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‘China shock 2.0’ and Europe’s industrial future

How the EU and UK
can respond to Chinese
technological supremacy

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Summary

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- The advance of industrial technology in China over the past few decades is one of the world's most consequential trends. The resulting ability of Chinese companies to manufacture high-tech products at low cost is disrupting some of the West's leading companies. This development is referred to as the 'China shock 2.0'. For the West, the competitive pressure is only likely to intensify as Chinese firms leverage structural advantages that are set to strengthen and endure for years to come.
 - Europe is particularly vulnerable. In industries as varied as pharmaceuticals and machine tools, the impact of an upsurge in Chinese competition is clear. The closure of production sites and resulting unemployment across the continent are an ominous sign for the long-term viability of entire European strategic industries.
 - The first priority for EU countries and the UK is to recognize at the highest levels of government the nature of China's technological ascendancy and engage in open and regular debate on this topic. Governments should not downplay the scale of the disruption in prospect.
 - The EU and UK should use the 'China Shock 2.0' as a spur to speed up reforms aimed at boosting productivity and industrial competitiveness. This includes accelerating the EU's current slow implementation of the recommendations in the 2024 Draghi report, which outlined how Europe should boost its competitiveness, in part through slashing red tape and administrative burdens. The EU Antici Group on Simplification can play a role in this.
 - Europe, including the UK, should adopt a hybrid approach to inward Chinese investment. This would involve the clear identification of 'red flag' areas of the economy that should be protected from Chinese investment, due to national security concerns. At the same time, Europe should actively court Chinese high-tech investment in all other 'green flag' (non-circumscribed) sectors, offering incentives to lure technological leaders while also devising policies to encourage local content and technology transfer. This approach echoes China's own policies on inward investment.
 - The EU and UK should upgrade the transparency of their investment screening mechanisms regarding China to increase trust and sustainability. This should include the formulation of guidelines on acceptable levels of dependency on Chinese imports of critical minerals, pharmaceuticals and other essential products. Without clarity, Europe and the UK risk creating a Cold War dynamic in which shadows, suspicion and confusion derail mutually beneficial engagement.

- The EU should open talks with China on the renminbi’s structural undervaluation with a view to redressing chronic trade imbalances. Furthermore, to strengthen its position, the EU should create a rapid response mechanism – not unlike the US Section 301 tool that allows the president to take unilateral tariff action – to safeguard against import surges that threaten the viability of European industrial sectors.

01

Introduction

China's emerging lead in many technology sectors threatens to fundamentally erode Europe's industrial base. The continent now faces the pressing challenge of formulating a comprehensive response.

China's ascent to the cutting edge of global technology is one of the world's most consequential trends. The ability of Chinese firms to produce advanced technology at highly competitive prices is disrupting the business models of some of the West's largest companies – a phenomenon referred to as the 'China shock 2.0'.¹ As a result, in 2025, China's annual trade surplus swelled to almost \$1.2 trillion,² the largest in history. In Europe, this development is ringing alarm bells at the highest levels of government and in industries as varied as pharmaceuticals and machine tools. Factories are being shut, jobs lost and the viability of strategic industries thrown into jeopardy. The pressure is unlikely to abate. A series of interviews and company visits conducted by the author in Beijing, Shenzhen and Tianjin in the spring of 2026 show that China's competitiveness is based on several structural advantages (see Chapter 3) that are likely to endure for decades.

The evidence depicting China's rise to the forefront of technology is plentiful. According to several measures, China's competitiveness now leads that of the US in a majority of advanced technologies, with some key exceptions being semiconductors, frontier artificial intelligence (AI) models, quantum computing, aerospace and advanced biotechnology.³ Europe has fallen significantly behind both China and the US in all but a few discrete areas.⁴ This paper looks briefly

¹ In reference to 'China shock 1.0', which described China's rapid economic expansion following its accession to the WTO and the subsequent impact on manufacturing in the West.

² U.S.-China Economic and Security Review Commission (2026), 'China Bulletin', 4 February 2026, <https://www.uscc.gov/trade-bulletins/china-bulletin-february-4-2026>.

³ ITIF (2024), 'China is Rapidly Becoming a Leading Innovator in Advanced Industries, New Report Finds', 16 September 2024, <https://itif.org/publications/2024/09/16/china-rapidly-becoming-leading-innovator-in-advanced-industries-new-report-finds>.

⁴ European Commission (2024), *The Draghi Report: A competitiveness strategy for Europe*, 9 September 2024, https://commission.europa.eu/topics/competitiveness/draghi-report_en.

at four sectors – pharmaceuticals, electric vehicles (EVs), wind power and machine tools – to demonstrate how Chinese competition is impacting important European industries.

In a shift from even as recently as a decade ago, China’s rise up the technology ladder now derives significant impetus from a panoply of structural advantages. These include an increasingly world class university sector,⁵ an industrial supply chain of unrivalled scale and price competitiveness,⁶ technology companies such as Huawei and CATL that are global leaders in corporate patent applications,⁷ a regime of generous industrial subsidies,⁸ and a state-led policy that elevates the importance of high-end manufacturing.⁹

According to the UN World Intellectual Property Organization, Chinese residents filed 1.8 million patent applications in 2024, compared to just over 500,000 filed by US residents.

It should be noted that allegations of intellectual property (IP) theft, mainly made by US official bodies, have persisted.¹⁰ Such allegations are routinely denied by China, as in the case of a recent statement by Beijing’s Ministry of Commerce on US allegations related to IP theft of AI capabilities.¹¹ Such allegations notwithstanding, it is beyond doubt that China is pushing the boundaries of global innovation. According to the UN World Intellectual Property Organization, Chinese residents filed 1.8 million patent applications in 2024, compared to just over 500,000 filed by US residents.¹² China is also producing more STEM PhDs than the US.¹³ European countries lag behind both China and the US in the above metrics.

The technological advances of Chinese companies have been backed by a long-running and comprehensive programme of state support. Estimates on the size of this assistance vary considerably, but an OECD report published in June 2026 valued it at ‘three to eight times more government support’ than firms based

⁵ QS TopUniversities (2026), ‘Explore the World’s Top Universities’, 18 June 2026, <https://www.topuniversities.com/world-university-rankings?region=Asia&countries=cn%2Chk>.

⁶ Author visits to multiple high-tech factories in Shenzhen and elsewhere in the Pearl River Delta, plus evidence from the Huaqiangbei electronics market in Shenzhen and numerous statements by non-Chinese executives on China’s supply-chain prowess.

⁷ World Intellectual Property Indicators (WIPO) (2025), ‘Patents highlights’, <https://www.wipo.int/web-publications/world-intellectual-property-indicators-2025-highlights/en/patents-highlights.html>.

⁸ OECD (2026), ‘Industrial subsidies reach highest levels since the global financial crisis, says OECD’, 1 June 2026, <https://www.oecd.org/en/about/news/press-releases/2026/06/industrial-subsidies-reach-highest-levels-since-the-global-financial-crisis-says-oecd.html>.

⁹ Yu, J. (2025), ‘China’s Five-Year Plan bets on a risky new direction’, Chatham House Expert Comment, 15 December 2025, updated 11 March 2026, <https://www.chathamhouse.org/publications/the-world-today/2025-12/chinas-five-year-plan-bets-risky-new-direction>.

¹⁰ FBI (2019), ‘Executive Summary – China: the risk to corporate America’, <https://www.fbi.gov/file-repository/counterintelligence/china-exec-summary-risk-to-corporate-america-2019.pdf/view>.

¹¹ Ministry of Commerce People’s Republic of China (2026), ‘MOFCOM Spokesperson’s Remarks on the U.S. Announcement of plans to Investigate and Impose Sanctions on Chinese AI Companies’, 31 July 2026, https://english.mofcom.gov.cn/News/SpokesmansRemarks/art/2026/art_23e34479954d4cb2a9ccb9d45ce833da.html.

¹² WIPO (2026), ‘IP Facts and Figures’, March, <https://www.wipo.int/en/ipfactsandfigures/patents>.

¹³ Zwetsloot, R. et al. (2021), *China is Fast Outpacing U.S. STEM PhD Growth*, Washington, DC: Centre for Security and Emerging Technology, <https://cset.georgetown.edu/publication/china-is-fast-outpacing-u-s-stem-phd-growth>.

in the OECD received between 2005 and 2024 in 15 sectors covered by the study.¹⁴ The types of Chinese state support highlighted by the OECD included direct subsidies, tax breaks and loans from banks on favourable terms. China’s response criticized the OECD for using ‘loose definitions’, ‘biased sampling’ and ‘one-sided and arbitrary findings’.¹⁵

This paper recommends that policymakers in Europe recognize the historic nature of the challenge that China’s rise to technological pre-eminence presents. First, it suggests that governments, industry executives and experts discuss and debate this challenge with full and unsparing transparency. Second, it proposes a hybrid response. Governments should strive to identify and protect their core security interests with regard to Chinese technology as a priority. Once this is done, they should welcome and promote engagement with advanced Chinese technology in all areas that are not circumscribed. Third, European governments should engage with the US – their leading security partner – to produce a predictable framework that clears the way for European countries, companies and institutions to engage with Chinese technology unless it is explicitly forbidden.

