

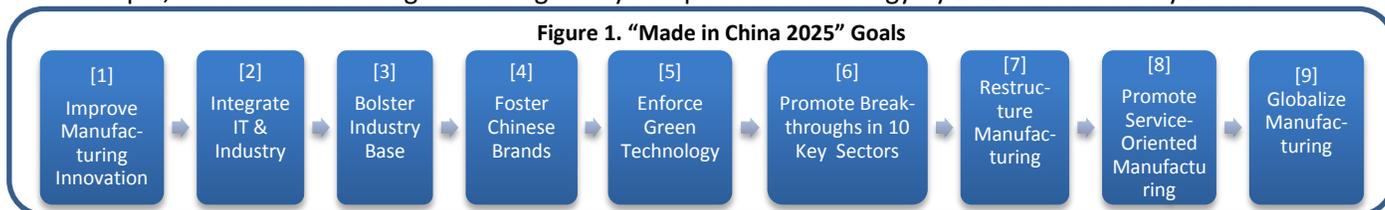
# “MADE IN CHINA 2025” ATTEMPTS TO RE-STIMULATE DOMESTIC INNOVATION

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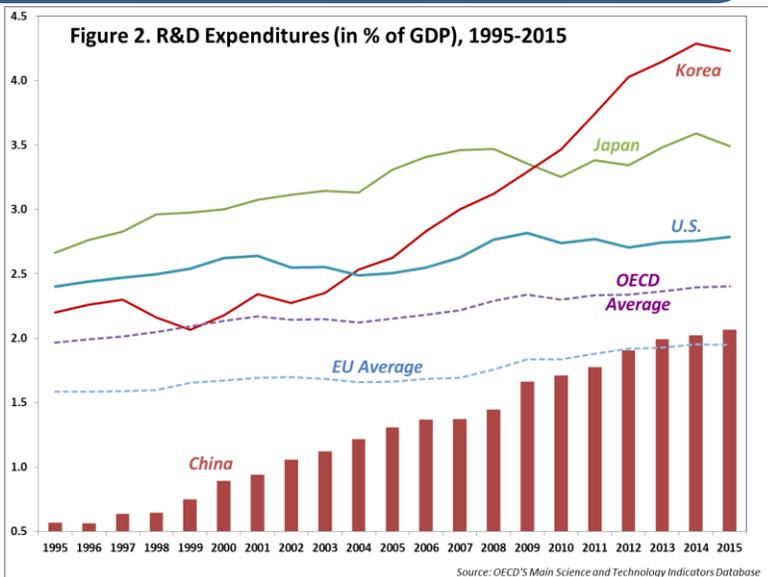
In May 2015, China implemented a “Made in China 2025” initiative to upgrade its manufacturing sector into one that will be considerably more innovative and competitive. Much state direction and funding have been provided to help move the country from a “Made in China” to a “Created in China” economy. This briefing describes the goals of this new initiative (in light of similar past policies), its motivation, and its targetted sectors. It also outlines China’s implementation plans and identifies potential implications for U.S firms.

**What is “Made in China 2025”?** Made in China 2025 (MiC-25) is the first of three decade-long Chinese industrial policies aimed at transforming the world’s largest manufacturing base into one that is markedly more innovative and globally-competitive. Instituted by China’s State Council, MiC-25 sets forth 9 broad goals<sup>1</sup> (Figure 1) each associated with several specific targets.<sup>2</sup> To reach the first goal of improving manufacturing innovation, for example, targets have been set to increase both R&D spending (by 77%) and the number of non-utility patents filed (by 150%) in 2015–2025.<sup>3</sup> Similar targets were established to improve domestic value-added, productivity, broadband use, energy conservation, and carbon-dioxide emissions. Specific sectors have been also been targeted under this policy. Semiconductor firms, for example, have been encouraged to use globally competitive technology by 2020 and lead it by 2030.<sup>4</sup>

