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The Department of Defense's report on Securing Defense- Critical Supply Chains

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Michael Mason, Stacy Hadeka, Michael Scheimer, and Lauren Olmsted

The U.S. Department of Defense (DoD) has issued its long-awaited report in response to last year's Executive Order 14017, *Securing America's Supply Chains*, which called for a comprehensive review of supply chains in critical sectors, including the defense industrial base (DIB). The DoD report, titled "Securing Defense-Critical Supply Chains" ("Report"), assesses supply chains in the DIB and sets out DoD's plan to align its priorities and capabilities to strengthen the industrial base and to establish a network of domestic and allied supply chains to meet national security needs.

The Report proposes a series of specific recommendations across several DoD focus areas and strategic enablers, and also provides an update on the implementation of DoD's strategic review of Critical Minerals and Materials published in June 2021. This is a major development for the aerospace and defense (A&D) industry. It builds on prior reports, legislative proposals, and executive orders. It provides DoD's current analysis of DIB supply chain challenges and includes recommendations to strengthen and enhance the resiliency of the supply chain. The Report provides insight on where to expect increased government investments, as well as potential changes in procurement regulations and policies. The Report may also be used to identify where your company may have a future competitive advantage. By understanding the Report and the recommended plans contained therein, A&D companies will be much better prepared to pursue the opportunities and to tackle the challenges that emerge from DoD implementation of the Report.

Background

The Report is the latest instalment in a year of significant executive, legislative and policy action that the government has taken to bolster critical domestic supply chains and to mitigate identified socioeconomic, trade, and geopolitical vulnerabilities, among others. Of particular importance, on 24 February 2021, President Biden issued **Executive Order 14017** (the "EO") to strengthen America's

supply chains.¹ We previously wrote about the EO **here**. The EO called for dual, "whole-of-government" assessments of critical supply chains: first, an immediate 100-day review of supply chain vulnerabilities in four key product sectors, including the DoD-led review of Critical Minerals and Materials published on 8 June 2021² (which Hogan Lovells extensively covered **here**); and second (and the subject of this article), supply chain assessment reports focused on six industrial sectors, including defense, to be completed within one year of the EO's publication. The EO instructed Department heads, in collaboration with industry, to prepare a final report for White House consideration detailing key findings and recommended solutions (including proposed policymaking) to address core vulnerabilities in the supply chain.

Building on the EO were efforts to secure the cybersecurity supply chain, including Information and Communications Technology and Services (ICTS) supply chain regulations implemented by the U.S. Department of Commerce as well as software supply chain security guidance promulgated by the National Institute of Standards and Technology (NIST). Consistent with previous years, the National Defense Authorization Act (NDAA) for Fiscal Year 2022 also included several initiatives to strengthen supply chain security and the DIB, such as development of a strategy to reduce U.S. reliance on Chinese and Russian sources of materials and supplies, which we previously identified **here**.³

Against this backdrop, the Report addresses the risk of substantial supply chain disruption underscored by the increasing complexity and globalization of modern A&D supply chains. According to DoD, "[t]he average American aerospace company relies on roughly 200 first tier suppliers. The second and third tiers have more than 12,000 companies." The COVID-19 pandemic revealed the potential fragility of this arrangement, as supply chain shortages and delays left many industry participants under significant pressure to meet commercial and government demand.

In response to these challenges, DoD has been much more inclined to tackle supply chain issues through existing tools available under statutory authority such as the Defense Production Act (DPA)⁴ and the Industrial Base Analysis and Sustainment (IBAS)

program.⁵ While these strategies have been met with some success, they are insufficient to address each of the threats and vulnerabilities plaguing the DIB. Complicating the situation are several sector-specific issues that will require considerable effort and investment from DoD and industry to mitigate. The Report highlights, for example, that “[s]ome foundational industrial supply chain sectors, like optical instruments, mechanical gears, welding equipment, and printed circuit boards source a large part of their components from outside North America.” Moreover, a protracted war in Ukraine would likely exacerbate supply chain pressures affecting the A&D industry.