One aim of such a system would be clarity. If European countries decide to block a Chinese investment, then companies and the public should get to know why it was blocked and where the relevant national security boundaries lie. Without clarity, Europe (including the UK) risks hastening the onset of a Cold War dynamic in which shadows, suspicion and confusion derail mutually beneficial engagement and repel investment from Chinese technology leaders that could boost European economies.

Methodology

The research for this paper was conducted over a period of around eight months, with the aim to first define the nature of China’s competitive challenge to Europe and then to consider responses that Europe (including the UK) could enact. Interviews in Beijing, Hong Kong, Shenzhen and Tianjin with executives from Chinese technology companies, government officials and think-tank researchers were conducted in April and May 2026. Interviews with European officials and corporate executives took place over several months to May 2026 in Berlin, Brussels, Eindhoven, London and Paris. This original research informs and supplements the published material referenced in the analysis here. In addition, the author has submitted written testimony to the UK parliament, participated in hearings for parliamentary sub-committees, briefed UK government officials, and took part in various roundtables in Brussels and Berlin.

¹⁴ OECD (2026), *OECD MAGIC Database of Industrial Subsidies*, https://www.oecd.org/content/dam/oecd/en/publications/reports/2026/05/oecd-magic-database-of-industrial-subsidies_3d51d749/ce94f33b-en.pdf.

¹⁵ Ministry of Commerce People’s Republic of China (2026), ‘MOFCOM Spokesperson’s Remarks on OECD Report on Industrial Subsidies’, 10 June 2026, https://english.mofcom.gov.cn/News/SpokesmansRemarks/art/2026/art_cb9c434b92af43cc9b267c4eb936c166.html.

02

The principal technology threats from China

China's broad-based technology challenge is gaining recognition in Europe and is supported by structural features that are unlikely to change in the near future. The European response is so far insufficient to meet a challenge that is intensifying with time.

Europe, in general, was slow to wake up to China's emergence as a leader in advanced technology. But by mid-2026, both the dimensions and the implications of the country's ascent had become clear to policymakers and industry leaders alike.

French president Emmanuel Macron has been vocal about the challenge posed by China, warning last year that it was hitting 'the heart of the European industrial and innovation model'.¹⁶ German chancellor Friedrich Merz, speaking alongside Macron in July this year, called for 'emergency measures' to address the EU's '\$1bn-a-day' trade deficit with China.¹⁷ Macron has also spoken of the heavy cost of the trade imbalance in terms of European jobs.

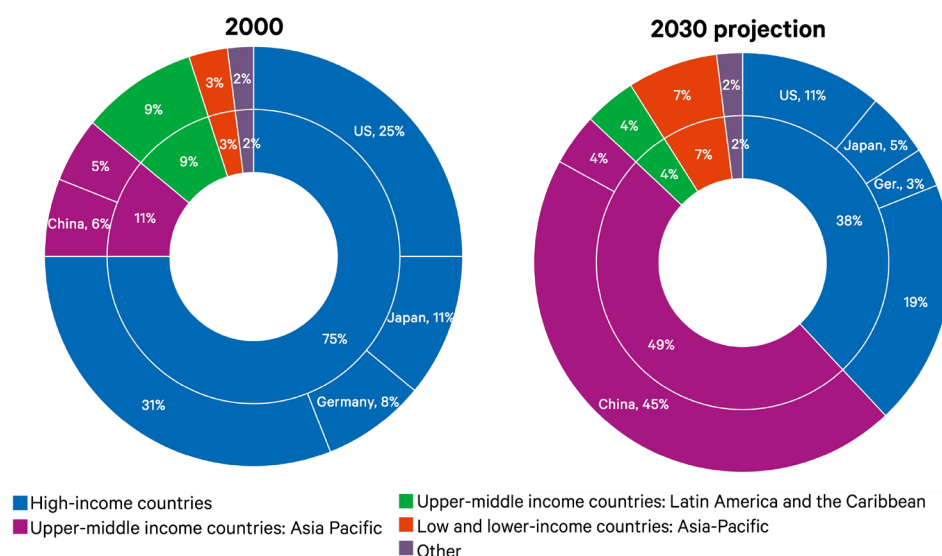
Such warnings are reinforced by the work of the UN Industrial Development Organization (UNIDO). A 2024 UNIDO report forecast that by 2030, China will account for 45 per cent of global manufacturing value added, significantly outpacing the contributions of the US (11 per cent), Japan (5 per cent), Germany (3 per cent)

¹⁶ Reuters (2025), 'France's Macron threatens China with tariffs over trade surplus', 7 December 2025, <https://www.reuters.com/world/china/frances-macron-threatens-china-with-tariffs-over-trade-surplus-les-echos-2025-12-07>.

¹⁷ Chassany, A.-S. (2026), 'Paris and Berlin vow to align on tougher trade measures against China', *Financial Times*, 17 July 2026, <https://www.ft.com/content/e8f185db-9b5c-4d0c-8e5e-e130483f151d?syn-25a6b1a6=1>.

and the UK (around 1 per cent).¹⁸ The report did not give a current value for China’s share of global manufacturing but according to the UN Statistics Division, that figure stood at 29 per cent in 2023.¹⁹

Figure 1. The global shift in industrial production



Source: UNIDO (2024), *The Future of Industrialization: Building Future-ready Industries to Turn Challenges into Sustainable Solutions*.

The scale of the projected transformation is therefore significant. China will gain around 16 percentage points in global manufacturing market share over the next few years, if the UNIDO predictions are borne out. This will mean that the global manufacturing hierarchy has been comprehensively reshaped in the first three decades of this century. Back in 2000, the US accounted for 25 per cent of global manufacturing while China had just 6 per cent.²⁰

Such assessments of where Europe stands in the global technology race are further amplified by quantitative research. According to the Critical Technology Tracker compiled by the Australian Strategic Policy Institute (ASPI), China leads research in 66 out of 74 critical technologies, marking a significant shift from US dominance two decades ago.²¹ This tracker does not seek to measure a country’s current technological level but rather to rank its research efforts in each field, as assessed by a rolling five-year count of high-impact papers produced by the country’s researchers. Papers defined as ‘high impact’ are the 10 per cent most cited.

¹⁸ UNIDO (2024), *The Future of Industrialization: Building Future-ready Industries to Turn Challenges into Sustainable Solutions*, <https://www.unido.org/sites/default/files/unido-publications/2024-11/The%20Future%20of%20Industrialization%20-%20Building%20Future-ready%20Industries%20to%20Turn%20Challenges%20into%20Sustainable%20Solutions.pdf>.

¹⁹ Richter, F. (2025), ‘China Is the World’s Manufacturing Superpower’, 16 April 2025, Statista, https://www.statista.com/chart/20858/top-10-countries-by-share-of-global-manufacturing-output/?srsltid=AfmBOoqhXEOW3_9o29PQac6itEdsMkh3NCLy7eyua03ML4BMs6oHcR0n.

²⁰ UNIDO (2024), *The Future of Industrialization: Building Future-ready Industries to Turn Challenges into Sustainable Solutions*.

²¹ ASPI (2025), ‘ASPI’s Critical Technology Tracker: 2025 updates and 10 new technologies’, 1 December 2025, <https://www.aspistrategist.org.au/aspi-critical-technology-tracker-2025-updates-and-10-new-technologies>.

In terms of funding too, China is moving up a gear. OECD estimates, in purchasing power parity (PPP) terms, show that China’s gross domestic expenditure on research and development reached \$859 billion in 2024, narrowly eclipsing the US for the first time. The US total was estimated at \$848 billion in PPP-adjusted dollars.²²

Impact on European competitiveness

Chinese companies are gaining market share both in Europe and in third countries where European and Chinese corporations compete. One reflection of this lies in the ballooning trade deficit that Europe has with China. The EU’s trade deficit with China in 2025 totalled €359.81 billion, the second largest deficit for a decade after the €397.3 billion registered in 2022.²³ The recorded deficit for 2022 is seen as somewhat anomalous because the figure that year was inflated by an upsurge in imports from China to replace those from Russia following the latter’s invasion of Ukraine. If this anomaly is stripped out, the trend shows a steadily deepening deficit each year since 2019.

The EU’s trade deficit with China in 2025 totalled €359.81 billion, the second largest deficit for a decade after the €397.3 billion registered in 2022.

EU exports to China have dwindled in recent years as Chinese companies have developed increasingly advanced technology and replaced items – in particular vehicles and chemicals – that were previously imported from European companies. At the same time, Chinese high-tech exports to Europe are starting to outcompete long-standing European brands in their home markets. Even Chinese luxury and high fashion brands are starting to make inroads into European markets that are dominated by French, Italian, UK and other incumbent producers.²⁴

Ngozi Okonjo-Iweala, director-general of the World Trade Organization, has criticized China’s global trade surplus – which rose to almost \$1.2 trillion in 2025 – as ‘not sustainable’. She added that the surplus risked triggering fresh protectionist barriers worldwide because ‘the rest of the world cannot absorb it’.²⁵

²² OECD (2026), ‘OECD overall R&D growth stable; government R&D budgets decline and reorient towards defence’, 31 March 2026, <https://www.oecd.org/en/data/insights/statistical-releases/2026/03/oecd-overall-rd-growth-stable-government-rd-budgets-decline-and-reorient-towards-defence.html>.

²³ European Commission (2026), ‘Trade and Economic Security: China’, https://policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/countries-and-regions/china_en; Eurostat (2026), ‘Trade in goods with China 2025’, 10 April 2026, <https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20260410-2>.