Figure 1. “Made in China 2025” Goals



**Motivation.** The MiC-25 was motivated by China’s (1) short-term desire to reverse its recent economic slowdown; (2) long-term interest in spurring domestic innovation; and (3) strategic interest in staying competitive in light of other countries’ innovation policies, such as Germany’s “Industrie 4.0” plan.<sup>5</sup> Regarding the slowdown, China’s real GDP growth decelerated to 6.7-6.9% in recent quarters, the lowest it has been in 25 years. This slowdown was led by sluggish growth in manufacturing given decreased global demand and increased wage competition from countries such as Vietnam and Indonesia.<sup>6</sup>



<sup>1</sup> China’s State Council, “[Made in China 2025 Plan Issued](#)”, 5/19/2015.  
<sup>2</sup> China’s Ministry of Industry and Information Technology’s, “[Key Technology Roadmap](#)”, 7/7/2015 and U.S. Chamber of Commerce, “[Made in China 2025: Global Ambitions Build on Local Protections](#),” 2017.  
<sup>3</sup> R&D expenses measured as share of operating expenses. Filing intensity measured as non-utility patents per RMB billion in revenue.  
<sup>4</sup> U.S.-China Business Council, “[Unofficial Chart of Localization Targets Set in Made in China 2025 Technology Roadmap](#),” accessed 7/4/2017.  
<sup>5</sup> References to the motivation for China’s new initiative include Li Keqiang, “[China and Germany: Building a Golden Partnership in Innovation](#)”, “[Fostering Global Prosperity: China and US Innovation Policy](#)” China.org.cn, 4/16 2017; CRS (Morrison), “[China-U.S. Trade Issues](#),” 4/24/2017; China State Council, “[Economic Growth Amid Some Slowdowns](#)”, 10/20/2015; and Xinghua “[Chinese Premier Vows to Deepen Reforms](#),” 2/5/2016. Germany’s “Industrie 4.0” is a strategic initiative aimed at establishing Germany as a leading market and supplier of advanced (often IT-enabled) manufacturing goods. Germany built on the notion that digitalized manufacturing is the fourth revolutionary wave in manufacturing, following (1) mechanization; (2) assembly-line production; and (3) computers in workspace. See [GTAI Germany Trade & Invest Industries 4.0](#) and China-Europe International Business School, “[Industry 4.0 & the China Market](#)”, 2016.

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With respect to spurring domestic innovation, Chinese policy makers have been keen on increasing R&D expenditures (Figure 2) to help China move up the manufacturing value chain. In this respect, MiC-25 is the latest of such initiatives. Its predecessor, China’s 2006 “indigenous innovation” policies encouraged domestic innovation through “strategic emerging industries” that were similar to those in MiC-25 (Figure 3).<sup>7</sup> Now, MiC-25 is part of a new series of interconnected policies aimed at boosting domestic innovation that include the 13<sup>th</sup> Five Year Plan (2016–2020), a new Science & Technology Plan, and sub-national development plans.<sup>8</sup> Many consider MiC-25 the most comprehensive Chinese innovation policy to date, given its greater reliance on the market to help allocate resources, focus on improving all stages of manufacturing (not just innovation stages), clearer targets, and enhanced IPR protection for small firms.<sup>9</sup>

**Figure 3. Sectoral Targeting in "Made in China 2015" and "Indigenous Innovation" Policies**

Policies		Similar Sectors					Dissimilar Sectors					
<b>Made in China 2015 (2015-2025)</b>	<b>Strategic Sectors</b>	Next Generation IT	New Materials	Electrical Equipment	Biomedicine & Medical Devices	Energy-Saving & New Energy Vehicles		Machinery & Robotics	Ag. Machinery & Equipment	Space & Aviation Equipment	Maritime Vessels & Equipment	Advanced Rail Equipment
<b>Indigenous Innovation (2006-2021)</b>	<b>Strategic Emerging Sectors</b>	Next Generation IT	New Materials	High-End Manufacturing Equipment	Bio-Technology	New Energy Vehicles	Energy-Saving and Environmental Protection	New Energy				

