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Defense Primer: The National Technology and Industrial Base

What is the NTIB?

The *National Technology and Industrial Base* (NTIB) consists of the people and organizations engaged in national security and dual-use research and development (R&D), production, maintenance, and related activities within the United States, Canada, the United Kingdom, and Australia. The NTIB, as established by 10 U.S.C. §2500, is intended to support national security objectives of the United States, including supplying military operations; conducting advanced R&D and systems development to ensure technological superiority of the U.S. Armed Forces; securing reliable sources of critical materials; and developing industrial preparedness to support operations in wartime or during a national emergency.

Establishing the NTIB

During World War II, shipments of critical wartime materials to the United States were disrupted. To ensure a supply of defense articles in future conflicts, Congress and the executive branch sought to establish a more robust domestic defense industrial base. Over the next half-century, evolving U.S. national security objectives led to new legislation and regulations addressing the defense industrial base, dual-use critical technologies, and manufacturing technology. Defense spending, particularly significant R&D investment, was critical to the advancement of U.S. military and industrial technology.

Following the end of the Cold War, Congress grappled with the economic implications of predicted significant cuts in U.S. defense spending. Responding to the perceived “failure of the Department of Defense to undertake serious technology and industrial base planning”—and the need to maintain a national technology and industrial base capable of meeting future national security and economic challenges—Congress mandated a more active federal government role in shaping the U.S. technology and industrial base through provisions in the FY1993 National Defense Authorization Act (NDAA). These provisions consolidated existing defense industrial base policies into a single chapter of the U.S. Code and enacted additional new policies and requirements, including establishing the NTIB, formalizing in statute what had been a traditionally close United States-Canada defense cooperation relationship.

DOD and the Global R&D Landscape

See CRS Report R45403, *The Global Research and Development Landscape and Implications for the Department of Defense*.

Expanding the NTIB

While the U.S. military has historically conceptually used advanced technological capabilities as a strategic counterbalance to superior force size and geographic

advantages of potential adversaries, recent trends have exacerbated concerns regarding the ability of the Department of Defense (DOD) to maintain this dominance in the future. The sharp decline in U.S. defense R&D spending as a share of global R&D spending, together with the rise of the private sector in driving innovation, signify continuing challenges to DOD’s reliance on technology for battlefield advantage.

Analysts and DOD officials increasingly assess that allies and potential adversaries alike are achieving technological parity with—and in some instances have already surpassed certain capabilities of—the U.S. military. In the FY2017 NDAA (P.L. 114-328), responding in part to this concern, Congress expanded the NTIB to include the United Kingdom and Australia. S.Rept. 114-255 describes global R&D as shifting abroad, in part to avoid U.S. technology transfer and export control rules, raising concerns that

innovation may be increasingly conducted overseas with technology more readily available to potential adversaries than to the U.S. military because of the lack of civil-military integration of the [NTIB].

Congress also directed DOD to create a plan that would promote closer integration of the technology and industrial bases of all NTIB member countries.

How Does the NTIB Operate?

The National Defense Technology and Industrial Base Council (10 U.S.C. §2502) is responsible for ensuring interagency cooperation in promoting the NTIB and providing advice to the President. The council consists of the Secretaries of Defense, Energy, Commerce, and Labor, and other officials appointed by the President. While the U.S. government has a governing body to coordinate activities across agencies, no such structure with representation of all NTIB member countries exists.

The Secretary of Defense is also required to take certain steps, such as establishing a national security strategy for the NTIB based on a prioritized assessment of risks and challenges to the defense supply chain (10 U.S.C. §2501) and submitting an annual report to Congress addressing NTIB capabilities, performance, and vulnerabilities (10 U.S.C. §2504).

Statutory Benefits of NTIB Membership

NTIB countries benefit from certain limited statutory preferences. Procurement of conventional ammunition can be restricted to NTIB sources and must be from the NTIB in a national emergency or when necessary for industrial mobilization (10 U.S.C. §2304). Fire-resistant rayon fiber in uniforms may only be procured from a non-NTIB member if NTIB sources are not available (10 U.S.C. §2533a note). NTIB manufacturers are generally exempt

from domestic sourcing restrictions on buses, chemical weapons antidotes, ball and roller bearings, and certain components for naval vessels (10 U.S.C. §2534). As of August 2019, DOD must develop a process for deciding if certain items must be procured from NTIB sources (P.L. 115-232, §844). Some NTIB entities may also be exempted from the foreign ownership, control, or influence requirements of the National Industrial Security Program and, as of October 1, 2020, are to be exempt from the requirement to obtain a national interest determination to be awarded a contract under a national security program (10 U.S.C. §2536).

