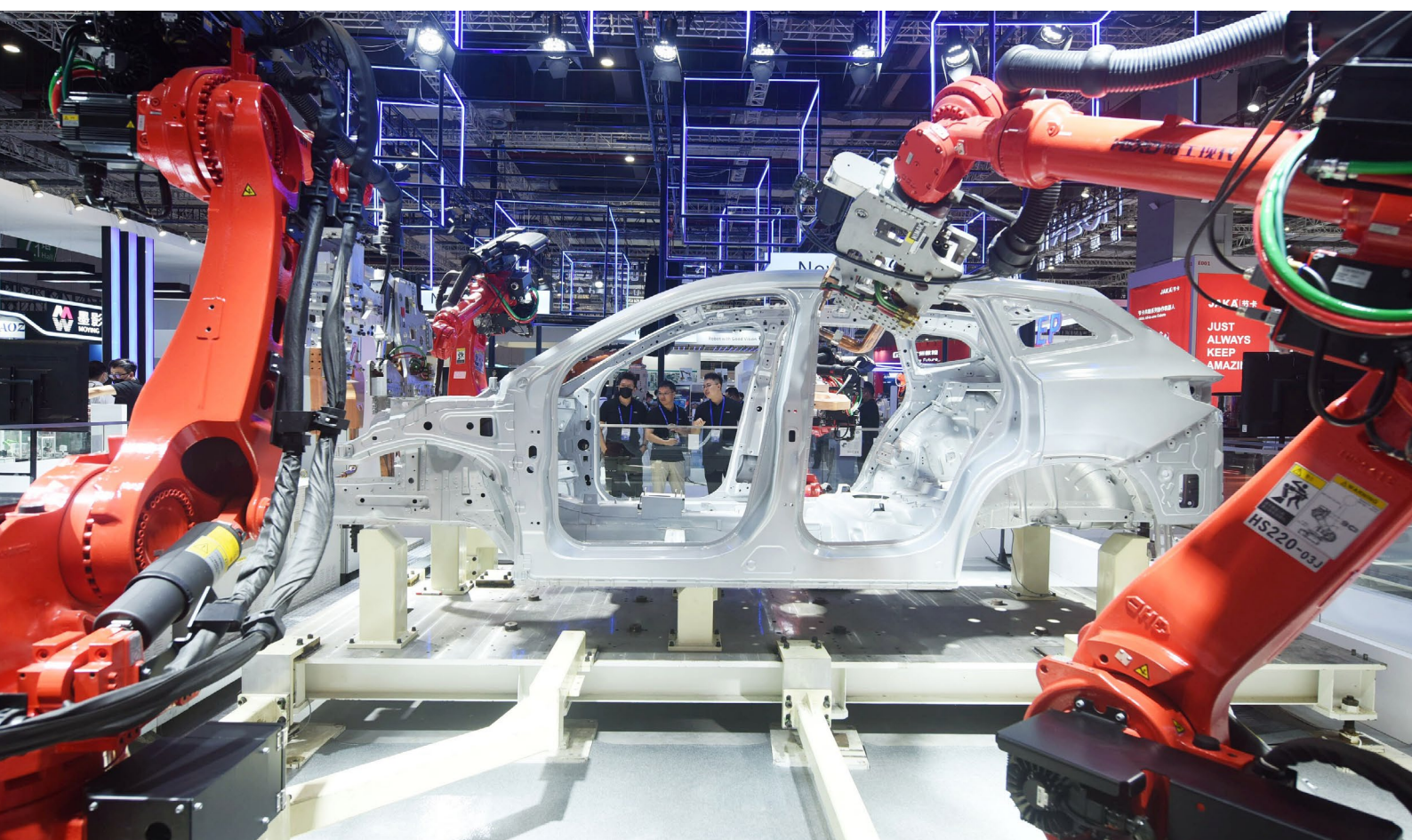


Fragmented Europe: Dealing with China as a technology and innovation power

Edited by: Bernhard Bartsch, Claudia Wessling

Peer reviews by: Andreas B. Forsby, Nick Nieschalke, John Seaman,
Tamás Matura, Francesca Maremonti, Aurelio Insisa, Matej Šimalčík,
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A report by the European Think-tank
Network on China (ETNC)
June 2026

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Contributing institutions to ETNC

Coordinating institutions

French Institute of International Relations (Ifri), France
 Mercator Institute for China Studies (MERICS), Germany
 Elcano Royal Institute, Spain

Participating institutions

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Executive Summary

Fragmented Europe: Dealing with China as a technology and innovation power

China’s drive to become a global leader in science, technology and innovation has huge implications for the EU and its member states. On the one hand, China is becoming a strong competitor in industrial high-tech sectors and innovative science that used to be the stronghold of European actors. Advanced digital technologies made in China also increasingly pose risks to infrastructures in Europe. On the other hand, China offers itself as a resourceful counterpart for collaboration in research and development (R&D) and keeps attracting European scientists and businesses alike.

This report, the 12th compiled by the European Think-tank Network on China (ETNC), analyses how Europe is affected by China’s rise to a technological power and its increasing clout in shaping and creating innovation. Authors from 22 European countries have contributed to this study. The goal is to provide a nuanced picture of how those states interact with China in the field of innovative technologies, and to identify commonalities and differences in how they are affected.

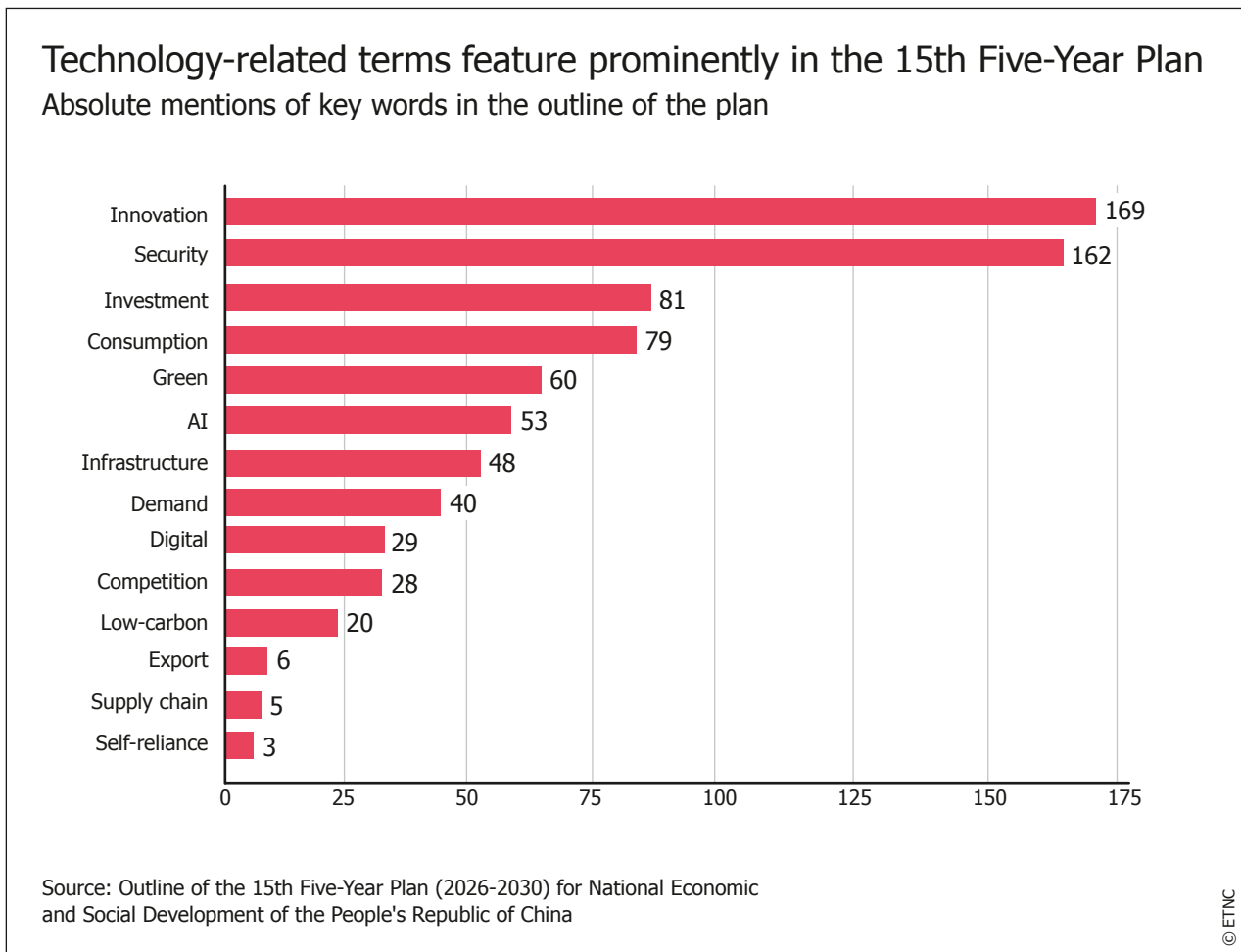


Figure 1

Persistent technology and innovation policies have made China a strong competitor for Europe

In 2024, China surpassed the US in R&D spending, and has, in recent years, made great strides to innovate in sectors like energy, e-mobility and increasingly also robotics. China is not only building its 5G technology into telecommunications infrastructures across the globe, it also actively shapes the future standards in this sector. China looks set to become a key player in AI development, both in basic research and industrial or consumer applications. According to the technology tracker of the Australia-based think tank ASPI, China leads in 66 of 74 underlying research systems of new technologies tracked.

The 15th Five-Year Plan (FYP), published at the National Peoples' Congress in March 2026, marks a significant intensification of China's challenge to Europe's technological competitiveness in the coming years. The plan outlines bold strategies and steps to become a leader in high-tech fields and upgrade China's industry. Technological self-reliance is a key goal of the plan, with China aiming to become stronger and more self-sufficient in AI development, by improving the related research and the required ICT infrastructure of hard- and software systems.

The Five-Year Plan also emphasizes the need for "landmark achievements" and a marked increase in the number of technology fields in which China strives to become a global leader. One case in point is green tech: Beijing wants to double its world-leading solar and wind capacities in the next decade.

In addition to renewable energy, China also invests heavily in emerging sectors such as quantum technology, hydrogen, nuclear fusion as well as brain-computer interfaces. For instance, in 2025, China created the Government Guidance Fund (GGF) to provide funding of one trillion Chinese Yuan (EUR 127 billion) to emerging tech fields to include quantum computing, biotech, embodied AI and next-generation wireless networks¹.

Securing control of innovation value chains is another key strategic goal. China will prioritize the procurement of innovative products from domestic origin to support the development of its high-tech industry. The party stresses that it expects both companies and research institutions to engage in a "new-style whole of nation system" that "concentrates resources to do great things." In this spirit, national champions like semiconductor maker SMIC, tech giant Huawei or battery maker CATL are expected to play along and to co-innovate with tech unicorns, small- and medium-sized enterprises, and research labs in comprehensive industrial clusters.

Apart from targeted innovation policies, the Chinese government has also been using technology transfer, comprehensive subsidies and industrial policies to nurture its own development. The EU and its member states, as of now, are still crucial for China to achieve many of its goals, because their universities offer top-notch research and their highly specialised companies (called "hidden champions" in some regions) produce high-tech components China still needs to import. But the E-mobility and solar sectors show that the tables are beginning to turn and that China is becoming a strong competitor.

The 15th Five-Year Plan intensifies China's challenge to Europe's technological competitiveness

The EU's approach is shifting from unconditional openness to stronger emphasis on economic and research security

In recent years, the EU's approach to China in science and technology has shifted from unconditional openness to a logic of 'de-risking' and economic as well as research security. The Economic Security Strategy published by the Commission in 2023² reflects the shared risk perception. The EU remains determined to reduce dependencies on China, in particular in strategically relevant sectors or critical infrastructures. However, when it comes to the details of implementation, alignment among EU capitals is still lacking and, in business, national actors continue to follow their own strategies of economic engagement with China.

The same lack of alignment can be seen in the research sector, where universities and institutions of higher education across Europe are actively collaborating with Chinese partners across disciplines, especially in the STEM fields. The EU is taking an increasingly cautious stance: while in the past Chinese partners participated (via their own funding) in Horizon research projects, the next funding cycle (2026-27) effectively excludes Chinese legal entities from participation in some key areas.³

China is increasingly a supplier of technology to Europe

A challenge for implementing the economic and research security⁴ agendas lies in the fact that China is increasingly a supplier of technology to Europe. The dynamics in the semiconductor and automotive sectors capture a dilemma: European businesses remain drawn to China's innovation ecosystem and market, even though Beijing's self-reliance campaign that is fueling localization in China is also increasing dependencies and driving de-industrialization in Europe.

On the policy side, increasing competition and fears of European dependency in high-tech sectors have contributed to the diplomatic tensions in recent years. In Brussels, risks stemming from the EU's collective reliance on China as a technology supplier are considered a top priority on the de-risking agenda. EU policies trying to navigate these challenges and regulation such as the updated EU Cybersecurity Act, the Industrial Accelerator Act, the Critical Raw Materials Act etc., albeit country-agnostic in essence, regularly elicit criticism in China.

In recent years, however, both sides have also made efforts to diffuse tensions. The 2025 EU-China summit held on the 50th anniversary of mutual relations, both sides issued a joint statement on climate change. The fight against climate change and for the protection of the environment is, on the political level, still seen as a positive agenda for China and the EU.

Moving forward, in an increasingly complex geopolitical situation, the EU will face difficulties in translating its de-risking strategy into action, including achieving greater technological autonomy and reducing dependencies on China.

The risks stemming from deep technological interdependence with China are arguably recognized and taken seriously by most EU governments. Brussels seems to be preparing for a more hardline de-risking approach towards China, referring to the current state of affairs as "not sustainable."⁵ But the policies of the current US administration are making it costlier for Europe to reduce its strategic vulnerabilities and implement high-stakes policies at both EU and member states' levels.

European states face similar issues with Chinese tech power, but pursue different approaches

As the analyses in this report show, engagement with China as a rising technological power differs in these 21 EU member states and the United Kingdom, but each of these countries is exposed one way or the other.

For some of the countries analysed in this report, exposure to Chinese tech is focused on consumer products; for others, it is an integral part of industrial value chains or infrastructure. There are significant differences in public debates regarding the risks associated with dealing with China as a technological power – from virtually no discussions to lively debates about the delicate balance between nuanced collaboration and targeted de-risking on tech- and innovation.

The degree of exposure and engagement with China in tech and innovation often coincides with a country's economic exposure to China writ large. **France, Germany, Italy and the United Kingdom** can be counted among the countries that are most affected by China's rise in tech and innovation sectors.

For **France**, ensuring national and European sovereignty and competitiveness is now structuring relations with China in the technology and innovation space. While China's capacity for technological innovation has become undeniable, the perception of risk in France is increasingly palpable. Paris is looking to boost European competence in fields that touch on sovereignty and security, such as AI or quantum applications, digital infrastructure or strategic supply chains. This limits the scope of engagement with China (as well as with the United States).

Germany's economy is faced with an existential crisis due to increasing competition from China in key industries like automotive, machinery, and pharma. The science community continues to debate the "risks of not engaging" to the detriment of security circles, who urge for a more conservative approach to prevent unwanted tech transfer. The government's efforts to strengthen German competitiveness are only taking off slowly; efforts for risk mitigation in both business and science are often met with resistance, because the relevant actors consider not collaborating with China a risk in itself.

In **Italy**, autonomous driving technology is arguably the most consequential dossier in tech and innovation relations, with Chinese state-owned enterprise SinoChem being a relative majority shareholder at tire manufacturer Pirelli. On the domestic market, Italian companies in the biopharma sector are facing encroachment by surging Chinese competitors. The country is increasingly preoccupied with the question of how continued collaboration with Chinese partners could negatively affect an already declining global share in high-tech manufacturing.

The **United Kingdom** and China have a long-standing collaborative relationship in science, technology and innovation. However, bilateral research and technology ties have become increasingly securitised over recent years, and the object of domestic political pressure on the UK government. As a result, future collaboration is likely to be more constrained than in an earlier phase of bilateral relations.

The degree of exposure in tech and innovation often coincides with a country's economic exposure to China

Austria, Belgium, Denmark, Finland, the Netherlands, Poland and Sweden can also be counted among the countries with a comparatively high degree of exposure to and engagement with China as a tech power. Their approaches to risk mitigation, however, differ considerably:

Austria's science and technology engagement with China is characterized by quiet and steady continuity. Positioning itself as a small neutral actor, Austria has thus far avoided both enthusiastic embrace as well as dramatic rupture, seeking balance between geopolitical pressures under the umbrella of EU-level frameworks. Austria's industrial policy roadmap until 2035, without mentioning China explicitly, places a strong emphasis on boosting technological sovereignty, economic resilience and the protection of critical infrastructure.

Belgium's technology relationship with China is shaped by its structural strengths in innovation, institutional and regional fragmentation, and geopolitical dynamics putting its growth model increasingly under pressure. The country hosts significant innovation assets, notably in semiconductors, pharmaceuticals, and advanced manufacturing. Flanders dominates Belgium's trade and investment relationship with China but has also applied tighter guardrails on investments and research collaboration.

In **Denmark**, Chinese firms now supply much of its electric bus fleet, Chinese batteries are entering the power grid, and cooperation is expanding in areas such as green maritime technology and water management. Although the China challenge has recently figured less prominently in public debates, concerns about Chinese technology remain deeply institutionalized. Since 2018, Copenhagen has embraced the EU's de-risking approach, tightened research guidelines, and restricted the use of Chinese-made 5G, drones and surveillance technology.

China's clout in tech and innovation is seen in an increasingly critical light both in business and among citizens in **Finland**, also due to Beijing's pro-Russian stance in the Ukraine war. In policy and expert circles, views began turning more critical around 2018, similar to many other European countries. In the 5G debate, the country has performed a U turn: while in the past, all major Finnish telecom operators had relied on Chinese equipment, it was reported in October 2025 that Finland will exclude 'high-risk vendors' (e.g., Huawei) from its 5G networks on security grounds.

Technology also plays a crucial role in Sino-Dutch relations. The **Netherlands** has a strong high-tech industry that is entangled with and dependent on Chinese players, which the conflict involving formerly Chinese-owned chipmaker Nexperia showed. Simultaneously, China is still reliant on critical technology and expertise from Dutch universities and companies like chip machine manufacturer ASML. This gives the Netherlands leverage in the relationship with China - but also makes it vulnerable to the US-China technological competition. When it comes to **Poland**-China cooperation, four technology topics have recently been discussed: 5G, lithium-ion batteries, automotive and e-commerce. Rising awareness of China as a tech power led to the adoption of mitigation measures. Poland is open to Chinese high-tech investments, including EVs, but only on the condition of technology transfer and based on not simply becoming an assembly site for Chinese products.

In **Sweden**, Chinese-owned companies' R&D investments have increased by almost 300 percent since 2013. At the same time, China's dominance in several technology areas has become a controversial issue, at least since the mid-2010s. Security aspects have shaped

policy adjustments in the past five years, for example in foreign direct investment screening and public procurement legislation.

Hungary, Ireland, Portugal, Slovakia and Spain are among the countries that prioritize cooperation.

In **Hungary**, China is positioned as both an economic partner and a potential source of technological integration, while risk discourse remains limited. Key sectors include electric mobility, battery production, advanced ICT, and applied research, though the effectiveness of agreements is constrained by regulatory gaps and Chinese restrictions on technology transfer. Changes to that position might lie ahead following the change of government after the 2026 elections.

Pharmaceuticals, drugs and investments in R&D in China are at the core of **Ireland's** engagement with China in science, technology and innovation. Ireland's policy towards China in this realm constitutes a balancing act: Ireland's open and FDI-driven economic model, traditionally strong ties to the US, and government strategies focused on security, competitiveness and a deeper integration within the EU single market.

Similarly, **Portugal's** engagement with China as a technological and innovation power is grounded in a mix of collaborative openness, economic pragmatism, and caution amidst intense geopolitical competition and rivalry. In this context, an incremental growth of Portugal-China collaborative projects and initiatives in strategically relevant technological fields is visible in domains like e-batteries, energy and ICT infrastructure.

Slovakia's relations with China in the domain of technology and innovation have been characterized over the past five years by pendulum-swinging positions driven by differing political ideologies among governing parties. Contrary to the previous government, the coalition led by Prime Minister Robert Fico pursues cordial relations with China across all domains of interaction. Cooperation on green technologies and renewables is framed as a means towards "enhancing energy security," while reliance on Russian fossil fuels and partnership with the US in nuclear energy persist in parallel.

Spain approaches the challenge pragmatically: it still sees Chinese investment and technological cooperation as tools for industrial upgrading and the green transition, even as concerns about resilience, security and asymmetry grow. "Selective engagement" is the order of the day for Spain: limiting risk in sensitive areas such as 5G core networks, relying heavily on Chinese capabilities in photovoltaics and storage, and trying to embed Chinese investment in EVs and batteries within broader industrial goals.

For some of the countries analysed in this report, engagement with China on tech and innovation is not non-existent, but more limited. Among them are, for different reasons, **Czechia, Estonia, Latvia, Lithuania, Romania and Slovenia** – each of them with their own approaches to risk mitigation.

In **Czechia**, Chinese investments in the Czech technology sector remain relatively small and have been constrained by security considerations and investment screening mechanisms. However, there is a distinction between discourse and practice, as investments in Chinese 5G and solar panel technologies continue despite warnings from security agencies. The Czech industry strongly relies on Chinese imports, while Chinese consumer electronics, surveillance cameras, and selected industrial technologies are widely used.

Estonia's engagement with China is best characterized by a divergence in the recommendations made by the national security apparatus, and decisions made by the business community. In 2019, Estonia signed the 5G memorandum with the US. China's support for Russia in its war against Ukraine likely caused the exit of the 16+1 format and BRI. Yet there has not been a full decoupling: Huawei photovoltaic inverters remain embedded in Estonia's energy infrastructure, and Estonia's Bolt has announced a partnership with China's Pony.ai in self-driving technology.

China's investment in **Latvia** has largely been unsuccessful. Amidst the US-China rivalry and evolving EU policy on technological security, Latvia has opted to engage with China via EU frameworks rather than China led-initiatives.

Lithuania's position on China as a technological power has shifted from openness, in particular in fintech collaboration, to one of the most alarmist in Europe. Four technology sectors – telecommunications, surveillance tech, photonics, and greentech – have become targets of either Lithuanian securitisation or Chinese retaliatory economic coercion.

The technological paths of **Romania** and China also rarely intersect. Even though many Memorandas of Understanding have been signed, no real tech output has resulted from them. Nor is there any debate about potential risks of China as a tech actor. Chinese surveillance technology – CCTV cameras – were adopted in Romanian public institutions without any larger debate.

Slovenia increasingly considers China an attractive partner in technology, primarily with the goal to create additional options and reduce dependence on a slowing European industrial base. With one of Europe's highest manufacturing shares of GDP and among the global top 10 in robot density, there is high interest in engaging with China on technological enhancement and market access. Yet, Slovenia sees itself anchored in the EU, which sets clear limits on this engagement.

To deal with China's technological rise, European coordination is indispensable, but will be challenging for economies under pressure

Moving forward, Europe will have to face the fact that China will remain a force to be reckoned with in high tech and innovation. Securing Europe's still strong industrial base and investing in research and development will be crucial to remain competitive in high-tech and emerging sectors.

The challenge to Europe's technological competitiveness will only intensify

To adapt to the growing competition from Chinese high-tech, Europe will need to closely monitor the implementation of sectoral Five-Year Plans and respond accordingly. As China's leadership continues to project confidence in its policy of tech self-reliance, there can be no doubt that the challenge to Europe's technological competitiveness will only intensify in the coming years.

The outlook for the EU and its member states is complex, as they find themselves between a rock and a hard place: Distrust in Chinese technology will stay, but with the transatlantic relationship challenged by Washington's shifting policies, the implementation of policies protecting European assets might prove challenging. In addition, the ongoing crisis of the transatlantic relationship might undermine the EU's ability to act in global technology competition, making the reduction of strategic vulnerabilities costlier for Europe.

As the Managing Director of the Asia-Pacific Department at the European External Action Service (EEAS), Erik Kurzweil, stressed in his speech at a conference in Beijing on EU-China relations in May 2026, both sides are faced with important choices that will “determine whether our two great regions drift apart or move forward together.” Kurzweil tried to strike a more conciliatory tone despite the many points of contention: “The inflection point in our relationship is not a moment of crisis, but of opportunity. The EU is ready to engage—with openness, with pragmatism. But engagement must be reciprocal and it must deliver tangible benefits for our people, our economies, and our planet.”

However, with regards to China’s rise as a technological and science superpower, the EU, its member states and European neighbors will have no choice but to keep addressing both risks and opportunities – and to carefully weigh them against one another based on sound – and swift – analysis.