²⁴ FedEx (2025), ‘Why Europe is the Next Runway for Asia’s Luxury Brands to Grow’, 17 October 2025, <https://www.fedex.com/en-jp/business-insights/ecommerce/asia-luxury-brands-europe-market-entry.html>.

²⁵ AFP (2026), ‘WTO chief urges China to shift on trade surplus’, 14 February 2026, <https://business.inquirer.net/574306/wto-chief-urges-china-to-shift-on-trade-surplus>.

So far, Europe has resisted a ‘trade war’ with China, although the EU has taken a few measures such as imposing ‘anti-subsidy tariffs’ on exports of Chinese cars to Europe, launching anti-dumping probes targeting various Chinese products, and scrapping a duty-free rule for a range of low-cost imported parcels shipped by platforms such as Temu and Shein.

But in some quarters, at least, the language is starting to harden. The Haut-commissariat à la Stratégie et au Plan (HCSP), which advises the French prime minister, published a report in 2026 that looked at the impact on Europe of China’s competitive threat. Chinese competition, it said, threatened one-quarter of French exports and one-third of German exports. It added that Germany has lost 240,000 industrial jobs in about a two-year period as Chinese competition hit.²⁶ These numbers could not be independently confirmed.

Other commentators have seen the China challenge in terms of Europe’s growing technological dependency on the country. Peter Wennink, former CEO of ASML, the Dutch lithography company vital for semi-conductor manufacturing, wrote in a report that ‘if we depend on the technology of others and they hardly depend on us, we lose strategic relevance’. If this happens, Wennink added, then others will ‘set the conditions and prices for our access to technology’.²⁷ Indeed, out of the world’s 50 largest technology companies only four are European, and the EU is only competitive in four out of 14 critical technology areas, Wennink wrote.²⁸

China’s rapid technological rise is heaping competitive pressure upon many European companies. Even ASML, which is widely regarded as one of Europe’s most technologically advanced companies, is facing challenges. A Chinese company has begun producing deep-ultraviolet lithography (DUV) machines – an advanced chipmaking tool hitherto dominated by ASML, according to a report by Reuters.²⁹ ASML’s share price slid following the publication of this article.

China’s structural advantages in high-tech development

A series of interviews and company visits conducted by the author in the spring of 2026 underpin the sense that China’s emergence as a global leader in high technology is not a one-off. On the contrary, China’s advance derives from a whole-of-system effort that is itself in part the product of decades of industrial policy.³⁰ This feature, in turn, reinforces a crucial reality: China’s competitiveness is set to endure and intensify in coming years, unless unforeseen disruptions or crises blow the country off course.

²⁶ Grjebine, T., Lefebvre, P. and Torres, M. (2026), *The Chinese Steamroller: Quantifying the Systemic Threat to Europe’s Industrial Base*, Paris: Haut-commissariat à la Stratégie et au Plan, <https://www.strategie-plan.gouv.fr/en/publications/chinese-steamroller-quantifying-systemic-threat-europes-industrial-base>.

²⁷ The Wennink Report (2025), *The Roadmap to Future Prosperity*, 12 December 2025, https://www.rapport.wennink.nl/downloads/wennink_report_12december2025.pdf.

²⁸ Ibid.

²⁹ Potkin, F. (2026), ‘China starts production of home-grown immersion DUV chipmaking tools, source says’, Reuters, 28 July 2026, <https://www.reuters.com/world/china/china-starts-production-home-grown-immersion-duv-chipmaking-tools-source-2026-07-28>.

³⁰ Boullenois, C., Black, M. and Caruso, A. (2026), *China’s Next-Generation Industrial Policy*, New York: Rhodium Group, <https://rhg.com/research/chinas-next-generation-industrial-policy>.

This industrial policy goes far beyond the ‘Five-Year Plan’ (FYP) that is drafted by the Communist Party of China Central Committee and formally approved at the National People’s Congress (China’s state legislature) every five years. For example, over the course of the 14th FYP (2021–25) there were dozens of lower-level, sector-specific plans – covering distinct fields such as technology, green energy and climate change – that fleshed out the principal blueprint.³¹ In addition, there were many more local plans adopted at the provincial and city levels across China. In each of these subordinate plans, government agencies or local governments are given latitude to adapt the master blueprint FYP to specific conditions to hedge against ineffective and wasteful investment.

A representative example of how industrial policy has helped to drive efficiencies in China’s high-end manufacturing sector concerns telecoms, AI and automation.

High-bandwidth, fast download 5G telecoms were mentioned as an enabler of industrial and digital upgrades as far back as the 13th FYP in 2016.³² This theme was fleshed out in the 15th FYP (2026–30), which called for the rapid buildout of a new generation of telecoms infrastructure.³³ Known as 5GA, this new technology delivers a tenfold increase in speed and capacity compared to 5G and operates with a fraction of the latency.³⁴ These characteristics enable a new suite of AI and industrial uses, including high-capacity AI agents, high-performance factory automation, autonomous driving, eVTOL (electrical vertical take-off and landing), and direct satellite-to-phone communication, according to industry executives.³⁵ The roll-out of 5GA in more than 100 Chinese cities by mid-2026 – far exceeding this new technology’s penetration anywhere else in the world – has facilitated a new frontier in China’s tech advancement. For the diffusion of AI into the economy, 5GA is a crucial enabler because its vastly superior capacity allows multiple AI agents to run simultaneously – thereby allowing many tasks to be undertaken at the same time.³⁶

The provision of high-capacity, high-speed, low-latency telecoms has taken factory automation in China to the next level. One striking example of this is the Xiaomi EV Hyperfactory in Beijing, which uses 100 per cent automation in core processes to manufacture a new car (such as the SU7) every 76 seconds.³⁷ Some human workers at the plant are still deployed for supervisory roles, quality checks, maintenance and a few specific assembly tasks that require human oversight.

³¹ Center for Security and Emerging Technology (2021), ‘Translation: Outline of the People’s Republic of China 14th Five-Year Plan for National Economic and Social Development and Long-Range Objectives for 2035’, <https://cset.georgetown.edu/publication/china-14th-five-year-plan>.

³² National Development and Reform Commission (undated), *The 13th Five-year Plan For Economic and Social Development of the People’s Republic of China (2016–2020)*, <https://en.ndrc.gov.cn/policies/202105/P020210527785800103339.pdf>.

³³ Center for Security and Emerging Technology (2026), *Proposal of the Central Committee of the Chinese Communist Party on Drawing Up the 15th FiveYear Plan for National Economic and Social Development*, https://cset.georgetown.edu/wp-content/uploads/t0660_CCP_4th_plenum_proposal_EN.pdf.

³⁴ Huawei (undated), ‘5.5G to the rescue’, <https://www.huawei.com/en/media-center/transform/16/06-brian-chamberlin>.

³⁵ Author interview with Huawei executive, under the condition of anonymity, Shenzhen, China, April 2026.

³⁶ Ibid.

³⁷ Luchian, E. (2024), ‘One Car Every 76 seconds: Inside Xiaomi’s Smart Super factory’, 5 April 2024, <https://www.autoevolution.com/news/one-car-every-76-seconds-inside-xiaomi-s-smart-super-factory-231911.html#>.

Nevertheless, the removal of humans from core processes has improved efficiency. Lei Jun, CEO of Xiaomi, has spoken of the advantages bestowed by ‘smart manufacturing’ enabled by high-bandwidth telecoms.³⁸

Thus, the diffusion of cutting-edge telecoms throughout the economy has acted as an indispensable precursor to the smart manufacturing revolution. Moreover, China is already preparing to roll out 6G, which will bring further improvements in capacity and speed over 5G. By 2035, China is expected to deploy 900 billion AI agents (a vast increase on what is believed to be millions of AI agents currently in use) to boost efficiency and automation in manufacturing and services throughout the economy – and the roll-out of 6G is seen as an enabler for this.³⁹ The 15th FYP’s ‘AI Plus’ strategy prioritizes AI as a driver of productivity in almost every important sector of the economy and foresees a 90 per cent penetration rate for AI devices, agents and applications in all key economic sectors by 2030. These are aspirational goals rather than actionable key performance indicators but nonetheless they carry weight because of their prominence in the latest FYP.⁴⁰

By 2035, China is expected to deploy 900 billion AI agents to boost efficiency and automation in manufacturing and services throughout the economy – and the roll-out of 6G is seen as an enabler for this.

Factory automation is enabled by both cutting-edge telecoms and AI. The roll-out of industrial robots across China is driving measurable increases in factory productivity and allowing China to keep producing low-cost items. In Shaodong, Hunan province, for example, the production costs of cigarette lighters have fallen to a fraction of what they were a decade ago after robots and automated assembly lines replaced workers.⁴¹ In 2024, China installed some 295,000 new industrial robots, more than the number of newly installed industrial robots in every other country in the world combined in the same year. The productivity gains reaped from this deployment – which is likely to remain strong for years to come – is set to underpin China’s industrial competitiveness for the foreseeable future.⁴² The diffusion of AI into different industry sectors is already enhancing innovation, as shown in pharmaceutical R&D (see Chapter 3).