In light of these challenges, the Report recognizes that it is critical for DoD take bold action in support of supply chain resiliency. To this end, the Report proposes an aggressive and comprehensive strategy that relies on utilizing varied funding mechanisms; leveraging technological innovation; and encouraging interagency, industry, and international collaboration to secure critical supply chains.

The Report identifies four focus areas of particular importance to national security, each of which is also prioritized in the DoD Budget Request for FY 2023:⁶

- **Kinetic capabilities:** current missile systems and advanced and developing missile capabilities, including hypersonic weapons technology, as well as directed energy weapons;
- **Energy storage and batteries:** high-capacity batteries, with a particular focus on lithium batteries;
- **Castings and forgings:** metals or composites developed into key parts and manufacturing tools through high-intensity processes; and
- **Microelectronics:** State-of-the-Practice (SOTP) and legacy microelectronics, as well as State-of-the-Art (SOTA) microelectronics.

Related to these four areas, the Report identifies the following “strategic enablers” necessary to build overall supply chain resilience:

- **Workforce:** trade skills through doctoral-level engineering skills;
- **Cyber posture:** industrial security, counterintelligence, and cybersecurity;



- **Manufacturing:** current manufacturing practices, as well as advanced technology like additive manufacturing; and
- **Small business:** the role of these key members of DoD supply chains.

Recommendations

The Report's 64 recommendations highlight the significance of the focus areas and strategic enablers to the economic prosperity and national security of the United States. A number of these are "foundational" recommendations that overarch the focus areas and are considered critical recommendations for building resilience in the DIB. The remaining recommendations are focus area-specific or pertain to the strategic enablers. Although not all of the recommendations will result in funding decisions, new regulations or policies, they do provide a roadmap regarding DoD's plans for a strengthened and more resilient DIB supply chain.

The following discussion addresses those recommendations that most impactful to industry.

Foundational Recommendations

At the outset, the Report identifies seven foundational recommendations that reflect pivotal opportunities to strategically develop DIB resilience.

Build domestic production capacity. Through close coordination with industry, DoD aims to enhance acquisition strategies and contracting mechanisms that prioritize domestic sourcing. The Report emphasizes a commitment to future DoD investment to ensure defense production for critical supplies can endure disruptions to the supply chain. Given DoD's recent reliance on the DPA to prop up supply chains critical to the COVID-19 response, this investment strategy may signify an ongoing (and increased) usage of the DPA to strengthen supply chains. It is therefore imperative that industry participants take the time to understand the funding and framework applicable to the DPA.

Engage with partners and allies. The Report emphasizes the need for U.S. collaboration with its international partners to strengthen the DIB and improve supply chain resilience. Although this particular recommendation is thin on specifics, it suggests increased cooperation between the United



States and its allies with respect to enforcing rated orders under the DPA, increased use of foreign military sales and foreign military financing of direct commercial contracts, and joint procurements.

Mitigate Foreign Ownership, Control, or Influence (FOCI) and safeguard markets.

FOCI in the DIB has primarily been enforced through the Committee on Foreign Investment in the United States (CFIUS) process and the mechanisms in place to ensure contractors with access to U.S. classified information have satisfactorily mitigated FOCI concerns. However, in recent years DoD has significantly increased scrutiny of its supply chain for FOCI, including outside the CFIUS and industrial security context. Consistent with this trend, the Report recommends front-end assessment of a program's acquisition strategy to ensure a resilient supply chain. This is yet another "drum beat" on the increased importance that FOCI issues are expected to play in U.S. acquisitions.

Conduct data analysis. The Report recognizes the need for DoD to improve the collection of data and the use of analytic tools to identify and address trends, vulnerabilities, and disruptions. In this respect, the Report underscores DoD's increased emphasis on artificial intelligence, sensors and the Internet of Things, and data collection mechanisms.

