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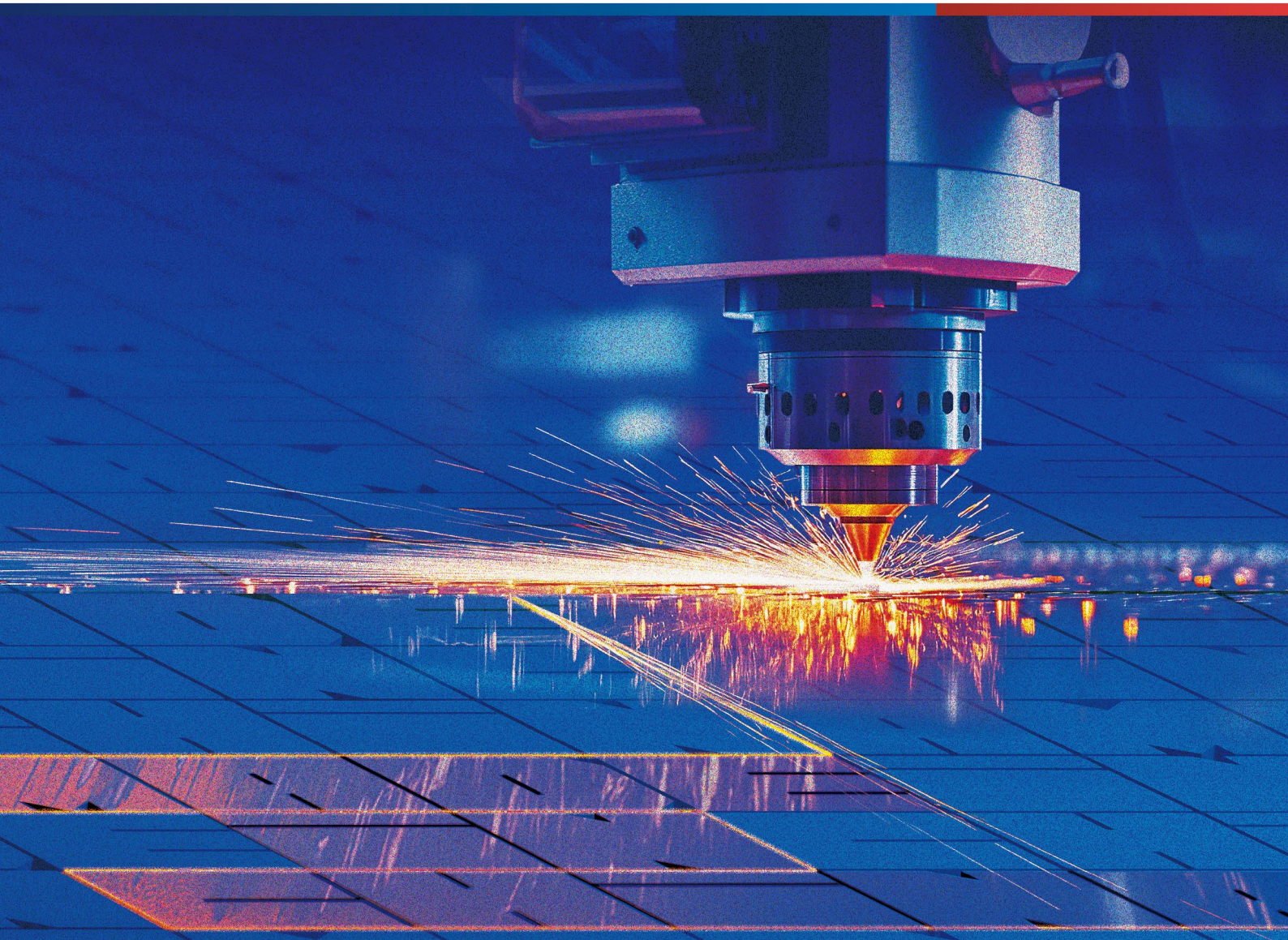

MADE IN CHINA 2025

THE COST OF TECHNOLOGICAL LEADERSHIP

European Union Chamber of Commerce in China

www.europeanchamber.com.cn

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About the European Union Chamber of Commerce in China

The European Union Chamber of Commerce in China (European Chamber) was founded in 2000 by 51 member companies that shared a goal of establishing a common voice for the various business sectors of the European Union (EU) and European businesses operating in China. It is a member-driven, non-profit, fee-based organisation with a core structure of 23 working groups and 12 fora representing European business in China.

The European Chamber now has nearly 1,700 members in seven chapters operating in nine cities: Beijing, Nanjing, Shanghai, Shenyang, South China (Guangzhou and Shenzhen), Southwest China (Chengdu and Chongqing) and Tianjin. Each chapter is managed at the local level by local boards reporting directly to the Chamber's Executive Committee.

The Chamber is recognised by the European Commission and the Chinese authorities as the official voice of European business in China. It is registered as a foreign chamber of commerce with the Ministry of Civil Affairs. The European Chamber is part of the growing network of European Business Organisations. This network connects European business associations and chambers of commerce located in over 50 third markets around the world.

Mission Statement:

As a member-based organisation, the European Chamber seeks to:

- Ensure greater market access and a level playing field for European companies in China.
- Improve market conditions for all businesses in China.
- Facilitate networking among members and stakeholders.
- Bring specific information relevant to its members on doing business in China.
- Update its members on economic trends and legislation in China.

Principles:

- We are an independent, non-profit organisation governed by our members.
- We work for the benefit of European business as a whole.
- We operate as a single, networked organisation across China.
- We maintain close, constructive relations with the Chinese and European authorities while retaining our independence.
- We seek the broadest possible representation of European business in China within our membership: large, medium and small enterprises from all business sectors and EU Member States throughout China.
- We operate in accordance with Chinese law and regulations.
- We treat all our members, business partners and employees with fairness and integrity.

President's foreword

In the decade since the Made in China 2025 (MIC2025) initiative was launched, China has made unprecedented gains in its advanced manufacturing capabilities. The country is now the world's sole manufacturing superpower, accounting for 29 per cent of global manufacturing value added as of 2023, nearing that of the European Union (EU) and United States (US) combined. [1&2]

China has achieved leadership or near-leadership in a wide range of industries identified as strategically important under the MIC2025 plan, while becoming highly influential in others, and the size of China's market and its ability to build scale and optimise industrial processes have propelled many Chinese manufacturers into globally dominant positions. There is no doubt that the MIC2025 industrial policy, in tandem with an industrious workforce in adaptable and innovative companies, played a critical role in these advances.

But, the progress that China has made carries potentially significant consequences.

Today, more than a third of shipping containers exported globally originate from China and the nation is the largest trading partner of 120 countries.[3] Also, China's increasing hold on strategic industries is likely to lead to an escalation of trade tensions with many of these partners, including the EU and the US. In part, this is due to the fact that Europe and the US have historically held leadership positions in many of the strategic technologies that are the focus of the MIC2025 initiative, and they will therefore take whatever actions they feel necessary in order to both continue competing and retain strong capabilities in areas that have economic security implications. However, it is also due to the perception that China has been able to make such remarkable advances due to an industrial policy that is based on top-down, non-market principles. With China seemingly set to rely further on exports for a sizeable chunk of its growth, MIC2025 products may increasingly struggle to find acceptance in key international markets. MIC2025 has also resulted in adverse consequences for the Chinese economy, including involution and overcapacity in many of the sectors that performed best on their targets.

Today, China faces a choice between continuing MIC2025-style policies, at a cost to the domestic economy and at the risk of wider global pushback, or taking a more targeted and sustainable approach to technological self-reliance that minimises negative externalities. In the face of unprecedented challenges to the global trading system, the latter presents an opportunity for China to demonstrate to reliable partners, like the EU, that it is committed to fostering a long-term, mutually beneficial trade relationship and ensuring that its business environment provides the stability and predictability that investors require.

Jens Eskelund
President
European Union Chamber of Commerce in China

1 Baldwin, R, *China is the world's sole manufacturing superpower: A line sketch of the rise, VoxEU,* 17th January 2024, viewed 21st March 2025, <https://cepr.org/voxeu/columns/china-worlds-sole-manufacturing-superpower-line-sketch-rise>

2 *U.S. and EU Manufacturing Value Added Remains Higher than China Despite Long-Term Decline*, Voronoi, 17th October 2024, viewed 25th March 2025, <https://www.voronoiapp.com/economy/-US-and-EU-Manufacturing-Value-Added-Remains-Higher-than-China-Despite-Long-Term-Decline-2769>

3 Shan, LY, *China de-linking talk is overdone and it's still key to the global economy, Asian Development Bank says, CNBC*, 25th February 2024, viewed 21st March 2025, <https://www.cnbc.com/2024/02/26/china-still-top-trading-partner-for-many-countries-says-adb.html#:~:text=However%2C%20the%20economic%20powerhouse%20remains%20a%20top%20trading,Vietnam%2C%20according%20to%20U.S.%20think%20tank%20Wilson%20Center.>

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China's industrial policy timeline

MIC2025 is one part of a long-term strategy designed to carry China to a high degree of self-reliance and leadership in strategic technologies, or even self-sufficiency in some cases. The plan, launched in 2015, was neither the beginning nor the end of these ambitions.

1978 – Reform and opening up

China embarked upon its reform and opening up, with initial efforts geared towards accelerating the development of light industries such as textiles.[4]

1990 – Focus on self-sufficiency in everyday goods

The State Council called for the development of new products (primarily everyday goods), as well as higher quality products, that could both replace imported ones and even be exported.[5]

1998 – Focus on high-tech industrialisation

In response to the Asian financial crisis in 1997, industrial policy began to play a greater role in the Chinese economy. The focus also shifted to technology, with the country's policymakers calling for high-tech industrialisation.[6]

2001 – World Trade Organization (WTO) accession

China acceded to the WTO in 2001, which led to more foreign-invested enterprises (FIEs) entering the Chinese market, albeit with extensive restrictions and technology transfer requirements.

2006 – National Medium- and Long-term Programme for Science and Technology Development

When the National Medium- and Long-term Programme for Science and Technology Development (2006–2020) (MLP) was launched, it saw China adopt the concept of 'indigenous innovation' as a policy priority. The MLP was introduced to address the fact that most key innovation was taking place outside of China, and was intended to "reduce [China's] dependence on foreign technology by at least 30 per cent." [7&8]

2010 – Strategic Emerging Industries (SEI) Initiative

The 2010 SEI initiative reiterated the guiding principles of the MLP and was aimed at supporting hand-picked national champions to become leaders in strategic industries.

4 Wei, J, *China's Industrial Policy: Evolution and Experience,* United Nations Conference on Trade and Development, July 2020, viewed 7th November 2024, <https://unctad.org/system/files/official-document/BRI-Project_RP11_en.pdf>

5 *Ibid.*

6 *Ibid.*

7 Notably, the policy lacked clarity on how foreign or domestic technology were defined, heightening the uncertainty faced by foreign businesses in China. It also outlined the need for "enhancing original innovation through co-innovation and re-innovation based on the assimilation of imported technologies [and that one] should be clearly aware that the importation of technologies without emphasising the assimilation, absorption and re-innovation is bound to weaken the nation's indigenous research and development capacity," leading to concerns about intellectual property theft. McGregor, J, *China's Drive for 'Indigenous Innovation', A Web of Industrial Policies*, U.S. Chamber of Commerce, 2010, viewed 21st January 2025, p. 4, <https://www.uschamber.com/assets/archived/images/legacy/reports/100728chinareport_0.pdf>

8 For a detailed discussion of China's self-reliance ambitions, please refer to *Riskful Thinking: Navigating the Politics of Economic Security,* European Union Chamber of Commerce, 20th March 2024, viewed 25th February 2025, <https://www.europeanchamber.com.cn/en/publications-archive/1175/Riskful_Thinking_Navigating_the_Politics_of_Economic_Security>

2015

Made in China 2025

MIC2025 was launched with 10 strategic sectors identified for development. It was largely considered to be a repackaging of the SEI initiative. What set it apart was the specific market share targets, some global and some domestic, assigned to the 10 sectors.

2021

Dual Circulation

The 14th Five-year Plan (14FYP; 2021–2025) explicitly outlined the need for China to reduce its reliance on the global economy and increase its self-reliance. The 'dual circulation' theory, detailed in the 14FYP, exemplifies this, outlining China's plan to tap into the unexploited potential of its huge domestic market to become a global leader in intelligent manufacturing and key technologies that will define the future economy.[9]

2023

New productive forces

Introduced in September 2023, the "term refers to new productive forces that emerge from continuous breakthroughs in science and technology, driving strategic future and emerging industries that may introduce disruptive technological advancements in an era of intelligent information." [10&11] 'New productive forces' is essentially a repackaging of MIC2025's aims, to be applied to a wider range of industries, indicating China's intent to continue the use of strategic industrial policy.

2024

'Self-sufficiency' in scientific and technological infrastructure

In 2024, the Third Plenum's Decision, in addition to repeating calls for greater self-reliance, called for "self-sufficiency in scientific and technological infrastructure,"[12] which adds weight to the argument that self-sufficiency is the ultimate goal of Chinese industrial policy, at least in areas identified as critical to China's economic security.[13]

9 Examples of such technologies include semiconductors, fifth-generation mobile technology (5G), artificial intelligence, automation, biopharmaceuticals, advanced medical devices, big data and cloud computing.

10 *Explainer: What do "new productive forces" mean?*, *Xinhua*, 21st February 2024, viewed 6th February 2025, <https://english.news.cn/20240221/3e0d1b79a39f4e6c89724049558e1082/c.html>

11 'New productive forces', or '*xinzhishengchanli*' in Chinese, is also often translated as 'new *quality* productive forces'.

12 The official English translation of the *Resolution of the Third Plenary Session of the 20th Communist Party of China Central Committee* uses the term 'infrastructure', however the Chinese version of the same text uses the term '*jichu tiaojian*' or 'basic conditions', a broader term which is inclusive of physical infrastructure. *Full text: Resolution of CPC Central Committee on further deepening reform comprehensively to advance Chinese modernization, Xinhua*, 21st July 2024, viewed 21st February 2025, <https://english.news.cn/20240721/342df6c6e05c4e1a9ce4f6e3b933007b/c.html>; *Resolution of the CPC Central Committee on further deepening reform comprehensively to advance Chinese modernisation, Xinhua,* 21st July 2024, viewed 21st February 2025, <https://www.gov.cn/zhengce/202407/content_6963770.htm>

13 It is important to make the distinction between 'self-reliance'—and its relation to 'de-risking' from an EU perspective—and 'self-sufficiency', and how this is more related to the idea of 'de-coupling'. Increasing self-reliance is a strategy that many economies are now pursuing in order to reduce dependency on any one source or country for goods that are crucial to ensuring economic security, such as medical devices, pharmaceutical inputs or rare earths. For the EU, this involves taking a carefully considered, analytical approach to identifying which goods can be truly defined as 'critical', and then taking precise, country-agnostic actions that can ensure its continued access to those goods, even in the event of global shocks. This narrow, surgical approach to 'self-reliance' is what the EU terms 'de-risking', in order to differentiate it from a broader self-reliance drive. The aim of becoming 'self-sufficient' is to enable a country to source and produce everything it needs within its own borders. This involves 'decoupling' – in other words, 'self-sufficiency' entails countries developing entirely onshored supply chains that are completely insulated from the rest of the world.

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The MIC2025 technological leadership score card

MIC2025 was designed to push China towards a greater degree of technological leadership in certain industries, partly at the expense of FIEs and overseas manufacturers, many of which are now feeling the impact of the policy. The following ratings are based on desk research, member feedback in MIC2025 sectors as well as the European Chamber's *Business Confidence Survey 2025* (BCS2025).

MIC2025 Sector	Progress	Degree of technological leadership
Next generation information technology (IT)	While China has achieved a high degree of self-reliance in next generation IT products, its ambitions are limited by its inability to manufacture extreme ultraviolet (EUV) lithography machines, which are, so far, essential to making the most advanced semiconductors.	
High-end numerically controlled machinery and robots	Industrial automation levels have increased substantially since the launch of MIC2025, but much of this has been due to foreign technology.	
Aerospace and aviation equipment	While China has seen some success in aerospace technologies, particularly in drones and satellites, China's self-developed commercial passenger jet, the C919, is largely reliant on foreign suppliers for key components.	
Maritime engineering equipment and high-tech maritime vessel manufacturing	China has become the dominant shipbuilder globally. While luxury cruise ships remain the final market segment dominated by the EU, there are signs that this is beginning to change with the launch of China's first self-built, large-scale cruise ship.	
Advanced rail equipment	China's high-speed rail technology has reached a high degree of self-reliance, with only a few train components that must still be imported. However, this also serves as a reminder that the last mile, moving from a high-level of self-reliance to full self-sufficiency, can be extremely difficult if not impossible.	
Energy saving vehicles and new energy vehicles (NEVs)	China has onshored most of the NEV supply chain, including batteries, but still relies largely on imported chips for vehicles.	

Electrical power equipment	China has achieved a high degree of self-reliance in wind and solar, but still lags behind in some aspects of nuclear energy technology.	
Agricultural machinery and equipment	While Chinese firms have a large market share in this sector, they are still behind European counterparts in terms of quality for some product categories.	
New materials	Given that new materials are involved in almost every other MIC2025 sector, it is difficult to make generalisations about this grouping. However, a high proportion of Chamber members involved in the sector report that Chinese competitors can produce similar products, although these are sometimes of a lower quality.	
Biopharmaceuticals and high-performance medical devices	While domestic Chinese alternatives are available for most products in this sector, they tend to be at the lower ends of the price and quality spectrums. Given that the safety of medical products is established over decades, products from foreign companies are likely to maintain a reputational advantage for the foreseeable future.	

Executive summary

While manufacturing has traditionally been a pillar of China's economic growth engine, overreliance on low-tech manufacturing carried the risk of leaving China stuck in the middle-income trap.[14] MIC2025 was a key part of China's overall strategy to prevent this by developing new growth drivers through the expansion of advanced manufacturing capabilities. MIC2025 stood out from previous Chinese industrial policies for its ambitious market share targets,[15] including an overarching goal of achieving 70 per cent domestic market share for "core basic components and key basic materials" by 2025. It also prescribed specific technological targets, calling on domestic firms in its 10 key sectors to launch domestic versions of core technologies by 2025. In some instances, in order to rapidly bridge the technology gap, strategic acquisitions were made—such as Midea's takeover of the German company Kuka—something that official Chinese sources have directly associated with MIC2025.[16&17]

A decade on, MIC2025's core principles have been tweaked, expanded upon and repurposed to fit a wider scope of strategic industries, indicating that China will continue with renewed ambition many of the practices that MIC2025 either introduced or reinforced. In addition, during this time period, the overall aim of MIC2025 has been gradually aligned with China's new policy priorities – namely 'dual circulation' and the drive to achieve self-reliance in a wide range of sectors, as well as the realisation of "self-sufficiency in scientific and technological infrastructure."[18] In short, the plan is not just about creating more globally competitive domestic companies, it is about creating the conditions that will allow China to lead in the technologies that will define the future global economy. By pursuing this policy direction, China has managed to decrease its reliance on third markets while simultaneously increasing third markets' reliance on its own.

Different shades of success

While some of MIC2025's specific sectoral targets have not been achieved, its general goal of further modernising China's overall manufacturing sector has been advanced significantly. For example, in 2024, China surpassed Germany in the number of industrial robots per 10,000 workers, meaning that, at least by this metric, China's level of industrial automation is now greater than that of any European country.[19] Since 2015, more Chinese companies in MIC2025 sectors have become world leaders, allowing China to capture significant global market share: in 2024,

14 The "middle-income trap" refers to countries that fail to become high-income despite experiencing economic growth and decreased poverty rates. Feingold, S, *The 'middle-income trap' is holding back over 100 countries. Here's how to overcome it*, World Economic Forum, 4th September 2024, viewed 10th March 2025, <https://www.weforum.org/stories/2024/09/middle-income-trap-world-bank-economic-development/>

15 From 1978 onwards, China used direct intervention in priority, long-term industries to achieve its development goals. By the 1990s, China began to identify and develop high-tech and 'pillar' industries. The country dialled back on industrial policy following its entry into the World Trade Organization in 2001, but embraced it again in earnest during the global financial crisis in 2008. Into the mid-2010s, China further ramped up its industrial policy with more ambitious targets, like MIC2025. Wei, J, *China's Industrial Policy: Evolution and Experience,* United Nations Conference on Trade and Development, July 2020, viewed 7th November 2024, <https://unctad.org/system/files/official-document/BRI-Project_RP11_en.pdf>

16 *When China's 'Made in China 2025' meets Germany's 'Industry 4.0',* The State Council Information Office, 3rd May 2017, viewed 21st February 2025, <http://english.scio.gov.cn/2017-05/03/content_40737890.htm>

17 The euro (EUR) 4.6 billion acquisition of Kuka, a German company specialised in the manufacture of industrial robots, led to serious questions being asked in Germany about the nature of such interest in the country's key strategic industries from Chinese companies, and how it related to the MIC2025 plan. Although the acquisition was allegedly made using private financing, the fact that it fell outside of Midea's core business focus of white goods, coupled with the fact that Midea launched its takeover bid just a year after the MIC2025 plan had been announced, raised alarm bells. Questions also began to be raised in Europe more broadly about insufficient mechanisms for investment screening amid fears that Europe may surrender its core technological advantages, and that the Single Market could be open to market distortions caused by state-led investments. Kullik, J, and Wrage, C, *After Kuka – Germany's Lessons Learned from Chinese Takeovers*, China Observers in Central Europe, 21st July 2022, viewed 26th February 2025, <https://chinaobservers.eu/after-kuka-germanys-lessons-learned-from-chinese-takeovers/>; Stanzel, A, *Germany's turnabout on Chinese takeovers*, European Council on Foreign Relations, 21st March 2017, viewed 26th February 2025, <https://ecfr.eu/article/commentary_germanys_turnabout_on_chinese_takeovers_7251/>

18 The official English translation of the decision of the Third Plenary Session of the 20th Communist Party of China Central Committee uses the term 'infrastructure', however the Chinese version of the same text uses the term '*jichu tiaojian*' or 'basic conditions', a broader term which is inclusive of physical infrastructure. *Full text: Resolution of CPC Central Committee on further deepening reform comprehensively to advance Chinese modernization, Xinhua*, 21st July 2024, viewed 21st February 2025, <https://english.news.cn/20240721/342df6c6e05c4e1a9ce4f6e3b933007b/c.html>; *Resolution of CPC Central Committee on further deepening reform comprehensively to advance Chinese modernisation, Xinhua,* 21st July 2024, viewed 21st February 2025, <https://www.gov.cn/zhengce/202407/content_6963770.htm>

19 *Global Robot Density in Factories Doubled in Seven Years,* International Federation of Robotics, 20th November 2024, viewed 22nd January 2025, <https://ifr.org/ifr-press-releases/news/global-robot-density-in-factories-doubled-in-seven-years>

China's shipbuilders took around 70 per cent of new global orders;[20] China's share of the global electric vehicle (EV) market rose to 76 per cent;[21] and Chinese solar panels made up over 80 per cent of global market share.[22]

Despite impressive progress on paper, MIC2025's implementation has resulted in a number of challenges and negative externalities. For example, the mixture of subsidies and policy support has led to countless—often significant—inefficiencies, with some industrial segments becoming saturated as a result. This, in turn, has resulted in involution, a term which, in an industrial context, refers to unhealthy competition, leading to companies investing ever increasing resources without generating commensurate returns. Several of the MIC2025 industries that performed best on sectoral targets—namely NEVs and wind turbines—have also experienced damaging price wars.[23&24]

There are also areas in which MIC2025 underperformed by its own targets, evidence that industrial policy alone is not enough to ensure success. For example, China's self-developed commercial passenger jet, the C919, is still predominantly reliant on foreign suppliers for its key components, leaving it far from the degree of self-reliance that China is aiming for.[25] In parts of other MIC2025 industries, like biopharmaceuticals, medical devices and numerically controlled machinery,[26] some Chinese competitors produce alternative products that are inferior in quality to those made by FIEs, rather than equivalent ones. However, many FIEs in these sectors have still suffered in the China market, due to the fact that China's procurement mechanisms overwhelmingly favour bids at rock-bottom prices, even at the expense of quality.