³⁸ Xiaomi (2021), ‘Xiaomi Expands into Electric Vehicle Sector’, press release, 30 March 2021, <https://www.mi.com/global/discover/article?id=2319>; Wang, Z. (2019), ‘The President of Xiaomi Submits Proposals in Two Sessions about 5G Industries and Iot’, EqualOcean, <https://equalocean.com/news/201903051512-president-xiaomi-submittes-proposals-two-sessions-about-5g-industries-iot>.

³⁹ Author interview with Huawei executive, under the condition of anonymity, Shenzhen, China, April 2026.

⁴⁰ Arcesati, R. (2026), ‘China’s next five-year bet on AI: Self-reliance, diffusion and a lot of hype’, Merics, 26 February 2026, <https://merics.org/en/comment/chinas-next-five-year-bet-ai-self-reliance-diffusion-and-lot-hype>.

⁴¹ Gao, L. (2025), ‘How a \$1 Lighter Defied Inflation for 20 years’, Shear Force, 13 August 2025, <https://theshearforce.substack.com/p/how-a-1-lighter-defied-inflation>.

⁴² International Federation of Robotics (2025), ‘World Robotics 2025 report’, 25 September 2025, <https://ifr.org/ifr-press-releases/news/global-robot-demand-in-factories-doubles-over-10-years>.

Such foundations are further enhanced by numerous other features of the Chinese economy. Scientific and engineering talent is plentiful in a country that was projected to produce some 77,000 STEM PhDs per year by 2025, compared to around 40,000 in the US.⁴³ The influence of this talent has also helped to propel an extraordinary increase in the number of patents won by Chinese companies over the past decade. Huawei, one of China’s leading technology companies, holds more patents than the combined total of its main competitors in the West – Qualcomm, Nokia and Ericsson – and files some 35,000 new patent applications each year on a global basis.⁴⁴ The superiority of the Chinese supply chain, in which it is possible to source almost all components quickly and more cheaply than anywhere else in the world, is another central factor in the country’s competitiveness.⁴⁵ ‘There is nothing you can’t build or make in or nearby Shenzhen’, the head of a large supply-chain company in Shenzhen told the author. ‘And it is almost always cheaper, faster and better than anywhere else in the world.’⁴⁶

Logistical efficiencies on a high-speed railway system that boasts more than 40,000 km of track and the ubiquity of an inexpensive parcel delivery service that covers every city in China combine to contribute to a low-cost environment for manufacturers and service companies alike. Plentiful subsidies from both the central and local governments for specified technological sectors and more generally for manufacturers in a range of industries also help to reduce costs and boost efficiency.⁴⁷

The four industry case studies in the next chapter have been chosen because they each show some of the technological strides that China has made. They also showcase aspects of the impact that these advances are having on different sections of Europe’s industrial base.

⁴³ Zwetsloot et al. (2021), *China is Fast Outpacing U.S. STEM PhD Growth*.

⁴⁴ Author interview with Huawei executive in Shenzhen in April 2026, under the condition of anonymity.

⁴⁵ Author interviews with numerous Chinese and foreign company executives in Shenzhen in early 2026, under the condition of anonymity, testify to the highly competitive pricing of China-made components. In particular, the Huaqiangbei electronics market in Shenzhen, visited by the author in April 2026, sells thousands of components at extremely low prices.

⁴⁶ Ibid.

⁴⁷ Xiang, S., Yin, X. and Yuan, Z. (2026), ‘Two decades of Chinese industrial subsidies’, Centre for Economic Policy Research (CEPR), 7 January 2026, <https://cepr.org/voxeu/columns/two-decades-chinese-industrial-subsidies>.

03

Case studies

Four European industrial sectors – pharmaceuticals, EVs, wind power and machine tools – are already under pressure from strong Chinese competition. However, without action, the risk of further disruption will only grow.

Pharmaceuticals: Some of Europe's biggest companies face disruption

China is making great strides in the pharmaceuticals industry. A series of structural advantages – including rapid and low-cost clinical trials, the world's largest pool of patients, efficiencies derived from industrial clustering, the deployment of AI into already highly innovative drug development pipelines and an abundance of intellectual talent – has propelled China to the forefront of global pharmaceutical innovation.⁴⁸

By some measures, European competitiveness is already trailing in China's wake. One executive of a Western pharma company said in June 2026 that clinical development in China can be conducted three times faster than in Europe and at roughly half the cost.⁴⁹

China's emergence has coincided with a game-changing event in the global pharma industry. The arrival of a so-called 'patent cliff' means that, between 2025 and 2030, drugs that account for a significant proportion of the industry's annual revenue have lost or are set to lose patent exclusivity.⁵⁰ Nearly 200 products, including many common drugs that sell in high volumes, known as 'blockbusters', will lose protection over this period.⁵¹

⁴⁸ Author interviews with pharmaceutical company executives and analysts in China and Europe in early 2026, under the condition of anonymity.

⁴⁹ Fick, M. (2026), 'China outpacing Europe in drug innovation and development, Pfizer executive says', Reuters, 23 June 2026, <https://www.reuters.com/legal/litigation/china-outpacing-europe-drug-innovation-development-pfizer-executive-says-2026-06-23>.

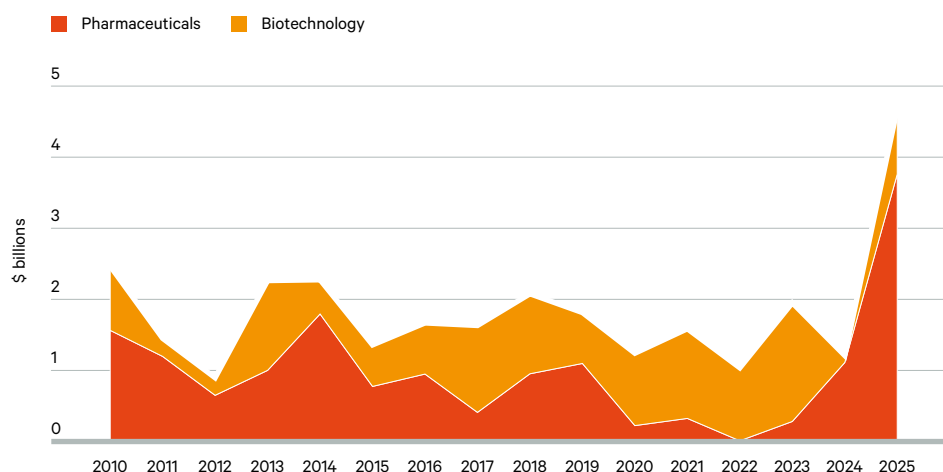
⁵⁰ DeepCeutix (2026), '\$300 Billion in Pharma Revenue Loses Patent Protection by 2030', <https://deepceutix.com/insights/patent-cliff-reformulation>.

⁵¹ Life Science Daily News (2026), 'Biologics on the Brink: The Patent Cliff Facing Big Pharma', 18 May 2026, <https://lifesciencedaily.news/biologics-on-the-brink-the-patent-cliff-facing-big-pharma>.

This ‘cliff’ has sent Western pharma giants scrambling to find promising new drug candidates to replace their soon-to-be off-patent blockbusters, thus swelling the trend of licensing deals in China. These ‘out-licensing’ deals, which leverage China’s ability to conduct rapid and low-cost drug development, typically involve a Western pharma company paying cash and milestone fees to a Chinese firm. The Chinese firm then conducts the R&D and, after development, grants rights to the Western company to sell the drug outside China.

This trend has the effect of reinforcing China’s increasingly central position in global pharma R&D and development. The speed of the country’s ascent is captured in global out-licensing statistics. China’s share of the value of global out-licensing deals reached around 50 per cent in 2025, significantly outpacing the US for the first time and leaving the EU far behind.⁵² In tandem with the shift in out-licensing deals to China, Western pharma and biotech companies are ramping up their investments in China to take advantage of the country’s supply chain and intellectual resources to develop new drugs.

Figure 2. Pharma and biotech FDI into China



Source: Based on figures supplied by fDi Markets.

In early 2026, the average size of out-licensing deals to China grew significantly by 76 per cent on the 2025 level.⁵³ As part of this, AstraZeneca, the UK–Swedish pharmaceutical giant, agreed a licensing deal with China’s CSPC Pharmaceutical worth up to \$18.5 billion.⁵⁴ One part of this planned investment was to secure the exclusive global rights – outside the Greater China region – for SYH2082, a long-acting drug for the treatment of obesity and type-2 diabetes that was developed by a CSPC subsidiary. One feature of CSPC’s work is its use of proprietary AI platforms to assist in research and drug development.

⁵² Blotnick, A. (2026), ‘The Year China Surpassed the USA in Biotech Innovation, Deal Value and Clinical Output’, Synbiobeta, 22 January 2026, <https://www.synbiobeta.com/read/the-year-china-surpassed-the-usa-in-biotech-innovation-deal-value-and-clinical-output>.

⁵³ Wu, K. and Silver, A. (2026), ‘China biotech licensing boom to hit record in 2026 as pipeline swells’, Reuters, 13 February 2026, <https://www.reuters.com/sustainability/climate-energy/china-biotech-licensing-boom-hit-record-2026-pipeline-swells-2026-02-13>.

⁵⁴ Biospace (2026), ‘AstraZeneca’s China Trip Yields CSPC Obesity Deal Worth \$1.2bn Upfront’, 30 January 2026, <https://www.biospace.com/deals/astrazenecas-china-trip-yields-cspc-obesity-deal-worth-1-2b-upfront>.

