive source for raw lithium outside of the mining industry as well. “Urban mining,” as described by a prominent lithium market analyst at the London metals exchange, Lukas Bednarski, needs to be considered another source of raw lithium and, more importantly, other rare minerals used in battery components.³¹ The largest lithium recycling company operating now is Umicore’s factory in Hoboken, Belgium—other notable mentions are Canadian Li-Cycle, American Redwood Materials, and Chinese firms like CATL’s recycling wing, Brunp.³² With an average life expectancy of 8–10 years, there is going to be a steady stream of EV engines ready for recycling by 2030 with an average of 17 pounds of lithium from each engine.

Challenges remain in the recovery process of lithium batteries since they always retain a charge and come in a variety of sizes and shapes, which makes streamlining recycling difficult. Furthermore, the relative cost of raw lithium depresses the recycled lithium market. Recycled lithium costs more per pound, which makes profitability difficult in a market with record low prices, and recycled lithium still requires refining.³³ Another reason is that the processes are still insufficient for finding, transporting, and integrating used lithium batteries into the recycling plant. Even if they do make it there, they come in all sizes and charges, which require special equipment. Further complicating the matter is that, according to economist Ed Conway’s interview with Umicore represen-

tatives, the recovery rates for lithium from EV engines currently sits at around 50 percent. Greater incentives and developments are needed to make urban mining profitable.

Recycling offers a greater amount of security for the supply chain at a higher cost for the United States, but also the abundance of raw lithium is not necessarily the issue for national security concerns. The strategic value of recycled battery recovery may pay greater dividends for the rare earth minerals included in batteries, such as cobalt, that the United States is completely reliant on imports for. However, incentives for rare earth metal recovery from batteries also mean more secure sources of lithium for domestic production in the United States.

For the United States and the Department of Defense, increasing reliance on domestic industry and securing recycled lithium sources offer viable solutions to mitigate supply risks. Implementing procurement policies favoring recycled lithium, subsidizing the integration of recycled lithium into domestic manufacturing, and potentially creating state-owned recycling/refining operations for defense use could enhance supply chain resilience. This approach aligns with broader economic policies aimed at reducing dependency on foreign sources and enhancing national security amid global competition for critical minerals. However, these measures require federal commitments to domestic lithium industries to overcome challenges related to cost fluctuation and easing integration into existing manufacturing processes. Further increases in domestic mining without concurrent investments in refining capacity only benefit the PRC, who will retain their position as the premier market for unrefined sources. These moves would not only challenge PRC dominance but offer defense contracted companies and allies alternative supply chain sources with greater security and reduced risk.

Refining Solutions to Lithium Supply Choke Points

Lithium is practically useless without refining into a purity level that enables its use in manufacturing, hence the abundance of lithium resources across the world are useless without refining capacity. The PRC dominates the refined lithium market as the leading consumer and the leading exporter—a rare combination of titles in the commodities market.³⁵ The PRC accounts for 65 percent of the world's refining capacity, Chile accounts for 26 percent of refined lithium, Argentina accounts for 5 percent, and the rest of the world is about 4 percent.³⁶ The PRC's significant demand for refined lithium consumption and exports gives them not only a powerful strategic advantage over commodity pricing, but also leverage in trade conflicts or negotiations with any nation hoping to manufacture lithium batteries. Understanding the significant advantages the PRC

enjoys from their capital investments in lithium refining capacity are necessary for adapting to the challenges they pose in securing lithium-ion battery value chains for the United States.

Even though the PRC can produce 89 percent of required raw material requirements domestically, an inability to export refined lithium would cripple their lithium refining industries. To insulate against risk of competition, PRC companies such as Ganfeng Lithium and Tianqi Lithium have secured long-term supply contracts and equity stakes in major lithium projects in the two chief competitors for refined lithium, Chile and Argentina.³⁷ In 2022, the PRC was responsible for 76.7 percent of the entire \$5.4 billion export trade of lithium hydroxide, which is up 346 percent in value from \$1.21 billion in 2021. Top destinations for their exports were the remaining top battery manufactures such as South Korea, Japan, and a smattering of other East Asian/South Pacific nations along with Sweden.³⁹ Their ownership and equity shares around the globe ensure long-term security and hedge against supply chain disruptions in a multitude of geopolitical scenarios.

The PRC's advantages are not permanent in the refining sector. The IEA already anticipates their controlling share of refining capacity to decrease to 49 percent by 2030 as other leading competitors like Albemarle in the United States increase their global operations.⁴⁰ Blocs of consumers like the European Union are already working to reshape economic law to favor domestic industry and decrease reliance on PRC suppliers by implementing laws that heavily tariff or block industries with state subsidies.⁴¹ In the United States, the Inflation Reduction Act of 2022 added regulations to subsidize lithium from North American refiners for use in EVs, along with generous Department of Energy loans for new refining capacity, which has spurred new construction in places like Texas and Nevada. But with the continued control of the market from decades of investment, those seeking to disconnect or challenge the PRC's control must expect to weather through PRC overproduction and market volatility for value chain security in lithium technologies.

Options to mitigate a short-term risk in refined lithium supplies are less palatable. The United States must be prepared for a strategy like the historical management of petroleum supplies, which involved public-private partnerships and strategic resource distribution during World War II. Establishing an office akin to the former National Recovery Administration's oil code or the Office of Petroleum Coordinator could help manage lithium supplies effectively. In the long term, expanding domestic refining capacity and aligning with allied markets to prefer secure supply chain refined lithium exports are crucial steps to securing the value chain against future disruptions.

United States Leading the Charge for Allied Battery Manufacturing

The rapid growth of the PRC's EV sector, supported by robust government incentives, positions it as the largest consumer and exporter of lithium batteries globally. The integration of lithium refining and battery production within China reduces costs and enhances efficiency, providing a competitive edge over other nations. The sheer volume of refined lithium used in the PRC's EV industry also decreases the cost of smaller battery manufacturing to price averages well below what is feasible for any other nation to accomplish. It is no coincidence that 74 percent of lithium battery manufacturing occurs in the PRC and more than 80 percent of the global lithium battery manufacturing capacity exists in East Asia with reliance on PRC refined lithium products. This trend is further reinforced by the South Korean and Japanese reliance on PRC refined lithium products for their microelectronics industries as well.⁴⁵

During the past decade, the Chinese government has allocated more than \$60 billion in subsidies to support EV production and infrastructure development.⁴⁶ These subsidies were pivotal in reducing initial production costs, weathering market fluctuations, and encouraging consumer adoption. Additionally, the government has invested heavily in research and development, pouring approximately \$2.4 billion into EV-related technology advancements.⁴⁷ This aggressive financial backing has propelled China to become the world's largest EV market, with more than 1.3 million electric cars manufactured in 2020 alone, accounting for more than 40 percent of global EV production and 60 percent of EV sales.⁴⁸ The PRC's strategic use of subsidies and investments has thus far established it as a dominant force in the global EV industry, fostering a robust manufacturing ecosystem that continues to grow rapidly without subsidies and organic consumer demand.

Simple analysis leads many to conclude that the PRC's dominance in EV manufacturing is a result of the meticulous capitalism with Chinese characteristics emblemized by the "Made in China 2025" plan or through reckless hyper-financing and spending in all manufacturing sectors that will likely implode.⁴⁹ However, the real impetus for the massive investment in EV manufacturing stems from the PRC's colossal energy security issues derived from leading the world in petroleum and hydrocarbon imports through geostrategic choke points controlled by the United States' Seventh Fleet. From the perspective of Chinese Communist Party leadership, every EV on the road is a few less barrels of oil they need to import. The year 2022 was in fact the first year the PRC's imports of foreign oil did not increase since 1991—although there are more than just EVs as a variable in this trend.⁵¹ Thus far, the PRC's calculated investment or gamble, depending on one's perspective, has paid off with dividends in the lithium battery and EV value chains.

EVs capture the bulk of attention since they are a key emerging technology in strategic competition and the green energy revolution. Focus on EV manufacturing is important since it acts as a subsidizing market force for all other lithium battery manufacturing and explains the PRC's strategic position of strength in global manufacturing across the value chain. EV procurement and/or technology are not a strategic vulnerability for the United States, since the domestic industry has flourished under protective tariffs against foreign EV manufacturers. However, the strategic risk in other lithium technologies that benefit from the PRC's robust lithium supply chains are pronounced.

American companies are well positioned to compete at the high end of lithium battery manufacturing (EV engines) but ill-suited to compete with East Asian manufacturing for the lower end (personal electronics and other lithium-ion applications smaller than EV engines) of the market.⁵² The United States is the leading importer of lithium-ion batteries with a total import cost of \$13.9 billion in 2022, with \$9.3 billion coming from the PRC.⁵³ The lower end of the lithium battery market is where most of the ubiquitous and important lithium batteries for portable electronic devices and drones are manufactured. Thus, the clearest vulnerability in the supply chain from the perspective of the U.S. Department of Defense are smaller lithium batteries, which power critical technologies such as communication devices, handheld GPS, drones, and other expeditionary technologies that the defense industry sources abroad.

As with most of the world, the Department of Defense's lithium value chains are also primarily located in East Asia, posing a strategic challenge. According to the Department of Energy, it procures approximately \$200 million of all battery types each fiscal year. Assuming the majority of these are lithium for the purposes of this thought experiment, the Department of Defense's purchases makes up approximately 1.44 percent of all American lithium battery import demands.⁵⁴ The Department of Defense's market share of all U.S. lithium battery consumption is likely less than 1 percent.⁵⁵ When it comes to batteries, the Department of Defense procurement processes are entrenched in the globalized supply chain mindset of cost-saving manufacturing over supply chain security.

The Department of Defense's inability to leverage market power and robust need to procure a vast array of battery types poses a significant challenge to securing critical lithium value chains for defense. A shortage of lithium, even for a year, has massive implications for Department of Defense capabilities. One need only look at the one- to two-year life cycle of a portable radio or GPS rechargeable lithium battery under heavy use to understand how a disruption to the supply could impact capabilities at all echelons. Every charge and discharge of lithium battery decreases its life cycle, and given that infantry squads, vehicles, and command posts all rely on personal electronic batteries, the loss in

communications and capabilities without a resupply of lithium-ion batteries to replace expended batteries impacts all formations from the team level up from the U.S. Army and Marines' perspectives.⁵⁶ This does not even include risks associated with the capabilities and opportunity loss the Department of Defense would incur from other lithium batteries necessary for emerging drone and energy pulse weapons capabilities. More needs to be done to ensure the entire value chain for Department of Defense batteries. The solution to this problem lies with greater efforts to support allied and North American suppliers.

In the long term, blocs of lithium battery consumers, like the United States, can continue their plans to increase their market power by mandating standardization of lithium battery manufacturing, which eases the value chain complexity and decreases the pressure for manufacturers to seek specialty batteries overseas.⁵⁷ Focusing allied manufacturing on smaller sets of standardized lithium batteries increases the ability to foster their growth and decouple from PRC manufacturers. This effort requires collaboration between technology manufacturers and battery manufacturers for adoption and standardization. The Department of Defense has a role to play in this process by shaping contracts to mandate battery adaptability, much like prime power contracts mandate procured technology to work with existing Department of Defense generators.⁵⁸ This effort can shape the market by influencing leaders of national security hardware and eventually other sectors of the economy will adopt the standardized batteries to secure supply chains and reduce risks.

A potential strength for the United States and allies in the current strategic environment is that the vast multitudes of bespoke and specialty batteries in the current supply chain are nearly impossible to leverage effective sanctions without hamstringing most of the PRC's lithium exports. Furthermore, limiting Japanese and Korean manufactures access to refined lithium to stop United States and allied defense industry battery procurement would likely backfire and lead to increases in challengers to the PRC refining market advantage. Any attempt to curb the export of small batteries to specific defense industries around the world would cause the PRC to incur more economic loss and hardship than the United States would lose in capabilities.

A long-term solution readily available is for American grants or subsidies to include stipulations for battery manufacturing recipients to build some capacity in their EV factories for low-end market lithium-battery manufacturing. Most American manufacturers are currently seeking to enter the profitable EV manufacturing market, but capacity for ubiquitous lithium batteries needed for portable electronics are rarely a profitable business model outside of East Asia. Benchmark Minerals anticipates more plans for American and allied gigafactories to pull out of their investments in the wake of softening prices in 2024.⁵⁹ At a minimum, the Department of Defense can mandate not only a

standardization of batteries for new contracts, but also mandate those battery come from secure U.S. and allied supply chains—a clear trade-off for security over cost. Regardless, the world outside of the PRC sphere can expect value chain secure batteries to exceed the average costs of East Asian manufacturing by a wide margin.

In the short term, if the United States were unable to procure materials from East Asian manufactures, the options for securing critical battery supplies are less palatable. Options include using third parties abroad to secure PRC batteries in a similar fashion to how Russia has attempted to bypass trade control sanctions.⁶⁰ Also, in a conflict, nations could follow historical precedence for a technology swap mid-conflict, similar to how England traded rubber to Germany in exchange for rifle scopes and binoculars during World War I.⁶¹ Both of these options are highly undesirable, but considering an immediate crisis in the current arrangement, there are no good options.

Leapfrogging Lithium: Sodium-Ion Batteries and Alternative Technologies

Given the marked disadvantages the U.S. Department of Defense faces in the lithium value chain, alternative technologies represent a bright spot of optimism for greater security and capability. Sodium-ion batteries (Na-ion) are emerging as a potential alternative to lithium-ion batteries (Li-ion), driven by various factors including cost, supply chain security, safety standards, and performance. However, even with many redeemable qualities, the capital investments in sodium-ion manufacturing are nowhere near maturity, and there are performance considerations introduced below that make them unable to replicate some capabilities of lithium-based technologies. Solid-state lithium batteries also offer the possibility to eliminate reliance on the many battery components that the PRC currently controls such as graphite and other rare minerals like cobalt, which are located in a few geopolitically sensitive areas.⁶² Other older and existing battery technologies such as zinc, alkaline, and acid batteries are capable of replacing some lithium applications but are unlikely to make major replacements without massive scale-ups in manufacturing and research and development to increase efficiency that will take years or decades. Sodium-ion and other batteries are going to be a part of the solution to achieve greater supply security, but they offer little help in the interim. More research and development, investment in manufacturing, policy adjustments to favor allied industries, market development, and most importantly time are needed to replace lithium-ion technologies.

Sodium-ion batteries present a promising alternative to lithium-ion batteries in large, fixed-site applications, offering significant advantages in terms of cost, supply chain security, and safety. They currently lag behind lithium-ion

batteries in terms of energy density, portability, and size. Just like zinc, alkaline, and classic lead acid batteries, sodium-ion batteries will find their place in the supply chain and eventually decrease reliance on lithium in some sectors. The broader adoption of sodium-ion technology stands to reduce dependence on critical minerals, enhance national security, and provide a safer and more sustainable energy storage solution in key areas.

As the technology matures, sodium-ion batteries, solid state batteries, and others are likely to complement rather than completely replace lithium-ion batteries in various applications. The manufacturing processes for these alternative batteries are still maturing, requiring substantial initial investments in infrastructure and technology development. The pathway dependency on lithium induced by decades of PRC investments and now lower costs for materials, combined with lithium tech's increasing performance efficiency, make any total replacement scenarios a far-fetched solution for the immediate demands of the U.S. Department of Defense and allies.

Conclusion

In the age of strategic competition with the PRC, the United States has already suffered one of its largest failures by recognizing the strategic value of lithium technology value chains too late. Strategic resources like lithium technology are worth more than their market value since security of the value chain must be ensured to access them and for the critical capabilities they enable. In the era of strategic competition with the PRC, security of value chains once again has returned as the primary consideration for commodities over price.⁶³ The United States has long recognized the strategic value of petroleum and hydrocarbons within this paradigm of understanding but seemingly overlooked lithium technology. U.S. policy makers and industry continued to prioritize prices in the lithium value chain while the PRC recognized lithium's strategic value decades before. The U.S. Department of Defense has now fallen into a position of strategic disadvantage within the lithium value chain that will take immediate and dramatic actions to reconcile.

From the U.S. perspective, the lithium value chain is a strategic disadvantage, but not an irreconcilable one. Long-term solutions included in the Inflation Reduction Act and the 2022 activation of the Defense Production Act by the Joseph R. Biden administration are already working to scale up domestic capacity across the value chain, which ultimately addresses many vulnerabilities. It is currently unknown how these initiatives will fare under the Donald J. Trump administration, but even with these solutions, the Department of Defense requires immediate solutions like the ones recommend above to secure critical capabilities enabled by lithium technologies.

In the event of a short-term crisis or dispute affecting lithium value chains,

the severe repercussions of the Department of Defense's strategic disadvantage in lithium would become starkly evident. Suppliers could face a shortage of portable electronics and access to critical lithium refining capabilities and resources. The crisis options available, already mentioned in this argument, are less desirable but are a necessity in the current strategic environment. Despite operating from a position of distinct strategic disadvantage, the United States has options for countering the strength of the PRC's control over the lithium value chains to secure critical capabilities.

To impact the PRC's long-term advantages, more analytical work is needed to uncover areas for strategic opportunities from the perspective of the United States. Comprehensive engagement with top suppliers in the Lithium Triangle are needed to weaken and/or replace the PRC's influence on their major suppliers and market competition. Further research on the political economies of Argentina, Chile, and, maybe most importantly, Bolivia is needed to inform decision-making on opportunities and challenges for competing with the PRC in these critical lithium supplies and refiners. Another area for research to complement these findings include finding emerging battery technologies that could replace key value chain vulnerabilities associated with lithium technology—such technologies are likely a decade or more away from commercial viability but represent emerging strategic opportunities that are vital to pay attention to now so that the United States' lithium missteps are not repeated.

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The Winds of Change

How China's Focus on Rare Earth Minerals Reshapes the World

Ian Murphy and Kevin Johnston

Abstract: This article examines how rare earth minerals and the People's Republic of China's (PRC) strategic dominance in the global economy affect U.S. national security. The PRC's near monopoly on rare earth processing and its use of export controls as leverage pose significant risks to global supply chains and U.S. national security interests. This analysis explores contemporary PRC strategies in the rare earth sector and their implications for U.S. national security by explaining how the PRC's view of international cooperation differs from the United States' view. In essence, the PRC is using the transition to renewable energy to pursue its broader security goals and enhance its position in the global power hierarchy. Furthermore, the article offers policy recommendations aimed at mitigating vulnerabilities and ensuring the secure and sustainable supply of resources critical to U.S. interests.

Keywords: rare earth minerals, climate change, Sino-American cooperation, Malacca dilemma, great power competition

The Looming Rare Earths Crisis: China's Strategic Leverage in a Changing World

The shift from U.S.-China cooperation to competition has been a gradual process. The Donald J. Trump administration's 2017–18 implementation of tariffs, escalating into a trade war, marked a stark departure

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from economic cooperation. This shift was driven by concerns over Chinese military modernization, aggression, and persistent trade disputes. The bilateral relationship further strained in 2020 due to the COVID-19 pandemic, with both countries trading blame and escalating diplomatic tension. The Joseph R. Biden administration continued many Trump-era policies, leading to expectations that future administrations will likely continue challenging the People's Republic of China (PRC) on trade and technology in the name of U.S. national security.¹ Even amid heightened tensions, the Biden administration sought to boost cooperation on combating climate change with the PRC. This echoes functionalist thought, which centers on the practical needs of people and states, rather than prioritizing state power, and suggests that cooperation should begin in nonpolitical areas, such as technical or economic sectors, where there is a common interest and a need for collaboration.² However, the PRC has not engaged in mutual cooperation with the United States and instead seeks to challenge the U.S. economic and security interests.

Kevin Johnston's perspective on the PRC aligns with functionalism by advocating for U.S.-China cooperation on climate change, which the West often views as a shared global challenge that can foster collaboration and potentially spill over into other areas. The authors' argument for Sino-American cooperation on climate change implicitly acknowledges their economic interdependence, a key tenant of neofunctionalism, which posits that economic integration promotes cooperation and that crises offer opportunities for deeper integration.³ Johnston suggests that cooperation on climate change could improve the overall relationship and lead to cooperation in other areas. However, Johnston's primary focus on security and the potential for military conflict differs from the functionalist emphasis on nonpolitical issues as the starting point for cooperation.

Johnston's approach to climate change involves treating it as a common enemy that can unite the two countries and foster the norm of shared cooperation. In this way, Johnston draws a parallel to the Marshall Plan, suggesting that a similar collaborative effort to combat climate change could lead to economic growth, reduce military tensions, and foster a long-term alliance between the two nations.⁴ By emphasizing the potential for cooperation and shared benefits, this approach is optimistic and hopeful. However, despite U.S. attempts to engage the PRC on climate, Beijing has continued to prize relative security and economic gains over shared values. A realistic and effective approach to Sino-American climate action recognizes that both countries are primarily motivated by their national interests and that cooperation will only occur when it aligns with those interests, even in the absence of shared values or norms.

The contrast between Johnston's idealistic model for cooperation and the PRC's actions highlights a critical challenge in U.S.-China relations. While the United States has sought to engage the PRC on climate change based on shared

international values and the potential for mutual benefits, the PRC is primarily using the transition to renewable energy to pursue its broader security goals and enhance its position in the global power hierarchy. Chiefly, the PRC is prioritizing its own security and economic interests, leveraging climate action as a means to advance its national power. This misalignment in motivations and goals has hindered the possibility of genuine cooperation on climate change and has led to a more competitive dynamic.

The PRC has taken advantage of U.S. and European willingness to engage on climate by reciprocating with economic dumping of electric vehicles and working with sanctioned nations to further its goals. The PRC's economic dumping of electric vehicles involves selling them below cost to gain market share, which can harm domestic industries and give the PRC an unfair advantage. This strategy aims to dominate the U.S. and European electric vehicle markets by undercutting competitors and establishing a strong foothold in the growing industry. First an economic threat, the PRC now presents a direct security challenge by monopolizing the rare earths mineral industry, revealing a pattern of behavior that shows a willingness to choose domination over cooperation.

This article begins with an explanation of E. H. Carr's political realist framework to lay the theoretical foundation to explain why the PRC has not engaged in joint climate change action, before turning attention to the PRC's dominance of the rare earth metal supply chain from supply to patents. The article then focuses on the consequences of that control, including the PRC's strategic military advantage, and its ability to dominate foreign economies. This article concludes with policy recommendations for U.S. policymakers.

Understanding the PRC's Strategic Motivations through Political Realism

To better understand the PRC's strategic posture on climate change cooperation, we can turn to the insights of E. H. Carr's political realism. Carr, a British international relations theorist, argued that national interest and power, rather than idealism and international institutions, are the primary drivers of state behavior. His work, *The Twenty Years' Crisis*, was inspired by the failed peace in the wake of the Treaty of Versailles and challenged the utopian belief in the power of international organizations to prevent conflict, highlighting the League of Nations' failure to prevent the reemergence of war.⁵ Carr's political realism, defined by military power, economic power, and power over public opinion, provides a framework for understanding the PRC's actions, particularly its reluctance to fully engage in collaborative efforts to address climate change, as described by Johnston. Through this lens, the PRC's efforts to decrease emissions are not solely aimed at reversing the trend of global climate change, but also at securing its national interests. This realist perspective helps us better understand

the PRC's priorities around its climate action and predict potential future crises, such as the PRC hoarding rare earth minerals to the detriment of the United States and its allies.

In its bid to reach energy security, the PRC is playing a double game of defense and offense. Largely dependent on petroleum imported from abroad, the PRC is vulnerable to the so-called Malacca Dilemma, whereby large quantities of its petroleum are imported through the Strait of Malacca. A disruption of oil tanker traffic through the Strait of Malacca would severely jeopardize the PRC's energy security, potentially causing fuel shortages for both its military and economy. At 3.2 kilometers wide at its narrowest point and easily defendable by the U.S. Navy, the Strait of Malacca poses a significant risk to the PRC's military in the event of a conflict. The PRC is playing a defensive game here by diversifying its energy supply away from imported petroleum. The offensive side of the PRC's energy strategy is to take advantage of collective climate action initiatives abroad to fuel Chinese low-cost exports of solar panels, electric vehicles, and batteries. By engaging in economic dumping, PRC grand strategy seeks to kill U.S. and EU manufacturing and place the PRC in a position where it can out-manufacture and politically coerce foreign countries into providing concessions for continued access to Chinese products.⁶

Just as collective climate action became a security threat for developed economies, the PRC's dominance of rare earth minerals will become politicized at the time of the PRC's choosing. Rare earths are essential components for a variety of products, such as high-tech consumer products (computers, phones, new energy vehicles, etc.) and military equipment (lasers, guidance systems, radar systems, etc.). Rare earth minerals are used in permanent magnets—its biggest and most important use—without which the spindle motors and voice coils of phones and laptops would not work. PRC dominance of rare earth minerals comes in the form of supply, investment, processing capability, technical expertise, and global patents.⁷ As the world continues to transition away from fossil fuels, the demand for rare earth minerals will grow exponentially to meet the demands of manufacturing advanced and green technologies.

With a near monopoly on every aspect of this new supply chain, the PRC will be poised for economic domination and gain key strategic military and economic advantages. As with climate action, the PRC is posed to play a dual strategy where it secures its supply of rare earths, unaffected by foreign sanctions and will use its dominance offensively to coerce by restricting access. To understand the implications of this strategy, it is essential to examine it through the lens of E. H. Carr's political realism.

Political realism posits that states, first and foremost, pursue their own national interests, even if it means conflicting with the goals of the broader international community. This pursuit of self-interest is deeply ingrained in

the fabric of international relations. Classical realism, as articulated by Hans J. Morgenthau, explains international politics as inherently bound by human nature—specifically, our innate desire for power.⁸ John J. Mearsheimer takes this a step further, arguing that the anarchic nature of the international system compels states to constantly seek power to ensure their survival, with international institutions being an expression of this desire.⁹ This relentless pursuit, he argues, ultimately leads to either hegemony or a security dilemma.

While both classical and offensive realism provide a compelling framework for understanding the PRC's worldview, they are somewhat constrained by their inherent assumptions. Political realism, as described by Carr, offers a more nuanced perspective, better able to grasp the complexities of Sino-American relations. It provides a framework for understanding how the United States might cooperate with the PRC without necessarily triggering a security dilemma or leading to undesirable hegemonic dominance.

The PRC's current path to securing its energy needs exemplifies this realist perspective. It includes the determined pursuit of energy independence, the economic domination of foreign markets, and the monopolization of critical minerals, even at the expense of environmental concerns. Political realism acknowledges that while collective action may be discussed and even pursued to some extent, the reality of international politics is often characterized by competition and the unwavering pursuit of individual state interests. PRC actions in the realm of energy security and its strategic use of economic leverage, such as its policies on electric vehicles and rare earth exports, are entirely consistent with this realist view.¹⁰ Instead of simply adopting renewable energy to support the international community, the PRC is actively attempting to dominate the renewable energy sector, both militarily and economically. Adopting a purely utopian perspective when it comes to understanding cooperation and conflict with the PRC has significant limitations.

Assuming that the PRC holds a shared "world interest" effectively ignores the reality of world politics, leading the United States to have unrealistic expectations about the PRC's willingness to cooperate. Specifically, a utopian perspective overlooks PRC strategic actions in the realm of "unrestricted warfare," a concept that offers a new dimension in realism, encompassing political, informational, and legal domains.¹¹ The PRC's approach to energy security and climate change better aligns with the concept of unrestricted warfare than with any notion of a "harmony of interests." It seeks to leverage its growing dominance in the energy industry and critical mineral supply chains to gain advantages over its perceived adversaries. Using the combined lenses of political realism and unrestricted warfare helps us to better interpret observable PRC economic behavior and thus allows the United States to respond in a more impactful and realistic way.

The PRC's Strategic Calculus in Its Quest for Dominance

When viewed through the lens of Carr's political realism, it becomes evident that energy security is a critical component of the PRC's broader pursuit of national rejuvenation and global ambitions, rather than simply an appeal to international values or a reflection of shared environmental concerns. The PRC's concept of unrestricted warfare further informs this analysis, as it suggests that the pursuit of national objectives transcends the traditional military realm and encompasses economic, technological, and information domains.¹²

The PRC undoubtedly aims to lead the global shift toward cleaner energy sources, but unlike the European Union and the United States, its primary focus is on strengthening national security and gaining economic leverage, with reduced emissions being a by-product of this national security-centric strategy. While the PRC has invested heavily in renewable energy sources, it also continues to rely heavily on coal and petroleum, making emission reductions a secondary outcome. Furthermore, the PRC's participation in global climate agreements can be seen more as a matter of global prestige and a means to advance its geopolitical influence, rather than a genuine commitment to environmental protection for its own sake.¹³

This strategic approach echoes past instances where Western powers, particularly in Europe, prioritized engagement and cooperation with potentially adversarial states, only to find themselves vulnerable to economic and political coercion. The prime example is the relationship with Russia before the invasion of Ukraine. Western Europe believed that increasing engagement and cooperation with Russia was key to sustained political change, but it instead led Europe to become dangerously dependent on Russian energy supplies and vulnerable to Russian economic and political pressure.¹⁴ As the war in Ukraine enters its third year, countries are now questioning their global supply chains and are actively working to reshore or near-shore their supply routes, particularly those involving the PRC.¹⁵

The PRC's energy security strategy is intricately linked to its broader national security strategy in several ways. First, PRC dependence on fuel imports, particularly petroleum, poses a significant vulnerability. While the PRC's overall petroleum imports increased by 10 percent in 2023, driven by growing demand and refining capacity, the source of these imports has become more concentrated. In 2023, Chinese crude oil imports saw the biggest increase from Russia, Iran, Brazil, and the United States, with Russia becoming the PRC's top crude oil source, supplying 19 percent of its imports.¹⁶ This reliance on a mixture of politically volatile and sanctioned sources, along with a potentially hostile United States, puts the PRC in a precarious position where it is vulnerable to price fluctuations, supply disruptions, and potential political pressure. To mitigate this risk, the PRC has been actively seeking to diversify its energy

sources, including increasing domestic production of fossil fuels, investing in renewable energy technologies, and securing access to energy resources in other countries.¹⁷

Second, the PRC's heavy reliance on coal for its energy needs presents both a challenge and an opportunity. While coal remains a significant source of energy for the PRC, the country has been actively pursuing cleaner and more sustainable energy sources.¹⁸ As part of its energy security strategy, the PRC adopted a long-term "dual carbon" plan that aims to have China reach peak carbon emissions by 2030 and achieve carbon neutrality by 2060.¹⁹ Although on the surface it appears that the PRC is making progress to reduce its carbon footprint and address environmental concerns, the PRC's roadmap to carbon emission reduction includes deepening energy cooperation with Russia, Iran, Pakistan, Myanmar, and Central Asian countries.²⁰ While the PRC's "dual carbon" strategy addresses environmental concerns to some extent, it is closely linked to national security considerations and is not tied to a sense of international solidarity on combating climate change.

Third, the PRC's efforts to dominate rare earth mineral supply chains and promote its clean technology industry can be seen as a way to gain economic leverage and technological advantages over other countries. This strategy aligns with the realist perspective articulated by Rui Feng in his review article on the PRC's energy security and geopolitical imperatives. He explicitly links the PRC's energy strategy with its view of international politics, emphasizing the competitive nature of international relations and the fundamental need for states to prioritize their own survival and development.²¹ In this context, the PRC's actions can be seen as a strategic effort to secure its national interests and enhance its position in international politics and should not be interpreted or pursued for purely altruistic motives—to do so, according to Feng, would be naive.

Rui Feng further advises a pragmatic and cautious approach to international relations with his emphasis on the PRC's use of "moral neutrality," recognizing that the pursuit of ideals and ambitions should be tempered with a realistic assessment of the situation without being corrupted by a sense of moral mission.²² This explains why we see the PRC using moralistic language and joining multilateral climate agreements while simultaneously pursuing its own strategic goals. In essence, the PRC is using the transition to renewable energy as a means to pursue its broader security goals and enhance its position in the global power hierarchy.

The Malacca Dilemma's Influence on PRC Resource Strategy

On New Year's Eve 2023, Chairman Xi Jinping gave an address stating that

Map 1. The Strait of Malacca is a strategic choke point between Malaysia and Indonesia

Source: Thomas Dent, *The Strait of Malacca's Global Supply Chain Implications*.

a PRC reunification with Taiwan was “inevitable” and a “historical inevitability.”²³ Though Chairman Xi did not mention military force that night, the People’s Liberation Army Navy (PLAN) continues to hold large-scale military exercises around the island nation, where the PLAN simulates operations that would close Taiwan’s ports.²⁴ Working toward this goal, the PLAN is now the world’s largest navy with more than 350 ships and submarines.²⁵ Despite its rapid military modernization, the PRC’s relentless pursuit of national rejuvenation and its ambition to take Taiwan by military force hinges on securing a stable and reliable supply of energy. However, its reliance on maritime transport for energy imports, particularly through the narrow Malacca Strait, presents a significant strategic vulnerability.²⁶ This vulnerability, referred to as the “Malacca Dilemma,” casts a long shadow over the PRC’s energy security and its broader strategic ambitions.

Reliance on the Malacca Strait for most of its oil imports exposes the PRC to a range of risks, including potential blockades, disruptions due to piracy or accidents, and political pressure from regional powers. As Ian Storey emphasizes, this vulnerability has become a major preoccupation for PRC policymakers, who recognize the potential for hostile forces to exploit this weakness in times of crisis.²⁷

Despite the rapid modernization of the PLAN in recent years, the PRC still lacks the naval power to guarantee the security of the Malacca Strait in a

direct confrontation with the United States Navy.²⁸ The U.S. Navy's superior capabilities, combined with its extensive network of alliances in the Indo-Pacific region, pose a formidable challenge to the PRC's ability to project power in the region and safeguard its vital sea lanes. This imbalance further exacerbates the Malacca Dilemma, forcing the PRC to explore alternative strategies to mitigate its energy vulnerability.

One such strategy involves diversifying its energy import routes and sources. The PRC has been actively pursuing pipeline projects with Russia, Central Asia, and Myanmar to reduce its reliance on maritime transport.²⁹ However, these overland routes face their own set of challenges. Existing pipelines currently provide only a small fraction of the PRC's energy needs, and expanding this infrastructure would require navigating complex geopolitical terrain and making substantial investments in potentially unstable countries. The establishment of new pipelines takes several years to plan, build, and reach operational capacity, severely limiting pipelines as a silver-bullet solution to the PRC's energy security needs.³⁰ Moreover, as recent conflicts have demonstrated, pipelines are not immune to disruption, whether through sabotage, accidents, or political instability. The ongoing war in Ukraine provides a stark reminder of the vulnerability of energy infrastructure, even in well-established and seemingly secure regions. The Nord Stream pipeline explosions and attacks on other energy facilities highlight the ease with which critical infrastructure can be targeted and disrupted, even in the face of sophisticated defenses.³¹ This reality underscores the limitations of relying solely on pipelines to address the PRC's energy security concerns.

Another strategy involves accelerating the transition to renewable energy sources, reducing the PRC's dependence on fossil fuels and, by extension, its vulnerability to disruptions in maritime transport.³² This approach aligns with the PRC's broader ambitions to dominate the renewable energy sector and control the supply chains for critical minerals, particularly rare earth elements. This strategy also presents significant challenges, including the need for technological breakthroughs, the security of mineral supply chains, and the potential for new geopolitical dependencies.