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Authors' survey: Views on status and trajectory of engagement with China in high tech and innovation

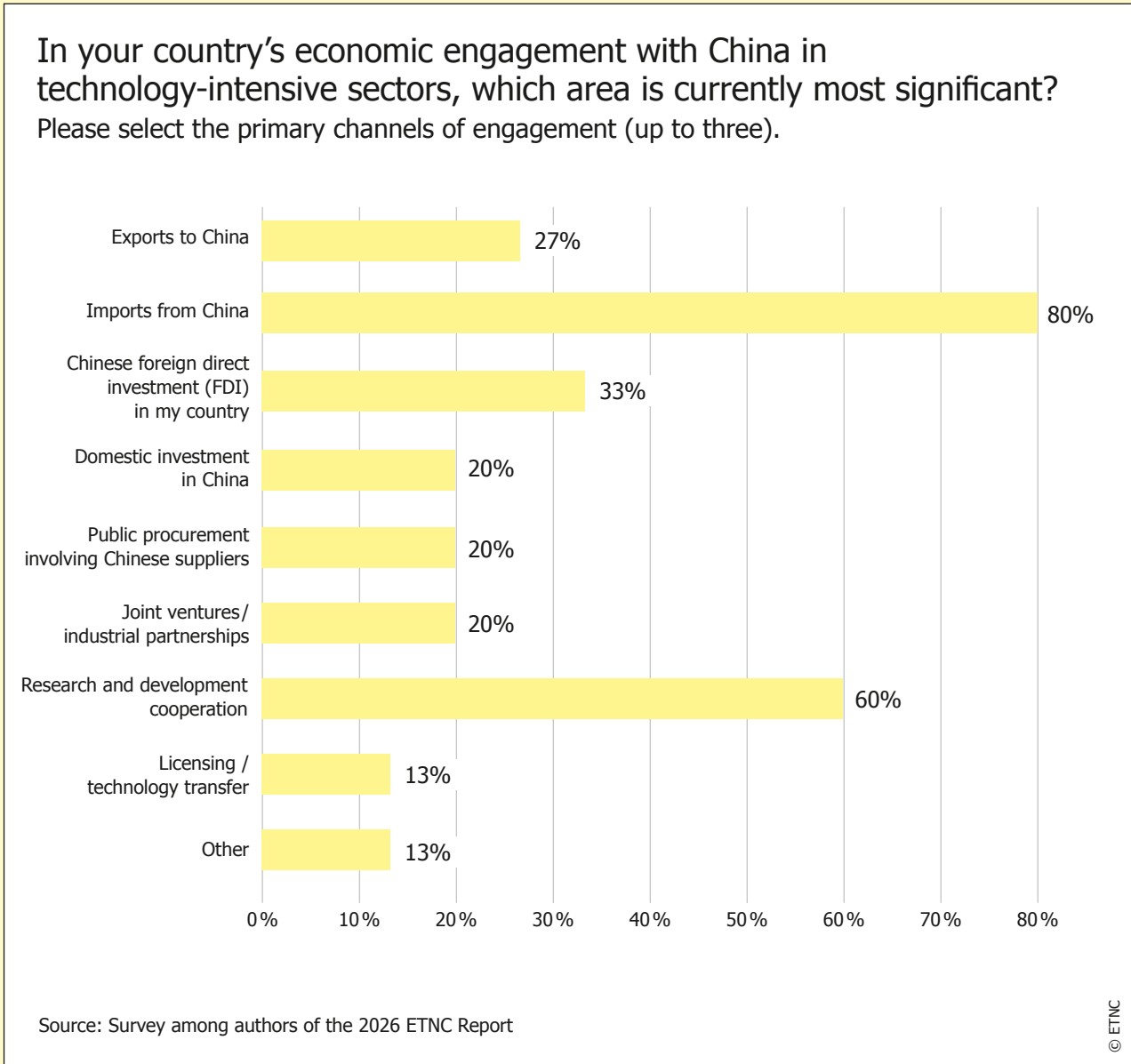


Figure 2

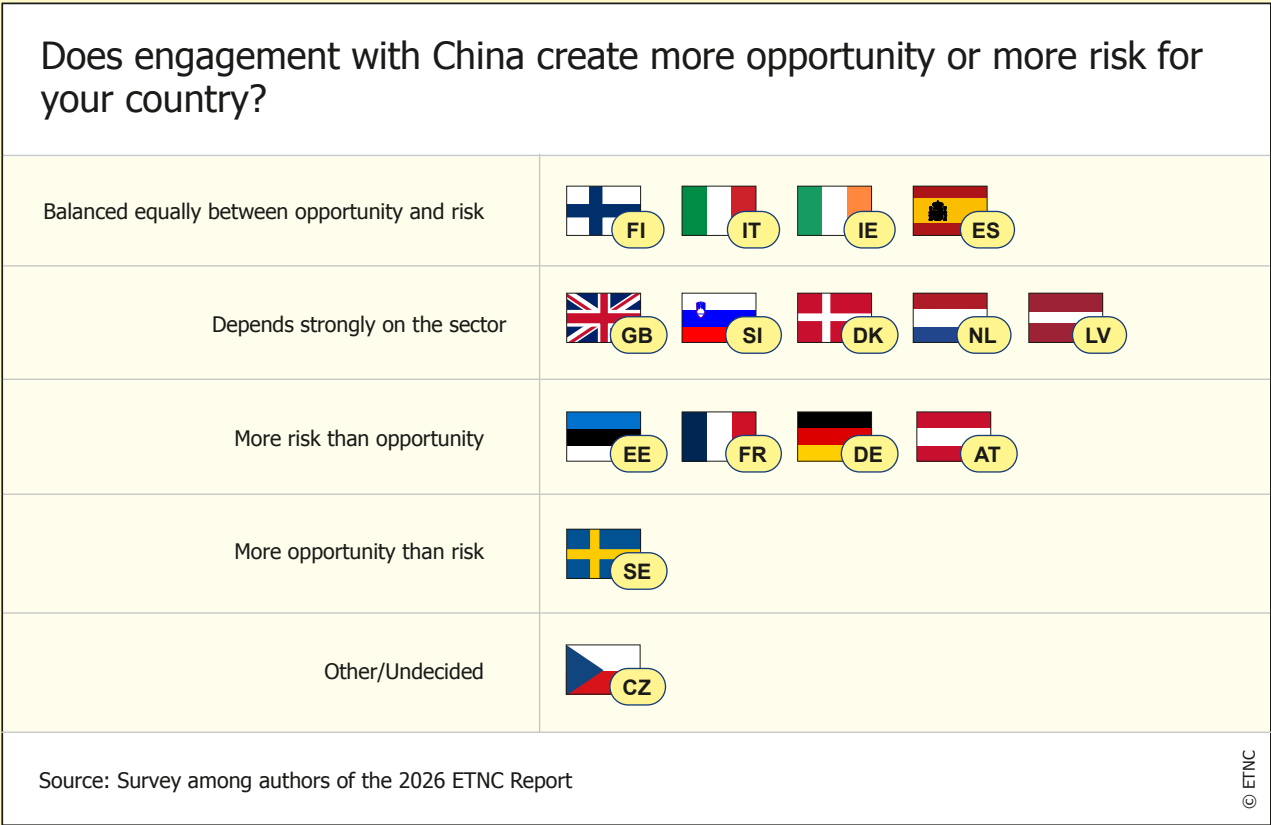


Figure 3

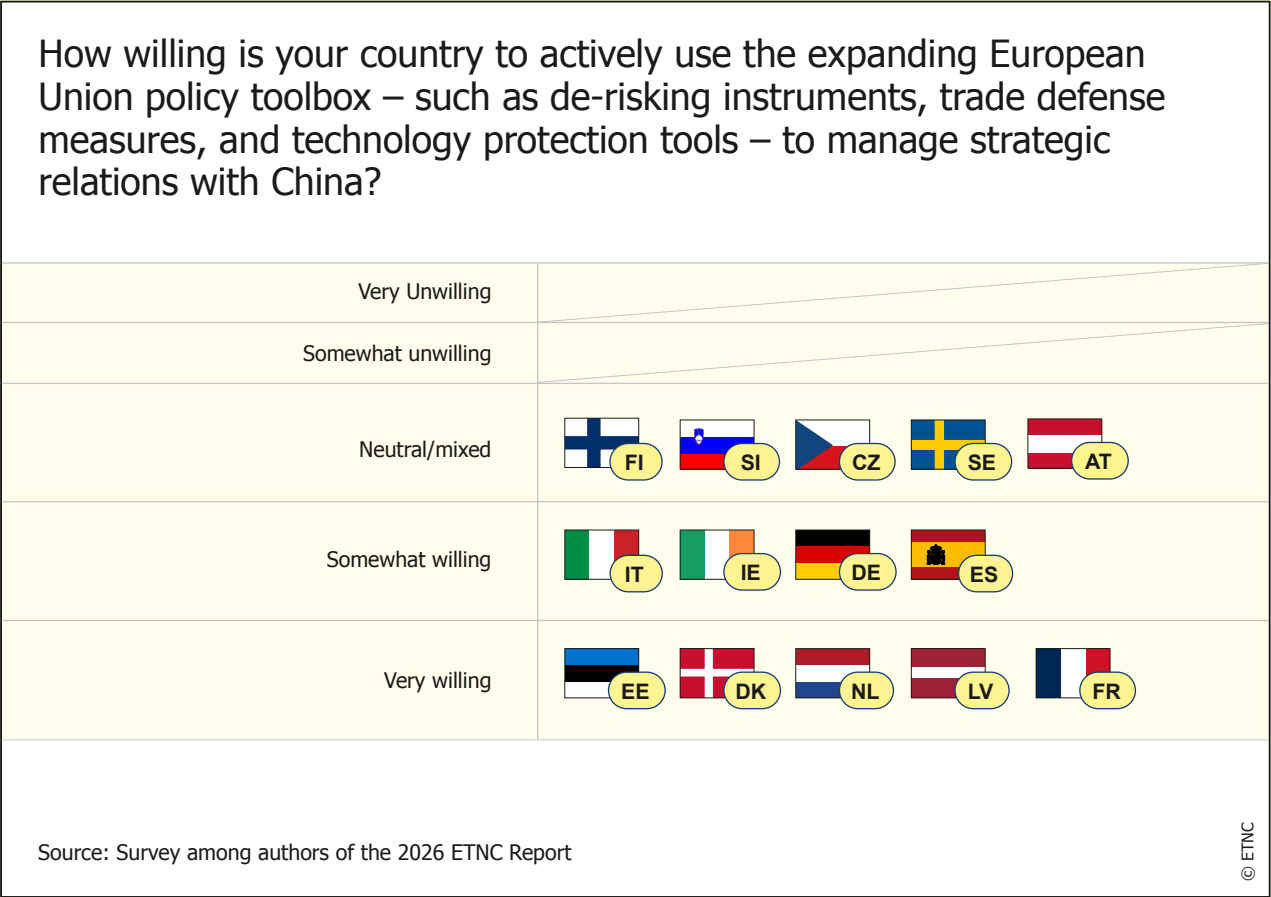
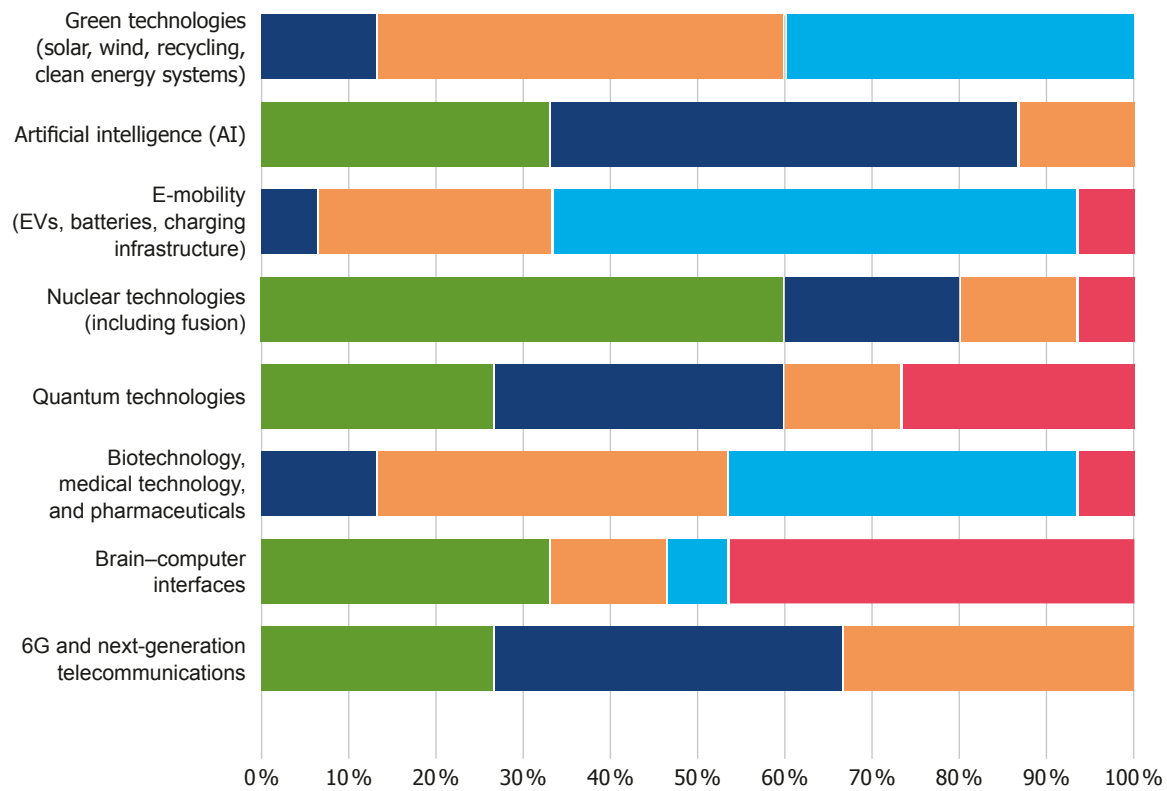


Figure 4

To what extent do you expect the following technologies to become strategic areas of cooperation between your country and China in the coming years?

This may include collaboration in research, industrial partnerships, investment, supply chains, or joint innovation.

■ Not at all ■ To a limited extent ■ To a moderate extent ■ To a high extent ■ No opinion



Source: Survey among authors of the 2026 ETNC Report

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Figure 5

In which one of these sectors do you expect your country to strengthen cooperation with China moving forward?

Please select all applicable sectors.

Green technologies	
Artificial intelligence (AI)	
E-mobility	
Nuclear technologies	
Quantum technologies	
Biotechnology / MedTech / Pharma	
Brain-computer interfaces	
6G and telecommunications	
Other (Maritime technologies)	

Source: Survey among authors of the 2026 ETNC Report

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Figure 6

EU

**Shepherded by Brussels,
Europe awakens to
Chinese technology**



EU: Shepherded by Brussels, Europe awakens to Chinese technology

By Rebecca Arcesati, Mercator Institute for China Studies (MERICS)

EU-China innovation relations have turned more difficult in recent years. Although government policies cannot undo deep interdependencies in science and business overnight, cooperation no longer goes uncontested. The exclusion of Chinese entities from large parts of the Horizon Europe funding program and capitals' increased scrutiny of Chinese investments into high-tech sectors are just two examples of a wider transformation: From largely unconditional openness to China in science and technology, the EU's approach has shifted towards a logic of "de-risking" and economic security.¹

Technology and innovation in EU-China relations: from openness to economic security

Amid intense geopolitical and technological rivalry between Beijing and Washington, Europeans increasingly find themselves in a position of relative disadvantage and dependency. To be sure, European companies control "chokepoints" on some of the world's most critical technology value chains, such as advanced semiconductor fabrication, and occupy important niches for energy systems and connectivity – both crucial for the data centres and networks upon which artificial intelligence (AI) relies.² But the continent is quickly falling behind when it comes to developing, deploying, and setting the standards for tomorrow's most disruptive technologies.

In this context, supply-side dependencies on China for critical technologies and their inputs are viewed with growing preoccupation. Opportunities and the necessity of cooperation notwithstanding, there is growing recognition that the People's Republic of China (PRC)'s ambitions and capabilities pose serious challenges to Europe in terms of supply chain resilience, technological security, critical infrastructure security, and exposure to economic coercion. The Economic Security Strategy from 2023³ reflected an emerging EU-wide consensus regarding the nature of these challenges, even though profound divisions remain between – and within – member states as to urgency and acceptable costs of specific responses.

Against this backdrop, Brussels aims to turn the economic security agenda from paper to practice. The Joint Communication by the European Commission and the High Representative on strengthening the EU's economic security, published in December 2025, offered the clearest official diagnosis yet of the challenges that China's techno-industrial system poses to the bloc's resilience, security, and long-term competitiveness.⁴ PRC-origin technology looms large in each of the high-risk areas identified as needing the most urgent action – from Europe's strategic import dependency for chips to the security and resilience of its energy grids. This assessment reflects a growing consensus among experts and analysts in and outside governments.

Brussels aims to turn the economic security agenda from paper to practice

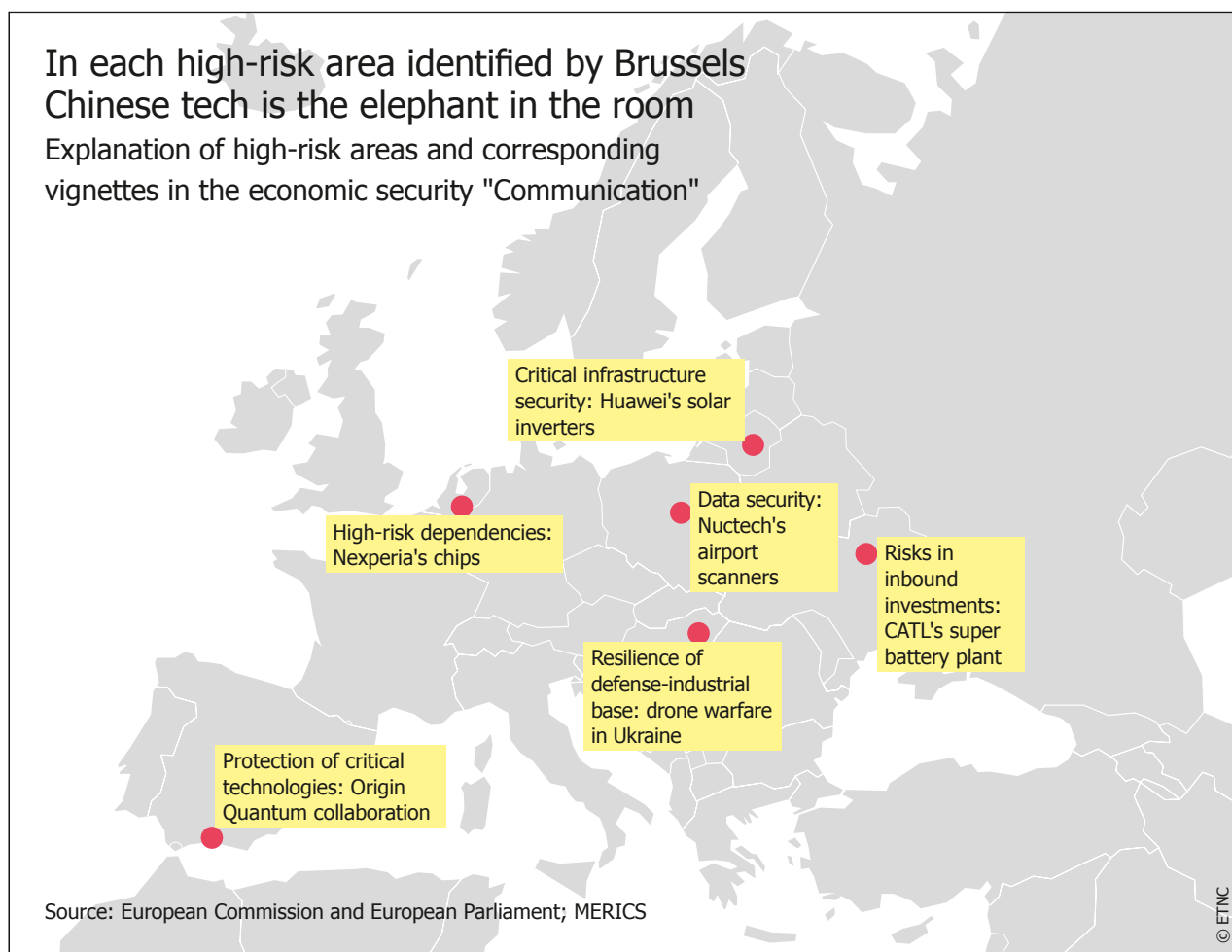


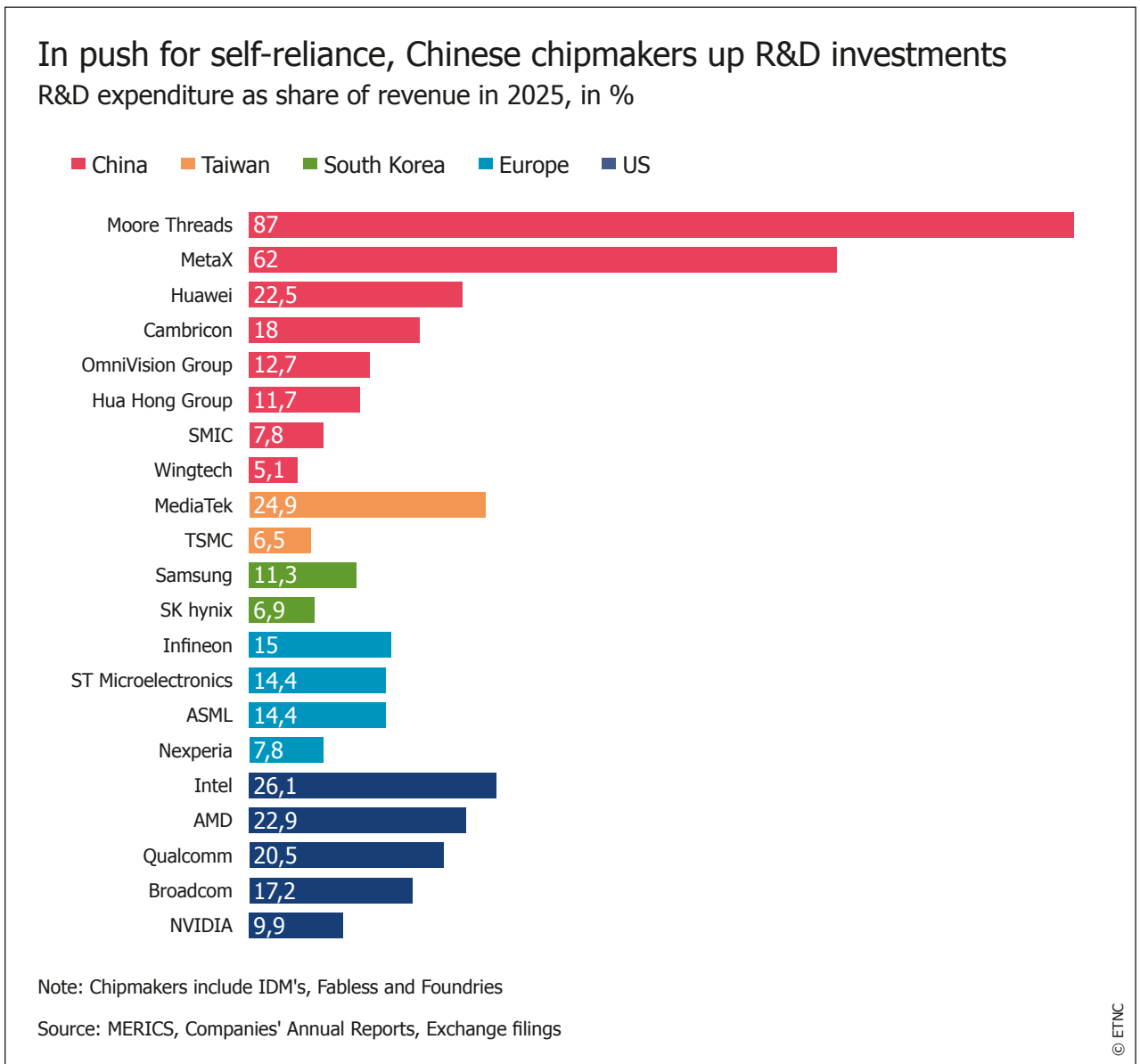
Figure 1

Focus areas: EU-China interaction in technology and innovation

Foundational semiconductors: Nexperia's saga brings strategic dependencies in focus

The EU's collective reliance on China as a technology supplier is a top priority on the de-risking agenda. After the Dutch government used emergency powers in October to seize control of semiconductor manufacturer Nexperia from its Chinese parent, Wingtech Technology, the European automotive industry found itself embroiled in a dramatic supply shock.⁵ Beijing responded the move, which the Netherlands had taken to address the alleged improper transfer of assets by Nexperia's since-ousted CEO, by blocking shipments of packaged chips from the company's plants in China.⁶ Because Nexperia sent around 70-80% of its wafers to China for processing, testing and packaging, foreign carmakers have been left exposed to Beijing's export restrictions. Despite the experience of the Covid-19 pandemic, companies from Volkswagen to Bosch, having failed to prepare for possible disruptions, were forced to cut or suspend production lines.⁷

A lesson in the importance of robust and consistent screening rules for foreign direct investment (FDI) across Europe, Nexperia's case also highlights a key weakness in EU economic and technological security: The bloc's growing dependency on China for mature-node semiconductors, also known as "legacy chips".⁸ Long seen as relatively unimportant, these integrated circuits, which include the ones Nexperia produces, are foundational to the functioning of industries ranging from automotive and medical devices to drones, robotics, aerospace and defence, to name a few.



China controls around 30% of front-end capacity (i.e., chip fabrication), not including semiconductor assembly, testing and packaging (ATP, also commonly referred to as back-end manufacturing).⁹ On top of that, like Nexperia, other European chipmakers, such as ST-Micro, also do much of their back-end manufacturing in China before selling packaged chips to their consumers – including European companies that produce in China for export. This vital technology trade is therefore vulnerable to potential Chinese government export restrictions.

Figure 2

This trend is only poised to intensify given rising global demand for mature-node chips, coupled with China's projected capacity expansions. The EU faces a projected annual supply gap of 12.7 million wafers by 2030, with currently planned fab expansions expected to cover less than half.¹⁰ If downstream European industries manage to survive the ongoing "China shock"¹¹ and thus continue driving chip demand (which is not a given), the shortfall in legacy nodes will be acutely felt. Meanwhile, Chinese companies have committed to doubling their capacity by 2030 (compared to the 2023 baseline).¹² China is therefore set to dominate EU chip imports, while European chipmakers will also face growing pressure from their local competitors. The result is a mounting challenge to the bloc's resilience and competitiveness.

Battery electric vehicles: Europe wants Chinese technology

Another example of China's challenge to European technological competitiveness is the growing footprint of and demand for Chinese battery electric vehicles. Chinese players enjoy advantages stemming from the country's massive economies of scale and state support to the industry, and their products are increasingly sophisticated too. This notably includes batteries, a critical technology field where Chinese firms, particularly Contemporary Amperex Technology Co. Ltd. (CATL), dominate major parts of the value chain. Today, China is the world's leading producer of lithium-ion (Li-ion) batteries, with Chinese battery producers holding 65% of global production.¹³

As CATL and other companies are expanding in Europe and opening facilities to supply local automakers, the attractiveness of their investments for the European economy is obvious. To maximize the benefits, Brussels and some capitals are considering conditionality requirements – including possible technology transfer requirements – for those investments. This is not EU competence, however, as it is up to each member state government to negotiate greenfield investment deals. The Commission is now trying to promote harmonisation through guidance on FDI, non-price criteria for public procurement, as well as additional provisions included in the draft Industrial Accelerator Act.¹⁴ The goal is to ensure that competition for Chinese battery projects among capitals does not trigger a race to the bottom.

Transferring technology, unfortunately, is easier said than done. As mentioned previously, China's government has shown both the willingness and the ability to restrict technology outflows.¹⁵ Indeed, several types of battery technology and components, as well as any associated intellectual property, are subject to PRC technology export controls.¹⁶ In July 2025, China's Ministry of Commerce included fourth-generation lithium iron phosphate (LFP) cathode technology, newer lithium manganese phosphate (LMFP) technology, as well as certain technologies for phosphate cathode raw material production, lithium extraction, and gallium extraction.¹⁷ By requiring that Chinese exporters obtain a license for overseas transfers, the government is proactively preventing foreign competition from emerging. As such, Chinese export controls are poised to further complicate EU industrial policy and de-risking plans.

Energy infrastructure: solar inverters expose cybersecurity concerns

The expansion of PRC-origin technologies in the European market has given rise to cybersecurity and data security concerns

The expansion of Chinese battery makers heralds the arrival of more PRC-origin technologies in the European market, which has given rise to cybersecurity and data security concerns, too.¹⁸ Particularly when components end up in critical infrastructure, such as transportation or energy systems, vendor trustworthiness is paramount. However, one big lesson learnt from the patchworked implementation of the 2020 cybersecurity "toolbox" for 5G networks regards the difficulty of getting to a shared, EU-wide definition of political risk.¹⁹

This is largely due to a lack of political will. Existing cybersecurity regulations, notably the Cyber Resilience Act, Critical Entities Resilience Directive, and NIS2 Directive, do provide for the assessment of both technical and non-technical risk factors in the context of evaluating critical ICT products, services, and systems being procured in the EU.²⁰ Chinese vendors stand out for their risk profile due to their centrality on many ICT supply chains, coupled with the political and legal landscape in their home country, where the CCP is above the law, prosecutes a markedly offensive cyber policy, and limits the autonomy of

economic actors. Although some member states have used such authorities, others have been wary of singling out specific vendors – in large part out of fear that doing so would jeopardise bilateral relations with China.

An illustration of this regulatory patchwork, Chinese solar inverters were banned in Lithuania in 2023 but remain widely available elsewhere in the EU.²¹ Over 80% of inverters are sourced from China, with Huawei being the market leader, followed by other Chinese firms.²² Over 200 GW of European solar power capacity is estimated to be linked to inverters made in China.²³ Inverters, which connect power devices to the grid, must be accessible remotely for updates and maintenance. Reports of undisclosed communication devices found in some Chinese solar inverters have triggered renewed concerns around potential sabotage or damage.²⁴ Now, under the proposed recast of the EU Cybersecurity Act, the Commission would be empowered to designate and de facto restrict these or other products “where dependencies on a single or very limited number of suppliers could pose a significant security risk.”²⁵

Recent policy adjustments: De-risking enters crucial implementation phase

These illustrate two key difficulties the EU is facing in translating its de-risking strategy into action. First, achieving greater technological autonomy entails choices that are both financially and politically costly. Industrial and innovation policy in sectors like semiconductors and green technologies come with big price tags, and at a time when European citizens are being asked to spend more on the continent’s defence capabilities in the face of Russia’s aggression and the less reliable, more unpredictable US administration of Donald Trump. These conditions further limit the political will and cohesion required for member states to implement high-stakes policies that would reduce exposure to China’s value-chain dominance and willingness to weaponise its advantages. This is largely why good-on-paper initiatives such as the ReSourceEU Action Plan, the Net Zero Industry Act, or the proposed Industrial Accelerator Act face so many structural, political, and financial constraints.

