

Made in China 2025 and China's Industrial Policies

The People's Republic of China (PRC or China) aims to gain a global economic and technology leadership position through a range of industrial and science and technology (S&T) plans. Such plans inform PRC economic, industrial, S&T, and foreign trade and investment policies. They also guide PRC government and corporate strategies and activities at the national, local, and global levels. The industries, projects, and technologies featured in the plans reflect co-developed PRC civilian and military priorities that are to receive preferential financial and policy support. PRC plans and related policies feature a heavy government role in directing and funding PRC firms to acquire foreign technology and related capabilities in areas in which China has gaps and the United States has long been a global leader and has strong comparative advantages. Some Members of Congress have expressed concern that PRC policies, if successful, could undermine U.S. technological leadership; further shift advanced technology, production, and research to China; and support China's advancements, including in defense. The scope and scale of PRC efforts are evident in the amount of state direction and support devoted to these efforts; PRC policies to lead in all parts of global supply chains; and the targeting of foreign capabilities.

MIC2025

In 2015, China's State Council issued *Made in China 2025* (MIC2025)—a broad set of industry plans designed to implement key goals set out in China's *Medium- and Long-Term Plan for Science in Technology (MLP)* (2006-2020) and reaffirmed in China's *Innovation-Driven Development Strategy*, issued in 2016, and the subsequent MLP for 2021-2035. A technology roadmap set targets for 2025-2030.

At its core, MIC2025 seeks to boost PRC competitiveness by advancing China's position in the global manufacturing value chain, "leapfrogging" into emerging technologies where there are not yet defined global leaders, boosting advanced manufacturing, and reducing reliance on foreign firms in core technologies and strategic industries. The plan stresses "indigenous" innovation, a process that can involve the acquisition, absorption, and adaptation of foreign technology by PRC firms, which may later recast these capabilities as their own. This strategy obscures the extent of PRC state ownership and control of PRC firms, the role PRC firms may play in advancing PRC goals, and the role that foreign ties play in developing PRC capabilities.

MIC2025 calls for technological breakthroughs in 10 sectors (**Figure 1**) and supports a range of sector-specific plans. These plans aim to make China a leader in all parts of global value chains and to increase the share of inputs and finished goods produced in China and worldwide by PRC firms. MIC2025 set targets for PRC firms to meet a defined share of domestic demand between 2025 and 2030: agricultural machinery and basic materials (90+%); advanced ships, electric vehicles (EVs), batteries, medical

device components, mobile devices, and high-performance computers (80%); and industrial robots and advanced medical devices (70%). Broad goals include the following:

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

By 2035. Reach a level of development on par with global industry at "an intermediate level"; improve innovation; make major technology 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 industry.

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

The "Made in China 2025" plan highlights 10 sectors:	
	New generation information technology
	New energy and energy-saving vehicles
	High-end computerized machines and robots
	Energy equipment
	Aerospace
	Agricultural machines
	Maritime equipment and high-tech ships
	New materials
	Advanced railway transportation equipment
	Biopharma and high-tech medical devices

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

MIC2025 is part of a continuum of PRC plans and policies that seek to advance core S&T and industrial objectives. For example, China's 15th Five-Year Plan for National Economic and Social Development (FYP) (2025-2030) and the Outline of Long-Term Goals to 2035 deepens PRC efforts in MIC2025 sectors in which China still has capability gaps (e.g., advanced equipment, tools, and machinery; aerospace; biotechnology; robotics; and semiconductors). See CRS In Focus IF13204, *China's 15th Five-Year Plan: S&T and Economic Priorities*.

MIC2025 Advancements and Gaps

China has emerged as a global manufacturing leader with about a 29% share of global manufacturing output as of 2023. (U.S. output is about 16%; U.S. and European Union

combined output is about 33%.) China now leads globally in key emerging technologies—such as solar panels, EVs, communications equipment, and drones—and in heavy industries such as rail, advanced marine equipment, and shipbuilding. China has mostly localized production of agricultural, communication, power generation, electrical transmission, and rail equipment. Progress in other sectors has been slower (e.g., aerospace) or mixed (e.g., medical devices and semiconductors). China has moved up the value chain in many sectors but still relies on high-end foreign equipment, products, and inputs even as it works to reduce such reliance. In autos, China lags in combustion engines and automotive systems/electronics. While China has built a mature-node chip market, it lags in producing advanced logic chips. Other areas in which China relies on foreign firms and targets their capabilities include aerospace and jet engines, advanced machinery and CNC machine tools, medical devices, new materials, semiconductor manufacturing equipment (SME) and tools, scientific instruments/tools, and industrial software.