China's pursuit of self-sufficiency in advanced semiconductors—something no single country has achieved—is also evidence of MIC2025's limitations. China has made advances in key semiconductor technologies, but its inability to produce EUV lithography machines has so far prevented it from being able to produce the most cutting-edge chips at a scale that would allow commercialisation. While it is possible that a sudden advance or shift in technology could see China surge ahead, there is no way to guarantee that it would stay there. Therefore, despite being difficult in the face of US restrictions, the only plausible way for China to ensure a reliable supply of the most advanced chips is to regain access to the global semiconductor ecosystem, something that its pursuit of self-sufficiency is at odds with.

FIEs a useful bridge

For FIEs, individual outcomes of each MIC2025 sector vary largely based on the level of technology that their Chinese competitors possess. For sectors in which China has achieved a high level of self-reliance, FIEs are more likely either to face challenges selling their product or find themselves uncompetitive.

Taking high speed trains as an example, China has achieved a high degree of self-reliance, with only a couple of components—bearings and screws—still sourced from overseas.[27&28] Because of this, European Chamber members

20 *China secures 70% of global green ship orders in first three quarters of 2024: report, Global Times,* 10th October 2024, viewed 6th February 2025, <https://www.globaltimes.cn/page/202410/1320959.shtml>

21 Hawkins, A, *China's share of global electric car market rises to 76%, The Guardian*, 3rd December 2024, viewed 6th January 2025, <https://www.theguardian.com/business/2024/dec/03/chinas-share-of-global-electric-car-market-rises-to-76>

22 *Solar PV Global Supply Chains – Executive Summary,* International Energy Agency, viewed 22nd January 2025, <https://www.iea.org/reports/solar-pv-global-supply-chains/executive-summary>

23 Ren, D, A *bleak 2025 awaits China's 30,000 car dealers as price war piles on US$24 billion losses, South China Morning Post*, 5th January 2025, viewed 6th February 2025, <https://www.scmp.com/business/china-business/article/3293353/chinas-30000-car-dealers-face-bleak-2025-price-war-piles-us24-billion-losses?module=inline&pgtype=article>

24 Xue, Y, *China's wind-turbine makers vow 'self-discipline' in pledge to end price war, South China Morning Post*, 17th October 2024, viewed 6th October 2025, <https://www.scmp.com/business/climate-and-energy/article/3282739/chinas-wind-turbine-makers-vow-self-discipline-pledge-end-price-war>

25 Kennedy, S, *China's COMAC: An Aerospace Minor Leaguer*, Chinese Business & Economics, 7th December 2020, viewed 22nd January 2025, <https://csis-website-prod.s3.amazonaws.com/s3fs-public/201204_Kennedy_COMAC.pdf>

26 Typically, high-end numerically controlled (also referred to as computer numerical control) machinery refers to manufacturing equipment that is digitally controlled and has advanced properties such as being high-speed, precision-made, intelligent, composite, multi-axis linked and network connected. Examples include metal-cutting machinery, casting, forging and welding equipment, and other manufacturing equipment. *Technology Roadmap for Key Areas of Made in China 2025*, National Advisory Committee on Strategies for Building a Strong Manufacturing Nation, October 2015, viewed 22nd January 2025, <https://www.cae.cn/cae/html/files/2015-10/29/20151029105822561730637.pdf>

27 *Are Chinese bearings really that lousy? As Chinese high-speed trains are being exported, this one part must still be imported,* Tengxun Wang, 29th December 2023, viewed 5th February 2025, <https://news.qq.com/rain/a/20231229A05QFL00>

28 *China's high-speed trains have a critical dependency on Japanese screws, China really can't make screws that never loosen?,* Sohu, 27th April 2023, viewed 5th February 2025, <https://m.sohu.com/a/671540313_121687414/?pvid=000115_3w_a>

in the rail sector have suffered a significant loss of market share in recent years. Another example, in the middle of the 'self-reliance spectrum', is biopharmaceuticals, a sector in which Chinese firms have some advanced products but are not yet able to produce every type of drug at the same quality or price. European Chamber members in the biopharmaceutical sector have found success concentrating on high-end products, relying on their long-standing reputation for quality and safety, as well as innovation, to lead in this segment. A final example, at the far end of the spectrum, is aviation, a sector in which China is still reliant on foreign suppliers – likely not out of choice, but because these suppliers act as a bridge, enabling China to produce a product—the C919—that would otherwise be several years away.

Regardless of where China's progress stands today, the end goal appears to be to achieve roughly what has been done in high-speed rail, which is very close to self-sufficiency, in all ten MIC2025 sectors. In general, FIEs are seen as a useful tool when they can bring the latest or most competitive technologies to China's market, but once Chinese firms can substitute them, many feel they have overstayed their welcome.

Exporting MIC2025's side effects

China's trade with the EU in products from MIC2025 sectors is a good proxy for measuring the technological capabilities of Chinese companies. For sectors in which China has had the most success, exports to the EU have risen. Key examples of this include NEVs, rail technology, electrical power equipment and some next generation IT products such as telecommunications network infrastructure. Interestingly, all of these sectors have seen the EU take defensive action to protect the Single Market from perceived or potential market distortions.[29,30,31&32]

Some of the spikes in exports from China to the EU seen in some MIC2025 sectors reflect increasing international concern over China's industrial policies. When subsidies and other forms of policy support create an overcrowded environment in their home market, Chinese companies turn to exports as a source of relief, often selling products at rock-bottom prices.

While this practice can be viewed positively, in that it makes key technologies—including those important for the green transition—more affordable, it also exports many of the market distortions that the MIC2025 plan has created in the China market. One of the potential risks that this brings to other markets, including the EU's, is that it could induce long-term dependencies on China, with no guarantee that these technologies will continue to be cheap or available at all in the future. For China, it carries the risk that the technology that Chinese companies in MIC2025 sectors are becoming increasingly proficient in will gradually become unwelcome in the EU, particularly if domestic industries in Europe also come under threat.

Many FIEs have suffered significant damage

For FIEs in many MIC2025 sectors, it is too late to reverse the negative effects of China's industrial policies. For example, in the automotive sector, the emergence of NEV technology made market access barriers that were intended to constrain FIEs in the internal combustion engine (ICE) segment unnecessary. Even the requirement to enter into a joint venture (JV) with a Chinese company to produce vehicles in China—which was perhaps the most

29 *Commission opens first in-depth investigation under the Foreign Subsidies Regulation*, European Commission, 16th February 2024, viewed 22nd January 2025, <https://ec.europa.eu/commission/presscorner/detail/en/ip_24_887>

30 *EU imposes duties on unfairly subsidised electric vehicles from China while discussions on price undertakings continue,* European Commission, 29th October 2024, viewed 22nd January 2025, <https://ec.europa.eu/commission/presscorner/detail/en/ip_24_5589>

31 *EU starts investigation into Chinese wind turbines under new Foreign Subsidies Regulation*, Wind Europe, 9th April 2024, viewed 24th February 2025, <https://windeurope.org/newsroom/press-releases/eu-starts-investigation-into-chinese-wind-turbines-under-new-foreign-subsidies-regulation/>

32 *Commission moves to protect EU mobile access equipment industry from dumped imports,* Directorate-General for Trade and Economic Security, 9th January 2025, viewed 24th February 2025, <https://policy.trade.ec.europa.eu/news/commission-moves-protect-eu-mobile-access-equipment-industry-dumped-imports-2025-01-09_en>

significant market access barrier—has been removed.[33,34&35] This indicates that many of the barriers that have been traditionally faced by FIEs are there to provide temporary relief to domestic industry, and can be dismantled once market conditions favour domestic competitors.

Many FIEs report that the goalposts are often moved, meaning that regardless of the strategic decisions they make, requirements are subsequently adjusted to ensure that their market share remains limited. This can be seen in procurement processes in China. While as a general trend FIEs in MIC2025 sectors are outcompeted on price by their Chinese competitors, this is not always the case. One next generation IT company interviewed for this report said that after years of being uncompetitive on price against its Chinese counterparts, they now offer a comparable product for a lower price yet still lose procurement bids due to alleged security concerns around the use of foreign technology.

The impact of these types of market access barriers is long lasting, and simply removing them does not eliminate competitive disadvantages that have arisen as a result of years of unequal treatment, rather it starts a vicious cycle that is difficult to exit. For instance, a loss of business due to market access restrictions can result in less willingness from European companies' headquarters to invest further in China, which can have the consequence of rendering the China subsidiary less competitive even if its market conditions eventually improve overall.

The opposite is sometimes true for Chinese companies, where, in some cases, market access barriers have helped ease them into a virtuous cycle. The ability to rapidly gain domestic market share, often contrary to market forces, can quickly improve their profitability allowing them to scale up and expand globally.

MIC2025's core principles live on through 'new productive forces'

Despite the negative externalities and inefficiencies created by MIC2025, China looks set to continue and expand the same industrial policy playbook. 'New productive forces', introduced in 2023, encapsulates the main MIC2025 ideas of developing and then leading in strategic and emerging industries, but extends the scope beyond the 10 sectors that MIC2025 identified.[36] The pursuit of self-reliance, and even self-sufficiency, in critical industries will therefore continue, but through a framework that is not only broader but also lacking in specificity. This vagueness, while drawing less external scrutiny than MIC2025 did, will also allow China to better adapt its industrial policy from sector to sector. The aim appears to be to encourage *all* Chinese manufacturers—regardless of sector—to aim for a high level of innovation, quality and productivity. While some FIEs will have an important role to play in some sectors at certain times, the ultimate goal appears to be to make many of them easily controllable and substitutable.[37]

This approach, however, overlooks the fact that developing critical technologies is a dynamic, continuous pursuit that requires a sustainable approach. Even if China can achieve all of its MIC2025 targets, doing so in a way that puts the country at odds with other major economies could be costly in the long run, potentially cutting it off further from access to future technologies as other countries seek to protect their own industrial capabilities and positions in home and third-country markets. It also does not account for the fact that all major economies are now far more cognisant

33 *Special Administrative Measures for Foreign Investment Access (Negative List) (2021 Edition),* National Development and Reform Commission (NDRC) and Ministry of Commerce (MOFCOM), 27th December 2021, viewed 6th February 2025, <https://www.ndrc.gov.cn/xxgk/zcfb/fzggwl/202112/t20211227_1310020.html?code=&state=123>

34 *Special Administrative Measures for Foreign Investment Access in Pilot Free Trade Zones (Negative List) (2021 Edition),* NDRC and MOFCOM, 27th December 2021, viewed 6th February 2025, <https://www.ndrc.gov.cn/xxgk/zcfb/fzggwl/202112/t20211227_1310019.html?code=&state=123>

35 In practice, foreign-invested vehicle manufacturers still face regulatory barriers that prevent them from optimising their investments in China, including through the restructuring of existing operations, adjusting the foreign equity ratio of existing JVs and building new vehicle production plants. For more information, see the *European Business in China Position Paper 2024/2025*, European Union Chamber of Commerce in China, 11th September 2024, viewed 6th February 2025, pp. 188–189, <https://www.europeanchamber.com.cn/en/publications-archive/1269/European_Business_in_China_Position_Paper_2024_2025>

36 Introduced in September 2023, the "term refers to *new productive forces* that emerge from continuous breakthroughs in science and technology, driving strategic future and emerging industries that may introduce disruptive technological advancements in an era of intelligent information." *Explainer: What do "new productive forces" mean?, Xinhua,* 21st February 2024, viewed 6th February 2025, <https://english.news.cn/20240221/3e0d1b79a39f4e6c89724049558e1082/c.html>

37 For more information on how FIEs are being moulded into more controllable and thus substitutable entities, please see *Siloing and Diversification: One World, Two Systems*, European Union Chamber of Commerce in China, 9th January 2025, viewed 22nd January 2025, p. 6, <https://www.europeanchamber.com.cn/en/press-releases/3682>

of China's industrial policy practices and the negative impact that they can have on their own respective markets, and are prepared to tackle any resulting market distortions accordingly.

At a time when the US is bringing unprecedented uncertainty to the future of global economic interdependences, it would be in China's interests to demonstrate to the EU that it is willing to build a long-term, mutually beneficial EU-China economic relationship. This could be achieved, at least in part, by shifting away from the highly coordinated industrial policy framework that MIC2025 introduced—and which seems will live on under 'new productive forces'—and returning to bold market-orientated reforms that will allow Chinese and foreign companies to compete on a level playing field. This would also have the added benefit of reducing the prevalence of 'involution' and overcapacity that has characterised many of the MIC2025 industries and the Chinese economy in general in recent years.

Introduction: MIC2025 ten years on

Not long after the release of the European Chamber's report *China Manufacturing 2025: Putting Industrial Policy Ahead of Market Forces* in 2017, adverse reactions towards the MIC2025 plan from China's key trade and investment partners—including the EU and the US—coincided with its use in government communications being reduced. However, the policies associated with the initiative continued largely as planned.

Companies in MIC2025 sectors have topped the list for receiving the most government subsidies in recent years, a departure from before the plan was introduced when energy companies were the most subsidised.[38,39&40] In addition, Chinese companies in MIC2025 sectors have benefitted from extensive policy support, including favourable regulatory treatment that has given them a competitive advantage over their foreign counterparts. Investors influenced by state-led industrial policy have also played a role. China's market size and potential created a Silicon-Valley-like investment climate in some MIC2025 sectors, with capital injections driven by the desire to pick the next big winner.[41] However, this allocation of resources is not always based on 'pure' market forces, and serves as an example of how such dynamics can incentivise private capital. Yet despite being characterised by such nonmarket forces, many of the MIC2025 goals appear to have been achieved and China's level of self-reliance in key sectors has increased.

Looking at the latest available data, China's gains have been impressive. For example, although most countries with high-tech manufacturing have seen some increase in the use of robots, China has gone from well below the global average to being in the top-three in less than a decade: in 2016, the country had just 49 manufacturing robots per 10,000 workers; it now has 470 per 10,000 workers, putting it behind only South Korea and Singapore.[42]

China's rapid catch-up in advanced manufacturing can be seen across the board according to official data from both the National Bureau of Statistics and state media. It suggests that most key manufacturing targets have either already been or will likely be met. In some cases, more ambitious goals have already been set.

MIC2025: Progress made against original key manufacturing targets[43]

	2013	2015	2020 goal	2025 goal	Latest data	New goal (if any)
Innovation						
Manufacturing enterprises' research and development (R&D) spending as a percentage of operating revenue[44]	0.88	0.95	1.26	1.68	1.71 in 2023[45]	

38 Kawase, K, *CATL tops China's corporate subsidies list, outranking oil majors, Nikkei Asia*, 6th June 2024, viewed 22nd January 2025, <https://asia.nikkei.com/Business/China-tech/CATL-tops-China-s-corporate-subsidies-list-outranking-oil-majors>

39 Cao, A, *China gave 190 chip firms US$1.75 billion in subsidies in 2022 as it seeks semiconductor self-sufficiency, South China Morning Post*, 7th May 2023, viewed 22nd January 2025, <https://www.scmp.com/tech/tech-war/article/3219697/china-gave-190-chip-firms-us175-billion-subsidies-2022-it-seeks-semiconductor-self-sufficiency>

40 Kawase, K, *'Made in China 2025' thrives with subsidies for tech, EV makers, Nikkei Asia*, 22nd July 2022, viewed 22nd January 2025, <https://asia.nikkei.com/Business/Business-Spotlight/Made-in-China-2025-thrives-with-subsidies-for-tech-EV-makers>

41 One example of this is the EV sector. Many EV startups raised funds through investors that took a Silicon-Valley-style approach, whereby they took a long-term outlook, losing money for years but betting on their eventual profitability. Donovan, G, *On the Road of Excess: How Startups Are Driving China's Electric Vehicle Boom,* Asia Society Policy Institute, 11th September 2024, viewed 26th January 2025, <https://asiasociety.org/policy-institute/road-excess-how-startups-are-driving-chinas-electric-vehicle-boom>

42 *Global Robot Density in Factories Doubled in Seven Years*, International Federation of Robotics, 20th November 2024, viewed 22nd January 2025, <https://ifr.org/ifr-press-releases/news/global-robot-density-in-factories-doubled-in-seven-years>

43 The original circular announcing MIC2025 set overarching targets listed in this table. *Circular of the State Council on the Issuance of Made in China 2025*, State Council, 19th May 2025, viewed 10th February 2025, <https://www.gov.cn/zhengce/content/2015-05/19/content_9784.htm>

44 Refers only to 'above-scale manufacturing enterprises', which must have an annual operating revenue of Chinese yuan (CNY) 20 million or more. *What is an 'above-scale industrial enterprise'? How is it recognised? What is the difference between 'above quota' and 'above scale'?,* National Bureau of Statistics, 18th February 2021, viewed 12th February 2025, <https://www.stats.gov.cn/zt_18555/zthd/sjtjr/d12kfr/tjzsqzs/202302/t20230216_1908924.html>

45 *Fifth National Economic Census Bulletin (No. 6) – Development of New Industries,* National Bureau of Statistics, 26th December 2024, viewed 22nd January 2025, <https://www.stats.gov.cn/sj/zxfb/202412/t20241226_1957891.html>

Number of manufacturing enterprises' invention patents per Chinese yuan (CNY) 100 million of total revenue	0.36	0.44	0.7	1.1	Data not available	Four by 2027 (high-value patents for manufacturing enterprises in key areas) [46]
Quality						
Quality Competitiveness Index[47]	83.1	83.5	84.5	85.5	85.6 (2024)[48]	
Growth rate of manufacturing value-added (%)	-	-	9*	11*	6.1* (2024)[49]	
Manufacturing productivity growth (%, annual average)	-	-	7.5 (during 13FYP)	6.5 (during 14FYP)	Data not available[50]	
Digitalisation of Industry						
Broadband internet (penetration %)	37	50	70	82	115.9[51] (2024)	
Use of digital design tools in R&D (penetration %)	52	58	72	84	83.1[52] (2024)	90 by 2027[53]
Use of numerically controlled machines in key production processes (penetration %)	27	33	50	64	64.9[54] (2024)	75 by 2027[55]
Environmental Protection						
Decrease in industrial energy intensity (% compared to 2015)[56]	-	-	-18	-34	Likely achieved[57]	

*Original targets used percentage points. Data simplified to growth rate in per cent.

46 *Scheme on Intellectual Property Rights for Industrial Innovation and Development (2023–2027)*, Ministry of Industry and Information Technology, 13th September 2023, viewed 22nd January 2025, <https://www.cnipa.gov.cn/art/2023/9/13/art_2744_191558.html>

47 "The manufacturing quality competitiveness index is a comprehensive economic and technical indicator reflecting the overall level of manufacturing quality in China, and is calculated from a total of 12 specific indicators in two aspects, namely, quality level and development capacity." *Circular of the State Council on the Issuance of Made in China 2025*, State Council, 19th May 2025, viewed 10th February 2025, <https://www.gov.cn/zhengce/content/2015-05/19/content_9784.htm>

48 *China's manufacturing product quality qualification rate rose steadily*, State Administration for Market Regulation, 27th February 2025, viewed 3rd March 2025, <https://www.gov.cn/lianbo/bumen/202502/content_7006917.htm>

49 In 2015, China's manufacturing value added growth rate was seven per cent, but by 2024 it had fallen to 6.1 per cent. *Statistical Bulletin on National Economic and Social Development for 2015,* National Bureau of Statistics, 29th February 2016, viewed 22nd January 2025, <https://www.stats.gov.cn/sj/zxfb/202302/t20230203_1899041.html>; *Statistical Bulletin of the People's Republic of China on National Economic and Social Development for 2024*, National Bureau of Statistics, 28th February 2025, viewed 4th March 2025, <https://www.stats.gov.cn/sj/zxfb/202302/t20230203_1899041.html>

50 While the National Bureau of Statistics publishes national productivity growth, no figure is available specifically for manufacturing productivity growth.

