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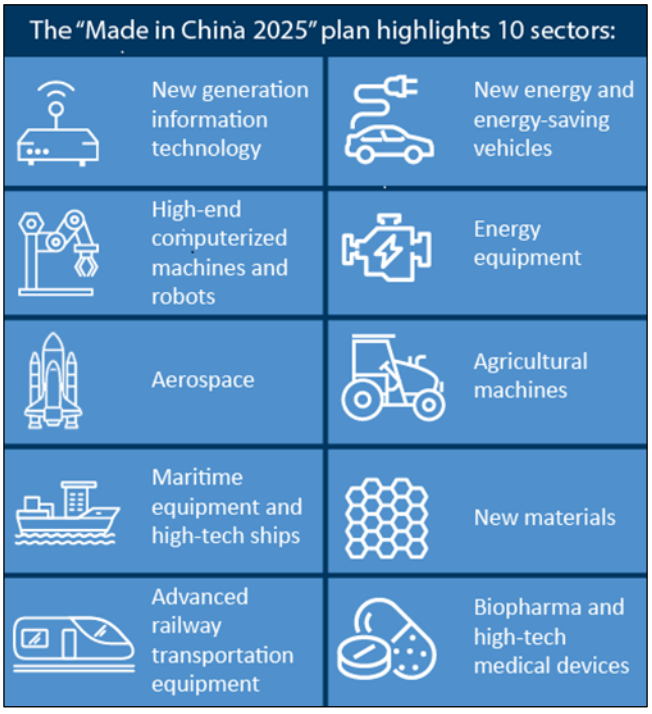
"Made in China 2025" Industrial Policies: Issues for Congress

China aims to advance its national development goals and future global economic position through industrial policies that seek global civilian and military leadership in advanced and emerging technologies. China's policies feature a heavy government role in directing and funding Chinese firms to obtain foreign expertise and intellectual property (IP) in areas where the United States has strong comparative advantages (e.g., aerospace, semiconductors, microelectronics and pharmaceuticals).

MIC 2025

Made in China 2025 (MIC 2025)—a broad umbrella industrial plan China introduced in 2015—seeks to boost China's economic competitiveness by advancing China's position in the global manufacturing value chain, leapfrogging into emerging technologies, and reducing reliance on foreign firms. MIC 2025 emphasizes technology advancement and innovation as drivers of growth and productivity, although the strategy looks to obtain foreign expertise to fill key technology gaps. The plan promotes diverse forms of state ownership and control and allows Chinese firms flexibility to access global markets, potentially obscuring the full extent of the role of the state. MIC 2025 calls for breakthroughs in 10 sectors and supports a range of sector-specific plans. (**Figure 1**)

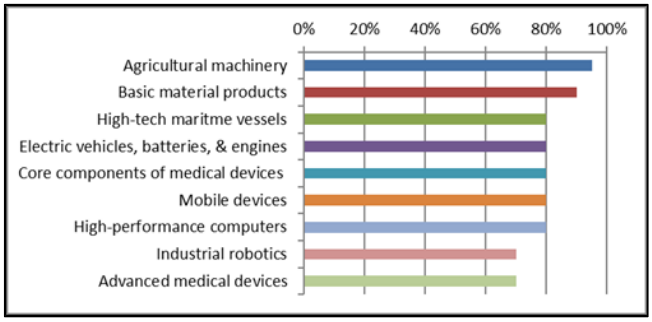
Figure 1: China's Industrial Priorities (2015-2025)



Source: "Notice of the State Council on Issuing Made in China 2025, May 8, 2015, Guofa [2015] No. 28."

MIC 2025 sets goals for each sector to increase the share of production by Chinese firms. (**Figure 2**). China seeks to lead at each point in the value chain. In semiconductors, for example, China seeks to build a globally competitive industry in design, operating systems, manufacturing, packaging, testing, equipment and materials.

Figure 2: Select MIC 2025 Domestic Content Goals



Source: U.S.-China Business Council.
Note: Dates for domestic content goals range from 2020 to 2030.

China seeks to upgrade its economy from one that largely assembles goods for foreign firms to one that increasingly invents the products it makes. MIC 2025 notes that "China's manufacturing sector is large but not strong." The plan prioritizes upgrading manufacturing through advances in technology innovation (smart manufacturing) and manufacturing-tied services. Specifically, China aims to:

By 2025. Boost manufacturing quality, innovation, and labor productivity; obtain an advanced level of technology integration; reduce energy and resource consumption; and develop globally competitive firms and industrial centers.

By 2035. Reach parity with global industry at intermediate levels, improve innovation, make major breakthroughs, lead innovation in specific industries, and set global standards.

By 2049. Lead global manufacturing and innovation with a competitive position in advanced technology and industrial systems. (This date coincides with the 100th anniversary of the founding of the People's Republic of China.)

China's Approaches to Implement MIC 2025

Tax, trade, and investment measures. China uses tax preferences to incentivize foreign firms to shift production and research and development (R&D) to China. The government also uses domestic standards, IP, competition, and procurement policies, and other market access terms that seek to transfer foreign know-how to Chinese entities and use Chinese suppliers for key components.