AstraZeneca’s bold deal with CSPC was widely seen as a bid to catch up with Eli Lilly of the US and Novo Nordisk of Denmark – both of which use China as a development base in the race to gain an advantage in the weight-loss industry.

For the first time, China’s total number of conducted clinical trials moved past both the US and Europe in 2020, and the gap has sharply widened in the years since then.

Clinical trials are another aspect of China’s leadership in pharmaceutical innovation. For the first time, China’s total number of conducted clinical trials – which are regulated studies on the safety, efficacy and side effects of new drugs – moved past both the US and Europe in 2020, and the gap has sharply widened in the years since then.⁵⁵ The speed and cost-effectiveness of these trials in China make for rapid drug development at costs that are hard to match elsewhere in the world.

One upshot of the rise in clinical trials has been a record 76 innovative drugs approved in 2025 by China’s National Medical Products Administration,⁵⁶ outpacing the number authorized by the US Food and Drug Administration⁵⁷ and the European Medicines Agency during the same year.

European disruption

Europe’s pharmaceutical industry ranks as one of the continent’s most important sectors. In 2025, the industry’s total regional revenue was estimated to be around \$514 billion, representing 29.6 per cent of global sales.⁵⁸ But competition from China has started to impact Europe’s presence in the industry worldwide. In 2024, Europe’s share of global new drug approvals was around 10 per cent, down from 20 per cent in 2015.⁵⁹ This share of global approvals was far below that of China in 2024 (at around 40 per cent).⁶⁰

In one case, Chinese competition has contributed to the disruption of Novo Nordisk, the Danish pharmaceutical giant that suffered a 70 per cent fall in its share price between its June 2024 peak and 24 April 2026.⁶¹ Local competition from Chinese biotech companies, combined with the expiration in early 2026 of the patent for semaglutide (an active ingredient in weight-loss and diabetes drugs) in China, have

⁵⁵ Barwick, P., Xia, H. and Xia, T. (2026), ‘From free rider to innovator: How China became a global pharmaceutical powerhouse’, CEPR, 1 April 2026, <https://cepr.org/voxeu/columns/free-rider-innovator-how-china-became-global-pharmaceutical-powerhouse>.

⁵⁶ GMW.cn (2026), ‘China approves record number of innovative drugs in 2025’, 23 January 2026, https://en.gmw.cn/2026-01/23/content_38554931.htm.

⁵⁷ Kartal-Allen, A. (2026), ‘FDA prevails over EMA in 2025 novel drug approvals’, 16 January 2026, <https://www.pharmaceutical-technology.com/news/fda-ema-2025-drug-approvals-rare-disease>.

⁵⁸ Grand View Horizon (2026), ‘Europe Pharmaceutical Market Size & Outlook, 2026-2033’, <https://www.grandviewresearch.com/horizon/outlook/pharmaceutical-market/europe>.

⁵⁹ Stadig, D. (2026), ‘Hello, Goodbye: Europe loses ground as China becomes powerhouse of innovation’, Think, 20 January 2026, <https://think.ing.com/articles/europe-loses-ground-as-china-becomes-powerhouse-innovation>.

⁶⁰ Ibid.

⁶¹ Gilchrist, K. (2026), ‘Novo Nordisk Shares Are 70% Off Their Peak. Is the Stock Fairly Valued?’, Morningstar, 13 August 2026, <https://global.morningstar.com/en-gb/stocks/novo-nordisk-shares-are-70-off-their-peak-is-stock-fairly-valued-2>.

dealt a shock to the company’s bottom line. As a result, the company had to slash its prices of popular weight-loss drug Wegovy in China, after a clutch of local companies including Hangzhou Jiuyuan Genetic Biopharmaceutical and CSPC Pharmaceutical Group developed competitor drugs.⁶² Some factories in European countries have already closed, partly because of the impact of Chinese competition.⁶³

Electric vehicles: Chinese EV exports roil Europe’s competitive landscape

China’s march to dominance in EVs and batteries is well understood. These two sectors stand as torchbearers for the country’s technological advance. Companies such as BYD, the world’s leading EV maker, and CATL, the world’s largest EV and energy storage battery manufacturer, are setting the pace globally and disrupting competitors in Europe, Japan, South Korea, the US and elsewhere.

China accounted for nearly 75 per cent of global EVs manufactured in 2025 and an even higher proportion of battery cells produced in the same year.⁶⁴ The sleek designs and high technology content of these EVs, combined with competitive pricing, has allowed Chinese car brands to make rapid inroads into global markets. In 2026, total Chinese auto exports, the majority of which are new energy vehicles (NEVs),⁶⁵ are projected to reach close to 10 million units, up from 7.1 million units last year.⁶⁶ In addition to large developed markets such as Europe, Chinese EV companies are also making headway in Brazil, Mexico and Southeast Asia.

The prices of Chinese EVs sold around the world are highly competitive, helping brands such as BYD (which outperformed Tesla in terms of global sales in 2025),⁶⁷ Geely, Great Wall Motor and SAIC (MG) to gain recognition in several new markets. This pricing advantage, which derives from China’s hyper competitive supply chain, has helped to offset the impact of tariffs in overseas markets such as the EU, where countervailing duties of up to 35 per cent were imposed in late 2024.⁶⁸

A second impetus behind the Chinese EV export juggernaut has been the high price of oil that followed the outbreak of the Iran war in early 2026. Wang Chuanfu, chairman of BYD, said that in markets such as Australia, the Philippines and New

⁶² Barrie, R. (2025), ‘Chinese drugmakers prep for looming semaglutide generics horizon’, Pharmaceutical Technology, 2 September 2025, <https://www.pharmaceutical-technology.com/news/chinese-drugmakers-prep-for-looming-semaglutide-generics-horizon>.

⁶³ Merics (2024), ‘Europe’s increasing reliance on China for critical drugs’, 12 September 2024, <https://merics.org/en/merics-briefs/europes-increasing-reliance-china-critical-drugs-foreign-investment-china-africa>.

⁶⁴ IEA (2026), ‘Global EV outlook 2026’, May 2026, <https://www.iea.org/reports/global-ev-outlook-2026/executive-summary>.

⁶⁵ As well as battery electric vehicles, this category includes other fuel innovations such as plug-in hybrid and hydrogen fuel cell vehicles.

⁶⁶ AlixPartners (2026), ‘The 2026 AlixPartners Global Automotive Outlook’, press release, <https://www.alixpartners.com/newsroom/press-release-the-23rd-annual-alixpartners-global-automotive-outlook>.

⁶⁷ Chia, O. and Kaye, D. (2026), ‘China’s BYD overtakes Tesla as world’s top EV seller’, BBC News, 2 January 2026, <https://www.bbc.co.uk/news/articles/cj9rjwvmpzo>.

⁶⁸ European Commission (2024), ‘EU Commission imposes countervailing duties on imports of battery electric vehicles from China’, 12 December 2024, <https://trade.ec.europa.eu/access-to-markets/en/news/eu-commission-imposes-countervailing-duties-imports-battery-electric-vehicles-bevs-china>.

Zealand the company was selling as many cars every day in March as it might previously sell in a two-week period.⁶⁹ Consequently, BYD raised its overseas sales target for 2026.⁷⁰

In the battery industry, CATL is the world leader, having expanded its share of the global EV battery market to around 42 per cent in early 2026.⁷¹ The company supplies a diversified portfolio of carmakers, including Tesla and Toyota. In April 2026, CATL unveiled six new battery innovations, including an EV battery with a driving range of up to 1,500 km – greater than the distance from London to Barcelona. Another of its innovations is the Shenxing Superfast Charging Battery that the company says can achieve around a 90 per cent charge in 6 minutes and 27 seconds, significantly improving previous charging records.⁷²

Most of CATL’s competitors – including six of the world’s top 10 EV battery makers in terms of installed capacity – are from China.⁷³ This dominance is disrupting the business of non-Chinese competitors such as LG Energy Solution of South Korea, which experienced a slump in profits in 2025 to a fraction of CATL’s.⁷⁴ The Korean company’s fastest battery charging times have fallen significantly behind those of CATL, and LG’s R&D budget was significantly less than that of its Chinese rival in 2025.⁷⁵

European disruption

The shockwaves emanating from China’s EV phenomenon are not restricted to one region of the world. In Japan, Toshihiro Mibe, CEO of Honda, remarked that his company had ‘no chance’ against China’s high level of factory automation and supply-chain competitiveness.⁷⁶ Honda reported its first annual loss in more than 70 years as a listed company in March 2026, partly due to Chinese competition.⁷⁷

Major European car brands were unprepared for the appetite of Chinese consumers for EVs. Chinese brands increased their share of the domestic passenger car market to about 70 per cent in 2025,⁷⁸ a sharp increase compared to the 38 per cent seen as recently as 2020.⁷⁹ Much of the increase in share for Chinese brands came at the

⁶⁹ Johnson, P. (2026), ‘BYD is winning the energy crisis as EV orders surge to ‘another level’ overseas’, Electrek, 6 April 2026, <https://electrek.co/2026/04/06/byd-ev-orders-surge-to-another-level-overseas-energy-crisis>.

⁷⁰ EV.com (2026), ‘BYD Targets 1.5m in Overseas EV Sales in 2026 Amid Global Expansion’, 31 March 2026, <https://ev.com/news/byd-targets-1-5m-overseas-ev-sales-in-2026-amid-global-expansion>.