51 *Interpretation of the Communications Industry Statistical Bulletin 2024: High-quality development of the communications industry reaches a new level,* Ministry of Industry and Information Technology, 7th February 2025, viewed 4th March 2025, <https://tjca.miit.gov.cn/xwdt/xydt/art/2025/art_7c884a9bfb1f4fb6a939f76ec6059d86.html>

52 Lu, C, *Accelerating the development of the industrial internet*, qstheory.cn, 1st December 2024, viewed 12th February 2025, <http://www.qstheory.cn/dukan/qs/2024-12/01/c_1130224011.htm>

53 *Focus on key industries to carry out four major actions, comprehensively promote equipment renewal and technological transformation,* Ministry of Industry and Information Technology, 11th April 2024, viewed 22nd January 2025, <https://wap.miit.gov.cn/xwdt/gxdt/ldhd/art/2024/art_7dedacefefe74f0b8472426265c70279.html>

54 Lu, C, *Accelerating the development of the industrial internet,* qstheory.cn, 1st December 2024, viewed 12th February 2025, <http://www.qstheory.cn/dukan/qs/2024-12/01/c_1130224011.htm>

55 *Focus on key industries to carry out four major actions, comprehensively promote equipment renewal and technological transformation*, Ministry of Industry and Information Technology, 11th April 2024, viewed 22nd January 2025, <https://wap.miit.gov.cn/xwdt/gxdt/ldhd/art/2024/art_7dedacefefe74f0b8472426265c70279.html>

56 Refers only to 'above-scale enterprises', which must have an annual operating revenue of Chinese yuan (CNY) 20 million or more. *What is an 'above-scale industrial enterprise'? How is it recognised? What is the difference between 'above quota' and 'above scale'?*, National Bureau of Statistics, 18th February 2021, viewed 12th February 2025, <https://www.stats.gov.cn/zt_18555/zthd/sjtjr/d12kfr/tjzsqzs/202302/t20230216_1908924.html>

57 Although a precise figure spanning from 2015 to the present is not available, the data available suggest that China is likely close to reaching its target. *Energy consumption per unit of added value in our country's above-scale industrial enterprises has dropped by more than 36 per cent in 10 years - the effectiveness of green development of industry is obvious, Economic Daily*, 12th June 2023, viewed 4th March 2025, <https://www.gov.cn/yaowen/liebiao/202306/content_6885847.htm>; *From 2016-2019, energy consumption per unit of industrial added value of above scale enterprises will fall by more than 15 per cent, and the cost of energy saving will be about 400 billion yuan. China's green development of industry has bright results, People's Daily,* 26th August 2020, viewed 4th March 2025, <https://www.miit.gov.cn/ztzl/rdzt/gytxyfgfcgz/mtbd/art/2020/art_94e71eca60e9454d83ea0ce086a8387a.html>

Decrease in industrial carbon dioxide (CO_2) emission intensity (% compared to 2015)	-	-	-22	-40	Likely not achieved[58]	-18 between 2021 and 2025[59]
Decrease in industrial water usage intensity (% compared to 2015)	-	-	-23	-41	-57[60]	
Reuse of solid industrial waste (% total waste)	62	65	73	79	57[61] (2022)	

These impressive developments did not come from domestic innovation alone. The increase in industrial automation, for example, would not have been possible without FIEs. This can be seen in the composition of market share: MIC2025's semi-official targets originally called for domestic brands to have a 70 per cent share of the domestic industrial robot market by 2025,[62] but by 2024 this figure was only 48.4 per cent.[63]

This trend holds true across other areas as well. FIEs, either directly through their own technology or indirectly through market presence, have enabled China to advance in MIC2025 sectors. Many FIEs would likely have seen their presence as a mutually beneficial partnership that would remain a hallmark of the plan, but many now feel they have outstayed their welcome.

Impact on European companies

Most European companies present in China today entered the market at least two decades ago, at a time when domestic competition in many advanced industries was limited. FIEs brought their technology to China during this time, often agreeing to JVs with technology transfer requirements in order to gain market access, with the assumption that China's market would continue opening up to them. Now, in addition to anticipated market opening being too little too late in a number of industries, they face a wide range of domestic competitors, many of which offer superior, comparable or close-to-comparable products, but usually for a lower price.

While European Chamber member companies consistently report that they welcome competition—as it should result in healthier markets and better products and services—many report that their Chinese counterparts are increasingly playing on a field tilted in their favour. This is not to say that all domestic firms have such an advantage – in fact, competition among them can be unhealthy, with market prices being driven to rock bottom. This dynamic is often further exacerbated by local governments that first bet heavily on a company's success and then spend unsustainably to prop it up once it comes under threat from industrial overcapacity.[64&65]

Many FIEs that have decades of experience and produce some of the best products available weathered the

58 Although China met its 2020 target of -22 per cent, a less ambitious target of achieving an 18 per cent decrease between 2021 and 2025 was announced, suggesting that planners already believed that the MIC2025 target of -40 per cent between 2015 and 2025 was unachievable. *Third Biennial Update Report on Climate Change in the People's Republic of China*, Ministry of Ecology and Environment, December 2023, viewed 22nd January 2025, <https://unfccc.int/sites/default/files/resource/China_BUR3_Chinese.pdf>; *Ministry of Industry and Information Technology: CO_2 emissions per unit of industrial added value to be reduced by 18 per cent by 2025, people.cn*, 3rd December 2021, viewed 4th March 2025, <http://finance.people.com.cn/n1/2021/1203/c1004-32298948.html>

59 *Ibid.*

60 In 2015, China's industrial water usage per CNY 10,000 of value added was 58 cubic metres. The same figure fell to 25 cubic metres by 2025. This represents a 57 per cent decrease, although some of this can be put down to inflation. *Statistical bulletin on national economic and social development for 2015,* National Bureau of Statistics, 29th February 2016, viewed 4th March 2025, <https://www.gov.cn/xinwen/2016-02/29/content_5047274.htm>; *Statistical Bulletin of the People's Republic of China on National Economic and Social Development 2024*, National Bureau of Statistics, 28th February 2025, viewed 4th March 2025, <https://www.gov.cn/lianbo/bumen/202502/content_7008605.htm>

61 *Solid Waste Disposal Outlook 2024: Waste incineration industry innovation business model, waste recycling triggered a new round of 'wind mouth'!, North Star Solid Waste Network,* 29th February 2024, viewed 4th March 2025, <https://www.cenews.com.cn/news.html?aid=1116261>

62 *Technology Roadmap for Key Areas of Made in China 2025,* National Advisory Committee on Strategies for Building a Strong Manufacturing Nation, October 2015, viewed 22nd January 2025, <https://www.cae.cn/cae/html/files/2015-10/29/20151029105822561730637.pdf>

63 *China's industrial robot market leads the world in sales for the 11th consecutive year, the market share of independent brands hit a record high, China Economic Newspaper,* 22nd November 2024, viewed 22nd January 2025, <https://www.ceh.com.cn/syzx/2024/1695688.shtml>

64 Ji, S, *China aims to heal wounds of industrial 'involution' as officials vow to stem bloodletting, South China Morning Post*, 14th December 2024, viewed 20th February 2025, <https://www.scmp.com/economy/china-economy/article/3290715/china-aims-heal-wounds-industrial-involution-officials-vow-stem-bloodletting>

65 Huang, Y, *The era of the entrepreneurial Chinese local government is over, South China Morning Post*, 3rd August 2024, viewed 20th February 2025, <https://www.scmp.com/opinion/china-opinion/article/3273016/era-entrepreneurial-chinese-local-government-over>

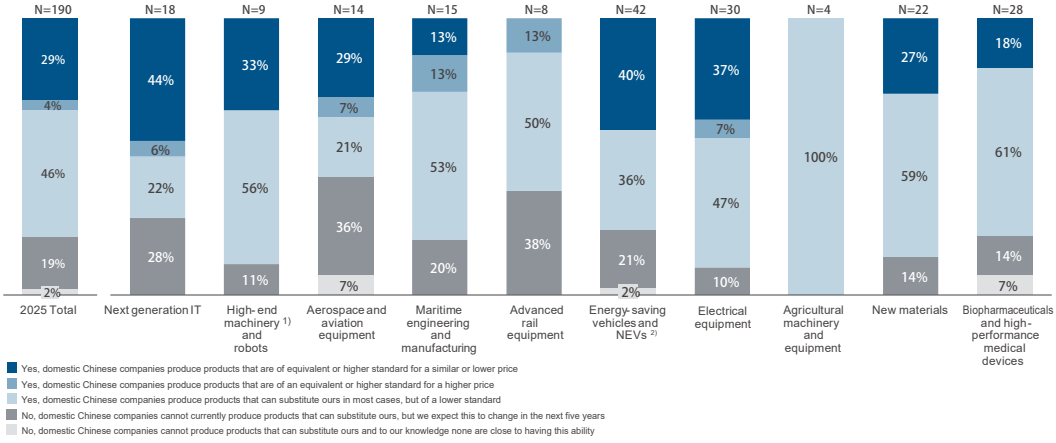
storm of the first stages of unfair competition. However, in many cases, once the Chinese market extracted what it needed from them and viable domestic alternatives emerged, they found their market space closing.[66]

There are several ways this has happened, and not all of them are due to policies that overtly favour domestic companies. These include the way subsidies are applied or other government support—such as cheap land rental, tax breaks and access to low-cost financing—discrimination in procurement and market access restrictions. It also happens as a result of customers that have become increasingly cautious about choosing foreign brands as they hedge against an escalation in global tensions that could see their access to foreign technology abruptly curtailed.

However, the ability of domestic Chinese companies to produce a *comparable* product is often the primary factor that determines whether FIEs are able to continue competing: once an FIE's product becomes substitutable, the other factors working against them can become overwhelming. According to the BCS2025, 79 per cent of respondents in MIC2025 sectors currently face competition against a comparable product from a domestic competitor. In some cases, European companies can still compete on reputation, given that product quality is established over decades, not years, but this applies mainly in industries in which the ability to ensure public health and safety to the greatest extent possible is a significant factor motivating customer choice, for example in high-end medical devices, some pharmaceutical segments, and aerospace and aviation.

Figure 1: Most members in MIC2025 sectors face Chinese competitors with comparable products, albeit often of lower quality.

In the sector that you selected, are your Chinese competitors currently able to produce comparable products? If your company produces or produced multiple categories of products in this sector, please answer based on the product that currently makes up the largest proportion of your sales in China.



1) Short for 'High-end numerically controlled machinery and robots

2) Includes original equipment manufacturers and suppliers

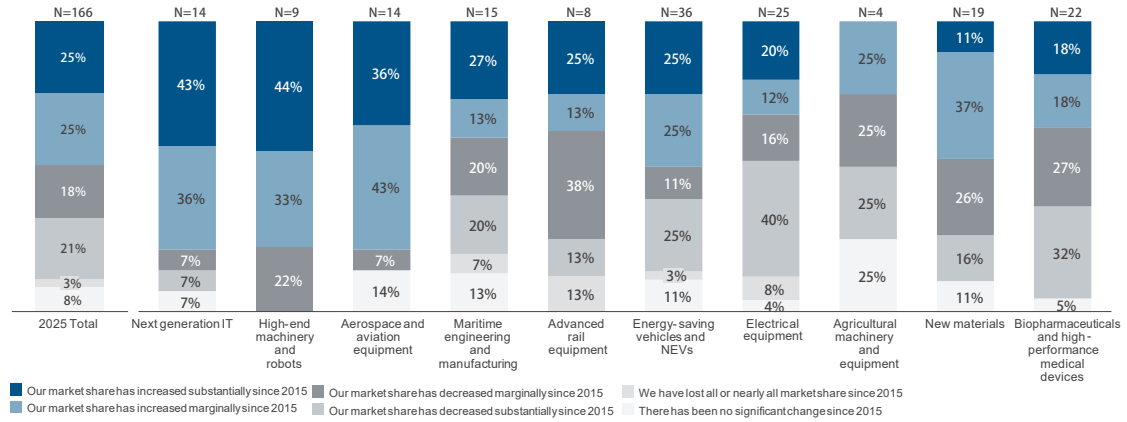
Unsurprisingly, MIC2025 sectors with the most comparable domestic alternatives are also those with the highest rates of market share loss for FIEs. For example, 79 per cent of BCS2025 respondents from the biopharmaceuticals and high-performance medical device sectors reported that their product had comparable domestic substitutes. These two sectors also had among the largest proportion of respondents reporting a decline in market share since 2015, at 59 per cent.

66 In multiple sectors, including advanced rail equipment, next generation IT, high-end numerically controlled machinery and robots, electrical power equipment, and biopharmaceuticals and high-performance medical devices, members report that they began to face increased market access restrictions or other barriers that decreased their competitiveness once Chinese companies were able to produce a comparable product. In some cases, like electrical power equipment, next generation IT and advanced rail equipment, members report losing all or nearly all market share for certain market segments.

While there are exceptions to this rule, namely next generation IT and high-end numerically controlled machinery and robots, this is likely due to a combination of factors, including the fact that rapid growth in these sectors means that demand is great enough to allow domestic players to grow without necessarily taking away overall market share. That said, members in these sectors interviewed for this report made clear that at a company level, they still see their market share increasingly challenged by domestic alternatives.

Figure 2: Loss of market share is higher in sectors with comparable domestic alternatives

In the sector that you selected, how has your company's market share in China changed since 2015?[1)]



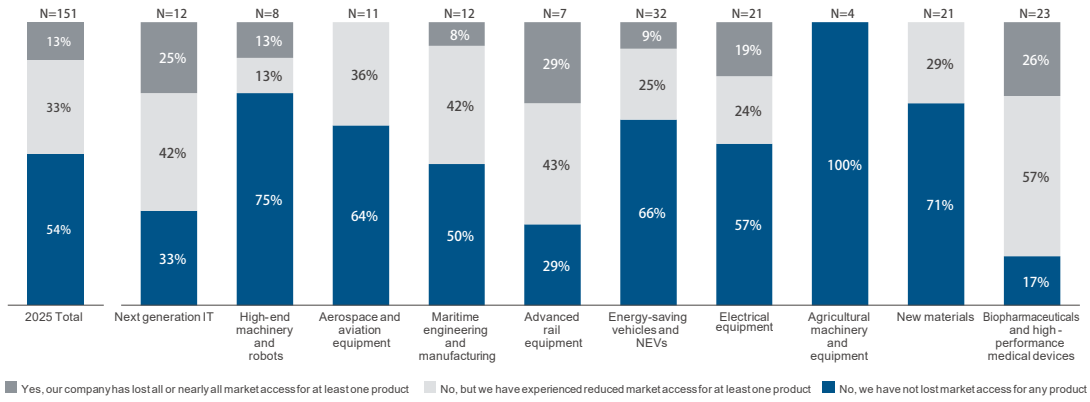
1) Excluding answer 'Don't know'

Market share loss is not merely a result of Chinese companies becoming more competitive, market access restrictions are also playing a significant role. As the proportion of Chinese companies with comparable products grows, industries are likely to see increased market access restrictions placed on FIEs. The most prominent example of this is the rail industry, with 29 per cent of BCS2025 respondents in the sector reporting a total loss of market access for a specific product. This is largely attributable to the high degree of self-reliance that China has attained in rail technology.

Companies that face loss of market access for an entire category of products typically continue to operate in other areas where possible. In some sectors, this means FIEs are forced to retreat to the high-end of a particular market, with their success dependent on them having the most advanced technology. Like with market share, market access loss rates generally have a proportionate relationship to the number of companies reporting comparable domestic alternatives to their products. Again, the biopharmaceuticals and high-performance medical device sectors, with 79 per cent of BCS2025 respondents reporting that their product had comparable domestic substitutes, had the highest proportion of respondents reporting market access loss or reduction, at 83 per cent.

Figure 3: Market access loss greatest in biopharmaceuticals and high-performance medical devices

In the sector that you selected, has your company lost market access for any specific product since 2015?[1)]



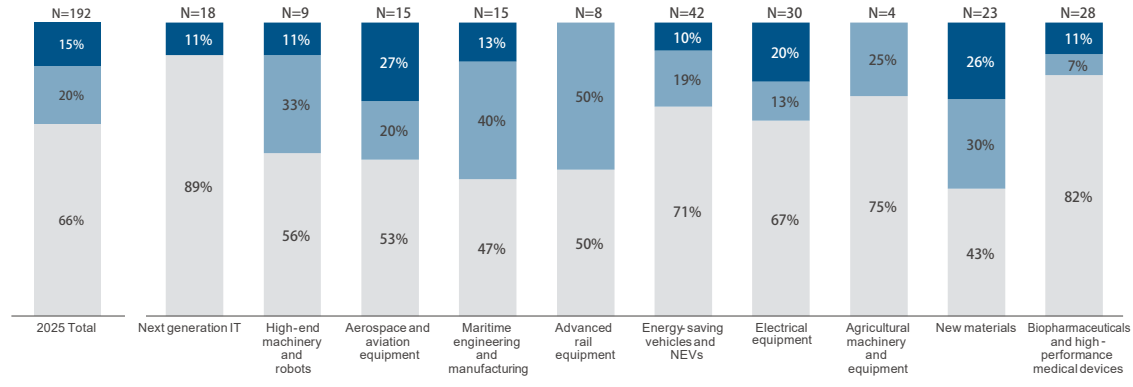
1) Excluding answer 'Don't know'

In addition to market access barriers, technology transfer requirements and intellectual property infringements have hurt the competitiveness of many FIEs. China's intellectual property rights (IPR) protection regime has undoubtedly improved over the years, with an increasing number of companies reporting that at least the country's written IPR laws and regulations have become more effective over the past decade,[67] however, much of the damage done to companies is irreversible with these actions having taken place years ago.

Interestingly, the MIC2025 sector with the highest proportion of respondents reporting that Chinese firms have gained access to their technology through transfers since 2015—aerospace and aviation equipment—is also the sector in which China has achieved the lowest level of self-reliance. This is indicative of the timelines at play and the size of the technology gap – for many of the other sectors, technology transfers likely occurred earlier than 2015 or were not necessary at all, whereas in aviation China is still far behind the technology frontier and is making concerted efforts to catch up.

Figure 4: Technology transfers and IP infringements have had a significant impact

In the sector that you selected, have technology transfer requirements or intellectual property infringements since 2015 resulted in Chinese competitors gaining access to your technology?[1)]



1) Multiple answers possible

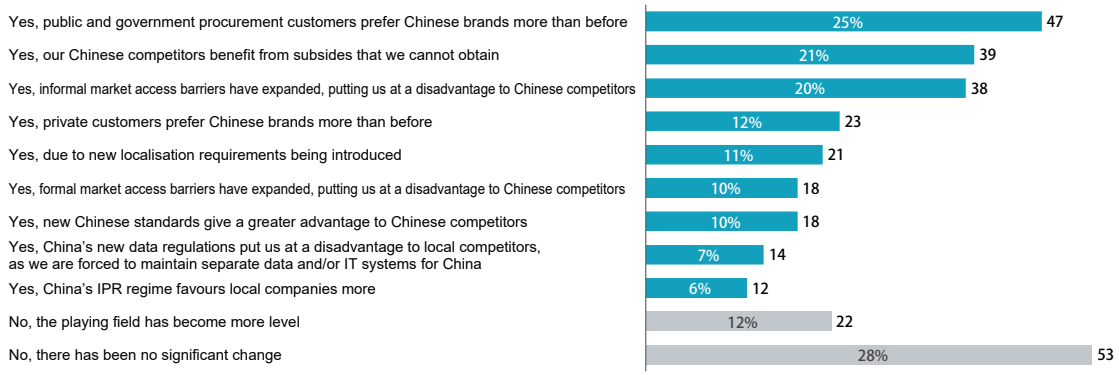
67 *European Business in China Business Confidence Survey 2024*, European Union Chamber of Commerce in China, 10th May 2024, viewed 10th February 2025, p. 26, <https://www.europeanchamber.com.cn/en/press-releases/3619>

While many of the issues that FIEs face existed before the MIC2025 plan was launched, 60 per cent of respondents involved in MIC2025 sectors report that the playing field has been tilted further in favour of Chinese companies since 2015, with the most prominent reason being an increase in unequal treatment in public and government procurement. However, the wide variety of other factors at play are indicative of the business environment that members in these sectors face: a highly coordinated mix of policies, subsidies and informal tools that shape the business environment in favour of domestic Chinese companies.

Figure 5: 60% of members in MIC2025 sectors have experienced a more unlevel playing field since 2015

In the sector that you selected, has your company experienced a more unlevel playing field since 2015?[1)]

N=188



1) Excluding answer 'Other'; multiple answers possible

In the face of an increasingly unlevel playing field, some FIEs have chosen to silo their China operations, essentially becoming Chinese companies in all but name, in a bid to be recognised as trusted partners and suppliers, as well as to qualify for 'made in China' status. The importance of 'made in China' status is likely to grow even further given a recent proposal to give domestically produced products a 20 per cent price advantage when being considered in government procurement bids, even though the purchaser still pays the full price.[68] However, despite siloing requiring significant investments, positive outcomes are not guaranteed. For more details about siloing, please refer to the European Chamber's report *Siloing and Diversification: One World, Two Systems*.[69]

68 *Notice of Public Consultation on the Notice on Matters Relating to National Product Standards and Implementation Policies in the Field of Government Procurement (Exposure Draft),* Ministry of Finance, 5th December 2024, viewed 12th December 2024, <https://www.ccgp.gov.cn/zcdt/202412/t20241205_23799858.htm>

69 *Siloing and Diversification: One World, Two Systems*, European Union Chamber of Commerce in China, 9th January 2025, viewed 22nd January 2025, <https://www.europeanchamber.com.cn/en/press-releases/3682>

Progress in MIC2025's key sectors: different stages of the same process

When MIC2025 was launched in 2015, the State Council identified 10 key sectors that were to be the focus of the plan: 1) next generation IT; 2) high-end numerically controlled machinery[70] and robots; 3) aerospace and aviation equipment; 4) maritime engineering equipment and high-tech maritime vessel manufacturing; 5) advanced rail equipment; 6) energy saving vehicles and NEVs; 7) electrical power equipment; 8) agricultural machinery and equipment; 9) new materials;[71] and 10) biopharmaceuticals and high-performance medical devices. The MIC2025 semi-official targets for each sector were all ambitious,[72] and China's ability to develop the technologies necessary to achieve them over the past 10 years has varied significantly from sector to sector. Likewise, the outcomes for companies operating in these 10 sectors are very different depending on the sector, and, in some cases, differ greatly from company to company.

A general conclusion can be drawn from the interviews conducted for this report: there is an inverse correlation between the level of success experienced by European Chamber members operating in MIC2025 sectors and the level of technological advancement that their domestic competitors have achieved. That is, once a Chinese company can produce a comparable domestic product, FIEs retreat to the high-end segment of the market, relying on reputation or superior quality to maintain sales.

An important point to be considered alongside this general pattern is that currently, many public and government procurement tender mechanisms do not adequately account for product quality or dependability.[73] This means that even if an FIE is not receiving direct discriminatory treatment, it is becoming less and less likely that its products will win bids based on superior quality alone. All MIC2025 sectors are touched by government or public procurement in some way, so the consequences of the system are impossible to escape.