The Malacca Dilemma casts a long shadow over the PRC's strategic ambitions. This critical vulnerability shapes not only its energy policy, but also its military strategy and approach to regional security. To overcome this dependence on the Strait of Malacca, PRC policymakers are driven to diversify energy sources, pursue technological innovation, and expand geopolitical influence. However, as this analysis has shown, securing alternative routes for energy imports, whether through naval expansion or overland pipelines, presents immense challenges. This leaves the PRC with the imperative of transitioning to renewable energy sources, which in turn creates new dependencies on rare earth

minerals. Ultimately, the PRC's success or failure in mitigating the Malacca Dilemma will profoundly impact its future trajectory and its role in the evolving global order. The country is already making significant strides in renewable energy development, with a recent Global Energy Monitor report highlighting that the PRC is "home to almost two-thirds of the world's utility-scale solar and wind power in construction."³³ Whether these efforts will be sufficient to overcome the Malacca Dilemma and secure the PRC's energy future remains to be seen.

The Rare Earths Advantage: PRC Strategic Leverage in a Technology-driven World

The PRC's strategic approach to rare earth minerals extends far beyond simply controlling the raw materials. While the PRC does indeed possess significant reserves, holding approximately 44,000 metric tons of rare earth oxides—twice the amount of Vietnam, the second-largest holder—its dominance lies in its comprehensive control over the entire rare earth supply chain.³⁴ Unlike oil-producing countries that primarily focus on extraction and export, the PRC has strategically built an entire ecosystem around rare earths. This ecosystem encompasses everything from mining and processing to the manufacturing of finished products, including critically important rare earth magnets.³⁵ While the PRC controls about 60 percent of global rare earth production, its dominance in processing is even more pronounced, with control over nearly 90 percent of the world's rare earth mineral processing capacity.³⁶

To further solidify its grip on this strategic sector, the PRC recently banned the export of technologies related to rare earth extraction and separation.³⁷ This move effectively prevents other countries from developing independent processing capabilities, ensuring the PRC's continued centrality in the global rare earth market. As the world transitions away from fossil fuels and toward renewable energy technologies, the demand for rare earths is projected to increase dramatically. The PRC's strategic foresight in securing its dominance in this sector positions it to reap significant economic and geopolitical benefits.

Beyond controlling the physical supply chain, the PRC has also made significant strides in securing intellectual property related to rare earth technologies. Since surpassing the United States in the number of rare earth patents in 1997, the PRC has continued to expand its lead, accumulating more than 23,000 more patents than the United States as of 2019.³⁸ This dominance in intellectual property not only grants the PRC a technological edge but also provides leverage in the form of potential patent litigation and licensing agreements.

As James Kennedy points out, Chinese companies can employ strategies like patent trolling and patent ring-fencing to undermine or nullify non-

Chinese patents, further consolidating their control over the industry.³⁹ This multifaceted approach to dominating the rare earth sector has allowed the PRC to reshape the global economic landscape and gain a significant advantage in the production of both high-tech consumer goods and advanced military equipment. The Baker School of Public Policy and Public Affairs at the University of Tennessee aptly summarizes the implications of PRC dominance, stating that it has created “a supply chain dominance that has made it impossible for other countries to contend with them on any impactful level.”⁴⁰ Even if other countries were to invest heavily in developing their own rare earth industries, catching up to established PRC infrastructure and expertise would be a monumental task. This reality underscores the strategic challenge posed by PRC control over this critical sector. The PRC’s near monopoly on rare earth patents has allowed it to reshape the world’s economy and control clear military weapons production.

Charting a Path Forward: Recommendations for U.S. Policymakers

Considering the PRC’s strategic approach to climate change action and its dominance in the rare earth sector, the United States must adopt a realistic and proactive policy stance. The United States must first realize that it cannot affect the PRC’s progress on climate action as Chinese behavior is set by its own national security and economic considerations, which is tied to how the PRC views the world. Recognizing that the PRC views climate action through a lens of moral neutrality and prioritizes its own economic and security interests, the United States should focus on building its resilience and pursuing its climate goals independently. Additionally, to effectively navigate and mitigate the challenges posed by the PRC’s current dominance of the rare earth mineral supply chain, U.S. policymakers should consider the following recommendations.

- 1. Embrace Marine Corps peer competition:** The Marine Corps must prepare for future conflicts characterized by disrupted sustainment and logistics. Building on its existing efforts to operate in austere environments, the Marine Corps should further evaluate and address its supply chain vulnerabilities. This includes exploring alternative suppliers for critical equipment, investing in renewable energy sources and reused materials, and promoting technological innovation to reduce logistical burdens. Prioritizing technologies like 3D printing, unmanned supply transport systems, and energy-efficient equipment will be crucial in enhancing the Marine Corps’ operational resilience.
- 2. Strengthen maritime security:** Protecting sea lanes of communication is essential for ensuring the secure transport of critical resources

and maintaining access to global markets. The United States should continue to invest in its naval capabilities and strengthen maritime partnerships with allies and partners in the Indo-Pacific region. Building robust multilateral security cooperation frameworks will enhance deterrence, reduce the risk of conflict, and safeguard vital sea lanes, including the strategically crucial Strait of Malacca.

3. **Foster international cooperation:** Collaboration with allies and partners is vital for coordinating resource management, addressing supply chain vulnerabilities, and promoting joint manufacturing initiatives. This cooperation should encompass Joint research and development, information sharing, coordinated responses to resource-related threats, and the expansion of the International Traffic in Arms Regulations exemptions to facilitate technology transfer and collaboration. By working closely with like-minded nations, the United States can enhance its global influence, diversify its industrial base, and strengthen the collective resilience of its allies and partners.
4. **Establish strategic stockpiles:** The United States should create and expand strategic reserves of critical resources, including rare earth minerals and other industrial materials, to provide a buffer against supply chain disruption, shortages, and price volatility. These stockpiles will ensure the continuity of operations for critical industries and defense capabilities during emergencies and times of conflict. A robust strategic reserve policy will enhance national security and reduce dependence on unreliable suppliers.

While the United States currently has some strategic stockpiles, such as the National Defense Stockpile, these reserves are limited in scope and quantity.⁴¹ The U.S. government should expand these stockpiles to include a wider range of critical minerals and resources, ensuring that there is sufficient supply to meet the needs of key industries and defense applications in times of crisis. This effort could involve increasing funding for the National Defense Stockpile, establishing new stockpiles for specific minerals or resources, or incentivizing the private sector to maintain their own reserves that would allow them to maintain industrial output amid sudden disruptions.

Additionally, the United States can protect its allies and partners from risks posed by the PRC's control over the rare earth minerals supply chain at a minimal cost. Pursuing a strategy of cooperative stockpiling initiatives with its allies involves negotiating bilateral agreements with key partners to establish strategically located stockpiles of critical industrial materials in secure and stable environments. These agreements would outline the terms of storage, access, and sharing of

the materials, cost, and procurement, ensuring accountability in their management. By diversifying the sources of these critical materials and coordinating with existing initiatives like the Australia-United Kingdom-United States (AUKUS) partnership and the Quad (Australia, India, Japan, and the United States), the United States can enhance its resilience to supply-chain disruptions, reduce collective dependence on China, and encourage its allies to responsibly provide for their own defense.

5. **Diversify supply chains:** Overreliance on any single supplier for critical minerals and resources creates strategic vulnerabilities. The United States should actively pursue diversification by sourcing these resources from multiple countries, reducing its dependence on the PRC, and mitigating the risks of geopolitical coercion. This diversification effort should include investing in exploration and development of domestic resources, fostering partnerships with resource-rich countries, namely Australia through the AUKUS partnership, and supporting the development of alternative technologies that reduce reliance on critical minerals.

To achieve diversification, the U.S. government could offer subsidies to companies that produce critical minerals domestically, incentivizing them to compete with cheaper Chinese-sourced minerals. Additionally, restrictions could be placed on the Department of Defense to prevent the usage of Chinese-sourced minerals in defense technologies. These measures would help to level the playing field and encourage the development of a diverse and secure supply chain.

6. **Reshore critical production:** To enhance U.S. economic resilience and national security, reshoring critical mining and production capacities should be pursued strategically, focusing on industries with significant national security implications and those where overreliance on unreliable foreign suppliers poses unacceptable risk, such as in the large-capacity battery supply chain.⁴² This strategy involves increasing domestic production of critical resources and technologies, which will lead to job creation, economic growth, and ensure a stable supply of essential resources for both domestic consumption and support for allies in future conflicts. In addition to the need for subsidies, as mentioned above, to incentivize the use of domestically sourced minerals and reduce reliance on unreliable foreign sources, expanding the base of reliable international sources is also necessary. Expanding the Defense Production Act to include Australia in the waiver that currently allows Canadian minerals to count as domestically sourced for the Department of Defense would further strengthen North American collaboration and accelerate the shift away from China.

The United States has implemented policies to reduce its reliance on China for rare earth minerals by diversifying supply chains through domestic mining and processing, strengthening partnerships with allies like Australia, Canada, and the United Kingdom and supporting the development of alternative technologies. Additionally, there is a growing focus on reshoring critical production capabilities to enhance U.S. economic resilience and national security, involving increased domestic production of critical resources and technologies through initiatives like the Inflation Reduction Act of 2022 and the 2021 Bipartisan Infrastructure Law.⁴³ The United States also recognizes the importance of international collaboration with like-minded nations to coordinate resource management, address supply chain vulnerabilities, and promote joint manufacturing initiatives, including expanding ITAR exemptions to facilitate technology transfer. However, despite these efforts, several challenges hinder the United States' ability to break PRC dominance of the rare earth mineral sector, including China's cost advantage, investment uncertainty, limited domestic processing capacity, delays in issuing permits, price uncertainty, environmental concerns, PRC strategic policies like banning the export of mining equipment, and skilled labor shortages.⁴⁴ To meet these challenges, the United States needs to adopt a comprehensive and coordinated approach involving government policies, private sector investment, and international cooperation.

Conclusion

The PRC's ambitious pursuit of renewable energy and its dominance in the rare earth sector are not driven solely by environmental concerns or altruism. Rather, these initiatives are deeply intertwined with the PRC's broader strategic objectives, including its desire to achieve energy independence, secure economic dominance in emerging markets, and overcome the strategic vulnerability posed by the Malacca Dilemma. As E. H. Carr observed in *The Twenty Years' Crisis*, nations consistently act in their self-interest, even if it means challenging international norms or disrupting the existing global order.⁴⁵ The PRC's actions in the realm of rare earths and renewable energy clearly exemplify the political realist perspective. By securing control over the entire rare earth supply chain, from extraction and processing to manufacturing and intellectual property, the PRC is strategically positioned to dominate the global renewable energy market. This dominance will not only fuel the PRC's economic growth but also enhance its military capabilities and geopolitical leverage. As the world transitions away from fossil fuels, the PRC's control over rare earths will become increasingly critical, potentially granting unprecedented influence over the global economy and security landscape.

In the words of Sun Tzu, "every battle is won before it is fought."⁴⁶ The

PRC's strategic approach to rare earths can be seen as a preemptive maneuver to secure victory in coming economic and geopolitical competitions. In its bid to establish a near-monopoly over this critical sector, the PRC aims to gain a decisive advantage in the emerging renewable energy era and reshape the global balance of power in its favor. However, the United States and its allies are not powerless to counter PRC ambitions of domination. To counter PRC ambitions and maintain a stable international system, the United States and its allies must proactively and strategically mitigate the risks posed by PRC dominance in the rare earth sector, preventing it from achieving uncontested control and safeguarding their own national interests. The challenges posed by the PRC's rise demand a clear-eyed assessment of its strategic intentions and a commitment to safeguarding the principles of a free and open international order.

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Recent U.S. Government Policy Literature on Critical and Strategic Minerals

Professor Bert Chapman

Abstract: Critical and strategic minerals have become increasingly important in U.S. government civilian and military policymaking in recent years. This is demonstrated by the heavy use of such minerals in many critical civilian and military infrastructures. This work will discuss how this subject has been addressed in laws, presidential documents, and works by government agencies along with congressional oversight committees and support agencies. It will stress how the United States is heavily dependent on strategic minerals from adversarial foreign countries such as China and will examine U.S. efforts to increase its ability to produce such materials in the United States by reforming permitting processes. It will conclude with recommendations for the United States to enhance its ability to produce these materials domestically and acquire them from reliable foreign sources. The conclusion will also suggest ways that the president and federal agency stakeholders can enhance public awareness of this problem and their efforts to rectify it.

Keywords: strategic minerals, supply chain, national security, technology, permitting, congressional oversight, government information, military information.

Critical and strategic materials are vital for technologies used across the economy in electronics, energy, defense, and health care. U.S. supply of these commodities is highly dependent on foreign countries as demonstrated in figure 1.

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Figure 1. The 2022 U.S. list of critical minerals, percentage of the U.S. supply imported in 2022, industries in which each is used, and primary import source

| Mineral | Percentage from foreign sources ^a | Key Industries | | | | | Primary Import Source (2018–2021) ^b |
|---|--|----------------|---------|--------|------------------------------------|--------------------------------|--|
| | | Aerospace | Defense | Energy | Telecommunications and electronics | Transportation (non-aerospace) | |
| Arsenic | 100% | | ● | ○ | ○ | | China: 57% |
| Cesium | 100% | ● | ● | ○ | ○ | | N/A |
| Fluorspar | 100% | | | ○ | ○ | | Mexico: 66% |
| Gallium | 100% | ● | ● | ○ | ○ | | China: 35% |
| Graphite | 100% | ● | ● | ○ | ○ | ○ | China: 35% |
| Indium | 100% | ● | ● | ○ | ○ | | Republic of Korea: 35% |
| Manganese | 100% | ● | ● | ○ | | ○ | Gabon: 67% |
| Niobium | 100% | ● | ● | ○ | | | Brazil: 66% |
| Rubidium | 100% | ● | ● | ○ | ○ | | N/A |
| Tantalum | 100% | ● | ● | ○ | ○ | | China: 24% |
| Bismuth | 96% | | ● | ○ | ○ | | China: 65% |
| Rare Earth Elements (Cerium, Dysprosium, Erbium, Europium, Gadolinium, Holmium, Lanthanum, Lutetium, Neodymium, Praseodymium, Samarium, Scandium, Terbium, Thulium, Ytterbium, Yttrium) | >95% | ● | ● | ○ | ○ | ○ | China: 74% |
| Titanium | >95% | ● | ● | ○ | | | Japan: 89% |
| Antimony | 83% | | ● | ○ | ○ | ○ | China: 63% |
| Chromium | 83% | ● | ● | ○ | | | South Africa: 37% |
| Tin | 77% | | ● | | ○ | | Peru: 25% (refined Tin) |
| Cobalt | 76% | ● | ● | ○ | ○ | ○ | Norway: 22% |
| Zinc | 76% | | ● | ○ | | | Canada: 66% |
| Barite | >75% | | | ○ | | | China: 38% |
| Tellurium | >75% | | ● | ○ | ○ | | Canada: 52% |
| Platinum ^c | 66% | ● | | ○ | ○ | ○ | South Africa: 24% |
| Nickel | 56% | ● | ● | ○ | | | Canada: 45% |
| Aluminum | 54% | ● | ● | ○ | | ○ | Canada: 50% |
| Vanadium | 54% | ● | ● | ○ | | | Canada: 31% |
| Germanium | >50% | ● | ● | ○ | ○ | | China: 54% |
| Magnesium | >50% | ● | ● | ○ | ○ | ○ | Canada: 21% |
| Tungsten | >50% | ● | ● | ○ | ○ | | China: 29% |
| Zirconium | <50% | ● | ● | ○ | | | China: 89% (Zirconium unwrought, including powder) |
| Palladium ^c | 26% | ● | | ○ | ○ | ○ | Russia: 34% |
| Lithium | >25% | ● | ● | ○ | ○ | ○ | Argentina: 51% |
| Beryllium | <20% | ● | ● | ○ | ○ | | Kazakhstan: 43% |
| Hafnium | — | ● | ● | ○ | | | Germany: 36% |
| Iridium ^c | — | ● | | ○ | ○ | ○ | — |
| Rhodium ^c | — | ● | | ○ | ○ | ○ | — |
| Ruthenium ^c | — | ● | | ○ | ○ | ○ | — |

Source: *Mineral Commodity Summaries 2023* (Reston, VA: U.S. Geological Survey, 2023); provides exhaustive enumeration of domestic and international reserves of these minerals; and *Technology Assessment Critical Minerals: Status, Challenge, and Policy Options for Recovery from Nontraditional Sources* (Washington, DC: Government Accountability Office, 2024), 4.

Minerals are essential for manufacturing defense goods including bombers, missiles, submarines, and torpedoes. Access to secure mineral supplies significantly influences a nation-state’s military capabilities with their possession of substantial, secure mineral supplies that enable considerable mineral power. When mineral power and ensuing military might reach significant levels, it is possible for states to achieve great power status internationally and exert significant influence on security-related topics. Powerful countries have always depended on possessing healthy mineral resource supplies.¹

This work strives to document recent U.S. government policy literature

on this subject and concludes with recommendations for the United States to enhance its domestic production and processing capabilities for these commodities to decrease its reliance on unstable and potentially adversarial supply chain providers.

A 2024 Congressional Research Service analysis emphasized the importance of critical and strategic minerals as being essential for specific products and services and subject to supply risks. It maintained gallium, germanium, and silicon are critical for manufacturing semiconductors. Lithium, cobalt, and nickel are essential for batteries in electric vehicles and other products. Some rare earth elements are required for manufacturing touchscreens in electronic products and magnet-based motors driving large wind turbines and electric vehicles. Demand for these products is expected to increase in the following decade.²

First and Second Trump Administration and Biden Administration Documents

Critical and strategic mineral policy literature encompasses multiple presidential administrations and these terms have different meanings depending on what U.S. government department describes them and depending on definitions in U.S. statutory law. Concerns about the U.S. relationship and policies with critical and strategic minerals has significant historical provenance. In 2008, two National Academies reports documented such concerns. A 2008 report on these commodities and the U.S. economy concluded that a *critical mineral* is essential in use and subject to supply restriction, its criticality can change as production technologies evolve and new products are developed, and the larger the difficulty, time, and expense it takes for a material substitution to occur the more critical a mineral becomes to a specific application or project. Report recommendations include the federal government needing to enhance the types of data and information it analyzes, collects, and disseminates on these minerals and products with particular emphasis on products that may become critical; the U.S. Geological Survey (USGS) Minerals Information Team requiring greater authority and autonomy to communicate with governmental and nongovernmental organizations about their mineral findings; and other federal agencies needing to develop and fund activities to encourage U.S. innovation in critical minerals and materials.³

A second National Academies report that year on materials management for a twenty-first century military documented global defense production, stockpiling, and supply chain practices of the United States and other countries. It stressed a continuing need for a U.S. National Defense Stockpile (NDS) to store materials critical to U.S. national defense but that its current design, operation, and structure made it ineffective in responding to emerging needs

and threats and that insufficient quality data and information from domestic and offshore sources on materials availability restricts effective management of defense critical supply chains. Report recommendations included: the Department of Defense (DOD) establishing a new system to manage supply of these materials; an ongoing analytical process to identify critical materials for defense systems; establishing tools to support and stabilize robust supply chains; partnering with private industry and considering options for outsourcing and off-shoring; and providing proper and robust information systems and forecasting tools.⁴

Executive Order (EO) 13817, A Federal Strategy To Ensure Secure and Reliable Supplies of Critical Minerals, issued on 20 December 2017, saw President Donald J. Trump contend that the United States was heavily dependent on importing mineral commodities vital to national security and economic prosperity. Such foreign source dependence makes the United States vulnerable to adverse foreign government action, natural disaster, and other events capable of disrupting supply of these materials. This document noted that the Department of the Interior defined *critical mineral* as a nonfuel mineral or mineral material essential to U.S. economic and national security, has a supply chain vulnerable to disruption, and serves an essential function in product manufacturing and the absence of this commodity would have significant economic and national security consequences. This document directed the U.S. government to identify new sources of critical minerals, increase activity at all supply chain levels including exploration, mining, concentration, separation, alloying, recycling, and reprocessing critical minerals; ensuring U.S. miners and producers have electronic access to the most advanced topographic, geologic, and geophysical data in U.S. territory; and streamlining leasing and permitting processes to expedite exploration, production, processing, recycling, and domestic refining and critical minerals.⁵

EO 13953, Addressing the Threat to the Domestic Supply Chain from Reliance on Critical Minerals from Foreign Adversaries and Supporting the Domestic Mining and Processing Industries, issued on 30 September 2020, saw Trump highlight the threats of heavy U.S. dependence on China demonstrated by the United States importing 80 percent of rare earth elements from China. This document also noted assertive Chinese policies to strategically flood the global market with these commodities and displace competitors. It determined that the United States must enhance its mining and processing capacity for all minerals and directed various cabinet departments to prepare a report to recommend executive action against China and nonmarket foreign adversaries including imposing tariffs and quotas and other import restrictions.⁶

A 2019 Commerce Department assessment produced during the first Trump administration noted that the United States imports most critical min-

eral commodities with 31 of 35 minerals designated critical by the Interior Department and that the U.S. imports of these minerals represent greater than 50 percent of annual consumption. This assessment also observed that the United States does not have any domestic production and relies exclusively on imports to supply 14 critical minerals.⁷

Significant legal emphasis was placed on critical minerals in the Energy Act provisions of the 2021 Consolidated Appropriations Act. This statute directed the Department of Energy (DOE) to research advanced separation technologies to extract and recover rare earth elements and other critical materials from coal and its products while determining possible mitigation of potential environmental or public health impacts from recovering rare earth elements from coal-based resources. Section 7002 of this statute defined critical materials and minerals as any nonfuel mineral, element, substance, or material with a high risk of supply chain disruption and serving an essential function in one of more energy technologies including those producing, transmitting, storing, and conserving energy. It went on to define critical minerals as “any mineral, element, substance, or material designated as critical by the Secretary of the Interior, acting through the director of the U.S. Geological Survey (USGS).”⁸

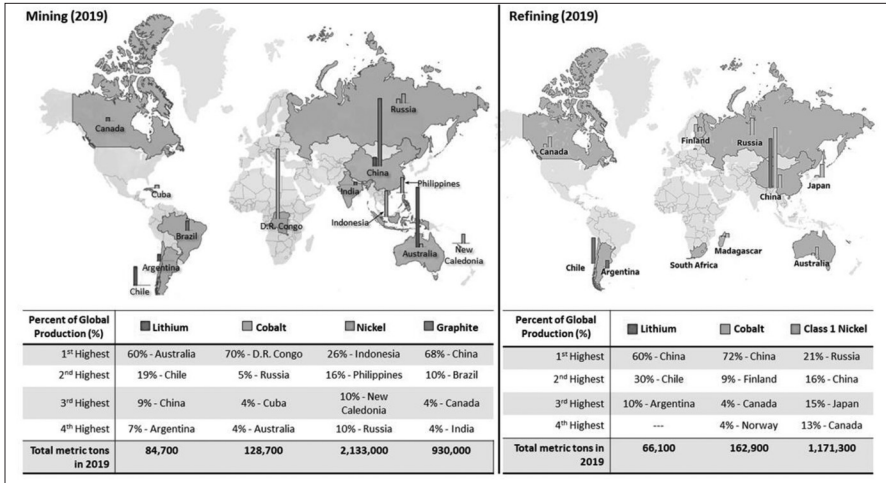
This statute also directed the Interior Department to produce a comprehensive national assessment of each critical mineral, identifying and quantifying known critical mineral resources and providing a qualitative and quantitative assessment of uncovered U.S. critical mineral resources including probability grade and tonnage estimates within four years.⁹

Figure 2 shows how the top producers and refiners of critical minerals for battery refining and mining is globally dispersed with some of these activities occurring in adversarial countries such as China and Russia.

On 24 February 2021 President Joseph R. Biden issued Executive Order 14017, America’s Supply Chains. This document directed the National Security Council (NSC) and the assistant to the president for economic policy (ASEP) to coordinate executive branch actions by preparing a 100-day supply chain review involving the Commerce, Defense, Energy, and other departments. The Commerce and Energy Departments were directed to identify supply chain risks in semiconductor management, advanced packaging, and high-capacity batteries including electric vehicle batteries. Defense was directed to identify critical mineral supply chain risks including rare earth elements and strategic minerals as well as policy recommendations addressing these risks.¹⁰

The report mandated by this EO was released in June 2021. Recommendations for the Commerce Department stressed increasing its partnership with industry on semiconductors to enhance information flow between semiconductor suppliers and end users; strengthening engagement with allies and partners to promote fair semiconductor chip allocations, increasing production, and en-

Figure 2. Top four producers of highest risk battery materials for mining and refining stages



Source: *Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-based Growth: 100-Day Reviews under Executive Order 14017* (Washington, DC: White House, 2021).

couraging increased investment; advancing adoption of effective supply chain management and security practices; strengthening the defense semiconductor manufacturing ecosystem; providing focused support for domestic national security related chip production; and engaging with allies and partners on semiconductor supply chain resilience.¹¹

Recommendations for the Department of Defense included developing and fostering new sustainability standards for strategic and critical material intensive industries; expanding sustainable domestic production and processing capacity, including recovery from secondary and unconventional sources and recycling; deploying the Defense Production Act (DPA) and other programs to issue grants, loans, loan guarantees, and economic incentives to establish industrial capacity, subsidize markets, and acquire materials; using DPA to mitigate current or anticipated national defense shortfalls; convening industry stakeholders to expand production; promoting interagency research and development to support sustainable production and technically skilled workers; strengthening U.S. stockpiles under the 1939 Strategic and Critical Materials Stock Piling Act; and working with allies and partners to increase global supply chain transparency.¹²

Report recommendations for the Energy Department include stimulating demand for end use products using domestically manufactured high capacity batteries; supporting demand for batteries in the transportation sector; electrifying federal, state, local, and tribal government fleets; strengthening responsibly sourced supplies for key advanced battery minerals with many of

these minerals coming from troubled countries like the Democratic Republic of Congo, which possesses approximately 80 percent of global cobalt reserves, and adversarial countries like China; supporting sustainable lithium domestic extraction and refining from existing sources in Arkansas, California, Nevada, and North Carolina; modernizing laws and regulations governing mining on public lands with lithium in California and Nevada; investing in nickel refining coordination with allies; identifying opportunities for supporting sustainable cobalt production and refining; and working with partners and allies to expand global production and supply access.¹³

On 31 March 2022, President Biden issued a memorandum for the secretary of defense directing this official to secure a reliable and sustainable supply of domestic and critical materials. Provisions within this document included:

(1) sustainable and responsible domestic mining, beneficiation, and value-added processing of strategic and critical materials for the production of large-capacity batteries for the automotive, e-mobility, and stationary storage sectors are essential to the national defense;

(2) without Presidential action under section 303 of the Act, U.S. industry cannot reasonably be expected to provide the capability for these needed industrial resources, materials, or critical technology items in a timely manner; and

(3) purchases, purchase commitments, or other action pursuant to section 303 of the Act are the most cost-effective, expedient, and practical alternative method for meeting the need.

(b) Consistent with section 303(a)(1) of the Act, the Secretary of Defense shall create, maintain, protect, expand, or restore sustainable and responsible domestic production capabilities of such strategic and critical materials by supporting feasibility studies for mature mining, beneficiation, and value-added processing projects; by-product and co-product production at existing mining, mine waste reclamation, and other industrial facilities; mining, beneficiation, and value-added processing modernization to increase productivity, environmental sustainability, and workforce safety; and any other such activities authorized under section 303(a)(1) of the Act.¹⁴

The January 2025 onset of the second Trump administration saw resumed presidential emphasis on critical and strategic minerals. EO 14154, *Unleashing American Energy*, issued on 20 January 2025, declared a national energy emergency and sought to establish the United States and the world's leading producer and processor of nonfuel materials including rare earth minerals, which this document contended would create domestic jobs and prosperity, strengthen U.S. and allied supply chains, and reduce the global influence of adversarial

states. It directed federal agencies to reduce undue burdens on the domestic mining and processing of nonfuel minerals, update the USGS list of critical minerals and potentially add uranium to that list; map previously unknown critical mineral deposits; assess whether imported critical minerals were produced by forced labor; and ensure that the National Defense Stockpile has a robust supply of critical minerals if a future shortfall occurs.¹⁵

On 20 March 20, 2025, EO 14241, Immediate Measures to Increase American Mineral Production, directed immediate measures to increase U.S. mineral production. Within 10–30 days, it directed the heads of U.S. agencies involved in minerals permitting to give to Interior Secretary Doug Burgum, the head of the National Energy Dominance Council (NEDC), any permits that can immediately be approved or permits that can be immediately issued. Industry feedback on this matter is to be solicited and the interior secretary will prioritize mineral production and mining related purposes as primary land uses in these areas consistent with applicable law. The Department of Defense (DOD) was authorized to make mineral production a priority industrial capability development area for the Industrial Base Analysis and Sustainment Program.¹⁶

The previously mentioned 2019 Commerce Department assessment produced during the first Trump administration observed that the United States does not have any domestic production and relies exclusively on imports to supply 14 critical minerals. Recommendations from this assessment include:

- **Advance transformational research, development, and deployment across critical mineral supply chains:** Assess progress toward critical minerals recycling and reprocessing technologies, technological alternatives to critical minerals, source diversification, and improving processes for critical mineral extraction, separation, purification, and alloying.
- **Strengthen America’s critical mineral supply chain and defense industrial base:** Discuss ways to improve critical mineral supply chains, which could help reduce risks to U.S. supply by increasing domestic critical mineral resource development, building robust downstream manufacturing capabilities, and ensuring sufficient productive capacity.
- **Enhance international trade and cooperation related to critical minerals:** Identifying options for accessing and developing critical minerals through investment and trade with America’s allies, discussing areas for international collaboration and cooperation, and ensuring robust enforcement of U.S. trade laws and international agreements that help address adverse impacts of market-distorting foreign direct trade conduct.
- **Improve understanding of domestic critical mineral resources:** Provide a plan to improve and publicize the topographical, geological,

geophysical, and bathymetrical mapping of the United States; support mineral collection and analysis of commodity-specific mitigation strategies; and conduct critical mineral resource assessments to support domestic mineral exploration and development of conventional sources.

- **Improve access to domestic critical mineral resources on federal lands and reduce permitting timeframes:** Provide recommendations to streamline permitting and review processes related to developing mining claims or leases and enhancing access to domestic critical mineral resources.
- **Grow the American critical minerals workforce:** Determine activities required to develop and maintain a strong domestic workforce, fostering a robust domestic industrial base.¹⁷

Department of Defense

On 8 June 2021, the DOD defined strategic critical minerals as “those that support military and essential civilian industry; and are not found or produced in the United States in quantities to meet our needs.”¹⁸ The Defense Logistics Agency (DLA) serves as the key agency for analyzing, planning, purchasing, and managing materials critical to national security. DLA works with clients by demonstrating technical expertise, global/geopolitical material supply analysis, and managing and tracking multiple existing and future critical materials. Its mission includes:

- Operating and overseeing the National Defense Stockpile (NPS);
- Acquiring and retaining stockpile materials;
- Converting and upgrading stockpile materials to prevent obsolescence;
- Developing and qualifying domestic strategic mineral sources;
- Recycling strategic materials from end of life government items; and
- Disposing excess stocks for operational funding.¹⁹

DLA stores multiple commodities at various U.S. locations (table 1).

On 1 October 2024, DLA issued its *Annual Material Plan* (AMP) of anticipated potential/sales and disposals and acquisition of new defense stocks (NDS) for fiscal year (FY) 2025 between 1 October 2024 and 30 September 2025 (tables 2 and 3).²¹

Energy Department-Critical Minerals

The 2020 Critical Minerals Act (P.L. 116-260) defines critical material as: Any nonfuel mineral, element, substance, or material that the secretary of energy determines: (i) has a high risk of supply chain disruption; and (ii) serves an essential function in one or more energy technologies, including technologies that produce, transmit, store, and conserve energy. This statute defines critical

Table 1. DLA depot commodities

| | |
|--------------------|---|
| Hammond, IN | Beryllium Metal, Chromium Metal, Low and High Carbon Ferrochromium, Tungsten O&C, Tin |
| Lordstown, OH | None |
| Point Pleasant, WV | Ferromanganese, Low Carbon Ferrochromium |
| Scotia, NY | Low Carbon Ferrochromium, Electrolytic Chromium Metal, Tungsten O&C, Zinc |
| Wenden, AZ | Manganese ore |

Source: “About Strategic Minerals,” Defense Logistics Agency, accessed 12 November 2024; and *Depot Information* (Fort Belvoir, VA: DLA, 2024): 1.

Table 2. Defense Logistics Agency’s annual materials plan for FY 2024

| Material | Unit | Ceiling quantity |
|---------------------------------|-------------------------------|------------------|
| Aluminum high purity | MT (metric ton) | 1,700 |
| Aluminum alloys | MT | 1,500 |
| Antimony | MT | 700 |
| Cadmium zinc telluride | EA (environmental assessment) | 2,800 |
| Electrolytic manganese metal | MT | 5,000 |
| Energetics | LBS (pounds) | 20,000,000 |
| Ferroniobium | LBS nb | 300,000 |
| Grain-oriented electrical steel | MT | 3,200 |
| Hafnium | MT | 2,300 |
| Iso-molded graphite | MT | 1,700 |
| Lanthanum | MT | 1,100 |
| Magnesium | MT | 3,500 |
| Neodymium-praseodymium oxide | MT | 300 |
| NdFeB magnet block | MT | 450 |
| Rayon | MT | 200 |
| Samarium-cobalt alloy | MT | 60 |
| Tantalum | LBS Ta | 64,500 |
| Tire cord steel | MT | 2,370 |
| Titanium | MT | 15,000 |
| Tungsten | LBS W | 4,500,500 |
| Zirconium | MT | 2,300 |

Source: *Annual Materials Plan for FY 2025*, DLA-SM-25-3256, (Fort Belvoir, VA: Defense Logistics Agency, 2024): 1; and *Glossary of Mining Terminology* (Iqaluit, Canada: Indian and Northern Affairs Canada, 2010).

mineral as: Any mineral, element, substance, or material designated as critical by the secretary of the interior, acting through the director of the U.S. Geological Survey.²¹

Department of Energy’s (DOE) Undersecretary of Energy for Science and Innovation includes the following “electric eighteen” as critical materials for energy: aluminum, cobalt, copper, dysprosium, electrical steel, fluorine, gallium,

Table 3. Defense Logistics Agency's annual materials disposal plan for FY 2025

| Material | Unit | Ceiling quantity |
|--------------------------------|---------------------|------------------|
| Beryllium metal | ST (short tons) | 8 |
| Carbon fibers | LBS | 92,000 |
| Chromium, ferro | ST | 24,000 |
| Chromium, metal | ST | 500 |
| Germanium | KG (kilograms) | 5,000 |
| Manganese, ferro | ST | 20,000 |
| Manganese, metallurgical grade | SDT | 322,300 |
| Aerospace alloys | LBS | 1,500,000 |
| Platinum | Tr Oz (troy ounces) | 8,380 |
| Iridium | Tr OX | 489 |
| Quartz crystals | LB | 15,712 |
| Tantalum | LBS | 190 |
| Tin | MT | 640 |
| Titanium-based alloys | LBS | 300,000 |
| Tungsten ores and concentrates | LBS W | 1,100,000 |
| Zinc | ST (stockpile) | 2,500 |

Source: *Annual Materials Plan for FY 2025*, DLA-SM-25-3256, (Fort Belvoir, VA: Defense Logistics Agency, 2024): 1; and *Glossary of Mining Terminology* (Iqaluit, NU: Indian and Northern Affairs Canada, 2010).

iridium, lithium, magnesium, natural graphite, neodymium, nickel, platinum, praseodymium, silicon, silicon carbide, and terbium.²²

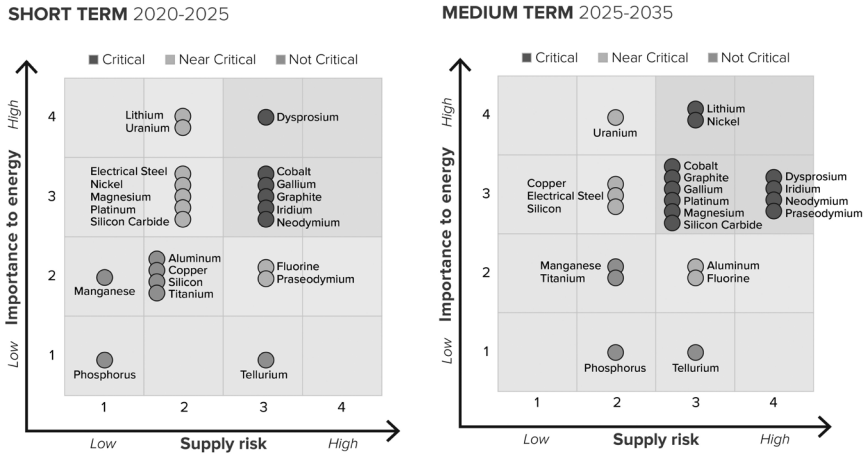
DOE's 2023 *Critical Minerals Assessment* includes the following supply risks for critical materials in the short-term from 2020 to 2025 and medium-term from 2025 to 2035 (figure 3).