The second difficulty lies in the multi-stakeholder nature of many technology and economic security policies, which require that the right structures, mechanisms, and incentives be in place. The dynamics in the semiconductor and automotive sectors capture the dilemma well: European businesses are still drawn to China’s innovation ecosystem and market due to the pace of innovation and digitalisation, even though the very self-reliance campaign that is fuelling localisation in China is also increasing dependencies and driving de-industrialisation in Europe. This situation explains why the December Communication places so much focus on getting industry on board – including as crucial providers of information and intelligence upon which to base risk assessments as well as the ensuing mitigation measures.

Outlook: Distrust in Chinese technology will stay despite EU-US tensions

Europeans increasingly perceive China as a major science and technology power whose development and policies involve high stakes for Europe. In a survey of 766 Europe-based China experts and observers conducted by MERICS, nearly 80% of respondents expected the country to make “major” or “very major” progress in AI in 2026, with more than half expressing the same views for semiconductors, biotechnology, and green technologies. At

The EU is facing two key difficulties in translating its de-risking strategy into action

the same time, most respondents were either pessimistic or only slightly optimistic about the EU's ability to reduce dependencies on the PRC and prosecute economic de-risking.²⁶ The ongoing crisis of the transatlantic relationship will further complicate the implementation of many China-related policies. Although Brussels is staying the course of the economic security strategy that the first von der Leyen Commission unveiled three years ago, Washington's policies are absorbing much of member states' bandwidth. Amid Trump's tariffs, assault on European countries' sovereignty and democracy, and transactional dealings with China and Russia, priorities in capitals have inevitably shifted. Importantly, Europeans are also rethinking their dependency on US chip designers and hyperscalers.

The United States is undermining the EU's ability to act in global technology competition

Once a partner in implementing important de-risking policies vis-à-vis China –sometimes by unilaterally pressuring Europeans to treat Chinese technology as a threat – the United States is now undermining the EU and its ability to act in global technology competition. European governments may be excused for scrambling to respond in kind to Chinese export controls on critical inputs for their tech industries while the United States is coercing its allies.²⁷ Similarly, restricting Chinese ICT vendors or strengthening export controls may seem ill-timed as Washington is making concessions to Beijing on the technology front.²⁸ Still, it seems fair to say that Trump's policies are making it more complicated and costlier for Europe to reduce its strategic vulnerabilities, but they will not fundamentally change member states' collective risk assessment on China. With some exceptions, the risks stemming from deep technological interdependence with China are arguably recognised by most EU governments. However, conversations with officials in Brussels reveal an acute preoccupation regarding the bloc's resolve, urgency, and ability to act swiftly to counter the PRC's growing techno-industrial dominance.

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Austria

**Technological engagement
with China not a priority,
but present**



Austria: Technological engagement with China not a priority, but present

By Nick Nischalke, Austrian Institute for European and Security Policy (AIES)

Throughout the last decade, Austria's science and technology engagement with China has largely been characterised by steady continuity. Austria has thus far avoided both enthusiastic embrace as well as dramatic rupture, instead maintaining overall quiet and stable cooperation. This position reflects Vienna's broader positioning as a small neutral actor seeking balance between geopolitical pressures under the umbrella of EU-level frameworks, rather than developing a distinct national approach toward China as a technological and innovation power. Nevertheless, in light of intensifying scrutiny of technology flows from and toward the PRC, Austria has found itself adapting its long-standing posture of quiet continuity.

Recent trends: A decade of managed continuity

Historically, science and research cooperation between the two countries has enjoyed a comparatively high priority. This is best exemplified by establishment of an Office of Science and Technology (OSTA) in Beijing back in 2012. To this day it remains one of only two such offices (the first was established in Washington D.C. in 2001) with the goal of strengthening “bilateral relations with these key research countries in the realms of science, research and innovation”.¹

Vienna has gradually shifted toward a more cautious approach

In 2018, deepening technological cooperation saw some momentum with the establishment of the friendly strategic partnership, which pledged to foster bilateral efforts in scientific research and innovation, in fields such as “clean energy” and “high-end manufacturing”.² At the time, Vienna also expressed willingness to participate in BRI, albeit never having signed a formal agreement³. Since then, however, there have been no comparable high-level initiatives regarding science and technology, signaling somewhat of a plateau in bilateral engagement and a gradual shift from political promotion toward a more cautious approach. Indeed, recent years have been marked by a carefully growing emphasis on regulatory instruments and political signaling aimed at managing technology related risks.

For instance, following the 2019 EU-FDI-Screening-Regulation, Vienna introduced tighter investment screening regulation on a number of sensitive technology areas, such as digital and 5G infrastructure, energy, artificial intelligence, robotics, and quantum technologies.⁴⁵ This shift from openness to prioritising sovereignty is also underscored in the 2026 Industrial Strategy which lays out Austria's industrial policy roadmap until 2035. Without mentioning China explicitly, it places a strong emphasis on boosting technological sovereignty, economic resilience and the protection of critical infrastructure. By prioritising key technologies and embedding industrial policy in a European framework, the document at least implicitly signals growing caution toward dependencies in areas where China acts as a technology and innovation power.⁶

Data on public perceptions of China as a science and tech power is not available as surveys hitherto have not specifically focused on that aspect, possibly indicating low salience of the topic which is further corroborated by limited parliamentary debates. One exception, however, can be found in the parliamentary debates of December 2024, where concerns

over dependency on China for the green transition were expressed across party lines (Greens, Conservatives, Right).⁷

Academia: Between cooperation and caution

Meanwhile, university ties between the two countries largely date back to the 1980s and 1990s and have not significantly expanded in recent years. And while institutional linkages to PLA-linked entities exist, these appear to primarily centre around student exchange programs and usually carry little structural significance in the technology domain.⁸ Still, as discussed below, individual cases, such as Anton Zeilinger's former assistant Pan Jianwei, have proven consequential for China's technological development in fields like quantum science.

The Austrian WTZ (S&T cooperation) programme funds bilateral research projects jointly supported by China's Ministry of Science and Technology (MOST) and administered on the Austrian side by the Agency for Education and Internationalisation (OeAD) on behalf of the Federal Ministry of Education, Science and Research. In its latest 2024 call covering projects for the 2025-2027 period the thematic scope covers areas from climate and energy to health and chemistry exhibiting a notable focus on some strategically relevant sectors.⁹ Furthermore, there have been regular joint calls by the Austrian Research Funding Agency (FFG) and the Chinese Academy of Sciences (CAS) with the latest rendition focusing on advanced materials.¹⁰

Research engagement with China has increasingly been accompanied by efforts to strengthen national research security

At the same time, the continuation of such research engagements has increasingly been accompanied by efforts to strengthen national research security. Following the Council's 2024 Recommendations on Enhancing Research Security,¹¹ Austrian authorities, in particular the Federal Ministry of Education (now BMB), have introduced a research security framework¹² to help universities and other research organisations in managing risks related to foreign interference and unwanted knowledge transfer in sensitive fields. To coordinate this effort the ministry established a dedicated network of contact points encompassing more than 70 institutions and stakeholders, each with a designated Single Point of Contact serving as liaison between the organisation and the Ministry.

As a fairly recent and country-agnostic initiative, concrete impacts on Sino-Austrian R&D cooperation remain to be seen, but developments point towards higher institutional awareness and prudence. Indeed, one survey found a "fundamental lack of knowledge about research security related terms" and current EU-China policy frameworks, while indicating a consensus that cooperation should continue, albeit in a "recalibrated way".¹³

Industry: Acquisitions and engagement before the security debate

Corporate engagement, too, spans several strategic sectors. Notably, the telecommunications sector shows significant Chinese involvement: ZTE has been a long-term network equipment partner of Hutchison Drei Austria since 2010,¹⁴ contributing to the operator's mobile network infrastructure, while Huawei has collaborated with more than ten Austrian universities, organisations, and startups on research, education, and digitalisation initiatives. This notably included the "Huawei University Austria"¹⁵ initiative which sought to institutionalise cooperation through training programmes, joint research activities, and talent

development partnerships with Austrian higher-education institutions in areas such as 5G and ICT.

Equally pre-dating recent debates, Chinese acquisitions in the aviation sector included Austrian components supplier FACC which has been majority-owned since 2009 by Xi'an Aircraft Industrial Corporation (XAC),¹⁶ a subsidiary of the state-owned defence conglomerate AVIC, while Diamond Aircraft was acquired by China-based Wanfeng in 2017.¹⁷

Quantum research: Close entanglement of Austrian and Chinese researchers

One area in which these dynamics have nevertheless become more visible is Austria's quantum tech field: The first ever quantum video call was conducted between Beijing and Vienna in 2017. This "unhackable"¹⁸ form of communication resulted a long and close cooperation between Austrian and Chinese scientists. While this breakthrough highlighted Austria's leading research capabilities in the field with Austrian physicist Anton Zeilinger ultimately being awarded the 2022 Nobel Prize in Physics, joint Sino-Austrian quantum research did spark concerns over potential contributions to Chinese military capabilities. Pan Jianwei, Zeilinger's former doctoral student leading China's quantum program, has documented ties to Chinese defence contractors working on quantum navigation and detection for naval applications.¹⁹

Austria's national security strategy acknowledges risks related to espionage in quantum research

Despite Zeilinger's assertion that his work constituted "purely fundamental research",²⁰ Matthias Kettmann, head of the Innsbruck-based Quantum Ethics Lab, called for an outright halt to quantum research collaboration with China, arguing that "the societal and political risk outweighs" the scientific benefits.²¹ At least, the risks associated with the field were ultimately acknowledged in Austria's latest rendition of the country's national security strategy which acknowledges risks related to espionage in quantum research. At the institutional level, quantum has been singled out as a focal area under the research security framework described above.²² That said, quantum collaboration with China has recently constituted a small fraction of overall bilateral research activity, with one project out of twenty in 2022, two out of thirty-four in 2023, and four out of fifty-six in 2024.

Furthermore, Austria joining the Quantum Declaration in 2024 marked a shift towards increased alignment with a European approach to quantum technologies as a strategic and geopolitical domain, with then Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology Leonore Gewessler stressing the "outstanding geopolitical importance of quantum technologies".²³

The Green bind: Decarbonisation and dependency

Green Tech is among the few more publicly debated fields regarding China's role. Indeed, Vienna's ambitious goal of achieving climate neutrality by 2040 places Austria in the same conundrum the European Union faces as a whole: The demand for affordable and scalable green tech solutions can thus far primarily be met by Chinese firms. The structural tension between accelerating decarbonisation and avoiding new strategic dependencies raise both economic and geopolitical concerns.

A meta study on trade dependencies in Austria identified critical vulnerabilities in technologies related to decarbonisation, notably due to China's dominant position in the processing of critical raw materials and in battery value chains. Additionally, indirect dependencies embedded in European value chains remain substantial with only limited options for diversification.²⁴

Against this backdrop, jointly applied research projects in the field remain part of Austria's broader engagement with the PRC, including through export-oriented R&D frameworks such as EXPORT, which funded joint research efforts in technologies like energy systems, and energy efficient construction from 2018 to 2025.²⁵

Policy responses thus far have been primarily shaped by European frameworks rather than distinct national initiatives. This is evident in Vienna's alignment with European initiatives such as the Net Zero Industry Act²⁶ as well as the Critical Raw Materials Act,²⁷ which is in line with Austria's perception of dependency risks as a European issue rather than a domestic one.

Notably, however, public debate has exceeded the policy arena: Recent examples include the controversy around suspicious inverters in Chinese PV systems²⁸ and reports on critical dependencies in batteries.²⁹ Still, the framing of these issues largely retains a European angle over a national one.

The Magna question: Industrial survival at what cost?

Where Chinese technologies intersect with Austria's economically most significant industries, public and political attention has been notably higher. With the automotive sector contributing roughly 6% to Austria's GDP and maintaining some 200.000 jobs (ca. 4.3% of total workforce)³⁰ as of 2022, Austria is particularly sensitive to the sector. China's technological lead in EVs has reshaped sectoral dynamics not just in the EU, but Austria as well.

China's technological lead in EVs has reshaped sectoral dynamics in Austria

Magna Steyr, arguably Austria's most strategically important contract manufacturer, serves as a prime example: After losing key clients,^{31 32} its Graz plants saw outputs fall by almost 30% between 2023 and 2024. Chinese OEMs effectively offered a lifeline: in 2025 Chinese EV manufacturer XPENG launched its first European production line at Magna Steyr's Graz facility that has since taken on production of the G6 and G9 models.³³ GAC followed suit the same year with its Aion brand.³⁴ Chinese manufacturers could thus circumvent EU tariffs, while Magna Steyr avoided a further slump in production for the time being. Austria's abstention from the vote on tariffs on Chinese EVs in 2024,³⁵ reflected this bind. By not choosing sides, Vienna avoided antagonising Chinese partners which may prove vital for the domestic automotive sector, whilst not openly breaking with the broader European position. Still, with core IP staying in China, and Austria merely serving as a manufacturing base, the arrangement offers short-term industrial relief but few structural gains in terms of technological sovereignty.

At the same time, changes on the demand side of the automotive sector were accelerating as 2025 marked a major shift in the Austrian auto market with the combined new registrations of electric and hybrid vehicles surpassing those with combustion engines. While the country has seen a sharp rise in market share of Chinese EVs with BYD occupying 8.7% of sales in the sector, various European brands including Skoda, BMW and VW still outperformed their Chinese competitors with market shares of around 10% each.³⁶

Overwhelmingly still, Austria's exposure to Chinese EV manufacturers points to a pragmatic accommodation of immediate market pressures rather than a strategic reorientation of the country's automotive sector.

Outlook: Austria's ongoing calibration

On the whole, the outlined cases paint the picture of a continuous balancing act, in which Austria has largely aligned itself with EU-level guidelines to navigate engagement with Chinese technological capabilities while avoiding any steps that could risk straining bilateral relations.

In the foreseeable future, Austria's science and technology relations with China are likely to continue to be shaped by economic imperatives and European regulation. Cooperation is most likely to persist in applied, commercially oriented fields such as green technologies, industrial manufacturing, and non-sensitive research domains, where Chinese capabilities remain difficult to substitute. At the same time, areas designated as critical technologies, including quantum, digital infrastructure, and dual-use applications, are likely to face tighter controls and further alignment with EU-wide research security and de-risking efforts. Thus, continued pragmatic engagement under stricter governance is a plausible trajectory.

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Belgium

**Technology relations with
China under strategic and
institutional Constraint**



Belgium: Technology relations with China under strategic and institutional Constraint

By Victor De Decker, Egmont Institute

Housing top-class R&D centres in a variety of innovative sectors, Belgium is consistently one of the highest spenders on research and innovation within the EU. In 2024 it spent 3.36% of GDP on R&D, second only to Sweden in the EU, and well above the European average (2.24%).¹ As China has become an increasingly central actor in global technology and innovation, Belgian and Chinese firms have shown growing interest to collaborate. While this creates opportunities, concerns over strategic dependence and the loss of technological advantage have increased accordingly. However, these concerns are not evenly distributed across regions or sectors.

Recent trends: Regional divergence and exposure

Belgium devolves innovation and international trade policy to its three regions – Flanders, Brussels, and Wallonia – each managing its own strategy and international economic relations. This decentralised structure directly shapes how Belgium engages with global partners, including China. On China specifically, regional approaches have diverged: Walloon authorities have maintained a warmer posture toward Chinese technology engagement for longer, while Flanders has applied progressively tighter guardrails on investments and research collaboration since 2016.

Regional approaches on China in Wallonia and Flanders have diverged

Despite this more cautious approach, Flanders still dominates Belgium's trade and investment relationship with China, anchored by the Port of Antwerp-Bruges. Its two main export categories are chemicals and pharmaceuticals (39.93%) and machinery and electronics (19.74%) – both technology-intensive goods categories. The import side presents a picture: machinery and electronics lead (32.49%), followed by transport materials (24.48%) and chemicals and pharmaceuticals (7.71%). Passenger cars are the single largest import category at 18.41%, with electric vehicles accounting for 16.10% of total imports. Overall, Flanders represents 87.28% of Belgium's exports to China and 94.52% of its imports, confirming its role as Europe's primary gateway to China.

Flanders is also one of Europe's most R&D-intensive regions, with expenditure at 3.5% of GDP and two thirds of national R&D investment concentrated in the northern region in 2023, making it a desirable destination for Chinese research institutions. Yet the political mood around Sino-Flemish research cooperation has shifted markedly. Although Flanders signed a Memoranda of Understanding with China's Ministry of Science and Technology (MOST) in 2012 and 2017, no public record of a renewal exists.² Concern has grown particularly around military-civil fusion: a 2025 study by Houttekier, Van Hoeymissen, and Du Bois found that research collaborations on critical technologies with potential military applications in China had increased over the past decade.³ In January 2024, the Flemish government announced a ban on new collaborations with China's "Seven Sons of National Defence" universities.⁴ A knowledge security desk, modelled on the Dutch approach, is now being developed at the Flemish regional level. Both the Wallonia-Brussels Education Ministry and the federal government have been slower to act on knowledge security.

South of the language border, technological engagement with China has remained warmer for longer. Wallonie-Bruxelles International (WBI) renewed its MoU with MOST as recently

as 2022.⁵ Wallonia also hosts the China-Belgium Technology Center near UCLouvain in Louvain-la-Neuve – described as the first Chinese-established business and technology park outside China, originating from an agreement signed by Prime Minister Elio Di Rupo and President Xi Jinping in 2014. Its stated mission is to serve as a gateway between high-tech European and Chinese companies.⁶

In 2017, the Walloon trade promotion agency further supported the establishment of an innovation center for logistics and e-commerce at Liège Airport, which already functions as the European logistics hub for Alibaba. Following intelligence assessments, the Belgian State Security Service (VSSE) has continued monitoring Alibaba's operations there, including the introduction of software systems capable of collating sensitive economic information. The security service stated that the presence of Alibaba “constitutes a point of attention for the VSSE” because of Chinese legislation forcing national companies to share their data with Chinese authorities and intelligence services.⁷

Electric vehicles: Belgium as a hub for Chinese EVs

Belgium is a trading and manufacturing hub for Chinese-made EVs

Belgium is not only a trading hub for Chinese-made electric vehicles (EVs), but also a manufacturing hub. The recent closure of Audi's Brussels plant has left the Volvo factory in Ghent - owned by China's Geely - as the country's sole remaining car manufacturing site, marking a shift in Belgium's automotive sector toward deeper integration with Chinese EV technology.

Volvo is the largest Chinese-owned employer in Belgium, employing more than 6,500 employees. In the long term more important than capital and employment opportunities, the Chinese link offers something else: technical battery technology expertise. The facility in Ghent produces three EV models. The production line of one of these models (EX30) was introduced following the European Commission's announcement of countervailing duties on Chinese-made EVs, attracting further investment in the production line in Ghent, with a company spokesperson calling the tariffs “a godsend” for the factory, as it became the prime production facility for EVs for the European market.⁸ In official communications, Geely/Volvo has stated that the decision to move the EX30 production to Belgium was taken regardless of the tariffs.

The EX30 is built on a platform from Zeekr⁹ – another Chinese Geely sister brand – and is thus not proprietary to Volvo alone, underlining the dependence on Chinese innovation. The Ghent facility underwent a €200 million investment, including a new battery pack assembly line, to support the increased production. The Flemish regional government contributed € 3 million to upskill the Volvo workforce to adapt to the electric transition in the automotive sector.¹⁰

While EV manufacturing in Ghent strengthens Belgium's industrial base, it simultaneously embeds it structurally into Chinese-controlled technological ecosystems. Political debate has largely prioritised industrial retention and employment, over concerns about long-term technological dependence.¹¹

Semiconductors: Phasing out cooperation with Chinese institutions in R&D

Belgium's position in the semiconductor sector is closely linked to Imec, which operates as a globally oriented research hub rather than being anchored to a small number of national champion firms. This institutional neutrality enables Imec to function as an international collaboration platform. In recent years, when faced with pressure to choose between

American and Chinese partners, Imec has aligned with US export control policies and has phased out cooperation with Chinese institutions, rather than an abrupt termination. Belgian policymakers had limited direct influence over these decisions.

In February 2026, Imec inaugurated NanoIC, a €2.5 billion semiconductor pilot line in Leuven, supported by EU, federal, and regional funding as well as by ASML. The facility offers more than 12,000 m² of cleanroom space dedicated to sub-2-nanometre chip prototyping and R&D. As a flagship project of the EU Chips Act, NanoIC is designed to provide shared access to near-industrial-scale infrastructure for European companies, research institutes, and start-ups, ahead of full-scale production. The arrival of ASML's next-generation High-NA EUV equipment is expected to further enhance its capabilities. For Belgium, hosting Imec consolidates its role as a core node in advanced semiconductor research and supports broader EU objectives on competitiveness, supply-chain resilience, and technological autonomy.

Belgium's role as a core node in advanced semiconductor research supports broader EU objectives

In his inauguration speech to NanoIC, Prime Minister De Wever characterised the pilot line as 'a strategic instrument' bridging fundamental research and industrial production, and argued that strengthening Imec would make Belgium and Europe 'indispensable' in competition with the US and China.¹²

Although Imec is by far Belgium's most strategically and internationally significant semiconductor asset, Imec is not everything Belgium's semiconductor industry has to offer. The largest Belgian semiconductor company by market capitalisation is Melexis. This fabless semiconductor company has established itself as a key player in the automotive sensor industry. With a revenue of approximately USD one billion, China accounts for nearly a third of its businesses.

The electrification of China's car market – EVs notably requiring more sensors and chips –, only solidifies its position as Melexis' most important market outside the EU. Despite its strong presence in China, Melexis does not currently operate production sites in the country. Instead, its manufacturing facilities are located around the globe.

Whereas Belgium has proven an innovative player in the industry, its semiconductor manufacturing has never fully taken off. The only notable exception was BelGaN. Acquired by Chinese investors in 2021, the company went bankrupt only a few years later. While its financial difficulties predated Chinese investment, concerns over Chinese ownership appear to have constrained political willingness to provide public support. According to Christian-democratic member of parliament, Robrecht Bothyne, a screening of the company's Chinese ties was likely one factor in the Flemish government's decision not to intervene.¹³

Wind energy: Belgium adjusts to EU regulations

To increase the share of European green tech and reduce dependence on Chinese-made clean technologies, the EU adopted the Net-Zero Industry Act (NZIA) in the summer of 2024, requiring member states to apply its rules in public procurement. From 2026, these rules apply to auctions – including Belgium's tender for offshore wind energy in the Princess Elisabeth Zone.¹⁴ The rules require that at least 75% of turbines not be Chinese-made or contain more than four critical Chinese components.

They also exclude Chinese drive systems from most turbines and mandate partial diversification away from China for key inputs such as permanent magnets, of which the EU currently sources about 93% from China, while introducing stricter environmental and cyber-

security standards. These sourcing requirements are expected to increase project costs, illustrating the trade-off between economic efficiency and strategic autonomy as Belgium redesigns its auction framework under Energy Minister Mathieu Bihet.¹⁵

Solar: Reliance on Chinese-made inverters a concern

Concerns over technological dependence extend beyond wind energy to distributed solar infrastructure. In November 2023, research highlighted the risks associated with Belgium's extensive reliance on Chinese-made inverters in photovoltaic systems. These internet-connected devices convert direct current into alternating current and were identified as potential cybersecurity vulnerabilities. Several Chinese suppliers, including Huawei, were linked to concerns over data access, remote control capabilities, and exposure to state influence, raising fears of systemic disruption and hostile interference.¹⁶

The political response revealed the practical consequences of Belgium's fragmented governance structure. While data on Chinese inverters were available for Brussels and Wallonia, comparable information was lacking in Flanders. Former Flemish Energy Minister Zuhal Demir framed the issue as a European-level problem and pointed to federal responsibility for product standards. At the same time, she acknowledged significant information gaps and called on grid operators, regulators, and intelligence services to conduct a comprehensive risk assessment.¹⁷

In 2025, the debate resurfaced following media reports of undocumented communication devices embedded in Chinese-made solar inverters.¹⁸ Asked about this in the Flemish Parliament, Energy Minister Melissa Depraetere confirmed that brand origin has been recorded since 2022, with 85% of inverters being of Chinese origin, but referred cybersecurity responsibility to the federal level.¹⁹

No public follow-up from authorities or intelligence services was recorded in the intervening period. Two years on, the institutional response was structurally identical: awareness was acknowledged, but responsibility was deflected upward.

Outlook: Uneven awakening to the risks of Chinese technology

Belgium's engagement with Chinese technology has been driven more by economic reflex than strategic design

Belgium's engagement with Chinese technology has been driven more by economic reflex than strategic design. Regions have pursued their own interests, while the federal level has largely stood aside. When choices have to be made, preserving jobs and industrial capacity has consistently come first – except where Chinese ownership made support politically untenable, as the BelGaN episode illustrated.

Across sectors, an uneven awakening to the risks of Chinese technology exposure is visible. In electric vehicles, political debate has centered on preserving the last remaining car manufacturing capacity rather than questioning the deeper integration into Chinese-controlled technological ecosystems it entails. In advanced semiconductors, Belgium's most consequential strategic decisions – Imec's gradual phasing out of Chinese partnerships, and the effective abandonment of BelGaN once Chinese ownership raised security concerns – were driven by US export-control policy and geopolitical discomfort rather than overarching domestic strategic initiative. In wind energy and solar, EU-level procurement rules and intelligence assessments have prompted responses that Belgium's own governance structure was slow to generate.

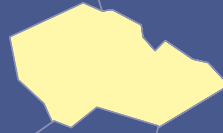
The result is clear: regions engage with Chinese technology on their own terms, risks are either identified or acknowledged late, and there is no national framework to tie them together. Strategic risk considerations are becoming more prominent, but are largely driven by external pressure rather than internally driven policy. While short-term economic logic continues to favor engagement, the absence of a coordinated national strategy risks leaving Belgium reactive rather than strategic in navigating EU-China technological competition.

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Czechia

**Speaking security,
experiencing exposure**



Czechia: Speaking security, experiencing exposure

By Jan Švec, Institute of International Relations Prague and Aleš Karmazin, Metropolitan University Prague

Chinese investments in the Czech technology sector remain relatively small and have been constrained by security considerations and investment screening mechanisms. However, there is a distinction between discourse and practice, as investments in Chinese 5G and solar panel technologies continue despite warnings from security agencies. The Czech industry strongly relies on Chinese imports, while Chinese consumer electronics, surveillance cameras, and selected industrial technologies are widely used. The future trajectory of Sino-Czech technological relations will depend largely on the approach of the government formed in late 2025 under Prime Minister Andrej Babiš. The most likely scenario is a pragmatic, less openly critical policy towards China, with slightly increased technological cooperation but continued attention to security risks.

Recent trends: From rapprochement to China as a security risk

Since around 2018, Chinese technologies have increasingly been treated by Czech security authorities as a significant security risk. In December 2018, during the government of Andrej Babiš, the National Cyber and Information Security Agency (NÚKIB) issued a warning identifying both the software and hardware of Huawei and ZTE as security threats.¹ This was followed in May 2019 by the Prague 5G Security Conference in Czechia,² which ultimately led to the adoption of the EU Toolbox for 5G Security in January 2020.³ Despite this, the Czech telecommunication sector continues its reliance on Chinese technologies, concluding new contracts with Huawei, including for 5G technologies.