Next generation IT

Next generation IT, which includes semiconductors and telecommunications network equipment, underpins several other strategic sectors and has become one of the fiercest battlegrounds in the global competition to control critical technology. Globally, China's next generation IT ambitions are also the most politicised of any MIC2025 sector, with security concerns in other markets resulting in significant restrictions being imposed both on Chinese IT products being used abroad and high-end IT exports to China.

China has demonstrated a willingness to respond by heavily restricting foreign IT providers in product areas in which viable domestic alternatives are available. FIEs involved in the IT sector in China are not given equal access to public and government procurement, with members reporting that security concerns often result

70 Typically, high-end numerically controlled (also referred to as computer numerical control) machinery refers to manufacturing equipment that is digitally controlled and has advanced properties such as being high-speed, precision, intelligent, composite, multi-axis linked, and network connected. Examples include metal-cutting machinery, casting, forging and welding equipment, and other manufacturing equipment. *Technology Roadmap for Key Areas of Made in China 2025*, National Advisory Committee on Strategies for Building a Strong Manufacturing Nation, October 2015, viewed 22nd January 2025, <https://www.cae.cn/cae/html/files/2015-10/29/20151029105822561730637.pdf>

71 Given that the new materials industry contributes to the majority of MIC2025 sectors in some way and encompasses a wide range of products with distinct strategic value, it is difficult to draw general conclusions about the sector as a whole. Thus, no sectoral analysis is provided for new materials.

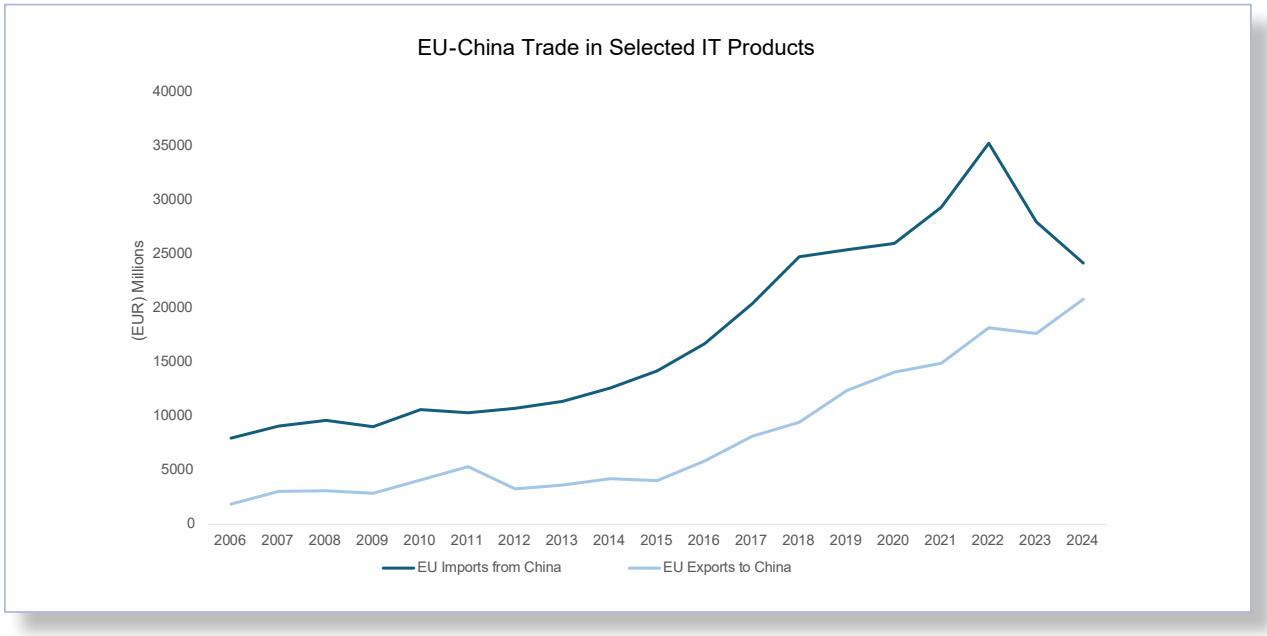
72 In 2015, the National Advisory Committee on Strategies for Building a Strong Manufacturing Nation (NCSM) released the *Technology Roadmap for Key Areas of Made in China 2025*, which contained specific market share targets for MIC2025 sectors. In 2018, the NCSM released another, similar roadmap, but the 2015 version is most representative of MIC2025 targets at the launch of the plan. The NCSM is a think tank set up by the State Council and its work has been widely acknowledged by state-run media. *Technology Roadmap for Key Areas of Made in China 2025*, National Advisory Committee on Strategies for Building a Strong Manufacturing Nation, October 2015, viewed 22nd January 2025, <https://www.cae.cn/cae/html/files/2015-10/29/20151029105822561730637.pdf>; Xu, X, *Challenges ahead of 'Made in China 2025', CGTN*, 26th January 2018, viewed 26th January 2025, <https://news.cgtn.com/news/3141544f7a677a6333566d54/index.html>

73 The recent public outcry about drugs purchased through the volume-based procurement system is one example of how China's procurement mechanisms prioritise cost over quality. Stevenson, A, and Wang, Z, *In China, Rare Dissent Over a Program to Save on Drug Costs, New York Times*, 25th January 2025, viewed 18th February 2025, <https://www.nytimes.com/2025/01/25/business/china-pharma-drugs.html>. Members in other sectors have also reported that domestic competitors with inferior products or even inadequate industry experience have won procurement bids at the expense of FIEs, usually due to concern from the purchaser over choosing a foreign brand.

in unsuccessful bids, even if not officially acknowledged as a reason. One member company interviewed for this report noted that although their product is now cheaper than their Chinese competitors, they still lose procurement bids to domestic alternatives. They described a highly coordinated effort in their market segment to ensure that domestic players gain control, with one FIE given a token stake of market share to maintain the appearance of a semi-open market.

FIEs are also impacted by US export controls, which sometimes require them to sell a less-advanced product to the Chinese market, further removing a competitive advantage. Other companies are even forced to substitute proprietary technology for Chinese alternatives in order to be allowed to sell into the Chinese market. With such components designed specifically to increase operational efficiency of their product, these restrictions have a significant impact on their competitiveness.

The prevalence of restrictions on IT products in recent years is one reason why the EU saw a sharp drop in IT imports from China in 2023, which can primarily be attributed to a decline in Chinese exports of telecommunications network equipment, integrated circuits and other IT components to the EU. The nature of telecommunications network equipment means that it is among the next generation IT products most impacted by security concerns. Several EU countries have already placed bans on using Huawei and ZTE equipment in their 5G networks, with some others likely to follow.[74]



Source: Eurostat

See page 45 for selected CN codes

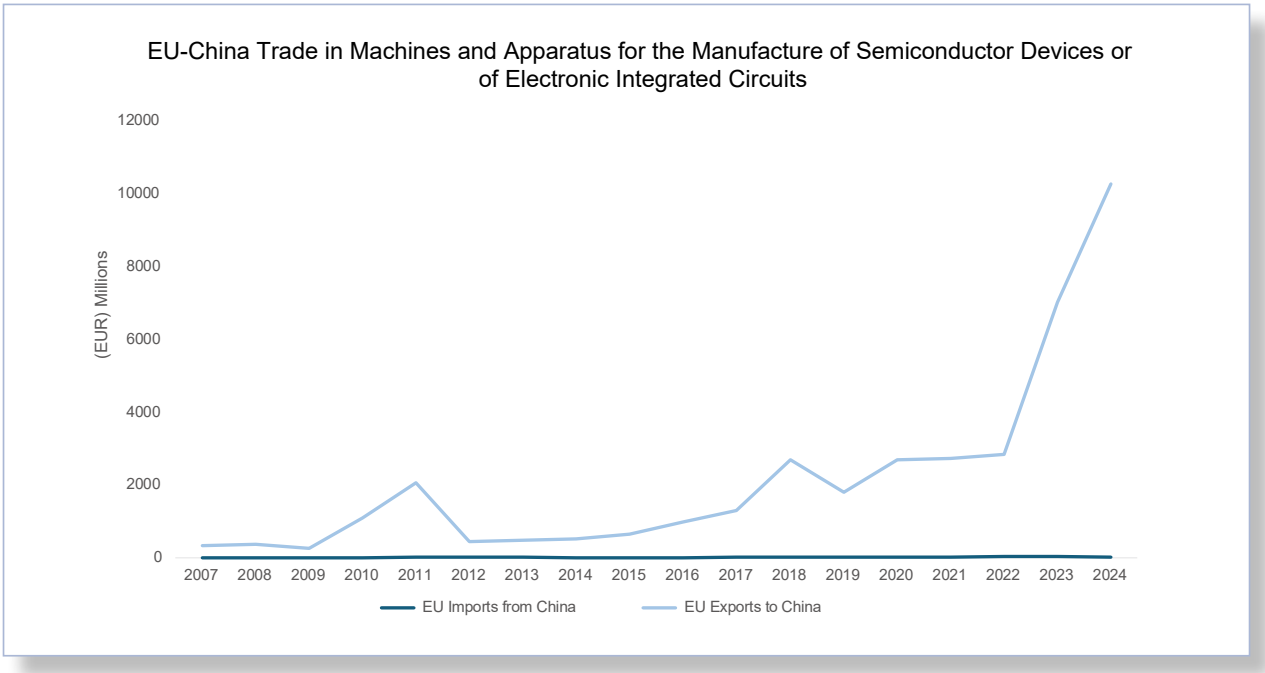
While the value of exports to China has continued to increase, this is likely due to China's inability to produce machines to manufacture high-end semiconductors. China has made meaningful progress in related technology, but it is still unable to make EUV lithography machines, which are, so far, essential for manufacturing the most advanced chips.[75] Many EUV lithography machines are now subject to export controls, and China is accelerating efforts to develop homegrown alternatives.[76] However, producing EUV lithography machines takes far more than

74 Kroet, C, *Eleven EU countries took 5G security measures to ban Huawei, ZTE, Euronews,* 12th August 2024, viewed 27th January 2025, <https://www.euronews.com/next/2024/08/12/eleven-eu-countries-took-5g-security-measures-to-ban-huawei-zte>

75 Pan, C, *China's chip-making sees steady progress with new tools, but nothing to rival ASML, South China Morning Post,* 23rd September 2024, viewed 26th January 2025, <https://www.scmp.com/tech/policy/article/3279653/chinas-chip-making-sees-steady-progress-new-tools-nothing-rival-asml>

76 Zhang, T, *How China's award-winning EUV breakthrough sidesteps US chip ban, South China Morning Post,* 19th January 2025, viewed 26th January 2025, <https://www.scmp.com/news/china/science/article/3295209/how-chinas-award-winning-euv-breakthrough-sidesteps-us-chip-ban>

simply acquiring a blueprint, as the supply chains and human expertise involved are difficult to replicate.[77] For the time being, this dependency will likely continue to contribute to China's trade deficit in next generation IT products.



Source: Eurostat
CN code 848620

Semiconductors are one area in which the EU has adopted a MIC2025-like policy of its own. The European Chips Act, which entered into force in 2023, aims to "reinforce the semiconductor ecosystem in the EU, ensure the resilience of supply chains and reduce external dependencies." It sets the goal of achieving a 20 per cent global market share in semiconductors by "building and reinforcing Europe's capacity to innovate in the design, manufacturing and packaging of advanced chips [and] putting in place an adequate framework to increase production by 2030", among others.[78] The European Chips Act also shares some similarities with the US Chips Act,[79] setting the stage for prolonged EU-US-China competition in this area.

So far, no country has been able to onshore the entire advanced-chip supply chain, so doing so presents an enormous challenge to China. That said, cooperation in controlling China's access to chips has been challenging and may be further strained by recent US efforts to limit the sale of advanced AI chips to certain countries, including some EU Member States.[80] Given the importance of advanced IT technologies to essentially every strategic sector, China will in all likelihood continue to pour significant resources into semiconductors and other core technologies in the pursuit of self-sufficiency.

High-end numerically controlled machinery and robots

China's industrial robot market—the world's largest by sales for over a decade—still has a significant FIE

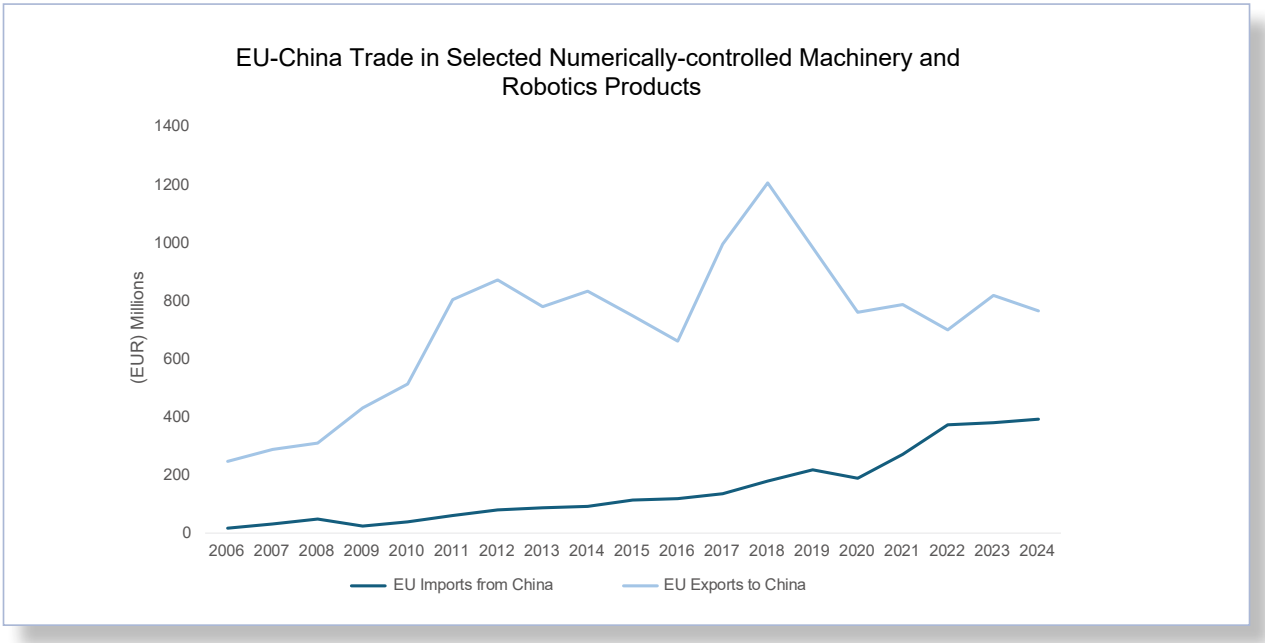
77 Koc, C, King, I, and Deutsch, J, *ASML, Europe's Most Valuable Tech Firm, Is at the Heart of the US-China Chip War, Bloomberg,* 26th April 2023, viewed 26th January 2025, <https://www.bloomberg.com/news/articles/2023-04-26/asml-europe-s-most-valuable-tech-firm-to-define-us-china-chip-war>

78 *Shaping Europe's digital future: European Chips Act,* European Commission, last updated 20th January 2024, viewed 7th February 2024, <https://digital-strategy.ec.europa.eu/en/policies/european-chips-act>

79 Shivakumar, S, Wessner, C, and Howell, T, *A World of Chips Acts: The Future of U.S.-EU Semiconductor Collaboration*, Center for Strategic & International Studies, 20th August 2024, viewed 22nd January 2025, <https://www.csis.org/analysis/world-chips-acts-future-us-eu-semiconductor-collaboration>

80 Eitel, M, *Biden's Final Global Chip Controls Target China — and Allies*, Center for European Policy Analysis, 7th January 2025, viewed 26th January 2025, <https://cepa.org/article/bidens-final-global-chip-controls-target-china-and-allies/>

presence, despite extensive efforts to expand domestic capacity, including through foreign acquisitions.[81] With only 48.4 per cent domestic-brand market share as of 2024, China is well behind the semi-official MIC2025 target of 70 per cent domestic control of its market.[82&83] The same is true for high-end numerically controlled machinery. China missed its 2020 target of 70 per cent domestic market share, reaching just over 30 per cent in 2022.[84] This is reflected in EU-China trade in high-end numerically controlled machinery and robots, which shows China running a deficit.



Source: Eurostat

See page 45 for selected CN codes

The semi-official MIC2025 market share targets for both numerically controlled machinery and robots were particularly ambitious given the low domestic market share held at the launch of the plan. High-end numerically controlled machinery is a standout given that domestic producers had almost no market share when the plan was announced. This, coupled with the fact that penetration of numerically controlled machinery in China is still relatively low by international standards,[85] created the conditions that allow FIEs to continue controlling a large proportion of market share today.

However, given that this segment contains a wide variety of products, with uses across many of the other MIC2025 sectors, individual company outcomes are dependent on their specific industry and technology. In general, as Chinese competitors develop near-equivalent technology, FIEs start to lose their competitive edge in some business segments. However, because many of the products sold in this sector are used in highly complex industrial processes, many FIEs still offer products at a standard that their domestic competitors cannot yet match.

One company interviewed for this report said that although many of their products—which are primarily imported—are several times the price of the most expensive domestic equivalents, industrial customers still

81 Atkinson, D, *How Innovative Is China in the Robotics Industry?*, Information Technology & Innovation Foundation, 11th March 2024, viewed 26th January 2025, <https://itif.org/publications/2024/03/11/how-innovative-is-china-in-the-robotics-industry/>

82 *Technology Roadmap for Key Areas of Made in China 2025,* National Advisory Committee on Strategies for Building a Strong Manufacturing Nation, October 2015, viewed 22nd January 2025, <https://www.cae.cn/cae/html/files/2015-10/29/20151029105822561730637.pdf>

83 *China's industrial robot market leads the world in sales for the 11th consecutive year, the market share of independent brands hit a record high, China Economic Newspaper,* 22nd November 2024, viewed 22nd January 2025, <https://www.ceh.com.cn/syzx/2024/1695688.shtml>

84 *The market share of domestic high-grade CNC systems has increased to 31.9 per cent from the Ministry of Industry and Information Technology, Sina Finance*, 6th September 2022, viewed 22nd January 2025, <https://finance.sina.cn/2022-09-06/detail-imqmmtha6178740.d.html>

85 *High-end CNC system to break the monopoly of foreign capital, machine tools equipped with 'Chinese hearts',* Southwest Securities, 9th June 2023, viewed 22nd January 2025, <https://pdf.dfcfw.com/pdf/H3_AP202306161591018042_1.pdf>

choose them for reliability reasons because of the high costs associated with production line shutdowns if equipment fails. However, they expressed concern about the future, given that many of their state-owned enterprise (SOE) customers are already becoming hesitant about buying imported products even if it makes business sense to do so, given that opting for a domestic product instead is seen as a political win. Furthermore, there are signs that the 'quality dividend' is becoming less of a factor as a result of China's slowing economy overall. Customers are simply becoming more willing to accept a product that is less reliable if the price is significantly lower.

Aerospace and aviation equipment

Commercial jet airliners

The launch of China's first homegrown mid-sized commercial aircraft, the Commercial Aircraft Corporation of China (COMAC) C919, is a testament to the importance of international cooperation and FIEs for China to achieve its goals.[86] The aircraft—which, despite being built by a SOE, relies on around 90 per cent foreign suppliers to provide its key components according to one 2020 estimate—has been billed as a clear demonstration of China's advanced manufacturing capabilities.[87&88] While on the surface it is a highly visible demonstration of China's technical capabilities, its heavy reliance on foreign components leaves it far from achieving the level of self-reliance that MIC2025 aims for.

Widely promoted as a historic development in China's civil aviation industry, the C919's commercial rollout is still in its early stages. With only a small number of C919s in service, China is well behind MIC2025's semi-official target of 10 per cent domestic market share by 2025.[89] COMAC has also missed the semi-official goal of delivering a wide-body, dual-aisle commercial airliner by 2025. Its prototype wide-body aeroplane, the C929, is still under development and has yet to complete its first test flight.[90] The C919—the launch of which was marred by delays, technical challenges and issues with COMAC's original partner, a Russian company—only began regular commercial service in 2023, and the slow pace of its rollout is likely to continue. Despite one key criticism of the C919 being the low number of orders from non-Chinese carriers, COMAC is in fact unable to fulfil existing domestic orders quickly enough, with this being attributed to problems accessing sufficient imported components.[91]

China's concerns about relying on imported components go beyond simple supply chain limitations. If the EU and US were to place sanctions on COMAC, production of C919s would likely cease entirely, with years, if not decades needed before production could restart.[92] This scenario is not beyond the realms of possibility. In early 2025, the US Department of Defense labelled COMAC 'military in nature'.[93] While this designation does not carry any direct consequences, it increases the likelihood that COMAC will face further US restrictions, which would be problematic for the C919 given that more than half of its key component suppliers are reported to be US companies.[94]

86 *What the congratulations Boeing and Airbus sent to the C919 reflect: Global Times editorial, Global Times*, 28th May 2023, viewed 18th February 2025, <https://www.globaltimes.cn/page/202305/1291527.shtml>

87 Kennedy, S, *China's COMAC: An Aerospace Minor Leaguer,* Chinese Business & Economics, 7th December 2020, viewed 22nd January 2025, <https://csis-website-prod.s3.amazonaws.com/s3fs-public/201204_Kennedy_COMAC.pdf>

88 *Air China's order of 100 C919s showcases China's tech advances, market confidence: experts, Global Times,* 27th April 2024, viewed 22nd January 2025, <https://www.globaltimes.cn/page/202404/1311372.shtml>

89 The semi-official target for 10 per cent domestic market share refers to '*ganxian feiji*', sometimes translated as 'trunk aircraft'. This refers to aircraft used for transport between hub airports and excludes regional jets. Thus, the COMAC ARJ21 regional jet is not included in the 10 per cent market share goal.