This assessment concluded by noting that the dynamism of material criticality requires DOE to regularly revisit this assessment due to the energy transition's rapid pace. It also stressed that future assessments may consider future areas of improvement including considering materials used in the manufacturing process not making up a product's final composition or better data and information on recycling. Developing a sharper understanding of recycling markets is key to future materials stock assessments embedded in energy technologies becoming prevalent sources including materials with geopolitical sensitivities. Improvements in understanding and reflecting possible material and system substitutions is critical along with enhancements allowing for assessing multiple supply chain stages.

Key summative findings from the *Critical Minerals Assessment* include:

- Rare earth materials (neodymium [Nd], praseodymium [Pr], dysprosium [Dy], and terbium [Tb]) used in magnets in electric vehicle (EV) motors and wind turbine generators continue to be critical. While Dy

Figure 3. Short- and medium-term criticality matrices



Source: *Critical Materials Assessment* (Washington, DC: Department of Energy, 2023), 106, 110.

and Tb are both heavy rare earth elements that serve the same function in magnets, the criticality of Tb is slightly lower than that for Dy in the short term due to the widespread use of Dy in high-grade magnets and Tb’s present role as a substitute. Similarly, Pr is critical in the medium term but only near critical in the short term because it is more substitutable in magnets than Nd.

- Materials used in batteries for EVs and stationary storage are now considered critical. While cobalt (Co) was found to be critical in this and previous reports, lithium (Li) becomes critical in the medium term due to its broader use in various battery chemistries and the rampant growth of the EV industry. Natural graphite is a new addition in this assessment and is also found to be critical.
- Platinum group metals used in hydrogen electrolyzers, such as platinum (Pr) and iridium (Ir), are critical due to an increased focus on hydrogen technologies to achieve net-zero carbon emissions, whereas those used in catalytic converters, such as rhodium (Rh) and palladium (Pd), were screened out due to the decreased importance of catalytic converters in the medium term.
- Gallium (Ga) continues to be critical due to its use in light-emitting diodes (LEDs). In addition, the use of Ga has increased in magnet manufacturing and in semiconductors in forms such as gallium arsenide (GaAs) or gallium nitride (GaN).
- Major materials like aluminum (Al), copper (Cu), nickel (Ni), and silicon (Si) move from noncritical in the short term to near critical in the medium term due to their importance in electrification.

Table 4. List of critical minerals, 2022

| | | | |
|--------------|-----------|------------|-----------|
| Aluminum | Antimony | Arsenic | Barite |
| Beryllium | Bismuth | Cerium | Cesium |
| Chromium | Cobalt | Dysprosium | Erbium |
| Europium | Flourspar | Gadolinium | Gallium |
| Germanium | Graphite | Hafnium | Holmium |
| Indium | Iridium | Lanthanum | Lithium |
| Lutetium | Magnesium | Manganese | Neodymium |
| Nickel | Niobium | Palladium | Platinum |
| Praseodymium | Rhodium | Rubidium | Ruthenium |
| Samarium | Scandium | Tantalum | Tellurium |
| Terbium | Thulium | Tin | Titanium |
| Tungsten | Vanadium | Ytterbium | Yttrium |
| Zinc | Zirconium | | |

Source: "2022 Final List of Critical Minerals," *Federal Register* 87, no. 37 (February 2022): 10381.

- Electrical steel is near critical due to its use in transformers for the grid and electric motors in EVs.²³

Department of the Interior: U.S. Geological Survey Minerals Management

On 24 February 2022, the USGS published a list of critical minerals in the *Federal Register* (table 4). The Administrative Procedure Act, 5 U.S.C., § 551–559, allows interested individuals and organizations to comment on proposed federal agency rules.²⁴ USGS noted that it received 1,073 comments on the critical minerals list during the extended public comment period on this subject. Two comments were made anonymously, 996 came from individuals, 77 were submitted by organizations, and four letters were received after the end of the comment period.

Comments included 91 requests to include materials such as copper, phosphate, silver, and lead, which were not on the 2018 critical minerals list, and helium, potash, and uranium, which were on the 2018 final list but not on the 2022 draft list. None of the comments identified inaccuracies in data used to conduct quantitative evaluation with published USGS methodology.²⁵

USGS's National Minerals Information Center serves as a one-stop gateway for statistics and information on global supplies, demand, and mineral and materials flow emphasizing U.S. economic essentials, national security, and environmental protection.²⁶ Their *2024 Critical Minerals Summary* report notes that the United States consumed approximately four percent of world chromite ore production in varying forms of imported material including chromite ore, chromium chemicals, ferrochromium, chromium metal, and stainless steel.

Table 5. USGS chromium minerals commodity summary

| | | | | |
|----------------------------------|------------------|----------------|-------------------|-----------------------|
| Chromite (ores and concentrates) | South Africa 97% | Turkey 2% | Other 1% | |
| Chromium (containing scrap) | Canada 52% | Mexico 43% | United Kingdom 1% | Other 4% |
| Chromium (primarily metal) | South Africa 28% | Kazakhstan 15% | Russia 8% | Finland 5%; other 44% |
| Chromium-containing chemicals | Kazakhstan 22% | Germany 20% | China 19% | Italy 14%; other 25% |
| Total imports | South Africa 34% | Kazakhstan 12% | Russia 6% | Canada 5%; others 43% |

Source: Linda R. Rowan, *Critical Mineral Resources: The U.S. Geological Survey (USGS) Role in Research and Analysis* (Washington, DC: Congressional Research Service, 2024); and *Mineral Commodities Summary 2024* (Reston, VA: USGS, 2024): 58.

Table 6. Tariffs issues on varieties of chromium

| | |
|--------------------------------|--|
| Chromium ores and concentrates | Free |
| Ferrochromium | 1.9% ad valorem (at value) to 3.1% ad valorem depending on percentage of carbon. |
| Ferrosilicon Chromium | 10% ad valorem |
| Chromium Metal | Free-3% |

Source: *Mineral Commodities Summary 2024* (Reston, VA: USGS, 2024), 58; and *Harmonized Tariff Schedule of the United States*, rev. 9, (Washington, DC: International Trade Commission, 2024).

U.S. chromium material consumption (measured by net imports) fell from \$1.5 billion in 2022 to \$830 million, representing a 44 percent decline. Import sources for U.S. chromium consumption between 2019–2022 are available in table 5.

Tariffs issued by the president and Congress and documented by the U.S. International Trade Commission for importing various varieties of chromium from countries the United States has normal trade relationships with as of 31 December 2023 are available in table 6.

This document’s section on titanium mineral concentrates notes the domestic and international production of ilmenite, an iron-black metal containing an oxide of iron and titanium and rutile (a reddish-brown to black mineral that consists of titanium dioxide usually with a little iron and has a brilliant metallic or adamantine luster) with countries such as Australia, Canada, and China ranking higher than the U.S. in production and reserves (table 7).

Congressional Activity

Congress and its multiple oversight entities seek to shape U.S. government policy in multiple areas such as legislation, funding, and oversight of the per-

Table 7. Titanium mineral concentrates

| | Mine production | | Reserves ⁸ |
|--|-----------------|-------------------|-----------------------|
| | 2021 | 2022 ^e | |
| Ilmenite: | | | |
| United States ^{2,9} | 100 | 200 | 2,000 |
| Australia | 600 | 660 | 160,000 ¹⁰ |
| Brazil | 33 | 32 | 43,000 |
| Canada ¹¹ | 430 | 470 | 31,000 |
| China | 3,400 | 3,400 | 190,000 |
| India | 204 | 200 | 85,000 |
| Kenya | 181 | 180 | 390 |
| Madagascar ¹¹ | 414 | 300 | 22,000 |
| Mozambique | 1,100 | 1,200 | 26,000 |
| Norway | 468 | 430 | 37,000 |
| Senegal | 482 | 520 | NA |
| South Africa ¹¹ | 900 | 900 | 30,000 |
| Ukraine | 316 | 200 | 5,900 |
| Vietnam | 122 | 160 | 1,600 |
| Other countries | 137 | 77 | 14,000 |
| World total (ilmenite, rounded) ⁹ | 8,900 | 8,900 | 650,000 |
| Rutile: | | | |
| United States | (9) | (9) | (9) |
| Australia | 190 | 190 | 31,000 ¹⁰ |
| India | 12 | 11 | 7,400 |
| Kenya | 72 | 73 | 170 |
| Madagascar | — | — | 520 |
| Mozambique | 8 | 8 | 890 |
| Senegal | 9 | 9 | NA |
| Sierra Leone | 123 | 130 | 490 |
| South Africa | 95 | 95 | 6,500 |
| Tanzania | — | — | 20 |
| Ukraine | 95 | 57 | 2,500 |
| Other countries | 14 | 14 | NA |
| World total (rutile, rounded) ⁹ | 618 | 590 | 49,000 |
| World total (ilmenite and rutile, rounded) | 9,500 | 9,500 | 700,000 |

⁸ World resources: Ilmenite accounts for about 90 percent of the world's consumption of titanium minerals. World resources of anatase, ilmenite, and rutile total more than 2 billion tons.

Substitutes: Ilmenite, leucosene, rutile, slag, and synthetic rutile compete as feedstock sources for producing TiO₂ pigment, titanium metal, and welding-rod coatings.

^e Estimated; NA=not available; — = zero.

¹ See also the titanium and titanium dioxide chapter.

² Rounded to the nearest 100,000 tons to avoid disclosing company proprietary data.

³ Defined as production + imports – exports.

⁴ Fast Markets IM; average of yearend price.

⁵ Zen Innovations AG, Global Trade Tracker.

⁶ Landed duty-paid unit value based on U.S. imports for consumption. Source: U.S. Census Bureau.

⁷ Defined as imports–exports.

⁸ See appendix C for resource and reserve definitions and information concerning data sources.

⁹ U.S. rutile production and reserves data are included with ilmenite.

¹⁰ For Australia, Joint Ore Reserves Committee-compliant or equivalent reserves for ilmenite and rutile were estimated to be 37 million and 9.2 million tons, respectively.

¹¹ Mine production of titaniferous magnetite is primarily used to produce titaniferous slag.

Source: *Mineral Commodity Summaries* (Washington, DC: USGS, 2023), 187.

formance of U.S. critical and strategic materials including mandating federal agency compilation of reports and data.²⁷

During the 118th Congress from 3 January to 13 November 2024, 101 proposed bills or resolutions on “critical minerals” were introduced in both the House of Representatives and Senate, referred to various committees, and various degrees of action were taken or not taken on them.²⁸ As of 14 November 2024, 53 were introduced in the House with the rest being introduced in the Senate, with 58 bills being introduced in 2023 and 43 in 2024. These examples of proposed legislation were referred to 24 committees in both chambers with the House Committee on Natural Resources and the Senate Energy and Natural Resources Committee receiving 20 and 12 bills, respectively, on this subject. One hundred members of Congress introduced legislation or resolutions on this subject during this congressional session with the bicameral division for this session to the aforementioned date being 43 senators and 57 representatives.²⁹

Examples of bills from each chamber include Securing American Critical Minerals Act of 2023, H.R. 118–22 and the Intergovernmental Critical Minerals Task Force Act, S. 1871, H. R. 5021, was introduced by Representative Betty McCollum (D-MN) on 27 July 2023 and referred to the House Committee on Natural Resources. It aspired to prohibit selling or transferring certain critical materials to foreign entities of concern by individuals conducting certain mineral activities on federal land. It directed the secretary of the interior to cooperate with the secretary of commerce and other federal agencies to determine penalties for violations of this proposed statute and to make a public report by 30 June of each year identifying individuals selling or transferring covered minerals, which are critical minerals defined in the Energy Act, sections 7002 of the 2020, and legally codified as Mineral Security, 30 U.S.C., S. 1606. This legislation has received no subsequent consideration.³⁰

The Intergovernmental Critical Minerals Task Force Act was introduced by Senators Gary Peters (D-MI), James Lankford (R-OK), and Mitt Romney (R-UT) and referred to the Senate Homeland Security and Governmental Affairs Committee. It sought to create intergovernmental coordination between state, local, tribal and territorial jurisdictions, and enabled the federal government to combat U.S. reliance on China and covered countries for critical minerals and rare earth minerals. Covered countries are defined as U.S. geostrategic competitors or adversaries concerning strategic minerals. If enacted, this legislation required the director of each entity to establish a task force within 90 days to facilitate cooperation, coordination, and mutual accountability among these jurisdictions to create a holistic response to this dependence. Such a response would include assessing the amount of critical minerals mined, processed, recycled, and refined by China, other covered countries, and the United States,

determine alternative minerals in the United States that can be used to substitute for these materials emanating from covered countries; mitigate supply chain risks for critical materials from China and other covered countries; provide research and development recommendations into emerging technologies for expanding existing U.S. critical mineral supply chains in the United States; strengthen the domestic work force to support increasing growing U.S. critical mineral supply chains, and improve partnerships between the U.S. and allied countries in these arenas. The bill mandated that the task force director publish a report describing findings, guidelines, and recommendations within two years of the enactment of this legislation.³¹

On 5 September 2023, the Senate Homeland Security and Governmental Affairs Committee issued a report approving this legislation. This legislation passed the Senate on 18 September 2024 and was referred to the House on 19 September 2024 with no subsequent action occurring in that chamber.³²

Congressional Committees

Congressional committees are responsible for approving new legislation, revising existing legislation, funding government programs, and conducting oversight of government program performance.³³ Recent congressional sessions have seen significant exploration of critical minerals policymaking scrutiny in both the House and Senate. A 31 March 2022 Senate Energy and Natural Resources Committee hearing addressed opportunities and challenges confronting U.S. critical mineral mining, processing, refining, and reprocessing. Committee chair Senator Joe Manchin (D-WV) opened with the following observation about U.S. reliance on foreign suppliers for critical minerals.

In the immediate term, our concern is . . . Russia . . . I am also extremely concerned with China as the gatekeeper of the critical minerals that we need for everyday life that we really have taken for granted. In addition to the minerals crucial to energy and defense applications, it makes no sense to remain beholden to actors when we have abundant resources and manufacturing knowledge here in the United States. . . . We are beholden, particularly when it comes to many of the minerals that go into clean energy technologies. That is why I sounded the alarm about going down the path of EV's alone and advocated for equal treatment for hydrogen. China mines 60% of global rare earth elements crucial to high-tech applications and magnets needed for electric motors. Even more shocking, China processes almost 90% of the rare earths, regardless of where they are mined in the world. The only large scale producers of cobalt are in the Democratic Republic of the Congo, where Chinese interests control many of the mines . . . 65% of the processing is done in China. Lithium is mined extensively

Figure 4. Minerals used in cars

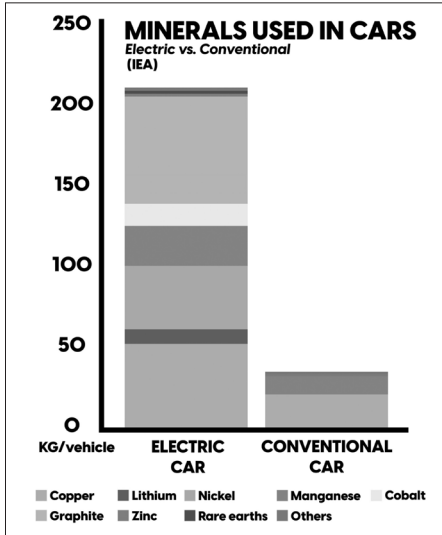
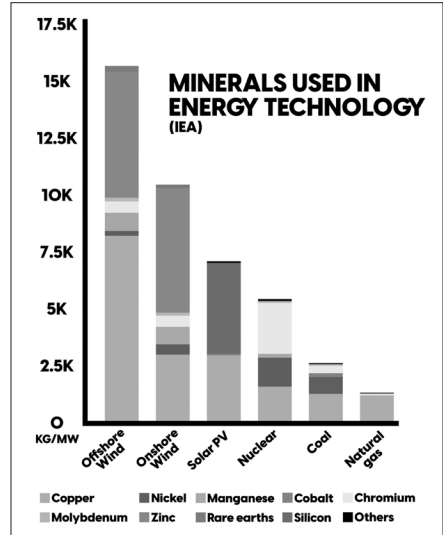


Figure 5. Minerals used in energy technology



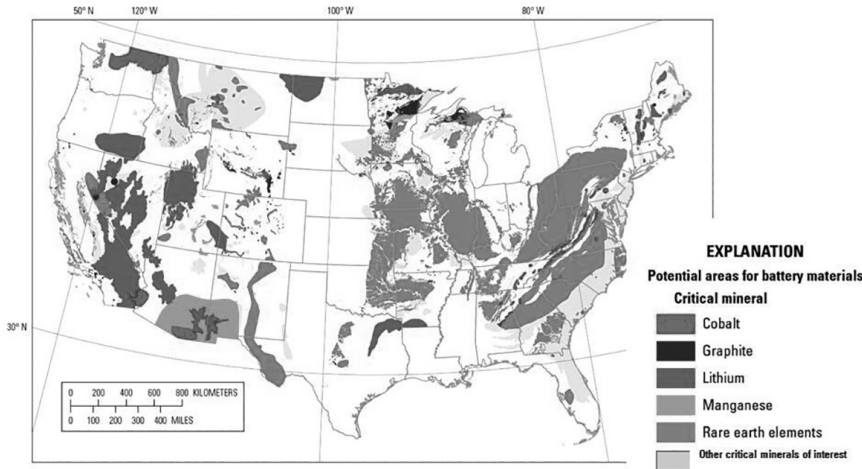
Source: U.S. Congress, Senate Committee on Energy and Natural Resources, *Opportunities and Challenges Facing Domestic Critical Mineral Mining, Processing, Refining, and Reprocessing* (Washington, DC: GPO, 2024), 5.

Source: U.S. Congress, Senate Committee on Energy and Natural Resources, *Opportunities and Challenges Facing Domestic Critical Mineral Mining, Processing, Refining, and Reprocessing* (Washington, DC: GPO, 2024), 5.

by Australia, an ally that produces over 50% of global supply. However, China processes over 58% of global lithium, and uses that material to feed their lithium battery manufacturing.³⁴

Committee ranking member Senator John Barasso (R-WY) expressed concern about Biden administration desires to achieve zero emission vehicles within eight years by including two charts from the International Energy Agency (IEA) into the hearing transcript comparing the minerals used in electric and conventional cars and in energy technology. These charts document that electric vehicles require much more minerals than internal combustion engines and wind turbines and solar panels require more minerals than coal-fired, natural gas, and nuclear plants (figures 4 and 5).

A 13 September 2023 House Natural Resources Committee hearing examined the methodological structure of USGS’s critical minerals list. Representative Pete Stauber (R-MN) noted that demand for hard rock minerals including cobalt, lithium, nickel, silver, and zinc is expected to increase rapidly in the near future and that his congressional district in northeastern Minnesota has significant quantities of these minerals, which are critical for most high-tech devices including cell phones, defense systems, and satellites. He expressed concern that, while the Biden administration rhetorically advocated for increased renewable energy and electric vehicle mandates, it chose to eliminate access to

Figure 6. Areas with potential for battery materials

Source: C. L. Dicken and J. M. Hammarstrom, "GIS for Focus Areas of Potential Domestic Resources of 11 Critical Minerals," data release, U.S. Geological Survey, 2020, <https://doi.org/10.5066/P95C08LR>.

lands with high mineral potential including 225,504 acres withdrawn from development in January 2023 encompassing the world's largest copper nickel resource at Minnesota's Duluth complex along with creating a new national monument adjacent to Arizona's Grand Canyon blocking access to the United States' richest uranium deposits.³⁵

Nedal T. Nassar, USGS's chief of minerals intelligence research, noted that the Energy Act of 2020 requires USGS to coordinate with other federal agencies in developing a whole-of-government list of critical minerals and identify commodities with elevated supply risk. He noted that the 2022 critical minerals list identified gallium as representing the United States' greatest supply risk due to recent Chinese export controls imposed on gallium and germanium products. Gallium is important to semiconductors used in telecommunications such as 5G networks, consumer electronics, solar photovoltaics, electric vehicles, and defense applications with China producing 98 percent of this commodity's global supply.³⁶

The following map notes areas with potential conterminous U.S. subsurface mineral resources required for high-capacity batteries including cobalt, graphite, lithium, manganese, and rare earth elements (figure 6).

Reed Blakemore of the Atlantic Council's Global Energy Center notes that critical materials or minerals can vary from industry to industry with significant metal commodities being important to national economic health and small quantities of niche supply-constrained materials being equally important to pharmaceutical and semiconductor industries. Where defense is concerned,

Blakemore notes critical materials include antimony, ferromanganese, gallium, lithium, and nickel. Every *Virginia*-class (SSN 774) submarine requires 9,200 pounds of rare earth elements (REE), while Lockheed Martin F-35 Lightning II aircraft require 920 pounds of REE. Cobalt is an important part of critical magnets used in energy technologies and military technologies including aircraft, guided missiles, and smart bombs.³⁷

A 30 November 2023 House Oversight Committee hearing focused on providing safety and security in the critical mineral supply chain. The subcommittee chair Representative Pat Fallon (R-TX) commented that the United States produces only 14 of the 50 critical materials USGS, DOD, and DOE consider critical for domestic economic and security requirements. He added that China dominates global supply chains, controlling 60 percent of production, 90 percent of processing, and 75 percent of critical minerals manufacturing. Fallon also noted that China uses aggressive international investment practices to access what it cannot produce domestically as demonstrated by Chinese companies owning or financing 15 of 19 cobalt mines in the Democratic Republic of Congo, which use child labor.³⁸

Steve Feldgus, the deputy assistant secretary for land and minerals management in the Interior Department, noted that the 1872 Mining Law has shaped domestic mineral production on federal lands by allowing for developing nearly all mineral resources. In 1920, Congress enacted the Mineral Leasing Act removing petroleum, natural gas, and other hydrocarbons from the Mining Law and creating a lease-based system for such minerals. The 1947 Materials Act removed common materials including sand and gravel from the Mining Law, making them subject to sale of permit. Currently, nearly all hard rock minerals on federal land, including precious minerals such as gold and silver, fall under the Mining Law, which also applies to critical minerals including cobalt, graphite, and lithium needed to support the contemporary economy and promote a transition to renewable energy.³⁹

Isabella Munilla, the deputy assistant secretary for multilateral engagement, climate and market development in DOE's Office of International Affairs, contended that U.S. demand for critical minerals and materials would increase four to six times during the next three decades with no single country being able to satisfy global demand. She also warned that U.S. reliance on nonallied foreign sources for these materials is unsustainable and insecure.⁴⁰

Halimah Najieb-Locke, DOD's deputy assistant secretary of defense for industrial base resilience maintained:

We know from history that industrialized nations that do not have secure and reliable access to critical materials during conflicts have suffered performance tradeoffs that contributed to their defeat on the battlefield. . . . The Department seeks stable access to arrange these

materials for everything from large capacity batteries and microelectronics to conventional munitions and missiles, and new chemistries for next generation weapons and aircraft. We rely on these materials ask key components to power computation for DoD weapons systems.⁴¹

She went on to stress the importance of the National Defense Stockpile (NDS) as the United States' stockpile for strategic and critical materials with NDS serving as a buffer during emergencies. These reserves allow the United States to release materials to keep critical production lines operating until long-term supply chains are restored. Her remarks concluded by reiterating the importance of relying on international partners to bolster domestic capacity, citing the need to strengthen military partnerships such as the Australia, United Kingdom, United States (AUKUS) nuclear submarine agreement as key factors in enhancing critical material readiness.⁴²

Representative Byron Donalds (R-FL) noted existing regulatory burdens from agencies such as the Environmental Protection Agency (EPA) and Bureau of Land Management (BLM) prohibit permitting flexibility in extracting domestic critical mineral resources. Feldgus and Munilla responded by noting that streamlining permitting processes is essential to achieving domestic critical minerals production capacity.⁴³

Government Accountability Office (GAO)

A July 2024 report by this congressional support agency conducted a technology assessment of critical minerals including the potential for recovering them from nontraditional sources. Such sources include mining waste, water from existing mines, waste from coal-fired plants, and saline groundwater (brine) from geothermal power plants. Recovering minerals from coal and mining waste requires operators to repurpose mature technologies already used in the mining industry. Most of these projects are at pilot scale with direct extraction from geothermal brines closer to commercial-scale operation with one plant expected to become operational in 2025.⁴⁴

Factors involved in identifying where difficulties may arise in recovering critical minerals from nontraditional sources include:

- **Liability:** Recovery operations on previously mined sites could result in operators being responsible for historical liabilities. There is little appetite in industry to take on this financial risk, according to experts.
- **Economics:** Due to factors such as high fixed costs and unstable prices, potential recovery project operators may be uncertain that their investments will be financially viable.
- **Public engagement and tribal consultation.** Stakeholders and experts

identified engagement with local communities, and when appropriate, government-to-government consultation with tribal nations as important steps to a successful critical mineral recovery project.⁴⁵

GAO recommended policy options potentially capable of addressing or enhancing critical mineral recovery from nontraditional sources of minerals (table 8).

Conclusion

Strategic minerals will remain important features of consumer convenience and communication, business enterprise, and military activity. Factors influencing national mineral power include domestic production, government stockpiles, overseas production, mineral import and resources, national influences on mineral demand, international exchanges, market transparency, mineral companies, and other factors.⁴⁶

This will require a highly educated and paid workforce to help the United States enhance its ability to produce and refine these resources. The Bureau of Labor Statistics *Occupational Outlook Handbook* maintains that the job outlook for materials engineers will increase 7 percent between 2023 and 2033 and that their 2023 median pay is \$104,000. This same source claims that mining and geological engineers job outlooks will grow 2 percent between 2023 and 2033 with their 2023 median pay being \$100,640, while geoscientists job outlooks will grow 5 percent between 2023 and 2033 with their 2023 median pay being \$92,580.⁴⁷

The second Trump administration may incorporate its 2019 Commerce Department report findings on expanded access to critical material including: identifying options for accessing and developing critical minerals through investment and trade with America's allies, discussing areas for international collaboration and cooperation, and ensuring robust enforcement of U.S. trade laws and international agreements that address adverse impacts of market-distorting foreign direct trade conduct.⁴⁸

The United States must expand financial support for domestic exploration, mining, and processing with DOD already providing financial support for cobalt and nickel exploration; antimony, graphite, and lithium mining; and aluminum, graphite, and titanium refining. Imposing tariffs on foreign minerals could assist domestic producers, and the United States should drastically bolster its stockpiles of critical minerals and enhance the number of geographic locations. It should also do business solely with overseas mineral production entities in countries geopolitically aligned with the United States and, given U.S. dependence on China for minerals such as gallium and magnesium, it should diplomatically notify Beijing that export controls it places on these exports to

Table 8. Policy options to address challenges or enhance benefits of recovering critical minerals from nontraditional sources

| Policy option | Opportunities | Considerations |
|---|--|---|
| <p>Pilot Good Samaritan Legislation <i>Implementation approaches:</i> Legislators could provide some liability protections from third parties recovering critical minerals at previously mined sites and require that a portion of profits generated be used for restoration activities.</p> | <ul style="list-style-type: none"> • Could encourage investment in domestic recovery operations. • Could expand types of organizations interested in cleaning up previously mined sites. | <ul style="list-style-type: none"> • Disturbing previously mined sites may result in new environmental effects. • If financial assumptions are not adequately set, federal or state taxpayers may become liable for cleaning up environmental liabilities. • Requiring a percentage of profits to be used for restoration activities could affect industry interest in previously mined sites. |
| <p>Subsidies <i>Implementation approaches:</i> The federal government could subsidize developing specific nontraditional sources to meet energy and defense needs via tax credits.</p> | <ul style="list-style-type: none"> • Properly tailored subsidies could boost technology development, demonstration, commercialization, and domestic critical mineral production. • Subsidies could offset some fixed costs with developing recovery and processing infrastructure. | <ul style="list-style-type: none"> • Taxpayer-funded subsidies do not guarantee supported recovery operations become profitable. • Subsidies can be difficult to end. • May result in resource reallocation from other priorities. |
| <p>Community benefit agreements <i>Implementation approaches:</i> Improve engagement with communities near nontraditional sources, permitting agencies could encourage operators to pursue agreements outlining how communities may benefit from projects incurring costs in their communities. Companies could adopt policies encouraging or facilitating these agreements.</p> | <ul style="list-style-type: none"> • Negotiating specific community benefits from new recovery projects could create deeper acceptance of facilities possibly having environmental effects. • New recovery operations could offer additional employment opportunities in economically distressed communities. | <ul style="list-style-type: none"> • Negotiating which stakeholders benefit, which do not, and who controls the agreement can be challenging. • Predicting who will engage in such agreements is difficult. • Creating these agreements may be time-consuming. • Some provisions in agreements may be difficult to enforce. |
| <p>Status Quo <i>Implementation approach:</i> Sustain current efforts.</p> | <ul style="list-style-type: none"> • Federal policymakers could observe and evaluate existing efforts, such as agency funding of nontraditional sources, possibly limiting risk and resources expended. • Continued private sector efforts, like recovering lithium from geothermal brines, could eventually produce profitable mineral recovery. • Private sector may pursue other options for overcoming critical mineral supply chain problems including buyers pursuing substitutes, reducing the need for new resources. | <ul style="list-style-type: none"> • Current efforts may not address challenges described in this report. • Current efforts could delay or inhibit developing nontraditional sources for critical minerals potentially resulting in in forgone benefits including increased independence from foreign suppliers. |

Source: *Critical Minerals: Status, Challenges, and Policy Options for Recovery from Nontraditional Sources* (Washington, DC: GAO, 2024).

the United States will result in retaliatory U.S. export controls on technology to China.⁴⁹

There are ongoing congressional efforts to enhance U.S. critical minerals policymaking. The Critical Mineral Consistency Act was passed by the House on 14 November 2024. This legislation modifies the 2020 Energy Act to expand the definition of critical materials to include materials designated critical by DOE. It would require USGS to post materials on DOE's list, including copper, electrical steel, silicon, and silicon carbide on the critical minerals list; standardize criteria for identifying critical minerals and include provisions to reduce reliance on foreign imports by encouraging domestic mining, refining, and recycling efforts; and ensure critical mineral projects, including copper mine projects are eligible for expedited FAST-41 permitting improving federal interagency coordinating by establishing a two-year environmental review goal permitting covered federal infrastructure projects to proceed.⁵⁰

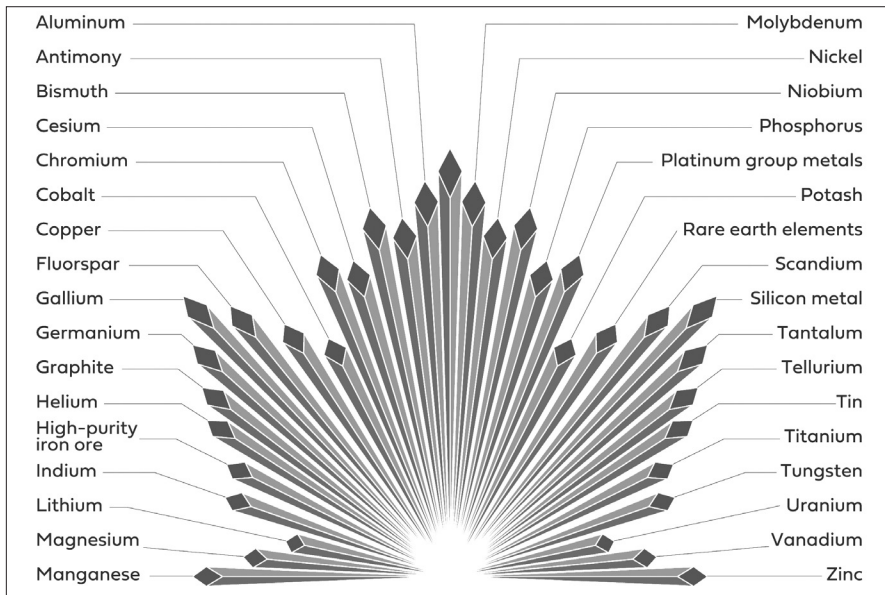
Critical minerals are a subject of such importance that the president and other cabinet departments should make active and ongoing efforts to reach out and cultivate contacts with traditional broadcast and social media sources. The president and senior officials in these departments should provide succinct and informative information on this subject with widely viewed programs such as television network evening newscasts and social media podcast influencers to publicize and spread awareness of this subject. President Trump should also emulate the example of former Canadian prime minister Justin Trudeau and prepare mandate letters to cabinet ministers with critical minerals responsibilities such as the Departments of Commerce, Energy, Defense, and Interior. Such letters should give these ministers explicit directions on achieving critical mineral objectives within specified time periods as occurred in Trudeau's letter to Minister of Natural Resources Jonathan Wilkinson directing him to launch a Canadian critical minerals strategy, improve supply chain resilience, and position Canada as the leading mining nation.⁵¹

Canada, Greenland, and Ukraine are likely to play some role in future delivery of critical minerals to the United States. The 34 metals and minerals in figure 7 were listed on Ottawa's critical minerals list on 10 June 2024.

While Canada does not currently produce rare earth elements, it is believed to have 15.2 million tons of rare earth oxide reserves scattered across Canada with particularly strong reserves in Ontario and Quebec and may choose to begin such production (figure 8).

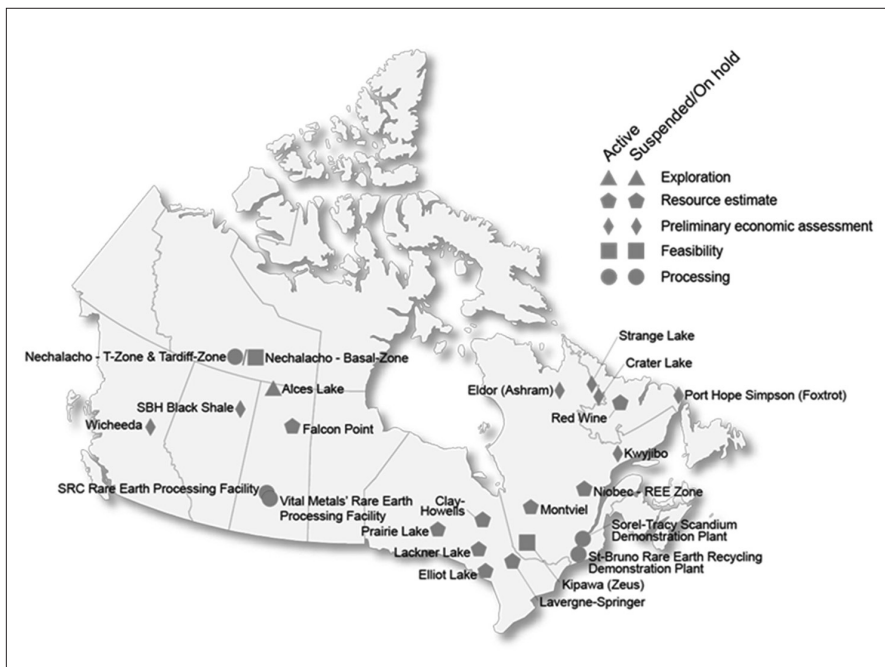
The Trump administration has an acute interest in acquiring Greenland for geopolitical reasons, including its potential strategic mineral resources. These include copper, gold, graphite, ilmenite, iron ore, lead, molybdenum, nickel, precious stones, rare-earth elements, silver, titanium, uranium, and zinc. Greenland's Ministry of Natural Resources has a strategic plan for 2020–24, which

Figure 7. Canadian natural resources



Source: "Canada's Critical Minerals," Government of Canada, accessed 23 April 2025.

