U.S. Aerospace and Defense (A&D) Promoting a Comprehensive Approach to Supply Chain Resiliency

The Aerospace Industries Association (AIA) and its over 320 aerospace and defense (A&D) member companies – spanning the entire supply chain, from small component suppliers to large original equipment manufacturers (OEMs) – have a vital and unique role in global trade. Our industry continues to drive global economic growth and U.S. market leadership, with $104.8 billion of goods exported in 2022. Government officials must consider the exposure and breadth of the A&D supply chain as the United States evaluates methods to promote supply chain resiliency and reduce its dependencies on adversarial sources.

The A&D industrial base is expansive and includes over 100,000 companies across commercial and defense markets.[1] In 2022, the A&D supply chain generated $415 billion in revenue through indirect output, accounting for 44 percent of total industry revenue.[2] Unlike other industries, the commercial aerospace and defense industries are intertwined and share a broad range of suppliers across the value chain. Defense companies rely on the health of the commercial market for access to minerals, materials, and products at scale, quality, and cost.

Geopolitical competition continues to impact the trajectory of supply chain policy. The COVID-19 pandemic highlighted and exacerbated the fragility of global sourcing and prompted the U.S. government to invest resources in support of the U.S. industrial base. Conflicts in Ukraine and Israel and competition in the Indo-Pacific further exposed the need to diversify and mitigate U.S. dependencies on sole sources of minerals, production capacity, and manufacturing.

Adversaries are increasingly leveraging strategic resources as tools of competition, and the U.S. must do the same. To bolster U.S. capacity and reduce adversarial trade dependencies, the U.S. must adopt a comprehensive and collaborative approach across industry, government, and other stakeholders. U.S. officials should consider, prioritize, and pursue a policy approach that balances investments into domestic sources and nimble regulatory structures that ease cooperation with likeminded allies and partners to achieve resiliency.

AIA and its members are committed to supporting the U.S. government in strengthening its policies and tools that maintain U.S. competitiveness and ensure supply chain security. However, with additional legislative and regulatory restrictions on sourcing under consideration, policies that drive such restrictions must acknowledge and reflect market realities. U.S. A&D companies can serve as strategic partners to provide practical knowledge and expertise to assist policymakers in their efforts to reduce exposure and risk.

The critical role of free market policies in the global supply chain

Historically, agreements that reduce trade barriers, increase market access, and promote non-discriminatory market practices directly correlate to the growth of the U.S. A&D industry. Global trade promotion demonstrates that open markets stimulate innovation and cost savings for U.S. companies. Alternatively, tariffs, trade disputes, and free trade disruptions inject risk into U.S. supply chains. Mitigating these risks is vital to securing the long-term health of the global economy and the United States' competitive edge in technological innovation.

Multilateral trade agreements have been an integral tool in supporting free market access for industry. The World Trade Organization (WTO) Agreement on Trade in Civil Aircraft requires signatories to eliminate tariffs and import duties on civil aircraft engines, flight simulators, and

[1] Cybersecurity and Infrastructure Security Agency report on Defense Industrial Base Sector.
[2] 2023 Facts and Figures, Aerospace Industries Association.

related parts and components. When first implemented in 1980, the agreement expanded market access, enabled competitive opportunities for global trade of civil aircraft, and promoted technological advancement of the global aerospace industry. As a result, U.S. commercial aerospace exports jumped from $6.2 billion in 1979 to $25.6 billion by 1989.[3] Industry continues to benefit from the supply chain access, price predictability, and investment opportunities provided through that multilateral agreement today.

The U.S. government must remain involved and invested in the international trading system as it is vital to protecting its integrity. Trade remedies, such as anti-dumping, countervailing duties, and Section 301 and Section 232 investigations, can protect domestic industry. However, they must be appropriately scoped to ensure that U.S. companies are not disadvantaged by increased costs. U.S. companies are disadvantaged by import and retaliatory tariffs, leading some to offset costs by increasing prices or searching for alternative suppliers to limit costs. These policies disproportionately disadvantaged small suppliers who cannot afford offsetting tariffs in the long term and thus lose opportunities to expand, invest in research and development (R&D), or build the workforce pipeline.