⁷¹ Reuters (2026), ‘China’s CATL beats first quarter forecasts, boosting market dominance’, 15 April 2026,

<https://www.reuters.com/world/asia-pacific/chinas-catl-posts-slower-profit-growth-first-quarter-2026-04-15>.

⁷² CATL (2026), ‘CATL Unveils Six Major Innovations: Multi-Chemistry Systems to Redefine New Energy Mobility Experience’, 21 April 2026, <https://www.catl.com/en/news/6811.html>.

⁷³ Tanabe, S. and Matsuura, M. (2026), ‘China’s EV battery makers widen lead to over 70% global share’, Nikkei Asia, 18 March 2026, <https://asia.nikkei.com/business/automobiles/electric-vehicles/china-s-ev-battery-makers-widen-lead-to-over-70-global-share>.

⁷⁴ Ibid.

⁷⁵ Benchmark (2025), ‘How does battery company R&D expenditure vary’, 13 November 2025,

<https://source.benchmarkminerals.com/article/how-does-battery-companies-rd-expenditure-vary>.

⁷⁶ LaCapria, K. (2026), ‘Honda CEO says ‘we have no chance’ against Chinese automakers’, Yahoo Finance, 24 April 2026, <https://finance.yahoo.com/sectors/energy/articles/honda-ceo-says-no-chance-020000235.html>.

⁷⁷ Masud, F. (2026), ‘Honda makes its first annual loss in 70 years’, BBC News, 14 May 2026, <https://www.bbc.co.uk/news/articles/c794lj90jqpo>; Honda (2026), ‘Honda announces losses’, 12 March 2026, <https://global.honda/en/newsroom/news/2026/c260312eng.html>.

⁷⁸ MarkLines Information Platform (2026), ‘Chinese market 2025: Sales Volume 34.4M units, Chinese OEMs’ Share over 70%’, 19 February 2026, https://www.marklines.com/en/report/rep2969_202602.

⁷⁹ 36Kr (2026), ‘The market share has fallen below the 25% warning line and joint venture auto makers have entered their most precarious moment’, 27 July 2026, <https://eu.36kr.com/en/p/3916077131623811>.

expense of the big three German brands – VW/Audi, BMW and Mercedes-Benz – all of which experienced a contraction in their market share in China during 2025. Japanese brands also suffered an overall decline in market share.⁸⁰

Toshihiro Mibe, CEO of Honda, remarked that his company had ‘no chance’ against China’s high level of factory automation and supply-chain competitiveness.

The big shifts underway amount to much more than a cyclical adjustment. They represent a coming-of-age for Chinese carmakers in terms of technology, design and customer service. The response of VW – and other Western carmakers such as BMW and Ford – is a strategy that is being referred to in the industry as ‘in China, for the world’.⁸¹ In other words, investing more in Chinese R&D, boosting autonomy from headquarters in Germany and embracing a much faster pace of innovation inside China. Thus, Germany’s most famous company is doubling down on the China market – where it has some 50 million customers, 39 factories and 90,000 employees.⁸² It has also built an innovation hub in the city of Hefei, which VW says will bring technologies to market ‘around 30 per cent faster’ in future.⁸³ The company has announced plans to launch a whole batch of new electrified vehicles this year, including pure electric, plug-in hybrid and range-extender variants. The first model, developed with Chinese partner XPENG, was launched in April 2026 and looks significantly different from a traditional VW.⁸⁴ The company has said it has no plans to export the Chinese-designed models to Germany, but they are due to be shipped to other parts of the world.⁸⁵

The investment and attention being lavished by VW on its China operations stands in contrast to the bleak headlines surrounding VW’s business in Germany, where the company is in crisis. News reports have said that VW is considering closing four plants and cutting tens of thousands of jobs as part of a thorough restructuring.⁸⁶

⁸⁰ MarkLines Information Platform (2026), ‘Chinese market 2025’.

⁸¹ Gasgoo (2026), ‘The Other Side of “In China, For the World”: Chinese Brands and Joint Ventures Launch an Overseas Race’, 1 July 2026, <https://autonews.gasgoo.com/articles/news/the-other-side-of-in-china-for-the-world-chinese-brands-and-joint-ventures-launch-an-overseas-race-2072319693330104321>.

⁸² Volkswagen Group (2024), ‘40 years of Volkswagen in China: Group accelerates its realignment with ‘In China, for China’ strategy’, 4 November 2024, <https://www.volkswagen-group.com/en/articles/40-years-of-volkswagen-in-china-group-accelerates-its-realignment-with-in-china-for-china-strategy-18322>.

⁸³ Ibid.

⁸⁴ Volkswagen Group (2026), ‘Auto China 2026: Volkswagen Group Unveils Record Product Offensive and Agentic AI Roadmap for China’, press release, 21 April 2026, <https://www.volkswagen-group.com/en/press-releases/auto-china-2026-volkswagen-group-unveils-record-product-offensive-and-agentic-ai-roadmap-for-china-20333>.

⁸⁵ Fitzpatrick, C. (2025), ‘Volkswagen to expand exports of China-built cars to new global markets’, CBT News, 25 November 2025, <https://www.cbtnews.com/volkswagen-to-expand-exports-of-china-built-cars-to-new-global-markets>.

⁸⁶ Amann, C. and Steitz, C. (2026), ‘VW weighs up to 100,000 job cuts, four plant closures in biggest overhaul yet, sources say’, Reuters, 26 June 2026, <https://www.reuters.com/business/autos-transportation/volkswagen-ceo-aims-cut-up-100000-jobs-next-years-manager-magazin-reports-2026-06-26>.

Wind power: Can Europe’s industry survive Chinese competition?

For Europe, dependence on Chinese suppliers for renewable energy equipment is a critical concern. Following the collapse of the German solar industry from around 2010, China now supplies over 95 per cent of Europe’s solar panels.⁸⁷ In wind power, the situation is significantly different, with European companies such as Vestas, a Danish wind turbine manufacturer, Siemens Gamesa, a Spanish–German company based in Zamudio, and Nordex of Germany maintaining a significant presence in the European market.

Nevertheless, the competitive challenge from Chinese manufacturers, even in the European market, is strong. This is mainly because of several advantages that Chinese producers enjoy, including their huge domestic market, the subsidies that different strata of the Chinese government provide to national champions, the competitiveness of China’s supply chain, larger R&D budgets and rapid innovation. All of these factors combine to mean that a Chinese-made wind turbine can cost at least 30 per cent less than those made by European and US companies, according to industry executives who declined to be identified.⁸⁸

Including the UK and Norway, the European wind industry employs 370,000 people and is investing some €14 billion to build new factories or expand on existing sites across the region. By 2030, the number of people employed in the industry could grow to 936,000.

Europe’s wind industry represents a strategic asset that the region can ill afford to lose. Including the UK and Norway, the European wind industry employs 370,000 people and is investing some €14 billion to build new factories or expand on existing sites across the region.⁸⁹ By 2030, the number of people employed in the industry could grow to 936,000. The EU installed 12.9 gigawatts (GW) of new wind capacity in 2024 and predicts that between 2025 and 2030, it will install another 140 GW, corresponding to 23 GW a year on average.⁹⁰ Much of the new capacity envisaged between now and 2050 is likely to be in the offshore market, according to EU planning documents.⁹¹ Last year, EU countries agreed to work towards 89 GW in offshore capacity by 2030, rising to 366 GW by 2050.

⁸⁷ McWilliams, B., Tagliapietra, S. and Trasi, C. (2024), ‘Smarter European industrial policy for solar panels’, Bruegel, 8 February 2024, <https://www.bruegel.org/policy-brief/smarter-european-union-industrial-policy-solar-panels>.

⁸⁸ Author interviews with Chinese wind turbine executives in Europe and in China, under the condition of anonymity. These interviews were supplemented by discussions with industry experts in China and Europe.

⁸⁹ Wind Europe (undated), ‘Wind Works for Europe’, <https://windeurope.org/news/campaigns/wind-works-for-europe>.

⁹⁰ European Commission (2025), ‘In focus: Wind energy powering the clean transition’, 17 March 2025, https://energy.ec.europa.eu/news/focus-wind-energy-powering-clean-transition-2025-03-17_en.

⁹¹ European Commission (undated), ‘Trans-European Networks for Energy’, https://energy.ec.europa.eu/topics/infrastructure/trans-european-networks-energy_en.

The size of these ambitions, coupled with the strategic nature of the sector, puts Chinese competition in Europe into a relevant context. The crucial question now is whether the European wind industry will go the way of the solar industry before it, becoming eviscerated by China’s wind power giants that can use superior pricing power and more advanced technology. China already accounts for over 60 per cent of the global manufacturing of wind turbines, along with components such as gearboxes, generators, power converters and castings.⁹² The rare earth magnets essential in such components are almost all made in China.

Chinese wind power companies are making inroads in third markets, such as India and Brazil, often by underbidding and displacing European companies. Now the battleground is moving to Europe itself.