Figure 8. Canadian rare earth deposits



Source: "The Outlook for Development of Canada's Rare Earth," Innovation News Network, 5 April 2024.

includes the sustainable development of these resources and developing a competitive tax and royalty model. Its proximity to potential trade routes has also attracted interest from China and Russia and key locations of Greenland's critical minerals include southern Gardar Province and other locales.⁵²

Ukrainian strategic minerals are also of interest to the Trump administration as demonstrated by efforts to negotiate delivery of these commodities to the United States as conditions for further U.S. assistance to Ukraine in its three-year war against Russia. USGS reports the total value of Ukrainian mineral deposits located in Russian-occupied areas as \$12.4 trillion with 33 percent of these deposits being rare earths and other critical minerals including lithium. During 2022, Ukrainian mineral trade decreased 64.8 percent, falling to \$44.1 billion. Nevertheless, USGS assesses that Kyiv is likely to remain a leading global producer of manganese, titanium ore, and titanium sponge though its ability to remain metallurgically competitive could prove difficult due to high energy costs, requiring new investments in this sector, differing priorities of plant owners and the government, and the ongoing military situation.⁵³

On 2 April 2025, Trump announced an executive order instituting a broad range of tariffs against many countries on multiple products. Expressing concern about what his administration saw as a lack of reciprocity in bilateral trade relationships, disparate tariff rates and nontariff barriers, concerns over acute U.S. defense supply dependence on adversarial countries, depleted U.S. defense stocks, and continuing annual U.S. trade deficits were listed as reasons for issuing these tariffs. Concern about critical mineral access was also included when announcing these tariffs. The long-term impact of these tariffs and potential retaliatory action against them by other countries and how this might affect critical materials access, pricing, and supplies remains uncertain.

Critical minerals will continue influencing the civilian and military economic activity and national security strategies of the United States and other nations for years to come. The United States and other international countries, particularly those allied with the United States, will need to work diligently to coordinate their strategies in this policymaking arena, avoid supply chain dependence on hostile providers, ensure that domestic production and processing occurs with minimal adverse environmental impact, includes consultation and profit sharing with all stakeholders in affected areas, and continually and transparently publicizing national dependence on these resources to taxpayers and concerned citizens.

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Reauthorizing the Defense Production Act in the Era of Defense Mobilization and Supply-Side Industrial Policy

Michael Hikari Cecire

Abstract: The 1950 Defense Production Act (DPA) is one of the most significant tools the U.S. government uses to mobilize the civilian economy for national defense. As the United States approaches the DPA's statutory termination and likely reauthorization in 2025, this article surveys its recent employment during the COVID-19 pandemic and potential for policy iteration, assessing its evolution from postwar and early Cold War origins to a broader industrial policy tool. By analyzing DPA usage, legislative actions, and public interest trends, this study aims to extract key lessons from its recent implementation. The article argues that while the DPA has become increasingly central to the government's industrial policy initiatives, its application has been broadly inconsistent, unevenly coordinated, and insufficiently integrated into broader strategic frameworks. Reauthorization of the DPA could include creating a more permanent and coordinated executive branch infrastructure, clarifying its use as an emergency versus routine policy tool, and identifying gaps in future deployment. **Keywords:** Defense Production Act, DPA, reauthorization, industrial policy, defense mobilization, national defense, COVID-19 response

The Defense Production Act (DPA) of 1950 remains one of the most pivotal legislative frameworks for mobilizing the U.S. economy in service of national defense. Originally conceived during the Cold War, the DPA

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has evolved significantly, transitioning from the national mobilization context of the preceding War Powers Acts (1941 and 1973) designed to bolster the defense industrial base to a steady state mechanism increasingly integrated into broader industrial and economic policy.

The evolving role of the DPA highlights critical vulnerabilities in the U.S. approach to securing and leveraging strategic resources—issues that are central to the bases of U.S. power and countering the economic and geopolitical strategies of near-peer competitors such as Russia and China. For example, Russia's weaponization of hydrocarbons amid the Ukraine conflict and China's dominance over rare earth elements and lithium highlight the necessity for robust, preemptive policies that integrate resource security into national defense frameworks. This article explores the current relevance of the DPA, particularly in the context of its statutory termination and likely reauthorization in 2025, and examines its recent use in addressing critical national challenges, most notably during the COVID-19 pandemic.

As the United States approaches the upcoming reauthorization, this article seeks to reflect on the lessons learned from the DPA's recent application and to consider potential reforms that could enhance its utility in both emergency and peacetime scenarios. This article proposes a syncretic analysis of the DPA, drawing on historical context and recent policy developments, validated by descriptive data elements. Through this approach, it aims to illuminate strategies regarding how the DPA can be reauthorized and optimized to meet the demands of contemporary defense mobilization and an increasingly bipartisan industrial policy consensus.

Background on the Defense Production Act

The Defense Production Act was enacted in 1950, a period marked by Cold War tensions and a need for rapid mobilization of the U.S. economy to address the national security concerns posed by the threat of Soviet aggression. The DPA provided the president with a broad suite of powers aimed at harnessing civilian industrial capabilities for defense purposes. Modeled after the War Powers Acts of World War II, the DPA initially granted the government extraordinary powers, including the ability to fix prices and seize private property—measures designed to prevent disruptions in the supply of critical goods and services during wartime.

However, the DPA has undergone significant changes over the decades. Early provisions related to price controls and property seizures were phased out, with the U.S. Supreme Court striking down the latter in 1952. The act was instead refined into a more targeted set of tools designed to facilitate the efficient allocation of resources in times of national crisis. Today, the DPA consists of

three primary sections—Titles I, III, and VII—each addressing a distinct aspect of defense production and industrial mobilization.¹

Title I: Priorities and Allocations

Title I grants the president the authority to prioritize the production of specific goods and services deemed essential to national defense. This provision allows the president to direct private industry to fulfill government contracts ahead of others, ensuring that critical materials and services are available during times of need. The Department of Defense (DOD) makes extensive use of this authority, reportedly issuing approximately 300,000 priority-rated orders annually as part of its routine procurement process.² Although less frequently employed, the allocation power within Title I was notably used during the COVID-19 pandemic to redirect supplies such as personal protective equipment (PPE) and medical devices to areas of critical need. However, this use of allocation power also led to some controversy, as reports surfaced of federal interventions in private and state supply chains, raising questions about the limits and transparency of the DPA's application in nondefense contexts.

Title III: Expansion of Productive Capacity and Supply

Title III enables the president to invest directly in industries that are deemed essential to national defense, with the goal of expanding their productive capacity. This title authorizes a range of financial interventions, including direct financial assistance, loans, loan guarantees, and purchase commitments. Prior to the COVID-19 pandemic, the DOD was the sole active user of Title III authority, primarily focusing on the defense industrial base. However, the pandemic prompted the Department of Health and Human Services (HHS) to establish its own DPA Title III program to support the production of critical public health supplies.³ In essence, if Title I is about opening the flow of goods and services, Title III is about ensuring that the infrastructure is in place to meet future demand surges.

Title VII: General Provisions

Title VII encompasses a range of supporting measures that enhance the efficacy of Titles I and III. These provisions include industrial base assessments, authority for the establishment of voluntary agreements between the federal government and private industry (which might otherwise raise antitrust concerns), small business preferences, and the establishment of an executive reserve to rapidly mobilize expertise in times of crisis. Notably, Title VII also includes the statutory authorization for the Committee on Foreign Investment in the United States (CFIUS), an interagency body responsible for reviewing and approving foreign investments in U.S. companies that could pose a threat to na-

Table 1. Defense Production Act provisions at a glance

| Title | Description | Key uses | Notable applications | Challenges |
|--|--|--|---|---|
| Title I: Priorities and Allocations | Grants the president authority to prioritize the production and allocation of goods and services essential to national defense | <ul style="list-style-type: none"> • Directs private industry to fulfill government contracts • Issuance of priority-rated orders | <ul style="list-style-type: none"> • Approximately 300,000 orders annually by DOD • Used during COVID-19 for PPE and medical devices | <ul style="list-style-type: none"> • Controversies regarding federal intervention in private and state supply chains • Questions about limits and transparency in nondefense contexts |
| Title III: Expansion of Productive Capacity and Supply | Authorizes investment in industries critical to national defense to expand their productive capacity through financial interventions | <ul style="list-style-type: none"> • Direct financial assistance, loans, loan guarantees, purchase commitments • Primarily used by DOD; expanded use by HHS and Department of Energy during COVID-19 | <ul style="list-style-type: none"> • Focused on defense industrial base prepandemic. • Post-pandemic expansion to public health and energy supplies | <ul style="list-style-type: none"> • No major controversies reported, but challenges include ensuring infrastructure meets future demand surges |
| Title VII: General Provisions | Includes supporting measures to enhance Titles I and III efficacy, such as industrial base assessments and voluntary agreements | <ul style="list-style-type: none"> • Small business preferences • Establishment of executive reserve • Authorization for CFIUS | <ul style="list-style-type: none"> • Broad range of national security concerns addressed • CFIUS reviews for foreign investments in U.S. companies | <ul style="list-style-type: none"> • CFIUS operates somewhat independently of other authorities in both function and treatment |

Source: Pub. Law 81-774, 50 U.S.C., § 4501.

tional security. While CFIUS operates somewhat independently from the core DPA functions, its inclusion in the act underscores the broad scope of national security concerns addressed by the DPA.⁴

The DPA is, at its core, a presidential authority. Although Congress plays a role in overseeing the use of DPA powers, including specifying certain notification requirements and committees of jurisdiction, the act is designed to provide the president with the flexibility to respond swiftly to national emergencies. Although the president has designated executive branch delegates department and agency heads in Executive Order 13603, National Defense Resource Preparedness, those delegations may be amended or superseded by the president at any point, as they were in several instances during the COVID-19 pandemic, even if they did not fundamentally change the overall delegations.⁵

Formally, the Federal Emergency Management Agency (FEMA) is the lead federal executive branch agency for coordinating and advising the president on DPA issues, having assumed those residual responsibilities from the defunct

Office of Defense Mobilization after its creation in 1979.⁶ However, in practice, FEMA's role is largely incidental and its perceived indifference to the portfolio has been a subject of scrutiny from Congress.⁷ As such, active coordination during periods of high activity or public awareness has been from the White House, which was a major dimension of congressional oversight and public concern during the COVID-19 pandemic.⁸ In response, the Joseph R. Biden administration appointed a supply chain coordinator in its early days in office that advised the president on DPA-related matters, which would transmogrify into a White House Council on Supply Chain Resilience.⁹

Understandably, the practicalities of presidential authority have led to some tensions over the years, particularly concerning the extent of executive power in domestic industrial policy. The current authorization of the DPA, extended by the National Defense Authorization Act (NDAA) for fiscal year 2019, is set to expire at the end of fiscal year 2025, prompting the need for a comprehensive review of its provisions and applications.

Analyzing DPA Efficacy

The upcoming reauthorization of the DPA presents an opportunity to assess the lessons learned from its recent use and to explore potential reforms that could enhance its effectiveness in the future. In particular, the COVID-19 pandemic revealed both the strengths and limitations of the DPA as a policy tool for addressing large-scale national contingencies. The pandemic's disruption of global supply chains, coupled with economic and industrial dislocations caused by strategic competition with near-peer adversaries such as China, has renewed interest in the DPA as a central component of U.S. industrial policy. Notably, the COVID-19 pandemic emergency represents a singular event for the DPA's employment, as it was the first time its authorities had been so widely applied in service of something approaching national mobilization since the Korean War. This makes it a particularly unique case study, and thus a major test for evaluating the DPA's efficacy in a protracted contingency environment.

One of the key questions driving the reauthorization debate is whether the policy lessons from the pandemic should be reflected in future iterations of the DPA. The frequent use of the act to mitigate supply chain disruptions during the pandemic, as well as its broader application to support strategic competitiveness efforts, suggests that the DPA's role has expanded to a wider set of challenges. Until the COVID-19 pandemic, DPA usage came to be narrowly focused on Department of Defense-oriented procurement (under Title I) and blue-sky technology development (under Title III), with much smaller if nonetheless meaningful efforts for broader national mobilization and preparedness. In some respects, given the Defense Production Act's more expansive original mandate in service of mobilizing the civilian economy, its broader application

more recently is arguably a closer reflection of its original intended purpose, albeit without the accompanying policy infrastructure.

This shift raises important questions about how the DPA can be reformed to better align with the realities of modern industrial policy, where government intervention in the economy is increasingly viewed as necessary to ensure national security and economic resilience. Moreover, the DPA's use in addressing supply chain vulnerabilities highlighted the need for strengthened coordination between federal agencies and the private sector. The pandemic exposed significant gaps in the government's ability to efficiently mobilize resources, leading to inconsistent application of DPA powers and confusion among state and local officials. As the United States continues to face strategic challenges related to global supply chains, economic decoupling, and industrial resilience, it can be argued that a more comprehensive approach to DPA implementation will be needed to ensure its continued relevance in the future.

Gathering Evidence

To address the question of how recent experiences with the DPA should inform its reauthorization, this article uses qualitative case studies of its application during key national events, which is validated by data on recent DPA usage patterns. This integrated methodology allows for a more holistic understanding of the DPA's current role in U.S. industrial and defense policy.

The first step in this analysis is to situate the DPA within the broader policy literature on defense, emergency preparedness, and industrial policy. This contextualization not only provides insight into the historical evolution of the DPA but also allows for a comparison of past and present thinking on the role of government in economic mobilization. This review draws on foundational texts on the DPA, as well as more recent scholarship on its use during the COVID-19 pandemic and in response to strategic competition with near-peer competitors.

In addition to the literature, this article uses validating data sources to assess the recent interest and utility of the DPA. Congressional appropriations for DPA-related activities serve as a direct indicator of legislative intent and provide insight into the perceived value of the DPA as a policy mechanism. Similarly, legislative actions tracked through Congress.gov offer a snapshot of the frequency with which the DPA has been invoked or discussed in recent legislative sessions. Finally, Google Trends data is used as a proxy for public and elite interest in the DPA, particularly during the height of the COVID-19 pandemic.

That analysis is supplemented by qualitative case studies of three key DPA use cases: the COVID-19 public health emergency, strategic competitiveness with near-peer adversaries, and efforts to bolster supply chain resilience. These case studies provide a deeper understanding of how the DPA has been employed in practice and highlight the challenges and opportunities associated

with its use in different contexts. For example, the case study on COVID-19 reveals both the successes and shortcomings of the DPA in responding to a public health crisis, while the case study on strategic competitiveness examines the DPA's role in supporting industries critical to national defense, such as semiconductor manufacturing. The COVID-19 case study is particularly important given its scope and scale; while it does deal with public health, it is arguably the most significant national defense mobilization effort using DPA authorities since the Korean War. This makes it a more compelling test case for potential future mobilization efforts of the civilian economy in the event of a protracted contingency, including high-intensity war.

However, there are several limitations to this approach. Congressional appropriations data, while useful for gauging intent, does not provide detailed information on how funds are actually spent. Similarly, legislative actions do not always translate into concrete policy outcomes, and Google Trends data, though indicative of public interest, may not fully capture the nuances of elite or governmental attitudes toward the DPA. Moreover, the case studies presented in this article focus primarily on recent events, potentially limiting the ability to draw broader conclusions about the long-term evolution of the DPA. While these limitations were not assessed to be fatal to a faithful policy analysis at the present, the topic would benefit from a more in-depth examination of historical case studies, as well as interviews with key stakeholders involved in DPA implementation.

Overall, the Defense Production Act has played an increasingly prominent role in U.S. industrial and defense policy, particularly in the context of the COVID-19 pandemic and strategic competition with global competitors and adversaries. Its impending termination and potential (and likely) reauthorization presents a potential opportunity to reflect on the lessons learned from recent applications and to explore potential reforms that could enhance its efficacy in future crises. By employing a mixed approach that combines validating data analysis with qualitative case studies, this article seeks to provide a comprehensive framework for understanding the DPA's role in modern defense mobilization and industrial policy.

The DPA—Analyzed

A survey on Defense Production Act (DPA) literature reveals its multifaceted role in both economic stabilization and crisis management. The DPA was initially enacted to address broad-based national security concerns through the mobilization of civilian industrial capacity, prompting a range of scholarly inquiries. Richard H. Field's seminal 1950 analysis in the *Harvard Law Review* emphasized the need for a flexible approach to policy implementation under the DPA, particularly advocating for a robust administrative infrastructure to

ensure the effective application of its provisions.¹⁰ Field's early insights remain relevant, as the flexibility of the DPA has allowed it to adapt to the evolving nature of national emergencies over the decades. This is particularly relevant in the context of reauthorization following a particularly intense period of DPA activity and scrutiny, as it has evolved from a secondary instrument to a major presidential mechanism for effecting public policy.

More contemporary studies, particularly in the wake of the COVID-19 pandemic, highlight the DPA's critical role in addressing nontraditional security threats. For example, Chad P. Bown's 2022 analysis of COVID-19 vaccine supply chains in the *Oxford Review of Economic Policy* underscores the DPA's utility in accelerating vaccine production through strategic planning and international collaboration.¹¹ Bown's work highlights how the DPA, originally designed for defense purposes, was successfully repurposed for public health, showcasing its flexibility in crisis management. One of the key findings was that the COVID-19 pandemic revealed the drawbacks of concentrating only on domestic production during a global crisis, emphasizing the need for wider, international strategies and policies to strengthen supply chains. It suggests that in future emergencies, national defense measures like the DPA should be paired with global cooperation and proactive planning to effectively tackle global challenges. Conversely, recent literature has increasingly pointed to Operation Warp Speed (OWS) as a defining case in the modern use of the Defense Production Act. Scholars and practitioners alike have noted how the DPA's Title I and III authorities were instrumental in scaling vaccine manufacturing and resolving supply chain bottlenecks during the pandemic. Carlo Notaristefani offers a firsthand account of how these authorities enabled rapid coordination between federal agencies and private industry, underscoring the DPA's evolving role as a tool for industrial mobilization in public health emergencies.¹²

However, a recurring theme in the literature is the need for transparency and accountability in the execution of DPA powers. Reports from the U.S. Government Accountability Office (GAO) and the Congressional Research Service (CRS) frequently emphasize that the DPA must be implemented with clear oversight mechanisms to avoid misuse or inefficiency.¹³ These reports, drawing on near-real-time lessons from the COVID-19 response, suggest that the DPA has at times been applied inconsistently, and accountability structures have not always been robust enough to manage its broad and expanding authorities. To wit, the GAO reports emphasize that while the DPA was instrumental in scaling production, its implementation was often inefficient, leading to missed opportunities and fragmented supply chains. These findings underscore the need for better coordination and strategic planning to enhance the DPA's effectiveness in future emergencies. Similarly, the CRS reports provide an overview of the DPA's effectiveness and its limitations, emphasizing the need for clearer

strategic planning, better resource allocation, and oversight to ensure the DPA can be more efficiently used in future crises—particularly in the context of the COVID-19 pandemic.

Further reinforcing these elements, Ariel F. Coto's 2022 article in the *Southwestern Law Review* highlights how essential accountability is to the DPA's long-term legitimacy, especially as it is increasingly used outside of traditional defense contexts.¹⁴ Coto's findings align with the arguments presented in Dani Rodrik's widely cited 2004 monograph on industrial policy, which advocates for a balanced approach that leverages state interventions without abandoning the market's role. Rodrik's call for a pragmatic industrial policy resonates with current debates on the DPA's role, as the act's expanded use for economic interventions during the pandemic has positioned it as a critical tool for modern industrial policy.¹⁵

For another policy treatment, a paper published by the Bipartisan Policy Center presents a timely analysis of the DPA's evolving role in shaping U.S. industrial policy.¹⁶ The authors argue that the DPA can be repurposed to drive domestic manufacturing investment, especially in strategic industries critical to both defense and economic resilience. The paper highlights the DPA's capacity to foster private sector investments in areas such as advanced manufacturing, emphasizing its potential to strengthen the nation's economic and defense infrastructure in an era of increasing global competition and supply chain vulnerabilities. In the context of future crises, the paper advocates for a more proactive and strategic use of the DPA to enhance the nation's industrial base, particularly in sectors crucial for economic security and public health, thus contributing to the broader discourse on the DPA's role in crisis management and industrial policy.

In sum, the literature reflects a broad consensus on the need for a flexible, transparent, and accountable framework for the DPA's implementation. This is particularly relevant as the U.S. government increasingly looks toward active industrial policy, with the DPA playing a pivotal role in addressing both defense-related and broader economic challenges. The intersection of defense mobilization and economic resilience, as evidenced in recent scholarship, supports the view that the DPA is well-positioned to serve as a cornerstone of U.S. policy in both traditional defense contexts and beyond.

Key Findings

Appropriations Data

Appropriations data serve as a kind of signal of demand, or at least intent, by Congress. An analysis of appropriations data from the last decade shows a clear upward trend in funding allocated for DPA-related activities, particularly in response to the COVID-19 pandemic. Between fiscal years (FY) 2020 and 2022,

Table 2. Total appropriations (in millions USD, by FY)

| Fiscal year | DPA Fund | Non-DPA Fund |
|-------------|------------|--------------|
| 2023 | \$372.90 | — |
| 2022 | \$888.30 | \$11,100.00 |
| 2021 | \$174.60 | — |
| 2020 | \$1,064.40 | — |
| 2019 | \$53.60 | — |
| 2018 | \$67.40 | — |
| 2017 | \$64.10 | — |
| 2016 | \$76.70 | \$45.00 |
| 2015 | \$51.60 | \$45.00 |
| 2014 | \$60.10 | \$45.00 |
| 2013 | \$223.50 | — |

Source: data aggregated from Congressional Research Service and Congress.gov.

there was a substantial increase in DPA appropriations, with approximately \$12 billion earmarked for DPA-related uses in FY 2022 alone. Notably, \$10 billion of this total was appropriated to the Department of Health and Human Services through the American Rescue Plan Act of 2021, signaling a marked shift in the DPA's application toward public health industrial base interventions.

A key feature of DPA-related appropriations is the use of the DPA Fund, which operates as a “no-year” fund, meaning that appropriated monies do not expire at the end of a fiscal year. However, there are limitations on how much of this funding can be carried over. Specifically, the DPA Fund has a \$750 million cap on its carryover authority, although this restriction was temporarily suspended in 2020 to address the exigencies of the pandemic. It is also important to note that while most DPA funds are subject to the no-year provision, some appropriations, particularly those not allocated directly to the DPA Fund, expire at the end of FY 2025. This has the effect of spreading roughly \$11 billion in appropriations across three fiscal years, with a subsequent decline in FY 2023 figures reflecting this amortization.

These appropriation trends underscore the growing recognition of the DPA as an important tool for addressing not only defense-related concerns but also broader national defense issues, including public health and economic challenges. The pandemic-induced surge in DPA funding indicates a shift in how policymakers view the act, highlighting an increased acceptance of the DPA as a viable mechanism for broader applications.

Legislative Actions

Like appropriations, tallying legislative actions can be considered a kind of proxy for interest in DPA application in Congress—but also potentially of dissatisfaction with the current way the DPA is employed, functions, or construct-

ed. Drawing from data from Congress.gov, the legislative history of the DPA shows a significant shift in congressional interest and activity over time. From the 82d Congress (1951–52), which followed shortly after the DPA's enactment, to the present, there have been periods of relatively low legislative activity surrounding the act, punctuated by occasional surges in interest. One of the most notable increases occurred during the 107th Congress, coinciding with the aftermath of the 9/11 attacks and the onset of the Global War on Terrorism.

However, the most dramatic increase in legislative activity occurred during the 116th Congress, which coincided with the COVID-19 pandemic. During this period, legislative actions related to the DPA reached unprecedented levels, driven by the urgent need to address the public health crisis and stabilize supply chains. Although interest has somewhat declined since then, the level of legislative attention remains significantly higher than historical norms, reflecting the sustained relevance of the DPA in contemporary policy discourse.

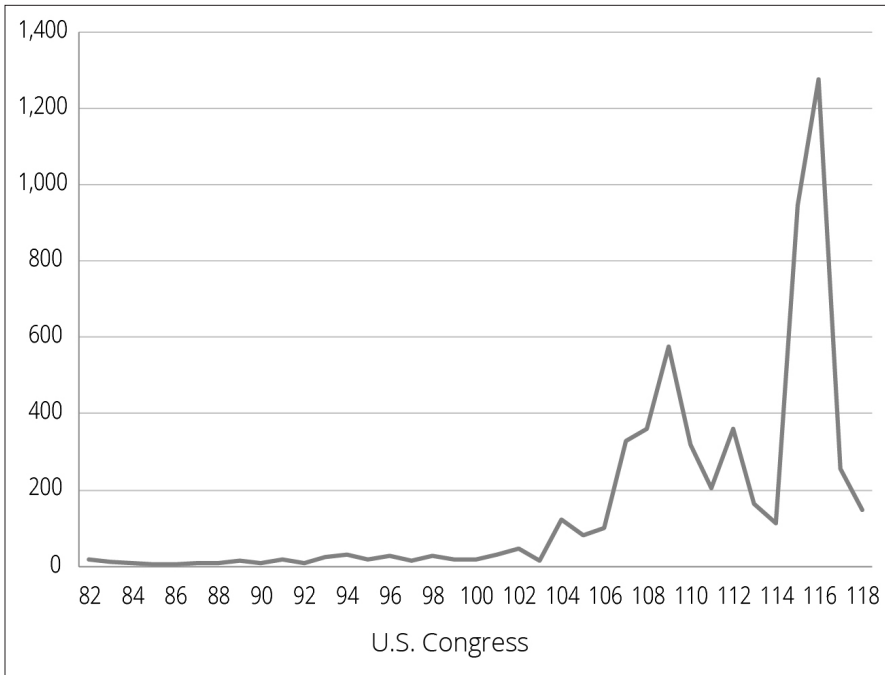
While this data is informative, it should be interpreted with caution. The figures do not distinguish between different types of legislative actions, such as introduced bills, reporting requirements, and communications. Moreover, legislative activity alone is not necessarily indicative of substantive policy outputs, as many introduced bills may not advance beyond initial stages. Nevertheless, the increase in legislative attention during critical periods—such as the post-9/11 era and the COVID-19 pandemic—demonstrates the act's enduring significance as a policy tool. It is worth noting that this data was collected at the midpoint of the 118th Congress, and so the precipitous decline shown is likely a visualization of incomplete data.

Public Awareness: Google Trends Data

In addition to congressional interest, we can employ Google Trends to look at broader popular interest. Analysis of Google Trends data provides additional insights into public awareness and elite interest (as measured in news citations) in the DPA. Notably, search trends for the DPA saw a marked increase during the early stages of the COVID-19 pandemic, mirroring the surge in legislative and appropriations activity during the same period. Interestingly, there is a significant divergence between general search trends (represented in blue) and news-specific search trends (represented in orange), particularly from 2008 onward.

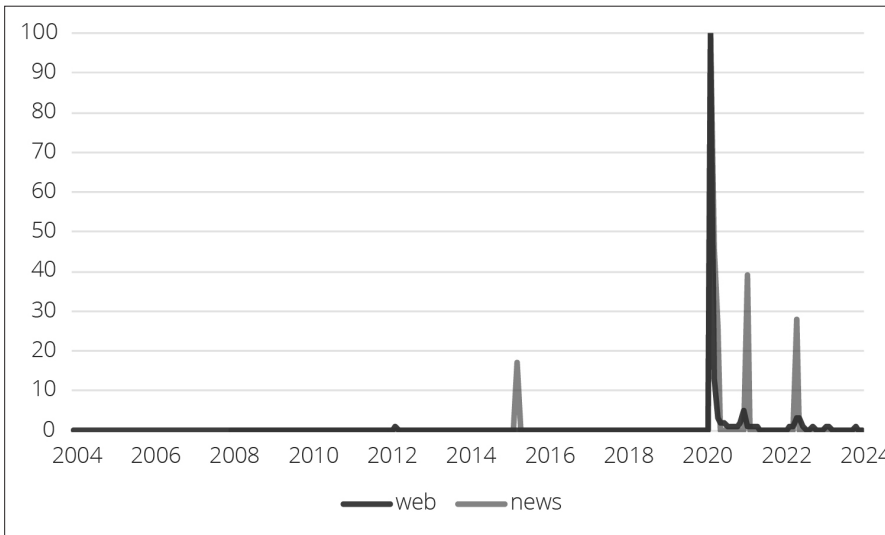
This divergence may reflect differing levels of awareness between the general public and elite or specialized audiences. News search trends, which tend to reflect the interests of a more informed cohort, may indicate a higher baseline level of interest in the DPA, even outside of major crises. In contrast, general search trends show more pronounced spikes during periods of heightened public attention, such as the pandemic. This suggests that while the DPA may have

Figure 1. All DPA legislation (by numbered Congress)



Source: Congress.gov.

Figure 2. DPA Google Trends (web and Google News, indexed)



Source: Google Trends. Note: "Defense Production Act" search term.

entered broader public discourse during crises, its relevance and significance have long been recognized by policymakers, academics, and industry leaders.

The analysis of appropriations data, legislative actions, and public awareness collectively reveals the growing and evolving role of the Defense Production

Act in addressing not just national defense concerns but broader public health and economic challenges, particularly in times of crisis. The marked increase in appropriations for DPA-related activities, especially during the COVID-19 pandemic, signals a shift in the act's application, with funding directed toward enhancing public health infrastructure and stabilizing critical supply chains. Legislative actions further reflect this shift, with unprecedented activity during the pandemic reflecting Congress's heightened interest in leveraging the DPA for pandemic-related interventions. Meanwhile, Google Trends data highlights a parallel surge in public awareness, particularly during periods of heightened crisis, underscoring the DPA's growing visibility and relevance across various sectors. These findings suggest that the DPA's utility as a policy tool has expanded significantly, gaining traction as a flexible mechanism for addressing a wide range of contemporary challenges.

Case Studies

Case Study: COVID-19 Public Health Emergency

The trajectory for contemporary policy development regarding the implementation of the Defense Production Act (DPA) was significantly shaped by the COVID-19 public health crisis. The pandemic highlighted the need for large-scale governmental interventions and exposed gaps in understanding and applying this decades-old legislation, which was originally designed to mobilize the U.S. economy in the service of national defense. As early as February 2020, it became apparent that the DPA might be a crucial tool in the United States' response to the COVID-19 pandemic, not only for facilitating production but also for directing the allocation of essential resources.¹⁷ Initial policy recommendations included economic countermeasures such as expanded unemployment insurance, demand-side stimulus, and stabilization measures for both businesses and government entities. Among these, the potential utility of the DPA to scale up production and coordinate resource distribution was recognized, but this would require a broader mobilization than had been historically associated with the DPA.

The pandemic precipitated a surge of interest in DPA policies and a significant shift in how they were implemented—as evidenced in the previously discussed data. Prior to COVID-19, the DPA had seen limited use outside of defense-related industries, with applications in energy and emergency preparedness being relatively sporadic. However, the scale and urgency of the pandemic necessitated a dramatic expansion of its scope, as the U.S. government sought to harness its authorities as part of a broad countermeasures package to a novel and rapidly spreading virus. Although the DPA provided the legal framework necessary to stimulate domestic manufacturing, allocate critical medical supplies, and organize the supply chain, it quickly became apparent that both Con-

gress and the broader administrative apparatus lacked a deep understanding of how to effectively wield these powers.

Historically, the DPA's role had been narrowly confined to the Department of Defense, and its potential for nondefense applications was largely unfamiliar to most policymakers. During the early stages of the pandemic, the urgency to mobilize industrial production and distribute medical supplies often outpaced the government's ability to coordinate these efforts effectively. For example, priority-rated orders for personal protective equipment (PPE) were frequently unfulfilled due to reliance on supply chains that extended to countries like China, which had imposed temporary export bans. Additionally, efforts to allocate medical equipment resulted in misallocations, with critical supplies being sent to areas that did not ultimately need them, and confusion surrounding supply chain coordination leading to tensions between federal and state governments.¹⁸

Furthermore, the allocation of Title III funds, initially intended to support public health initiatives, was redirected toward the defense industrial base, which raised concerns about congressional intent and statutory adherence. The inconsistencies in how the DPA was applied, coupled with an apparent lack of centralized coordination, compounded the confusion. The overlapping responsibilities across various government agencies and departments further exacerbated these challenges, leading to a response that often seemed ad hoc and fragmented.¹⁹

Although the federal government's early use of DPA authorities during the COVID-19 pandemic was, at best, inconsistent, the DPA proved to be a crucial part of the federal response. One of the clearest examples came with Operation Warp Speed (OWS), the public-private effort launched in April 2020 to fast-track vaccine development and distribution. Through its Title I and Title III authorities, the DPA allowed the government to prioritize key contracts and ramp up domestic production across the vaccine supply chain—from raw ingredients to specialized machinery. Leaders like Army general Gustave F. Perna, who oversaw logistics for OWS, and Carlo Notaristefani, who led manufacturing coordination, emphasized how these tools helped bypass potential bottlenecks in everything from vials to cold storage. In that light, the DPA did not just serve as a procurement workaround—it became a central pillar of the country's broader industrial mobilization strategy.²⁰

In essence, the COVID-19 pandemic served as a stress test for the DPA, revealing significant weaknesses in its application for large-scale nondefense emergencies, but also critical successes. While the DPA did play a material role in the pandemic response, the confusion surrounding its boundaries, authorities, and practical implementation undermined its potential effectiveness. These challenges were anticipated, at least in part, by a 2019 tabletop exercise conducted by the Department of Health and Human Services, which simulated

the impact of a novel pathogen outbreak. The after-action report from this exercise noted a general lack of awareness and understanding regarding how to apply DPA authorities, an issue that would resurface throughout the pandemic response.²¹

As such, the COVID-19 pandemic exposed critical gaps in the knowledge and operationalization of the DPA within the U.S. government. While the DPA remains a powerful tool for industrial mobilization, its use during the pandemic was hampered by inconsistent application, a lack of coordination, and widespread misunderstanding of its provisions and capabilities. Addressing these shortcomings will be essential for future policy planning, particularly in the face of potential future crises requiring rapid and coordinated national responses.

Case Study: Strategic Competitiveness

The Defense Production Act is often closely associated with the Department of Defense and military-related applications. However, the scope of the DPA extends far beyond purely military concerns, reflecting a broader understanding of national defense. Even before the onset of the COVID-19 pandemic, the DPA was designed to serve as a mechanism for mobilizing the civilian economy to meet national defense needs. This broader scope is evident in the assignment of jurisdiction over the DPA to civilian-oriented committees such as the House Financial Services and Senate Banking Committees, both of which oversee sectors representing the broader civilian economy.