- **Recommendation:** Return to the pursuit of bilateral and multilateral trade agreements which – when enforced and monitored – lead to greater opportunities for U.S. businesses and workers and grow the U.S. economy, including the A&D sector, whose largest customer base remains outside the country.
- **Recommendation:** Leverage international trade organizations to promote free market practices and revitalize multilateral trade agreements, such as the WTO Aircraft Agreement, as a mechanism to promote cooperation, facilitate open dialogue, and mitigate disputes around trade barriers in the aerospace sector.
- **Recommendation:** Prioritize iterative industry engagement to understand the practical impacts of tariffs on industry competitiveness and consumer pricing. Adopting measures like an exclusion review and approval processes in tariff expansion may help to safeguard the domestic supply chain and increase its resiliency.

Supply chain resiliency through government investment and financial incentives

Resilience requires creative solutions, shared resources, and investment in trusted partners. Consistent with applicable law, the U.S. government should provide financial support to American companies to incentivize secure supply agreements with trusted suppliers at home and abroad and sustain access to raw material production facilities and domestic mines. Financial institutions and policies, such as the Export-Import (EXIM) Bank and tax incentives, support the domestic industrial base and U.S. firms competing in the global market. The government should continue to leverage and expand U.S. financing to build supply chain security.

The EXIM Bank is a critical tool for the U.S. aerospace industry. Continued investment loans from EXIM Bank signal sustained marketplace availability and lead to vertical growth – for all companies, from OEMs to raw material providers. EXIM Bank policies, including the *Make More in America* initiative, have led to direct investment into the U.S. manufacturing and broader industrial base that, without sustained financing, would lack comprehensive growth opportunities. For example, a brief lapse in EXIM Bank's reauthorization in 2015 put 1.4 million jobs and over 15,000 supply chain companies at risk if further investment had been halted.[4]

[3] Aerospace Facts and Figures 1980/1981 and Aerospace Facts and Figures 1990/1991, Aerospace Industries Association.
[4] EXIM Bank FY2015 Annual Report.

Our members support legislation that provides investments and tax incentives; these have been critical to mitigating supply chain risks. Game-changing financial investments such as *The CHIPS and Science Act,* Advanced Manufacturing Tax Credit under Section 45x(c)(6) of the *Inflation Reduction Act,* and R&D-incentivizing tax policies are key to supporting innovation and bolstering domestic capacity. However, many of these policies are limited in scope to certain sectors and further restrict market access for others. As global adversaries subsidize their domestic industries, it is vital for the U.S. economy to also make additional public investments that ensure U.S. industry can remain competitive. The U.S. government must allocate resources quickly while targeting strategic sectors to maximize the effectiveness of taxpayer investments. Congress should consider expanding *The CHIPS and Science Act* to other key sectors and reconsider the recently issued guidance for Section 45x(c)(6) Advance Manufacturing and R&D tax credits with input from industry. The exclusion of direct and indirect raw materials costs undermines the spirit of the legislation and minimizes the potential benefits to the domestic industrial base.

- **Recommendation:** The EXIM Bank should guarantee viable financing to maintain U.S. market competitiveness. Over 100 countries have established export credit agencies that give non-U.S. competitors an edge in the market. The U.S. government should support EXIM Bank Reauthorization in 2026 and continue to invest in policies like *Make More in America*.
- **Recommendation:** Enact policies and tax incentives that invest in industry manufacturing and support U.S. firms. Congress should consider similar legislation to *The CHIPS and Science Act* that incorporates the A&D industry to reduce trade dependencies. Further, Congress should pursue tax policies with clear guidance that incentivize domestic capacity.

Building up the domestic industrial base while maintaining access to international sources

While bolstering the domestic supply chain is a critical step, the U.S. government must also acknowledge the A&D industry's inherent and necessary role in the global supply chain. Our supply chains are often horizontally integrated and complex. While most companies have visibility into their immediate suppliers, insight into sub-tiers is often a challenge due to the varying industrial knowledge at each level. U.S. cooperation with allies and partners increases both resiliency and complexity of A&D supply chains as coproduction and other agreements incorporate new international suppliers.