90 *COMAC says Air China is the first customer for C929 widebody jet, Reuters,* 12th November 2024, viewed 22nd January 2025, <https://www.reuters.com/business/aerospace-defense/comac-says-air-china-will-be-launch-customer-c929-widebody-jet-2024-11-12/>

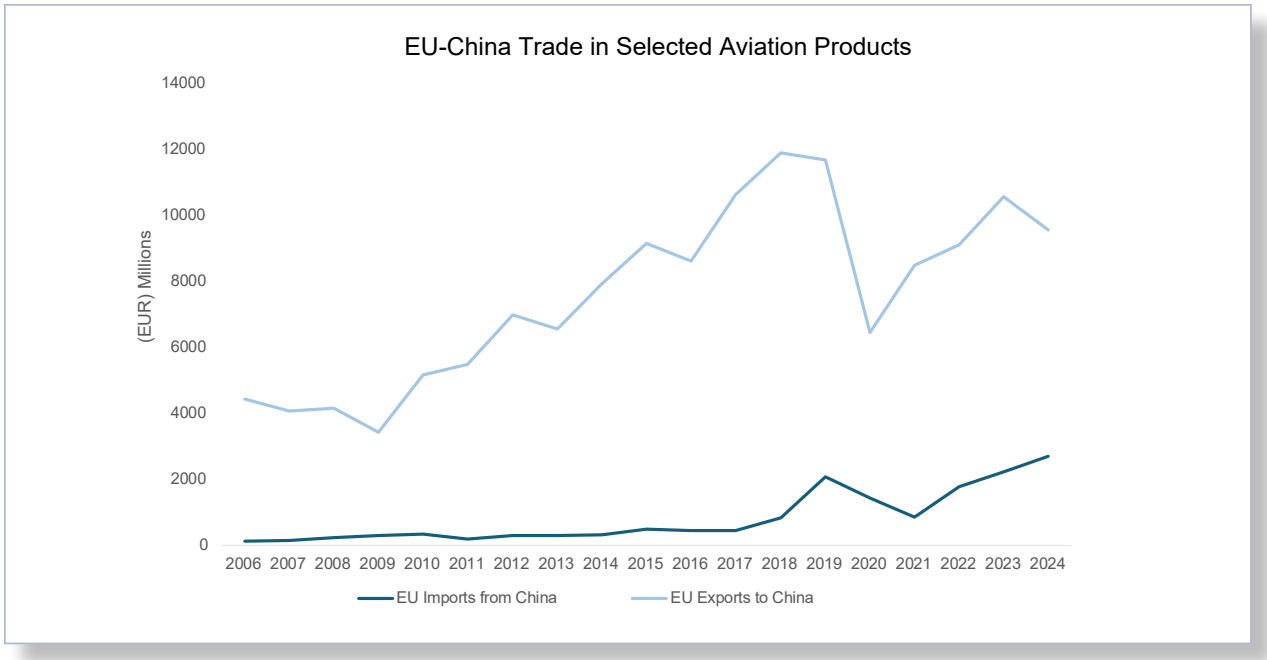
91 Chen, F, and Jennings, R, *China's C919 order backlog raises urgency for foreign-part acquisitions, new suppliers, South China Morning Post,* 16th November 2024, viewed 22nd January 2025, <https://www.scmp.com/economy/global-economy/article/3286779/chinas-c919-order-backlog-raises-urgency-foreign-part-acquisitions-new-suppliers>

92 Aboulafia, R, *If China Arms Russia, the U.S. should Kill China's Aircraft Industry, Foreign Policy,* 20th March 2023, viewed 27th January 2025, <https://foreignpolicy.com/2023/03/20/china-russia-aircraft-comac-xi-putin/>

93 Areddy, J, *Pentagon Labels More Chinese Companies as Military in Nature, The Wall Street Journal,* 7th January 2025, viewed 22nd January 2025, <https://www.wsj.com/politics/national-security/pentagon-labels-more-chinese-companies-as-military-in-nature-bac351b5>

94 Kennedy, S, *China's COMAC: An Aerospace Minor Leaguer,* Chinese Business & Economics, 7th December 2020, viewed 22nd January 2025, <https://csis-website-prod.s3.amazonaws.com/s3fs-public/201204_Kennedy_COMAC.pdf>

China's sizeable deficit in the trade of aviation products with the EU is indicative not only of the country's limited capabilities in the sector, but also a critical dependency on the bloc. Driven by China's deficiency in aircraft technology, EU exports of aviation products have continued to grow, with most of the value still made up by finished aircraft. The sharp decrease in 2020 can be attributed to a decline in global aircraft deliveries as a result of the COVID-19 pandemic.[95]



Source: Eurostat
See page 45 for selected CN codes

Likely due to the perceived instability of foreign suppliers, China announced additional subsidies to support indigenous aircraft technology development earlier this year,[96] making it clear that in the long run, aerospace and aviation equipment is the same as other MIC2025 sectors. Although the C919's rollout represents a significant advance in China's capabilities, it is likely that a truly indigenous aircraft, free from geopolitical risk, is the ultimate goal, but it remains an open question as to whether this is achievable at all.

Much like semiconductors, existing commercial jet supply chains rely on cooperation between multiple countries to produce a finished product.[97] The idea that China will—with a single SOE at the centre—be able to completely onshore the supply chain of large-scale commercial jets lacks plausibility.

The safety aspect of commercial aircraft also presents a significant challenge to China's success. Although the C919 uses components from foreign companies with decades of expertise, the first stage of the aircraft's certification in the EU—a technical familiarisation—could take over five years,[98] indicative of the kind of timelines at play in aviation safety.

China's commercial jet capabilities are therefore likely to remain on uncertain ground for the time being. For one, the US and EU could shut down the industry at any moment. And even without external intervention, COMAC

95 *2020 "worst year on record" for aircraft deliveries – ADS, Aerospace Global News,* viewed 27th January 2025, <https://aerospaceglobalnews.com/news/2020-worst-year-on-record-for-aircraft-deliveries-ads/>

96 Chen, F, *Applicants wanted: China's C919 to benefit as Beijing bankrolls 'large aircraft' research, South China Morning Post*, 15th January 2025, viewed 22nd January 2025, <https://www.scmp.com/economy/china-economy/article/3294861/applicants-wanted-chinas-c919-benefit-beijing-bankrolls-large-aircraft-research>

97 Aboulafia, R, *If China Arms Russia, the U.S. should Kill China's Aircraft Industry, Foreign Policy,* 20th March 2023, viewed 27th January 2025, <https://foreignpolicy.com/2023/03/20/china-russia-aircraft-comac-xi-putin/>

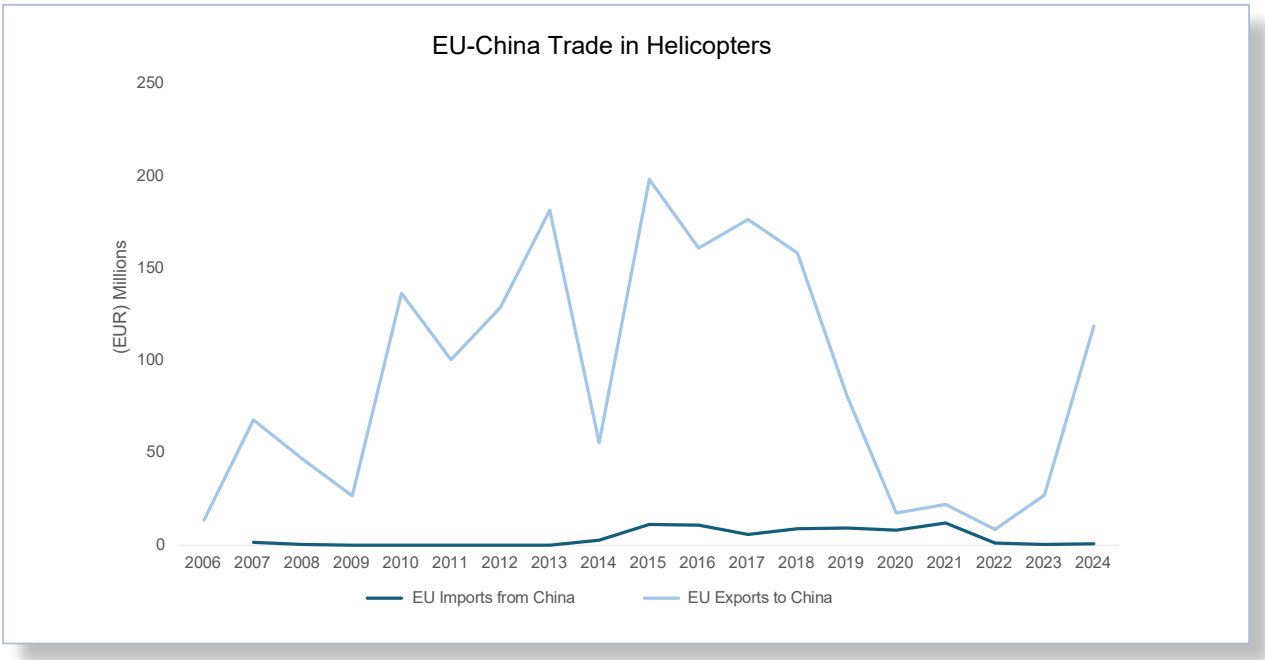
98 Hepher, T, and Plucinska, J, *Europe regulator says will take time needed to approve China jet, Reuters,* 14th March 2024, viewed 27th January 2025, <https://www.reuters.com/business/aerospace-defense/europe-regulator-says-will-take-time-needed-approve-china-jet-2024-03-14/>

lacks a strong market case to break the EU-US duopoly, and the lengths they will have to go to ensure that their product is safe—and also accepted as such by global customers—present years of challenges.

Low-altitude aircraft: helicopters and unmanned aerial vehicles

Despite massive potential, application of helicopters in China remains limited.[99] The lack of a unified national strategy for governing low-altitude airspace resulted in fragmented pilot initiatives that made it difficult for the industry to develop and for FIEs to take part. By the end of 2023, there were only a little over 5,000 registered general civil aviation aircraft in China, a category that covers civilian-use helicopters, including rescue helicopters.[100]

The drop to near zero in EU helicopter exports to China in the early 2020s does not seem to be the result of new domestic alternatives replacing foreign competitors, but rather a fluctuation in deliveries. China is years away from meeting MIC2025's semi-official target, which is to produce a helicopter capable of a take-off weight of 30–40 tonnes. In fact, one of its latest plans for doing so relies on a JV with a Russian company, underlining the lack of self-reliance in this area.[101&102] China's homegrown helicopters are still in the early stages,[103] leading some to suggest that the low uptake of foreign helicopters is an intentional move to give domestic players time to catch up.[104]



Source: Eurostat
CN codes 880211 & 880212

China's unmanned aerial vehicle—or drone—industry is a very different story. Not unlike NEVs, China has been able to take advantage of the fact that drones are an emerging industry to become a global leader. One city

99 Swartz, K, *Tethered Dragon: The Chinese helicopter industry, Vertical,* 16th March 2017, viewed 27th January 2025, <https://verticalmag.com/features/tethered-dragon/>

100 Zhu, W, *Sky's limit for choppers in China market, China Daily*, 14th November 2024, viewed 27th January 2025, <https://www.chinadaily.com.cn/a/202411/14/WS67355e13a310f1265a1cd510.html>

101 Ma, J, and Liu, X, *40-tonne class heavy helicopter jointly developed by China, Russia to be delivered by 2032, Global Times,* 10th March 2019, viewed 27th January 2025, <https://www.globaltimes.cn/page/201903/1141515.shtml>

102 China's partner, Russian Technologies State Corporation (ROSTEC), is a Russian SOE subject to EU sanctions. *COUNCIL REGULATION (EU) 2022/428 amending Regulation (EU) No 833/2014 concerning restrictive measures in view of Russia's actions destabilising the situation in Ukraine,* Official Journal of the European Union, 15th March 2022, viewed 10th February 2025, <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32022R0428>

103 *China's AC332 helicopter makes first full-state flight, Xinhua,* 7th April 2023, viewed 27th January 2025, <https://english.news.cn/20230407/f84a8c8822dd499a881353c6729c4ef3/c.html>

104 Swartz, K, *Tethered Dragon: The Chinese helicopter industry, Vertical*, 16th March 2017, viewed 27th January 2025, <https://verticalmag.com/features/tethered-dragon/>

in particular—Shenzhen—is instrumental to the global drone supply chain.[105] With an unparalleled industrial cluster and clear policy and subsidy support from the municipal government, Shenzhen has become so essential to drone manufacturing that the global drone industry would be a fraction of its current size without it.[106] One Shenzhen-based company, Da-Jiang Innovations (DJI), controls as much as 70 per cent of the global drone market and China, collectively, controls as much as 80 per cent.[107]

While drones have extensive civilian uses—from agriculture to construction to logistics—Russia's war in Ukraine has drawn attention to their military application. The stakes associated with China's dominance in drone production became clear in September 2024, when China imposed export controls restricting the sale of drones and drone components to Ukraine and Russia, both of which relied heavily on DJI products for military applications.[108] As a result, the EU and the US began looking for ways to bolster indigenous drone supply chains to aid Ukraine.[109]

While helicopters and drones are often grouped together as 'low-altitude' aircraft, their respective outcomes under MIC2025 could not be more different. Helicopters and their thousands of individual components, much like passenger jets, require decades to develop and rely on years of secure operation to establish a reputation for safety and reliability. Drones—which are unmanned and technologically less complex—have far less at stake, making China's fast-paced development model under MIC2025 extremely successful.

Commercial satellites

MIC2025 called for the "formation of long-term sustainable and stable satellite remote sensing, communication, navigation and other space information service capabilities." China now has significant commercial presence in these three areas, with an increasing ability to export its technologies, particularly to Belt and Road Initiative (BRI) countries.[110&111] Early indications also suggest that China is pulling ahead of competitors in key satellite communication and remote-sensing technologies.[112]

Similar to drones, China's commercial space technology can also have military applications, but unlike drones, military applications are a large part of what has driven the industry's development. One example of this is Beidou, China's homegrown alternative to the US Global Positioning System (GPS), another military-driven technology. GPS, which is operated by the US Department of Defense, only provides its most precise level of geolocation to the US federal government and military, as well as some US allies.[113] The GPS's standard service, which is available to the public, could theoretically be made unavailable to users at any time.[114] This vulnerability is one reason why the former Soviet Union and the EU developed homegrown alternatives,[115] the Global

105 Yang, Z, *Why China's dominance in commercial drones has become a global security matter,* MIT Technology Review, 26th June 2024, viewed 5th February 2025, <https://www.technologyreview.com/2024/06/26/1094249/china-commercial-drone-dji-security/>

106 *Ibid*.

107 Kroenig, M, and Bayoumi, I, *A global strategy to secure UAS supply chains*, Atlantic Council, 25th June 2024, viewed 27th January 2025, <https://www.atlanticcouncil.org/in-depth-research-reports/issue-brief/a-global-strategy-to-secure-uas-supply-chains/>

108 Pusztaszeri, A, *Why China's UAV Supply Chain Restrictions Weaken Ukraine's Negotiating Power*, Center for Strategic & International Studies, 19th December 2024, viewed 27th January 2025, <https://www.csis.org/podcasts/audio-briefs/why-chinas-uav-supply-chain-restrictions-weaken-ukraines-negotiating-power>

109 *Ibid*.

110 *Chinese satellite enterprises provide expanded, improved global services, Xinhua,* 30th January 2025, viewed 5th February 2025, <https://www.globaltimes.cn/page/202501/1327682.shtml>

111 *China's commercial satellite constellation to provide Brazil with Internet services, Xinhua*, 21st November 2024, viewed 5th February 2025, <https://eng.yidaiyilu.gov.cn/p/0MDSQCG0.html>

112 Zhang, T, *China beats Starlink to hi-res space-ground laser transmission at 6G standard, South China Morning Post,* 2nd January 2025, viewed 5th February 2025, <https://www.scmp.com/news/china/science/article/3293038/china-beats-starlink-hi-res-space-ground-laser-transmission-6g-standard>

113 Millner, D, Maksim, S, and Huhmann, M, *BeiDou: China's GPS Challenger Takes Its Place on the World Stage*, Joint Force Quarterly 105, National Defense University Press, 14th April 2022, viewed 5th February 2025, <https://ndupress.ndu.edu/Media/News/News-Article-View/Article/2999161/beidou-chinas-gps-challenger-takes-its-place-on-the-world-stage/#endnote-101>

114 *Ibid*.

115 GLONASS development began in the Soviet Union and the system was partially functional by 1991 when the Soviet Union fell, after which the project was continued by the Russian Federation and declared fully operational in 1993. *GLONASS Development History*, GIS Resources, viewed 28th February 2025, <https://gisresources.com/glonass-development-history/>

Navigation Satellite System (GLONASS) and Galileo, respectively.[116]

What may set Beidou apart from the GPS, GLONASS and Galileo is China's ability to carefully leverage its rollout for geopolitical gain. China has tied free access to Beidou to BRI membership and facilitated a highly coordinated rollout of Beidou across Eurasia, under the auspices of the 'space silk road'.[117] Like the GPS, Beidou will have to rely on worldwide adoption to become a truly influential standard, but by starting with expanding its use in BRI countries China is well on the way to achieving this. In 2023, Beidou gained recognition from the International Civil Aviation Organisation as a universal satellite navigation system for commercial flights,[118] a further indication that Beidou can offer a level of service similar to the GPS.

Maritime engineering equipment and high-tech maritime vessel manufacturing

China's shipbuilding industry has grown extensively since the launch of MIC2025, with the country boasting over 50 per cent market share in terms of global tonnage output and nearly 70 per cent of new global orders as of 2024.[119] Key MIC2025 targets, such as the development of a mid-sized luxury cruise ship, have been achieved and the country is likely to continue to advance its shipbuilding abilities.

MIC2025 selected vessel manufacturing targets	
2025 Target	**Progress**
Develop and test a medium-sized luxury cruise ship (gross tonnage greater than 100,000)	Achieved: The Adora Magic City, with a gross tonnage of 136,201, launched in 2024 and was billed as a critical development in China's shipbuilding technology.[120&121] A second ship—the Adora Flora City—is currently under construction and is expected to be slightly larger than the Adora Magic City.[122]
Begin R&D on a large-scale luxury cruise ship (gross tonnage greater than 200,000)	Unknown: Very few cruise ships over a gross tonnage of 200,000 are in service and all were built in the EU.
Industrial use of large-scale liquified natural gas (LNG)-powered vessels	Achieved: China has the ability to produce LNG-powered ships.

As is the case in the aviation industry, China's shipbuilders are at risk of third-country restrictions due to their close links to the Chinese military.[123] However, unlike aviation, China's shipbuilding capabilities are less reliant on foreign technology and the country already has a dominant global market share. Subsidies have played

116 Millner, D, Maksim, S, and Huhmann, M, *BeiDou: China's GPS Challenger Takes Its Place on the World Stage,* Joint Force Quarterly 105, National Defense University Press, 14th April 2022, viewed 5th February 2025, <https://ndupress.ndu.edu/Media/News/News-Article-View/Article/2999161/beidou-chinas-gps-challenger-takes-its-place-on-the-world-stage/#endnote-101>

117 Dotson, J, *The Beidou Satellite Network and the "Space Silk Road" in Eurasia*, China Brief Volume: 20 Issue: 12, 15th July 2020, viewed 5th February 2025, <https://jamestown.org/program/the-beidou-satellite-network-and-the-space-silk-road-in-eurasia/>

118 Nulimaimaiti, M, and Sun, S, *China's GPS-like BeiDou navigation system recognised as global standard for commercial aviation in 'important milestone', South China Morning Post,* 24th November 2024, viewed 5th February 2025, <https://www.scmp.com/economy/global-economy/article/3241788/chinas-gps-beidou-navigation-system-recognised-global-standard-commercial-aviation-important>

119 *Chen, Q, China's shipbuilding sector sees steady Q1 growth, keeps leading market, Global Times*, 20th May 2024, viewed 22nd January 2025, <https://www.globaltimes.cn/page/202405/1312667.shtml>

120 *Adora Magic City: Asset details, Lloyd's Register,* viewed 28th February 2025, <https://classdirect.lr.org/assets/LRV40994/details>

121 *China's second domestically built cruise ship Adora Flora City completes hull assembly, set for delivery in 2026, Global Times*, 15th January 2025, viewed 28th February 2025, <https://www.globaltimes.cn/page/202501/1326919.shtml>

122 *China completes main structure of 2nd homegrown large cruise ship, Xinhua,* 16th January 2025, viewed 22nd January 2025, <https://english.www.gov.cn/english.www.gov.cn/news/202501/16/content_WS678858dbc6d0868f4e8eeda0.html>

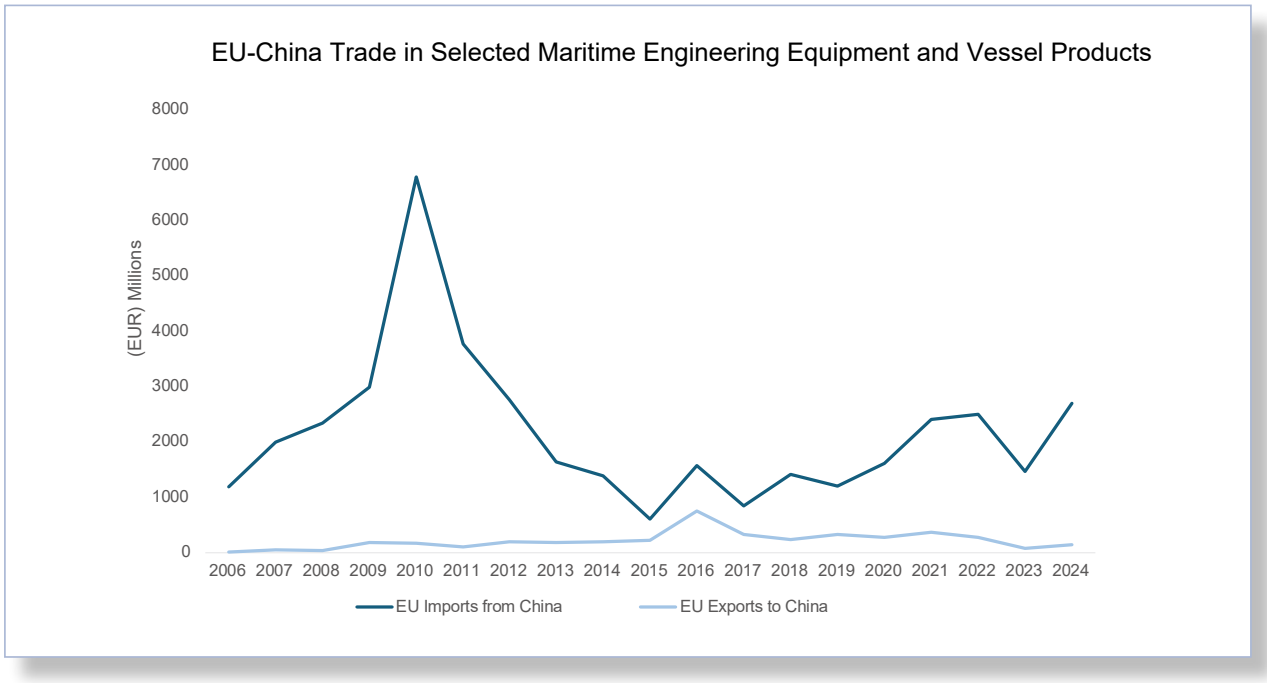
123 Funaiole, M, *The Threat of China's Shipbuilding Empire*, Center for Strategic & International Studies, 10th May 2024, viewed 22nd January 2025, <https://www.csis.org/analysis/threat-chinas-shipbuilding-empire>

a significant role in achieving this, allowing Chinese companies to invest heavily in R&D and even acquire technologies that were unprofitable at the time but could have future use.[124]

This has allowed China's shipbuilding market share to skyrocket. According to the Ministry of Industry and Information Technology, Chinese shipbuilders took 113.05 million deadweight tonnage in new orders in 2024, a 58.8 per cent increase from the previous year.[125] China also leads in orders for most ship types according to state media,[126] underscoring the grip the country has on global shipbuilding. From a security perspective, the scale of China's shipbuilding industry—which translates into a formidable advantage for naval shipbuilding—is a significant concern to its potential adversaries.