The DPA allows for financial incentives under Title III, which are granted to domestic industrial operations deemed critical for national defense. Notably, the statute is flexible in its approach to these transactions, allowing for the prioritization of various industries, depending on the strategic needs of the time. Over the decades, U.S. administrations have used DPA authorities to enhance strategic competitiveness in a range of industries. For example, under the Barack H. Obama administration, the DPA was leveraged to launch an advanced biofuels project, which sought to develop alternatives to conventional jet fuels that could serve both civilian and military purposes.²² This initiative also reflected concerns about U.S. dependence on foreign energy sources. During the Donald J. Trump administration, before the COVID-19 pandemic, DPA authorities were used to invest in the development of a domestic market for small unmanned aerial systems (UAS), a largely civilian market segment, as well as to promote rare earth mining, an industry crucial to a wide range of defense technologies.

In recent years, there has been growing recognition of the strategic importance of semiconductors, leading to multiple rounds of Title III funding aimed at ensuring the viability of a domestic semiconductor industry. Additionally,

the scope of DPA authorities has been expanded to other departments such as the HHS and the Department of Energy. These expansions have enabled Title I actions and Title III investments in areas such as the health industrial base and advanced renewable energy infrastructure. In a more recent application of DPA powers, the Biden administration issued an executive order on artificial intelligence (AI), invoking the industrial base assessment provisions of Title VII to compel private companies to provide proprietary data to the federal government.²³

The increasing reliance on the DPA as a tool for industrial policy reflects a broader shift toward embracing industrial policy in the wake of the COVID-19 pandemic. This trend is also indicative of the “dual-use revolution,” a concept that highlights the growing significance of commercial technologies for both national competitiveness and military applications. The Russian invasion of Ukraine has further emphasized the importance of dual-use technologies, as Ukraine has effectively employed commercial off-the-shelf innovations to counter a materially superior adversary. These technologies have demonstrated not only tactical and operational utility but also strategic impact, challenging traditional paradigms of military production and deployment.

The DPA’s role is critical in this evolving landscape, as it enables the U.S. government to support industries where rapid innovation is key to both commercial and military success. The traditional long-cycle processes of governmental technology development, testing, and deployment are increasingly being supplanted by more agile, iterative innovation models from the commercial sector. As such, the DPA continues to serve as an essential tool in ensuring that the United States remains competitive in an era where national defense is inextricably linked with the civilian economy.

Case Study: Supply Chain Resilience

The health and resilience of supply chains has emerged as critical considerations for national competitiveness, particularly in the context of the COVID-19 pandemic. The disruptions experienced across various sectors, from semiconductors to food production—including meat, poultry, and infant formula—have highlighted the vulnerabilities inherent in global supply chains. The Defense Production Act has been used to address many of these disruptions, underscoring the importance of non-defense critical goods in maintaining national security.

A notable example of the DPA’s broadening popular relevance is illustrated in the response to the discontinuation of Klondike’s Choco Tacos, a popular American treat. Senator Christopher Murphy (D-CT) humorously tweeted that he would introduce legislation to invoke the DPA to mandate the continued production of Choco Tacos. While this statement was made in jest, it

symbolized how the DPA has entered the wider policy discourse, extending well beyond its traditional association with national defense. The episode highlights the increasing comfort with invoking the DPA in contexts far removed from its original defense-oriented mandate.

This shift in the use of the DPA was further exemplified by the Department of Energy's (DOE) announcement of a \$500 million investment in domestic energy-related manufacturing. Of this, \$250 million was allocated to boosting the production capacity of high-efficiency heat pumps, a technology essential for electrified residential and commercial heating. The Biden administration has also convened the first interagency White House Council on Supply Chain Resilience, which leverages DPA authorities through HHS to expand domestic production of key medicines and their components.

The DPA is, however, just one of several tools employed in the broader U.S. industrial policy framework, particularly under the Biden administration. This broader policy approach includes a variety of initiatives aimed at strengthening domestic manufacturing and enhancing supply chain resilience. Despite its expanded use, the DPA remains central to these efforts, reflecting its ongoing importance beyond COVID-19-related measures or competition with near-peer adversaries.

Some might argue that this broader application of the DPA, especially for domestic economic interventions, diverges from its original intent to support national defense. However, the historical purpose of the DPA always extended beyond the production of military equipment. From its inception, the DPA was intended to address more mundane aspects of the civilian economy, with the understanding that a robust and resilient civilian industrial base was inextricably linked to national security. The DPA's current use to safeguard supply chains and promote domestic industrial capacity continues this tradition, acknowledging that economic resilience is a cornerstone of strategic defense in the modern era.

In sum, the DPA has evolved from its origins as a tool for military mobilization to become a critical instrument for ensuring the stability of supply chains and supporting key sectors of the civilian economy. Its expanded use reflects a growing recognition that economic and industrial resilience are foundational to national security, particularly in a globally interconnected world.

Summary of Observations

The analysis of the Defense Production Act reveals several key insights that underscore its increasing importance in modern U.S. industrial and defense policy. During the past few decades, and especially since the onset of the COVID-19 pandemic, interest in the DPA has grown significantly, particularly among policymakers. This growing interest is not limited to its traditional wartime uses,

where the DPA's primary function was to mobilize civilian resources for defense purposes. Instead, the DPA's expanded application to nondefense areas such as public health, supply chain resilience, and industrial competitiveness marks a significant evolution in the use of this authority.

The data highlights an expansion in the DPA's application to cases that go beyond a narrow, military conception. Arguably, this expansion is more in line with the original intent of the DPA, which contemplated mobilizing the civilian economy to support national defense as more broadly defined, including the maintenance of economic and industrial stability. Today's challenges, such as global supply chain disruptions, growing strategic competition, and the need for a robust industrial base, have increasingly necessitated the use of the DPA in areas previously unanticipated. This shift reflects broader trends toward a more active industrial policy approach within the U.S. government, whereby government interventions in the economy are seen as vital for national security and economic resilience.

However, despite its increased use, the DPA remains poorly understood across many parts of the federal government. Inconsistent application of DPA authorities, especially during the COVID-19 pandemic, has exposed significant gaps in interagency coordination and understanding. While agencies such as the Department of Defense have long relied on the DPA for defense procurement, other critical agencies like the Department of Health and Human Services and the Department of Energy (DOE) faced challenges in mobilizing DPA powers to respond effectively to the pandemic. There are no permanent administrative structures in place to oversee DPA implementation across varying agencies of responsibility, and this has led to inefficiencies and miscommunication during periods of crisis. For instance, in some cases, vital supplies such as personal protective equipment were misallocated, causing significant delays in resource deployment.

In addition to these operational shortcomings, efforts to centralize and coordinate DPA authorities have been ad hoc, particularly in response to the pandemic. While there have been attempts to create a more coherent system for managing the DPA, these have not yet resulted in the establishment of a comprehensive, whole-of-government approach. As a result, the DPA remains fragmented in its application, with different offices and agencies taking varied approaches to its implementation. This fragmented approach highlights the need for better coordination and a more institutionalized framework for administering DPA authorities.

Policy Implications and Reauthorization Options

The upcoming reauthorization of the DPA presents a critical opportunity to address many of the challenges that have been identified in recent years. The

data strongly indicates that the demand for the DPA remains robust. Whether in response to public health emergencies like COVID-19, strategic competition with global adversaries such as China, or vulnerabilities in global supply chains, the DPA has proven to be an essential tool for addressing a wide range of national challenges. However, the reauthorization process should not only focus on extending the DPA's powers but also on reforming its implementation mechanisms to ensure that it can be used more effectively in the future.

One area that could be addressed during reauthorization is the DPA Fund. The DPA Fund has been instrumental in providing financial support for industrial mobilization projects, but its application has often been constrained by unclear rules and a lack of flexibility. For example, the \$750 million cap on carryover authority—while temporarily lifted during the pandemic—has historically created challenges in ensuring that funds are available for long-term projects. Reauthorization offers a chance to clarify the rules governing the DPA Fund, potentially removing restrictions that limit its utility. By making the fund more accessible and flexible, the government can better leverage the DPA to meet both immediate and long-term industrial challenges.

Another potential area for reform is the need for a permanent administrative infrastructure to oversee and effectively perform the use of the DPA. The COVID-19 pandemic made it clear that there is no central body responsible for coordinating DPA activities across the federal government. The DOD has traditionally been the primary user of DPA authorities, but other agencies, particularly HHS and DOE, found themselves ill-equipped to deploy DPA powers effectively during the pandemic. As a result, there were significant delays in the production and distribution of critical supplies, and many agencies struggled to understand how DPA authorities could be applied to their specific needs. One solution is to create a permanent Office of Defense Mobilization, modeled after the original office that existed when the DPA was first enacted. This office could serve as the central coordinating body for all DPA activities, ensuring that agencies like HHS and DOE are prepared to use DPA authorities when necessary. Additionally, this office would be responsible for studying and advising the president on the use of DPA powers, ensuring that the act is implemented in a coordinated and efficient manner across all relevant sectors.

Alternatively, policymakers could consider expanding the role of the existing Defense Production Act Committee (DPAC), which was established during the FY 2004 DPA reauthorization and further elaborated on in the 2009 reauthorization. The DPAC is an interagency body designed to coordinate DPA activities, but its role has been limited to date. With the right legislative modifications, the DPAC could be expanded to serve as the primary administrative body for overseeing DPA implementation across the federal government. This would provide a more formalized and professional structure for managing the

complexities of modern industrial mobilization, ensuring that the DPA is used in a coordinated manner across all agencies.²⁴

Another potential avenue for reform is building on the previous administration's White House Council on Supply Chain Resilience, which was established in response to the supply chain vulnerabilities exposed by the pandemic.²⁵ The council has already played a role in addressing critical supply chain issues, and it could serve as a precursor to a more permanent Office of Defense Mobilization or similar entity. By professionalizing the administration of the DPA, the federal government would be better equipped to manage the complex challenges of modern industrial policy and national security. Additionally, such an office would provide a central point of oversight for Congress, addressing many of the perceived failures in DPA implementation during the pandemic, which were often linked to a lack of coordination and understanding of DPA authorities.

Another option for reauthorization would be to reserve the DPA as a "break-glass" mechanism, used only in extreme emergencies. Using this model, the DPA would remain available for use in national crises but would not be applied to more routine industrial policy issues. Routine functions that currently fall under the DPA could be transferred to other legislative mechanisms. For example, the DOD could continue using the DPA for procurement processes, while other agencies could rely on separate authorities for industrial interventions. This approach would allow the DPA to remain focused as a wartime and emergency mobilization tool, while other more routine activities would be handled outside the DPA framework.

However, this approach comes with several limitations. First, the DPA has long been used routinely by the DOD for defense procurement, and restricting its use to emergencies could disrupt ongoing defense projects. Second, the DPA has proven to be a critical tool in areas such as semiconductor production and renewable energy infrastructure, which are both vital to U.S. economic and strategic competitiveness—which are uncontroversial aspects of national security. Given the increasing prevalence of dual-use technologies, which have both civilian and military applications, it may be difficult to justify limiting the DPA's use to emergency situations. As technologies and industries become more interconnected, industrial policy issues and national defense are inextricably linked, and the DPA may be better suited reflecting this reality.

A third option is to allow the reauthorization of the DPA to proceed without major reforms, leaving its future use to be dictated by the president and Congress on a case-by-case basis. This approach would provide the greatest flexibility, as it would allow the DPA to be adapted to the unique policy demands of the moment. For example, future administrations could decide to use the DPA to address specific supply chain issues or public health crises, without requiring legislative modifications. It also addresses the implied risk that estab-

Table 4. Policy options

| Policy option | Description | Potential benefits | Potential risks |
|--|---|---|--|
| 1. Expansion of the DPA | Expanding the DPA's scope and flexibility to better address long-term industrial challenges through increased funding, improved coordination, and enhanced capabilities | <ul style="list-style-type: none"> • Provides flexibility for addressing a wide array of challenges • Strengthens industrial policy and national security | <ul style="list-style-type: none"> • Risk of overreach or inefficient use • Requires greater oversight to prevent misuse |
| 2. DPA as a "break-glass" mechanism | Limiting DPA use strictly to emergency situations, reserving it for crises while routine functions are shifted to other legislative frameworks | <ul style="list-style-type: none"> • DPA remains focused on emergencies • Prevents overuse in noncrisis situations • Reduces routine dependency | <ul style="list-style-type: none"> • Disrupts ongoing defense procurement • Limits use in dual-use and strategic industries like semiconductors |
| 3. Reauthorization without major reforms | Allowing the DPA to continue without significant changes, providing maximum flexibility for use in varied situations by future administrations | <ul style="list-style-type: none"> • Flexible and adaptable to evolving needs • Avoids complex reforms • Allows case-by-case adjustments | <ul style="list-style-type: none"> • Inconsistent application • May perpetuate current inefficiencies in coordination and oversight |
| 4. Allowing the DPA to expire and reconstituting authorities | Letting the DPA expire, requiring new legislation to be passed for future crises, enabling tailored legislative responses to specific events | <ul style="list-style-type: none"> • Tailored responses to individual crises • Encourages careful scrutiny of new powers | <ul style="list-style-type: none"> • Politically difficult • Delays in crisis response • Challenges in rebuilding a similar broad mechanism |

Source: compiled by the author.

lishing a more expansive administrative infrastructure might bring in terms of giving the federal government more direct control over the civilian economy, which could result in other forms of mismanagement. At the same time, avoiding DPA professionalization carries the alternative risk of perpetuating the same implementation challenges that have hindered the DPA's effectiveness in recent years, which could also contribute to mismanagement, inefficiency, or worse. Further, without clearer guidance and oversight, the DPA could continue to be applied inconsistently, limiting its potential to address future challenges.

Finally, policymakers could theoretically allow the DPA to expire and, if needed, reconstitute its authorities through new legislation later. Under this scenario, Congress would be responsible for enacting new laws to address specific crises, rather than relying on the DPA as a one-size-fits-all mechanism for industrial mobilization. However, this option would likely prove politically and logistically challenging. The DPA's broad suite of powers, which include the ability to prioritize production, allocate resources, and provide financial incentives to critical industries, would be difficult to reconstitute piecemeal.

Moreover, reenacting such powers without the benefit of immediate precedent or trained staff would likely lead to significant delays in responding to future crises.

Conclusion

The Defense Production Act remains one of the most important tools in the federal government's arsenal for addressing national emergencies and ensuring the resilience of critical industries. Over the past several decades, the DPA has evolved from a narrowly focused defense mobilization mechanism into a more versatile instrument that can be applied to a wide range of industrial, economic, and public health challenges. Its expanded use during the COVID-19 pandemic, as well as in response to strategic competition and supply chain vulnerabilities, underscores its growing relevance in contemporary policymaking.

However, despite its increasing importance, the DPA's implementation has been hindered by a lack of understanding and coordination across the federal government. The fragmented nature of its administration has led to inefficiencies, particularly during the pandemic, when the need for a more unified approach to resource allocation and industrial mobilization became apparent. The upcoming reauthorization process presents an opportunity to address these shortcomings and reform the DPA to better meet the demands of the twenty-first century. Key policy options for reauthorization include expanding the administrative infrastructure that oversees DPA activities, either by creating a new Office of Defense Mobilization or by enhancing the role of the existing DPAC or the White House Council on Supply Chain Resilience. By professionalizing the administration of the DPA, the federal government would be better positioned to manage the complex challenges of modern industrial policy and ensure that the DPA can be effectively used in both routine and emergency situations.

Alternatively, policymakers could consider reserving the DPA as an emergency authority, with routine functions transferred to other legislative mechanisms. However, this approach risks limiting the DPA's ability to address ongoing industrial challenges, particularly as dual-use technologies and industries become more prevalent. The flexibility of the DPA has been one of its greatest strengths, and restricting its use to emergencies may undermine its broader potential.

Ultimately, the DPA's continued relevance depends on the federal government's ability to administer it effectively. By strengthening the administrative infrastructure, clarifying the rules governing the DPA Fund, and ensuring that all relevant agencies are prepared to use DPA authorities, the government can ensure that the DPA remains a vital tool for addressing the complex and evolving challenges of national defense and industrial policy in the years to come.

While this article explores these issues within the context of reauthorization, they are also largely relevant and applicable outside of that context. Questions of management, efficiency, and “right sizing” the DPA to varying definitions of national security and national defense, not to mention questions of applying the policy intent of the DPA in the immediate aftermath of World War II and in the early Cold War period to contemporary challenges, will continue to demand attention and deliberation. Another aspect of discussion that is outside of the scope of this article is the potential for governmental overreach through the employment of DPA authorities. While some of the explicitly coercive tools of the DPA are no longer active parts of the statute, the DPA could nonetheless be wielded inappropriately, and even maliciously, by an adept presidential user should they choose, with few obvious and effective safeguards, much less precedent. Of course, this question is also inseparable from the discussion of implementation; mechanisms for effective management and implementation of DPA authorities would be critical for questions of oversight and regulation of authorities.

Endnotes

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Why the Ukrainians Fight The Holodomor (1932–33)

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Abstract: Nations fight for several reasons. The nation may have been invaded, as was Ukraine by Russia. Nations will fight for political or religious reasons. Nations will also fight due to historical animosities. In 1932–33, Joseph Stalin inflicted on Ukraine an intentional man-made famine that killed 3–7.5 million people. This action was taken to consolidate Soviet political power and enforce collectivization of farmland. The Holodomor is firmly embedded in the history and mindset of the Ukrainian people. It is one of the reasons they feel the need to fight the invaders from Moscow. This article explains how historical events can fuel future conflicts, and these narratives can serve as a resource to establish national identity and solidarity.

Keywords: genocide, famine, political repression, collectivization

There is a horrible war going on in Ukraine. Russia has invaded, and the Ukrainians are fighting with great skill and courage against the invaders. One motivation for the fierceness of their resistance is a historical event

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known as the Holodomor. When describing the importance of the Holodomor, Shaun Walker stated that “the decade leading up to the Second World War is almost as critical for understanding the recent clash between Moscow and Kiev as the history of the war itself. In Soviet Ukraine, after a brief flourishing of Ukrainian identity, in the 1920s a devastating, unnecessary famine during Stalin’s collectivization drive caused millions of deaths in what became known as the Holodomor.”¹

Ukraine was a vassal republic of the Union of Soviet Socialist Republics from 1919 to 1991. It was known as the Ukrainian Soviet Socialist Republic. One of the darkest chapters in the history of Ukraine was the intentionally caused man-made famine known as the Holodomor that occurred between 1932 and 1933. The Holodomor was a genocide in which an estimated 3–7.5 million Ukrainians perished.² The term *genocide* was coined by Raphael Lemkin in 1944 and defines genocide as an intentional action to destroy a people.³ Genocides are usually conducted for religious, ethnic, racial, or political reasons.⁴ The Holodomor was inflicted on the people of Ukraine by the government of the Union of Soviet Socialist Republics for political reasons.

Introduction

The history of relations between Russia and Ukraine has been a tumultuous one filled with wars, conflicts, and political turmoil. Humans have lived in the area known as Ukraine since at least 32,000 BCE.⁵ Both the Russians and the Ukrainians trace their origins back to the Kievan Rus (882–1240 CE). Although some historians disagree, many historians such as Michael T. Florinsky, Gregory L. Freeze, and Paul Dukas acknowledge that the Kyivan Rus was a forerunner of modern Russia.⁶ The Rus had accepted Christianity by 988 CE when Prince Volodymyr was baptized in Chersonesus.⁷ Kyiv or Kiev was the capitol and by the eleventh century had become one of the largest countries in Europe.⁸ The area was made rich by trade routes between Asia and Europe. The Kyivan Rus came to an end in 1240 with the sacking of Kyiv by the Mongols of the Golden Horde under Batu Khan.⁹ The area became filled with small principalities who paid tribute to the Golden Horde until the fourteenth century when the Polish and Lithuanians began to contest the Mongols for control of Ukraine. Kyiv was captured by the Lithuanians in 1362.¹⁰

Anne Applebaum observed: “By the late Middle Ages, there was a distinct Ukrainian language, with Slavic roots, related to but distinct from Polish or Russian, much as Italian is related to but distinct from Spanish or French.”¹¹ The Ukrainian language developed from Old East Slavic, which is also an ancestor of Russian.¹² Ukrainians had their own foods, their own customs and local traditions, and their own villains, heroes, and legends. Like other European nations, Ukraine’s sense of identity sharpened during the eighteenth and nine-

teenth centuries. But for most of its history, the territory we now call Ukraine was, like Ireland or Slovakia, a colony that formed part of other European land empires.

In 1569, Ukraine came under Polish control. After a rebellion of the Cossacks against the Polish-Lithuanian Commonwealth that resulted in the Russo-Polish War (1654–67), Ukraine came under Muscovite jurisdiction.¹³ Russian rule of Ukraine was challenged in 1708 when Charles XII of Sweden invaded the area. The Russians defeated the Swedes at the Battle of Poltava in 1709 and most of Ukraine remained in Russian hands. Poland was partitioned by Austria-Hungary in 1793 and in 1795 by Russia, which caused Poland to cease to exist as a nation until after World War I. In 1876, the Edict of Ems bans all Ukrainian language publishing and teaching in the Russian Empire.¹⁴ Ukraine and Ukrainian nationalism were repressed.

The Imperial Russian Empire collapsed in February 1917. Many Ukrainians felt that this was a time for an independent Ukraine. During this time of revolution, the Central Rada (Українська Центральна Рада, *Ukrayins'ka Tsentral'na rada*) or Central Council of the Ukraine became the revolutionary Ukrainian parliament after the All-Ukrainian Congress in April 1917. The Central Rada declared the Ukrainian People's Republic as an independent nation and free of external control on 9 January 1918.¹⁵ The collapse of the Austro-Hungarian Empire in 1918 also fanned hopes of success for Ukrainian independence. The Poles and the Soviets had other ideas. The Central Rada lasted until the Ukrainian-Soviet War (1917–21).

A workers and peasants military force formed and was known as the Revolutionary Insurgent Army or sometimes the “Black Army” since they fought under the anarchist black flag. This anarchist army was sometimes known as *Makhnovshchyna* after the anarchist, Nestor Makhno.¹⁶ Applebaum noted Leon Trotsky's description of Makhno's followers as “Kulak plunders” who “throw dust in the eyes of the most benighted and backward peasants.”¹⁷ The Black Army had up to 10,000 cavalry, 40,000 foot soldiers, and artillery. They fought the Germans, the Poles, the Russian anti-Bolshevik “White” forces under counterrevolutionary Anton I. Denikin, and the Soviet forces for control of Ukraine. They also fought other Ukrainian nationalist forces at times. In 1920, Makhno formed a truce with the Soviet forces to fight the White Russian forces under General Pyotr N. Wrangel and prevent them from seizing the grain harvest in Ukraine. After the defeat of the White Russian forces, the Red Army received instructions from Vladimir Lenin to arrest Makhno as a counterrevolutionary. Makhno fled first to Romania and then to Paris, where he died in 1934 of tuberculosis. The constant fighting in Ukraine between 1918 and 1921 resulted in Kyiv changing hands several times and many villages being laid to waste.¹⁸ Lucien van Der Walt observed that the Bolshevik Revolution under Lenin had

gone from a revolutionary movement to a dictatorship “because Marxism/Bolshevism is based on the idea of socialism from above.”¹⁹ It was this consolidation and centralization of Communist power by the Soviet government that ultimately resulted in the Holodomor.

The Setting

Many peasants chose to sell their grain and other agricultural goods at village markets rather than sell their grain to the state. Many of these markets operated on an underground basis. Lenin denounced these black-market traders as ideological enemies in 1919. Applebaum noted that “from there he needed to make only a short logical leap to the denunciation of the peasants who sold grain to these speculators.”²⁰ Stalin was put in charge of matters in southern Russia, including Ukraine, with orders to collect grain for Moscow. To do this, Stalin used the Red Army. Peasant rebellions broke out in several places as collectivization and grain requisitions were very unpopular.

In 1919, the Bolsheviks were quickly consolidating power in Ukraine. Ukrainian newspapers were banned. The use of the Ukrainian language in schools was banned as well as Ukrainian theaters. The Soviet secret police, the Cheka, began rounding up Ukrainian intellectuals and accused them of separatism. People who spoke Ukrainian on the street were subject to being shot by the Russian soldiers that occupied Kyiv.²¹ Private land was confiscated, and an attempt was made to collectivize the farms.

Bernard Pares noted that the word *kulak* means fist. It was used before the revolution for hard-fisted merchants or for peasants who got a hold of their fellows and were probably village usurers. They also gained power over others by hiring labor or leasing out machinery or land. It was now used wholesale as a word of abuse for any who used machinery or employed hired labor—in short, for the thrifty, who were the leaders of the village.²² Thus, basically a kulak was a successful Ukrainian farmer.

Ukraine is the breadbasket of this region. The disruption of war was compounded by drought and attempts by the Bolsheviks to control all aspects of local life including agriculture. Robert Conquest explains: “But mere disruption was far more important. The decline in agriculture only began in 1919, but by 1922 work horses were down 35.1% (from 1916), cattle 24.4%, hogs 42.2%, sheep and goats 24.8%, livestock, in fact being at about two-thirds of the prewar level.”²³ Conquest further found that the problems were compounded by the fact that less crops were being planted, observing that “in 1913 about 700,000 tons of fertilizer had been used, in 1921 about 20,000 tons. The area sown had gone down from 214 million acres in 1916 to 133 million in 1922. The grain crop (including potatoes) had gone down by about 57% between 1909–1913 and 1921.”²⁴ The result was the great famine of 1921.

The famine of 1921 gave the Bolsheviks a new chance to consolidate their power in Ukraine. Applebaum observed that “the grain requisition system broke up communities, severed relationships, and forced peasants to leave home in search of food. Starvation weakened and demoralized those who remained, forcing them to abandon the armed struggle.” The state then struck at the religious beliefs of the people when, in the name of famine relief, the Ukrainian churches were forced to give up religious objects made of precious metal to the state. The Ukrainian Orthodox church had declared its independence from Moscow in 1921. Lenin explained that these actions were to teach the peasants, religious clergy, and political opponents “a lesson.”²⁵

When describing the New Economic Policy (NEP) adopted by Lenin in 1921, Edward Hallet Carr explained the problem facing the Soviet government, explaining:

Another jarring, but irresistible, Russian force had imposed itself on the original Marxist conception of the revolution. The question that the Bolshevik leaders had to ask themselves in 1921 was essentially the question that had divided the Westerners and the Slavophiles. Would the triumph of socialism in Russia be achieved by following the Western path, or by following a specifically Russian line of development? If the first answer were accepted, reliance must be placed on the development of industry and of the proletariat, if necessary, at the expense of the peasant. If the second answer were accepted, reliance must be placed on conciliating the peasant and winning their support for increased agricultural production as the prerequisite of an advance to socialism. As always in Russian history, a clear-cut choice between two answers was impossible. Russia could neither unconditionally pursue nor reject the Western path. In NEP, Lenin found the compromise between the two answers—the “link” between proletariat and the peasantry, which for a time make it possible to travel the two roads simultaneously. But the compromise, which was also a “retreat,” had ideological implications, and these implications also carried reflections of the Russian past. The resistance of the Russian peasant to Marxism was the resistance of the traditional Russian way of life to western innovation.²⁶

The death of Lenin on 21 January 1924 threw the Soviet Union into a power struggle. The struggle for power between Joseph Stalin, Leon Trotsky, Grigory Y. Zinovyev, Lev Kamenev, and Nikolay Bukharin ended with the ruthless victory of Stalin and the downfall, exile, or outright execution of all Stalin’s rivals.²⁷ Stalin began to consolidate his power not only over the Communist Party, but over all the Soviet Union as well. Kamenev and Zinovyev were exe-

cuted in 1936 after show trials during the purges. Bukharin's execution came in 1938 after another show trial. Trotsky fled the Soviet Union but was murdered in Mexico in 1940 by a Soviet agent.²⁸ In her assessment of the situation, Applebaum stated that

war Communism had failed. The radical workers' state had not brought prosperity to the workers. But by the latter part of the 1920s, Lenin's New Economic Policy was failing too. Theoretically, markets were free. But in practice, the state was not content to leave them alone. Officials, suspicious of the traders profiting from the sale of grain, interfered constantly by circulating aggressive, "anti-speculator" propaganda and imposing heavy regulations. They set high prices for industrial goods and low prices for agricultural products (hence the designation "scissors crisis"), which created an imbalance.

Applebaum explained that many peasants refused to sell their grain at the low state offered prices and either kept the grain or fed it to their livestock.²⁹ Applebaum observed that, by 1927, another crisis had appeared:

For the Communist Party the crisis threatened to overshadow an important anniversary: ten years after the revolution, living standards in the Soviet Union were still lower than they had been under the tsars. Food of all kinds was obsessively rationed—workers received food coupons according to their status—and very scarce. So sensitive was information about grain production that five months before the anniversary celebrations, in May 1927, the OGPU forbade all Soviet newspapers from writing about any "difficulties or interruptions in the supply of grain to the country as they could . . . cause panic."³⁰

The first Five-Year Plan came into effect in 1928 and lasted until 1932. In 1929, Stalin modified the plan to include collectivization of agriculture.

Facing an obvious failure of their agricultural policy, the Soviets looked for someone to blame. Stalin chose the kulaks. A kulak was generally a small farm owner who was rich enough to employ labor. On 27 December 1929, Stalin told the meeting of the Congress of Agrarian Marxists that "we have gone over from a policy of limiting the exploiting tendencies of the kulak to a policy of eliminating the kulaks as a class."³¹ Thus, the policy of dekulakization had begun. This policy resulted in the arrest, deportation, exile, and murder of thousands of kulaks, especially in Ukraine. According to *Conquest*: "Already, deportation quotas were laid down for different areas. Mass execution also played its part. Stalin later told Churchill that 10 million kulaks had to be dealt with, and that 'the great bulk' were 'wiped out,' others being transferred to Siberia. Some 3

million seem to have ended up in the newly expanding labour-camp system.” Stephen Kotkin observed that “those that refused to join the collectives became ‘Kulacks,’ no matter how poor.”³²

The phrases *chrezuychainye mery* (extraordinary measures) and *chrezvy-chaishechina* (state of emergency) began to be used by Stalin and other Soviet leaders. Accused of hoarding grain for speculation purposes, the grain traders had become scapegoats.³³ The kulak had become an enemy of the people.³⁴ The grain shortage problem was complicated by several droughts that resulted in poor harvests.

The Disaster

Bohdan Klid and Alexander J. Motyl found that the actions taken by Stalin against Ukraine were a deliberate attempt devised to kill and subdue ethnic Ukrainians and destroy their aspirations of statehood, as separate from the Soviet Union. Central Committee members Lazar M. Kaganovich and Vyacheslav Molotov were given the responsibility of enforcing collectivization and dealing with the kulaks at the All-Ukrainian Party Conference in 1930. They were assisted by Pavel Postyshev (first secretary of the Kyiv Regional Committee), Stanislaw Vikentyevich Kosior (first secretary of the Communist Party of Ukraine), and Vlas Chubar (Central Committee Member).³⁵

The Ukrainian kulaks were deemed enemies of the state. Stalin had announced in 1929 that the kulaks would be eliminated as a class.³⁶ Beginning in 1929, in a program called “dekulakisation,” up to 12 million kulaks were deported.³⁷ In 1930, the political purges in Ukraine had spread to political leaders, academics/intellectuals, writers, linguists, artists, singers, students, clergy, and lawyers. Mass arrests and executions became common.³⁸ Some Ukrainians resisted the collectivization, but without their leadership resistance soon collapsed.³⁹

By 1931, although the secret police had triumphed over peasant resistance to collectivization through mass arrests, mass deportations, and mass repression, their actions had not fixed the problem of low agricultural output. The Soviet government continued these policies and were even harsher in their actions against the peasants of Ukraine. Olha Dovbnia found that “the political repression against the peasantry of the Ukrainian SSR in 1921–1939 focused on solving economic problems, suppressing all forms of resistance, and modeling social processes and regional peculiarities of repressive politics depended on combinations of directives of the center, initiatives of the local authorities and the public security authorities. The repression was not limited to a specific group of the richest peasantry but was directed against the peasantry opposing a forced collectivization.” Many peasants were given the choice of either joining the collective or being shot where they stood.⁴⁰

Basil Dmytryshyn observed that “the speed and ferocity with which the mass collectivization program was carried out benefited neither the state, nor the collective farms nor the peasants. Before they ‘joined’ collectives, the peasants, in desperation, killed their cattle, pigs, and horses; destroyed their farm implements; and either burned their crops or allowed them to rot in the field.”⁴¹ Robert W. Thurston found that “grain was funneled from farms to the Red Army and the cities, despite the grave lack of consumer goods flowing the other way.”⁴²

Signs of starvation had been reported as early as 1930 in some areas. Collectivization did not motivate the peasants to work harder or more efficiently to raise crops. The threat of violence had forced the peasants to relinquish their lands, livestock, and farm machinery to the state collective farms, but it did not motivate them to work hard for no perceived rewards. Peasants began to abandon the farms and leave for jobs in the city.⁴³

The migration of the peasants to the cities resulted in a rapid growth of many cities in Ukraine. The peasants had found jobs doing various tasks, but this increased the need for food to be brought into the cities to feed the growing population. The effects of the famine on the available food supply were devastating. Snyder observed that in the cities of Ukraine, people would begin to line up at 0200 in the morning to wait for the shops to open in hope of buying a single loaf of bread. Some in the line were so desperate to keep their place that they hung on to the belts of those in front of them. Others were so weak that they had to be held up by strangers who were also standing in line. Starving peasants begged those in line for crumbs of food. One observer called the peasants “living skeletons.”⁴⁴

Stalin’s Five-Year Plans demanded unrealistic agricultural production goals from Ukraine. When the goals were not met, the quotas were raised, not lowered. Walker stated:

The few first-hand accounts of the Holodomor that survive make for gruesome reading. First came the absurd grain targets sent to the region from the Centre; if the officials did not fulfill them, they would be considered wreckers themselves. Brigades of enthusiastic party officials and volunteers descended on villages and farms, requisitioning grain seeds, then personal supplies before smashing up homes looking for anything that might have been hoarded.⁴⁵

Even the seed grain was confiscated. Conquest observed that watch towers were erected in the fields and armed patrols prevented the peasants from accessing the food from the fields.⁴⁶ The result was mass starvation. Walker also observed that “during the winter of 1932, the famine spread more widely. People ate rats, cats and eventually each other. . . . By the Spring of 1933,

people were dying in eastern Ukraine at a rate of more than 10,000 per day.”⁴⁷

When examining the Holodomor, Kotkin discovered that “death and disease wracked the entire Soviet wheat belt—Ukraine (including the Moldavian autonomous republic), the North Caucasus (including the Kuban, Stavropol, and Don provinces) the Middle and Lower Volga valley, Novgorod to Astrakhan, including the Volga autonomous republic and the central black earth region. . . . Party officials begged for emergency aid to ‘save the lives of many people from starvation death’.”⁴⁸

Kotkin stated that “reports of cannibalism in Ukraine were averaging ten per day. Parents were killing one child and feeding it to the others; some prepared soup stock and salted the remaining flesh in barrels to preserve it.” The secret police reported on cannibal bands that targeted orphans: “This group cut up and consumed as food three children, including an eleven-year-old son and an orphan whose parents perished from starvation.”⁴⁹ No aid was permitted from outside provinces. As a direct result, an estimated 3–7.5 million Ukrainians perished.⁵⁰ Millions more were deported to Siberia and other provinces.⁵¹

Investigation and Assessment of the Event

During 1934–35, the Soviets intensified their program of Russification in Ukraine. Churches and synagogues were seized by the government and either repurposed or torn down. Monuments and buildings to Ukrainian glory were removed or destroyed. Ukrainian authors had their books banned and removed from libraries. Even the dictionary was changed to Russify the Ukrainian alphabet and make words more Russian sounding. The dramatic population change in Ukraine as a result of the famine was revealed in the 1937–38 census. The census showed that there was a population drop of millions in Ukraine. Stalin fired the census takers and declared the results a state secret.⁵² In 1939, Nikita Khrushchev became the first party secretary in Ukraine and the political situation stabilized somewhat.⁵³ However, Kotkin found that “at least 160,000 victims, in Moscow and Ukraine, would be arrested under Khrushchev during the terror.”⁵⁴ Three of the organizers of the Holodomor, Kosior, Postyshev, and Chubar were denounced in the Stalinist purges and shot in 1939.⁵⁵

Lessons Learned and Policy Impact

During the latter 1930s, collectivization was responsible for food shortages in the Soviet Union. Individual farmers in collectives did not feel responsible for the overall output and production of the collective. The collective farms were not nearly as efficient as the privately run ones had been.⁵⁶

Anti-Soviet sentiment lingered. When the Nazis from Germany invaded the USSR in 1941, they were greeted as liberators by many Ukrainians and giv-

en gifts of bread and salt. Olesya Khromeychuk stated that “during the Second World War large numbers of inhabitants of central, eastern and southern Europe joined the German Armed Forces. Among them were around 250,000 soldiers who identified themselves as Ukrainian. They served in the Wehrmacht, as well as the Waffen SS; a considerable number of them also served in the auxiliary police.”⁵⁷ The Ukrainians soon realized their mistake.