Competition grows in Europe

In 2021, a German wind turbine manufacturer, Senvion GmbH, was replaced by China’s Ming Yang Smart Energy as the turbine supplier for the 30-megawatt (MW) Taranto offshore wind farm in Italy.⁹³ This followed the insolvency of Senvion due to high debts, a downturn in the German market, delayed projects and strong competition.⁹⁴ In Croatia, Shanghai Electric Wind Power Equipment was selected as the turbine supplier for a 156 MW onshore wind power project in 2019.⁹⁵ By 2024, however, these and other installations by Chinese companies amounted to less than 1 per cent of Europe’s installed wind capacity⁹⁶ – a tiny footprint compared, for example, to the 41 per cent share that Envision, the Chinese energy giant, holds in India’s domestic market.⁹⁷

Nevertheless, Chinese wind power companies are making some headway both inside Europe and on the periphery. In Serbia, which is not a member of the EU, Chinese manufacturer Windey has been chosen by project developer Fintel Energia Group of Italy to supply turbines to the 854 MW Maestralski Ring project, one of Europe’s largest onshore wind farms.⁹⁸

⁹² Cytera, C. and Lagercrantz, O. (2024), ‘China Threatens Europe’s Windmills’, CEPA, 17 October 2024, <https://cepa.org/article/china-threatens-europes-windmills>.

⁹³ Buljan, A. (2021), ‘Mingyang Turbines for Taranto Arrive in Italy’, offshoreWIND.biz, 4 October 2021, <https://www.offshorewind.biz/2021/10/04/mingyang-turbines-for-taranto-owf-arrive-in-italy>.

⁹⁴ Amelang, S. (2019), ‘German wind turbine maker Senvion files for insolvency’, Clean Energy Wire, 10 April 2019, <https://www.cleanenergywire.org/news/german-wind-turbine-maker-senvion-files-insolvency>.

⁹⁵ Power Technology (updated 2024), ‘Power plant profile: Senj Wind Power Project, Croatia’, <https://www.power-technology.com/data-insights/power-plant-profile-senj-wind-power-project-croatia>.

⁹⁶ Reuters (2024), ‘Chinese wind turbine makers move into Europe as trade tensions flare’, 9 July 2024, <https://www.reuters.com/sustainability/climate-energy/chinese-wind-turbine-makers-move-into-europe-trade-tensions-flare-2024-07-19>.

⁹⁷ Singh, P. (2024), ‘Envision Strengthens Leadership in India Wind Energy Market’, Saur Energy International, 20 May 2024, <https://www.saurenergy.com/solar-energy-news/envision-strengthens-leadership-in-india-wind-energy-market>.

⁹⁸ Blackburne, A. (2024), ‘Allure of low-cost Chinese wind turbines grows in overseas markets’, S&P Global, 30 April 2024, <https://www.spglobal.com/market-intelligence/en/news-insights/articles/2024/5/allure-of-low-cost-chinese-wind-turbines-grows-in-overseas-markets-81124805>.

A significant planned investment by Ming Yang to build a £1.5 billion offshore wind turbine manufacturing plant at Ardersier Port in Scotland was blocked by the UK government in March this year, citing security risks.⁹⁹ The Chinese company has said it remains interested to ‘engage constructively’ with the UK government.¹⁰⁰

In Italy, Ming Yang has signed a memorandum of understanding with Renexia, an Italian renewables developer, to build a €500 million wind turbine manufacturing plant.¹⁰¹ In March 2024, Zhenshi Holding Group acquired an Airbus factory in Spain to produce wind turbine blades, within a year the factory had already manufactured its first wind power products. At the time, the company stated that this turnaround demonstrated its ‘Zhenshi speed’ to bring the factory online without delay and display the ‘hard core strength of Chinese enterprises’.¹⁰² Given the competitive advantages that Chinese wind turbine manufacturers enjoy, allied with a pipeline of new products including Ming Yang’s 50 MW floating offshore turbine (nearly double the capacity of currently available turbines), it appears likely that China’s competitive challenge in Europe’s wind market is set to intensify.¹⁰³

Machine tools: Eroding Europe’s industrial base

Machine tools represent a bedrock technology, often called the ‘mother of all machines’, that constitute the backbone of a country’s industrial base. They cut, shape, grind and drill materials such as steel, aluminium, copper, titanium and other metals into the precision parts that create manufacturing machines.

A decline in a country’s machine tool industry therefore can impact that country’s ability to sustain a thriving industrial base. In Germany, the stress of Chinese competition is starting to tell.

In 2025, China overtook Germany as the world’s leading exporter of machine tools for the first time.¹⁰⁴ While China has produced more machine tools than Germany in recent years, the superior quality of German products in the past served to secure growing or stable export markets. But this is changing fast. Following industrial advances in China, exports of high-tech Chinese machine tools rose by 21 per cent in 2025,¹⁰⁵ while German machine tool orders fell during the year.¹⁰⁶

⁹⁹ White, R. (2026), ‘UK Mingyang snub to tighten Europe’s offshore wind supply chain – BloombergNEF’, Windpower Monthly, <https://www.windpowermonthly.com/article/1953368/uk-mingyang-snub-tighten-europes-offshore-wind-supply-chain-%E2%80%93-bloombergnef>.

¹⁰⁰ Author interviews with Ming Yang executives, under the condition of anonymity.

¹⁰¹ Buljan, A. (2024), ‘Mingyang Enters Deal with Renexia, Italian Gov’t to Set Up Shop in Italy’, offshoreWIND.biz, 8 August 2024, <https://www.offshorewind.biz/2024/08/08/mingyang-enters-deal-with-renexia-italian-govt-to-set-up-shop-in-italy-18-8-mw-offshore-wind-turbines-planned-for-mediterranean-large-scale-project>.

¹⁰² Invest in Spain (2024), ‘Zhenshi to manufacture wind turbine components in Cádiz’, <https://www.investin-spain.org/en/noticias-main/2024/zhenshi>; Zhenshi (2025), ‘The new power of European wind power: Zhenshi’s Spanish factory is supplied’, 17 April 2025, <https://en.zhenshi.com/news/company-news-45.html>.

¹⁰³ Memija, A. (2025), ‘China’s Mingyang Unveils Plans for Massive 50 MW Floating wind turbine’, offshoreWIND.biz, 21 October 2025, <https://www.offshorewind.biz/2025/10/21/chinas-mingyang-unveils-plans-for-massive-50-mw-floating-wind-turbine>.

¹⁰⁴ German Machine Tool Builders’ Association (VDW) (2026), ‘German machine tool industry leveling off – China further dominating production’, 18 March 2026, <https://vdw.de/en/german-machine-tool-industry-leveling-off-china-further-dominating-production>.

¹⁰⁵ State Council Information Office (2026), ‘SCIO briefing on imports and exports’, 28 January 2026, http://english.scio.gov.cn/m/pressroom/2026-01/28/content_118304543_3.html.

¹⁰⁶ VDW (2026), ‘German machine tool industry leveling off – China further dominating production’.

This shift represented a watershed moment. Germany and Japan have dominated global machine tool manufacturing for more than a century. Now in all but a few ultra-high-end areas, Chinese producers have caught up and are selling competitively priced products to the West.¹⁰⁷

Franz-Xaver Bernhard, chairman of the German Machine Tool Builders’ Association (VDW), said he was ‘very concerned’ about the competition from China, adding that further ‘capacity adjustments’ would be required, following a significant reduction in employees in the German industry in 2025.¹⁰⁸ He called for a series of industrial reforms to sharpen Germany’s competitiveness.

Competition in Europe grows

Another industry segment that is suffering a competitive shock from China is computer numerical control (CNC) machines, which are automated machining tools (such as drills, lathes, mills and routers) that run on computer programmes. China has emerged as the market leader in CNC over the past decade, controlling the lion’s share of the global CNC market in 2025.¹⁰⁹

However, German companies such as Hermle and Siemens along with Japanese firms FANUC and DMG Mori are thought to maintain an edge over Chinese competitors in the advanced five-axis and above CNC machines. But several industry executives interviewed in early 2026 in China said that the Chinese industry is on the march even in the most advanced segments.¹¹⁰

Some Chinese CNC companies, for example Wuhan Huazhong CNC, are integrating AI into their products to achieve precision in milling that can produce objects thinner than a human hair. The HNC-10 Intelligent CNC Model, one of Huazhong’s flagship machines, incorporates both an AI chip and a large-scale AI model that help it make autonomous decisions and achieve cutting-edge levels of precision.¹¹¹

Technological upgrades in China have started to impact even the most advanced European competitors. Siemens reported sharp drops in factory automation orders in China, including a 55 per cent plunge in the first quarter of 2024 and a 31 per cent decline in global orders for its digital industries division, partly due to Chinese market weakness.¹¹²

¹⁰⁷ Handemo (2026), ‘How did China’s machine tool industry beat Germany’s to become world number one? The answer might surprise you’, <https://www.handemocnc.com/blog/industry-information/156.html>.

¹⁰⁸ Zerspanungstechnik (2026), ‘VDW Annual Press Conference’, 19 January 2026, <https://www.zerspanungstechnik.de/en/blog/2026/01/19/jahrespressekonferenz-2026-des-vdw>.

¹⁰⁹ Market Reports World (2025), ‘CNC machinery market size’, 13 June 2025, <https://www.marketreports.world.com/market-reports/cnc-machinery-market-14717885>.

¹¹⁰ Author interviews with Chinese CNC executives exhibiting their CNC machines at the Tianjin Industrial Expo in March 2026, under the condition of anonymity.