Aggregate demand. The Report prompts DoD to better signal to the DIB its expected demand across multiple programs in the near term.

Develop common standards. The Report provides yet another call for DoD to leverage commercial sector innovations and technologies rather than military-unique requirements. The fact that this recommendation is included in the Report reflects that DoD has not fulfilled past similar pronouncements, including those set forth in the 1994 DoD memorandum on a new way of doing business issued by then Defense Secretary William Perry.⁷

Update acquisition policies. The Report concludes that DoD should update its procurement and budget policies to encourage expansion of capabilities and streamline procurement cycles. This recommendation, and the Report as a whole,

is expected to give rise to rulemaking that will be subject to industry and other stakeholder comment.

These foundational recommendations support the "more tactical recommendations" that apply to each specific focus area. Given the expansive reach of these foundational areas, A&D companies should consider how they can leverage their unique capabilities to benefit from planned DoD investment in these areas.

Focus Area Recommendations

The Report analyzes each focus area in terms of importance to national security, challenges, and recommendations for DoD implementation. The most significant findings and recommendations for industry are summarized below.

Kinetic Capabilities. The Report recognizes that adversary military build-up in conventional, strategic, cyber, and hypersonic capabilities poses an acute challenge for the United States. Core challenges faced by DoD are driven by the realization "the defense sector alone cannot drive demand for components." Magnifying these challenges are "U.S. reliance on sole-source suppliers and foreign sources," inconsistent DoD procurement practices, and limited visibility into certain sub-tiers of defense supply chains. Key recommendations to address these sector challenges include:

- Address supply chain vulnerabilities to critical chemical supply. A prioritized list of critical chemicals should be used to inform future defense funding, including through the DPA and IBAS programs.
- Invest in the hypersonic industrial base. DoD is developing a roadmap to inform investments, including sub-tier supplier development, over the next five years. The roadmap will also "inform procurements by the Military Services to optimize synergies within the DIB." These developments are especially important in light of advances made by both China and Russia in this area.
- Work with other agencies, including the Department of Energy (DOE) and the National Aeronautics and Space Administration (NASA), to review mergers that may reduce DIB supply chain security. This comes on the heels of DoD's Report

on the “State of Competition within the Defense Industrial Base” issued in February 2022, which discusses the current state of competition in the DIB and recommends DoD actions to promote a more diverse and expanded industrial base.⁸

Energy Storage and Batteries. The Report builds upon DOE’s National Blueprint for Lithium Batteries 2021-2030,⁹ published 8 June 2021, and the Bipartisan Infrastructure Law (BIL), Pub. L. 117-58 (Nov. 15, 2021), which provides for domestic investments in the supply chain, including dual use investments. Front and center, the Report emphasizes China’s global supply chain dominance in all aspects of the lithium battery market. The Report also identified a standards gap that creates a barrier to successful DoD leveraging of the \$515 billion in active global auto industry investment in advanced battery technology. Moreover, the Report concludes that domestic preferences and other incentives built into DoD acquisitions are insufficient to generate the type of demand required to benefit from domestic battery production.

To tackle these challenges, the Report makes several recommendations that prioritize domestic battery production, including the following:

- Use investment authorities to leverage commercial investments. The Report recommends that DoD develop an implementation plan to identify joint investment opportunities that partner DoD with industry. Moreover, DoD proposes to collaborate with DOE to distribute BIL funding, which authorizes \$3 billion in competitive investment between FY 2022 and FY 2026 for mineral and material mining and battery materials processing, and \$3 billion devoted to battery cell and pack production and recycling. DoD will facilitate additional BIL battery investments through other interagency partnerships, such as with the U.S. Department of Transportation.
- Standardize and aggregate battery demand. This recommendation aims to ensure DoD fully leverages “the substantial domestic investments in [electric vehicle] battery production, testing, and grid energy storage, and maintain a continual technological advantage.” Central to this recommendation is the alignment of DoD and commercial standards, wherever practicable, to



ensure future defense requirements are produced efficiently and affordably.