In the former Soviet Union, the Holodomor was hidden as a state secret for decades. In 1963, Khrushchev (now the first secretary of the Communist Party of the Soviet Union) finally publicly acknowledged the famine in Ukraine and blamed Stalin.⁵⁸ In 1966, Ukrainian Communist Party leader Petro Shelest finally allowed it to be mentioned in an article that was being published in *News from the Ukraine*, which was a newspaper published for Ukrainians abroad.⁵⁹ In 2010, a Ukrainian court found Kaganovich, Molotov, Postyshev, Kosior, and Chobar guilty of genocide for their participation in actions during the Holodomor. The verdict against the defendants was posthumous.⁶⁰

The impact of the Holodomor is still felt among the Ukrainian people today.⁶¹ A study of the intergenerational transmission of trauma from the Holodomor genocide found that the psychological and cultural impacts of the Holodomor were still felt by Ukrainians, resulting in fear and mistrust of government and a perceived need to conserve food or overeating and shame that this had been inflicted on them. The relationship between Russia and Ukraine was an uneasy one. Since the Russian invasion, the relationship has evolved to open warfare. The Ukrainians are fighting a desperate battle to retain their country.

Implications for Modern Emergency Management

Droughts and famines will always occur. It is the job of emergency management authorities to plan for these disasters. The preparation, planning, and training for disasters are what helps a nation mitigate the impact of the disaster, save lives, and recover from the disaster’s effects. Interagency agreements for mutual aid help emergency managers to supplement areas that they do not have enough resources in.⁶² The USSR did not request foreign aid and in fact continued to export food to the cities and elsewhere.

Hiroaki Kuromiya noted the negative impact of these decisions, stating: “Had Moscow stopped all grain exports and released all strategic grain reserves, the available 2.6 million tons of grain, under optimal conditions of distribution, might have saved up to 7.8 million lives, which was the approximate number of actual deaths from the 1932–1933 famine. Of course, Moscow did not release the grain reserves, even in the face of mass starvation.”⁶³ Stalin used starvation as a strategic weapon to ensure compliance with Soviet policies of collectivization.

Summary

The Holodomor was the result of a deliberate effort by Stalin to crush all opposition and force collectivization on Ukraine and its peoples by weaponizing its resources against the population. Alessandro Toscano notes that “Stalin held ‘enemies’ and ‘kulaks’ as the main cause behind the ‘food difficulties’.”⁶⁴ Stalin intentionally caused the crisis and withheld food aid until all opposition was crushed and forced collectivization was achieved in Ukraine. The result was that an estimated 3–7.5 million Ukrainians perished.⁶⁵ Stalin felt that Ukrainian nationalism was a threat to the Soviet state.

Larisa Yepik and Eduard Semeshyn discovered that the methods and measures of the Bolsheviks’ fight against the private market became one of the main causes of the artificial famine that occurred in Ukraine in 1932–33. They advocate that the Holodomor was “provoked by the political and economic transformations of the communist rule.”⁶⁶

The Holodomor was the result of the deliberate exercise of raw political and military power by Stalin. While the objective of forced collectivization was achieved, millions died in the process. The actions taken by the USSR during this period still affect the relationship between Russia and Ukraine to this day. It was a man-made genocide. After the fall of the USSR in 1991, Ukraine became independent again. The Ukrainians began to de-Russify their country, changing the spelling of their capital back to Kyiv and removing other signs of the Soviet times. The National Museum of the Holodomor-Genocide was opened in Kyiv so that this horror would never be forgotten. Ukrainians are further motivated to defend their country against the invasion from Russia. They feel that it is a matter of survival, not only of their country, but of the very lives of their people.

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The European Integration as a Strategic Source for the Ukrainian Democratic Media and the EU in Countering Russian Propaganda

Gleb Trufanov

Abstract: This article focuses on scientific description and discursive analysis of the key parameters of the Ukrainian media as strategic agents of Ukrainian discursive transit during the Russo-Ukrainian War and the proposition of the new field for cooperation of the European Union (EU) and Ukraine conflict studies in media. This study analyzes changes in EU media policies with Ukrainian democratic media development during wartime. The author focuses on the positive outcomes and future perspectives of the EU-Ukraine media organizations' cooperation in media security and Russian propaganda countering. The article revises the current EU-Ukraine efforts in countering Russian propaganda and proposes the application of conflict studies in the sphere of journalist's security. By security in this case, the author understands a set of measures to reduce the lethality of journalists' work in war zones.

Keywords: Ukraine, Russia, war, conflict, media, propaganda, hybrid warfare, information, European integration

The Russo-Ukrainian War is one of the largest armed conflicts of our time. It is necessary to note the wide inclusion of the media as a means of confrontation between the two actors of the conflict. This conflict

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is considered a hybrid war. The most recent research in the field of security indicates that hybrid war combines conventional and unconventional methods of warfare to achieve long-term goals. These methods are being used in combination to indicate the weak spots in the enemy's defensive mechanisms. Hybrid warfare shapes the use of a wide range of tools in the sphere of media and occupies the mental space of a certain nation's society.¹ This type of warfare represents a synergy of approaches aimed at achieving a multidimensional goal in an armed conflict—disruption.² These combined methods are meant to increase success and minimize possible casualties in a conventional struggle. In the context of the Russo-Ukrainian War, both sides use a pattern of “historical/cultural” identity frames in their information operations.

The main characteristic of a hybrid war in this article is understood to be information operations. *Information operations* during conflict target the audiences of the opponent with certain selected media content to affect the perception of reality in the opponent's audience by creating false or biased narratives. The media discourse recipient is an object in these operations. Information operations in the context of conventional war create an opportunity of expansion of impact on the opponent through the transformation of values, perception of its support group, and allies. *Transformation* refers to a process of cognitive impact on media discourse recipients that has the following features: it is constant, focuses on the long term, requires the wide use of instruments and resources of information distribution, and creates media content. In other words, information operations in media are targeting the basic consensus on a national level to indicate social vulnerabilities. *Basic consensus* is a core set of unique values and traditions forming the identity of a certain nation for years. The main goal is to highlight the fissures and contradictions existing in a nation and create an agenda to transform them into a conflict of interests.³ Successful information operations, from an adversary's perspective, create division and cause supporters of different opinions and views to act hostile toward each other. All of this results in an erosion of the nation's morale.

The main strategic tasks of modern Ukrainian independent media within the hybrid war are social mobilization of the population around common problems, the creation of a universal platform for dialogue, and a nation's storytelling of their problems on the international level. The Russo-Ukrainian War has presented Ukraine with the challenge of mobilizing broad spectrum resources for defense, creating a platform for cross-cultural interaction to find support in the world, and countering Russian propaganda. Media in most of the post-Soviet countries is still in the process of democratic transition. This means transferring the media sources from the state-corporate body to democratic media sources. The main aspect that only democratic media can achieve as a strategic resource is overcoming the crisis of representation and agenda formation based

on feedback from the public. The case of the *Kyiv Independent* presents the need for the democratic media to make a strategic impact in a hybrid war—discursive transit. The *Kyiv Independent* is a new type of Ukrainian media outlet. It is published in English and presents an international audience with the stories of Ukraine, its economics, history, and war effort.

This research offers a novel concept of discursive transit as the media practice of influence in information operations. What is a discursive transit? *Discursive transit* refers to the use of information power in a conflict. First, we should note that propaganda during wartime is very common and is widely used by both Ukraine and Russia. Discursive transit is a part of a propaganda frame. Propaganda works as a source of social mobilization on a national level. It serves as a narrative of the “plan” of the state and the armed forces on how to defeat the enemy, explains who the enemy is, what the military needs you to know, and what to do in a case of an emergency. In this article, discursive transit is presented through the work of the *Kyiv Independent* and its explanation of cultural/identity materials.

In this research, we define power through the concept of Robert A. Dahl. Power is a special capability of *A* to force *B* to do things that *B* would have never done without the direct impact of *A*.⁴ Discursive transit is subject-object interaction in the context of information power. It could be either applied as a tool of information struggle between opponents in conflict, or for seeking international sympathy and support (as in the case of the *Kyiv Independent*). The concept of information power is described through the following: *A* possesses a monopoly over its story (propaganda) in terms of its distribution and interpretation on a national level; however, *A* conflicts with *B*, and storytelling becomes an instrument in a conflict. *A* seeks an opportunity to change the perception of the reality of *B*, test its vulnerabilities, or gain momentum in its information operations expansion, increase international support for its war effort, or maintain an image or reputation. It is not that efficient in terms of information impact on *B* for *A* to distribute its discourse on its national level only. *A* seeks global expansion and recognition of their narrative by overwhelming media resources and discourse to change the perception of *B*'s audience regarding key aspects of conflict and *A*'s role in it. By discourse in this article, the author understands a set of vital symbols in the media reflecting the main goals and objectives of a nation in an armed conflict. At the same time, for *B* this discourse of *A* may be hard to understand—after all, it is a foreign discourse. The following aspects may interfere with its receipt: language barrier, little knowledge of the problem, need for a detailed explanation for certain symbols, and others. So, *A* should do extensive research on the society of *B*, including its divisions and overall beliefs to make a transition/migration for its propagandist discourse from its media sphere and culture to fit into the one of *B*.

However, existing domestic media are not necessarily designed for this goal. Media sources must be independent to operate freely in foreign countries and must be available online, comply with the needed laws and regulations, and be presented in the language that the majority of the targeted audience can understand (e.g., English). Moreover, the media source has to have a reputation that resembles the values of the targeted audience. That is why there emerged a need for the creation of special media outlets for discursive transit like the *Kyiv Independent*. This media source is the best strategic match for Ukrainian discursive transit to gain international support and garner sympathy through discourse on the vital Ukrainian identity, historical symbols, and the atrocities connected to the invasion by Russia, including inculcating Russian language and beliefs in the occupied regions of Ukraine. This new independent media is aimed at the internalization of Ukrainian storytelling. For Ukraine, the core topics of its discursive transit are national identity symbols, culture, and independence. However, Russia uses discursive transits too. Since the very beginning of the full-scale war in 2022, the Western states chose the strategy of information isolation of Russia to prevent pandemic misinformation in their media spheres. Russian war discourse is mainly aimed at criticism of the West, legitimization of the war effort, and discreditation of opponents. Russia was constantly trying to break out from this blockade, but increasing amounts of Russian-affiliated media outlets were banned in the United States and the EU. Nevertheless, Russian elites came up with an idea of using Western journalists to deliver and transit their discourses into Western media spheres.

The striking example of this is the Vladimir Putin interview with Tucker Carlson on 6 February 2024. The *Kyiv Independent* produces and distributes its stories independently without inclusion of mediators between its audience and the media outlet; however, in the case with Russia, an American journalist served as an intermediary structure in this discursive transit. Carlson may be considered a controversial figure in the American media sphere, but the Russian leader did not have many choices or media options to deliver his speech. For Putin, it was essential to be represented by a Western journalist. This interview may have been aimed at the polarized agenda inside American and Western media spheres by emphasizing hatred and imbalanced emotions. Putin focused mainly on criticism of the West and the North Atlantic Treaty Organization (NATO) and the legitimization of the war effort.⁵

Independent media tends to inhabit a strategic role in society as a mediary structure between the public and national leadership that can learn the needs of people. Social activism in media is a major aspect of social mobilization of the nation. Democratic media are extremely effective in countering propaganda by fact-checking and investigating it. Furthermore, media serves to moderate conflict by countering propaganda. This strategic role is described in this article

by the example of the EU-Ukrainian antidisinformation effort and the author's view on media as a part of the conflict-management resource in an armed conflict. Democratic media as a social platform creates an inclusive public space for national initiatives. In this case, the media may work as a fundraising platform to announce the needs of the nation—and the military during the war.

In this research, the author views propaganda countering in the context of hybrid warfare and democratic media development as integral to building an effective model for the regulation of information conflict. The Russo-Ukrainian War tends to be inclusive in terms of the intervention of many parties in collaboration on information security and media. Here, we can list the United States and the EU as the main strategic partners of Ukraine. So, strategic cooperation of the EU, the United States, and Ukraine in building an effective antipropaganda policy is essential.

This process is described as the construction of strong cooperative bonds between collective governmental bodies, media actors, and the public. While these terms differ by their disposition in social life, the author sees them as the most essential parts of building an effective media policy for wartime. The Russo-Ukrainian War and propagandist discourse require democratic media in the EU and Ukraine to accept challenges; however, European integration of Ukraine is an ongoing process that shows the number of potential fields for cooperation. One of those fields is media security. This article is mainly a descriptive work aimed at a theoretical explanation of how European integration of Ukraine provides new instruments for propaganda countering as a strategic cooperative ground.

How did European integration affect the countering of Russian propaganda in the context of the EU-Ukraine strategic collaboration in the media sphere? The object of the study is to analyze changes in the media policies of the EU that are aligned with the process of Ukrainian democratic media development during wartime. The subject of the study is the positive outcomes and future perspectives of the EU-Ukraine media organizations' strategic cooperation in media security and Russian propaganda countering. Modern researchers in the fields of politics and media studies specifically focus on the role of the media in hybrid operations during the Russo-Ukrainian War. They pay attention to aspects like the Ukrainian military readiness, Russian expansionist culture, and colonialist frames. The relevance and significance of this study are defined through the following aspects. First, there is a gap in contemporary research on the role of the EU integration of Ukraine and their collaboration in Russian propaganda countering.

This article presents the study of the most recent EU legislation initiatives in the context of information security and media regulations. Moreover, this study is the first attempt at scientific description and discursive

analysis of the key parameters of the Ukrainian media as agents of Ukrainian discursive transit during the Russo-Ukrainian War. This aspect was studied in the example of the *Kyiv Independent*. Furthermore, this research offers an innovative field for EU-Ukraine cooperation in the sphere of media-security-conflict studies in media. EU integration aspirations for Ukraine are now secured by the EU as a logical outcome of Ukraine's effort to become an EU member. However, the Russo-Ukrainian War and the context of Russia's information operations pose a serious threat to both the EU and Ukraine. Moreover, Russian information operations fighting became an object of collaboration between the EU and Ukraine and led to the EU development in the field of media-regulation legislation. We can conclude that constant analysis of the current efforts and presentation of the methods and tools should be the basis of any antipropaganda measure. Russian pro-regime media is a dynamic structure that adopts new methods and intensifies its operations.

The article starts with the methodology section describing the methods and approaches used for this study. The methodology section elaborates on the approaches, frames, and their meaning in the context of the study. Furthermore, the research continues with the revision and description of the current research results in the sphere of media studies and political communication in the context of hybrid warfare and information operations. The article continues with an explanation and description of the development of EU legislation on media regulations.

The author especially emphasizes the innovative adoption of the European Board for Media Services as an intermediary body. The study outlines the positive effects of the representation of the national identity symbols as a key factor in building a problem-oriented media strategy, as in the case of the *Kyiv Independent*. The article continues with an explanation of the new generation of Ukrainian media, the aspects of success needed to make discursive transit a successful element of media reality for constructing a positive national image, and how this in turn creates a cultural dialogue space and helps obtain international support. This article introduces a new way of raising security in media for both saving journalists' lives and making media a safe space. This particular article presents a new concept of EU-Ukraine cooperation and conflict studies in media. The article continues with general provisions for the inclusion of conflict studies in media, its relevance, and its positive influence on security in media. The conclusion highlights the findings and outlines the potential for further research.

The Research Objectives

Research objectives of this article include explanations of the most recent EU efforts in the security of journalism and information security practice as well

as the revision of the current EU-Ukraine efforts in countering Russian propaganda. The formulation for the application of conflict studies in the sphere of journalist security is a strategic source for collaboration expansion in the frame of EU-Ukraine efforts regarding information security.

The author performs a discourse analysis of discursive transits in the war-time case of the *Kyiv Independent* to identify key features of the Ukrainian independent media strategic potential in the context of collaboration with the EU in countering Russian information operations.

Review of the Literature on the Current State of Information Warfare

Information warfare between the EU and Ukraine against Russia has never been more relevant than it is now. There is a limited body of literature that is dedicated to the study of aspects of propaganda countering and problems and controversies of the Russo-Ukrainian War discourse in media. Ukrainian media had been through many transformations since 1991, which was the year the Soviet Union collapsed.⁶ However, media and political researchers from different Western countries have done significant research to define Russian propaganda and ways to counter it. Maxime Audinet, Eloïse Fardeau Le Meitour, and Alicia Piveteau studied strategies for how an agenda is formed.⁷ Jakov Devčić studied aspects of changes in political discourses in connection to the national proximity of Russia and Serbia.⁸

National proximity is one of the key aspects of Russian propaganda's success in nations of the post-Communist states. Russia performs its information operations in the Balkan region actively. Those operations are focused on the concept of "Slavic-brother" states. Russian media is making discursive transits in the media spheres of those states, including efforts to create proxy media. It is a vital activity for Russia to capitalize on post-Communist and Slavic sentiments in the Balkan region to reflect wide international support for the war effort in Ukraine. Social media plays a crucial role in information distribution and building the trust between media outlets and audiences.⁹ It has many features beneficial for both Ukraine and Russia in terms of discursive transit. Online media platforms have less strict regulations than those created for registered media providers, plus services like YouTube are accessible worldwide and have a vital element—the comment section—which serves to create a long life cycle of media participation and discourse recipients. Interpretation of media material ensures the story is more effective than just a piece of broadcast shown a few times on television. This longevity benefits Russian propaganda consisting of pro-regime individual influencers responsible for an intensive and constant propaganda flow.¹⁰ Many researchers highlighted this feature of the new generation of online resources and their special role in discourse distribution.¹¹

David Gregosz and Daniel Sagradov highlighted the essence of Russian imperialistic ambitions in the formulation of media discourses in Poland and the Baltic states. Researchers argued that online media platforms distributing pro-Russian narratives have been proving themselves as integral aspects of social tension between Poles and Ukrainian refugees residing in Poland.¹² Researchers from the Hague Centre for Strategic Studies came to a specific conclusion about Russian propaganda's effects on norm and habit formation. Constant repetition of narratives may lead to norm formation.¹³ Modern social media became a place that serves as a fake distribution platform. Social media (Instagram, YouTube, etc.) allows content creators to give their opinions on political and social events. Moreover, wars like the Russo-Ukrainian War give an incredible opportunity for many content creators to focus on conflict analytics especially. Videos on drones and war atrocities have been used by many media recipients since the very beginning of the war.¹⁴ However, in the case of social media independence, the lack of control and accountability along with the lack of a proper fact-checking will result in fakes and disinformation. Many researchers highlighted this exact problem since the beginning of the war, especially those who focused on the most novel ways of warfare and disinformation around them as a result of the ambiguity of these methods of engagement, which can cause fear, damage, and are widely available.¹⁵

Moreover, if that narrative repetition is unchallenged, it creates a new set of norms. In the case of Russian propaganda, those narratives are aimed at the legitimation and normalization of the war effort and the ideological frames behind it. Implication of legitimation of war frames through foreign media resources is the main task for Russian wartime pro-state media. Many researchers conclude that the Russo-Ukrainian War has been seriously affecting the European security architecture since 2014 in terms of territorial integrity violations. European states have been concerned about the probability of a full-scale war in Europe between Russia and NATO.¹⁶

Finnish researcher Tuukka Elonheimo reported that highly digitalized societies are predisposed to become victims of propaganda due to the high level of access to different sources of information.¹⁷ Moreover, Canadian researchers have made a complex, comprehensive attempt to find the reasons for the success of Russian propaganda for internal social mobilization during the war in Ukraine. Social mobilization is an internal support resource of the state. Inner legitimation of Putin's regime is one of the main aspects of Russian pro-regime media actors in social networks. Simon Hogue states that cyber operations in social networks like a TikTok social network are an essential action in the context of digital participation.¹⁸ The main task here is getting approval of the regime's actions from the public through the constant implication of polar images of the "good" and "special" role and destiny of Russia in saving Ukraine and the

world from many threats. Pierre Jolicoeur and Anthony Seaboyer pointed to artificial intelligence technologies developed in Russia. They believe that artificial intelligence is a significant threat in the context of a hybrid warfare model.¹⁹

Ukrainian media researcher Mykola Polovyi concluded that prewar Russian propaganda was built on symbols of sympathy in the context of history. Russian propaganda applied “positive Soviet legacy,” “unity,” and “nostalgic” models that targeted the Russian-speaking Ukrainian community’s sentiment.²⁰ Polovyi has identified language as a key cultural mechanism of norm or pattern accommodation. This specific role of the Russian language has been exploited by Russian propaganda ever since. Language serves as a link between Ukrainian media recipients and the object of Russian propaganda. The media recipient is always an object in the case of propaganda. The most recent research indicates that memes and popular culture are meant to play a crucial role in uniting the nation during the war. Humorous materials serve to emphasize problems and maintain morale.²¹

Methodology and Framework of the Study

For this research, the author applied various methods and approaches. The first method used was critical discourse analysis to analyze social and political aspects represented by text or in speech. This method is used by many researchers and widely described in many works.²² Teun A. van Dijk gave critical discourse analysis the following definition: *critical discourse analysis* is a type of discourse analysis that first and foremost examines how the abuse of power, domination, and inequality is established, reproduced, and countered in text and conversation in political and social contexts.²³ This is a multipurpose scientific approach that allows us to interpret and scientifically describe social and political processes in the frames of many disciplines.²⁴

However, in this study, we focus on cultural and political dimensions when analyzing discursive transit in the context of the *Kyiv Independent*. Ukrainian media discourse has a strong connection to the representation of wartime problems; however, war as a conflict is a multidimensional process. In this research, the author examined text constructions as elements of culture and the history of relations or conflicts between nations.²⁵ Those aspects were studied through symbolic representation in the Ukrainian wartime discourse. The platform Ukrainian media discourse is constructed on is the idea of a distinct Ukrainian identity and that Russia is the aggressor in this conflict and Ukraine is simply fighting for its independence as a sovereign nation. Critical discourse analysis allowed the author to examine those aspects in the example of the section “Explaining Ukraine” on *Kyiv Independent’s* website. Symbols represented there are not isolated units; they are meant to construct the complex image of Ukraine for a Western audience within social and political contexts to counter the Rus-

sian propagandist model of idiosyncratic history. This article analyzes symbols that are subject to discursive transit like *vyshyvanka*, *cosacks*, etc., and highlighted their intratextuality in the representation of Ukrainian identity. Moreover, it should be noted that the “Explaining Ukraine” section represents Ukrainian symbols linked to the historical perspective of Russian aggression and its political and social repercussions.

Discourse analysis was essential to make the following conclusions that one of the main aims of Ukrainian discursive transit is to fight the cultural appropriation frame that is widely represented in the Russian wartime discourse of hostility. Moreover, discourse analysis of Ukrainian discursive transits is aimed at the deconstruction of the idiosyncratic view of Ukrainian identity and culture of Russian propagandist discursive transits. Discourse may serve to increase social mobilization.²⁶ Opinion, comment, and donation sections on the *Kyiv Independent* all discuss Ukraine and the effects of the war on Ukrainian society as well as news about the war effort. This enables Ukrainian discourse to be interpreted and makes the storytelling continue. In terms of formulation and theorization of the role of conflict studies in media as a collaborative field for the EU and Ukraine, we used the conflict model of Ralph Darendorph.²⁷ In this conflict research, we mean any relation of incompatibility in terms of interests and positions. This incompatibility is described on the level of states and groups of interests like media outlets. A key aspect of any conflict is struggle as a process of achieving goals. The frame of a Ukrainian discursive transit as a propaganda-countering measure reflects this idea. Supervision of the third party is important for conflict regulation according to Darendorph. Conflict studies in media are meant to serve as an intermediary in solving problems inside and outside teams of media professionals to maintain security. Moreover, the role of the European Media Board was emphasized with a third-party role in the regulation of conflict as the process. Among other methods, we can list close reading of the EU legislation materials. Key aspects of information conflict as a part of hybrid warfare were developed in connection to the hybrid warfare theory of Martin C. Libicki.²⁸ Moreover, Committee to Protect Journalists’ (CPJ) reports data was visualized via graph to visualize how dangerous war journalism is in war zones from 2022 and 2024 and addresses the danger and lack of proper security for media workers in wartime.

Results

Context

War zone journalism tends to be a risky activity. However, there are still no complex tools for making it safer based on the conflict studies approach. Since 2022 the freedom of media and independence of journalism are of extreme importance due to the need to report the major armed conflicts emerging in

different regions of the world. Russia has applied strict laws against independent media. These laws had repressive repercussions on independent journalists in Russia like the apprehension and detainment of the Radio Liberty journalist Alsu Kurmasheva who was detained in Kazan, Russia, on 18 October 2023. Other cases include the detention of Evan Gershkovich on March 2023. Other cases of detention happened to different journalists who were covering the aspects of Alexei Navalny's death. Media in these difficult times are essential in terms of investigating and presenting different perspectives from diverse groups. The deep political crises in Russia showed that independent, democratic journalism is in the most danger in times of conflicts. Protection of media means securitization and support of its independence and ability to function. Major conflicts like the war in Ukraine and the conflict between Israel and Palestine in the Gaza Strip region proved that conflicts have a constant trend to raise uncertainties about the treatment of journalists in the combat zones. Journalists may die from structural violence from the side of states and their institutions. Those cases may include intentional harm to the journalist's physical health, life, and mental health caused by authorities. Furthermore, there is possible indirect harm like negligence of laws, burdensome bureaucracies, danger, and lack of proper work in a conflict zone from the military, law enforcement, and other bodies of the state. We can conclude that any governmental policy in media regulation normally should include the following aspects: freedom of speech and pluralism promotion and guarding, creation of a safe and legal work environment for journalists, and maintenance of policies against hate speech.

Since 2022, in military operations by Israel in Gaza against Hamas and the war in Ukraine, the journalists covering these conflicts are subject to many risks in war zones. Violence and casualties occur frequently in those conflicts. Civilians suffer from combat actions.

There are analytical reports by the CPJ on accidents that happened to journalists who worked to cover those conflicts. Below are three graphs that represent the analysis of harm made to journalists while performing their duties. These graphs represent data to show that journalists are exposed to pressure from many groups, including governments. These graphs give three main markers of harm. There are three major markers of how to measure the level of risks of working in a war zone or covering conflicts while being a journalist in a country with strong repressive laws and censorship.

These markers consist of three possible negative impacts on journalists and media workers. The first marker is the death (murder) of the journalist or media worker. The second one is about the circumstances of the death of the journalist, such as if it happened during a crossfire or whether it was an intentional murder committed by some group or governmental body or institution. The third marker is defined by imprisonment due to the journalist's position on cov-

ered events, which includes the exact reason for that imprisonment. Reasons are different, however, in general, we can conclude that those reasons are in the field of structural violence of the state as a tool for forceful consolidation of media around the allowed field of coverage. For instance, in Russia, there is a law on reporting “fake news” (accepted on 4 March 2022) about the activities of the Russian armed forces. This law defined both the amount of the penalty of up to 700,000 rubles (approximately 7,000 euros) in the case of a regular violation and 300,000 rubles (approximately 30,000 euros) in case of an aggravated violation. The incarceration term could be up to three years. The choice between penalty and incarceration is at the discretion of the court.²⁹ This law was used against independent journalists many times. Coverage of armed conflict events is risky for journalists—they may get killed in a shooting or airstrike or get imprisoned due to noncompliance with repressive laws.

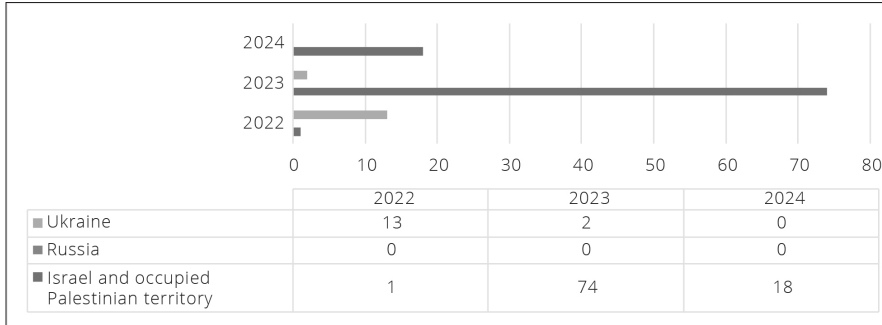
Risks connected to working as a journalist in Ukraine are very much connected to the dangers of entering and performing duties in the war zone. The most casualties were sustained during risky assignments and crossfires. Those results tell us that Ukraine does not impose much of a political threat to free journalism and does not apply any rigorous laws against journalists. The greatest danger comes from the presence of a large number of combat-connected aspects (live fire, military maneuvers). Furthermore, risks connected to working as a journalist in Russia are very much connected to the dangers connected to the high probability of becoming a victim of the structural violence that is on the rise constantly. Russian authorities try their best to facilitate the information vacuum around their war effort in Ukraine and maintain their own approved narratives.

The conflict between Israel and the Gaza Strip has had more casualties than the Russo-Ukrainian War. Among dangerous assignment deaths, there have been murders. Murder means it was intentional, planned, organized, and backed by some group of interest. The reasons for murdering a journalist can include wanting the journalist to stop working on their assignment to ensure the activity remains hidden. Journalists often perform investigations on certain problems of public interest. These topics compared reports of abuse of power, violations of martial law, tortures, etc. When the interests of major groups of interest are reported on, it jeopardizes their activities, which means they have a motive to commit a murder to continue to cover up their activities.

The European Union Legislation and Free Journalism Development

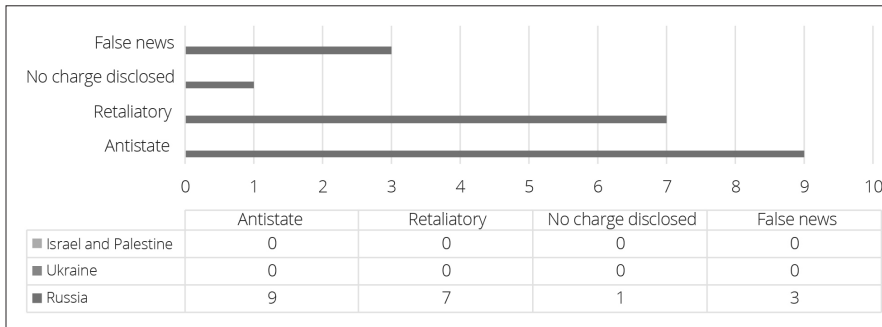
European integration is a long-term strategy of Ukraine. Integration into a union as a new member is a very complicated process. Ukraine has to embrace and adapt to European ideals of how media works as an independent body.

Figure 1. Journalists and media workers killed in countries that participated in armed conflicts, 2022-24



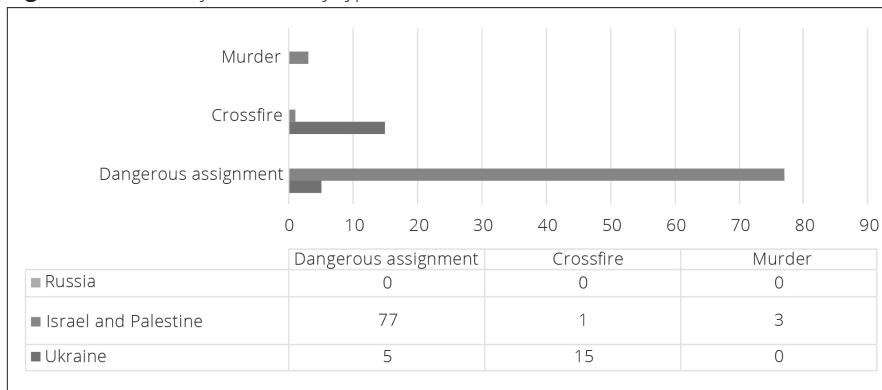
Source: Committee to Protect Journalists, 2024, adapted by MCUP.

Figure 2. Journalists and media workers imprisoned in countries that participated in armed conflicts, 2022-23



Source: Committee to Protect Journalists, 2024, adapted by MCUP.

Figure 3. Deaths of journalists, by type, 2022-24



Source: Committee to Protect Journalists, 2024, adapted by MCUP.

What is a European media strategy? Laws have a national context and differ from country to country. EU regulations in media are the concept of how media should work as an independent public servant. EU media regulations or standards are accepted by members of the EU and are meant to protect jour-

nalists as public servants from any violations conducted by nation-states and their governments. The EU in this case is an intermediary or arbiter in any type of clash of interests between media and state apparatus. Conflicts of interests are possible even in free and democratic states in the EU. For instance, in the case of Poland, the media is constantly struggling with political and financial dependencies. For years, the ruling Polish party, the Law and Justice Party (PiS), used Public Service Media (PSM) as a propaganda tool.³⁰ This was possible because of the control over media that the Law and Justice Party had. Another striking example of this type of conflict between state apparatus and media is Slovakia. There are cases of state sabotage on the investigation of murders of journalists (e.g., Ján Kuciak and his fiancée Martina Kušnírová).³¹ Moreover, control of independent media is very high, which makes it hard for media to stay independent.

The EU constantly develops and maintains its policy regarding the freedom of journalism and journalistic protection. The EU claims that it is doing everything possible to maintain the highest standards of pluralistic and deliberative democracy trends in modern journalism-state relationships as a strategic democratization of media. The EU has many regulations on how freedom of journalism should be implemented. Moreover, EU policy in journalism is a provisional thing. Some scientists in the field of media research believe that contemporary European media serves as an instrument of the representation of the core ideas dedicated to the storytelling of the social groups perceived as fragmented identities without the internal drive to societal integration.³² Some modern researchers believe that the EU has to expand its media strategies to other countries to shape the media sphere in those countries and make those societies more democratic.³³ According to Nevena Ršumović, the speed of transition of democratic values to some post-Communist regions, especially the Balkan states, is among the main reasons that governments applied brakes on the development of free journalism.³⁴ The problem of the involuntary political values transition is a major issue for many European countries with a Communist past (such as the Czech Republic, Hungary, Slovakia, and the Balkan states). The repression of journalism has been inherited from both inside social spheres and outer foreign political circles and elites.³⁵ Some researchers highlighted the essence of the contradictions inside media doctrine in modern Europe.³⁶ These and other complex issues should be highlighted for ensuring the future of media regulation in the EU.