Chinese technologies have increasingly been treated by Czech security authorities as a significant security risk

This coincided with and contributed to the end of the Sino-Czech rapprochement at the end of the 2010s. At the level of high politics, it was followed by the adoption of an openly and more broadly critical stance of the subsequent coalition government (2021-2025) under the leadership of the right-wing Civic Democratic Party (ODS) and PM Petr Fiala towards China. This stance was complemented by pro-Taiwan diplomacy and efforts to advance technological, scientific and academic cooperation between Prague and Taipei.⁴

Since then, NÚKIB has issued several other warnings about Chinese technologies. They concerned the TikTok application⁵ and DeepSeek application.⁶ NÚKIB also issued a report describing Chinese surveillance cameras as a significant security risk.⁷ In September 2025, NÚKIB issued its most comprehensive warning to date, which essentially focuses on all Chinese technologies that can transmit data to China or allow remote access.⁸ The warning specifically mentions, for example, solar panel inverters and 3D printers. Following that, the Confederation of Industry and Transport also warned against Chinese 3D printers.⁹

The security of solar panel inverters continues to be discussed in the Czech public discourse.¹⁰ Despite that, the deployment of Chinese solar technologies continues to rise (see below). Apart from NÚKIB, the Czech internal intelligence agency Security Information Service (BIS) has for many years warned in its annual reports against cooperation with China, including in the technological domain.¹¹

The framing of Chinese technologies in the public debate as security risks has resulted in only minimal open or systematic cooperation with Chinese actors in the technological field

across government, business, and academia. The Czech Ministry of the Interior issued a counter-influence manual for universities, mentioning Chinese institutions as examples of high-risk cases.¹² Several cases of Sino-Czech academic cooperation received criticism from Czech media for links with unreliable partners.¹³ Chinese investments in the Czech technology sector were also largely negligible. At the same time, Czech companies and public institutions continue to make extensive, if quiet, use of Chinese technologies because of their favourable price to quality ratio, often downplaying the significance of the associated risks.

Imports as the Main Diffusion Channel of Chinese Technologies

The Czech industry imports a substantial share of its inputs from China

China's technological role has manifested primarily through product imports, especially in the automotive, digital technology, and green technology sectors. The Czech industry, including the automotive sector, which is particularly important to the Czech economy, imports a substantial share of its inputs from China. China is among the three most important source countries for both direct and indirect imports of many basic industrial raw materials and metals, including iron ore and steel, bauxite and aluminium, zinc, magnesium, lithium and rubber.¹⁴ Czechia recorded significant imports of electrical and electronic equipment (EUR 18 billion in 2024)¹⁵ along with a similar value of other imports (total imports from China amounted to EUR 36.7 billion in 2024).¹⁶ While it is difficult to find a comprehensive and detailed overview of the most important items that make up these imports, many of them are linked to the automotive industry. Sensors, control units, wiring harness components, and semiconductors are among the components frequently imported from China.¹⁷

However, this issue receives limited attention in the public debate. According to data from Eurostat, in 2024, Czechia had the highest share of imports from China among all European Union member states. Specifically, imports from China accounted for 42% of all imports from non-EU countries. Czechia also recorded one of the worst trade imbalances with China, amounting to a deficit of EUR 22.5 million.¹⁸

Apart from industrial parts, Chinese cars have been recently entering the Czech market. In 2024, Chinese vehicles still accounted for only 3.3 per cent of all new car sales in Czechia,¹⁹ but the share of new sales rose more than sixfold compared to 2022,²⁰ and the share of EV sales was considerably higher – 14 per cent in the first half of 2025.²¹ Although Chinese cars are still far from dominant on the Czech market, there is some potential for future growth of their sales. Vehicles produced by BYD, Chery, and Hongqi also began to be sold on the Czech market in 2025.²²

Maybe surprisingly, given the overall securitisation framing of China, there has been almost no public discussion of security risks tied to Chinese cars, and no Czech institution has yet regulated their use. Chinese cars often receive positive coverage in Czech media, appreciating their price to quality ratio.²³ Criticism of the quality of Chinese cars and related security and ethical issues also appears in the media and among parts of the public, but it has not been prominent.²⁴

As in other countries, Chinese consumer electronics are sold in Czechia on a large scale. Online retailers report rising sales of Chinese televisions, such as those produced by TCL and Hisense.²⁵ At the same time, despite warnings from Czech security authorities, Chinese surveillance cameras are also widely sold and used, including by government and public institutions. Camera systems produced by Hikvision and Dahua are used by ministries, hospitals, state owned enterprises, and municipalities. Documents from the public

register of contracts show hundreds of contracts between Czech public institutions and these companies. For example, the Police purchased Dahua and Hikvision equipment for specialised interrogation rooms.²⁶ Cameras produced by Chinese manufacturers have also appeared in buildings of the Ministry of Defence, including facilities operating under classified regimes.²⁷ Other users include the Czech Republic's Prison Service and Fire Rescue Service.²⁸

Huawei has also continued to operate with considerable success in Czechia, despite some problems. While it experienced a sharp decline in revenue due to security warnings in 2021,²⁹ it reoriented itself from the telecommunications sector towards the energy sector and has been successful in securing contracts for solar power inverters. Despite warnings from the security services, Huawei technologies were purchased by the partly state-owned energy conglomerate ČEZ. In 2024, Huawei's revenues in Czechia increased to more than EUR 164 million but are still EUR 82 million below their 2020 numbers.³⁰ In January 2025, Czech media reported that T-Mobile and Vodafone continue to secure new contracts with Huawei for building 5G networks.³¹

Limited Chinese Investments

Chinese investments in Czechia have never reached a particularly significant level. In 2016, following a visit by Xi Jinping to Czech President Miloš Zeman, investments worth EUR 9.5 billion were promised to be realised by 2020.³² In practice, only a small fraction of these investments materialised, and most of them took the form of acquisitions rather than new greenfield investments, and brought limited added value to the economy. Moreover, most of these acquisitions were carried out by a single Chinese company, CEFC, which later collapsed and whose assets were taken over by the state-owned company CITIC. The CEO of CEFC disappeared in 2018 and, according to unofficial information, has been detained on corruption related charges.³³

In 2024, almost three thousand companies with Chinese ownership were operating in Czechia, but only a small number of them can be considered significant technology firms. These include the engineering company Žďas, which is owned by CITIC, and the television manufacturer Changhong Europe, which has been assembling televisions in Czechia since 2005.³⁴ Chinese companies invested roughly EUR 943 million in Czechia in 2023, which placed China in 20th position, between Japan and Russia.³⁵ None of the ten largest investments in that year were Chinese.³⁶

Among the larger recent investments is one of roughly EUR 82 million by the Chinese electronics company Electric Apparatus, which is to produce magnetic wires for electric vehicle motors. The company is a supplier to Siemens Energy and Toshiba.³⁷ Another comes from the Chinese company NOBO AUTOMOTIVE which has recently opened a manufacturing facility in Czechia. It produces seats, for example for BMW.³⁸

Chinese technological investments in Czechia have become partially constrained by security framing. In 2024, under the Act on the Screening of Foreign Investments, the Czech Ministry of Industry and Trade prohibited the construction and operation of a radar station by the Chinese company Emposat.³⁹ This has so far been the only case in which an investment has been formally banned.

Although there is still some interest in Chinese investments, CzechInvest emphasised the need to take strategic and security considerations into account and expressed a prefer-

Chinese technological investments in Czechia have become partially constrained by security framing

ence for investment from Taiwan. ⁴⁰ In spring 2024, CzechInvest opened a new office in Taiwan and envisages cooperation primarily in the field of semiconductors. This is also linked to the planned TSMC plant in Dresden, which could bring new opportunities for suppliers in neighbouring Czech regions. ⁴¹ Among Taiwanese companies already operating in Czechia is Foxconn, the world's largest electronics manufacturer. Foxconn has operated in Czechia since 2000 and continues to expand production, employing more than five thousand workers. ⁴²

Outlook: New government leaves direction uncertain

The formation of a new government at the end of 2025 is a decisive factor for the coming Sino-Czech (technological) relationship. The new government is headed by Andrej Babiš and is composed of his centrist and populist political party ANO – by far the strongest player in the coalition – and two right-wing parties, nationalist Freedom and Direct Democracy (SPD), and radical-conservative Motorists for Themselves. Compared with the previous government, contacts with China will almost certainly be more intensive, government representatives' statements towards China less critical, and those towards Taiwan less openly supportive. However, the concrete approach remains uncertain, also regarding technology cooperation. Two scenarios appear most probable.

In the first scenario, Prime Minister Andrej Babiš would more actively seek to weaken liberal democracy and strengthen relations with the governments of countries such as Slovakia and Hungary. This could lead to a more openly positive attitude towards China as an alternative partner to the EU. In this scenario, higher cooperation in the technological sector can be expected, together with the downplaying of technological risks and potentially targeted interference in security structures aimed at weakening risk assessments. However, given the long-term low level of public support for China in Czechia, including disappointment with previous investment efforts, a substantial overall increase in technological cooperation is unlikely even in this scenario.

Second, and in the authors' view the more probable scenario, is a more pragmatic approach in which the government will be critical of the EU and some of its major policies, such as the Green Deal, will partly weaken liberal institutions, but will remain supportive of Czechia's membership in the EU and NATO. While representatives of SPD, as more radical members of the government, may at times disseminate Russian and Chinese narratives, the official government policy would be critical of Russia and ambivalent towards China. This pragmatic approach would eschew hawkish criticism of China and its technologies.

The new government will promote economic diplomacy and seek to 'normalise' relations with China

The government will promote economic diplomacy and seek to 'normalise' relations with China. Hynek Kmoníček, who has assumed the role of the Prime Minister's security adviser, previously worked in the office of President Zeman during the rapprochement with China in the mid-2010s and has already spoken about the need to restore relations with China. ⁴³ However, while some security risks related to China may be downplayed, the government will likely remain cautious in this area and a substantially higher level of cooperation than at present is not expected. Efforts to continue technological cooperation with Taiwan are also expected.

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Denmark

**Caught between the
de-risking doctrine and
green tech pragmatism**



Denmark: Caught between the de-risking doctrine and green tech pragmatism

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Although the China challenge has recently figured less prominently in Denmark's public debate, concerns about Chinese technology remain deeply institutionalised. Since 2018, Copenhagen has embraced the EU's de-risking approach, tightened research guidelines, and restricted the use of Chinese-made 5G, drones and surveillance technology. At the same time, commercial interests and China's growing edge in green technologies have encouraged engagement in some areas. Chinese firms now supply much of Denmark's electric bus fleet, Chinese batteries are entering the power grid, and cooperation is expanding in areas such as green maritime technology and water management – despite the cautionary tale of Vestas' loss of market position to its Chinese competitors. Looking ahead, as Denmark aligns more closely with Brussels than Washington, any shift toward renewed engagement is likely to remain limited as long as the EU maintains its de-risking strategy.

Recent trends: Danish authorities remain highly vigilant on Chinese tech

Denmark's views and policies on Chinese technology will be increasingly shaped by the European Union

Amid the Trump administration's threats to the Danish Kingdom's territorial integrity and Russia's continued war of aggression in Ukraine, the "systemic challenge" from China has receded into the background of the public debate in Denmark. Meanwhile, the deepening rift in relations between Copenhagen and Washington seems to pave the way for adopting a more pragmatic attitude to Beijing – also when it comes to Chinese technology. Although some Chinese-made green technologies such as electric buses and, to a lesser extent, power grid batteries have recently become central components of Denmark's public infrastructure, Danish authorities remain highly vigilant with respect to Chinese technology. Intelligence agencies issue recurrent public statements about the risks of China's growing technological power, and Prime Minister Mette Frederiksen – well known for her critical views on China – has urged her fellow Europeans not to become too dependent on Chinese technology.¹ Ultimately, Denmark's views and policies on Chinese technology will be increasingly shaped by the European Union, as Copenhagen is pivoting towards Brussels in search of a bulwark against coercive great power diplomacy.

De-risking: Mapping Danish perceptions of Chinese technology

Since 2018, when the Danish government moved swiftly to oust Huawei from Denmark's digital infrastructure, Chinese technology has been regarded as a potential security threat in Denmark.² This has been driven not only by direct US pressure on its European allies but also hardening Danish views of China's trajectory under Xi Jinping and, eventually, Brussels' adoption of its de-risking approach towards Beijing. As the Danish government fully embraced de-risking and even started to portray China as a "systemic rival",³ Denmark's Comprehensive Strategic Partnership agreement with China (the CSP, adopted in 2008) was hollowed out and eventually, in August 2023, reframed in a far narrower version, following a pragmatic course correction under the current coalition government.⁴

Whereas the 2017 joint work program (under the CSP) contained more than 50 MoUs, several of which explicitly referred to collaboration on technology, the current "Green Joint Work Program" (2023-26) only proposes such bilateral collaboration in the specific context of "green shipping and green maritime technology" (see next section).⁵ The joint work

program also plans to “boost green transformation [by] hold[ing] intergovernmental joint committee meetings on science and technology cooperation on a regular basis” within the framework of the Sino-Danish Center, an institutionalised arrangement for research collaboration between Danish and Chinese universities across five areas.⁶ However, such exchanges are now significantly restricted by the adoption in 2022 of national guidelines for addressing security-related risks in international research cooperation,⁷ and the Police Intelligence Agency has assumed an active role in raising awareness about these risks among Danish research institutions.⁸

The prevailing de-risking approach to Chinese technology can be inferred from several Danish government documents. The most recent official foreign policy strategy (from May 2023) acknowledges China as “an inevitable global political and economic factor”, but also stresses that “we have been too naïve, and therefore Denmark, the EU and our allies have significantly sharpened our approach to China.”⁹ [p.18] It goes on to say that “we must reduce Denmark’s and Europe’s critical dependencies and vulnerabilities. This applies especially to [...] critical raw materials and technologies when it comes to China.” [p.25]

Specifying some of these security-related concerns, the annual public report from the Danish defense intelligence service (FE) states that Chinese technology “can, among other things, be exploited to compromise internet-connected devices – either to conduct cyber espionage or to disrupt critical infrastructure” [p. 41].¹⁰ The report also dwells on how “China’s extensive knowledge-transfer efforts pose the greatest threat to Danish research, innovation and technology” [p. 48] and even warns that China possesses the technological capacity to “impersonate Danish authorities in communications, making it virtually impossible to distinguish between genuine messages and fraudulent ones.” [p.50] The Danish police intelligence service (PET) offers a similarly negative view of Chinese technology in its public communication.¹¹ Concentrating primarily on the risks of espionage, the agency also directly cautions against “the increasing use of Chinese technology in critical infrastructure [which] means that China may use any Danish dependency on Chinese components as a means of pressure in case of major deterioration of the bilateral relations between China and Denmark.” [p. 19]

Although several representatives of the Danish business community have called for a more pragmatic approach to China, they rarely challenge the prevailing de-risking approach. Instead, they stress the need for engaging more with China given its critical position as an innovation hub¹² and a supplier of green technologies, refined critical minerals and other key components for Danish companies.¹³

The director of the Sino-Danish Centre for research collaboration acknowledges the difficulties in handling the potential risks associated with Chinese technology, but he believes “the pendulum will swing back towards cooperation [...] where opportunities and prudence go hand-in-hand”.¹⁴ Striking this balance, however, is difficult as suggested by the ad hoc and somewhat inconsistent approach to de-risking practiced by the Danish authorities in the past several years across a number of specific areas examined below.

Danish business communities rarely challenge the prevailing de-risking approach but stress the need to engage more with China as an innovation hub

Zooming in: Four approaches to Chinese technology

1) Green tech: Collaboration in the maritime sector

Danish and Chinese interests seem most clearly aligned on green maritime technology, where cooperation goes back to 2015 and was reaffirmed in the current Green Work Program (with bilateral MoUs signed in both 2023 and early 2026).¹⁵ The two sides – the Danish Ministry of Industry, Business and Financial Affairs and China’s Ministry of Industry and Information Technology – meet annually in a joint steering committee that guides more practical cooperation in a “Technical Industrial Advisory Group”, consisting of key representatives from both countries’ maritime industries.

Danish members include Everllence (ship propellers), Alfa-Laval (marine transportation), Hempel (ship coating), Viking (safety equipment) and Eltronic FuelTech (fuel systems), while the Chinese side is dominated by representatives of COSCO (shipping) and CSSC (ship-building). The press release from the most recent minister-level meeting emphasises their “common interest in the green transition of shipping [because] Chinese and Danish companies are well positioned to benefit from this transition”.¹⁶

What is at stake from a Danish perspective has been most clearly articulated by two key stakeholders: “It’s crucial for Danish developers of maritime technology to have access to China’s shipbuilding industry [due to] the sheer size of it”.¹⁷ Indeed, although these stakeholders explicitly flag the risks of technology transfer, they see no viable alternative to collaboration with China in this sector.

2) Wind turbines: Former Danish market leader in vulnerable position

Danish Vestas was once the world’s leading manufacturer of wind turbines and even dominated the Chinese market in the early 2000s. Today, however, it holds a global market share of roughly 10%, trailing the four Chinese wind giants Goldwind, Envision, Windey and Mingyang.¹⁸ The story behind this reversal is, in many respects, a familiar one: Chinese green tech firms have benefitted from fierce domestic competition, generous state subsidies, protective regulation and access to foreign technology.¹⁹

The Danish authorities directly assisted the rise of China’s wind turbine industry

Although Vestas was never forced into a joint venture with a local rival, the company established several production facilities around Tianjin, thereby exposing its knowhow and technology to potential replication by Chinese competitors. Moreover, the Danish authorities directly assisted the rise of China’s wind turbine industry by providing technical expertise on energy-efficient turbine designs, optimal site selection, improved grid integration, reduced energy losses etc.²⁰ Initiated in 2005 and incorporated as a key pillar of collaboration under the CSP in 2008, this ongoing assistance has been spearheaded by the Danish Energy Agency with the aim to help reduce China’s CO₂ emissions.²¹

As a result, Vestas now finds itself in a far more vulnerable position in the global market as suggested by recent reports that Ørsted, a leading Danish offshore wind developer, is seriously considering sourcing more competitively priced Chinese wind turbines for its upcoming projects.²²

3) E-mobility: Pragmatism outweighs risks

Ever since the Copenhagen Municipality in 2019 decided to electrify its entire bus fleet to meet its CO2 emission targets,²³ Chinese electric buses – primarily from Yutong and BYD – have rapidly gained ground in Denmark’s public transportation sector (with a market share in the Eastern part of the country around 70% in 2025).²⁴ According to Movia, the publicly owned transportation company responsible for procuring and operating these buses, Chinese-made buses are favoured because they are cheaper, have lower operating costs, match their European competitors on quality and are, unlike the latter, delivered on time.²⁵

Chinese electric buses have rapidly gained ground in Denmark’s public transportation sector

In 2025, local politicians and the media raised a number of concerns, including the risk that the buses could be remotely controlled from China,²⁶ that Chinese manufacturers might exploit their dominant market position,²⁷ and that the production of Chinese buses by Yutong and BYD involves forced labour practices.²⁸ Movia has responded to the latter allegation by pointing to the manufacturers’ participation in the UN Global Compact, a set of non-binding principles for corporate responsibility that include human rights.²⁹

Nonetheless, sustained public attention has recently prompted Movia and its owners to explore the possibility of introducing specific “country of origin” requirements in the procurement process, apparently in line with the existing EU directive on heavy-duty vehicles (2024/1610). In the meantime, Movia expects Chinese electric buses to account for as much as 80% of its fleet by 2027.

4) 5G and digital tech: Deemed to pose a security risk

Since 2018, several Chinese technologies have been deemed to pose a security risk, prompting the Danish authorities to adopt various measures to curtail their use. When the first Trump administration began warning its partners against reliance on Chinese 5G technology, the Danish government openly pressured the local telecom industry to abandon Huawei as a partner, even before the passing in 2021 of a new law on the security of suppliers of critical digital infrastructure (L1156), alongside a national investment screening mechanism.³⁰

Chinese-made drones also raised security concerns, following media reports that the Danish Defence and the National Police of Denmark had operated a considerable number of these drones. In 2023, against the backdrop of tightening US restrictions on Chinese drones and public warnings from PET regarding Chinese technology (see previous section), the Danish minister of Justice called for increased vigilance, noting that he was in dialogue with relevant authorities.³¹ Without the introduction of new regulatory measures, the defence and police authorities now appear to be phasing out Chinese-made drones, with the Danish municipalities, meanwhile, coming under growing media scrutiny for their use of drones to monitor public spaces, conduct land surveys etc.³²

Beyond drones, the deployment of Chinese CCTV systems by the police and defence authorities as well as the Danish Road Directorate has also been heavily criticised. This culminated in June 2023, when the ministers of defence and justice pledged a more cautious approach following an interpellations debate.³³ Since then, as these state institutions have started dismantling their Chinese-made surveillance systems,³⁴ media attention has shifted to the municipalities³⁵ and universities,³⁶ where cameras produced by Hikvision and Dahua are widely used.

Outlook: Competing tendencies in Denmark's approach to Chinese tech

Fear of missing out and the growing edge of China's green technologies create incentives to soften the de-risking stance

As of early 2026, Denmark's approach to Chinese technology displays competing tendencies. On the one hand, a deeply ingrained sense of vigilance is evident in institutionalised de-risking measures; on the other, a more pragmatic attitude prevails in the green tech sector, where Danish commercial interests and climate commitments pave the ground for the adoption of Chinese technology. Although security concerns have significantly curtailed Danish-Chinese collaboration on technology and the use of some Chinese technologies (case #4), recent developments seem to be pushing the pendulum back toward renewed engagement. The fear of missing out (case #1) and the growing edge of China's green technologies (cases #2 & #3) thus create incentives to soften the de-risking stance and potentially expand the relatively narrow joint work program set to expire at the end of 2026.

Beyond the cases examined above, the Danish authorities have recently, and with little public debate, approved the integration of Chinese batteries into Denmark's power grid in order to strengthen storage capacity for renewable energy.³⁷ Meanwhile, the Danish MFA has launched a range of initiatives to deepen collaboration on water management, hosting multiple Chinese delegations to study Denmark's technical expertise and connecting Danish water technology companies with Chinese stakeholders such as China Urban Water Association.³⁸

Against the wider backdrop of geopolitical turbulence and the risk of exposure to coercive diplomacy from either Beijing or Washington, Copenhagen is increasingly turning to Brussels for policy coordination. This strategic reorientation will fundamentally shape Denmark's approach to Chinese technology as the government has become less willing to take its cues from the US. As long as the EU's de-risking strategy remains intact, the Danish government is therefore unlikely to deviate substantially from the cautious line it has pursued since 2018, notwithstanding recent signs of increased pragmatism. And with prime minister Frederiksen in office, any such pragmatism is likely to be tightly circumscribed to areas where Chinese technology is difficult to replace and where EU rules permit engagement.

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Estonia

A stylized map of Europe is shown in the background, rendered in shades of blue. The country of Estonia is highlighted in a bright yellow color, making it stand out from the rest of the map. The map shows the outlines of various European countries and their borders.

Unenthusiastic about tech relations with China, yet Huawei remains and Pony.ai arrives

Estonia: Unenthusiastic about tech relations with China, yet Huawei remains and Pony.ai arrives

By Toomas Hanso, International Centre for Defence and Security, Estonia

Over the past ten years, Estonia's engagement with China in tech and innovation has shifted from positive to negative. An inflection point is marked by 2019, when the EU designated China a systemic rival, and Estonia signed the 5G memorandum with the US. Negative momentum has been compounded by China's support for Russia in its war against Ukraine, which likely caused Estonia to exit China's 16+1 cooperation format and end BRI collaboration. Yet there has not been a full decoupling, despite the Estonian Foreign Intelligence Service (EFIS)'s repeated warnings of the risks of using Chinese technology. While Huawei has been banned from 5G infrastructure, Huawei photovoltaic inverters remain embedded in Estonia's energy infrastructure, and in December 2025 Estonia's Bolt announced a partnership with China's Pony.ai in self-driving technology. This highlights a divergence in the recommendations made by national security apparatus, and decisions made by the business community.

Recent trends: From positive engagement to heightened risk-awareness

2017 – 2019: Positive tech engagement, if insubstantial

Between 2017-2019 Estonia-China tech relations were strengthening – at least on paper

Between 2017-2019 Estonia-China tech relations were strengthening, at least on paper. In November 2017, Estonia and China signed three economic agreements:¹ the Silk Road Memorandum, the Digital Silk Road Agreement, and the E-Commerce Agreement. The Digital Silk Road Agreement promised strengthening bilateral IT cooperation including e-commerce, digital services, data exchanges in technological fields, logistics and commerce data, while the E-Commerce Agreement aimed to establish a common e-commerce cooperation regime to support bilateral business ties.

Positive sentiment carried into 2018, when Estonian IT Minister Rene Tammist visited Shenzhen's High-tech Fair with a business delegation. Key meetings included: Estonia's state-owned courier and logistics provider Omniva with China's largest private courier SF Express, who together established a joint venture "Post11"; Estonian ferry company Tallink and China's Tencent, hailing the successful integration of WeChat Pay onto Tallink's services; a meeting at Huawei's Shenzhen headquarters, where Minister Tammist introduced the possibility of establishing Huawei development centres in Estonia to Huawei VP Edward Zhou.² The idea was that Estonia could serve as a testing ground for Chinese tech, before it entered the wider-European market.³ While Huawei never established these centres in Estonia, it did succeed in establishing cooperation agreements with both Tallinn University of Technology (TalTech)⁴ and University of Tartu⁵ in 2019. Although several agreements were signed in 2017 and 2019, little substantive follow-up is visible.

2019: Inflection point in Estonian, EU and US attitudes

Three important things contributed to 2019 as an inflection point – in Estonia domestically, the EU, and the US. Domestically, EFIS' 2019 annual report identified China as a threat to Estonian national security for the first time.⁶ On the EU level, 2019 saw the designation of China as a "systemic rival" for the first time,⁷ as well as member states calling for a common approach to 5G network security. On the US side, 2019 marked an escalatory second

year of the US-China trade war, with economic relations increasingly viewed through a security lens. In this context, Tallinn and Washington signed the Estonia-US 5G memorandum. From Tallinn's perspective this agreement would block out Huawei from Estonian 5G,⁸ while also signalling Estonia's reliability as ally to the US, Estonia's primary security guarantor. Notably, the 2019 MOU talked of using trusted vendors not only in the context of 5G, but also for other "next-generation technologies",⁹ signalling cross sector scepticism of Chinese technologies.

2020 – 2026: Limiting tech engagement

Although ministers have avoided outright critical statements, acknowledgment of risks has been made in other ways. In October 2019, Estonian IT Minister Kert Kingo replaced the controversial Huawei phone she was using with an iPhone;¹⁰ in January 2020, the next IT Minister Kaimar Karu met with Huawei representatives to demand explanations regarding the security of Huawei telecommunications equipment;¹¹ in February 2020, IT Minister Kaimar Karu and Foreign Minister Urmas Reinsalu defended EFIS' 2020 report¹² after it received criticism from the PRC embassy in Tallinn – the embassy wrote that the part concerning China was characterised by "ignorance" and requested EFIS to "correct its wrong expressions".¹³ Among other things, the report discusses the hidden risks of Chinese technology, and how reliance may be exploited by Beijing as political leverage.¹⁴

Estonian policy moves from 2021 and 2023 acted on addressing risks. In November 2021, the Electronic Communications Act was transposed into Estonian law. Paragraph § 873 of the law excludes all high-risk providers from hardware and software in communications networks,¹⁵ thereby effectively ruling out all Chinese telecom providers, including Huawei. In January 2023, the Foreign Investment Reliability Assessment Act was adopted, which does not permit foreign investment that may endanger Estonian security.¹⁶ While this does not ban all Chinese investments, it may expose Chinese tech to increased scrutiny.