If focused and properly scoped, U.S. government surveys may serve to inform broader policy and regulatory decisions, but they often are very intensive and pull subject matter experts away from their primary work. Timelines for completion are often underestimated by issuing government agencies and don't always account for the time required for companies to ensure the information provided is accurate and comprehensive. In addition, collecting sub-tier data is often costly, especially when industry must take measures to protect sensitive proprietary or classified information to mitigate cyber or other threats. When closing or restricting supplier markets – through legislative or regulatory sourcing restrictions – the U.S. government must have a strong understanding of available alternatives, or in the short term, risk potentially augmenting our supply chain vulnerabilities. Establishing sourcing restrictions when there is no other source of supply stalls production or significantly slows delivery, harming the overall health of the industrial base.

The Department of Defense (DOD) recently released its National Defense Industrial Strategy (NDIS), which sets resilient supply chains as a strategic priority to support a modernized defense

industrial ecosystem.[5] This builds on the Department's action plan responding to Executive Order 14017 – entitled 'Securing America's Defense-Critical Supply Chains' – which acknowledges that access to critical minerals is integral to the United States' ability deter threats.[6] A 2024 U.S. Geological Survey found that the U.S. is 100 percent net import reliant on 15 of 49 critical minerals integral to the A&D supply chain.[7] The global dispersion of the critical mineral market – and, in certain instances, concentration of processing and refining capabilities in near-peer adversaries – leaves the A&D industry vulnerable to shortages that could negatively impact national security interests. For example, the U.S. A&D industry is currently 100 percent import reliant on titanium sponge, which is used in key products such as castings and forgings. The critical mineral supply chain is further constrained by limited technology for sorting, processing, and recycling critical minerals. The U.S. government should consider increasing incentives to support reliable domestic access in addition to avenues for continued access of foreign sources of raw, processed, and manufactured materials from likeminded partners.

The unique nature of A&D supply chains cannot be ignored. A&D products include high-purity, aerospace-grade materials that require qualified processing, refining, and smelting operations. Companies assess that transitioning to new suppliers can take up to 10 years due to the certification process; this is a top challenge for AIA members. Integrating new suppliers from likeminded partner nations can lead to long-term resiliency and create needed redundancy. Without creating such resiliency, elements of the A&D industry will continue to shrink, further exacerbating the existing problem. A recent U.S. Government Accountability Office report found that small businesses in the U.S. industrial base have shrunk by 40 percent in the past decade and an additional 15,000 will likely leave the market in next 10 years.[8] These trends further highlight the need to limit regulations and time-prohibitive requirements that disrupt the supply chain, restrict certification of new suppliers, and limit diversification.

As a means to counter diminishing manufacturing and material sources, standards provide the single largest source of technical data used globally to design, build, and sustain aerospace-grade products and can help offset the impacts of firms exiting the market. The harmonization of standards ensures low-cost, quality products are accessible throughout the global market and can be easily reproduced if a supplier leaves the market. Further, industry-consensus standards inherently encourage communication and transparency throughout the supply chain, leading to risk avoidance and resiliency. Continued standards development is critical as industry increases their supply-chain visibility and establish environment certifications for domestic critical mineral processing. The U.S. government should continue to promote industry-led standardization strategies, engage in standards development to ensure success, and harmonize international standards development with partners and allies to support global supply chain resiliency.

Workforce constraints also remain a barrier to the A&D industry growth and its ability to meet growing demand resulting from international partnerships such as the AUKUS partnership and conflicts in Ukraine and Israel. At the end of 2023, there were 600,000 manufacturing job vacancies.[9] The A&D industry is both highly specialized and skilled. Workers often require extensive background checks due to the sensitivity of the projects to which they contribute. Competition with other key industries and an aging workforce further underscore workforce challenges firms up and down the supply chain are experiencing. While industry has taken steps

[5] National Defense Industrial Strategy, U.S. Department of Defense.
[6] Securing Defense-Critical Supply Chains, U.S. Department of Defense.
[7] Mineral Commodity Summaries 2024, U.S. Geological Survey.
[8] Department of Defense Report on the State of Competition within the Defense Industrial Base, February 2022.
[9] Adapting to Change with a Flexible Workforce: Workforce Solutions Market Overview 2024 Outlook, Agile One study.

to address these concerns, without further incentives and resources to build a manufacturing workforce, A&D companies will be unable to meet demand.