While parts of the EU's maritime manufacturing industry remain competitive, the EU has already taken trade defence action in the case of one shipbuilding product—bulb flats—by placing a 23 per cent tariff on imports from China.[127] The dominance of China in global shipbuilding is likely to continue triggering defensive action by the EU, with some calling for an EU strategy similar to the Chips Act to protect European shipbuilding.[128]

EU-China trade data in this sector, which is heavily influenced by seagoing cargo vessels,[129] can be misleading given that finished ships sold to European companies but registered outside of Europe will not be counted. However, it still reflects Europe's significant trade deficit in this sector.



Source: Eurostat

See page 45 for selected CN codes

124 Blanchette, J, Hillman, J, Qiu, M, and McCalpin, M, *Hidden Harbors: China's State-backed Shipping Industry,* Center for Strategic & International Studies, 8th July 2020, viewed 5th February 2025, <https://www.csis.org/analysis/hidden-harbors-chinas-state-backed-shipping-industry>

125 *Our country's shipbuilding industry saw comprehensive growth on three major indicators in 2024*, Ministry of Information and Technology, 16th January 2025, viewed 27th March 2025, <https://wap.miit.gov.cn/gxsj/tjfx/zbgy/mycb/art/2025/art_7db800ab08054066859e49992fa23314.html>

126 According to state media, China leads in new orders for 14 of 18 main ship types, including car carriers and container ships. It does not yet lead in gas carriers, LNG carriers, tugs and cruise ships. First again in 2024! Our country's shipbuilding industry has led the world for 15 consecutive years, CCTV, 16th January 2025, viewed 27th March 2025, <https://content-static.cctvnews.cctv.com/snow-book/index.html?item_id=9204461151402875762>

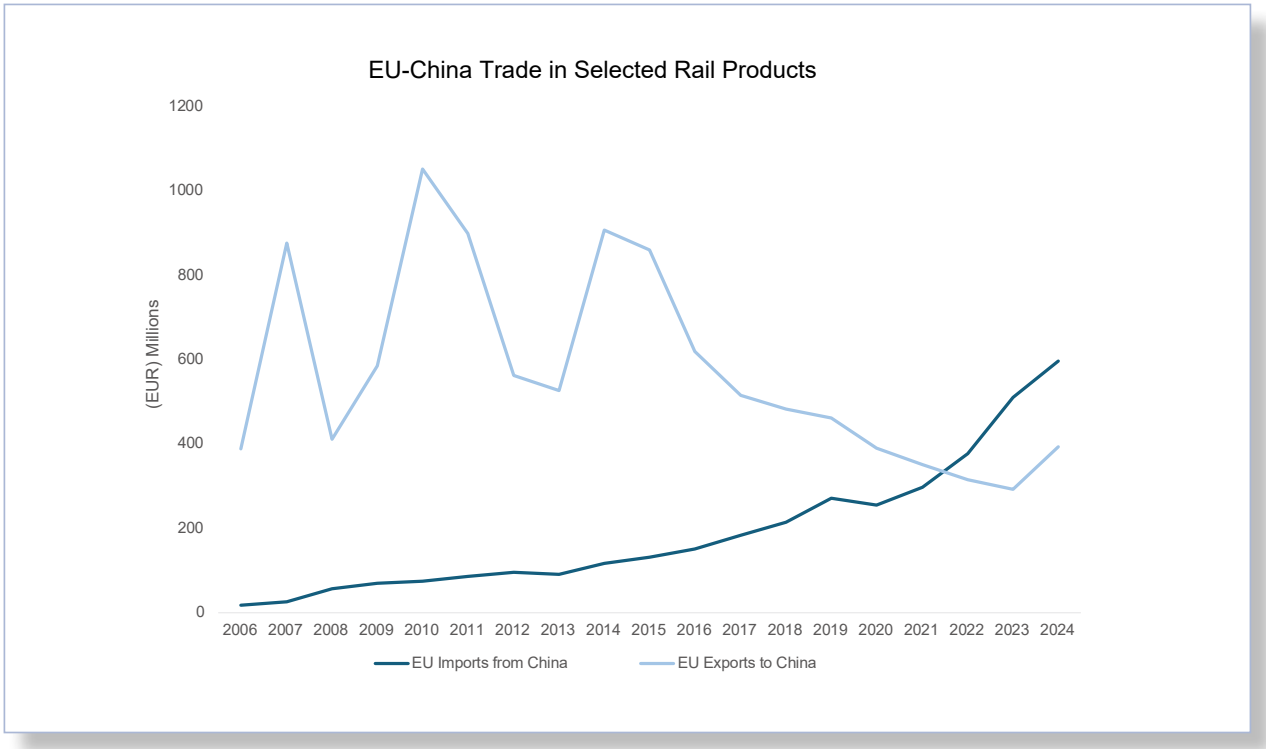
127 *Commission counters unfair imports of shipbuilding components from Türkiye and China,* European Commission, 11th January 2024, viewed 22nd January 2025, <https://policy.trade.ec.europa.eu/news/commission-counters-unfair-imports-shipbuilding-components-turkiye-and-china-2024-01-11_en>

128 Willmington, R, *EU shipbuilding strategy advancing as Europe boosts industrial policies to counteract Chinese might,* Lloyd's List, 21st August 2024, viewed 22nd January 2025, <https://www.lloydslist.com/LL1150304/EU-shipbuilding-strategy-advancing-as-Europe-boosts-industrial-policies-to-counteract-Chinese-might>

129 CN code 89019010: Sea-going vessels for the transport of goods and seagoing vessels for the transport of both persons and goods (excluding refrigerated vessels, tankers, ferry-boats and vessels principally designed for the transport of persons).

Advanced rail equipment

European rail equipment providers in China—which depend heavily on public procurement contracts—have been among the most negatively impacted by MIC2025. Domestic companies are now able to produce competing technologies in most cases, and even though European providers have a long-standing reputation for quality and reliability, procurement processes rarely capture this value in full. In addition, FIEs involved in the rail sector were subject to direct discrimination in public procurement procedures from 2014 onwards.[130] Even though this issue has now been resolved, more than a decade of formalised unequal treatment has inflicted irreversible damage on FIE competitiveness in China's rail sector. This is reflected in EU-China trade in rail equipment products, with EU rail exports to China having declined significantly since the introduction of the MIC2025 plan.



Source: Eurostat
See page 45 for selected CN codes

The steady increase in rail imports to the EU is indicative of just how competitive China's technology has become,[131] with China Railway Rolling Stock Corporation (CRRC) alone holding more than 50 per cent of global market share as of 2022, making China the clear leader.[132] Unfettered access to China's domestic market, now the largest high-speed rail network in the world, was critical to achieving this level of market share, but the scale of China's railway equipment industry today would not have been possible without significant technology transfer

130 The Tender Evaluation Method for Urban Rail Transit Vehicles (2014 Trial Version) (Tender Evaluation Method), formulated by the China Association of Metros, previously included a section on the localisation of key components. In this section, different scoring criteria were clearly set for domestic and foreign ownership: wholly foreign-owned enterprises (WFOEs) and JVs controlled by foreign investors often receive zero points; JVs controlled by Chinese investors, or in which Chinese and foreign stakeholders have equal shares, could receive half a point; while Chinese domestic enterprises could receive a full point. For more information, refer to *European Business in China Position Paper 2024/2025*, European Union Chamber of Commerce in China, 11th September 2024, viewed 20th January 2025, pp. 298–300, <https://www.europeanchamber.com.cn/en/publications-archive/1269/European_Business_in_China_Position_Paper_2024_2025>

131 Chinese companies have made significant investments in European rail infrastructure, likely contributing to the rise in trade. Ghiretti, F, Gökten, M, Gunter, J, Pindyuk, O, Ströhm, BC, Tonchev, P, and Zavarská, Z, *Research for TRAN Committee – Chinese Investments in European Non-Maritime Transport Infrastructure,* European Parliament, Policy Department for Structural and Cohesion Policies, December 2023, viewed 18th February 2025, <https://www.europarl.europa.eu/RegData/etudes/STUD/2023/747279/IPOL_STU(2023)747279_EN.pdf>

132 Zenglein, M, and Sebastian, G, *The sky is the limit: China's rise as a transportation superpower challenges the EU*, MERICS, 26th October 2023, viewed 20th January 2024, <https://merics.org/en/report/sky-limit-chinas-rise-transportation-superpower-challenges-eu>

from European and Japanese firms through JVs in the mid-2000s.[133]

Once China obtained the necessary technology, it was able to leverage the BRI to undertake massive infrastructure projects in third countries, through the control of tendering processes that saw contracts won by primarily Chinese companies or foreign companies working closely with or controlled by Chinese partners.[134] Through this highly coordinated process, China gained the ability to vertically integrate entire projects, from financing and steel manufacturing to railway construction and the provision of rolling stock, through to post-project servicing and operation, making it nearly impossible for foreign companies to compete on price.

Perhaps unsurprisingly, the highly coordinated, state-led nature of China's global ambitions in this industry saw the European Commission launching a Foreign Subsidy Regulation (FSR) investigation against a subsidiary of CRRC following its bid for a rail project in Bulgaria.[135] The investigation quickly resulted in CRRC dropping its bid. However, while the FSR seems able to help protect Europe's rail industry from distortions within the EU Single Market, it cannot protect European rail equipment producers in China or other third markets.

Although rail appears to be a self-reliance success story, the few remaining foreign dependencies on China's high-speed trains—imported screws to hold key components together and imported bearings to ensure that wheels turn smoothly—[136&137] are a testament to just how difficult full self-sufficiency is in a globalised economy. The screws exemplify this, as they are produced by just one company in Japan, which has a global monopoly.[138] Although screws are among the last known examples of China's foreign dependencies in high-speed rail, trains would fall apart without them, making this another example of how the safety aspect can determine China's ability to achieve self-sufficiency in a given industry.

There is no indication that China is reevaluating its direction of travel, meaning that FIEs are likely to remain marginalised in the rail industry. The *Five-year Action Plan for Accelerating the Building of National Strength in Transportation (2023–2027)*, released by the Ministry of Transport in 2023, specifically calls for increasing self-reliance in key technologies and products.[139] Some FIEs have attempted to boost competitiveness by further onshoring their operations, in the hope that this will see them treated more equally to domestic competitors, but it remains to be seen if this strategy is viable in the long run. FIEs could lose market access altogether or be given such a small share of projects that investments made to further onshore do not pay off.

Energy-saving vehicles and NEVs

Alongside next-generation IT, energy-saving vehicles and NEVs is among the most closely scrutinised of the MIC2025 groupings, due to its size and current global importance.

Unlike next-generation IT, rapid progress in NEV technology has seen Chinese firms become global leaders. European automotive companies still have an advantage in ICE vehicles, but these will become less important in the long run as NEV adoption increases.

133 *The importance of China's high-speed tech transfer policy,* Railway Technology, 1st March 2017, viewed 5th February 2025, <https://www.railway-technology.com/features/featurethe-importance-of-chinas-high-speed-tech-transfer-policy-5748075/>

134 While European companies have independently won bids for BRI projects, they did so primarily in areas in which no Chinese alternative was available. *The Road Less Travelled: European Involvement in China's Belt and Road Initiative*, European Union Chamber of Commerce in China, 16th January 2020, viewed 5th February 2025, p.6, <https://www.europeanchamber.com.cn/en/publications-archive/762/The_Road_Less_Travelled_European_Involvement_in_China_s_Belt_and_Road_Initiative>

135 This was the first time that the Commission launched a FSR investigation: *Commission opens first in-depth investigation under the Foreign Subsidies Regulation,* European Commission, 16th February 2024, viewed 22nd January 2025, <https://ec.europa.eu/commission/presscorner/detail/en/ip_24_887>

136 *Are Chinese bearings really that lousy? As Chinese high-speed trains are being exported, this one part must still be imported*, Tengxun Wang, 29th December 2023, viewed 5th February 2025, <https://news.qq.com/rain/a/20231229A05QFL00>

137 *China's high-speed trains have a critical dependency on Japanese screws, China really can't make screws that never loosen?,* Sohu, 27th April 2023, viewed 5th February 2025, <https://m.sohu.com/a/671540313_121687414/?pvid=000115_3w_a>

138 *Ibid.*

139 *Interpretation of the Five-year Action Plan for Accelerating the Building of National Strength in Transportation (2023-2027),* Ministry of Transport, 23rd April 2023, viewed 22nd January 2025, <https://www.gov.cn/zhengce/2023-04/23/content_5752770.htm>

MIC2025 selected NEV targets	
2025 Target	**Progress**
Five per cent or more of automotive market demand met by NEVs by 2020, and 20 per cent or more by 2025.	Achieved: For the first 11 months of 2024, sales of NEVs accounted for 40 per cent of all automobile sales.[140]
Domestically controlled and operated energy saving vehicle and NEV supply chain by 2025.	Partly achieved: While much of China's automotive supply chain is localised, chips remain a critical dependency, with China's automotive producers using more than 90 per cent foreign chips.[141]
80 per cent domestic NEV market share controlled by domestic brands by 2025.	Achieved: Domestic NEV manufacturers held nearly 90 per cent market share in the first half of 2024.[142]

Like other MIC2025 technologies with high success rates, China's NEV sector has flourished around a near complete, intentionally constructed domestic value chain that includes access to raw materials, batteries and other key components.

China has managed to dismantle Japanese and South Korean dominance in NEV batteries through both clever engineering, made possible by direct subsidies, and favourable market conditions, made possible by indirect subsidies. One Chinese company—Cotemporary Amperex Technology Co Limited (CATL)—now leads in global EV battery manufacturing.[143] While CATL continues to receive the most subsidies of any firm in China,[144] efforts to ensure its success went beyond direct subsidies. For example, a customer purchase incentive for NEVs was tied to the origin of the vehicle's battery, with only vehicles with Chinese batteries eligible for central government subsidies, compelling original equipment manufacturers (OEMs) to work with Chinese battery manufacturers to get Chinese battery technology into their vehicles.[145] Characteristic of other MIC2025 sectors, China did not just subsidise individual companies, but coordinated the creation of favourable conditions across the entire value chain to ensure domestic success.

Although inexpensive NEVs have a potential environmental benefit, the way in which China's NEV boom has come about has contributed to defensive actions being taken by other markets, with the US banning most Chinese cars and trucks from being sold in its market from 2027.[146] In October 2023, in the face of a rapid rise in Chinese EV exports to the EU, the European Commission launched an anti-subsidy investigation into battery electric vehicles (BEVs) imported into the EU from China, including those of foreign brands.[147] The year-long process resulted in the EU imposing definitive countervailing duties on BEVs imported from China in October 2024, despite extensive negotiations with China to find an alternative solution.[148]

Unlike other MIC2025 sectors, most NEV purchase decisions are primarily made by individual consumers, however public and government procurement processes still play a role in the sector. For example, commercial

140 *China's NEV sales account for 40% of total automobile sales in first 11 months of 2024: industry data, Global Times*, 11th December 2024, viewed 22nd January 2025, <https://www.globaltimes.cn/page/202412/1324828.shtml>

141 Chen, W, *China struggles to build car chip supply chain to break free of heavy reliance on imports, South China Morning Post,* 1st January 2025, viewed 22nd January 2025, <https://www.scmp.com/tech/tech-war/article/3292988/china-struggles-build-car-chip-supply-chain-break-free-heavy-reliance-imports>

142 Chun, TA, *Fuel for Thought: Electrification in China — On Track but Challenging*, S&P Global, 29th August 2024, viewed 22nd January 2025, <https://www.spglobal.com/mobility/en/research-analysis/fuel-for-thought-electric-vehicle-adoption-trends-china.html>

143 CATL tops global EV battery market for the seven consecutive year, CATL, 24th February 2024, viewed 5th February 2025, <https://www.catl.com/en/news/6217.html>

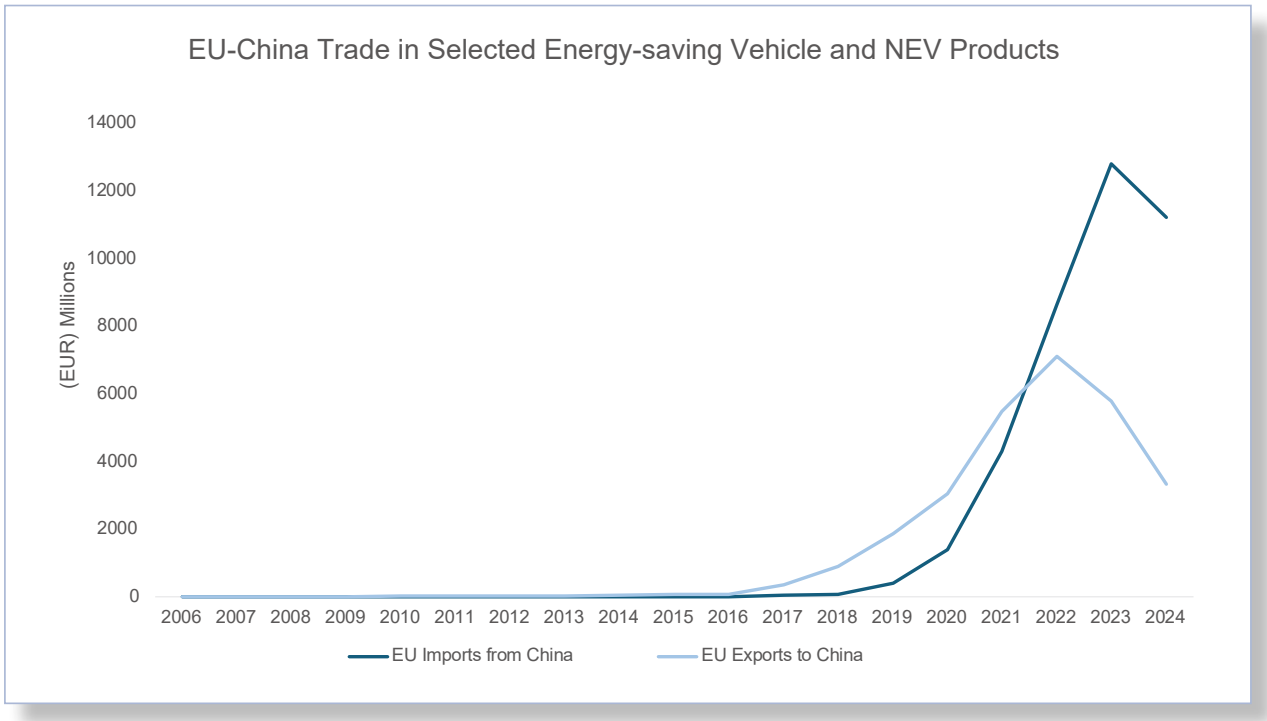
144 Kawase, K, *CATL reigns as China's top subsidy recipient with 35% jump in first half, Nikkei Asia*, 26th September 2024, viewed 5th February 2025, <https://asia.nikkei.com/Business/China-tech/CATL-reigns-as-China-s-top-subsidy-recipient-with-35-jump-in-first-half>

145 *China scraps white list of domestic auto battery suppliers, CGTN,* 25th June 2019, viewed 3rd March 2025, <https://news.cgtn.com/news/2019-06-25/China-scraps-white-list-of-domestic-auto-battery-suppliers-HO26IZLsWI/share_amp.html>

146 Shepardson, D, *Biden administration finalizes US crackdown on Chinese vehicles, Reuters*, 14th January 2025, viewed 22nd January 2025,<https://www.reuters.com/business/autos-transportation/biden-administration-finalizes-us-crackdown-chinese-vehicles-2025-01-14/>

147 *Commission launches investigation on subsidised electric cars from China,* European Commission, 4th October 2023, viewed 22nd January 2025,<https://ec.europa.eu/commission/presscorner/detail/en/ip_23_4752>

148 *EU imposes duties on unfairly subsidised electric vehicles from China while discussions on price undertakings continue*, European Commission, 29th October 2024, viewed 22nd January 2025, <https://ec.europa.eu/commission/presscorner/detail/en/ip_24_5589>



Source: Eurostat
See page 45 for selected CN codes

vehicle manufacturers remain heavily exposed to procurement, with members in some market segments—namely vehicle types only used by public customers—experiencing a complete loss of business due to procurement access barriers. For passenger NEV OEMs, however, the ability to win over consumers with their product and brand remains the primary factor determining their success, a rarity among MIC2025 sectors.

Members across different sectors consistently report that individual consumers are less likely to consider political factors in purchasing decisions than procurement mechanisms. European automotive companies have also localised onboard technology, such as navigation systems, in China-produced vehicles through local partners, something aimed at meeting local consumer preferences but with the added advantage of reducing potential security concerns.

While China's automotive sector has historically been restrictive, with forced JVs required to produce vehicles in China,[149] there are now relatively few market access barriers left, leaving European automotive manufacturers to compete on a more level playing field than companies in most other MIC2025 sectors. This is not necessarily, however, indicative of the desire to create a free and open market, but rather reflects the fact that industrial policy promoting NEV technology, while riddled with inefficiencies, has created domestic firms successful enough to render market access barriers increasingly unnecessary.