EU policies regarding protection of the independent media sources seek to maintain a special status for journalists to protect them from danger. Journalists are supported by the following bodies to protect freedom of speech and journalism. On 20 March 2024, the European Parliament accepted the Regulation of the European Parliament and of the European Council, establishing a common

framework for media services in the internal market and amending Directive 2010/13/EU (European Media Freedom Act).³⁷ This document serves to prevent multiple threats: the politicization of the media sphere, dangers connected to the work of journalists, and the interference of political actors in the media sphere. The European Media Freedom Act (EMFA) enhances the protection of editorial independence. It ensures the independent functioning of public service media. This act is aimed at ensuring the transparency of media ownership. Additionally, this new piece of legislation protects pluralism to provide differing perspectives and opinions for analysis.

On 28 April 2022, the European Council has accepted a law that should protect journalists against strategic lawsuits against public participation (SLAPP) (Interinstitutional File: 2022/0117[COD]) as public backlash or burdens to be applied by various stakeholders, public servants, etc.³⁸ A SLAPP is a lawsuit that oftentimes causes major damage to journalists due to the costs associated with legally defending themselves against the company or person who initiated the lawsuit. SLAPP lawsuits pursue journalists to make them silent and preoccupied with the financial and emotional burden that the lawsuit applies to them. In other words, SLAPP serves as an instrument to prevent public participation and to silence criticism outside the accepted narrative.

This law is meant to protect journalists' independence by providing financial remedies and coverage opportunities for victims of these types of lawsuits that target journalism as well as a free press. It allows courts to dismiss unfair and biased lawsuits designed to suppress journalists. It is granting protection from third parties (country judgment).

War in Ukraine brought a new agenda to the field of European integration of Ukraine. The integration of Ukraine into the EU is the best solution to enable long-term cooperation in the field of media regulation. The media community is a self-reflective and self-regulated body in any free country. Democratic transition of media in Ukraine is an ongoing process, however, it shows progress. Media is still vulnerable to the pressure of the major political actors, stakeholders, and government. However, it may empower its beneficiaries from different spheres. Media has significant power in discourse formation, adaptation, distribution, and interpretation. Media tends to be independent, but in most cases it is impossible. Media, by its nature, produces conflict: contradicting interests and differing positions are subject to conflict there. Moreover, media is a very dynamic and fast-changing field, and this fact aggravates existing tensions there. The variety of interests to consider and analyze in media is overwhelming. There are also possible conflicts not in the media sphere, but conflicts connected to gaining access to a certain element of the media sphere in terms of control and use. Media has a spectrum of uses: a tool of political communication, a reflective mirror of reality, and a creator of artificial reality (fake news, deep fakes).

Media is not a regular interlocutor, but it is a tool of information distribution. Media is not a homogeneous, static body. It always has diversity in many ways, from its many forms of distribution to the ideas it promotes.

Ukrainian Independent Media Development in Wartime: The Case of the *Kyiv Independent*

Since the beginning of full-scale war in Ukraine in 2022, there has been a constant trend of an increase in the use of electronic devices with an internet connection. According to United Nations (UN) reports, the number of Ukrainian citizens using the internet daily is constantly growing.³⁹ A UN report indicates the growth from 72 percent to 80 percent in the last year.⁴⁰ According to the Kyiv International Institute of Sociology (KIIS), 79.9 percent of the Ukrainian population use the internet for more than three hours a day daily.⁴¹ The global index of digitalization is on the rise too. According to the report of Datareportal, the constant yearly worldwide increase of internet users is 1.9 percent. Moreover, the average time spent online equals 6 hours and 37 minutes.⁴²

The benefits of digitization resulted in the development of small, independent media focused on specific topics and predisposed to work on certain narratives or information operations (such as the *Kyiv Independent*). The *Kyiv Independent* is a phenomenon of wartime, made by young and active people in Ukraine seeking support from young people from different countries. This type of media is specifically important in the context of countering Russian propaganda and gaining international sympathy and support through discursive transit as a media strategy. Those outlets serve not only to cover the events of war but to create a new information space. In other words, these media work as an information provider and for countering misinformation by explaining the events reported by the opponent. The new information space creates discourse transition opportunities, including the Ukrainian agenda in global and European media discourses, and promotes the Ukrainian identity as a part of Europe. As for other functions, we can list cultural promotion and diplomacy, charity, and fundraising. Discourse in those media outlets is a mixture of state, European, global, and Ukrainian viewpoints and ideals.

The war in Ukraine is comprehensively covered by a variety of media technologies. Digital modern resources in Ukraine are meant for the new generation of active decision-makers, who make digital media the main source of information. The dialogical nature of the new media in Ukraine and the world in general means gaining support from and including the audience in the creation of the media product. Ukrainian media serves as a symbolic beacon for seeking multilateral support from a wide variety of institutions around the world. We can list states, nongovernmental organizations, charities, and communities with different core ideas. Internalization of the war in Ukraine is beneficial to

Ukraine in terms of seeking support, finance, and donations. Ukrainian media in wartime plays the role of a symbolic transit intermediary. The example of the *Kyiv Independent* gives us a clear understanding of how discursive transit is being implemented in the new generation of Ukrainian media. The *Kyiv Independent* as a discursive transit agent offers a unique experience for Ukrainian discourse recipients from all around the world. The new generation of media will shape the future of the media in general.

There are several key features of the effectiveness of media in Ukraine, for example, the *Kyiv Independent*. The first feature is accessibility—English is used as the main language for all the publications. The internet is the primary distribution model, which makes media content internationally available. Second, the *Kyiv Independent* develops an interactive platform that allows users to participate in the future of the media and allows users to shape materials and content. The *Kyiv Independent* allows them to create unique experiences (such as getting newsletters, cross-platform sharing, following options, and comments sections). The recipient feels like they are a participant and an integral part of the narrative formation. Third, donations and charity are aimed at enhancing the feeling of inclusion in the most pivotal events of modern Ukrainian history and allow recipients to join the battle as a part of media participation. Fourth, different sections like business allow for a look at different aspects of life in Ukraine and Eastern Europe. Fifth, the *Kyiv Independent* is a problem-oriented media source; the first headlines and titles are dedicated to war. The majority of its sections tell stories about investigations and war crimes. The current war in Ukraine and the Russian invasion are key topics that the newspaper covers, and other stories serve as background to empower people with information in the war effort.

All these sections are aligned with the core idea of this media outlet, which is the promotion of the Ukrainian perspective on topics regarding the European future, Russian aggression, Western support, and political landscapes of the present times. The opinion section creates space for discussion of experts on important topics and the inclusion of media recipients in analysis on the relevant problems of Ukraine. Comments sections serve for the unionization of the audience and an even wider inclusion of discourse recipients. Disclaimers are needed to prevent any harm to the source from unpopular speakers or opinions. The *Kyiv Independent* explores national symbolism; it allows you to get an experience of learning the main Ukrainian symbols and the history of Ukraine.

All famous symbols are given connotations and explained to build a positive image of Ukraine. Moreover, an explanation of traditional Ukrainian festivals like the Ivan Kupala midsummer festival serves as an exploration into Ukrainian identity and culture as opposed to Russian culture, emphasizing the uniqueness of Ukrainian identity. Parts of the *Kyiv Independent* website lets

the readers know the timeline of the Russo-Ukrainian War better, including giving more context to past Russo-Ukrainian relations. There is an article titled “10 Years of War: A Timeline of Russia’s Decade-long Aggression against Ukraine,” which educates people on the history of Ukraine-Russia relations.⁴³

The history of Russian aggression explains the complexities of the conflict and the reasons Ukraine has to fight against Russian aggression. Furthermore, the connotations given promote cultural diplomacy and make clear distinctions between Russian and Ukrainian historical ways and identities. It may look like the process of the deconstruction of ethnic bilingual connections, however, the aspect of identities has been a serious question ever since.⁴⁴ Educating readers on Ukrainian identity and culture is the soft power of discursive transit the *Kyiv Independent* uses to gain international sympathy and solidarity. Also, it is one more asset in information operations to provide a Ukrainian perspective in terms of discursive transit and Russian propaganda countering. This is the deconstruction of the historical myth of the lack of differences between Ukrainians and Russians in terms of culture, origins of statehood, and the misperception that the main language is Russian. Aggressive cultural appropriation is one of the main features of the Russian wartime discourse of hostility. The *Kyiv Independent* explains to its Western audience the origins of Ukrainian identity in an accessible form. This Ukrainian democratic media works to explain the need for Ukrainian sovereignty. This in turn creates a strong bond with the ideals of the many Western media outlets and aligns with international support for Ukrainian defense. Moreover, this ideological platform links the EU and Ukraine regarding media collaboration and propaganda countering.

Countering Russian Propaganda

The most prospective field to be worked on for both the EU and Ukraine now is the antipropaganda legislation. Wartime dictated the adoption of media strategies to combat the hybrid and asymmetrical warfare, which combines the many sources of power available to a nation-state. The Western influence that grants the development of the forms of legislation and protection is the best basis for integration and building intergovernmental and cross-professional community connections between the EU and Ukraine. Ukraine is the testing ground for high-end antidisinformation tools. Information warfare is a complex hybrid problem aimed at perception changing and producing sympathy via media coverage. The correction of the perception of the electorally active population leads to unstable relations between the state and the people. Uncertainty during wartime is one of the problems that can also affect informed decision-making, which is why the information warfare problem is so relevant for modern democracies to fight.

Western—especially EU—media influence on Ukraine in the context of

integration can be described as deep collaboration between the EU and Ukraine on solving one problem: creating effective tools for the management of information conflict. In their latest work, the researchers from CSIS highlighted the inevitability of counting information warfare as one of the most important threats for European democratic states. The main conclusion of the research was that cooperation should transform into collective efforts, which then could be aimed at creating efficient tools for countering disinformation. Cooperation is effective due to the combination of resources and duties distribution.⁴⁵

The EU-Ukrainian efforts resulted in the Hybrid CoE Research Report 2024.⁴⁶ The main efforts made by joint EU and Ukrainian researchers are being aimed at the deep analysis of how pro-Kremlin propaganda works and which tool is the most efficient in terms of preventing the spread of dangerous misinformation. This report is one of the key EU-Ukraine integration products in the sphere of information of a conflict-management nature.

The most effective conclusions made in this report regarding how to deter propaganda activity include a variety of strategies. These include:

1. Consistent monitoring and analyzing of information. Distorted and misinformation should be immediately unveiled and given a proper connotation. Efforts to detect and deter pieces of propaganda or fakes should be implemented promptly.
2. Financial support of antipropaganda and fact-checking units is key. Information warfare units are the keystone of the modern information warfare.
3. Efforts should be collective. Overlap is not ineffective. Society and its will to deter propaganda is key for a state at war to fight it. Reciprocity and integrity are the main keys to success in information conflict.
4. Information conflict is inevitable, so preparation is essential; however, preparation is not a recipe for 100 percent success.
5. Crisis management: you cannot be prepared for everything, so adaptation and overcoming the odds is key.
6. Memes and humor are some of the viral forms of information with a major punitive outcome.
7. Symbolic attacks as punishment are inevitable.
8. Messengers are integral parts of the deliberative antipropaganda campaign going on nationwide.
9. The information war is never over. It consists of clashes and pauses.
10. The creation of the alternative discourse to the Russian propagandist is an integral part of hybrid warfare. The crisis of representation and information isolation of the internal media sphere are among the most widely used tools in modern Russia.

Dialogical models of media participation are now being adopted in the EU. Media transparency and media inclusion in political discourse on effective decision-making in media regulation are on the rise. Besides, the newly adopted initiative brings clarity into the moment of media market concentration. The main aspect here is crisis management. Responsible legislative bodies are exercising control of media market concentrations, not repression of those media bodies. The author deduces that this aspect is based on complex impact evaluation. According to the document, structured dialogue means constant experience exchange between actors of the media sphere and legislative bodies on diversification and independency monitoring of media.⁴⁷ Furthermore, the board will work for coordination of measures aimed at control of media products coming to the EU from the media outlets from countries outside the European Union. This measure will allow the board to become an intermediary in the context of countering any information threats coming outside of the EU and its partners. This initiative plays a major role in the face of countering Russian propaganda. We can conclude that this new legislative initiative may become a first step in the EU for the empowerment of legal barriers for hybrid warfare. We can say that such a law may set a new period of partnership in the EU, and Ukraine is an integral part of this collective effort.

Media Security and Cooperation

In light of the Swiss international summit on peace for Ukraine and EU-Ukraine joint efforts on counterpropaganda operations, the author believes that there is one more opportunity for effective cooperation in peacebuilding. Regulation (EU) 2024/1083 sets a new era in collaborative efforts to create safe and independent media space and conflict management has a great chance to become an integral part of it.⁴⁸ The most recent EU legislation has opened a new era in giving the media in the EU more freedom and protection from being abused by various stakeholders. Moreover, this law offers the creation of the special European Board for Media Services. The innovation of this board is its application to crisis management in the media sphere. The crisis is a special moment in the life of the system when it cannot normally function due to unresolved controversy accumulation. The media sphere and its regulation are very dynamic systems, and they need to be effectively managed. The board is an entity for consultation and expertise for media-related problems. The collegial nature of this body and its link to the EU Commission is meant to provide distinct, transparent decision-making without abuse of power. The collegiality of decision-making should ensure that individual commissioners do not abuse their power.

Conflict studies in media have a strong trend to benefit the security of journalism in many ways. Moreover, conflict studies in media allow the wide inclusion of experts from different fields of knowledge in the context of an ef-

fort to make independent journalism safer. Independent media in wartime met many challenges connected to a lack of effective instruments for resolving problems. There are some general provisions on how conflict studies can serve the media community in terms of increasing security; for example, the promotion and development of a dialogic model of interaction in the media sphere among journalists, statesmen, media personnel, and nongovernmental organizations. This promotion has to be based on the principles of equal rights in the process of effective interaction of subjects.

The first aspect of conflict studies in media is to develop the formation and promotion of a culture of tolerant behavior in the media sphere. Tolerance is a key to minimizing time spent on different altercations and arguments. Those cases do not fall under the definition of conflict; however, they mark a crisis in relations between people. Moreover, that crisis may grow into interpersonal or intergroup conflict. Conflict regulation requires resources and especially time to be done. Tolerance serves as a form of conflict prevention.

Second, the development and conduct of pieces of training and seminars for media staff aimed at the formation of a scientific understanding of the conflict, its nature, and social significance for the progress of society, as well as training aimed at the formation of a culture of constructive interaction between media personnel is needed.

Third, a study of the current legislation in the field of media and other related areas and identification of gaps in the legislation, including making proposals for its improvement. This requires the establishment of constructive dialogue with legislators and media workers, stakeholders, and the promotion of mediation and negotiation models as an alternative method of conflict regulation.

Moreover, it is important to provide constructive feedback and continuous monitoring of relations in professional media collectives and teams by the conflict studies specialists in media assigned for this role in media outlets. Hold sessions of open discussion of problems regarding conflict cases within media staff. The professional activity of journalists and media workers is extremely stressful, especially for those journalists working on war-connected topics. Agora-type meetings should become an integral part of team events. Those sessions highlight the fact that the team should resolve its problems collectively. Even interpersonal crises or conflict has a significant impact on a whole team and its ability to perform its duties. Conflict is a major stress: it may result in mental problems like constant anxiety and depression. Cooperative behavior in interaction and its promotion is key. An open discussion will make it impossible to conceal conflict in the team. Topics for group discussion should consist of problem-oriented elements. Here are sample questions for such a discussion meeting: Who was harmed in harmful events? What consequences did this

have? Who and how can their participants correct these consequences? How do we strengthen positive trends, outcomes, and agreements?

The last aspect here is the participation of conflict studies in media in the security enhancement of journalism. This requires conflict monitoring, analysis, and research of the dangerous war zones where journalists are predisposed to intimidation, lawsuits, harm, or or any kind of injuries including death.

Research should be conducted in the fields of war zone studies, conflict regulation in media, repression of journalism in autocratic states, and conflict and journalism perception in autocratic states. Conflict researchers must be involved with media management, constant collaborative efforts with nongovernmental organizations (like CPJ), and media management in terms of raising awareness of the dangers of journalism in war zones and autocratic, repressive states. Finally, collaboration with military and security specialists is important to formulate strategies for making journalism safer in war zones is necessary.

One more duty is the creation of field manuals of conflict situations for every possible zone of armed conflict media coverage. Details about main opponents in armed conflict, appearance, behavior in different situations, authorities they are controlled by, territory they are on, ethical and historical features, and perception of independent journalism should all be covered. Multidisciplinary studies of conflict are essential in terms of the formulation of the analysis of a certain region and the conflicts and other issues present in the region. Armed conflicts should be researched not as static elements of reality, but as complex, dynamic political things. Their dynamic structure is described through escalation, intensification, and growth due to the inclusion of new participants. All those factors should be taken into consideration.

Conclusion

Integrity remains the key aspect of the strategic role of the media. The EU media legislation adapts to the reality of the Russo-Ukrainian War gradually. In August 2025, there are planned new additions to the current European Media Freedom Act. The EU consistently focuses on antimonopoly, transparency, and safety in journalism where pressure on freedom of speech is under strict control. Moreover, the European Media Freedom Act aims to build an effective cooperative platform that includes media regulators to protect the European media space from outside threats like propaganda. Its experience in countering Russian propaganda is of major interest to the EU. The media sphere is a dynamic structure that is predisposed to dramatic changes during wartime. The war in Ukraine created a scenario with ineffective instruments for both saving the lives of journalists and for protecting the existence of free journalism. Imprisonment, dangerous assignments, and murders are all threats to journalists. Propaganda as a com-

mon threat became the battleground for the EU and Ukraine. Collective efforts speeded up integration trends and brought collaboration to the level of conflict-management tools for solving problems of contemporary hybrid warfare. The phenomenon of the *Kyiv Independent* as an example of the media of the new generation gives us a chance to examine the success of independent media sources in countering propaganda as a strategic resource in information warfare. Narrative combination, inclusion, and the problem-orientation approach make national media an international beacon for Ukraine. The application of conflict studies in media is a novel concept that should be given attention by researchers in the field of politics and media; its potential for research is of major significance. The application of new methods should be accompanied by constant linear research efforts to develop scientific reflections of outcomes.

Future study should be based on the aspect of practical implications of conflict studies in media. The concept of discursive transit developed in this research leaves space for further research in the context of conflict and security research. Further research is needed to focus primarily on the methodology of conflict management in media in terms of its form. For this purpose, the method of moderation of focus groups of journalists in different media fits best. Further study should investigate the journalists' perception of conflict management in media. Comparative work should analyze the materials of focus group sessions and create the blueprint for a universal model of conflict studies in media use. Moreover, this article proposes studying the cultural and ethical elements of the journalist community to adapt a general model for use in different environments. In addition, this study approached the aspects connected to the EU media legislation in 2022–24, and coupled with creation of the *Kyiv Independent* as a new Ukrainian media tool, it will be rational to take a look at the dynamic changes in this field. The aspect of intervention of state leaders like the United States into the negotiation process in conflicts in the frame of the Russo-Ukrainian War requires extensive analysis. President Joseph R. Biden's intervention in the exchange of political prisoners and American journalists in August 2024 (with the liberation of Alsu Kurmasheva and Ewan Gerskovich) requires a deep analysis of how this parallels the Cold War frame. Another development is how new emerging interpretations of wartime discourse and propaganda affect the field knowledge. Finally, this author believes that it would be beneficial to study how Russia affects countries with a strong EU and NATO orientation along with a certain amount of pro-Russian sentiment and territorial integrity like Moldova or Georgia. The recent presidential elections in Moldova illustrated that the post-Soviet independent countries are still under information pressure from Russia. This moment is essential due to the recent adoption of the Russian-like law on foreign agents in Georgia.⁴⁹

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The Arctic in the New Geopolitical Context of the Twenty-First Century

Protecting the Homeland in a New Kind of Cold War

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Climate Change and Arctic Security: Searching for a Paradigm Shift. Edited by Lassi Heininen and Heather Exner-Pirot. Cham, Switzerland: Palgrave MacMillan, 2020. Pp. 137. \$54.99 (hardcover and paperback); \$39.99 (ebook).

Newport Manual on Arctic Security. By Walter Berbrick, Gaëlle Rivard Piché, and Michael Zimmerman. Annapolis, MD: Naval Institute Press, 2022. Pp. 245. \$49.95 (hardcover).

The Fast-Changing Arctic: Rethinking Arctic Security for a Warmer World. Edited by Barry Scott Zellen. Alberta: University of Calgary Press, 2013. Pp. 395. \$41.95 (paperback).

Greenland in Arctic Security: (De)Securitization Dynamics under Climatic Thaw and Geopolitical Freeze. Edited by Marc Jacobsen, Ole Waever, and Ulrik Pram Gad. Ann Arbor: University of Michigan Press, 2024. Pp. 369. \$85.00 (hardcover); \$24.95 (paperback). <https://doi.org/10.3998/mpub.12676130>.

Today, a nation can only find lasting security by addressing the climate crisis. We face all kinds of threats in our line of work, but few of them

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truly deserve to be called existential. The climate crisis does. . . . Climate change is making the world more unsafe, and we need to act.¹
~ Former U.S. secretary of defense Lloyd J. Austin III

The sea has always fascinated sailors and pundits alike. While the seas are often seen as a natural milieu to be conquered and explored, that has not always been the case. In fact, in the early sixteenth and seventeenth centuries, depictions of the seas presented an environment inhabited by sea monsters such as sea dogs, sea lions, and sea pigs.² Such an environment is very inhospitable for any human activity, let alone survival. Today, the Arctic region immediately comes to mind when the seas are discussed. This part of the world has become the unique environment for great power competition, resembling a new kind of Cold War in the twenty-first century. The importance of this region, especially to the national security of the United States, is illustrated by the above quote from former U.S. secretary of defense Lloyd J. Austin III.

In a memorandum to U.S. Department of Defense (DOD) leadership dated 21 June 2024, Austin stressed that “the United States is an Arctic nation, and the region is critical to the defense of our homeland, the protection of U.S. national sovereignty . . . to preserve the Arctic as a stable region in which the U.S. homeland remains secure and vital national interests are safeguarded.”³

The United States’ pacing threat, China, and acute threat, Russia, also see the Arctic as their new environmental milieu and the new battleground in this post–Cold War international system. In his 2022 *National Security Strategy*, former President Joseph R. Biden Jr. stated that “Russia has invested significantly in its presence in the Arctic over the last decade, modernizing its military infrastructure and increasing the pace of exercises and training operations. Its aggressive behavior has raised geopolitical tensions in the Arctic, creating new risks of unintended conflict and hindering cooperation.”⁴ The Arctic region has always been a priority to Russia, especially during the Cold War, when the world faced an ideological battle of existential consequences between two major nuclear powers. After the implosion of the Soviet Union and the creation of the Commonwealth of Independent States in 1991, the Soviet Union lost one-half its territory and one-half its population. Russia, under the leadership of its current president Vladimir Putin, has vowed to retaliate against the West for the humiliation it suffered after the collapse of the Soviet Union and the dismantling of the Soviet empire. In his State of the Nation address on 25 April 2025, Putin called the collapse of the Soviet Union “the greatest geopolitical catastrophe” of the twentieth century.⁵ To reestablish its superpower status within the new international system, Russia has invested heavily in the Arctic region to “boast the largest Arctic territory and the most developed regional military presence of all the Arctic nations.”⁶

Within this fast-changing system, China, although not an Arctic nation, has proclaimed its presence as a “near-Arctic” state.⁷ As such, China “seeks to promote the Arctic region as a global commons to shift Arctic governance in its favor.”⁸ Furthermore, the Chinese government has advanced several arguments in favor of China as a “near-Arctic” state. According to the Chinese People’s Liberation Army Navy rear admiral Yin Zhuo, “the Arctic belongs to all the people around the world as no nation has sovereignty over it.”⁹ China is also challenging the legitimacy of “every treaty and organization constituting the Arctic five, including the United Nations Convention on the Law of the Sea (UNCLOS), the International Maritime Organization, and the Arctic Council,” claiming that those treaties and organizations are “riddled with flaws and must be reformed.”¹⁰ By challenging these established rules-based-order treaties and organizations, the Chinese government employs lawfare, which Michael Dressler has called both an existential threat to the international rule of law and an indispensable tool of American foreign policy in the twenty-first century.¹¹ A scholar and retired U.S. Air Force major general, Charles J. Dunlap Jr., has defined *lawfare* as “the strategy of using—or misusing—law as a substitute for traditional military means to achieve an operational objective.”¹²

Within this new multipolar and complex (*multiplex*) Arctic environment, the four books reviewed in this essay discuss the Arctic region and its securitization in the international system of the twenty-first century. Given the Arctic region’s vast area, it falls under the U.S. Northern Command, U.S. European Command, and U.S. Indo-Pacific Command, highlighting its centrality for U.S. national security. For example, the United States “reconstituted the U.S. Second Fleet in 2018 and subsequently expanded it to form the Atlantic Joint Command, responsible for the western part of the Russian Northern Sea Route.”¹³ The United States also activated the U.S. Army’s 11th Airborne Division, known as the “Arctic Angels,” “to conduct multidomain operations in the Arctic.”¹⁴ Given that the center of gravity for the United States is moving more predominantly toward the Arctic, is a paradigm shift occurring in the nation’s geopolitical priorities?

Lassi Heininen and Heather Exner-Pirot’s *Climate Change and Arctic Security: Searching for a Paradigm Shift* focuses on climate change and global security in the Arctic as it becomes a military theater in a “paradox” environment shaped simultaneously by elements of globalization and security. The Arctic in the post–Cold War international system has become a hotly contested environment. The current thawing of the Arctic permafrost is creating new commercial routes, shortening commercial distances, increasing the number of vessels navigating through the region, and thereby increasing the possibility for environmental disasters and potential conflict. Further complicating an already complex environment is the fact that the region’s problems are “unresolvable

due to their complex and inherently contradictory nature.”¹⁵ The “Arctic paradox” combines globalization and threats, changing the nature and scope of security within the region. Within this paradox, there are different conceptualizations and problematizations of climate change as a “security issue,” as well as recommendations or reconceptualizations that are put forward for a new understanding of security in the region.

The book comprises an introduction, six coauthored chapters, and a conclusion. In chapter 2, “Age of Change: Threat of Climate Change and Its Meaning for Security,” Salla Kalliojärvi analyzes “how the meaning of security is constructed through hegemonic struggle, and how the interpretations of climate change as a threat or a multiplier of threats affect the understanding of security.”¹⁶ The author’s analysis focuses on how the interpretations of climate change as a threat multiplier produce and contest the meaning of security. Words have meaning; therefore, discourse is a powerful tool in the age of misinformation, disinformation, and malinformation.¹⁷ In this age of fast-paced communication, security discourse “always depends on and sustains particular representation of the world.”¹⁸ Therefore, as Kalliojärvi argues, “identifying or naming something as a threat is . . . not just providing a label to a pre-existing object, but a process of identity construction of various subjects and their positioning about each other.”¹⁹

In chapter 3, “China, Great Power Responsibility and Arctic Security,” Sanna Kopra discusses how China’s rise is an ongoing concern to other great powers as the Chinese government asserts its claim to the Arctic region as a “near-Arctic” state. The author challenges the English school theory of international relations, focusing on the security of states, and claims that it is outdated to the realities of the post–Cold War international system, especially as “climate change will shape how security is being conceptualized and assessed in the future.”²⁰ Kopra also argues that a paradigm shift will be required as states shift focus from “security of the state” toward a broader conceptualization of security to include both traditional and nontraditional threats. According to the author, this paradigm shift is required because China sees its involvement in Arctic politics as an alternative option to the traditional great power focus on conventional military concerns in the region at the expense of nontraditional concerns such as poverty, disease, etc. In other words, China sees itself as a responsible steward of the environment, thereby legitimizing its involvement in the governance of the region and its rightful place among the “great power club.”²¹ China’s Arctic Policy, published in 2018, states that China’s policy goals in the region are “to understand, protect, develop, and participate in the governance of the Arctic, to safeguard the common interests of all countries and the international community in the Arctic, and promote sustainable development of the Arctic.”²²

In chapter 4, “Climate Change Ethics in the Arctic,” Teemu Palosaari sheds light on an interesting discussion. As the Arctic waters melt, new sea routes are established, and nation-states and multinational corporations explore and exploit the pristine land of the Arctic, it is becoming “increasingly difficult for governments, businesses, and decision-makers to ignore climate ethics in the Arctic.”²³ According to a study by the U.S. Geological Survey, the Arctic is the new “El Dorado,” the mythical city of gold. The region purportedly accounts for “13 percent of the undiscovered oil, 30 percent of the undiscovered natural gas, and 20 percent of the undiscovered natural gas liquids worldwide. Around 84 percent of these reserves are thought to reside in offshore areas. The Arctic also potentially holds 9 percent of the world’s coal and significant deposits of diamonds, gold, and uranium.”²⁴

The Arctic region becomes more urbanized and globalized with each passing year. The region’s population varies. For example, “within the Arctic regions of circumpolar states consisting of eight states, large numbers of people reside in urban areas.”²⁵ The Arctic is home to some 4 million people. With this rapid urbanization and population expansion, Wilfrid Greaves asks in chapter 5, “Cities and Human Security in a Warming Arctic,” what the implications of the interaction between urbanization, environmental change, and human security are.²⁶ His overall assessment is that the Arctic cities will be unable to “support and provide human security for their residents under conditions of environmental changes.”²⁷ Greaves points to three main reasons for this pessimistic assessment. First, Arctic towns are experiencing the effects of climate change in ways that undermine their critical infrastructure. Second, urbanization among Arctic cities is creating an uptick in the local rates of warning that the growth of Arctic cities will generate a positive feedback loop that will worsen the impacts of climate change. Finally, Graves asserts that many Arctic towns rely on fossil fuel-based industries, producing a paradox whereby they are simultaneously threatened by and reliant upon the continuation of the economic activities responsible for contributing to global climate change.²⁸

The dissolution of the Soviet Union and its replacement by Russia raised national security concerns regarding the Arctic’s place within the new world order. Would the Arctic be forgotten as an environment of competition between global superpowers, or would it transform from an isolated cold region into a hot spot that could become a new arena of conflict? One early indication was that the Arctic would be a “zone of peace.”²⁹ Some authors have argued that the Arctic would undergo a renaissance.³⁰ Indicative of an Arctic renaissance or zone of peace was a speech given by former Soviet premier Mikhail Gorbachev in Murmansk at a ceremonial meeting on the occasion of the presentation of the Order of Lenin and the Gold Star Medal to the city on 1 October 1987. Gorbachev stated, “The Soviet Union is in favour of a radical lowering of the

level of military confrontation in the region. Let the North of the globe, the Arctic, become a zone of peace. Let the North Pole be a pole of peace. We suggest that all interested states start talks on the limitation and scaling down of military activity in the North, in the Eastern and Western Hemispheres.”³¹ In this spirit of interdependence and cooperation, several initiatives by the Arctic states—countries with territory north of the Arctic Circle—were undertaken to promote a more peaceful region. For example, the Arctic Environmental Protection Strategy was written in 1991; the Arctic Environmental Cooperation project was established in 1996 by Russia, Norway, and the United States and later joined by the United Kingdom; and the Arctic Council was created in 1996 to become “the leading international forum for addressing issues relating to the Arctic.”³²

Despite these confidence-building steps undertaken by the Arctic states to promote the region as a zone of peace, several events have shattered the initial spirit of cooperation and turned the Arctic region again into a zone of great power competition. As Heather Exner-Pirot points out in chapter 6, “Between Militarization and Disarmament: Challenges for Arctic Security in the Twenty-First Century,” the 2004 Arctic Climate Impact Assessment by the Arctic Council and the International Arctic Science Committee noted that “climate change was not only possible but was already occurring with dramatic effect in the Arctic region.” In 2007, a private Russian expedition planted a Russian flag on the North Pole, raising concerns among Arctic states of a new Cold War in the region for the “scramble” or “race” for the extended continental shelf in the Arctic. Finally, in May 2008, a team of U.S. Geological Survey scientists completed an appraisal of possible future additions to world oil and gas reserves from new field discoveries in the Arctic, claiming, “The total mean undiscovered conventional oil and gas resources of the Arctic are estimated to be approximately 90 billion barrels of oil, 1,669 trillion cubic feet of natural gas, and 44 billion barrels of natural gas liquids.”³³

Walter Berbrick, Gaëlle Rivard Piché, and Michael Zimmerman’s *Newport Manual on Arctic Security* should be on the desks of all practitioners or pundits interested in the Arctic region’s “challenges, opportunities, and responsibilities facing people and governments in the Arctic region,” as those concerns have become “more complex and urgent.”³⁴ The problems facing the Arctic states today are highly complex, interdependent, and unstable without an end state. These problems will require a whole-of-government and whole-of-society approach to solve. This book offers a blueprint to address the change in basic assumptions in the Arctic region, providing “researchers, practitioners, and policymakers a better understanding of Arctic security challenges, common and diverging interests among Arctic stakeholders, and prospects for regional security dialogue and cooperation.”³⁵

The book is divided into three parts and further subdivided into 30 “principles.” It provides “new [and] innovative ways to foster cooperation, peace, and stability in the region, focusing primarily on Arctic States and the maritime environment.”³⁶ The authors operationalize the Arctic as “the region above the 66°34’ N parallel” comprising eight nations: Canada, Denmark (through Greenland), Finland, Iceland, Norway, Sweden, Russia, and the United States (through Alaska).³⁷ One vital contribution to the ongoing discussion about the new geopolitical importance of the Arctic is the book’s differentiation between hard security and soft security. The authors define *hard security* as “traditional security matters managed by military forces,” whereas *soft security* is “loosely defined and bears two meanings. First, it refers to domestic safety and security, including search and rescue, as well as law and regulation enforcement, which usually fall under the mandate of other government organizations: law enforcement agencies, guards, border protection services, shipping regulators, environmental agencies, or even agricultural departments.”³⁸

Part 1, “Awareness,” looks at significant changes and challenges that are shaping regional security and stability within the Arctic, considering the renewed great power competition in the area. The authors define *awareness* as “the perception and understanding of the physical and geopolitical environment over time and space.”³⁹ The Arctic’s physical and geopolitical environments are in constant flux, especially as “the shrinking polar ice cap is opening new sea routes, providing greater access to isolated regions and untapped natural resources.”⁴⁰ Within this changing environment, three types of resources are fundamental to the Arctic states, with claims within the region’s untapped richness. First, new search routes are central to furthering economic development and trade in the Arctic and between continents. As the authors point out, “the Northern Sea Route, the Northwest Passage, and the Transpolar route could all become potentially viable transit lines.” Second, with the thawing of the Arctic ice shelves, the region could become the solution for sending much-needed oil and gas to other parts of the world. Third, the Arctic is a significant protein resource for the rest of the world “as fish stocks elsewhere continue to deplete and migrate toward cooler waters.”⁴¹ As the waters of the Arctic get warmer, competing claims over the region’s untapped natural resources and potential fossil fuel resurface and fall into two categories: disputed areas and claims over the extended continental shelf.⁴² Currently, three such disputes fall under these categories. First, the United States and Canada “disagree over the definition of the maritime border between their respective territorial waters in the Beaufort Sea.” Second, Canada and Denmark disagree over the sovereignty of Hans Island, located in the waters between Canada’s Ellesmere Island and Greenland, a self-governing part of the Kingdom of Denmark. Third, Russia and Norway have a longstanding maritime border

dispute over a large area of the Barents Sea that contains significant oil and gas deposits.⁴³

Part 2, “Confidence-Building Measures,” focuses on “crafting an integrated framework of rules and norms that Arctic and non-Arctic states should consider to mitigate tension in the region.”⁴⁴ The authors argue that *confidence-building measures* encompass “a broad basket of international peace and stability tools with no precise or universally accepted definition.”⁴⁵ There are four critical components of confidence-building measures: communication, constraint, transparency, and verification.