Estonia's Information System Authority (RIA) has been involved in the debate on Chinese tech. In February 2025, RIA suggested that DeepSeek should not be used on Estonian government devices, among other things highlighting Sino-Russian cooperation in the cyber sphere, stating the potential for China to share collected data with Russia.¹⁷ RIA also shares US concerns regarding Chinese-manufactured drones, citing the risk as "real". In Estonia, DJI drones account for approximately 80% of market share, similarly to the US.¹⁸ RIA has also banned the use of TikTok on its work devices.¹⁹

From 2024-2026, Estonian tech engagement with China has largely remained cautious, unenthusiasm no doubt reinforced by the continued support that China has provided to Russia in its war against Ukraine since 2022. Public awareness of risks in Estonia-China tech collaboration has been strengthened by the work of EFIS and RIA. The former has highlighted the proliferation of Chinese tech not only as part of successful Chinese entrepreneurship, but as part of Beijing's wider strategic effort to grow its global influence. Following this designation, Chinese tech in Estonia may be assessed not solely on its price and quality, but also its security and geostrategic implications.²⁰

Chinese tech in Estonia may be assessed not solely on its price and quality, but also its security and geostrategic implications

Case studies: Chinese tech in Estonia

Estonia's focus on being a digital nation has been a factor in China being able to promote its technologies locally, with Huawei, ZTE and Tencent having the most success; Huawei

has focused on providing consumer electronics and cooperating with local telecom companies; ZTE has supplied telecom equipment and engaged in Internet of Things collaboration, contributing to Estonia's e-governance; third, Tencent Estonia has been involved in local online gaming platforms, as well as the integration of digital payments solutions like WeChat Pay.²¹ Since 2019, the Estonia-China technological collaboration these companies engaged in has decreased, but Huawei retains its strength in consumer electronics sales. And while cooperation may be down, Chinese technology platforms have attracted many users. Already in 2022, telecom provider Elisa noted TikTok's rapid popularity growth in Estonia post-pandemic.²² According to TikTok's advertising resources, the platform had 412,000 users in Estonia in late 2025,²³ equivalent to a third of Estonia's population. Although TikTok has been noted as promoting Russian propaganda to Estonian youth – in 2025 at least 9 TikTok accounts with thousands of followers spread Russian narratives in Estonia²⁴ – the platform remains popular.

Bolt and Pony.ai: New cooperation in self-driving technology

Estonian mobility company Bolt has continued to engage China, despite a decrease in other tech collaboration

Estonian mobility company Bolt has continued to engage China, despite a decrease in other Estonia-China tech collaboration. Between November 2025 and March 2026, Bolt announced three new partnerships, marking the company's next steps in its ambition to have 100,000 autonomous vehicles on its network by 2035. The partnerships launched were with multinational auto manufacturer Stellantis which will provide autonomous-ready vehicles;²⁵ Chinese autonomous vehicle technology company Pony.ai 小马智行 which will provide Level 4 autonomous driving technology;²⁶ American technology company Nvidia which will provide its Nvidia Drive Hyperion platform.²⁷ In November 2025, Pony.ai's investor relations disclosed that Bolt was a shareholder in the company.²⁸ Aside from this, Bolt's press releases do not state how and whether these partnerships will be coordinated, and no mention of a joint venture has been made.

The Bolt–Pony.ai partnership was announced despite EFIS' 2024 assessment that Chinese technology-enabled self-driving cars could be vulnerable to exploitation for intelligence purposes.²⁹ Bolt CEO Markus Villig said that they [Bolt] would like to work with European partners but are equally happy to work with partners from China or the US,³⁰ showing that EFIS' risk assessment did not deter partnering with Chinese companies. Pony.ai already entered the European market in April 2025, when it secured robotaxi testing permits in Luxembourg.³¹

Bolt's cooperation with Chinese companies goes back to 2021, when Chinese ride hailing firm Didi Chuxing invested in Bolt.³² While Bolt has now partnered with at least two Chinese companies, company CEO Markus Villig said Bolt would not enter the Chinese market – he perceives it as risky, given the unsuccessful track record of many Western companies there, perhaps due to actions of the Chinese government.³³

Huawei photovoltaic inverters: Dependency is critical

Photovoltaic inverters have been identified as an Estonian critical tech dependency on China. As of 2024, over 50% of solar parks connected to Estonia's Elektrilevi network use Huawei inverters. In terms of production capacity, the presence is even greater – as much as 63% of the solar energy supplied to Elektrilevi comes through Huawei inverters.³⁴ EFIS noted in 2024 that “Chinese technology is penetrating an entirely new area in Estonia – the electrical grid”.³⁵ In response, Estonian solar companies Sunly and Enefit Green say they have worked to mitigate the risks of Chinese inverters. As well as cybersecurity measures

taken domestically, Sunly has begun cooperating with a UK-based cyber-security company, which is part of the NATO DIANA defence technology accelerator programme.³⁶

Unlike in 5G, Huawei inverters have not (yet) been banned from Estonia's electricity network. This could be explained by EU China-policy, guiding Estonia's stance, which has not yet taken concrete actions to remove Chinese inverters from electricity networks. However, this could change, following increasing talk of an EU Inverter Security Toolbox, modelled on the previous 5G toolbox. In December 2025, the European Commission's new Economic Security Doctrine, "Strengthening EU Economic Security", explicitly identified solar inverters from Chinese suppliers as a high-risk dependency.³⁷ If Brussels is able to follow through by issuing guidelines on Chinese solar inverters, this could be reflected in future Estonian domestic law.

Biotech: Engagement discontinued

Until 2020, Estonia and China had been engaging in small-scale biotech cooperation, specifically in potato farming and breeding. Despite limited scale, this case study is valuable in showing how Estonia-China partnerships in tech can form, and the motivation behind them. Cooperation began in 2010 with Baltic-China agricultural discussions held in Beijing,³⁸ and joint work between the Estonian Crop Research Institute (ETKI) and the Liaoning Academy of Agricultural Sciences (LAAS). In 2015, the two institutions signed an agreement to continue cooperation in plant breeding in Shenyang, Liaoning's provincial capital. By 2018 increasing engagement was marked by the signing of a cooperation agreement to establish a joint potato laboratory and for joint research on potato genetics and breeding. In addition to meeting LAAS, ETKI also met with Harbin Agricultural University, although no specific cooperation projects followed those talks.³⁹

In 2020, joint Estonian-Chinese biotech research on potato yields was published in the Journal of Henan Agricultural Sciences,⁴⁰ conducted on "Liaoshu No.6", the main potato variety of Liaoning Province. Among knowledge exchanged between ETKI and LAAS, the Estonian side presented experience in drought and disease resistance in potato breeding, while the Chinese side demonstrated grain varieties and innovative cultivation technologies.⁴¹

On the motivation behind such collaboration, ETKI director Mati Koppel noted that the institution [ETKI] is "evaluated, among other things, on the basis of international agreements and connections".⁴² This shows that for Estonian institutions, international partnerships are an important KPI – this metric presents an opportunity for Chinese institutions to cooperate with Estonian counterparts who may otherwise be unenthusiastic. The lack of cooperation post-2020 coincides with the cooling of overall Estonia-China tech relations.

The lack of cooperation post-2020 coincides with the cooling of overall Estonia-China tech relations

Outlook: De-risking and caution, but no end to the use of Chinese tech

The outlook for Estonia-China technology relations remains uncertain at best. First, is the growing and increasingly institutionalised realisation of the risks that technological cooperation with the PRC entails. Second, is the fact Estonia has little appetite for cooperating with China, given China's continued support to Russia's war against Ukraine, directly undermining Estonia's core national security interests. Across society, little positive impetus can be found for the relationship, whether in parliament or in the business community.

Giving up Chinese tech is not only costly, but also extremely challenging

Caution and a lack of enthusiasm do not mean that Estonia will fully stop using Chinese technologies, although measures have been recommended to decrease reliance. At least for now, the global prevalence of Chinese tech means that giving it up is not only costly, but also extremely challenging. As Taltech's Professor Tanel Tammet puts it, "everything is full of Chinese products." Tammet says the risk is not that big, as most vulnerable technologies, such as telecom devices, are no longer using Chinese equipment in Estonia.⁴³ EFIS, however, points out that forward-looking measures should be taken now to prevent the proliferation of Chinese technology, as in the near future geopolitical developments and security concerns may necessitate "a painful decision" to abandon Chinese tech.⁴⁴

In the coming years, heightened scrutiny regarding Chinese tech will likely remain. But the cases of Pony.ai and Huawei inverters show continued engagement, even when deemed risky by EFIS, highlighting a divergence between Estonian national security considerations and business realities. If the EU can increase the continent's tech sovereignty and provide alternatives to China's offering, the Estonian business community will find it easier to abide by national security recommendations.

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Finland

**In search of a new balance
between economic and
security interests**



Finland: In search of a new balance between economic and security interests

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Views on China began turning more critical in Finnish policy and expert circles around 2018. The general public's views also turned markedly critical after Russia's full-scale invasion of Ukraine. Recent Finnish government foreign and security policy White Papers and a 2021 government Action Plan on China acknowledge China's rise as a sci-tech power, while reflecting more security-oriented and risk-sensitive concerns. The scope for sci-tech cooperation has consequently become more restricted. Low-carbon development has recently been the key focus in bilateral research and technology-related activities, whereas cooperation has decreased in more sensitive areas, such as 5G/6G research and Arctic technologies. There are some Chinese greenfield investments in the Finnish green tech sector, foremost a plant producing cathode active material under construction in Kotka. Finnish FDI screening legislation is to be aligned with the EU's FDI screening framework, and the scope of screening will likely expand towards stronger emphasis on economic security.

Recent trends: Sino-Finnish sci-tech collaboration shifting into de-risking mode

A decade ago, Finnish public discourse on China was moderately positive and focused mainly on China's market potential and some human rights concerns. In policy and expert circles, views began turning more critical around 2018, similar to many other European countries. At this point, the business sector continued to be more positively inclined, and the general public turned starkly negative on China only after Russia's full-scale invasion of Ukraine.¹ The invasion clearly affected the business sectors' views on China as well,² although still in 2023 the majority of respondents in a Finnish business survey saw China's role as a trading partner either as stable or becoming more significant in the future.³ The 2024 data of a survey of large Finnish corporations by a Finnish commercial bank shows that 55% of company leaders viewed China's rise as a weakening factor for the sector in which their company operates. This figure was 12 percentage points lower in 2023.⁴

The Finnish government publishes a foreign and security policy White Paper every few years. Between 2016 and 2022, the reports grew markedly more critical of China, from mainly emphasising cooperation and commercial opportunities to emphasising a large number of security risks.⁵ The 2023 government programme of Prime Minister Petteri Orpo's government states that "the Government aims to reduce the EU's economic, technological and industrial dependence on China,"⁶ which was the first time a Finnish government programme describes Finland's relations with China from a de-risking perspective.⁷

The 2021 Government's Action Plan on China provides the widest description of China as a sci-tech power among the recent governmental documents. It states that China is catching up with the US in technological development with implications to the military and cyberspace domains in addition to China's general economic performance. According to the action plan, technology has become a key area of great power competition that will shape the future world order and drive third countries' approaches to the two technological superpowers, China and the US. The document lists the following emerging technologies as fields in which China plays a particularly important role: quantum technologies, robotics, automation, space technologies, semiconductors and artificial intelligence.⁸

The Government Action Plan on China identifies technology as a key area of great power competition

The previous Joint Action Plan between China and Finland 2019–2023 still encompassed a detailed list of various research and technology related activities. For example, the Chinese Ministry of Science and Technology and the Finnish Ministry of Economic Affairs and Employment and the Finnish Ministry of Education convene Science and Technology Joint Committee meetings. Business Finland and Jiangsu and Zhejiang science and technology departments also have Memoranda of Understanding on innovation cooperation in cleantech and ICT among other topics. Marine technology in the Arctic was also listed with the aim of promoting sustainable development in the area by increasing contacts between Chinese and Finnish companies, shipyards and ship owners.⁹ The Chinese Academy of Sciences and the Finnish Meteorological Institute China had plans for a Joint Research Centre for Arctic Space Observations and Data Sharing in Sodankylä, Finland, agreed in 2018 but later suspended due to Finnish authorities' security concerns.¹⁰ In other words, cooperation in the Arctic in the broader climate change frame is of mutual interest to China and Finland, but there are limits to what kind of projects the Finnish side can take part in.

The Joint Action Plan between China and Finland 2025–2029 is considerably shorter than its first version and focuses on less sensitive issues of “genuine shared interest”, including low-carbon development and sustainable growth, science and technology and education and sports, while avoiding sensitive areas, such as Arctic cooperation.¹¹ This may be interpreted as a reflection of the new security environment after the Ukraine invasion, Finland's NATO membership, close military cooperation with the US, and heightened awareness of potential security risks.

Focus areas: Energy, green tech and telecommunications research

Energy and green tech: Key focus in bilateral cooperation

Low-carbon development was defined as the key focus in the bilateral cooperation of China and Finland.¹² The two countries signed a Memorandum of Understanding (MoU) on energy cooperation in Beijing on 27 January 2026 with the aim of facilitating exports of Finnish clean energy technology. The cooperation focuses on clean energy, smart energy systems and energy innovation.¹³

Earlier MoUs in the energy sector have led to tangible results. The first China-Finland energy cooperation demonstration project, Micro-Energy Grid Demonstration Project started in Guangzhou in 2022. It was based on the MoU between the Finnish Ministry of Economic Affairs and Employment (TEM) and China's National Energy Administration (NEA) signed in June 2017. The project involved three Finnish energy companies to build a geothermal storage solution and a solar thermal heating system that can generate stable and safer energy compared to traditional centralised systems.¹⁴

Chinese companies have invested in Finnish green technologies. The Confederation of Finnish Industries has collected information on green investments in Finland since 2021, including projects at various stages of development in the battery sector. In five of the 14 listed projects, the investors are completely Finnish. In seven out of the remaining nine projects, the investors come from Estonia, Belgium, China, Germany and the US. In the remaining two projects, the Finnish Minerals Group, a special-purpose company wholly-owned by the state of Finland, has a minority share in a joint project with a foreign partner. In the projects involving Chinese investors, Shansan project is in the planning

Low-carbon development was defined as the key focus in the bilateral cooperation of China and Finland

stage, meaning that estimated amounts of investments have been published, but the final investment decision has not yet been made.

In Kotka, the Finnish Minerals Group partnered with Beijing Easpring Material Technology to construct a plant producing cathode active material (CAM). Finnish Minerals Group owns 30% and Beijing Easpring 70% of the joint venture. The construction of the plant started in 2025.¹⁵ This new production plant investment of around EUR 800 million marked the first major greenfield investment by a Chinese company in Finland. The investment also comes with Finnish expectations of (reverse) technology and know-how transfer from the Chinese side.

In 2024 Chinese companies formed the largest foreign investor group in the battery sector with three projects,¹⁶ but this is no longer the case. In 2025 it was reported that CNGR Advanced Material pulled out of the project planned to be set up in Hamina close to Kotka, dealing a blow to visions of building a larger battery cluster in the region. The company was previously involved in a joint venture with Finnish Minerals Group to build a factory producing precursor cathode active material (pCAM) for lithium batteries. The Chinese side owned 60% of the joint venture.¹⁷ Now both Estonian Skeleton Technologies and Belgian Umicore have two projects each, the same number as the Chinese investors.

Telecommunications: From research collaboration to a tightening of requirements for providers to core networks

Due to the still considerable Nokia cluster, Finland has decades of expertise in telecommunications and network technologies. Nokia is among the top three global telecommunications network companies. The company still holds a sizeable patent portfolio and collects a large amount of patent licensing revenue from Chinese companies. 6G research in Finland, especially in Oulu, is leading globally.

Earlier, there was also very significant research collaboration between Nokia and Chinese (or China-based) organisations, attested to by the fact that in the period 2010–2022 Nokia Corp. was by far the most active European applicant submitting co-patents with Chinese or China-based organisations, while its subsidiary Nokia Tech Ltd was the third most active. This may partly be explained by the company apparently including its China-based subsidiaries in co-patenting.¹⁸ Earlier, when Nokia was still also in the mobile phone business, China was a very important market for the company.

Access of Chinese telecoms technology has been restricted to some national markets, leading to strong reactions from China

Today, the combined network market share of Nokia and Ericsson have shrunk to the low single digits. Nokia has reoriented towards the European and American markets, and with an American CEO aligned itself more closely with the US. Huawei also maintains R&D centres in Helsinki and Tampere employing hundreds of researchers. The centres were set up from 2012 onwards,¹⁹ capitalising on large layoffs in the sector at the time.

From the Finnish government's perspective "the expansion of China's state-run telecoms industry into global markets and the security of these technologies are also a matter of concern. As a result, the access of Chinese technology has in part been restricted to some national markets, leading to strong reactions from China. When it comes to regulating surveillance technologies and protecting 5G networks, for example, developed countries' decisions will be of interest to China."²⁰

Unlike in Sweden, the Finnish government was earlier reticent in imposing restrictions on Chinese telecom equipment suppliers and instead adopted a country-agnostic approach that centred on risk management and mitigation. All major Finnish telecom operators had relied on Chinese equipment.

Nevertheless, in 2021 security requirements for suppliers of core network components were tightened and in October 2025, it was reported that Finland will exclude 'high-risk vendors' (e.g. Huawei) from its 5G networks on security grounds, aligning with the EU Commission's focus on network security.²¹ US lobbying for the EU to cut out Chinese suppliers and the fact that Nokia is practically excluded from the Chinese network markets have also likely influenced the Finnish policy to some extent.

Policy adjustments: Stronger emphasis on economic security

2022–2024 marked a period of uncharacteristically harsh public statements by Finnish politicians in public on China. After 2019, there were also unusually few high-level bilateral visits, partly due to the pandemic. This started to change in late 2024, when the Finnish President Alexander Stubb made a state visit to China. This was followed up by an official visit to Beijing in January 2026 by the Finnish Prime Minister, during which the overall tone further softened. Prime Minister Orpo spoke about China's rise as a positive development for Finland.²² Orpo was accompanied by a business delegation consisting of 20 companies, which included Finnish Minerals Group and Okmetic, both linked to the technology sector, and both with recent active inward investment projects from China.²³ The business delegation took part in a meeting of the China-Finland Committee for Innovative Business Cooperation, which was set up in 2017 to promote business opportunities and dialogue between Chinese and Finnish enterprises.²⁴

By and large, Finnish companies already in China have maintained their presence, but there have not been many new establishments in recent years, and there are some indications that some Finnish companies have reshored or are in the process of reshoring production, in addition to other China-risk related risk mitigation efforts, e.g. diversifying of supply chains.²⁵ Finnish companies have invested well over EUR 10 billion in China.

There are indications that some Finnish companies are reshoring production

In contrast to these more diplomatic tones, Finland's investment screening legislation is undergoing major changes this year. The country has maintained an undisrupted investment screening practice since the late 1930s, which is unusual in the international context. The current Act on the Screening of Foreign Corporate Acquisitions (the FDI Act) dates from 2012 and has been amended twice, first in 2014 and the second time in 2020.²⁶

In February 2025, a working group appointed by the Ministry of Economic Affairs and Employment finished their assessment on changing the FDI Act and proposed enacting a new law.²⁷ The Act needs to be updated in part due to revision of the EU's FDI screening framework, on which the European Parliament and the Council reached a political agreement in December 2025,²⁸ and in part because Finland's current FDI Act is still relatively liberal and there are new risks related to "national security, security of supply, and wide-ranging influence activities".²⁹ By February 2025 no acquisitions had been blocked outright, but in a few cases, risks had been mitigated with special arrangements.³⁰

Due to EU-level changes, the scope of screening will be expanded towards stronger emphasis on economic security, instead of strictly focusing on traditional hard security. The

current Finnish Act does not include a list of sectors which the Act covers and is mainly related to acquisitions targeting the defence-related and dual-use industries. The updated screening mechanism should also include a two-phase review process, which the current Finnish FDI Act lacks.³¹

The current FDI Act does not include screening of greenfield investments, and the EU proposal does not require including them into the domestic screening mechanism. The working group in charge of the Finnish proposal suggests targeted greenfield investment screening in selected sectors because of the changed security environment. Sectors included in the targeted screening could encompass areas such as mining and minerals, batteries, wind power, nuclear power, cloud services, critical transportation and service infrastructures.³² Changes in the perceived security environment are exemplified by the fact that several proposed data centre investments by China-linked investors in Finland sparked public controversy in Finland in 2025.³³

Outlook: Limits to cooperation with China in sensitive areas, while others remain more open

In recent years, Finland has aligned its security closely with the United States. For example, in April 2026, Finland became one of the first European countries to sign the US-led Pax Silica declaration – an initiative aimed at reducing reliance on Chinese suppliers in AI and critical minerals supply chains.³⁴ This, in addition to heightened risk-awareness, places limits on cooperation with China in sensitive areas in which Finland excels, such as telecommunications, operating in cold conditions such as in the Arctic, and in satellite and quantum technologies.

Cooperation is likely to stay on the agenda in less sensitive areas

On the other hand, in less sensitive areas, especially those linked to the green transition and combatting climate change, cooperation is likely to stay on the agenda and even deepen. Other areas of cooperation include travel/tourism, the biotech and food industry, as well as sci-tech and education, including also vocational education.

Modifications proposed to the FDI Act will add bureaucratic layers to this cooperation, but as the revisions are still contemplated, it is hard to say more than that the required EU-level modifications discussed above will be done, which will already significantly change the legislation.

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France

**Weighing technological
sovereignty and
competitiveness with China**



France: Weighing technological sovereignty and competitiveness with China

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For France, ensuring national and European sovereignty and competitiveness are now structuring relations with China in the technology and innovation space. While China's capacity for technological innovation has become undeniable, the perception of risk in France is increasingly palpable. Paris is looking to boost European competence in fields that touch on sovereignty and security, such as AI or quantum applications, digital infrastructure or strategic supply chains. This naturally limits the scope of engagement with China (as well as with the United States). Elsewhere, particularly in technologies related to the green transition, where France emphasises competitiveness, the government seeks to increasingly condition partnerships and investment on technology transfer from China.

Recent trends: A strategy of tech sovereignty and competitiveness

The French technology strategy is largely defined by two central objectives that respond to an increasingly uncertain and geopolitically unstable world: bolstering technological sovereignty and enhancing French and European competitiveness. In particular, foundational or transformative technologies such as AI or quantum, associated infrastructure such as cloud platforms or semiconductors, supply chain issues from critical minerals on up, as well as the cybersecurity risks related to technological integration into critical infrastructure are considered in this framework as sectors that ultimately uphold or undermine sovereignty. As such, for Paris, partnerships outside of the EU in these areas, particularly with China, but also with allies such as the United States, require a more strategically calculated, even restrictive approach.

At the same time, the French government has sought to position itself as a leader in emerging technologies, both in areas related to technological sovereignty and less strategic areas such as the de-carbonised economy. For instance, it has vigorously supported startups such as Mistral in the AI sector and sought to capitalise on its advantages in the quantum arena.¹ France's Deeptech Plan launched in 2019,² and the subsequent France 2030 investment strategy from 2021 – which has mobilised EUR 54 billion in financing for digital startups and the clean tech ecosystem³ – seek to catalyse innovation and transform world-class fundamental research into technological and industrial champions, providing a boon for future prosperity.

A tenuous balance in France's approach to China as a technological power

Relations with China in technology and innovation space are structured by France's quest to ensure sovereignty while bolstering competitiveness

Relations with China across the technology and innovation space are therefore structured by France's quest to ensure sovereignty while bolstering competitiveness. Against this backdrop is China's growing prowess as an innovation power in emerging technologies and Beijing's ambition to achieve global technological leadership, particularly in an era of increasingly weaponised interdependence. There is a clear tension among and within stakeholder groups, from academia to industry to government, with regard to the benefits of engagement, the need for conditionality, and the prevalence of a broad range of risks – from technological leakage to the implications of unfair competition and market distortion to security concerns.

France has engaged with China in research and innovation notably through the Commission mixte franco-chinoise (COMIX), which was established in 1981 and reinvigorated in 2019. It is jointly managed by the French Ministry for Europe and Foreign Affairs, the Ministry of Higher Education and Research and China's Ministry of Science and Technology. The last Commission met in March 2024 and set out a work program in four areas which can be considered as green-light domains for cooperation: climate change and carbon neutrality, environment and biodiversity, the economy of aging and related healthcare, and theoretical chemistry. This marks a shift away from past collaboration in more strategic domains such as space research, particle physics, advanced materials, and artificial intelligence, suggesting an increasing wariness on the part of the French research establishment.⁴

While the scope of such exchanges has been reduced over time, leading voices in the research community such as the head of the China office of the French research bureau CNRS, Fremin Cuevas, consider that the opportunities of scientific collaboration far outweigh the costs in a number of less sensitive areas and should not be held hostage to geopolitical tensions.⁵ Still, concerns have grown over time, including about the need to improve reciprocity and limit cooperation in certain fields that remain sensitive or with a high value-added dimension. A number of suspected espionage cases at sensitive French research labs in recent years involving Chinese doctoral students or visiting delegations have served to increase awareness of the risks of collaboration with China.⁶

Meanwhile, France has in general established since 2012 a robust research security framework – Protection du potentiel scientifique et technique (PPST)⁷ – which mechanically limits engagement in sensitive fields across more than 50 scientific and technical sectors. The framework not only limits partnerships, but also conditions hiring of research and technical staff. Through the PPST, France has established more than 900 restricted research zones (ZRR) (with more than 200 created in 2023 according to labor unions)⁸ around specific laboratories and research units in areas that present risks to the economic interests of the nation, in addition to defence and security, proliferation of weapons of mass destruction and terrorism (both foreign and domestic).⁹

The establishment and management of such zones ultimately links back to the General Secretariat for National Security and Defence (SGDSN) in the French Prime Minister's office. Such a regime sets a natural barrier to deepening scientific cooperation with China, though doesn't exclude it outright. France has historically robust cooperation with China in the space¹⁰ or civilian nuclear sectors,¹¹ for instance, which remain sensitive areas but nevertheless continue to see a degree of cautious but certain bilateral engagement.

At the broader, strategic level, French authorities have increasingly taken stock of the risks stemming from China's growing technological prowess. In 2025, for the first time, the *Revue nationale stratégique*, a quadrennial strategic review endorsed by the president, explicitly highlighted the acceleration of China's technological development as a source of risk, namely in the fields of quantum, artificial intelligence and space and in relation to advanced defence technologies in particular. In the context of risks related to China's growing geopolitical clout across the globe, including in Europe, the strategic document notes that "China is exploiting an unprecedented range of hybrid actions, including cyber operations and scientific and technological predatory practices".¹² It further notes the acute supply chain vulnerabilities, notably related to critical minerals necessary for advanced technologies and climate adaptation in particular, in which China is a central player.

French authorities have increasingly taken stock of the risks stemming from China's growing technological prowess

At the same time, France has sought to tackle the question of competitiveness outside of domains that touch directly on national sovereignty. On the one hand, China's advancements in technology and innovation are becoming increasingly undeniable, enhancing the appeal of partnership particularly in sectors where French and European competitiveness is lacking. On the other hand, industrial overcapacities and disruptive supply chain policies are directly undermining European competitiveness in fields where France has sought to regain an industrial base.

During his last state visit to China in December 2025, President Macron made clear that France was seeking to strike a balance between engagement and competition. He highlighted that reciprocity, increasing conditionality and in particular the need to tie market access and Chinese investments in Europe to technology transfer was necessary. In an interview with French newspaper *Les Echos*, the president explained that "the Chinese must do in Europe what Europeans did 25 years ago by investing in China, with the transfer of technology ...".

Macron identified ten sectors where such an approach of technology transfer through investment would be emphasised: Lithium refining, batteries, electric vehicles, wind and solar energies, heat pumps (air-air), advanced components, recycling technologies, industrial robotics and consumer electronics. He further noted that "Chinese investments in Europe must not be predatory, that is to say, made for the purposes of hegemony and the creation of dependencies."¹³

Case Studies: 5G, automotive and batteries, and AI illustrate a complex approach

Telecommunications: a restrictive approach to 5G, a sovereign approach to 6G?