Forced joint ventures (JVs) & partnerships. China's formal regulations and informal certifications that require a Chinese partner drive multinational firms into JVs. In many sectors, such as aerospace, China leverages its role as a

major purchaser to press for joint ventures and technology transfer in order to develop indigenous capabilities.

Government subsidies. Chinese government guidance funds (GGFs) channel state funding to Chinese companies in support of domestic R&D and overseas acquisitions. As of March 2018, an estimated 1,800 GGFs linked to MIC 2025 were collectively valued at $426 billion. GGFs often take a stake or board seat in firms they fund and can influence corporate decisionmaking.

Foreign acquisitions. GGFs target and fund strategic acquisitions that appear to build Chinese capabilities through control of foreign corporate expertise, IP, talent pools, and ties to suppliers and customers.

Technology licensing & equipment. Foreign technology and equipment fill key gaps in China's current capabilities. Chinese firms are active in U.S.-led open source technology platforms (e.g., RISC-V, the Open Compute Project, and the ORAN Alliance). Since 2014, U.S. semiconductor machinery exports to China have increased three-fold as China seeks to make its own integrated circuits.

Talent recruitment. China encourages the return of Chinese expatriates, the hiring and exchange of foreign talent. Many Chinese technology firms (e.g., Alibaba, Baidu, Tencent, and TikTok) have U.S. R&D centers that partner with universities and leverage U.S. talent.

U.S. and International Concerns

MIC 2025 has been a major U.S. policy focus because of the tactics it has intensified, including technology transfer, licensing and joint venture requirements, state-directed IP theft, and government-funded acquisitions of companies in strategic sectors. Chinese officials contend that the MIC 2025 plan is transparent, open, and nondiscriminatory, and that domestic content goals are not mandates. Many in the U.S. and foreign business and academic communities assess the potential risks and distortions differently.

- A 2017 study by the U.S. Chamber of Commerce concluded "MIC 2025 aims to leverage the power of the state to alter competitive dynamics in global markets in industries core to economic competitiveness. By targeting and channeling capital to specific technologies and industries, MIC 2025 risks precipitating market inefficiencies and overcapacity, globally."

- A 2016 study by the Mercator Institute for China Studies warned that China's acquisitions aim "to systematically acquire cutting-edge technology and generate large-scale technology transfer. In the long term, China wants to obtain control over the most profitable segments of global supply chains and production networks."

- A 2019 study by the Organisation for Economic Co-operation and Development (OECD) found that Chinese semiconductor firms overwhelmingly benefitted from below-market government equity injections as compared to other global firms. The OECD concluded that the state role is more pervasive in China's industry than formal ownership reflects because of the opaque nature of government shareholding and funding.

U.S. Policy Response

The Trump Administration has moved to address MIC 2025 and other Chinese policies that it sees as unfairly advantaging Chinese firms, distorting global trade and investment patterns, advancing China's influence overseas, and strengthening China's technological and military capabilities. In 2018, the Administration invoked Section 301 authorities and, since that time, has imposed tariffs on MIC 2025 products and other imports in response to findings that China's IP, innovation, and technology policies were unfair and harmed U.S. stakeholders. A phase-one deal, signed in January 2020, aimed to boost U.S. exports, but prospects for talks on China's industrial policies—pushed to phase two— remain uncertain.

The United States has tightened technology transfer to China through scrutiny of academic exchanges and strengthened foreign investment review (P.L. 116-801) and export control authorities (P.L. 115-232). The Department of Justice has ramped up law enforcement to counter China's theft of U.S. technology and know-how. Since May 2019, the Administration has tightened control over dual-use exports to China's telecom firm Huawei, restricted the use of universal funds to purchase Huawei equipment, and sought to dissuade foreign governments from using Huawei products in their 5G networks. To implement export control reforms and counter China's military-civil fusion program—that seeks to leverage commercial gains for military development—the Administration is moving to cancel civilian end-user license exemptions for national security items, and require more detail on end-users and a second U.S. license for technology re-exports from Hong Kong to mainland China. To bolster U.S. capabilities, the U.S. government negotiated with Taiwan's leading chip fabricator, Semiconductor Manufacturing Company (TSMC), to build a $12 billion 5-nanometer chip foundry in Arizona. Congress is considering related provisions to boost U.S. industry in the National Defense Authorization Act for FY2021 (S. 4049).

Issues for Congress

Congress may wish to explore the effectiveness of U.S. authorities and global rules in addressing Chinese industrial policies that include state control of companies, subsidies, and technology transfer. Congress could press for meaningful progress in U.S.-Europe-Japan talks on these issues in advancing new rules, approaches, and joint action. Congress also may wish to more closely examine the economic benefits and risks in current U.S. technology ties with China over a longer-term trajectory. China still depends on U.S. technology, IP, and expertise, giving the United States leverage and policy choices about whether and how to counter or advance China's industrial policies. While some aspects of technology cooperation with China are currently commercially significant for U.S. companies, many experts assess that the transfer of U.S. technology, capabilities, and tools to China could undermine the competitiveness of U.S. firms over time.

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