In part 3, “Capabilities,” the authors identify *capabilities* as “practical steps states can take, independently or together, to close capability gaps and build trust while mitigating the risk of miscalculation and conflict in the Arctic.”⁴⁶ The book defines the capability to convey a sense of strength and posturing. According to the authors, capabilities include “a broad spectrum of tools and enablers, ranging from people with specific skills to platforms such as ships and planes, and infrastructure in the form of satellites, airfields, and harbors.”⁴⁷ Two important topics are addressed in this section: dual-use capabilities and developing a culture of “Arctic security” capability. *Dual-use capabilities* are capabilities that could be used for military objectives as well as nonmilitary objectives carried out by other government agencies or the private sector. In the Arctic region, it is not easy to distinguish or prevent the use of dual-use capabilities, given the strategic nature of the area. The development of a culture of “Arctic security” is paramount: “Arctic security researchers, investors, operators, regulators, and decision-makers are aware of the dual-use nature of these capabilities, but also educating those involved, and beyond, about how their development and employment could become a dual-use dilemma in the Arctic.”⁴⁸ In its final analysis, the *Newport Manual on Arctic Security* provides a blueprint for Arctic states and states claiming to be a “near-Arctic” to recognize that “trust, transparency, and dialogue among Arctic State are essential to the future of security and stability in the region,” as well as one of many ways to improve relations among competing superpowers.⁴⁹

Barry Scott Zellen’s *The Fast-Changing Arctic: Rethinking Arctic Security for a Warmer World* provide readers with an understanding of the Arctic’s energy, shipping, sovereignty, and climate and how these factors are all critical to successful collaboration, especially as the region undergoes a renaissance in the post–Cold international system. Like the other books reviewed here, *The Fast-Changing Arctic* argues that “climate change opens new and improved possibilities for the utilization of natural resources and their transportation by the opening of new global sea routes for big oil tankers and container ships, and other activities.”⁵⁰ However, this will not be an easy task. The Arctic states will have to “balance opportunities for the exploitation of resources with care for

the environmental and the rights of the Arctic residents while ensuring the region is free from conflict and that the Arctic nations, not outsiders, remain the key players in deciding what happens there.”⁵¹ Other powerful Arctic states are already challenging this balance between resource exploitation and peaceful coexistence. Russia, for example, has prioritized controlling natural resources within the region, and Russian oil and gas companies are “moving north, both on land and into the sea.”⁵²

Despite discord among the Arctic states regarding resource exploitation and peaceful coexistence, Daniel Clausen and Michael Clausen take issue with viewing climate change through its effects as a threat multiplier. Climate change is often seen in this way, meaning that anthropogenic activities are becoming more detrimental to the environment and human health worldwide. In her book *Nomad Century: How Climate Migration Will Reshape Our World*, Gaia Vince argues that instead of talking about climate change as a threat multiplier, the focus should be on climate apartheid since “the people most affected are those already experiencing threats to their lives and livelihoods, including degraded environments, income instability, inability to save money or resources, lack of affordable healthcare, inadequate sanitation, poor governance, and a lack of personal agency or ability to change their circumstances.”⁵³ Clausen and Clausen also point out that “the idea of climate change as a threat multiplier leads the defense community to focus more on responding to the outcome of climate change . . . than attenuating its causes.”⁵⁴

One significant contribution of *The Fast-Changing Arctic* to the environmental security debate is the book’s discussion of the four schools of environmental thought when examining the linkage between environmental causes, politics, and conflict: neo-Malthusianism, neoclassical economics, political ecology, and environmental security skepticism. The neo-Malthusianism theory examines the relationship between population increase and resource viability. From a neo-Malthusianism point of view, population increase is exponential while resource expansion is linear; consequently, with more people and fewer resources available to them, more conflict is bound to occur. Clausen and Clausen write: “Accelerating pressures on natural resources and planetary life-support systems . . . [is] a major cause of conflict in the future.”⁵⁵ The primary theory associated with the neo-Malthusian school of thought is the Toronto School, personified by the environmental scholar Thomas F. Homer-Dixon.⁵⁶

The neoclassical economics theory views the ability of humans to adapt and adjust to their environmental milieu as ultimately leading to survival. Neoclassical economics focuses “on the human capacity to cope with environmental change and, in a rebuttal to neo-Malthusianism, resource abundance (not scarcity) is linked with conflict.”⁵⁷ Neoclassical economics believes that market scarcity within a society leads to human ingenuity, innovation, and creativity to

cope with the hardships of everyday life, thereby improving society for future generations. Neoclassical economics also argues that abundant resources may lead to conflict as groups compete for the “honey pot,” especially where there is a weak or failed state. According to this school of thought, “greed (defined as the opportunity for banditry or state capture to generate income) over grievance (identified as human rights abuses and political oppression) [serves as] motivation for interstate conflict.”⁵⁸

Political ecology began in the early 1980s as a multidisciplinary academic field, mixing post-structural and critical theory, nonequilibrium ecology, and ethnography.⁵⁹ As Roderick P. Neumann stated, “A central premise of the field is that ecological change cannot be understood without consideration of the political and economic structures and institutions within which it is embedded.”⁶⁰ In other words, “political ecology tends to focus less on accumulating and testing generalizable theories and more on interrogating the complexity of social and ecological relationships.”⁶¹ The final school of thought discussed in the book is environmental security skepticism. According to Willem Van Rensburg and Brian W. Head, “a key assumption underlying most of the scholarly constructions of the skeptical phenomenon is that the key objections raised by skeptics to climate science and climate policy proposals represent some form of submerged deception or self-delusion on their part.”⁶² Environmental security skepticism questions the “salience of the environmental conflict linkage.”⁶³

Clausen and Clausen also discuss the utility of Colin Kahl’s demographic and environmental stress model in explaining environmental and political variables and how they contribute to conflict. This model highlights two pathways to conflict: state failure and state exploitation. According to Kahl, the state failure pathway “creates incentives for social groups to engage in violence via the logic of the security dilemma,” whereas the state exploitation pathway assumes that “better organized and powerful state elites can pre-empt competition from competitor groups or capture scarce resources through violence to protect their narrow self-interests.”⁶⁴

The Arctic states have developed their Arctic strategies in preparation for a warmer and more accessible Arctic, especially as the region is warming more than three times faster than the rest of the world. The DOD’s *2024 Arctic Strategy* emphasizes that the United States will defend its interests in the Arctic region by “enhancing our domain awareness and Arctic capabilities; engaging with Allies, partners, and key stakeholders; and exercising tailored presence.”⁶⁵ The U.S. *Arctic Strategy* considers five challenges within its strategic environment: increased Chinese activities in the region after the publication of China’s *Arctic Policy* in 2018; continuing Russian activities in the region; Chinese-Russian collaboration to undermine and challenge the United States in the region; the changing security architecture in the region, especially after the expansion of the

North Atlantic Treaty Organization (NATO) with the inclusion of Sweden and Finland; and the effects of climate change on the operating environment, with scientists predicting that the region may experience its first practically ice-free summer by 2030.⁶⁶ A major priority for the United States as an Arctic state will be defending the homeland by virtue of Alaska to protect its citizens and sovereign territory. Canada's Arctic strategy is based on four pillars: exercising Arctic sovereignty; protecting environmental heritage; promoting social and economic development through resource exploration, development, and infrastructure improvements; and improving and devolving northern governance.⁶⁷ Russia's Arctic strategy is based on five objectives: social and economic development, military security and protection of state borders, environmental protection, scientific and technological research and development, and foreign affairs.⁶⁸ The Arctic region is paramount to the Russian Federation as it attempts to insert itself among the community of nations in world affairs. Most importantly, Russia sees the Arctic region as its "foremost strategic base for natural resources."⁶⁹

Despite differing objectives among the Arctic states, cooperation is possible in the region. The Ilulissat Declaration agreed to by Canada, Denmark, Norway, Russia, and the United States in May 2008 emphasizes that the Arctic is "a low-tension region where disputes are resolved peacefully, building on mutual trust and transparency" rather than "a new comprehensive international legal regime."⁷⁰ Nong Hong argues that "the energy factor, rather than a curse for the Arctic, could serve as an opportunity for regional cooperation in the region."⁷¹ Henrik Jedig Jørgensen, on the other hand, argues that cooperation is lacking in the Arctic region for three main reasons. First, there is a historical mistrust between Russia and NATO member states. Second, Arctic states have only recently realized the implications of climate change to their areas of responsibility and the potential increase in traffic patterns as the region gets warmer and new sea routes are established. Third, cooperation has been hard to achieve due to weak institutional frameworks, competing interests, distrust among competing parties, and the risk of influence-dilution in the existing fora.⁷² P. Whitney Lackenbauer sees Russian elites as the main challenge for cooperation within the Arctic since they continue to see "others"—that is, Western nations—as Russia's public enemy number one. As Lackenbauer argues, "Russian elites continue to view the United States and NATO as threats to Russian security and perceive a broader anti-Russian agenda among America and its allies, aimed at undermining Russia's position in the region." Furthermore, Russian elites see the West's interests in the Arctic with "suspicions that rival powers may see to constrain and even dispossess Russia of its rights."⁷³

Marc Jacobsen, Ole Wæver, and Ulrik Pram Gad's *Greenland in Arctic Security: (De)Securitization Dynamics under Climatic Thaw and Geopolitical Freeze* has three objectives. First, it brings together scholars from various disciplines to

draw and disaggregate the concerns of Greenland as a new important player in Arctic geopolitics. Second, it studies Greenland's primary concerns regarding its Arctic security. Finally, it draws attention to and develops distinct aspects of desecuritization theory.⁷⁴ None of the countries discussed so far in respect to the Arctic region are more captivating than Greenland. As the editors of this volume succinctly point out, Greenland, the world's largest island, "formally belongs to Denmark, but the political autonomy of the Greenlandic nation as well as American strategic engagement make Danish sovereignty ambiguous."⁷⁵

In their investigation of Greenland's place within this new geopolitical Arctic environment, the chapter authors employ "a constructivist [international relations] tradition [of] analyzing security as speech acts and foreign policy as identity representations."⁷⁶ The authors make use of the Copenhagen School's securitization theory. The benefit of using this theory is that it is "uniquely devised to observe not just how similar dynamics may unfold in parallel, but also how they are entangled: security does not just unfold in the environmental sector. How security unfolds in the environmental sector may be intimately linked to how security unfolds about identities, and identity security may hook up decisively with more traditional securitizations involving sovereignty and armed forces."⁷⁷ Securitization theory was established in the early 1980s, when scholars debated whether security should be broadly reconceptualized to encompass nontraditional definitions of security rather than just the traditional definition, which ultimately involves a nation-state's military power capabilities. Practitioners of the theory "saw security being discursively and intersubjectively constructed in a self-referential and contingent process constantly open for restructuring."⁷⁸ From their perspective, securitization theory defines *security* "as the result of speech acts: something becomes a security issue not by virtue of its inherent [and intrinsic] nature but through the interplay between securitizing actors and audience."⁷⁹ Issues are securitized or become a securitization issue once a "securitization actor with a significant ethos declares a valued referent object to be existentially threatened, and a relevant audience accepts the possible use of extraordinary means to avert the threat."⁸⁰

One example of this is border security. Today, countries around the world have an aging population and a replacement population problem, as many females postpone marriage and parenthood to obtain an education. With an aging population and a population replacement problem, the only solution to maintaining a country's overall population is immigration. However, many countries have demonized immigrants coming into their society and have taken a draconian approach to border security. Of course, it is known that immigrants make a positive contribution to a society's gross domestic product (GDP) without obtaining social benefits. In the United States, for example, "immigrants added \$2 trillion to the U.S. GDP in 2016 and \$458.7 billion to state, local,

and federal taxes in 2018. In 2018, after immigrants spent billions of dollars on state, local, and federal taxes, they were left with \$1.2 trillion in spending power, which they used to purchase goods and services, stimulating local business activity.”⁸¹ Applying securitization theory to this issue, it becomes clear that because the valued referent object (immigrants) is seen as an existential threat (destroying the social fabric of society), a relevant audience (voters) accepts the possible use of extraordinary means (the militarization of borders and the inhuman treatment of immigrants as “others”) to avert the threat (a caravan of immigrants invading the nation-state). Another critical issue discussed under the umbrella of securitization theory is the concept of freezing. As Jacobsen, Wæver, and Gad discussed, *freezing* occurs when “something is threatened involves a valuation of this something in its current state, as opposed to accepting that it changes.”

An issue may undergo securitization just as well as desecuritization within the same context, depending on the political environment of the time. The desecuritization of an issue occurs when “normal politics prevail, in contrast to a situation when an issue is dealt with through emergency laws and exceptional measures with less room for democratic or other rules of transparency and accountability.”⁸² According to Jacobsen, Wæver, and Gad, there are three ways in which a securitized issue becomes a desecuritized issue. First, key political players and decision makers stop talking about the issue in terms of securitization. The issue becomes less of a concern or urgency and is relegated to the dustbin of history. For example, after the 11 September 2001 terrorist attacks against the United States, terrorism became a top priority for U.S. government leaders. Today, more than 20 years later, while there are still discussions among political leaders in Washington, DC, about terrorism, the issue is less relevant than it was immediately after the 2001 attacks. The issue is less of a priority; it has been desecuritized. Today, environmental security is the new securitized flavor of the day. Second, an issue can become desecuritized by political leaders “rearticulating it as not constituting a threat toward a certain valued referent object.”⁸³ For example, the collapse of the Soviet Union in 1991 and the “end of history,” according to Francis Fukuyama, represented the triumph of Western liberal democracies over all the so-called “isms” of the world. Under this new international order, the United States took steps to accommodate Russia and China by including them in the World Trade Organization.⁸⁴ Finally, an issue becomes desecuritized when “one securitization replaces another as the security discourse is redirected toward a new issue deemed more compelling, relegating the first issue to the level of politics or nonpolitics.”⁸⁵ As the world in the twenty-first century is in constant flux, different issues rise and fall on the ladder of continuity regarding national security or existential threats to a nation-state.

Within this discussion of the securitization of the Arctic, China and Rus-

sia have elevated the region in their strategic priorities and national security. Greenland's natural resources, including its rich mineral deposits, have been a major focus of Chinese interest.⁸⁶ The importance of the Arctic to the Chinese government is best illustrated by the region's official incorporation into China's Belt and Road Initiative (BRI).⁸⁷ One crucial initiative undertaken through the BRI in the Arctic geopolitical arena is China's investment in the Kvanefjeld (or Kuannersuit) rare earth project in Greenland. This project is just one of around 30 advanced-stage exploration projects outside China.⁸⁸ The Chinese government is using all of its whole-of-government elements of power, including "Made in China 2025" and the BRI, to extend its hegemonic influence within the region.⁸⁹ Russia also sees the Arctic and its natural resources as fundamental to its economy and superpower status. Russia's Arctic policy has been primarily driven by economic interests first and national security second. As U.S. Army colonel Robert A. McVey Jr. has pointed out:

Russia clearly views the Arctic as strategically important for promoting, pursuing, and protecting its economic interests. Russia's Arctic region will be critical for its economic survival over the next 30 years. The Arctic accounts for approximately 20 percent of Russia's GDP, 22 percent of its exports, and more than 10 percent of all investment in Russia. Concerning the Arctic, Russia is aggressively pursuing strategic economic objectives in three important sectors: energy resources and minerals, transportation, and food security.⁹⁰

Moreover, both Russia and Denmark elevated the Arctic as their top priority after U.S. president Donald J. Trump reportedly wanted to buy Greenland during his first administration.⁹¹ Russia did not take the offer lightly or as a typical instance of "Trump being Trump." Russia is concerned about the future of Greenland, especially given the proximity of U.S. and Russian military installations at Thule and Franz Josef Land.⁹²

The importance of the Arctic within this new post-Cold War international system is undeniable. Several key U.S. leaders, including former U.S. secretary of state Antony J. Blinken and former U.S. secretary of defense Lloyd J. Austin III, have pointed out the urgency with which the United States must prioritize climate change as a threat multiplier or an existential threat.⁹³ Russia sees the Arctic as a strategic arena, as "80% of Russia's natural gas and 17% percent of its oil [takes] place in its Arctic."⁹⁴ China also sees the Arctic as a strategic realm, with the polar regions (the Arctic and Antarctic) being included in China's 14th *Five-Year Plan*, which covers 2021–25. Furthermore, China sees the polar regions as extraction sites for industrialization and competitiveness in the world market.⁹⁵

To conclude, the Arctic has become the new frontier in the post-Cold War

international system. It could revive a “Cold War 2.0” based not on ideology but rather on economic and security interests. The United States ignores the Arctic region and its geopolitical importance at its peril.

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BOOK REVIEWS

Epidemics and the American Military: Five Times Disease Changed the Course of War. By Jack E. McCallum. Annapolis, MD: Naval Institute Press, 2023. Pp. 288. \$36.95 (hardcover).

Dr. Jack E. McCallum is a historian and a board-certified adult and pediatric neurosurgeon. In addition to *Epidemics and the American Military: Five Times Disease Changed the Course of War*, he has written numerous articles and the books *Military Medicine: From Ancient Times to the 21st Century* (2008) and *Leonard Wood: Rough Rider, Surgeon, Architect of American Imperialism* (2005). His exploration of the impacts of disease and their historical effects on military campaigns in *Epidemics and the American Military* are timely given the current concerns regarding climate change and the spreading of new diseases and vectors into the United States. While the West Nile Virus, the Zika Virus, Ebola, and the Hantavirus are some of the best-known diseases of recent years, COVID-19 trumps them in its overall impact on the world. In this book, McCallum calls attention to diseases that dominated military planning and campaigns in the past, including smallpox, typhus, malaria, yellow fever, and influenza. None of these diseases have been conquered by immunizations or antibiotics, and they all pose the risk of resurging when vigilance falters. McCallum devotes several chapters to the perennial dangers posed by mosquitoes, a remarkably resilient challenge for future military campaigns, including in areas where the threat of malaria was assumed eradicated.

Military leaders must consider how military methods and plans develop to include prophylaxis measures against the emergent diseases that vector sources such as mosquitoes carry, as well as drug-resistant strains that may surge in war-torn areas in which sanitation and infrastructure are secondary to survival. The COVID-19 pandemic takes center stage at the present time, but the involvement of the U.S. Army's 101st Airborne Division during the Ebola response in West Africa offers another recent example of how the military is often on the front lines of disease response. In combat, especially during wars in which the United States fought for a long duration, the U.S. military sustained many disease casualties and gained knowledge of the threats in those regions. McCallum's book does readers a great service by reminding them of the massive casual-

ty numbers that historical disease outbreaks and vectors inflicted on unprepared militaries. However, it is not only casualties in combat but also the military experience with humanitarian crises and disease that have brought an appreciation for clean water sources and food inspection. Finally, the darkest threat of disease originates from human hands, for in the background is the specter of biological warfare and the tacit acknowledgment that the military will be among the first to both encounter new threats and deploy new countermeasures. *Epidemics and the American Military* offers a cautionary injunction in its conclusion: “Climate change has expanded the range of disease-bearing insect vectors, and insect-borne disease will almost certainly be a problem whenever troops are deployed in the tropics” (p. 213). Perhaps the greatest lesson that readers can learn from this book is that the U.S. military will continue to be engaged in wars against disease as well as kinetic threats as humanity continues to experience the impacts of climate change on military operations.

McCallum’s sources and material are well-chosen, even if the historical examples are a bit dated. The author’s intent to demonstrate how disease has impacted warfare and the military in general is clearly communicated, but this volume could have been strengthened by the same sort of compelling arguments for malaria prophylaxis in World War II and similar efforts in more modern conflicts such as the Vietnam War, the Gulf War, and the Global War on Terrorism. The U.S. military’s aggressive efforts to combat communicable diseases should be highlighted as one of the greatest combat multipliers to deployed forces, regardless of theater. Despite the strong belief in the efficacy of modern medicine and technology that exists today, disease is not easily ignored and frequently derails even the best-planned campaigns. Disease outbreaks, whether they be mpox, a new strain of malaria, or a new waterborne disease, all stress existing systems and resources. The COVID-19 pandemic demonstrated that disease can have a rapid onset and expand globally before nations are able to react, especially if they are unprepared. Climate change’s accelerated catalysis of insect vector spread, disease mutation, and loss of vital food sources make disease a threat as dire as any kinetic conflict.

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Deter, Disrupt, or Deceive: Assessing Cyber Conflict as an Intelligence Contest. Edited by Robert Chesney and Max Smeets. Washington, DC: Georgetown University Press, 2023. Pp. 336. \$110.95 (hardcover); \$36.95 (paperback and ebook).

The technology zeitgeist has largely moved on from cyber to artificial intelligence, but the importance of the field for government, business, and non-state actors only continues to increase. Conflict in the cyber domain continues to grow both more frequent and more complex, and the study of it remains as relevant today as ever. *Deter, Disrupt, or Deceive: Assessing Cyber Conflict as an Intelligence Contest* is a dense but accessible volume that seeks to further the underdeveloped theoretical debate on how to characterize cyber conflict. It is best suited for those who wish to better theorize and conceptualize how cyber conflict fits within existing political science and international relations concepts and what the “why” is when states build, resource, and employ offensive and defensive cyber capabilities. Those seeking to better understand the technical aspects of *how* state’s carry out those activities, or who have little patience for abstract theoretical debates, however, may be more interested in another work. At its core, this work is an effective and valuable addition to the burgeoning academic literature surrounding cyber conflict, and it successfully furthers the academic discourse that ultimately affects the way policymakers approach the field over the medium and long terms.

The editors of this volume strive to further the academic discussion surrounding the conceptual frameworks used to analyze competition and conflict in the cyber domain through the concept of an intelligence contest. They define an *intelligence contest* as “statecraft pursued through the means and methods traditionally associated with intelligence agencies” (p. 5). Many authors adopt Joshua Rovner’s more robust five part definition that can be condensed and paraphrased as: 1) an effort to collect more and better information relevant to a long term political competition; 2) an effort to exploit that information for practical gain; 3) a reciprocal effort by adversaries to undermine each others’ morale, institutions, and alliances; 4) an effort to disable adversary intelligence through sabotage; and, 5) a long-term effort to pre-position assets and capabilities for future use in the event of a conflict (pp. 19–20).

Chapter authors argue that cyber conflict is merely the latest method or toolset in a well-established pattern of intelligence contests, which have evolved alongside technology for centuries (Joshua Rovner, chapter 1). These oppose the intelligence contest framework for being insufficient to capture the potential for an exponentially expanded strategic impact from cyber activities given the now instant global reach of the domain (Michael Warner, chapter 2), and

that accept some of its premises while critiquing and expanding it in significant ways (Jon Lindsay, chapter 3). Chapters 4 and 5 offer additional context to the debate, and this reviewer found the latter chapter by Michael Fischerkeller and Richard Harknett to be a particularly useful synthesis of the dominant arguments from the theory heavy part 1. Chapter 6, by Steven Loleski, offers a particularly important discussion on why creating a mutual understanding of the rules surrounding cyber conflict is important for managing risk and preventing escalatory spirals that will be familiar to anyone who has studied nuclear issues. Of note, the first and largest section of the book is dominated by discussion of the United States' capabilities and structures, which is largely reflective of the historical dominance of the U.S. in intelligence studies writ large. Part 2 offsets that with national case studies covering China, Russia, and the United Kingdom.

Chapter 7 offers a Chinese perspective from former People's Liberation Army officer Lyu Jinghua who describes a system characterized by a relatively recent shift from an offensive and militarized focus to one defined by information gathering over attack capabilities. Lyu's chapter is particularly noteworthy in its use of Chinese historical works and theory, as opposed to the U.S.-dominated intelligence literature that opens the book, and for its strong argument in favor of the intelligence contest lens. The extensive use of contemporary and historic examples of the strategic uses and benefits of cyber activities in the chapter make it ripe for conflict with Warner's chapter, where he argues that those strategic qualities elevate the nature of the conflict beyond an intelligence contest.

Chapter 8, by Valeriy Akimenko and Keir Giles, dissects Russia's approach to cyber conflict, with notable emphasis on how it differs from the United States' approach. In particular, Russian doctrine views cyber activities as one tool among many within the broader concept of information warfare, and cyber practitioners across the Russian state also regularly engage in psychological operations, overt and covert messaging, and tactical and strategic campaigns. Put another way, cyber activity does not exist within a distinct warfighting domain for Russia. Rather it is one tool among many for competing in the information or cognitive domain. Additionally, in contrast to the other countries profiled, Russia is found to be more willing to pursue limited, tactical, and often ad hoc aims in order to satisfy immediate domestic political needs. In the context of these differences, attempting to force a Western intelligence contest framework, or Warner's competing strategic framework, on Russian cyber activity may be forcing a round peg into a square hole. Indeed, the fundamentally different outlooks presented by Lyu in chapter 7 and Akimenko and Giles in chapter 8 emphasize a core weakness in the still young field of intelligence studies, with its U.S.-centric literature and theory that often lacks applicability beyond the Western liberal context.

Chapter 9 provides yet another distinct approach to cyber conflict, but this time from a Western power. Ciaran Martin, founding chief executive of the UK's National Cyber Security Center (NCSC) describes a decidedly civilian approach, and one that for most of its history put a strong emphasis on defending domestic networks and enterprises. This is a notable departure from the highly militarized U.S. approach that historically emphasized protection of government networks and offensive capabilities against malign state actors. Though Martin describes a shifting UK policy landscape, the contrast between two partners that otherwise operate in near lockstep via the Five Eyes alliance and elsewhere is clear.

The focus shifts to nonstate actors in part 3. A decidedly technical chapter 10 by J. D. Work details the role of private sector actors, with a strong emphasis on private cyber security and intelligence firms. This is paired with a less formal but equally serious piece from Nina Kollars that similarly focuses on the role of private-sector nonstate actors in cyber competition. Notably, there is no chapter on nonbusiness nonstate actors. Though this reviewer understands that barriers to the study of these groups are high (they do not often publish doctrine, embrace public records, or follow legislative procedure), their use of the cyber domain in transnational crime, illicit financing, and for-hire malign activity is a significant enough use of the cyber domain to be relevant. Indeed, the states discussed in depth here developed specific agencies to address them, such as the UK's NCSC and/or maintain semiofficial relationships with them for personal gain like China and Russia. As such, understanding nonstate and nonbusiness actors' motivations, intentions, and methods would also inform the debate over the broader applicability of the intelligence contest concept.

Though there is a clear fondness for the intelligence contest concept on the part of the work's editors, this reviewer found that the foreign case studies show the weakness of trying to impose a U.S.-centric academic frame on the activities of foreign countries. The nonstate actor chapters further show how, even if one accepts the definition of intelligence contest offered by the book's editors as, among other things, part of a "competition in a political contest," then the frame would only be relevant to a small subset of all global cyber activity and actors (p. 5). The state actors discussed in the work each conceptualize cyber activity differently in significant ways, and nonstate actors make up the vast majority of activity and competition in cyberspace (whether that is competition for clicks, currency, or ideas). It is therefore this reviewer's opinion that there is a mirror-imaging problem in the application of a U.S.-centric intelligence contest lens to activity that is inherently global and increasingly borderless. The theoretical box the intelligence contest proponents try to place cyber conflict in simply is not robust enough to cover the multitudes of differing state and nonstate approaches to its practice.

This reviewer's opinion notwithstanding, Robert Chesney and Max Smeets, "set out not to resolve this struggle [between conceptual categories] but to bring it to the surface in a way that might advance mutual understanding" when they compiled this work (p. 273). They fully succeeded. This collection of works by some of the preeminent scholars and practitioners of intelligence from around the world thoroughly expands the theoretical discussion and is an engaging read. It is highly recommended for those looking to engage with the more abstract elements of cyber conflict through theory, and it will undoubtedly see continued relevance.

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Power Up: Leadership, Character, and Conflict Beyond the Superhero Multiverse. Edited by Steven Leonard, Jonathan Klug, Kelsey Cipolla, and Jon Niccum. Havertown, PA: Casemate Publishers, 2023. Pp. 320. \$ 37.95 (hardcover); \$22.95 (ebook).

U.S. military education institutions do not normally include a significant body of fictional work in their curricula or reading lists. There are exceptions, like Jean Laterguy's *The Centurions*, but by and large, most of the recommended reading one finds in our centers for higher learning tends to focus on theory, doctrine, and history. This is unfortunate. There is much we can learn about the human experience that only fiction can really address.

During the past two decades, and the past five years in particular, two genres have developed, supplementing the available reading for military professionals. The first may be termed "useful fiction," which presents fictionalized accounts of conflict in the future where actions are constrained by the imagined possibilities of either existing or in-development technologies. These include titles like Mick Ryan's *White Sun War*, August Cole and P. W. Singer's *Ghost Fleet*, and Elliot Ackerman and James G. Stavridas's *2034*. The value of these books, and others like them, is that they are imagined futures, where readers can image themselves having to play a role. In doing so, these works feed curiosity and create an emotional reaction—like good stories always do.

The second genre, to which *Power Up* is an extremely worthy addition, is comprised of works that seek to explain difficult ideas or concepts using the fic-

tion found in pop culture. Examples here include *Game of Thrones and Philosophy: Logic Cuts Deeper than Swords*, *Make It So: Leadership Lessons from Star Trek the Next Generation* by Wess Roberts, and *Battlestar Galactica and Philosophy: Mission Accomplished or Mission Fracked Up?*

The difference between this category and the first genre is that the stories from pop culture are examined as metaphors to illustrate complex ideas and concepts. This academic treatment of subject matter originally intended for mass consumption has real power. It makes challenging concepts relatable, and affords insights that might not be possible in real-world situations. For someone instructing at a professional military education (PME) institution, this genre offers a wealth of examples that can be tapped into, instantly taking the unfamiliar and making it accessible to a wide potential audience.

In the case of *Power Up*, a wide range of both new and familiar authors have examined a broad swath of the superhero multiverse to provide insight into an equally broad range of human (and superhuman) experience. Its 35 essays are extremely varied and take advantage of comic books, graphic novels, and superhero movies to make their points in easily digestible form. The writing is to a high standard, and the essays tend to be short enough to be rapidly consumed.

The real strength of this volume is the vast breadth of topics that are covered. Organized in six thematic sections, there is something for almost every military practitioner to engage with. The first section tackles leadership: examining ideas as diverse as Captain America and his use of mission command, to command or leadership teams using Batman and Alfred, Tony Stark and Pepper Potts, and Spiderman and Uncle Ben (pp. 11–18). In fairness, these are all referred to as “sidekicks,” a term this reviewer would never use with my senior enlisted advisor, but the lessons still hold (pp. 27–34). Section two looks at team dynamics and how effective teams function. The fact that the reviewer had never heard of the “Lumberjanes” did not detract from the ideas on teamwork that author Julie M. Still laid out for the reader. That she referenced existing U.S. Army doctrine to illustrate her point demonstrates the crossover potential that exists between doctrine and this particular genre of literature (pp. 76).

Further sections treat character and ethics, strategy, humanity and technology, and redemption in similar fashion—and to similar good effect. In the process, readers are exposed to the wide array of superheroes that populate the multiverse; examples are in a sense pan-universal, coming from Marvel, DC, and lesser-known publishers and authors. Whether the authors are examining artificial intelligence, deception and information operations, the role and place of empathy, or the Peloponnesian War—all subjects examined in the volume—the treatment is universally solid and does not rely on the readers possessing an extensive knowledge of the superheroes. This makes the ideas consumable,

fosters further inquiry, and gives the book a usefulness that staid philosophy textbooks and military doctrine could only wish for.

Complex ideas need to be made common if they are to be readily understood; *Power Up* achieves this extremely well. By using cultural reference points that can be found at your local bookstore, your chosen streaming service, or in theaters near you, the authors have shown a new way of digesting the actions of Spiderman, Black Widow, and the Unbeatable Squirrel Girl, which can be of great service to the military profession. As educational institutions seek to enculturate the military ethos, leadership, team building, and the creation of strategy to those new to the profession (or new to the ideas we need them to adopt) using pop culture and the panoply of superheroes within it to start necessary discussions is a worthy addition to our utility belts.

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Climate Change, Conflict, and (In)Security: Hot War. Edited by Timothy Clack, Ziya Meral, and Louise Selsiny. New York: Routledge, 2024. Pp. 380. \$43.99 (paperback and ebook); \$152 (hardcover).

The edited volume *Climate Change, Conflict, and (In)Security: Hot War* is an excellent starting point for individuals seeking to examine the way in which climate change affects numerous aspects of security ranging from migration to maritime. Timothy Clack is the Chingiz Gutseriev Fellow at the University of Oxford, UK, and coeditor of *Cultural Heritage in Modern Conflict: Past, Propaganda, Parade* (2023) and *The World Information War: Western Resilience, Campaigning, and Cognitive Effects* (2021). Ziya Meral is a senior associate fellow at the Royal United Services Institute, and Louise Selsiny is a research associate at the University of Oxford, UK. *Climate Change, Conflict, and (In)Security* offers a way to gradually introduce U.S. military personnel to the writing and thoughts of the volume's international contributors. Although the authors are predominately from the United Kingdom, their experience spans the globe and takes in perspectives that include civilian stakeholders, policy makers, and multinational organizations. This valuable perspective highlights the overlapping ways in which security and military matters intersect in the civil-military sphere as well as cross-border and regional challenges to stability in contested environments.

The volume is divided into three sections that focus on climate security contexts, defense and security implications, and framings and reflections. Rather than focus on climate change through a political lens or look back at past conflicts, the authors in each of the sections explore the ways in which climate change may impact future defense and security thinking in new areas and fields, to include the Arctic, the Antarctic, energy, food security, migration, and trade. The book is organized specifically to prepare for the future. The editors identify “Understanding, preparation, and collaboration as vital [to the future] . . . the challenges are beyond the capabilities of any state to singularly address” (p. 20). In short, the editors have created a volume that they intend to serve as a starting point for dialogue and consideration of what plans should be drafted through collaborative regional bodies or alliances such as the North Atlantic Treaty Organization (NATO).

Another aspect of *Climate Change, Conflict, and (In)Security* is its consideration of how natural disasters caused by climate change accelerate cycles of instability in regions where natural resources are already under stress. Food scarcity and mass displacement may become threats on par with kinetic conflicts or terrorist attacks and will undoubtedly require security forces and militaries across the world to be prepared to provide humanitarian as well as advisory assistance to civilian authorities. The U.S. military has deep experience in this area through United Nations missions, humanitarian disaster relief, and regular responses to natural disasters ranging from hurricanes to forest fires.

Climate Change, Conflict, and (In)Security offers a way for readers interested in future conflict and instability to discern where old patterns of conflict intersect with new areas of instability. Alex Tasker draws the linkage between climate and health: “Human, animal, and ecological health are closely bound; just as climate change has been suggested as the greatest global environmental threat of the century, it represents a direct threat to global health” (p. 246). It should be noted that disease and climate have always been factors in military campaigns. The future of insecurity and conflict may be further determined by the sorts of change that occurs when climate causes people to migrate to gain access to food, water, and security into areas where the existing populace is not willing to share or is opposed to migration. The migration patterns from Africa to Europe across the Sahara in the twenty-first century are being paralleled by similar migrations in Central America and Asia. Exploring the impact of state security in Europe and especially in countries where Syrian refugees passed through on their way to safety highlights the maritime, land, and border impacts of large-scale migration. Adding in criminal enterprises that profit from human smuggling and corruption that arises from these conditions raises the specter of isolationism, closed borders, and mistrust within previously strong alliances.

Climate Change, Conflict, and (In)Security reminds readers that while the

cyber domain and artificial intelligence dominate present-day news cycles, climate still demands attention. Militaries will be deployed to respond to natural disasters, man-made catastrophes, or new conflicts as climate change accelerates instability in fragile states and conflict regions. It is therefore incumbent on military professions to understand why conflicts occur and how to forecast plans for potential climate change events. This volume recommends extensive crosstalk between military and civilian authorities to ensure that contingency plans are well-made and prepared in advance of potential threats.

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