PRC firms have met some *MIC2025* goals by acquiring foreign firms in sectors such as biotechnology, robotics, and semiconductors, and through trade, foreign investment in China, technology licensing, and ties to foreign research and talent. Some foreign firms have separated their China operations from global headquarters and moved certain R&D and advanced production to China to qualify for *MIC2025* preferences. In aerospace, Boeing and Airbus suppliers have partnered with and transferred technology to PRC state firms to develop a PRC single-aisle aircraft (C-919). PRC procurement rules in pharmaceuticals and medical devices have set fixed prices, which has increased cost pressures and encouraged foreign firms in these sectors to produce in China. Since 2014, U.S. SME exports to China have increased nearly fourfold as China seeks to make its own chips. PRC firms in *MIC2025* sectors have benefited from government support and the ability to build to scale and optimize industrial processes in a large protected market. As PRC products have become viable, the PRC has imposed more market restrictions, constraining foreign firms. PRC industrial policies have also fostered overcapacity and reliance on exports in sectors such as EVs.

U.S. Concerns and Policy Response

MIC2025 has been a U.S. policy focus because of the PRC tactics it has incentivized, such as technology transfer, licensing and joint venture (JV) requirements, intellectual property (IP) theft, and state-funded acquisitions of foreign firms in strategic sectors. U.S. and foreign industry groups have expressed concerns that *MIC2025* policies distort competition, create overcapacity, and systematically drive foreign technology transfer to China. Some say that the PRC government's tight market controls enable it to pressure foreign firms to adhere to its demands.

The U.S. government has sought to counter *MIC2025* and related practices that it assessed unfairly advantaged China, distorted trade, and strengthened PRC technology and military capabilities. In 2018, the Trump Administration invoked Section 301 of the Trade Act of 1974 (19 U.S.C. §2411) and imposed tariffs on most imports from China, after finding that PRC policies harmed U.S. stakeholders. The Biden Administration continued most of these tariffs while raising some rates. In 2025, the U.S. Trade

Representative (USTR) found PRC policies in shipbuilding, shipping, and semiconductors actionable under Section 301 but delayed actions under a trade truce with China. USTR is investigating China's implementation of a U.S.-China 2020 trade deal and structural excess capacity in China. The U.S. government has banned some PRC-connected vehicle technology in the U.S. market and restricted certain semiconductor technology exports to China.

China's Industrial Policy Approaches

Tax, trade, and investment measures. China uses tax preferences to incentivize foreign firms to invest in production and R&D. China introduces **market access restrictions** as domestic products become viable. China uses **standards, IP, competition, and procurement policies** to facilitate the transfer of foreign production and know-how to China and to require the use of PRC suppliers.

Forced JVs and partnerships. China's formal regulations and informal practices require a foreign firm to partner with a PRC entity to operate in China and drive foreign firms into JVs. In many sectors (e.g., aerospace), China leverages its role as a major purchaser to press for JVs and technology transfer in order to develop indigenous capabilities. In most cases, the foreign firm's partner is a state firm or the PRC government.

Government subsidies. PRC government guidance funds (GGFs) channel state funding to PRC firms for domestic R&D and overseas acquisitions. GGFs often take a stake or board seat in firms they fund and can influence corporate decisionmaking.

Foreign acquisitions. GGFs target and fund acquisitions of foreign firms and use foreign firms' expertise, IP, talent pools, and business networks to build China's capabilities.

Technology licensing and equipment. Foreign technology and equipment fill key gaps in China's current capabilities. PRC firms are members of U.S.-led open-source technology platforms (e.g., RISC-V, the Open Compute Project, the O-RAN Alliance).

Talent recruitment and training. China encourages the return of PRC expatriates and the hiring of foreign talent. Many PRC technology firms have U.S. R&D centers. Many PRC nationals participate in U.S. federally funded research in areas that overlap with *MIC2025* technologies.

Issues for Congress

Some Members have sought to restrict trade, investment, technology, and research ties with China; shift supply chains out of China; and prohibit PRC firms in federal procurement and infrastructure. Congress has enacted legislation to strengthen foreign investment review (P.L. 116-801) and export controls (P.L. 115-232); restrict certain outbound investment (Title LXXXV of P.L. 119-60); support U.S. capabilities in semiconductors (P.L. 117-167), EVs, and renewables (P.L. 117-169); and penalize China for IP theft (P.L. 117-336). Congress may deliberate

- the efficacy of U.S. policies (in design and in practice) in countering China's industrial policies;
- whether a growing state role in PRC companies calls for treating PRC firms differently;
- how U.S.-PRC trade, investment, technology, and research ties affect U.S. competitiveness and U.S. capacity and options to counter PRC policies; and
- the effects of PRC investment in the U.S. market in *MIC2025* sectors (e.g., autos and biotechnology).

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