How Effective is the NTIB?

Some analysts argue that domestic sourcing requirements, such as the Buy American Act (41 U.S.C. Ch. 83) and the Byrnes-Tollefson Amendment (10 U.S.C. §8679), hinder effective integration. Small business set-asides that apply only to American small businesses can also be a barrier to integration. Cross-border partnerships with U.S. small businesses could help foreign firms circumvent these restrictions, but inconsistencies among NTIB countries, such as different thresholds to qualify as a small business in the United States, can make integration more difficult. Others argue that these measures reflect higher public policy priorities and should be enhanced, not weakened. Some analysts and officials also point to the U.S. export control system for certain categories of defense articles and services as a barrier to closer integration.

For example, the International Traffic in Arms Regulations (ITAR), administered by the State Department, restricts the export of defense-related articles and services that are inherently military in character and, if exported, could jeopardize U.S. national security or foreign policy interests. Compliance with the ITAR requires individuals or business entities to obtain a license from the State Department in order to export covered materials. While the ITAR provides licensing requirement exemptions for some U.S. exports to Canada and temporary imports from Canada to the United States, not all ITAR-controlled items fall under the Canadian exemptions. Similar ITAR exemptions are not currently available to the other members of the NTIB. Additionally, while the United States has bilateral defense trade cooperation treaties with the United Kingdom and Australia, some analysts and officials do not consider them to be effective.

DOD Cooperation with Other Allies

DOD is actively strengthening defense cooperation partnerships with non-NTIB countries. The *FY2020 Industrial Capabilities* report notes that DOD has promoted cooperation with other allies through mechanisms such as the U.S.-India Defense Technology & Trade Initiative (DTTI), as well as security of supply arrangements and reciprocal defense procurement memoranda. Seven allied countries (including all NTIB members) are also participating in the F-35 Joint Strike Fighter Program.

However, while some of the world's most innovative countries are generally considered U.S. allies, they are not part of the NTIB. For example, the *2020 Bloomberg Innovation Index* describes Germany, South Korea, Singapore, Switzerland, and Sweden as the most innovative

economies. Together with the current NTIB members, these countries represent nearly 40% of the world's GDP. The World Intellectual Property Organization *2020 Global Innovation Index* also lists several of these countries, as well as the Netherlands and Denmark, as among the most innovative. Methodology and accuracy of these rankings notwithstanding, some have argued that working closely with some of these countries—whether by expanding NTIB membership, strengthening bilateral agreements, or leveraging multilateral arrangements—could increase U.S. access to technology and other critical innovations.

Considerations for Congress

Officials from the United States and other NTIB member countries have stated that, while coordination is moving in the right direction, the industrial bases are not meaningfully integrated. Furthermore, some contend that the NTIB currently falls short of the aspiration of a seamless integration of the “transfer of knowledge, goods, and services” called for in the FY2017 NDAA. Potential related considerations for Congress include the following options.

Establish a governing body of NTIB members: A 2019 Atlantic Council report called for establishing a high-level group of senior officials from member countries to facilitate better coordination and cooperation. While the *FY2019 Annual Industrial Capabilities* report noted that members had committed to regular meetings and had reached a new information sharing agreement, it is unclear whether these activities are steps toward establishing a governing body. Opponents could argue that a more formal structure would add unnecessary layers of bureaucracy and hamper coordination.

Amend laws affecting integration of the NTIB: Some analysts and government officials have called for overhauling technology transfer, socioeconomic, export, and related laws and regulations to promote more effective integration. Others have argued for tightening these policies to emphasize the promotion of domestic industry.

Increase international cooperation: Congress could also expand the NTIB to include other allies with shared interests and robust industrial bases. A successful expansion of the NTIB would likely rely on current members trusting new members; without the buy-in of current members, expansion could decrease integration. An increase in membership could also make it more difficult to coordinate joint activities and policies. Some officials suggest focusing instead on improving current NTIB integration. Alternatively, Congress could strengthen international agreements to increase access to, and collaboration in developing, technologies and critical items.

Other Resources

Department of Defense, *FY2020 Industrial Capabilities*.

Atlantic Council, *Leveraging the National Technology Industrial Base to Address Great-Power Competition*, 2019.

CSIS, *National Technology and Industrial Base Integration*, 2018.

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