Castings and Forgings. The Report attributes casting and forging capability challenges in part “to the impacts of offshoring and waves of industry consolidation since the mid-20th century.” For example, the United States has only a single foundry that can produce the large titanium castings required for certain key systems, while China produces four times as much as the United States in terms of casting tonnage. The resulting erosion of the domestic market share and increased reliance on foreign sources could introduce national security vulnerabilities in addition to the general diminishment of U.S. technological innovation.

The Report also cites vendor control of technical data packages as a constraint on DoD procurement of affordable replacement parts – particularly when such parts are no longer available from the original vendor. Recommendations to address these offshoring and consolidation issues include:

- Development of a cast and forged (C&F) strategy to “inform policy and investment decisions over the coming years,” which would include, in part, expanding use of additive manufacturing and digital production capabilities.
- Investment in the C&F industrial base. This investment will leverage DoD’s overall C&F strategy to revitalize sub-tier supplier and workforce development and address procurements that optimize DIB synergies.
- Identify and develop allied and partner C&F capabilities. Through international coordination, DoD aims “to scope, develop, and implement plans to develop and coordinate C&F capabilities.”
- Engage industry through the NIST’s Manufacturing Extension Partnership¹⁰ to develop domestic capacity.

Microelectronics. The Report highlights that 88 percent of the commercial production, and 98 percent of the assembly, packaging, and testing of microelectronics is performed overseas – specifically, in Taiwan, South Korea, and China, with the latter aggressively seeking to expand its market share. Domestic production, on the other hand, has decreased from 37 percent of global

manufacturing capacity in 1990 to only 12 percent in 2020. According to DoD, this decline in domestic manufacturing represents a significant security and economic threat for the United States and allied nations. As specific challenges, the Report cites supply chain visibility, foreign dominance in commercial production of semiconductors, measurably secure microelectronics sources, non-market competitive practices, obsolescence and DoD procurement practices. The Report provides more than a dozen recommendations, which include the following:

- Leverage investment authorities such as the DPA and other authorities to maintain national defense critical capabilities. Moreover, such investments “should target increasing resiliency to combat unfair competitive practices.”
- Develop measurably secure microelectronics. Common practices and techniques for independent evaluation of microelectronics security should be preserved in commercial standards.
- Drive domestic microelectronics innovation through program-relevant prototype investments. Through collaboration with commercial and DIB companies, DoD seeks to develop domestically manufactured microelectronics for DoD program adoption, and to incentivize the DIB to leverage available on-shoring investments and energy efficiency improvements.
- Track and prevent counterfeit parts in the microelectronics supply chain. To bolster this effort, the Report recommends including a counterfeit parts management plan in future microelectronics acquisitions to track procurement from non-authorized independent distributors. This recommendation would also benefit from the efforts identified in President Biden’s Executive Order 14028 on Improving the Nation’s Cybersecurity for the use of a software bill of materials (SBOM) for product purchases, as SBOMs are viewed as a key building block in software supply chain risk management.
- The Administration should request that Congress appropriate the \$52 billion authorized by the FY 2021 NDAA to fund the Creating Helpful Incentives to Produce Semiconductors (CHIPS)

program. The goal, according to DoD, is to “reverse the decades-long decline in domestic semiconductor fabrication.”

- Leverage international interest in microelectronics collaborative efforts. Such efforts include leveraging planned investments by Taiwan and South Korea in U.S.-located SOTA manufacturing facilities, and collaborating with the Department of State to explore new microelectronics supply chains in allied and trusted partner nations.