MiC-25’s focus also aims to stay competitive vis-à-vis Germany’s “Industrie 4.0” plan, which promotes manufacturing digitalization by leveraging and promoting firm, government, and academic partnerships.<sup>10</sup>

**China’s Implementation Plans** The interrelated nature of Chinese innovation policies make it challenging to isolate the exact size of MiC-25 funding. However, media reports identified 800 government funds, valued at \$325 billion, that have been supporting these goals.<sup>11</sup> The funds are being used by a 26-member group under the State Council to (a) coordinate **financial support for domestic firms to innovate**, typically in the form of R&D loans and subsidies;<sup>12</sup> (b) establish **40 innovation centers** by 2025 to demonstrate IT integration into manufacturing; (c) build **1,000 green factories** by 2020 to showcase better emissions practices; (d) encourage **self-sufficiency** by importing no more than 20% of inputs by 2025<sup>13</sup>; and (e) promote **indigenous R&D** in sectors, such as aircraft, new-energy vehicles, and medical equipment.<sup>14</sup>

**Implications:** MiC-25 has been a source of both optimism and considerable concern for U.S. and other multinational firms. With respect to optimism, multinationals have seen short-term opportunities in the 10 key industries, a more favorable business climate in IT-enabled manufacturing, and a modernized infrastructure.<sup>15</sup> With respect to concerns, multinationals have questioned their long-term viability in China, particularly after technology transfers are complete and competition from Chinese firms in key sectors intensifies. Other concerns include multinationals’ eligibility for tax preferences, investment restrictions in high value-added sectors, and anticipated scrutiny in national security investment reviews.<sup>16</sup>

<sup>6</sup> Manufacturing activity in China is often measured using the Caixin Manufacturing Purchasing Manager’s Index, which dropped to an 11-month low in May 2011. Financial Times, “China Manufacturing: Adapt or Die,” 11/3/2015.

<sup>7</sup> China’s “Indigenous Innovation” policies were introduced under China’s “Medium & Long-Term Plan on the Development of Science & Technology Policies. USTR, [National Trade Estimate Report – 2017](#), p. 84.

<sup>8</sup> The U.S. Chamber of Commerce references these Chinese media report. See U.S. Chamber of Commerce, [“Made in China 2025: Global Ambitions Build on Local Protections,”](#) 2017, p. 18; Also, PWC, [China Economic Quarterly Q1 2017](#), May 2017, p 15.

<sup>9</sup> Center of Strategic & International Studies (Kennedy, S.), [“Made in China 2025”](#), 6/1/2015.

<sup>10</sup> The Economist, [“Does Deutschland Do Digital?”](#), 11/21/2015; World Economic Forum, “The State of the Market”, 2016, and China, Ministry of Foreign Affairs, [“China and Germany To Carry Out Cooperation in Industry 4.0”](#). 10/11/2014.; and China Recent Developments [“China’s Central Partners in Europe,”](#) 11/26/2015.

<sup>11</sup> U.S. Chamber of Commerce, [“Made in China 2025: Global Ambitions Build on Local Protections,”](#) 2017, p. 18. Company Week (Taylor, B.), “Made in China 2025: Menace or Model for U.S. Industry?,” 4/3/2017.

<sup>12</sup> China Briefing (Zolzaya Erdenebileg and Weining Hu), [“Made in China 2025: Implications for Foreign Businesses,”](#) 5/18/2017.

<sup>13</sup> U.S. Chamber of Commerce, [“Made in China 2025: Global Ambitions Build on Local Protections,”](#) 2017,

<sup>14</sup> U.S. Chamber of Commerce, [“Made in China 2025: Global Ambitions Build on Local Protections,”](#) 2017

<sup>15</sup> Center of Strategic & International Studies (Kennedy, S.), [“Made in China 2025”](#), 6/1/2015.

<sup>16</sup> U.S.-China Business Council, (Markus and Marro), [“Made in China Now Made by China: Update”](#) 5/27/ 2016.