However, a similar story is playing out with intelligent connected vehicles (ICVs), which is a classification that China uses for vehicles with autonomous driving capabilities.[150] China has created a regulatory framework, based on pilot initiatives, that so far has limited access to autonomous vehicle testing to domestically produced vehicles. This means that when autonomous driving is legalised on more public roads, the accompanying regulatory framework will have been designed primarily around the needs of domestic competitors, based

149 *How Much Do China's Joint Venture Requirements Promote Knowledge Transfers to Domestic Firms?,* Stanford Center on China's Economy and Institutions, 21st March 2024, viewed 5th February 2025, <https://research.hktdc.com/en/article/MTY0NjgxMjQ1NQ>

150 The term ICV sometimes refers to vehicles with connectivity features that may or may not include autonomous driving, but China requires vehicles to have autonomous driving capabilities to be classified as ICVs. *Notice on the Pilot Work on Access and On-road Passage of Intelligent Connected Vehicles*, Ministry of Industry and Information Technology, 17th November 2023, viewed 14th May 2024, <https://www.gov.cn/zhengce/zhengceku/202311/content_6915788.htm>

on trials with little to no participation of FIEs, many of whom are developing their autonomous driving technology overseas. Even if ICV market access restrictions are eliminated in the long term, the damage to FIE competitiveness caused by today's restrictions will likely be significant.

Electrical power equipment

Since the launch of MIC2025, China has made significant gains in electrical power generation technology, leading to global dominance in solar and wind.

Chinese firms have more than 80 per cent share of the global solar panel market, and a 60 per cent share of the global wind turbine market.[151&152] These figures are only possible because China's domestic market accounts for the majority of new wind and solar installations globally.[153&154] In other words, market access barriers that have ensured Chinese firms control the domestic market have had the added bonus of helping them to win the bulk of global market share as well. FIEs operating in these sectors report market access barriers such as arbitrary changes in regulations that specifically prevent them from selling their products and discrimination in public procurement. The scale at which Chinese electrical power equipment producers operate has also led to efficiency gains, which means that even FIEs in the sector are now reliant on Chinese components or materials for their equipment in some cases.

Coordinated development in the domestic market has helped push Chinese firms in the electrical power equipment sector to the top of the technology frontier, achieving many of MIC2025's key targets.

MIC2025 selected electrical power equipment targets

2025 Target	Progress
Produce a 2,000 megawatt electrical (MWe) nuclear reactor	Not achieved: China's self-developed Hualong One nuclear reactor has a maximum capacity of 1,200 MWe.[155] The world's highest capacity nuclear reactor, while operating in China, was developed by a foreign company and has a capacity of 1,750 MWe.[156]
Produce a 10 MWe wind turbine	Achieved: A Chinese-developed 16 MWe wind turbine began operation in 2023, making it the largest deployed wind turbine by capacity in the world.[157]
Produce a 50–150 MWe single solar thermal power tower	Achieved: In late 2024, a solar tower with 110 MWe in solar thermal capacity was completed in Gansu Province.[158]

However, similar to other sectors in which MIC2025 targets have been successfully achieved, the result is an oversaturated domestic market, which has encouraged companies to turn to exports. While this provides some relief for excess production domestically, it sends market distortions abroad. For example, China's excess

151 *Solar PV Global Supply Chains – Executive Summary,* International Energy Agency, viewed 22nd January 2025, <https://www.iea.org/reports/solar-pv-global-supply-chains/executive-summary>

152 *China leads global wind turbine manufacturers' market share in 2023,* Wood Mackenzie, 1st May 2024, viewed 22nd January 2025, <https://www.woodmac.com/press-releases/2024-press-releases/global-wind-oem-marketshare/>

153 Hilton, I, *How China Became the World's Leader on Renewable Energy*, Yale Environment 360, 13th March 2024, viewed 22nd January 2025, <https://e360.yale.edu/features/china-renewable-energy>

154 *China's wind power installed capacity sees expansion amid green transition push, Xinhua,* 20th December 2024, viewed 22nd January 2025, <https://english.www.gov.cn/archive/statistics/202412/20/content_WS67657149c6d0868f4e8ee2bf.html>

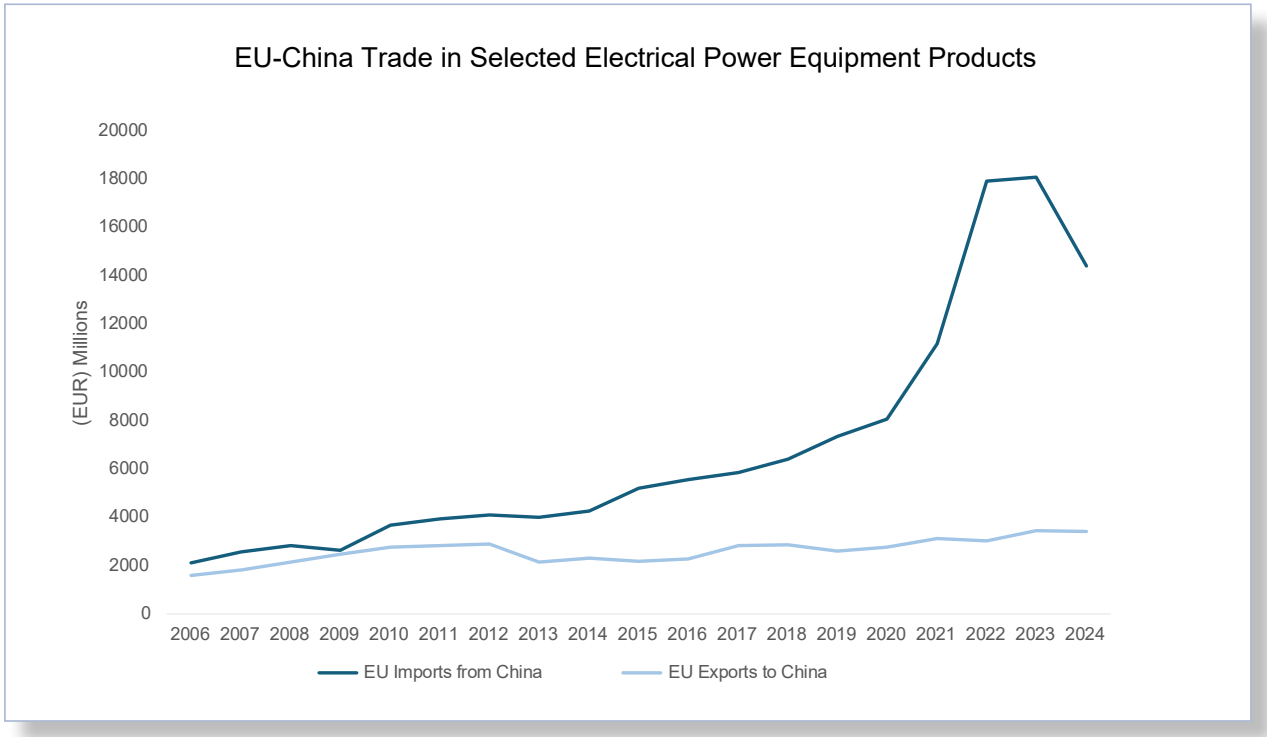
155 *World's first Hualong One reactor put into commercial operation*, China Atomic Energy Authority, 30th January 2021, viewed 22nd January 2025, <https://www.caea.gov.cn/english/n6759361/n6759362/c6811183/content.html>

156 *Taishan 1*, World Nuclear Association, viewed 22nd January 2025, <https://world-nuclear.org/nuclear-reactor-database/details/taishan-1>

157 *16 MW offshore wind turbine begins operations off east China coast, Xinhua*, 19th July 2023, viewed 22nd January 2025, <https://english.news.cn/20230719/d7fb206fc163496a9f05e00047db71db/c.html>

158 Wu, C, and Gu, J, *The largest tower-type photovoltaic power generation project in China with the largest single-unit scale is connected to the grid at full capacity, Technology Daily*, 1st December 2024, viewed 22nd January 2025, <https://www.stdaily.com/web/gdxw/2024-12/01/content_267042.html>

production of solar equipment—which is banned from the US—has pushed the EU's own solar industry to the brink of collapse.[159] And yet while cheaper solar energy is beneficial to reducing global emissions, there is no guarantee that China's solar equipment will remain cheap in the long run, meaning that the EU could become dependent on imported Chinese solar equipment without knowing if it will remain affordable or even accessible in the future.



Source: Eurostat
See page 45 for selected CN codes

The sharp increase in electrical power equipment exports to the EU from China beginning in 2021, driven largely by solar panels, is indicative of the volumes at play. The economics of wind turbine exports are slightly different, given the costs and logistics associated with shipping oversized components and the investment necessary in destination markets to facilitate maintenance.

Similar to other emerging technologies, like NEVs and drones, China has benefited from the fact that wind and solar generation at scale still rely on relatively young technologies. By comparison, nuclear power generation—which involves a high level of complexity with significant health and safety consequences if things go wrong—has proved tougher to gain global competitiveness in.

Agricultural machinery and equipment

Agricultural machinery and equipment is directly tied to one of China's core foreign dependencies: food. China's food supply is reliant on imports, and a relatively low proportion of arable land to population means that advanced agricultural technologies are essential to decreasing this dependence.[160] While domestically produced agricultural equipment already held 90 per cent of China's domestic market share in 2015, this was

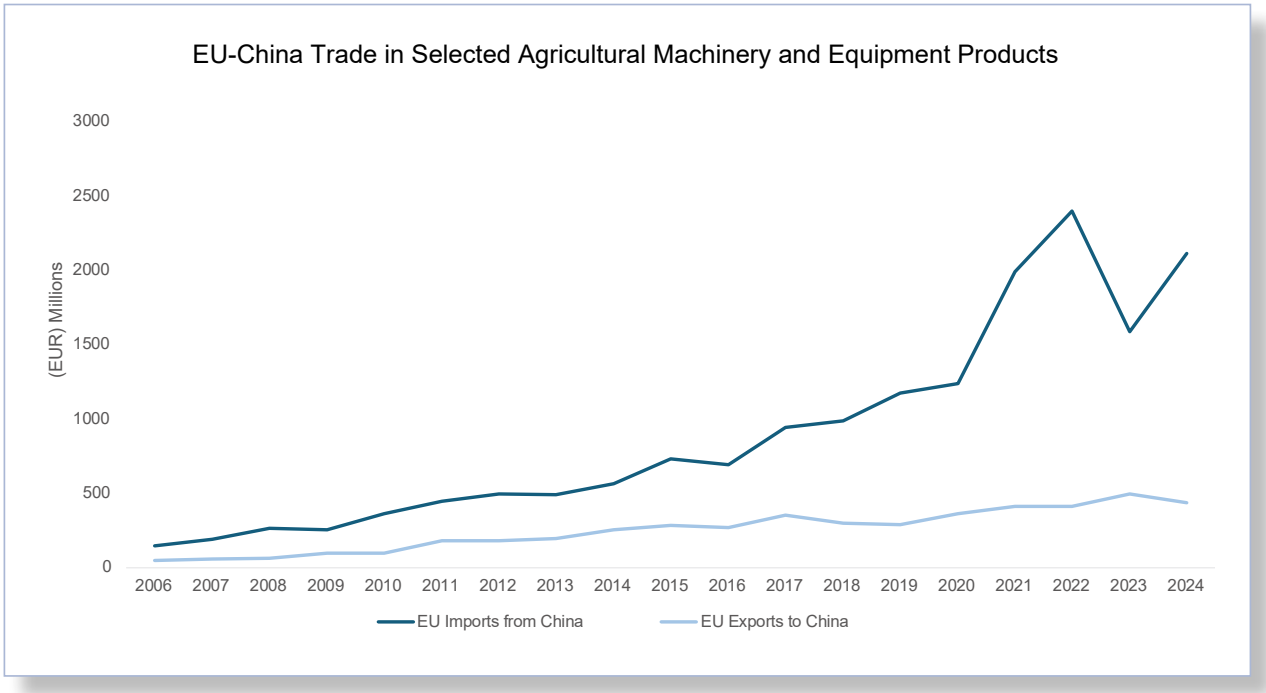
159 Deconinck, C, *EU solar panel market showing signs of collapse, Brussels Signal,* 5th March 2024, viewed 5th February 2025, <https://brusselssignal.eu/2024/03/eu-solar-panel-market-showing-signs-of-collapse/>

160 Liu, Z, *China Increasingly Relies on Imported Food. That's a Problem.*, Council on Foreign Relations, 25th January 2023, viewed 22nd January 2025, <https://www.cfr.org/article/china-increasingly-relies-imported-food-thats-problem>

almost exclusively in the low-to-medium technology segment of the market.[161] This differentiates the agricultural machinery and equipment sector from other MIC2025 sectors, as FIEs had less market share to lose; and MIC2025's semi-official target only called for a modest five per cent increase in market share by 2025.

The main MIC2025 ambition in this sector was therefore not based around capturing more market share, but rather ensuring that the domestic companies that already had substantial market share could elevate the level of their technology in step with China's need to modernise its agricultural system, without relying on FIEs as a bridge. This has proved challenging. For example, in tractor technology, even at the low end of the market, China was not competitive in the export market, with India leading in many developing countries.[162]

China has also seen mixed results in agricultural modernisation. MIC2025's semi-official roadmap called for China to achieve a mechanisation rate of about 80 per cent for the planting, growing and harvesting of key crops by 2025. As of 2024, China's mechanisation rate for harvesting all crops was 74 per cent, but the key crops of wheat, corn and rice surpassed the target at 97, 90 and 86 per cent respectively. Mechanisation rates for planting were lower, with rice at over 60 per cent.[163] Given the decentralised nature of agriculture, this is not necessarily due to advanced equipment availability, as there are also other factors at play, such as the economic viability of farmers purchasing equipment.



Source: Eurostat
See page 45 for selected CN codes

Biopharmaceuticals and high-performance medical devices

Biopharmaceuticals

The pharmaceutical industry development plan of the 14th Five-year Plan (Pharma14FYP) set a goal of 10 per cent growth in industry-wide R&D investment by 2025. By the end of 2023, that figure already exceeded 20 per

161 *Technology Roadmap for Key Areas of Made in China 2025,* National Advisory Committee on Strategies for Building a Strong Manufacturing Nation, October 2015, viewed 22nd January 2025, <https://www.cae.cn/cae/html/files/2015-10/29/20151029105822561730637.pdf>

162 Shen, W, *Why Indian tractors sell better than Chinese ones in Africa?, Global Times*, 20th January 2019, viewed 22nd January 2025, <https://www.globaltimes.cn/page/201901/1136378.shtml>

163 *Agricultural machinery facilitates farming activities across China, People's Daily,* 22nd July 2024, viewed 22nd January 2025, <http://en.people.cn/n3/2024/0722/c90000-20196342.html>

cent,[164] suggesting that China has comfortably surpassed its basic targets.

It is difficult to assess the technical success of some of the more specific targets in the biopharmaceutical field, partly due to transparency issues but largely due to the fact that the safety and effectiveness of pharmaceutical products is established over long periods of time, and many of China's domestic alternatives are relatively new. One well known example of this is China's COVID-19 vaccines, specifically mentioned in the Pharma14FYP. Although China was successful in getting three COVID-19 vaccines approved for emergency use by the World Health Organization,[165] many of the countries that adopted them reported mixed results, and China's reluctance to release extensive clinical data early on contributed to greater uncertainty.[166] Within its own borders, China still has not approved a single foreign COVID-19 vaccine. Instead, it finally approved a homegrown mRNA Covid vaccine in March 2023, based on the same technology used for the most effective foreign vaccines.[167] The unwillingness to approve foreign vaccines during the COVID-19 pandemic is indicative of the lengths that China is willing to go in the pursuit of self-reliance.

European companies in the biopharmaceutical sector have become increasingly uncompetitive on price. Chamber members report that Chinese competitors operate on razor-thin margins in the hope that they will win contracts through the value-based procurement (VBP) system, which controls purchases made by most public hospitals. While European biopharmaceutical companies have a reputation for quality, some with products that have been on the market in China for decades, it can be difficult to determine whether Chinese substitutes are inferior in quality, meaning that equivalent products on paper will win bids based on price. Some top-ranked hospitals still find ways to purchase European brands based on reputation and quality, but the VBP system has made it increasingly difficult for this to happen.

There are exceptions. Some products require complicated production processes that still have not been matched by an economically viable domestic Chinese alternative, meaning that European companies still offer the lowest prices. However, the best strategy for most FIEs appears to be to develop new drugs on the assumption that the latest breakthroughs will still provide a meaningful slice of market share, at least until other companies catch up or such advances become outdated.

While it is difficult to understand the internal dynamics of Chinese biopharmaceutical firms, Chamber members interviewed for this report suggested that it is likely that government subsidies are an important factor in their profitability. While European biopharmaceutical producers in China typically receive some form of assistance from local governments in return for opening manufacturing facilities, they do not rely on these subsidies to turn a profit.

China's trade deficit to the EU in biopharmaceutical products is indicative of the lead the EU maintains in the most advanced products, but a sharp drop in EU exports to China in 2024 suggests that China's self-reliance ambitions are beginning to have an impact. While imports from China to the EU remain at a minimum, in the long-term EU exports to China are likely to continue declining.

164 *China's pharmaceutical industry's R&D investment has increased by over 20% annually since the 14th Five-Year Plan from the Ministry of Information and Technology, China News*, 25th October 2023, viewed 22nd January 2025, <http://tradeinservices.mofcom.gov.cn/article/shidian/lxhy/202310/157567.html>

165 *12 Vaccines Granted Emergency Use Listing (EUL) by WHO*, World Health Organization, viewed 22nd January 2025, <https://covid19.trackvaccines.org/agency/who/>

166 Wee, S, *They Relied on Chinese Vaccines. Now They're Battling Outbreaks., The New York Times*, 22nd June 2021, viewed 22nd January 2025, <https://www.nytimes.com/2021/06/22/business/economy/china-vaccines-covid-outbreak.html>

167 *China approves first home-grown mRNA Covid vaccine, BBC*, 22nd March 2023, viewed 22nd January 2025, <https://www.bbc.com/news/world-asia-china-65036474>

Source: Eurostat
See page 45 for selected CN codes

Medical devices

China's capability in medical devices has advanced significantly since the launch of MIC2025, with very few technologies that do not have a viable domestic alternative, at least on paper. This leaves European companies to compete on quality and reputation. However, as with biopharmaceuticals, procurement mechanisms do not adequately account for quality differences. For example, Chinese producers of magnetic resonance imaging (MRI) machines use efficiency statistics that are based on a lower quality of scan, meaning they can produce performance statements that are misleading and likely to confuse decision-makers, many of whom are not qualified medical experts.

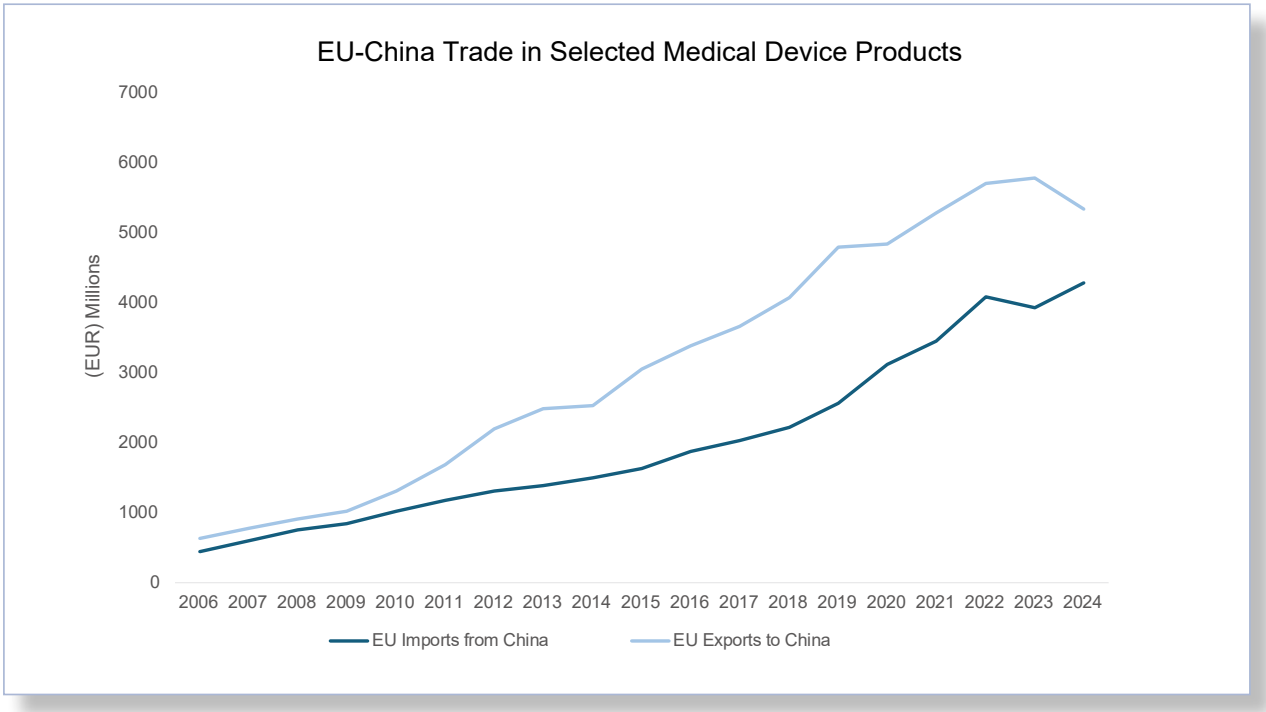
Much like the pharmaceutical sector, medical device companies have suffered due to the VBP system, which pushes costs down to a point that many European companies are no longer able to compete. However, at the premium end of the market, European companies still maintain a competitive edge. Many medical devices, like pharmaceuticals and commercial passenger jets, rely on long development periods followed by decades of adoption to establish comprehensive safety records. By this metric, Chinese domestic alternatives simply require time to truly catch up, giving foreign players at least some competitive edge.

Increasing numbers of European medical device manufacturers have localised production, hoping that their products will qualify for 'made in China' status. However, a lack of clarity over what constitutes 'locally made' has increased uncertainty over the long-term outlook, with many companies making investments today based on assumptions about future policy developments. In a sector that is almost entirely reliant on public procurement, this is a big risk.

In 2024, the European Commission launched an investigation into the public procurement market for medical devices in China which ultimately concluded that there is "clear evidence of China limiting the access of

EU medical device producers to its government contracts in an unfair and discriminatory way."[168] Although specific measures have not yet been announced, Chinese medical device producers could be excluded from EU procurement. While the EU's intention would likely be to compel China into adopting a fairer procurement framework domestically, measures that are taken without the careful consultation of industry could have the unintended consequence of permanently shutting out European medical device producers from the limited procurement access they have left in China.