Strategic Enabler Recommendations

The Report identifies the DIB workforce, cyber posture, small business, and manufacturing as supply chain “strategic enablers.” The recommendations associated with each strategic enabler generally are aimed at developing or leveraging existing programs, engaging in information sharing, making strategic investments, or collaborating with industry and other stakeholders to enhance the strategic enablers. Moreover, many of the foundational recommendations addressed above apply to some or all of these enablers.

Of particular note, the Report emphasizes that Cybersecurity-Supply Chain Risk Management (C-SCRM) should be an overarching priority. In this regard, NIST Special Publication (SP) 800-161, “Cybersecurity Supply Chain Risk Management Practices of Systems and Organizations” details the core processes required to implement C-SCRM and to mitigate cybersecurity risk in a company’s supply chain. The Report recommends the development of a C-SCRM best practices guide aligned with NIST SP 800-161. NIST has undertaken efforts to update SP 800-161 as a result of EO 14028, to include guidance on the security and integrity of the software supply chain and plans to release a final draft of NIST SP 800-161 during the third quarter of 2022. These changes could be informative to DoD’s efforts in this area.

The Report’s recommendations, predictably, also include that DoD should conduct cybersecurity assessments of companies that comprise critical DoD supply chains, enhancing the cybersecurity posture of critical companies through intelligence sharing and incident reporting, and developing international cybersecurity approaches. For instance, the Report recommends enhancing DoD’s cyber threat

intelligence by expanding cybersecurity information sharing through growing the DoD Cyber Crime Center’s (DC3’s) Defense Collaborative Information Sharing Environment (DCISE), which already serves as the reporting center for cyber incidents affecting the DIB and enhancing the National Security Agency’s Cybersecurity Collaboration Center to share crowdsourced threat intelligence at both unclassified and classified levels and enhance the ability of DIB companies to get information on cybersecurity.

Update to the 100-Day Review of Critical Minerals and Materials

Finally, the Report provides an update on the implementation of the proposed recommendations in DoD’s 100-day Review of Critical Minerals and Materials, published last June. The Report highlights the national security and economic significance of reliable access to critical minerals and materials. To that end, DoD is pursuing interagency partnerships to augment sustainable production and processing, and to diversify supply chains to limit reliance on foreign adversaries. DoD is also leading efforts to strengthen U.S. stockpiles of these items, although the Report emphasizes the success of such efforts will rely in part on congressional action to obtain new appropriations for the National Defense Stockpile and to grant DoD acquisition authority for shortfall materials (such as rare-earth oxides, titanium, and high explosives for missiles and munitions).

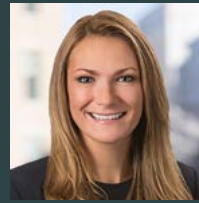
Next steps

The Report provides industry stakeholders with valuable insight into DoD’s core supply chain challenges, priorities, and potential solutions. As DoD prepares to implement this plan of action, A&D companies should carefully consider their own supply chain vulnerabilities, technical capabilities, and customer expectations. By taking the right actions now, A&D companies can position themselves to monitor DoD’s supply chain initiatives, shape forthcoming policy actions, and to capitalize on DoD’s forthcoming investments in the DIB.



Michael Mason

Partner | Washington, D.C.
T: +1 202 637 5499
E: mike.mason@hoganlovells.com



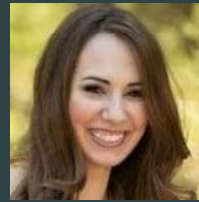
Stacy Hadeka

Senior Associate | Washington, D.C.
T: +1 202 637 3678
E: stacy.hadeka@hoganlovells.com



Michael Scheimer

Counsel | Washington, D.C.
T: +1 202 637 6584
E: michael.scheimer@hoganlovells.com



Lauren Olmsted

Associate | Washington, D.C.
T: +1 202 637 5772
E: lauren.olmsted@hoganlovells.com

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3. See Sec. 847 of the NDAA for Fiscal Year (FY) 2023.
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