France is looking to act more strategically in the development of future telecoms networks

Since 2019, France has adopted a regulatory approach that de-facto limited the uptake of Chinese hardware in 5G telecommunications networks, largely curbing the presence of Chinese vendors Huawei and ZTE. The presence of these suppliers in critical infrastructure, near key government sites or in major cities (Paris, Brest, Toulon, Toulouse, Rennes and Strasbourg) has been prohibited. The adoption of 5G technology from Chinese vendors elsewhere is subject to the decision of the French state regulator (ANSSI), which grants fixed-term, renewable licenses for operators. In this context, two of the four major telecoms operators – Orange and Free Mobile – operate without the Chinese vendors, while SFR and Bouygues Telecom have a limited number of licenses. Roughly 13% of France's 5G infrastructure is supplied by Chinese vendors, with concentration highest in rural areas.¹⁴ At the European level, France has also pushed for a more robust, harmonised approach to 5G restrictions across the European market and a full phase-out of Chinese vendors by 2028.

On the 6G front, meanwhile, the French government began funding research into the future of telecoms networks in 2023 through the investment strategy France 2030 and a EUR 65 million grant that seeks to "position France in a market that is essential for guaranteeing its sovereignty".¹⁵ It has further developed a "France 6G" platform designed to strengthen the coordination and development of the national research, innovation and standardisation ecosystem around future telecoms networks.¹⁶ While these projects don't explicitly exclude interaction with Chinese telecoms firms, particularly in the standards setting arena, they do indicate that France is looking to act more strategically in the development of future telecoms networks.

In parallel, in 2020 Huawei announced that its first manufacturing hub for 4G/5G equipment would be set up in the town of Brumath, north of Strasbourg, for the purpose of supplying the European market. The facility was scheduled to commence operations in early 2026 but will never open. Because of a collapse of market opportunities, resulting in large part from policies that restrict the Chinese company's access to European telecoms operators, Huawei is now seeking to sell its unused factory.¹⁷ Ultimately, the saga of Huawei's investment shows the difficulty of industrial cooperation in a sector that is ultimately integral to France's vision for digital sovereignty.

Automotive and batteries: enticing investment, seeking technology transfer, hedging bets

Contrary to telecommunications infrastructure, the automotive sector and the transition toward electric vehicles (EVs) and the battery technologies that power them have far fewer implications on national sovereignty. Nevertheless, the sector is a significant source of industrial and economic activity for France, and thus the industrial competitiveness approach has become the defining feature of interactions with China and Chinese firms. Technological advancements by Chinese manufacturers in electric motor and battery technologies have in many respects outpaced those of French firms, which complicate the picture. French authorities and firms look both to counter what is seen as unfair competition and develop partnership mechanisms that allow for technology transfer from China.

Industrial competitiveness has become the defining feature of interactions with China in the automotive sector

In its efforts to shield the French firms from market imbalances and distortions, France first adopted a bonus écologique system in 2024 designed to effectively exclude Chinese brands from consumer tax credits and rebates for EV purchases on environmental grounds.¹⁸ Concerns of anti-competitive behaviour also prompted the French government to support the EU's anti-subsidy investigations that resulted in countervailing duties on a number of Chinese manufacturers. Now, further pressures from within the automotive ecosystem, notably first and second-tier equipment manufacturers such as Valeo, Forvia or OPmobility, but also major automotive original equipment manufacturers (OEMs) such as Stellantis, which owns French brands Citroën and Peugeot, have pressed hard for minimum European content requirements of up to 75% for components.¹⁹

Still, while French OEMs seek a degree of autonomy from China in particular, they have still found China's technologies, its industrial and technological ecosystem and its growing competitiveness in third markets to be irresistible. In 2016, Peugeot already entered into a strategic agreement to produce EVs with China's Dongfeng Motors.²⁰ Renault has also partnered with Chinese firm Geely in third markets – notably South Korea and Brazil. Despite having developed its own indigenous electric motor technology – one that is free of rare earths and thus less dependent on China – Renault has further chosen to partner with Geely to develop hybrid motor technology and assemble electric motors at the French firm's plant in Cléon, which will equip its entry-level Twingo model from 2027.²¹

But the battery front is perhaps the most delicate, where Chinese technologies in future battery chemistries are most advanced and where its control of the supply chain is the most acute. This is also where the French government, and Emmanuel Macron in particular, has pressed hardest in enticing Chinese investment – ideally with a component of technology transfer – into France's 'battery valley' in and around the city of Dunkerque.

Macron personally witnessed, for instance, the June 2025 opening of Envision AESC's gigafactory in Douai, a project which also received EUR 450 million in funding from the European Investment Bank.²² The factory is expected to produce 24 GWh by 2030 and

supply Renault in particular. China's XTC New Energy Materials has also entered into a majority-share partnership (51%) with France's Orano (49%) to produce battery cathode materials to supply up to 10% of Europe's market by 2030, in which the Chinese firm is expected to provide technology and process knowledge.²³ Macron would like to see more such moves by Chinese firms. Still, in parallel to these investments, France has also sought to diversify investors and reduce technological dependency and supply chain risks through alternative projects in the region, including those of Verkor (a French firm), ACC (bringing together Stellantis/Total/Mercedes) or Prologium (a Taiwanese solid-state battery maker).

AI: a sovereigntist approach focused on safety and governance

France has tried to position itself as a leader in a third way AI approach

France has sought to develop its own, sovereign AI technology stack through Mistral AI. Engagement with China is therefore primarily focused on promoting a global AI governance regime built around AI safety and common standards. After years of reticence to engage in AI governance initiatives, China in 2023 signed the Bletchley Declaration on the safe and responsible development of AI.²⁴ In May 2024, during a visit of Xi Jinping to France, the two country's leaders agreed in a joint declaration to reinforce cooperation on AI and global governance, particularly within the confines of United Nations initiatives.²⁵ At the same time, with the United States and China clearly emerging as the two global leaders in the AI race, France has tried to position itself as a leader in a third way approach. In February 2025 and 2026, France partnered with India to co-host global AI leaders' summits in Paris and New Delhi, demonstrating both its willingness to champion the AI governance agenda and to avoid a clear alignment with either the US or China in this space.

Still, beyond governance, Chinese advancements in AI applications are increasingly making its AI ecosystem hard to ignore. In the biotech sector, for instance, where French firms struggle to remain competitive, Chinese patented algorithms are increasingly essential for research and development of new medicines and medical applications.²⁶ Another example is in civilian nuclear energy, where presidents Macron and Xi Jinping agreed in December 2025 to study the possibility of new collaborative projects related to the use of AI applications, notably in relation to digitalisation and automation of manufacturing for the industry.²⁷ Nevertheless, engagement between France and China in the AI space - as in other key technological domains such as quantum - is likely to remain limited by France's explicit goal to develop and enhance sovereign capabilities.

Outlook: Difficult choices to be made

Moving forward, France will be confronted with a number of trade-offs and difficult choices in relation to China as both seek greater sovereignty and competitiveness in emerging technologies. Two areas are likely to prove increasingly problematic: technology transfer and cybersecurity concerns.

President Macron's ambition to entice technology transfer from China will increasingly confront China's own ambitions for technological leadership. If the lesson France has drawn from the last three decades of economic engagement is that China has benefited from technology transfer from Europe, China is likely to understand the risks associated with a reverse technology transfer in relation to its own competitiveness. Furthermore, it has come to embrace the deterrent effect that a level of dependence on Chinese technology affords to Beijing – as recent restrictions in critical raw materials have demonstrated.

Meanwhile, the pressure to advance on climate change goals and the energy transition will only lead to further tensions wherein China's tech increasingly offers both effective and affordable solutions, but also presents cybersecurity risks that have only begun to be understood and will increasingly shift related technologies into the sovereignty domain.

Intertwined with the uptake of Chinese EVs in the European market is the integration of Chinese autonomous driving (AV) technology, which will run on Chinese algorithms and raises concerns around data privacy as well as safety and security. Chinese AV systems have already been banned in the United States. In solar energy as well, studies showing the risks of inverters in connected solar panels and smart grid technology have also raised concerns in France and Europe more broadly,²⁸ leading to efforts in support of European technological alternatives through initiatives such as the European Commission's Industrial Accelerator Act, which China proactively resists.²⁹

While France's 2025 strategic review and the related 2026 national cyber security strategy don't directly address the risk, they underline cybersecurity risks related to critical infrastructure as well as China's overall hybrid threat potential. The more time passes and the more the digital and green twin transitions become intertwined, the harder it will likely be to disentangle technology from security.

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Germany

**From mutual benefit to
existential competition
with China**



Germany: From mutual benefit to existential competition with China

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After decades of highly lucrative technology cooperation with China, Germany finds itself in an existential crisis. China has been catching up in high-tech and research areas where Germany has traditionally been a leader. Fears of losing key industries and potentially hundreds of thousands of jobs have led to soul-searching about reviving German competitiveness. But diverging strategies emerge along the fault lines of politics and business. While the German government tries to shift its focus on security politics and geoeconomics, many companies and research institutions consider the risks of not cooperating with China on innovation as being higher – and are doubling down on their engagement with Chinese partners.

Recent trends: Balancing more conscious risk management and staying at the competitive edge in science and tech

In the spring of 2026, German debates on China are shaped by concerns of a looming existential crisis. The German export industry appears to be in free fall, seemingly overwhelmed by a “China Shock 2.0”, a flood of Chinese products of remarkable quality at prices that European companies can hardly compete with. Business leaders are getting increasingly vocal about their frustration with political processes in Berlin and Brussels that they see as much too slow and insufficient to save or transform Germany’s economic model. And even though chancellor Friedrich Merz and leading figures in his coalition government share the concern and sense of urgency, they appear overwhelmed by the global turmoil from Ukraine to Iran that is leaving little room and few resources to undertake long overdue structural reforms.

There is growing concern about risks emanating from excessive dependence on innovative Chinese products, like batteries for electric vehicles, photovoltaics or wind energy equipment. In sectors that were traditionally dominated by German companies, such as automotives or mechanical engineering, China has emerged as a serious competitor that threatens Germany’s industrial base and by extension the value and production chains in many other European countries.

In 2025, around 120,000 industry jobs were lost in Germany,¹ and competition from China is considered a main factor (even though no reliable figures exist that attribute clear causality). Bosch alone has announced cutting more than 20,000 jobs in its automotive division due to weak global demand for German cars.² In 2025, Germany’s exports to China decreased by 9.7%, while imports of Chinese goods increased by 8.8% (year-on-year).³ With this sense of crisis comes a new round of fierce debates about the role of China for Germany’s tech and innovation prowess. Both the business and the scientific research communities stress the importance of upholding connections with the PRC, now considered a trend setter in key technologies and innovation hub for researchers. While politicians have emphasised the need for greater research and economic security as part of the de-risking agenda laid out in Germany’s China strategy (2023), companies increasingly demand that they be “left alone” to do their businesses, and a considerable part of the scientific community insists on maintaining the spirit of “Wissenschaftsfreiheit” - freedom of science.

China has emerged as a serious competitor that threatens Germany’s industrial base

Automotive, machinery, climate technologies and STEM research: Where China's innovation strategies are most relevant for Germany

Years of discussions about a national China strategy have led to a largely mainstreamed understanding of the risks China's technological progress poses to Germany as a high-tech powerhouse. It's the strategies derived from this analysis where positions diverge.

When Beijing announced its "Made in China 2025" strategy in 2015, German companies took China's ambitions seriously but largely doubted that China would achieve a good part of its ambitions within only ten years.⁴ But now the tables seem to be turning. According to the UN Innovation Index published in autumn 2025, Germany is no longer among the top ten on the list of most innovative nations. It dropped to be only ranked 11th – behind China, ranked 10th.⁵

German economic actors are looking to China for innovative approaches and technologies

China no longer depends on Germany as much for access to high-tech products and highly specialised knowledge. It is now German economic actors who are looking to China for innovative approaches and technologies. They argue that China is indispensable as a location for innovation to maintain their own competitive edge, both on the Chinese and international markets. This applies to industries such as automotive, mechanical engineering, chemicals, and pharmaceuticals.

Nevertheless, the outlook differs across different sectors. Three German industries in particular - the automotive industry, mechanical engineering and automation, and green and climate tech – are strongly affected by China's innovation success. Cutting across each of these is the underlying theme of science and research collaboration, where the German community appears keen to press against the grain of research security.

The automotive industry and its suppliers: Feeling the heat of China's innovation

The automotive industry, the backbone of Germany's economy, is feeling the heat of China's innovation most acutely.⁶ After decades of lucrative collaboration in joint ventures in China, German auto makers like BMW, VW and Mercedes see the China share of their revenue declining. According to a study of consulting firm E&Y published in December 2025,⁷ competition from China especially in the EV sector, sluggish demand for German premium cars and US tariffs have caused a "perfect storm for German carmakers". The study points to development speed, agility and completely digitalised R&D processes as a main strength of Chinese competitors like BYD, Geely and Great Wall Motors.

According to the study, German carmakers altogether saw their profit margins shrink by 76% in the 3rd quarter of 2025 alone. In China, German carmakers saw their sales dropping to a 13-year low last year.⁸ China has become a global leader in production of lithium-ion batteries, controlling almost the entire value chain from the extraction of raw materials to the production of the batteries.⁹ According to a study by the Institute of Economics (IW) in Cologne¹⁰, there is an imminent threat (to German industry) of China leapfrogging also in other areas of the electrification and digitalisation of the automotive industry.

Several measures have been taken both on the political and business level to navigate the increasing competition from China in the mobility sector. To avoid becoming overly dependent on battery supply chains, for instance, Chinese producers are incentivised to invest in battery plants in Germany. Battery maker CATL has built a plant in Arnstadt in the

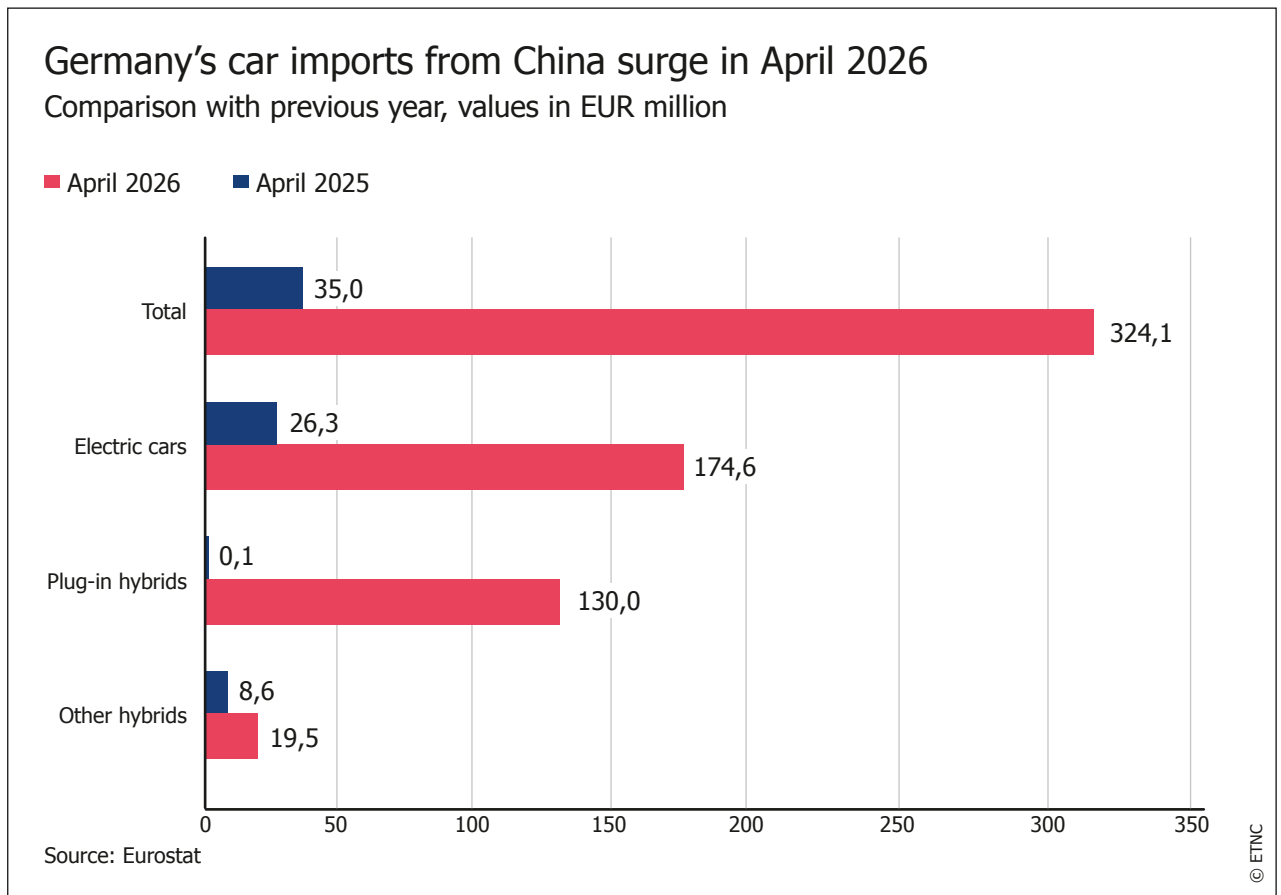


Figure 1

federal state of Thuringia, producing battery capacity for at least 200,000 EVs per year and supplying also European car makers.¹¹

The plant is considered by many a positive example of what future cooperation strategies with China could look like: by bringing Chinese innovative tech to Germany or Europe, local producers and universities can work closely with Chinese counterparts on domestic soil, avoiding unwanted tech transfer and other supply chain risks arising from German companies' localisation in China. During his visit to Beijing in February 2026, Chancellor Merz also called for more Chinese investments in Germany: "We want jobs in Germany with Chinese investments", he stressed.¹² However, it remains unclear how it will be ensured that local German stakeholders benefit from the investments.

Mechanical engineering and automation: Increasing competition with China for global market shares

For a long time, China has depended on German high-tech machinery to innovate its industry. The case of Chinese takeover of German robot maker Kuka in 2016 marked the beginning of a changing of tides and China's rise in robotics. Ever since, the German industrial automation industry has come under increasing pressure in the competition for global market shares. Faced with the "Buy China" trends, German companies in the sector also increasingly feel compelled to localise in China and enter into cooperative arrangements with domestic players.

"Made in China 2025" targeted exactly those areas in which Germany used to be a technological frontrunner, like industrial robotics, high-end computerised machines, high-per-

formance medical equipment or advanced railway transportation equipment. At the time, Beijing's industrial innovation strategy was welcomed by many German actors as a booster for more mutually beneficial cooperation in the targeted sectors. The ambition never really materialised. Instead, China has reached its goal of becoming a global leader in key manufacturing sectors in many areas. According to the German Engineering Federation (VDMA), Chinese machinery manufacturers delivered goods worth EUR 20 billion to the EU in 2018. That figure has reached EUR 48.7 billion in 2025.¹³

Even though Germany still exports more machinery to China than vice versa (2025 exports: EUR 16.2 million, imports: EUR 11.9 million)¹⁴, VDMA, an association for the machinery and equipment manufacturing industry in Europe and Germany, has called for improved conditions and deep reforms in Germany to prevent more research and production from being relocated to foreign countries.¹⁵

Green and climate tech: the predicament of an industry falling behind

China's high innovation speed and competitive pricing is increasing German dependency in green tech

China has become a dominant producer of climate technology, one of the fastest growing industry sectors, reaping growing shares of the estimated five-billion-dollar revenues worldwide.¹⁶ Germany – once the home of “solar valley” in the country's east – has fallen behind. China's high innovation speed and competitive pricing of relevant products is also increasing German dependency on wind turbines, photovoltaic and energy storage equipment from China. German companies in the sector are in a predicament: So far, there is no solution of how to gain access to Chinese innovation while at the same time protecting Germany's industry from competitors that provide low-cost and high-quality solutions also due to ample financial support by the Chinese state.

According to a study published by the Boston Consulting Group (2025),¹⁷ Germany is losing competitiveness in the field of environmental technologies to China. Obstacles include high electricity prices, lengthy approval procedures, and a lack of investment incentives for companies. According to the study, China spends more money on environmental technology than other regions of the world, invests more quickly, and is thus consolidating its control over value chains in green technology. “For the first time, the epicentre of innovation is shifting from traditional Western centres to China,” the study states.

Science and research: a scientific community that wants engagement despite risks

Science and research on the academic level are areas where China remains keenly interested in collaborating with German counterparts. In recent years, the debate over risks emanating from research collaboration has gained traction: cases of alleged bribery of German professors (RWTH Aachen)¹⁸ or the explicit warnings by the German intelligence service against science espionage from China in its yearly reports have raised eyebrows. There is increased risk awareness in fields like quantum or AI.

However, this heightened risk perception collides with a continuously high interest on the part of German scientists to continue established collaboration with Chinese counterparts. The focus of these collaborations clearly is on STEM and subject matters that are at the core of China's innovation strategy. According to 2025 figures,¹⁹ 205 German institutions of higher education maintained collaborations with 338 Chinese counterparts. China continues to be attractive due to its high pace of innovation, a highly motivated and flexible talent pool, and generous funding for research areas prioritised by Beijing's innovation agenda.

In a recent survey of the research organisation Max Planck Gesellschaft, 55% of respondents stated that science collaboration with China was “important and even essential” for their research. According to that same institution, more than 3,700 joint publications were published by MPG and the Chinese CAS alone.²⁰

German universities and research associations have launched programs²¹ to increase China expertise and published guidelines so that researchers can develop an informed approach and develop strategies for risk management, e.g., of technology and knowledge outflow, lack of access to jointly developed research data, or dual use.

Recent measures: Defending the competitive edge with a German high-tech agenda

In late fall 2025, German Chancellor Friedrich Merz presented his government’s new high-tech agenda by stressing: “The US and China must not be allowed to determine the future of technology on their own”.²² The goals formulated in the strategy reflect the ambition to strengthen the technological sovereignty of Germany and Europe in a world marked by geopolitical conflicts and a struggle for tech supremacy.

According to the strategy, ten percent of Germany’s economic output is to be generated by AI-based technologies by 2030. The federal government wants to expand chip production capacities, establish competitive battery production in Germany by 2035, and expand research and development of alternative car engine technologies and climate-friendly fuels. It is no coincidence that the areas mentioned are ones in which China has made great strides in recent years.

Merz’s high-tech strategy is just one of several measures targeted at safeguarding Germany’s position as a hub of industrial and scientific innovation. For example, fears of unwanted technology and knowledge transfer prompted the German government to, at the end of 2025, agree on a framework for strengthening research security. It calls for a “holistic and nationwide approach” to systematically strengthen “knowledge security in Germany and Europe.” There are also plans to establish a national platform on the topic, and even the German Research Association (DFG) recently emphasised the need for “more security” in research and science. “As open as possible, as protected as necessary”, is the new slogan issued by the funding institution for promoting international scientific cooperation in this new era of geopolitical disruption.

For a more informed approach to collaboration with China, the German Ministry of Research plans to establish a national “China Competence Network” in which central and regional actors contribute to providing independent knowledge about China to those involved in exchanges on innovation and technology issues.²³

The debate on how to deal with China as a rising innovation power is closely linked to the question of how to achieve a calibrated “derisking”. Some have brought up the concept of “Chinese Walls”: Whether to engage in cooperation with China depends on the assessment of the criticality of the technology or area of innovation in question. While avoiding critically sensitive areas, others should, in principle, remain open for collaboration. Inviting Chinese innovative companies to invest and build factories in Europe is also seen as part of the solution.

Germany needs to invest in its own domestic capabilities to innovate and become more independent from China and the US

Outlook: Risks of innovation collaboration outweigh the opportunities for Germany

According to a recent survey published by the German Chamber of Commerce in China²⁴ more than two thirds of German firms (68%) favour R&D collaboration with China. Respondents from 55% of the companies surveyed also emphasised that the benefit of R&D engagement was mutual: while a transfer of know-how from German mother companies to China (63% of cases) could be observed, so could a transfer from China to Germany (40%).

Despite these arguments from companies, there is also consensus that Germany will need to both invest in its own domestic capabilities to innovate and take measures to become more independent from China and the US.

China's rise to become a high-tech nation has a massive impact on Germany

China's rise to become a high-tech nation has a massive impact on Germany, which has a similar focus. The long-term effects on the dynamic of mutual innovation and on Germany's economy as a whole are uncertain, but the following scenarios illustrate two trajectories that feature prominently in current discussions:

1. The de-industrialisation nightmare: China's momentum continues and it increasingly dominates key industries. The "China Shock 2.0" will mark the end of Germany's export driven economy, with major companies going into decline. Despite calls for de-risking, many of these businesses will see no other chance than pinning their hopes on extending tech and R&D collaboration with China. What may be good for some businesses as well as research clusters will come at a high price for Germany as an economy and undermine its position as a breeding ground for top-notch basic and applied science and research.

2. Regrouping for a proper decoupling: As counterintuitive as this may seem in early 2026, there remains the prospect of a large coalition of G7-led countries forming a block that seeks to break dependencies from China and establish a hemisphere in which Chinese tech is pushed to the margins. Many in the US still seem convinced that they can build on their own dominance and "allied scale" to contain China's ambitions. The likelihood of such a trajectory would not only depend on a friendlier mindset in Washington towards its partners, but mostly on maintaining the competitive edge in Europe. Defensive measures against Chinese overproduction can buy time, but Germany must make substantive efforts to increase competitiveness, innovation and global partnerships.

The authors would like to thank Rafael Jimenez Buendia, MERICS Senior Associate Fellow and author of the SOAPBOX newsletter on EU-China trade relations, for providing the graphics for this chapter.