¹¹¹ HuazhongCNC (2026), ‘How Industry–University–Research Collaboration Is Making Hubei a Global CNC Machine Tool Leader’, <https://en.huazhongcnc.com/news/company-news/how-industry-university-research-collaboration-is-making-hubei-a-global-cnc-machine-tool-leader>.

¹¹² Bloomberg (2024), ‘Siemens Sees Sharp Drop in China Factory-Automation’, 8 February 2024, <https://www.bloomberg.com/news/articles/2024-02-08/siemens-sees-sharp-decline-in-china-factory-automation-orders>.

Integrating with China

One common response to the upsurge in Chinese competition is to integrate more deeply into Chinese supply chains, often while laying off workers back in home markets in Europe. German auto supplier ZF Friedrichshafen, for example, recently announced job losses in Europe while continuing to expand its production capacity in Shenyang, northeastern China.¹¹³

Meanwhile, Schaeffler, another German producer of auto parts, which aims to double its business in China in the next six to seven years,¹¹⁴ has announced plans to close some of its European operations and cut around 3,700 jobs.¹¹⁵

¹¹³ Wissenbach, I. (2025), ‘Auto Supplier ZF Group to cut 7,600 jobs in powertrain unit by 2030’, Reuters, 1 October 2025, <https://www.reuters.com/world/auto-supplier-zf-group-cut-7600-jobs-powertrain-unit-by-2030-2025-10-01>; ZF Press Centre (2025), ‘ZF and Horizon Robotics to Jointly Launch Driver Assistance System up to SAE Level 3 on the Chinese Market’, press release, https://press.zf.com/press/en/releases/release_95425.html.

¹¹⁴ Cheng, Y. and Liu, W. (2025), ‘Schaeffler revved up on China auto parts market’, China Daily, 21 May 2025, <https://www.chinadaily.com.cn/a/202505/21/WS682d3cb1a310a04af22c0ada.html>.

¹¹⁵ Schaeffler (2024), ‘Schaeffler provides more information on structural measures for locations outside of Germany’, press release, 27 November 2024, <https://www.schaeffler.com/en/media/press-releases/press-releases-detail.jsp?id=88061888>.

04 Recommendations

Europe and the UK face a challenge in balancing the need to take urgent action to boost competitiveness against Chinese companies, while actively courting Chinese investment in non-sensitive areas.

Europe and the UK stand at a crucial point in history. China has already arrived as a technological superpower and its progress up the value chain is both rapid and broad based.

The stark warnings issued by politicians and businesspeople – as well as the evidence presented in the case studies in Chapter 3 – should be taken seriously. There is a real possibility that over the next five years, Europe will lose much of its industrial base to Chinese competition. In some sectors, this has already happened. Not only will this result in the further loss of jobs and expertise; it may also mean the loss of companies with long histories of technological excellence and contributions to local communities. Europe is in a battle for its industrial future – one that it is currently on a trajectory to lose.

In the recommendations below, Europe is used to denote a geographical concept that includes the UK. The EU is used when an issue pertains specifically to EU competency. The author acknowledges that, in many cases, there is a lack of European unity on the topics raised.

This paper recommends a hybrid strategy to meet a complex challenge.

- Europe, including the UK, needs to recognize at the highest levels of government the nature of the challenge that China poses. High-level national and EU-level debates should be had over the detailed implications of this challenge, sector by sector. The continent should neither shrink from the hard truths that help illuminate how Europe is slipping into the technological slow lane, nor resist learning lessons from China's success. Europe should guard against a temptation

to demonize China but also be clear-sighted about the state subsidies,¹¹⁶ industrial policy and currency controls that have contributed to China’s progress and to the huge trade surplus it has with Europe and the world.¹¹⁷

- Europe, including the UK, should accelerate efforts to improve productivity and industrial competitiveness. In particular, it needs to lower the regulatory burden that its companies face; build modern infrastructure to support efficiency; train talent relevant to the needs of an industrial base increasingly animated by automation, robotics and AI; slash bureaucratic inefficiencies; and incentivize governments to speed up the process of decision-making, while making licensing systems faster and more transparent. The Antici Group on Simplification, set up in early 2025 by the Council of the European Union to cut red tape and reduce administrative burdens, is moving too slowly. The group’s staff numbers and resources should be bolstered and more technical experts appointed to improve the speed and precision of its work.
- The EU should accelerate progress to deliver on the recommendations of the 2024 Draghi report on boosting European competitiveness. In spite of a commitment to implement the recommendations in the report by the European Commission, progress has been slow. Of the report’s 383 recommendations, only 15.7 per cent have been fully delivered.¹¹⁸ Inclusive of recommendations on which there has been partial progress, the EU is tackling just 41.3 per cent of the Draghi agenda.¹¹⁹ The majority of the recommendations in the Draghi report are still ‘in progress’ or untouched.
- European countries, including the UK, should work at a national level to define and delineate their economic security priorities and identify ‘red lines’ beyond which Chinese investment is blocked or circumscribed. These guidelines should be published – just as China’s own investment code stipulating the limits on foreign participation in the country’s economy, sector by sector, is broadly circulated. The EU should also consider setting up a special body dedicated to economic security that would help member states and others define the security challenges that China presents and advise on compliance with forthcoming legislation, such as the Industrial Accelerator Act and the EU Cybersecurity Act. One function of such a body would be to block, restrict or closely monitor Chinese investments and economic activities in proscribed areas. The body would seek to coordinate between different EU departments such as law, trade and security to find unified positions.
- Once sensitive areas of the economy are identified and cordoned off from Chinese investment, Europe, including the UK, should actively court inward investment from China’s leading technology companies, provided that such companies are compliant with all relevant standards and screening processes. The active courting of Chinese technology corporations and investors should help to raise the competitiveness of European counterparts in a relatively controlled environment and to seed advanced supply chains in Europe.

¹¹⁶ OECD (2026), ‘Industrial subsidies reach highest levels since the global financial crisis, says OECD’.

¹¹⁷ OECD (2026), ‘OECD MAGIC database of industrial subsidies’.

¹¹⁸ EU Insider (2026), ‘Where the Draghi agenda stalls: Europe’s single market’, 14 August 2026, <https://www.euinsider.eu/news/epic-where-the-draghi-agenda-stalls-single-market-2026>.

¹¹⁹ Ibid.

- As part of the process of welcoming Chinese investment, the EU and UK should formulate a framework to require Chinese companies in key sectors to meet local content targets and work towards technology transfer goals with European partners. This initiative aims to mirror Chinese regulations that have long required European companies to share technology for market access in China. The European Commission’s formal proposal of the Industrial Accelerator Act, announced in March 2026, makes clear a number of ‘Made in EU’ requirements for specific industries.¹²⁰
- EU and UK investment screening processes should be made as transparent as possible (allowing for confidentiality related to national security). More granular explanations on why certain investment applications by Chinese companies were disallowed should be provided. This would include the 2026 ruling against a large, proposed wind turbine project by Ming Yang in Scotland.¹²¹ Such transparency will help local authorities and Chinese companies understand what is possible and what is not, thereby upgrading levels of trust in the process.
- The EU and UK should publish the main criteria they use for investment screening in critical and sensitive industries. Currently, the UK’s National Security and Investment Act 2021 (NSIA),¹²² which came into force in January 2022, mandates a mostly opaque process. The EU’s Foreign Direct Investment (FDI) Regulation, and its 2026 revision, should also be as transparent as possible about why proposed investments were rejected.¹²³
- With the aim of persuading Beijing to curb market-distorting state aid, the EU should maintain robust discussions with China on the full range of state subsidies and other assistance that the country provides at the local and central government levels. In addition, the undervalued renminbi should also form part of formal, broad-based EU–China talks on fair competition and the prospect of Beijing allowing the renminbi to gradually appreciate over time. IMF research on the renminbi’s undervaluation may be used as a reference in such discussions.¹²⁴
- The EU should establish new ‘Section 301’-like powers to launch swift defensive action against Chinese exporters to protect European industries from potential collapse precipitated by competitive shocks. Such powers, which could be engaged only after clear and transparent criteria have been met, would be designed to provide alternatives to the chronic delays inherent in WTO trade dispute processes. This tool would be modelled on the US ‘Section 301’ safeguards but modified to take account of EU realities. Such safeguards, if invoked, could result in the rapid imposition of restrictions, duties or retaliatory tariffs on Chinese exports to Europe. The aim of such a tool would be to provide temporary respite for European sectors while self-strengthening reforms are pushed through as a priority.

¹²⁰ European Commission (2026), ‘Industrial Accelerator Act’, https://single-market-economy.ec.europa.eu/publications/industrial-accelerator-act_en.

¹²¹ White (2026), ‘UK Mingyang snub to tighten Europe’s offshore wind supply chain – BloombergNEF’.

¹²² UK government (2021), ‘National Security and Investment Act 2021’, <https://www.legislation.gov.uk/ukpga/2021/25/contents>.

¹²³ European Commission (2026), ‘EU strengthens its foreign investment screening framework’, 26 June 2026, https://policy.trade.ec.europa.eu/news/eu-strengthens-its-foreign-investment-screening-framework-2026-06-26_en.

¹²⁴ International Monetary Fund (2026), *People’s Republic of China: 2025 Article IV Consultation*, IMF Country Report No. 26/44, <https://www.imf.org/-/media/files/publications/cr/2026/english/1chnea2026001-source-pdf.pdf>.

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