EU-China trade in medical devices illustrates what is at stake, with both the EU and China recording relatively consistent growth in medical device exports to each other's markets, despite MIC2025's launch. However, a slight dip in EU exports to China in 2024 suggests that China's self-reliance drive may be starting to impact trade.



Source: Eurostat
See page 45 for selected CN codes

168 *Commission to assess next steps for tackling discrimination in China's public procurement market for medical devices,* European Commission, 14th January 2025, viewed 5th February 2025, <https://ec.europa.eu/commission/presscorner/detail/en/ip_25_252>

‘New productive forces’: a re-packaging of MIC2025?

Taken individually, none of MIC2025’s sector-specific plans were a silver bullet for realising China’s self-reliance ambitions. Even in the sectors in which Chinese companies have enjoyed the most success since 2015, such as NEVs, MIC2025 did not fully achieve its ambitious targets. Dependencies, from automobile chips to aeroplane engines, continue to stand in the way of full self-sufficiency. FIEs dominate the high end of many sectors and in parts of some sectors—like aerospace and aviation, next generation IT and medical devices—FIEs are still integral bridges that allow China to develop products that would otherwise be decades away. However, there are counter examples of sectors, like wind and solar, in which many FIEs have been forced to exit the China market entirely and increasingly face fierce Chinese competitors in the rest of the world.

This indicates that while the MIC2025 plan provided a useful roadmap, the industries that saw the most success did so not only because of industrial policy, but also because of a confluence of favourable inherent conditions. In some sectors, like wind and solar, the Chinese market simply grew to take up the majority of the world’s market share,[169&170] giving Chinese firms the ability to rapidly build scale and, aided by advantages over FIEs domestically, gain a leg up in becoming global leaders. In other cases, Chinese firms, with a helpful push from industrial policy, jumped on emerging technologies, like NEVs and drones, at the right time. In these sectors, subsidies and coordinated policy support allowed Chinese companies to move faster, take more risks and ultimately develop more competitive products than many of their foreign counterparts.

It remains to be seen if MIC2025’s coordinated industrial policy framework can achieve similar success in industries that do not have any of these inherent conditions, like commercial passenger jets. For this reason, sectoral plans based on MIC2025 core principles continue to be tweaked, updated and reinforced over time, supporting the idea that MIC2025 was less a master plan and more a working draft.

In some sectors, despite heavy subsidisation and policy support, China is still behind on its goals. This highlights one of MIC2025’s main flaws: the inefficiency of subsidies. Pumping money into a sector does guarantee progress. For example, one study found that MIC2025 firms that received subsidies related to the initiative did not exhibit an increase in productivity, profitability or patents.[171] Furthermore, even in MIC2025 sectors in which China has exceeded expectations—such as NEVs—it will be difficult to recoup the value of years of subsidies. One conservative estimate values industrial policy spending on China’s EV sector, not including batteries, at United States dollar 230.1 billion between 2009 and 2023, yet today the majority of Chinese NEV makers continue to lose money.[172]

Some technological hurdles may not be possible to solve in just a few years without tapping into existing expertise, much of which is abroad. For example, China’s semiconductor industry, despite extensive subsidisation, is not guaranteed to outpace the group of countries currently working together to produce the world’s most advanced chips. Even if China were to take the lead in all chip technologies, subsidies can never guarantee that it will stay in the lead. The only way to guarantee that China has access to the best chips is to both take part in and facilitate the continuation of a global semiconductor ecosystem, something that China has already lost access to, in part due to its approach to industrial policy. In essence, while subsidies may not do

169 Hilton, I, *How China Became the World’s Leader on Renewable Energy,* Yale Environment 360, 13th March 2024, viewed 22nd January 2025, <https://e360.yale.edu/features/china-renewable-energy>

170 *China’s wind power installed capacity sees expansion amid green transition push, Xinhua,* 20th December 2024, viewed 22nd January 2025, <https://english.www.gov.cn/archive/statistics/202412/20/content_WS67657149c6d0868f4e8ee2bf.html>

171 Lee, B, and Li, G, *The actual effect of China’s “Made in China 2025” initiative may have been overestimated*, VoxEU, 11th August 2023, viewed 22nd January 2025, <https://cepr.org/voxeu/columns/actual-effect-chinas-made-china-2025-initiative-may-have-been-overestimated>

172 Kennedy, S, *The Chinese EV Dilemma: Subsidized Yet Striking*, Center for Strategic and International Studies, 20th June 2024, viewed 18th February 2025, <https://www.csis.org/blogs/trustee-china-hand/chinese-ev-dilemma-subsidized-yet-striking>

much to spur innovation, they do hurt other firms—and even entire industries—and disrupt global markets.

This is further evidenced by the type of competitors that most FIEs in MIC2025 sectors face. They are not necessarily producing an equivalent product, but rather an alternative product that substitutes the FIE's product for a lower price, suggesting that instead of innovating to compete, these firms are using their subsidies primarily to take market share.

A major, negative side effect of over subsidisation is overcrowding. In most MIC2025 sectors, only a few domestic firms emerge as genuinely competitive and economically sustainable, meaning that, early on, firms sell products at rock-bottom prices in the hope of surviving and emerging as a dominant player. This behaviour is actively encouraged by policies in some industries, as can be seen with VBP of pharmaceuticals. Ultimately, these conditions exacerbate overcapacity and result in massive inefficiencies.

From its inception, MIC2025 had ambitions beyond the first 10 years. It aimed to put China on track to become a fully developed nation by 2049. Now, with fewer than 25 years left, its basic principles remain engrained in Chinese policymaking. The question then is, given some of the more negative side effects of MIC2025, will the drafters of future policy persevere with the same methods?

'New productive forces' is in many ways a longer-term vision of the same ideas, focussed on achieving self-reliance in core technologies.[173] The Resolution of the 2024 Third Plenum went even further, stating China's intention of achieving "self-sufficiency in scientific and technological infrastructure."[174] MIC2025 can therefore be thought of as a pilot scheme that provides the framework for industries identified as being pivotal to China's—and the world's—future economy; whereas 'new productive forces' is a broader, less prescriptive policy direction for meeting China's 2049 goals. Where 'new productive forces' really differs from MIC2025, is that its broadness and lack of specificity encourages *all* Chinese manufacturers—regardless of sector—to aim for a high level of innovation, quality and productivity. As a concept, 'new productive forces" has drawn less scrutiny from other countries and regions that have come to view Chinese industrial policy as inherently loaded against their own companies, and even as a threat to their overall economic security.

One example of the kind of policies within the framework of 'new productive forces' is the 'future industries' initiative, with its ideas and targeted industries closely mirroring those contained within MIC2025. Launched in 2024, it contains development proposals for future manufacturing, future IT, future materials, future energy, future space and future health.[175]

A crucial element of the equation is 'dual circulation', which underpins China's overall policy framework. While 'new productive forces' aims to ensure that China has access to the right technology, 'dual circulation' solidifies the desire to have a self-reliant domestic economy, with the input of international companies as an *optional accessory* to this. Together, the two policies represent China's ambition to achieve full self-sufficiency in areas identified as strategically important to maintaining economic security.

Supply chain disruptions resulting from the COVID-19 pandemic, sanctions on Russia and the re-election of Donald Trump as US president are all factors that have further strengthened China's resolve to pursue self-reliance and self-sufficiency, while also retroactively justifying the fact that the country had been moving in this

173 Introduced in September 2023, the "term refers to *new productive forces* that emerge from continuous breakthroughs in science and technology, driving strategic future and emerging industries that may introduce disruptive technological advancements in an era of intelligent information." *Explainer: What do "new productive forces" mean?, Xinhua*, 21st February 2024, viewed 6th February 2025, <https://english.news.cn/20240221/3e0d1b79a39f4e6c89724049558e1082/c.html>

174 *Resolution of the CPC Central Committee on further deepening reform comprehensively to advance Chinese modernisation, Xinhua,* 21st July 2024, viewed 25th July 2024, <https://english.news.cn/20240721/342df6c6e05c4e1a9ce4f6e3b933007b/c.html>

175 *Opinions of implementation on the promotion of future industrial innovation and development from the Ministry of Industry and Information & Technology and seven other departments,* Ministry of Information and Technology, 31st January 2024, viewed 25th July 2024, <https://zwgk.mct.gov.cn/zfxxgkml/kjjy/202401/t20240131_951102.html>

direction long before any of these events took place. China will therefore continue its use of industrial policy.

Some FIEs have become just one tool in the box

Foreign companies have been instrumental in enabling China to achieve its MIC2025 goals. From direct dependencies, like suppliers of the C919,[176] to the early entry of global automotive companies that made China's automotive market what it is today,[177] China would not have been able to achieve so much so fast without FIE support.

This does not mean, however, that the involvement of foreign companies is part of China's long-term plan. A good example of this dynamic can be seen in the high-speed rail sector, in which foreign companies were pushed out of the market after China had absorbed their technology and achieved a high level of self-reliance.[178]

Even in sectors in which China has achieved high levels of self-reliance, the ultimate goal appears to be to ensure related goods are 'made in China'. This was made clear in late 2024, when the Ministry of Finance released draft standards that includes the requirement for key components to be produced domestically in order to qualify for a 20 per cent price benefit for 'made in China' products when making government procurement decisions, even though the buyer ultimately pays the full price.[179]

This constitutes what is essentially import substitution. By providing an incentive not available for imported products or products with imported key components, China is compelling FIEs to produce more of their technology domestically or lose their ability to compete in the Chinese government procurement market.

Many FIEs in procurement-heavy sectors have anticipated a regulation defining what constitutes a 'made in China product' for years, and have been onshoring supply chains and R&D in order to increase their chances of qualifying. However, the inclusion of the 20 per cent price benefit for all domestic products was surprising as it directly impacts FIEs' competitiveness.

The message is clear: China wants the FIEs that it deems necessary for upgrading its own domestic industry to onshore as much as possible, decreasing its external foreign dependencies to the greatest extent.

'Dual circulation' makes it clear that self-reliance comes before foreign trade considerations. In the long term, foreign companies should therefore make plans to mitigate a potentially substantial loss of market share in China. For companies in sensitive sectors, this may happen suddenly as China bridges the technology gap and moves to the frontier. Foreign companies in non-sensitive sectors will likely continue to be accepted, but the disadvantage of playing on an unlevel playing field will continue to impact their competitiveness. Furthermore, as the boundaries of 'national security' continue to expand, what constitutes 'sensitive' will likely expand as well. No FIE can therefore be certain of its future in the China market.

However, while achieving self-sufficiency in certain strategic technologies may appear desirable to Chinese policymakers, the results may not bear this out. With less foreign investment and reduced access to important markets like the US and EU, China risks becoming increasingly isolated. This could come at a great cost to the

176 Kennedy, S, *China's COMAC: An Aerospace Minor Leaguer*, Chinese Business & Economics, 7th December 2020, viewed 22nd January 2025, <https://csis-website-prod.s3.amazonaws.com/s3fs-public/201204_Kennedy_COMAC.pdf>

177 *How Much Do China's Joint Venture Requirements Promote Knowledge Transfers to Domestic Firms?*, Stanford Center on China's Economy and Institutions, 21st March 2024, viewed 5th February 2025, <https://research.hktdc.com/en/article/MTY0NjgxMjQ1NQ>

178 *The importance of China's high-speed tech transfer policy,* Railway Technology, 1st March 2017, viewed 5th February 2025, <https://www.railway-technology.com/features/featurethe-importance-of-chinas-high-speed-tech-transfer-policy-5748075/>

179 *Notice of Public Consultation on the Notice on Matters Relating to National Product Standards and Implementation Policies in the Field of Government Procurement (Exposure Draft)*, Ministry of Finance, 5th December 2024, viewed 12th December 2024, <https://www.ccgp.gov.cn/zcdt/202412/t20241205_23799858.htm>

Chinese economy in the long term, resulting in increased trade tensions, which in turn will make it more difficult for China to export the very technologies that it is working to develop and dominate.

The EU has also already shown that it will take action to correct distortions in its own market, while other countries, including the US, have shown willingness to block certain Chinese imports entirely.[180] As Chinese policymakers focus on the perceived benefits of self-sufficiency, they would be well advised to consider these potential costs as well.

FIEs have been instrumental in China's rise as a manufacturing superpower, bringing expertise, technology and global customers to the country's market. While some have benefited under MIC2025, contributing to China's impressive advances by bridging technological gaps, others have lost access to entire industry segments or even exited the market entirely. 'New productive forces', at least initially, appears to be a continuation of MIC2025 principles, but its relatively open-ended framework leaves room for improvements to be made. This presents an opportunity for China to optimise industrial policy, take a more balanced approach to self-reliance and ensure that key industries remain fully open to foreign competition. Doing so would help position the country as both a reliable trading partner and a stable and predictable investment destination in the long term.

180 The EU's most closely followed trade defence action against China may be its recently concluded EV probe, but it has taken action in other MIC2025 sectors, like rail and shipbuilding as well. Globally, the growth in exports of Chinese EVs serves as a useful example of the kinds of trade defence actions China can expect. The US will ban the sale of most Chinese vehicles from 2027. Other countries, including Turkey and Canada, have also placed tariffs on Chinese EVs. *EU imposes duties on unfairly subsidised electric vehicles from China while discussions on price undertakings continue*, European Commission, 29th October 2024, viewed 22nd January 2025, <https://ec.europa.eu/commission/presscorner/detail/en/ip_24_5589>; *Commission opens first in-depth investigation under the Foreign Subsidies Regulation*, European Commission, 16th February 2024, viewed 22nd January 2025, <https://ec.europa.eu/commission/presscorner/detail/en/ip_24_887>; *Commission counters unfair imports of shipbuilding components from Türkiye and China*, European Commission, 11th January 2024, viewed 22nd January 2025, <https://policy.trade.ec.europa.eu/news/commission-counters-unfair-imports-shipbuilding-components-turkiye-and-china-2024-01-11_en>; Shepardson, D, *Biden administration finalizes US crackdown on Chinese vehicles, Reuters*, 14th January 2025, viewed 22nd January 2025,<https://www.reuters.com/business/autos-transportation/biden-administration-finalizes-us-crackdown-chinese-vehicles-2025-01-14/>; *China seeks WTO panel over Turkey's restrictions on electric vehicles: MOFCOM, Global Times*, 17th January 2025, viewed 10th February 2025, <https://www.globaltimes.cn/page/202501/1327067.shtml>; *Canada's move to levy high tariffs on Chinese EVs, steel and aluminum to damage bilateral relations: MOFCOM, Global Times*, 27th August 2024, viewed 10th February 2025, <https://www.globaltimes.cn/page/202408/1318723.shtml>

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Recommendations

Recommendations for European companies operating in strategic sectors in China

- Develop long-term mitigation plans based on the scenario that certain product categories become less viable for FIEs, especially in sectors dependent on public and government procurement.
  - Plan for worst-case scenarios, such as significant loss of market access.
- Take a balanced approach when planning future investments that accounts for potential incentives for FIEs, such as promises to provide those that produce locally with national treatment in government procurement.
- Communicate clearly the long-term market access concerns in China's strategic sectors to EU and Chinese authorities, as well as headquarters.
- Leverage the European Chamber to communicate with authorities to raise challenges to European businesses operating in China and to make constructive recommendations.
- Focus on the big picture and continue to advocate for regulatory change that meaningfully improves the business environment.
- Prepare for more Chinese competitors to enter the EU as well as third-country markets, if they have not already.
  - Invest appropriately in innovation to compete with Chinese companies that develop comparable or superior technology.
  - Step-up involvement in standardisation activities both in China and globally.

Recommendations for the EU

- Emphasise the importance of resolving core issues encountered by European companies in China, such as market access barriers and unequal treatment, during every engagement with Chinese authorities.
- Balance protecting core EU industries from irreversible harm against maintaining a fair and open internal market.
- Act early to mitigate market distortions caused by imports from China, while actively communicating with Chinese counterparts to ensure that concerns are understood.
- Avoid emulating MIC2025-style industrial policy in Europe.
- Require reciprocal market access.
- Take measured actions in cases where EU companies are not treated on equal terms.
- Limit European dependencies on China by developing bottom-up industrial policy that promotes market competition and innovation in strategic industries, without prescribing technological pathways.
- Continue to pursue a China policy based on the merits of the EU-China relationship alone, which prioritises long-term engagement with China.
- Communicate regularly with industry stakeholders, such as chambers of commerce, to best understand the most appropriate trade defence actions and other tools to be utilised and how they will impact European companies on the ground in China.

Recommendations for China

- Leverage market-orientated reforms that drove China's success over the past three decades, with less use of top-down, state-directed industrial policy.

- Substitute plans to achieve self-sufficiency with a focus on more precise actions that encourage a proportionate level of self-reliance in areas of genuine concern to economic security.
- Prioritise accessing and contributing to global ecosystems to ensure that China remains at the technological forefront while contributing to a globalised economy to the greatest extent possible.
- Rely on a fair, open and transparent market system to attract the best technology to China.
- Develop a market in which FIEs can feel comfortable making long-term investments, free of localisation requirements or fear of losing either market access or the ability to compete.
- Create an environment in which government authorities are open to straightforward, fact-based critical feedback, with a view that this will improve both the business environment and the economy as a whole.
- Ensure that FIEs have equal access to public and government procurement tenders and roll back plans that require key components to be made in China for products to qualify for ‘made in China’ status.
- Avoid increasing EU-China trade imbalances and exacerbating trade tensions through ’made in China’ requirements.
- Recalibrate the ‘dual circulation’ model to ensure that market distortions in China are not externalised.

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Trade Data Methodology

To analyse trade in goods for MIC2025 sectors, the European Chamber identified Combined Nomenclature (CN) codes for related products, which can be found in the table below. These groupings are not exhaustive as they only contain a selection of products from each sector, nor do they always capture the level of technology needed to be considered 'advanced'.

Trade data for these groupings was extracted from Eurostat's DS-059322 - EU trade since 2002 by HS2-4-6 and CN8 dataset. Data for all years reflects the EU's current 27 Member States. No data for the United Kingdom is included in any year. The data also makes no determination about the nationality of the exporter, meaning that a product made by European company in China and exported to the EU will be counted as an EU import from China.

MIC2025 Sector	CN Codes
Advanced rail equipment	85301000, 8601, 8602, 8603, 8604, 8605, 8606, 8607, 8608, 870130
Aerospace and aviation equipment	840710, 84091000, 84111100, 841112, 84112100 ,841122 ,841191, 85437004, 8802, 8805, 8806, 8807, 901420, 40113000
Agricultural machinery and equipment	842111, 84244100, 842449, 84244910, 84244990, 842482, 8432, 8433, 8434, 8436, 87019110, 87019210, 87019310, 87019410, 87019510
Biopharmaceutical products	2937, 29400010, 29400090, 300220, 300290, 300460, 30049000, 38221100, 38221200
Electrical power equipment	8401, 8405, 840681, 840682, 840690, 8410, 841181, 841182, 841199, 850161, 85016120, 85016180, 85016200, 85016300, 85016400, 85017100, 85017200, 85018000, 8502, 8503, 8504, 8535, 8537, 8538, 85414200, 85414300, 902830
Energy-saving vehicles and NEVs	870124, 87024000, 870122, 870123, 870220, 870230, 87034010, 87035000, 87036010, 870370, 87038010, 870460
High-end numerical control machinery and robots	842870, 8456, 84573010, 845811, 845891, 84592100, 84593100, 84594100, 84595100, 84601200, 84602200, 84602300, 84602400, 84603100, 84604010, 84613010, 84614011, 84614031, 84614071, 84621110, 84621910, 84622210, 84622300, 84622400, 84622500, 84622600, 84623210, 84623300, 84624200, 84625100, 84626110, 84626210, 84626310, 84626910, 84629010, 84795000
High-end medical devices	9018, 9022, 9021
Maritime engineering equipment and high-tech maritime vessel manufacturing	84061000, 72165091, 89011010, 89012010, 89013010, 89019010, 89051010, 89052000, 89059010, 848710
Next generation IT	381800, 8473, 8486, 85176100, 85176200, 851771, 85411000, 85412100, 85412900, 8542, 85433040, 85447000, 900110, 90304000, 903082, 903141

Methodology

To understand how the Made in China 2025 plan impacted European companies operating in China, the European Chamber combined member input, through interviews and the BCS2025, with extensive research on China's progress in MIC2025 sectors.

The Chamber invited eligible members—non-individual European Chamber members headquartered in Europe and resident in China—to take part in the BCS2025 over a four-week period during January and February 2025. The survey was conducted in cooperation with Roland Berger. One hundred and ninety respondents indicated that they operated in at least one of the 10 MIC2025 sectors and answered a subset of questions specific to Chinese industrial policy.

For simplicity and consistency, all BCS2025 results are rounded to the nearest whole number. As a result, the percentages contained in some charts displayed in the report may not sum to 100 per cent.

Interviews for this report were conducted in December 2024 and January 2025. Assessments of progress on MIC2025 targets are based on the best available public information at the time of writing, or the assessment of member companies within the applicable sectors.

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Abbreviations

5G	Fifth-generation mobile technology
14FYP	14th Five-year Plan
BEV	Battery electric vehicle
BCS2025	Business Confidence Survey 2025
BRI	Belt and Road Initiative
CATL	Cotemporary Amperex Technology Co Ltd
CRRC	China Railway Rolling Stock Corporation
CN	Combined Nomenclature
COMAC	Commercial Aircraft Corporation of China
DJI	Da Jiang Innovations
EU	European Union
EUR	Euro
EUV	Extreme ultraviolet
EV	Electric vehicle
FIE	Foreign-invested enterprise
FSR	Foreign Subsidy Regulation
GLONASS	Global Navigation Satellite System
GPS	Global Positioning System
ICE	Internal combustion engine
ICV	Intelligent connected vehicle
IT	Information technology
JV	Joint venture
MIC2025	Made in China 2025
MLP	National Medium- and Long-term Programme for Science and Technology Development (2006–2020)
NCSM	National Advisory Committee on Strategies for Building a Strong Manufacturing Nation
NDRC	National Development and Reform Commission
NEV	New energy vehicle
MOFCOM	Ministry of Commerce
MWe	Megawatt electrical
OEM	Original equipment manufacturer
Pharma14FYP	Pharmaceutical industry development plan of the 14th Five-year Plan
R&D	Research and development
SOE	State-owned enterprise
SEI	Strategic Emerging Industries
US	United States
VBP	Value-based procurement
WFOE	Wholly foreign-owned enterprise
WTO	World Trade Organization

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