Cars, car parts, chemicals: A few figures on Germany's shifting trade relations with China

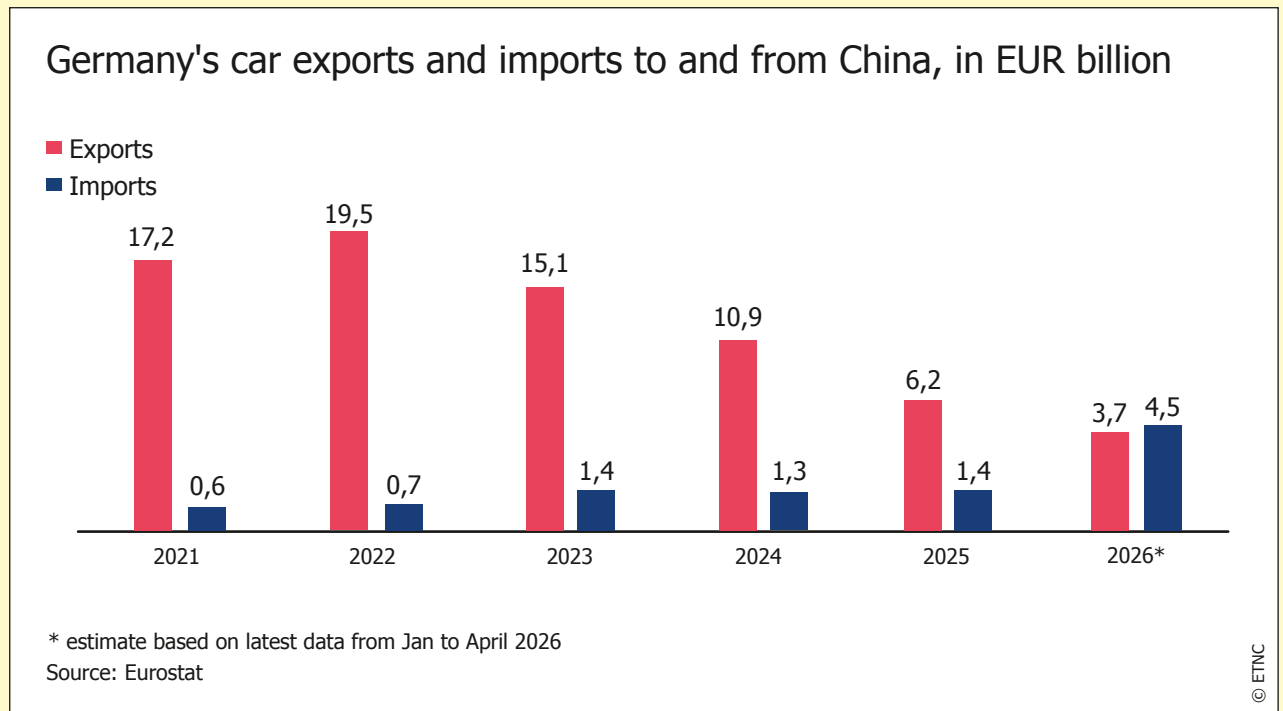


Figure 2

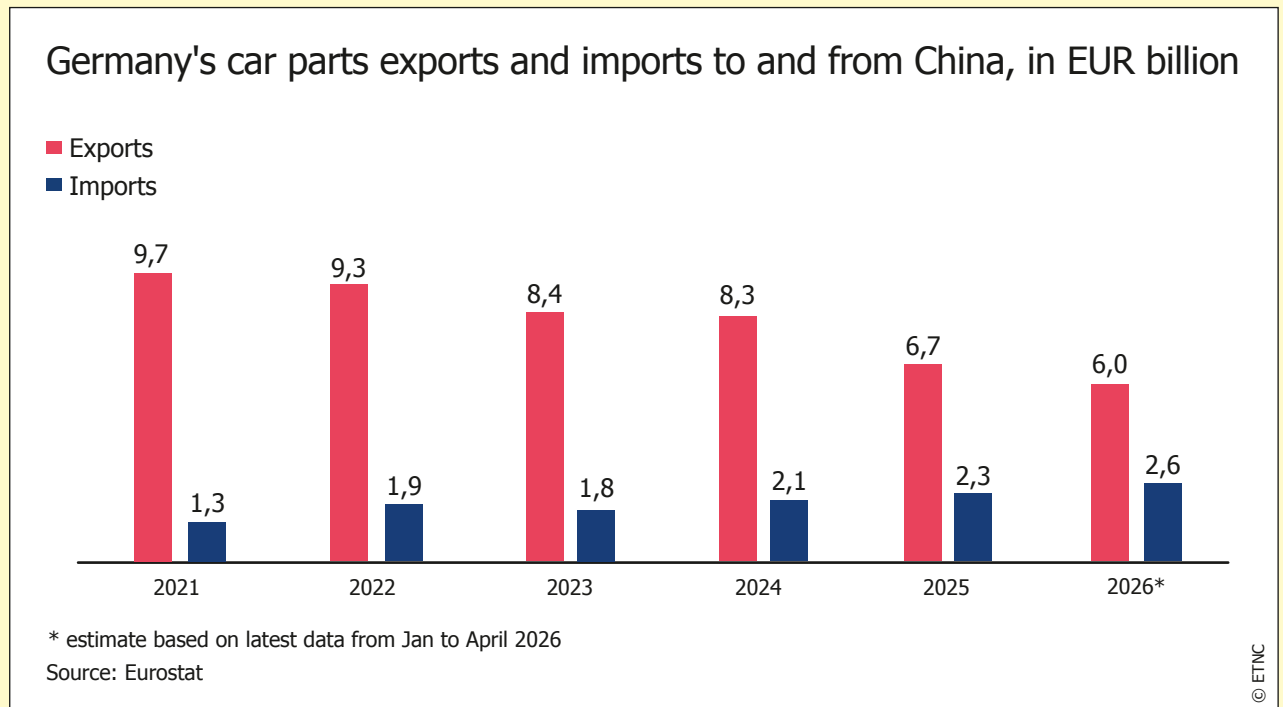


Figure 3

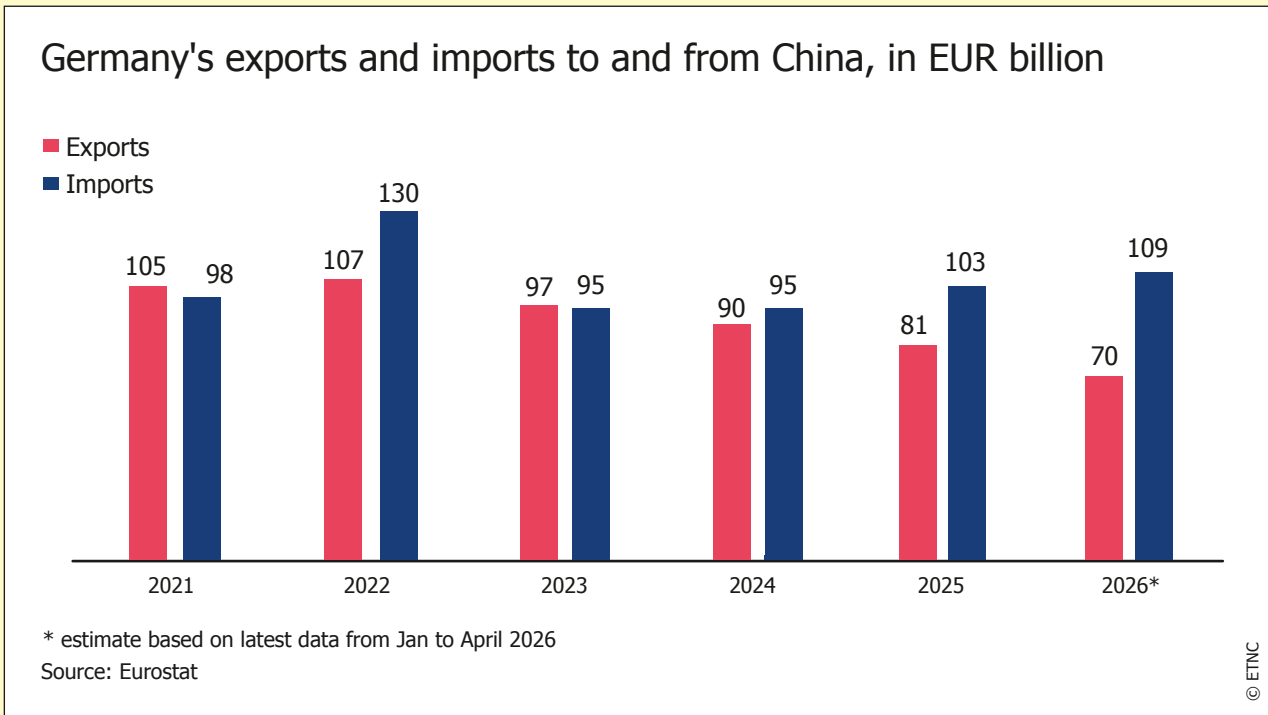


Figure 4

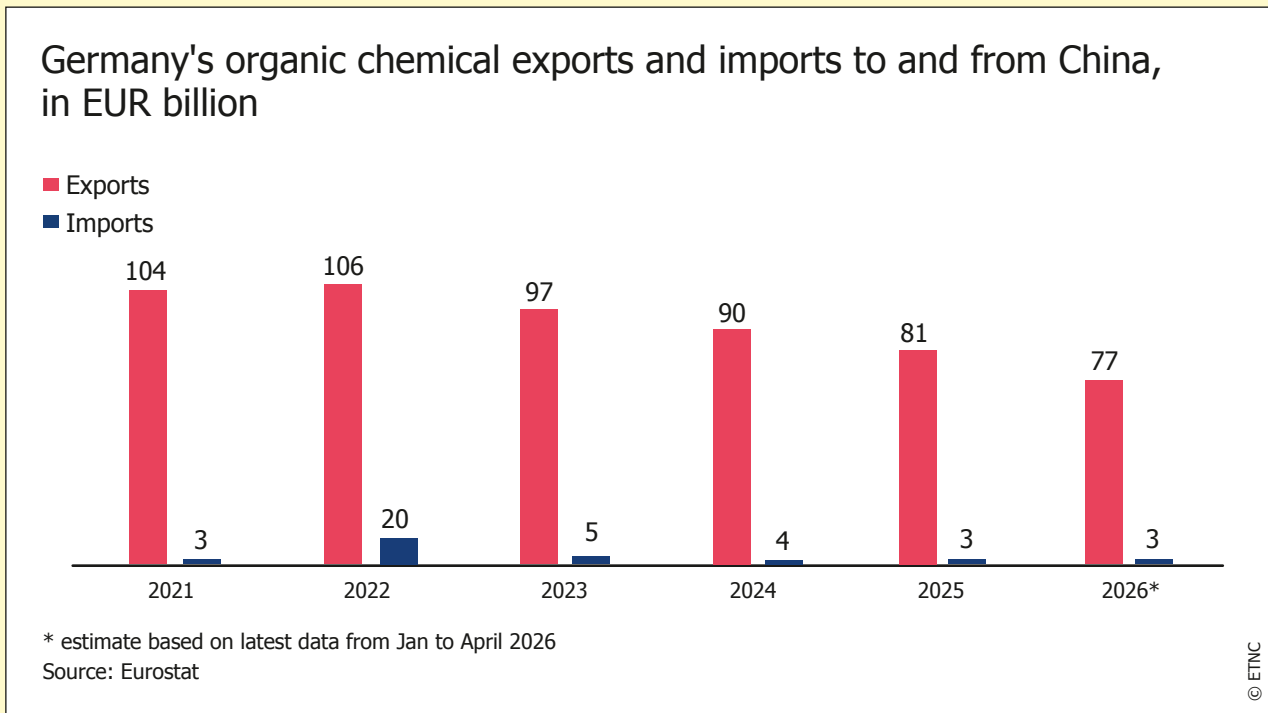


Figure 5

Graphics provided by Rafael Jimenez Buendía, MERICS Senior Associate Fellow and author of the SOAPBOX newsletter on EU-China trade relations.

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Hungary

**Engagement over caution
in cooperation with China**



Hungary: Engagement over caution in cooperation with China

By Tamas Matura, Central and Eastern European Centre for Asian Studies, Corvinus University

In Hungary, China is positioned as both an economic partner and a potential source of technological integration, while risk discourse remains limited in domestic policy. Key sectors include electric mobility, battery production, advanced ICT, and applied research, though the effectiveness of agreements is constrained by regulatory gaps and Chinese restrictions on technology transfer. Hungary faces opportunities for industrial modernisation and innovation partnerships, alongside risks from geopolitical tensions, EU regulatory frameworks, and potential changes in domestic governance after the 2026 elections.

Recent trends: Hungary and China in Science & Technology

In the post-Cold War era, Hungary's foreign economic and innovation policy was initially oriented toward Euro-Atlantic integration, with little focused attention on China. This shifted decisively in the early 2010s, when Hungarian policymakers began to recognise China's rapid economic and technological rise and under Viktor Orbán's leadership adopted the "Eastern Opening" foreign policy, positioning China as a key partner alongside Western allies. This strategic realignment manifested in the reopening of consular relations in Shanghai, new direct flights, and enhanced diplomatic engagement at the highest levels.

China has become recognised in Budapest as both an economic opportunity and a venue for cultural and scientific exchange, exemplified by the opening of Confucius Institutes across Hungary beginning with the inaugural institute at Eötvös Loránd University in 2006. These institutes, while ostensibly focusing on language and cultural programs, expanded substantially, with six established by 2025, reflecting active Chinese soft-power projection into Hungarian academia.¹

Scientific cooperation between the two countries began to expand in the 2000s. In 2002, Hungary and China concluded a bilateral Agreement on Science and Technology Cooperation. Responsibility for its implementation was assigned to Hungary's National Innovation Office (reorganised in 2015 as the National Research, Development and Innovation Office) and China's Ministry of Science and Technology. The agreement created a joint research fund to support mobility costs for collaborative projects. While this mobility scheme remained in place, a new funding mechanism was introduced in 2016 to promote the development of new technologies and the commercialisation of research outcomes.² Through the 2010s and into the 2020s, bilateral cooperation expanded in scope from cultural and educational exchange into industrial collaboration, applied research, and technology partnerships.

In 2017, the National Research, Development and Innovation Office and China's MOST signed an agreement on establishing a fund to support joint industrial research and development projects. In 2025 the HUN-REN Hungarian Research Network signed a MoU with the Shenzhen Institutes of Advanced Technology of the Chinese Academy of Sciences. It includes the development of joint research activities, the co-authoring of scientific publications, and the organisation of joint events and the exchange of researchers.³

The landmark legal and political foundation for this evolution was the establishment of an "all-weather comprehensive strategic partnership" between Hungary and China, which

Scientific cooperation between the two countries began to expand in the 2000s

explicitly identified emerging fields like clean energy, artificial intelligence, mobile communications, and nuclear technology as priority cooperation areas. This bilateral articulation reflected mutual political will to deepen synergies in science and technology, beyond traditional trade and investment linkages.⁴

The framing of China diverges significantly from many other EU member states, positing China as a partner

Despite — or perhaps because of — this broadening partnership, the framing of China in Hungarian policy discourse diverges significantly from many other EU member states. Where the EU’s China policy of recent years has increasingly depicted China as a “partner, economic competitor, and systemic rival,” Hungarian government rhetoric focuses on economic pragmatism and strategic sovereign choice, positing China as a partner in Hungary’s industrial modernisation and a source of investment and technology flows.

Risk discourse — framed in terms of national security or technological dependency — is much less prominent in official Hungarian discourse, and when it emerges, it tends to be focused externally (e.g., through references to EU policy or foreign think-tank analysis) rather than in domestic strategy documents.⁵ For instance, the large presence of Chinese firms like Huawei — which has participated in Hungary’s 5G deployment and maintains regional operations — has not sparked the kind of sustained public national-security debates seen in some Western European contexts. Instead, the narrative in Hungary remains one of economic opportunity, jobs, and integration into global value chains, with security concerns addressed, if at all, through references to broader EU guidelines rather than bespoke national restrictions. Academic cooperation, notably through Confucius Institutes and student exchanges, has been particularly dynamic. Research conducted by CEIAS found that of 63 Hungarian higher-education and research institutions monitored, 40 had some form of cooperation with Chinese bodies, totalling 116 institutional links. Many of these connections focus on STEM fields and medical sciences. Yet the same assessment also noted significant transparency and governance gaps, with no formal state guidance on cooperation with foreign entities from authoritarian regimes and limited public oversight of Confucius Institutes and similar arrangements. This relative absence of regulation has meant that China’s academic presence in Hungary has expanded largely unchecked by formal research security policies.⁶

In sum, Hungary’s orientation toward China in science and technology reflects a policy of diversified engagement, shaped by historical diplomatic outreach, a broad suite of political frameworks (including BRI and strategic partnership agreements), and a framing that emphasises economic pragmatism and sovereign choice over security-risk discourse. As the relationship has matured, cooperative modalities have become increasingly complex, crossing academic, industrial, and infrastructural domains. It remains to be a question, however, whether the high number of agreements and MoUs translate into actual or deep cooperation between the Hungarian institutions and their Chinese counterparts.

Focus areas: China is present in key technological domains in Hungary

Automotive and electric mobility: The most visible manifestation of China-Hungary tech cooperation

In recent years, the most visible manifestation of China-Hungary technological cooperation has been in the automotive sector, particularly in electric vehicles (EVs) and battery production. Hungary’s long tradition as an automotive manufacturing hub — home to numerous multinational OEMs — provided fertile ground for Chinese companies to integrate into

European value chains. Notably, Contemporary Amperex Technology Co. Limited (CATL), the world's largest battery producer, announced plans for a EUR 7.3 billion battery production facility near Debrecen, with support from both the national government and local authorities. Though this project has drawn controversy over environmental impacts and economic benefits, it illustrates the depth of Chinese industrial integration in Hungary's high-tech manufacturing base.⁷

The automotive cooperation narrative has continued into 2024–2025 with strategic partnerships between Chinese EV firms like NIO and Hungarian academic institutions, such as István Széchenyi University, aimed at jointly developing BEV technologies and infrastructure solutions like vehicle-to-grid systems and charging networks. This type of partnership may situate Chinese firms not merely as investors but as co-creators of innovation ecosystems alongside Hungarian universities and research parks, bridging applied research and industrial deployment, at least according to expectations.⁸

Chinese firms are not merely investors but also co-creators of innovation ecosystems in automotive cooperation

The ZalaZONE automotive testing and R&D site in western Hungary has further cemented Hungarian-Chinese collaboration in intelligent, green mobility and energy storage research. Here, an MoU between Hungarian and Chinese partners envisage joint research, digital innovation, and broader integration of Chinese technology in smart vehicles and energy systems. This cooperation demonstrates China's visibility not just as a source of capital but as an active partner in applied technology development.⁹ However, given the explicit ban by the Chinese government on the transfer of certain state-of-the-art technologies, it is questionable whether such agreements would lead to meaningful cooperations.

The automotive cooperation underscores broader debates about the role of China in shaping Hungary's industrial future. Proponents argue that Chinese investment accelerates Hungary's EV ecosystem development, retains high-value manufacturing jobs, and attracts ancillary suppliers. Critics and some EU officials counter that Chinese firms often bring limited transfer of core technologies, rely heavily on imported inputs, and may benefit from state subsidies that distort competition. An ongoing European Commission probe into possible unfair subsidies received by Chinese EV maker BYD for its plant in Szeged highlights these tensions.¹⁰

Academic and knowledge exchange networks: One of the earliest domains of interaction

Academic cooperation has been one of the earliest and broadest domains of Hungary-China interaction. Beyond Confucius Institutes, bilateral agreements have supported student exchanges, joint research collaborations, and scientific networks. Partnerships like those between Hungarian technical universities and Chinese institutions for mobility and joint lab projects reflect sustained cooperation in fundamental fields such as engineering, materials science, and ICT.

However, this cooperation exists in an environment where regulatory oversight is relatively weak, and state guidance on managing national-security risks or safeguarding research integrity is limited or non-existent. Analysis published by CEIAS emphasises that many institutional links involve exchange and basic research, yet a notable share is with entities classified in risk categories due to ties with the Chinese state or military research networks. The absence of formal guidelines means that such connections proceed without standardised assessment or oversight frameworks, contrasting sharply with more restrictive approaches in other EU states.¹¹

Hungarian academia has also pursued technology partnership avenues beyond student exchange. For example, Óbuda University's symposium with a delegation from Wuxi highlighted cooperation in robotics, innovation, and industrial partnerships. Agreements with Chinese firms and venture capital actors illustrate efforts to embed Chinese-linked research into local innovation ecosystems and commercial R&D pathways.¹²

These developments have boosted the tangible presence of Chinese technological influence in Hungarian research networks, though they have not yet generated a broad public debate on research security or academic integrity. Instead, discussions have been confined to specialised scholarly, policy-oriented publications.

ICT and advanced technologies: China's presence is less contested than in other EU Member States

China's presence in Hungary's ICT landscape has been significant but less controversial domestically than in some Western contexts. Huawei has maintained a strategic role in Hungary's telecommunications infrastructure, participating in 5G deployment and related digital projects. While in many EU states Huawei's involvement has been curtailed amid security concerns, Hungarian authorities have not pursued major restrictions, reflecting the government's technology neutrality narrative and emphasis on sovereign decision-making.¹³ While the government has already started to implement the EU Cybersecurity Act, it is less enthusiastic about its phase-out rules. As Péter Szijjártó, Minister of Foreign Affairs and Trade has said: "nobody should be excluded from competition based on their country of origin."¹⁴

Beyond infrastructure, Chinese actors have been linked to technology transfer centres and innovation platforms. The China-Hungarian Technology Transfer Centre, established in Chongqing with an office in Budapest, facilitates cooperation in novel materials, low-carbon technologies, and medical sciences, demonstrating an institutionalised framework for knowledge exchange and commercialisation across borders.¹⁵

Outlook: Opportunities, risks and scenarios

Hungary's China-tech relationship could further enhance its industrial competitiveness, while risks prevail

Looking forward, opportunities in Hungary's China–technology relationship likely centre on further industrial integration, localised innovation ecosystems, and applied research partnerships. The EV value chain, battery technology, clean energy deployment, and smart mobility platforms continue to draw Chinese investment and cooperation interest. If well managed, these trajectories could enhance Hungary's industrial competitiveness and embed it further in international innovation networks.

At the same time, risks loom. Heavy reliance on external capital and technology inputs can amplify vulnerabilities to geopolitical shifts, supply chain disruptions, and regulatory changes at the EU or global level. Debates over fair competition practices, technology transfer, and local content requirements could intensify as EU member states seek to balance openness with strategic autonomy. Two broad scenarios encapsulate these dynamics:

Managed Integration: Hungary successfully balances deep industrial and research ties with China while complying with evolving EU governance frameworks. Collaboration continues in automotive, green tech, and applied research, but with stronger safeguards and trans-

parency mechanisms arising from both national and EU initiatives. The current government of Prime Minister Orbán certainly prefers to maintain close cooperation with China, although science and academia has never been a priority to the government. Geopolitical Securitisation: Growing EU normative pressure and geopolitical tensions channel cooperation into narrower, economically oriented domains, while comprehensive frameworks on research security, investment screening, and technology standards reduce the scope of deep cooperation with Chinese actors.

In this scenario, Hungarian policymakers may face increasing tension between economic objectives and alignment with EU strategic autonomy priorities. Since Fidesz has lost the elections in April 2026, the new government is expected to pursue a more EU-aligned China policy, which could entail closer scrutiny of academic cooperation as well. In both scenarios, China's role as a technological power – given its huge investment into the EV sector – is likely to remain salient for Hungary, but the balance between opportunity and risk, and between sovereign discretion and multilateral regulation, will shape the evolution of the partnership.

The new government is expected to pursue a more EU-aligned China policy

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Ireland

Interlocking factors shape the approach to China in science-tech innovation



Ireland: Interlocking factors shape the approach to China in science-tech innovation

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Ireland's approach to China in science, technology and innovation is shaped by several interlocking factors. At its core is Ireland's open, FDI-driven economic model. This approach is further informed by a growing set of government strategies focused on security and competitiveness, designed both to bolster that model and to support a gradual shift toward industrial policy and deeper integration within the EU single market. It is also shaped by pressure to diversify amid uncertainty surrounding the current US administration, as well as by wider efforts to build resilience in response to geopolitical instability.

Recent developments: Meeting in Beijing, open to collaboration

In January 2026, Ireland and China's leaders met for the first time in 14 years in Beijing. Both Taoiseach Micheál Martin and President Xi Jinping made speeches about the bilateral relationship. In terms of technology, Martin highlighted Ireland's exports to China of medical equipment, pharmaceuticals and computer services. From the Chinese side, Xi singled out artificial intelligence, the digital economy, and pharmaceuticals and health as areas for cooperation.

The readout of Xi's speech also includes areas where the Irish side has stated it is willing to cooperate with China; in terms of science and technology, it mentions biomedicine, renewable energy and artificial intelligence. After returning from China, Martin framed Ireland's economic and trading relationship with China as being informed by support for accelerating the "market diversification agenda," suggesting that diversification is an important driver of the relationship.

Ireland's science and technology collaboration with China

Since July 2019, Ireland and China operate a revised Memorandum of Understanding (MoU) on science, technology and innovation (STI) cooperation, with an associated Joint Committee Meeting (JCM) mechanism bringing together China's Ministry of Science and Technology (MOST) and Irish enterprise/research agencies to steer priorities and implementation. It replaces the 2012 MoU to promote science, technology and cooperation (see Table 1).¹

A notable modality since the mid-2010s is co-funded joint research calls, led on the Irish side by Science Foundation Ireland (SFI) and on the Chinese side by the National Natural Science Foundation of China (NSFC), designed explicitly to support collaborative projects in agreed priority areas.²

In 2018, several Irish higher-education institutions signed agreements with Chinese universities to deepen collaboration through joint research centres, staff exchanges, and shared funding efforts. The deals also expanded education links via new joint colleges and dual-degree programs in fields such as computer science, engineering, AI/robotics, and design.³

Irish higher-education institutions have deepened collaboration with Chinese universities

As a state-backed “commercialisation and scaling” channel complementing academic co-operation, a 2018 EUR 150 million cross-border growth fund was designed to support IoT/hardware and software domains such as big data, robotics, and AI. It was established by Ireland Strategic Investment Fund (ISIF) and China’s CIC Capital to back high-growth companies seeking market access in Ireland/Europe and China, building on the earlier China–Ireland technology fund model launched in 2014 under ISIF’s predecessor (the NPRF) with China Investment Corporation (CIC).⁴

In terms of company-led collaboration modalities, in critical infrastructure, Irish power-systems innovation engages Chinese-linked partners mainly through international utility networks rather than formal Ireland–China bilateral frameworks. Electricity Supply Board (ESB) Networks participates in “open innovation” programs such as Free Electrons – now in its tenth year – where ESB collaborates with utility partners including China Light & Power (Hong Kong) alongside EDP, E.ON, Hydro Québec, and Origin Energy.⁵

Focus areas: Pharmaceuticals, drugs, Irish outward FDI to China

Pharmaceuticals and biotech: The central point of Ireland-China collaboration

The pharmaceutical sector is included here as a technology sector because Ireland has developed a strong position in high-value pharmaceutical, bio-tech and biopharmaceutical manufacturing, as well as in contract research expertise for clinical trials. Pharmaceutical production, particularly in biologics, involves the translation of laboratory knowledge into reproducible, regulated and globally scalable manufacturing processes. China is becoming a major global hub for biologics, biotech and advanced clinical research driven by heavy investment. In this sense, Ireland’s pharmaceutical trade with China is about Ireland’s applied technological capability and the position it inhabits in global life-science technology chains, creating opportunities for Irish and Ireland-based companies in this sector.

China would be an attractive partner to Ireland as it attempts to develop its own R&D sector

The pharmaceutical sector and biotech/bio medical sector have been an area of focus under China’s 14th and 15th Five-year plan⁶ with the Chinese state also attempting to develop its R&D capacity in these sectors. China has rapidly increased its clinical development infrastructure⁷ and has attempted to internationalize its R&D in these sectors⁸ under its 14th plan. China has developed many of the clinical development infrastructure that Ireland lacks and has access to a diverse patient population due to its large population size. This would make China an attractive partner to Ireland as it attempts to develop its own R&D sector. However, as much of the Irish life science sector is owned by US multinationals,⁹ US-China relations to a large extent would determine how much cooperation Ireland and China can have in innovative life science production.

Pharmaceuticals and biomedicine are key areas where Ireland and China’s cooperation interests overlap. Ireland is a leading actor in pharmaceutical manufacturing and plays a significant role in biotech and the wider life science sector with Ireland being the world’s third-largest exporter of pharmaceuticals.¹⁰ Ireland is home to 90 pharmaceutical companies, employing around 50,000 people of which 30,000 are employed by US companies.¹¹

With increased pressure for Ireland-based US companies to reshore pharmaceutical and other life science production, including both R&D and manufacturing, Ireland has attempted to move up the value chain towards an innovative pharmaceutical production future by developing an “ecosystem in biotechnology and biopharma innovation.”¹² While Ireland

has a strong foundation for R&D in pharmaceutical and biotech, it lacks some of the clinical development infrastructure (specialist trial networks, central labs, bio banks etc) of larger actors in this area such as the US or Switzerland. This is reflected also in China's investment in Ireland's pharmaceutical sector, for example, WuXi Biologics' investment in the Irish pharmaceutical sector and its focus on manufacturing with only a small R&D function.