- **Recommendation:** Increase U.S. government engagement with industry to increase multi-tiered transparency, including requesting industry input on supply chain survey development to ensure they are comprehensive, accurate, and reasonable. Continuous engagement ensures that policy does not inadvertently impact the U.S. domestic industrial base and that policies and regulations are reflective of market realities.
- **Recommendation:** The U.S. government should provide financial incentives to support onshoring policies that will increase domestic capability and capacity. For example, the bipartisan *Securing America's Titanium Manufacturing Act of 2024* enhances the competitiveness of America's titanium mill products industry and broader titanium supply chain by temporarily removing a 15 percent tariff on titanium sponge imports while domestic production is reestablished. Furthermore, Section 45x(c)(6) of the *Inflation Reduction Act* incentivizes U.S. industry to invest in critical mineral production by providing a 10 percent tax credit; however, implementation guidance on the inclusion of direct and indirect material cost should be reevaluated by policymakers.
- **Recommendation:** Support U.S. regulatory requirements and incentives that promote secure suppliers and a diverse industrial base. Government agencies should avoid creating further certification requirements that are potentially duplicative and/or could add additional time to an already lengthy certification process. Additionally, agencies like the Department of Transportation (DOT) and Federal Aviation Administration (FAA) should establish clearer guidance and standards for the certification of alternative manufacturing processes. These standards should be streamlined and broad to ensure the safe and sustainable integration of new suppliers into the industrial base and mitigation of administrative burden on industry and government agencies. Doing so would lead to a more diverse supplier base less vulnerable to shocks.
- **Recommendation:** Continue to incentivize industry consensus-based standards to uphold supply chain resiliency. The U.S. government should encourage incentives for industry to continue to develop the supply chain to support cost reduction and lower barriers to entry. Further, the U.S. government should support domestic standards developers who meet the principles of the WTO Technical Barriers to Trade and Good Regulatory Practices to ensure international harmonization.
- **Recommendation:** Provide policy incentives and budget stability to invest in a skilled workforce. Federally funded apprenticeships programs signal a commitment to the manufacturing industry and workforce development. This, coupled with industry investments, ensures that growth in domestic manufacturing continues and competes with countries already investing in a skilled workforce.

Securing the global supply chain with partners and allies

Industry requires a balance between domestic and global supply. Secure and resilient supply chains include like-minded partners and disperse geographic sourcing. When domestic manufacturing is not available, the United States should increase investment and coordination with allies and partners where possible. Existing tools, such as Reciprocal Defense Trade Agreements (RDPA), emphasize standardization and interchangeability with allies to help build resiliency and ensure market access.

- **Recommendation:** Enable U.S. investment in allied and partner industrial base capacity**.** Policymakers should continue to drive for global partnerships when identifying supply

chain priorities and ensure industry perspectives are considered. For example, foreign ally-sourcing of critical minerals, including through federally funded grants, as was enabled by recent legislative changes to the definition of domestic source for Title III of the Defense Production Act, will ensure the United States is not dependent on net imports from adversaries.[10] Similarly, the U.S. government must coordinate with allies when developing supply chain resiliency initiatives, such as stockpiling, to avoid any adverse effects.

- **Recommendation:** The U.S. government should examine and consider the implication of "domestic content" requirements and export restrictions on our relationships with allies and partners, and only pursue sourcing restrictions that are reflective of market realities. RDPAs have been successful in providing reasonable exclusions to sourcing requirements, leading to partnered industry growth and interoperability. Removing barriers to trade with allies and partners bolsters development, security, and resiliency of the supply chain.

Continuing industry engagement in policy development

Building resilient and secure A&D supply chains requires a whole-of-government approach. AIA appreciates the opportunity to provide written testimony that details actionable policies and incentives to strengthen domestic capabilities and enhance cooperation with allies and partners. AIA and our members look forward to continuing close collaboration with USTR as it evaluates how to promote supply chain resilience moving forward.

[10] See "Section 1080. Modification of the Definition of Domestic Source for Title III of the Defense Production Act of 1950," National Defense Authorization Act for Fiscal Year 2024