Weight loss drugs and the China growth market

Pharmaceutical and medical products made up a 53 percent share of Ireland's total goods exports in 2025 at EUR 138.6 billion.¹³ Ireland's role in the GLP-1 boom is not only as a manufacturing location, but potentially as part of the commercial architecture through which multinational pharmaceutical companies serve global demand, including China. Eli Lilly already produces the active pharmaceutical ingredients for Zepbound and Mounjaro at its Kinsale site in County Cork, after investing USD 800 million there earlier in the decade to prepare for rising demand; sales of the two drugs more than doubled year on year in the first quarter of 2025, reaching just over USD 6 billion.¹⁴

It appears Novo Nordisk's Athlone plant will export its Wegovy weight-loss pill into the Chinese market. Their CEO Mike Doustdar said his company will seek Chinese regulatory approval its Wegovy weight-loss pill. As oral forms of GLP-1 medicines are moving from development into commercial rollout, Novo Nordisk is committing EUR 432 million to expand its Athlone tableting facility for oral GLP-1 products, with the company saying that the investment will increase its ability to supply present and future demand outside the United States.¹⁵

The same Athlone plant is expected to manufacture tablet Wegovy for non-US markets, at a time when oral forms of GLP-1 medicines are moving from development into commercial rollout.¹⁶ China is one obvious market where this expanded non-US capacity could matter: at least ten injectable and oral weight-loss medicines are reportedly seeking regulatory approval there, the country's GLP-1 market is forecast to reach about USD 14 billion by 2030, and Eli Lilly has filed for Chinese approval of Orforglipron while also expanding manufacturing capacity in Suzhou.¹⁷

The evidence does not show that Irish sites are being built specifically for China, but it does suggest that Ireland is becoming a key production base for multinational GLP-1 supply outside the United States just as China is opening into a major growth market. If Eli Lilly and Novo Nordisk succeed in China, Ireland could benefit twice: first through high-value manufacturing activity, and second through corporation tax receipts if profits linked to these companies' global operations continue to be booked in Ireland.

Ireland's outward FDI: Investing in R&D in China to overcome limitations

During Martin's visit to China, he met with client companies of Ireland's agencies that support both outbound and inbound FDI. One such company is Orbsen Therapeutics, a regenerative medicine company with a focus on improving outcomes in diseases where inflammation drives organ damage, such as diabetic kidney disease. The meeting between Martin and Orbsen looked at potential partnerships. In 2023, Orbsen was looking to intensify efforts to secure partnerships or licensing deals to support Phase 3 development and commercialization. Orben's presence in China is likely an evolution of these efforts.

Another company Martin met with is healthcare company Solvotrin, who – during the Taoiseach's trade visit to China – announced a new exclusive agreement with Shanghai-based

If Eli Lilly and Novo Nordisk succeed in China, Ireland could benefit

Nuance Pharma to distribute Active Iron in China,¹⁸ marking a fresh push into the Chinese market, superseding an earlier arrangement. Solvotrin makes innovative oral iron supplements for women's reproductive health, patients with anemia or chronic disease and those who have difficulty swallowing pills – aligning with key goals of the Chinese government, namely women's reproduction and supporting its ageing society.¹⁹

These companies' efforts in China fit into a wider narrative of Ireland's efforts to develop successful innovative life science companies, though this has been limited to cases such as Nuritas. To increase its role in innovative pharma and life sciences, Ireland would need future development of national centres, biotech facilities, digital adoption, as well as a radical reform of its regulatory authority capacity to speed up the overall process. This would require increased investment both in terms of capital but also state capacity.²⁰

Ireland faces further natural challenges due to its small population size such as not having a diverse patient population and would require having strategic partnerships to overcome this limitation on its R&D potential. The result is that Ireland will always need to have international cooperation to develop an innovative life science sector and therefore would need an international trade system to ensure open and free trade.

Policy adjustments: Competing government strategies respond to China's ever-growing presence in sci-tech-related issues

Ireland has adopted and is developing a number national strategies such as the National Life Sciences Strategy, Offshore Wind Industrial Strategy and Ireland's National Semiconductor Strategy (NSS), which focus on open strategic autonomy, technological sovereignty and competing with states who have introduced industrial policies.²¹ For example, the NSS highlights that initiatives like the US Chips and Science Act 2022 and the Made in China 2025 fund mean "the environment for semiconductor investment has become increasingly competitive."²²

Despite Ireland's increased policy focus on security, China remains a key focus for Ireland in terms of trade

Ireland's offshore wind industrial strategy frames China as a competitive pressure on Europe's ability to scale offshore wind, stating Europe's offshore wind ramp-up faces bottlenecks including "dependency on imports of raw materials" and "competition from China." The strategy's overarching objective is to create "a solid domestic supply chain and resilient [offshore renewable energy] industry" by building supply-chain and industrial partnerships with "like-minded countries," i.e., politically trusted partners.²³

Ireland has also increased its focus on national security updating its National Maritime Security Strategy²⁴ and it is focusing on non-traditional security threats such as critical raw materials,²⁵ as well as energy and water security with the progress of the Critical Infrastructure Bill 2026.²⁶ While none of these policies focus on China directly, it suggests that Ireland is increasing its capability to respond to tensions in international trade.

Despite Ireland's increased policy focus on security, China remains a key focus for Ireland in terms of trade. The Government's Action Plan on Market Diversification views China as a significant opportunity for Irish firms and this policy provided a framework for them to export to China and attract Chinese investment into Ireland.²⁷

Outlook: Geopolitical instability could put Irish sci-tech cooperation with China under pressure

Cooperation between Ireland and China in areas such as the pharmaceutical sector, biotech/bio medical sector and in green tech are set to continue to grow in the near future. The CCP has set the pharmaceutical sector and biotech/bio medical sector as priority areas for growth over the next five years and in terms of manufacturing Ireland is a key hub for these sectors, which may push the two countries to cooperate in this area. Ireland under its Government's Action Plan on Market Diversification sees China as a key market. Minister for Foreign Affairs Helen McEntee has framed diversification as a response to current trade pressures, including tariffs, arguing that Ireland needs to make greater progress in sectors such as medical technology by exploring new markets.²⁸

However, the Irish sector is dominated by foreign multinational companies whose own states may have increased tension with China. The result is that the Irish Government will come under increased pressure to ensure there are safeguards to reduce risk that these companies may face from Ireland's cooperation with China in this area. Irish-Chinese collaboration in AI may also fall under this framework, with Irish industry involvement in the different aspects of AI development also being dominated by foreign multinational companies.

As one of the most energy import dependent countries in the EU with limited diversity of supply,²⁹ the need to invest in diverse renewable energy resources means that Ireland is likely to increase its green tech cooperation – particularly in solar and wind energy – with China. In these areas China is a leading provider, and as the Irish energy grid is state owned there are fewer external factors to manage. However, Ireland will by 2028 have a direct connection to the French energy grid,³⁰ and an increase in offshore windfarms will make this issue more complex.

The cooperation in science and technology reflects Ireland's wider relationship with China, attempting to balance between a security focus and a competitiveness focus. Moving forward, Ireland's policy towards China will be faced with this balancing act.

The Irish Government will come under increased pressure to ensure there are safeguards that multinational companies may face from Ireland's cooperation with China

Ireland-China science and technology cooperation

YEAR / DATE	INITIATIVE / INSTRUMENT	LEVEL / TYPE	WHAT IT ESTABLISHES (WHY IT MATTERS)	KEY INSTITUTIONS
September 2000	Agreement on Scientific & Technological Cooperation	Highest government level (intergovernmental treaty)	Baseline legal umbrella for bilateral S&T cooperation	Government of Ireland; Government of PRC
March 2012	Joint Statement establishing an Ireland–China “Strategic Partnership”	Highest government level (heads-of-government political framework)	Elevates relations; explicitly includes cooperation in science & technology among partnership areas	Government of Ireland; Government of PRC
March 2012	MoU on science and innovation (predecessor framework)	Highest government level (government MoU)	Sets formal cooperation modalities; later superseded by the 2019 revised STI MoU	Ireland (enterprise/innovation department at the time); China MOST
July 2019	Revised MoU on Science, Technology & Innovation (STI)	Highest government level (government MoU)	Refreshes STI cooperation framework; referenced priority areas include ICT and life sciences	Ireland (then DBEI); China MOST
July 2019	Inaugural STI Joint Committee Meeting (JCM)	Highest government level (governance mechanism)	Operationalises the 2019 MoU via joint steering and workplanning	MOST; Irish enterprise/research agencies
October 2022	Second STI Joint Committee Meeting (virtual)	Highest government level (governance mechanism)	Progress review and continuation of the MoU implementation agenda	MOST; Irish side counterparts
November 2025	Joint Economic & Trade Commission track where tech/innovation is explicitly on the agenda	Highest government level (minister/vice-minister commission)	High-level bilateral commission; recent agendas explicitly cite digital economy, green energy, biomedicine, and scientific & technological innovation	

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Italy

A stylized map of Europe is shown in a dark blue color. The country of Italy is highlighted in a bright yellow color, making it stand out from the rest of the map. The map shows the outlines of various European countries and their borders.

**Biopharma, automotive
and telecoms sectors
are facing China's
technological power**

Italy: Biopharma, automotive and telecoms sectors are facing China's technological power

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China's capacity to innovate and lead in high-added-value industrial sectors is a critical element of its technological power, alongside its unparalleled strength in ensuring high-volume and cost-competitive manufacturing in traditional industrial sectors.² According to Goldman Sachs forecasts, Italy is one of the countries that will suffer most from the impact of Chinese industrial plans for the 2026-30 period, together with Mexico, the CEE-4 group, and Germany.³

Recent trends: China's tech power shapes Italy's industrial future

China's rise as a tech power poses two fundamental questions to Italian institutions and private actors. First, should Italy continue cooperating with Chinese players in sectors where China's innovation capabilities could further diminish Italy's already declining global share in high-tech manufacturing? Second, should Rome grant access to the Italian market to Chinese players capable of innovating in strategic sectors?

This second question presents two alternatives. The first leads to accepting the emergence of technological dependencies on Beijing and the security implications tied to these dependencies. The second entails absorbing the financial burden of selecting more expensive (and potentially less performant) players, while also risking turning the country into a technological backwater vis-à-vis other competitors more willing to engage with China.

Case studies: Biopharma, automotive and ICT

To examine these dynamics and the choices made on the ground by Italian institutions and industrial actors, this chapter zooms in on three industrial sectors that are being profoundly reshaped by Chinese industrial capabilities: (1) biopharma, (2) automotive – focusing on electric vehicles (EVs) and autonomous driving technologies, and (3) information communication technologies (ICT) – focusing on 5G and the incoming 6G technological standard. These three sectors are subject to the Italian government's "special powers" over critical technologies, enabling direct intervention in the governance of companies operating in these areas.⁴ Furthermore, these sectors exemplify three different dimensions of the technopolitical challenge facing Italy. The Italian biopharma sector is one of the most dynamic and innovative in the country's industrial fabric, while the automotive sector is experiencing a profound crisis, if not a terminal decline. When it comes to ICT standards – and specifically 6G – instead, Italian companies and institutions play a marginal role in their development.

The rest of this chapter proceeds as follows. Three sections respectively cover biopharma, automotive and 6G. The conclusion sums up findings, assessing them in the context of recent developments in the Italy-China bilateral relations.

Biopharma: Italian companies struggle to compete with Chinese counterparts

The Italian biopharma sector is one of the most dynamic in the country's stagnating industrial landscape, accounting in 2025 for US\$ 15 billion in revenue, and employing 29,000 people in 178 companies.⁵ Against this backdrop, Italy's Ministry of Foreign Affairs and

China's rise as a tech power poses fundamental questions to Italian institutions and private actors

International Cooperation (MAECI) led a working group with institutions and private players to enhance the international competitiveness of the national biotechnology industry – including the biopharma sector – between 2024 and 2025.⁶

The working group devised an operational plan aiming at identifying pathologies critical for national security, the emerging biotechnologies to treat them, and national companies capable of developing such technologies. These steps, in turn, are designed to support these national champions in their investments in R&D with the help of dedicated growth funds and eased interaction with venture capital, enhance their visibility abroad through public diplomacy initiatives, and finally support them through the national research infrastructure to facilitate their upscaling at an international level.⁷

An interview with a leading executive figure in the Italian biopharma sector, however, suggest profound disappointment with these efforts. Criticism focuses on the broad-brush distribution of ultimately meagre funding to a broad number of small and medium enterprises without the ability or political will to identify a small number of enterprises capable of being competitive at the international level.⁸ More broadly, industry leaders remain concerned about Italy's inability to create an ecosystem capable of letting local companies compete against rising Chinese counterparts that are spurred by massive state subsidies for R&D.⁹

Industry leaders are concerned about Italy's inability to create an ecosystem capable of letting local companies compete against rising Chinese counterparts

This situation, however, has not resulted in a systematic pivot towards Chinese capital or forms of cooperation with Chinese biopharma companies. Two factors in particular stop major Italian players from deepening engagement with China's biopharma industry. The first is the inclusion of biotechnologies within the perimeter of its extensive, government-led FDI-screening mechanism, known as "golden power", which, even in the absence of explicit red lines, deters Italian players from seeking Chinese investment. The second argument is US securitisation of relations with China – in a context where major Italian players in the field rely on US venture capital and primarily export to that national market.¹⁰

These concerns have indeed become even more pressing following the enactment of the BIOSECURE Act in December 2025. The Act prohibits US federal agencies from contracting with pharmaceutical companies that use "biotechnology equipment or services" provided by "biotechnology companies of concern" (BCC).¹¹ While major Chinese biopharma players, including industry leader WuXi AppTec, are currently not listed as BCCs, the Act provides a legal platform to enable their ban in the near future – especially considering pressure from the Pentagon to blacklist such companies.¹² The exclusion of Chinese biopharma players from the US market, in turn, would potentially favour Italian companies operating in a national and supranational (EU level) ecosystem unable to match PRC state subsidies.¹³

This notwithstanding, research cooperation between Italian and Chinese institutions in the biopharma sector has moved forward within the framework of the Italy-China Action Plan to Strengthen the Global Strategic Partnership,¹⁴ with the establishment in November 2024 of the China-Italy Joint Laboratory of Pharmacobiotechnology for Medical Immunomodulation founded by the Shenzhen Institute of Advanced Technology (SIAT) and the Institute of Translational Pharmacology of Italy's National Research Council (CNR).¹⁵

Automotive: Cooperation versus competition in EVs and autonomous driving

The automotive sector, historically central to Italy's industrial development, has been sharply contracting since the 2000s, perhaps entering a phase of terminal decline since the 2010s,¹⁶ just as Chinese manufacturers reshape the global industry.¹⁷

How is Italy responding to Chinese looming dominance in EV manufacturing? Italy was one of the ten EU member states that voted in favour of the introduction of countervailing duties on made-in-China EVs in October 2024.¹⁸ Prior to the vote, Italian authorities conducted talks with PRC state-owned carmaker Dongfeng for establishing an EV factory in the country, but Chinese conditions for the investment were ultimately deemed unacceptable, given Beijing's request to vote against the proposed countervailing duties and to provide wider access to Huawei in Italy's telecommunications infrastructure.¹⁹

Authorities have been primarily concerned with guaranteeing a future to the Italian automotive industry

Against this backdrop, authorities have been primarily concerned with guaranteeing a future to the Italian automotive industry by preventing the multinational group Stellantis (owner of brands such as Fiat, Peugeot, Citroën, and Opel) from further shrinking or fully delocalising production away from Italy.²⁰

In 2024, Stellantis announced a new industrial plan aiming to revive manufacturing in the country, yet Italy has not been included in the strategy of selective engagement with Chinese players that Stellantis is pursuing to maintain global competitiveness. The group chose Poland for its ultimately short-lived cooperation with Leapmotor to produce the T03 battery electric city car,²¹ selected Spain for its new battery factory in partnership with CATL,²² and picked Luxembourg to start its cooperation with Pony.ai to jointly test and develop autonomous vehicles.²³

Autonomous driving technology, in fact, has been playing a central role in what is arguably the most consequential dossier in current Sino-Italian relations: Pirelli, a global leader in tyre manufacturing with a Chinese relative majority shareholder, state-owned enterprise (SOE) SinoChem. According to Italian sources, SinoChem became more assertive in Pirelli's governance following a new shareholder agreement reached in 2022.²⁴ SinoChem's assertiveness, in turn, pushed the Italian government to intervene in Pirelli's governance using its "golden power" in 2023, severely limiting its shareholder rights, including involvement in strategic planning, operational strategies, and R&D.²⁵

Crucially, the Italian government justified its decision by referring to Pirelli's development of its upcoming Cyber Tyre technology. This technology uses sensors to collect data on road configurations, geolocations, and infrastructure. The data is transmitted to cloud systems where AI creates complex digital models for applications like smart cities, digital twins, and autonomous driving.²⁶ Rome's decision meant a considerable extension of the "golden power" perimeter, originally focused on defence, national security, and critical infrastructure.²⁷

While the turmoil within Pirelli traces back to the internal tug-of-war between Chinese and Italian leading shareholders, the US securitisation of relations with China played a decisive role. SinoChem's majority shareholder position, in fact, threatened Pirelli's access to the critical US market, in light of the Department of Commerce's Bureau of Industry and Security's final rule Securing the Information and Communications Technology and Services Supply Chain: Connected Vehicles, which has banned Chinese-backed hardware and software interacting with US cars since March 2026. Consequently, The company initiated

Cyber Tyre production at its Pirelli Tire LLC facility in Rome, Georgia to provide carmakers with a compliant U.S. supply chain.

Reporting in January 2026 stated that Italian authorities and shareholders within Pirelli, also responding to US requests, were mounting pressure on SinoChem for its divestment from the company.²⁸ In response, SinoChem proposed to spin-off Cyber Tyre from the parent company, a move that was rejected by the board in February.²⁹

ICT: Joint research with China on 6G, halted deals on 5G

Italian ICT companies and institutions are expected to play only a marginal role in the standardisation and production of the forthcoming 6G standard of cellular network technology. Italian research institutions have in fact been involved in 6G research – focusing on internet-of-things networks – as early as 2020, with the establishment of a Joint Innovation Centre (JIC) between Huawei and WiLab, the wireless communication laboratory of the National Inter-University Consortium for Telecommunications (CNIT).³⁰ While the agreement with Huawei will last until 2030, the JIC has operated in a heavily constrained environment since its establishment in 2020.

5G technology was included within the perimeter of the Italian government's "golden power" in 2019.³¹ Successive deals between Italian telecommunications companies and Huawei and ZTE were then either stopped (in 2019) or subjected to severe limitations (in 2021).³² Furthermore, regulations concerning the provisions of 4G and 5G technologies, as well as their future iterations, were further tightened in 2025.³³

Expert interviews suggest, however, that the securitisation of 5G technology, in turn, has had a profound impact on the landscape of telecommunications technology in Italy. Even without a formal ban, national players cannot buy Huawei and ZTE 5G equipment, yet they receive no state subsidies to make up for the higher costs of European and US suppliers, discouraging overall investment in ICT. As a result, only 2% of Italian territory had "stand-alone" 5G coverage as of 2025.³⁴

The securitisation of 5G technology has had a profound impact on the landscape of telecommunications technology in Italy

However, the development of next generation 6G technology will likely not provide a clean slate for Italy and the EU. The international consortium responsible for defining the 6G standard, the 3rd Generation Partnership Project (3GPP), has started to work on the earlier phases of the standardisation of 6G in March 2025. Among the 811 individual members of the consortium, only six are Italian: telecommunications companies Fastweb (owned by Swisscom), TIM and FiberCop (both majority-owned by the U.S investment company KKR), the defence industry giant Leonardo, the Ministry of Enterprises and Made in Italy (MIMIT), and the University of Bologna. In contrast, 3GPP counts 179 Chinese members and two Hong Kong members.³⁵

In addition, interviews with figures in the sector highlight the lack of meaningful interactions between research institutions and telecommunications companies on one side, and Italy's MIMIT and Ministry of University and Research (MUR) on the other, and of strategic direction from these respective ministers, as well as the lack of an "institutional voice" by the MIMIT within the 3GPP.³⁶

Against this backdrop, the EU has issued an ambitious vision for the development of 6G technology, stating its aspiration to be both a standard setter and a "leading global provider".³⁷ As of early 2026, Europe's flagship research project on 6G is Hexa-X-II. The project,

which succeeds the original Hexa-X 6G project, is led by Nokia, includes Italian telecommunication company TIM in the consortium, and does not see the participation of Chinese companies.

Expert interviews, however, point out that such projects have an “exploratory character” and cannot deliver on their own EU sovereignty over 6G technology, because China will play a dominant role in 6G standardisation independent of the EU’s plans to exclude Chinese companies. Furthermore, there is already an expectation that Chinese players will be eventually capable of delivering products performing better and at a cheaper cost than foreign rivals when 6G begins its roll-out by 2029.³⁸

Outlook: Broader debate over wider implications of China’s industrial rise is urgently needed in Italy

Italy’s ongoing securitisation of its shrinking industrial base and its critical infrastructure shapes the country’s approach to China’s emerging leadership in technological innovation

Italy’s ongoing process of securitisation of its shrinking industrial base and its critical infrastructure within the broader context of transatlantic relations with Washington D.C. and of US-China relations shapes the country’s approach to China’s emerging leadership in technological innovation.

In the biopharma sector, Italian companies, while globally relevant, are facing encroachment by surging Chinese competitors spurred by massive state funding. Even though Italian authorities have recognised biotechnologies, and consequently the biopharma sector, as a key area for national security, and planned to support their presence in the global markets, national players still perceive these efforts as inconsequential. Against this backdrop, the US BIOSECURE Act, by opening a path for excluding Chinese companies from the most lucrative market in the world, may constitute a potential lifeline for Italian companies – albeit such a development would raise issues over the feasibility of current supply chains still relying on China.

In the automotive sector, production volumes continue to decline, and doubts persist about the relevance of Italian plants within Stellantis’ strategy. Yet these developments have not prompted a pivot towards China’s surging automotive industry. In fact, Rome refused Beijing’s request to link Chinese investment in EV factories to expanded access for Huawei and ZTE in Italy’s telecommunications infrastructure.

The government also limited the shareholder rights of Pirelli’s controlling company, SinoChem, after controversially placing the innovative Cyber Tyre technology – with implications for the development of autonomous driving – under “golden power” protections. Mounting pressure, allegedly including from the US, for SinoChem to divest entirely from the tyre maker further signals a hardline approach.

The same hardline approach is visible in the ICT sector, specifically in the governance of 5G technologies and in the initial steps for the development of the 6G standard, with severe constraints on Huawei and ZTE operations in Italy. However, this tight governance of critical infrastructure of the country has not resulted in a comprehensive national strategy to address either the consequences of restrictions imposed on Italian players in the provision of made-in-China equipment, or the implications of the likely Chinese dominance in future 6G technology notwithstanding the EU’s aspirations of technological sovereignty.

Against this backdrop, the public debate on the challenge of China's emerging leadership in technological innovation has not really developed. In detail, what appears to be missing is a debate between political parties, corporate associations, and civil society organisations, possessing a range of different positions on Italy-China political and industrial relations, that is articulated in terms that are accessible to the general public. Rather, the issue has remained largely confined within the remit of legacy media with ever-diminishing audiences and framed within the broader problem of declining industrial production and foreign company acquisitions.³⁹

The only partial exception to this trend is the automotive sector. In this case, the growing presence of innovative yet affordable Chinese EVs on Italian roads has contributed to reshaping perceptions of what Made in China means nowadays.⁴⁰ However, even in this case, what is lacking is a broader participation in a debate over the wider implications of China's industrial rise beyond the immediate benefit to the consumer.

Endnotes

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Latvia

A stylized map of Europe is shown in the background. The map is rendered in shades of blue and dark blue, with white outlines for country borders. Latvia is highlighted in a bright yellow color, making it stand out from the rest of the map. The map covers most of the European continent, from the British Isles in the west to the Mediterranean coast in the south, and from the Atlantic coast in the west to the Ural mountains in the east.

China's limited role in the technological innovation strategy

Latvia: China's limited role in the technological innovation strategy

By Dana Dūda, Head of the Asia Programme at the Latvian Institute of International Affairs

Despite early optimism marked by Latvia hosting the China-CEE summit in 2016,¹ becoming the first Baltic state to sign a BRI MoU,² and concluding several 16+1 agreements, China's investment in Latvia has largely been unsuccessful. Amidst the US-China rivalry and evolving EU policy on technological security, Latvia has opted to engage with China via EU frameworks rather than China led-initiatives.

Recent trends: Increasingly critical of S&T collaboration with China

Latvia's engagement with China in science and technology is balancing pragmatic economic cooperation with managing security risks

From 2016 to 2026, Latvia's engagement with China in science and technology (S&T) can be described as balancing pragmatic economic cooperation with managing security risks. Over the past decade, Latvia has signed three bilateral cooperation agreements with China in culture (2017), education (2017), and science and technology (2018).³ The S&T agreement, between Latvia's Ministry of Education and Science and China's Ministry of Science and Technology, laid the ground for research exchanges, joint funding, institutional cooperation, and possible joint laboratories.⁴

In 2019, an intergovernmental committee was established to oversee implementation of S&T cooperation, mandated to hold regular bilateral meetings every two years.⁵ According to China's state media covering this event, China's interest in Latvia was reported as "strategic" citing Latvia's "strong research capabilities" and "strengths in drug development, materials science, ICT, and electronics."⁶

In 2018, despite the ongoing US-China trade war, Latvia's Ministry of Foreign Affairs (MFA) reported that interest in economic partnerships with China remained "consistently high," with priorities in trade promotion, transport and logistics, and tourism.⁷ By 2019, however, the MFA had adopted EU diplomatic language, describing China as a "major systemic rival, competitor, and cooperation partner" - citing economic interference, lack of transparency, and WTO noncompliance. This discursive shift signalled Latvia's alignment with the EU call to "pursue a balanced policy aligning economic interests with security risks and values," marking a move from sector-specific enthusiasm to more cautious, values-based engagement.⁸

Latvia formally withdrew from the 17+1 framework and the BRI in August 2022,⁹ with MFA justifying the decision as being at "variance with Latvia's strategic interests,"¹⁰ while aiming to minimise diplomatic costs, stating that Latvia "is prepared to build constructive and open relations with China," and is "evaluating opportunities" for cooperation in mutually beneficial areas, while "not avoiding issues on which the positions are considerably different."¹¹

The 2025 MFA Annual Report situated China's technological development and AI capabilities within a broader democracy-autocracy divide, framing technological competition as value-driven rather than purely economic. Chinese AI was described as emblematic of "digital authoritarianism" - enabling increasingly effective surveillance, censorship, and information manipulation that threatens open societies,¹² while Latvia's strategic alignment with the US and other like-minded democracies was emphasised.

Latvia stated that it remains open to expanding “mutually beneficial cooperation”¹³ with China, provided Beijing maintains firm value-based positions, including ceasing support for Russia’s aggression against Ukraine. However, the areas deemed “mutually beneficial” were left unspecified.

The 2026 MFA report went further, framing the EU’s ability to compete with China in AI as crucial for European sovereignty. Technology competition was cast as “one of the central elements of geopolitics,” with Europe’s “sovereignty, security, economic development, and global influence” said to depend on the EU becoming an AI leader alongside the US and China. The report also linked Chinese technological and dual-use capabilities to Russia’s ability to sustain its war in Ukraine.¹⁴ Yet while Latvian foreign policy discourse has progressively sharpened its framing of China around technological competition, public perceptions have not followed a straightforward trajectory.

Latvian public opinion toward China remains ambivalent. A 2020 survey conducted during the Covid-19 pandemic found that around 43% of Latvian respondents held a positive view of China, the highest share among EU countries surveyed, while roughly 60% agreed that cybersecurity and intellectual property protection should be priorities in Latvia’s China policy.¹⁵ A subsequent 2022 survey showed that around 40% of respondents viewed China as an “economic and technological powerhouse,” making it the second most common characterisation,¹⁶ though not uniformly seen as a direct security threat.

ICT and 5G: From initial openness toward a more restrictive approach

In ICT and 5G mobile networks, Latvia shifted from initial openness toward Chinese telecommunications suppliers, including Huawei, to a more restrictive approach, as infrastructure security concerns increasingly intersected with national security considerations and EU and NATO commitments. Huawei established an early foothold in Latvia through a partnership with Bite Latvia between 2016 and 2018, entering the market in 2016 and later signing agreements to develop 5G infrastructure, including base stations in Riga and a nationwide Narrowband Internet of Things network.¹⁷

These developments occurred before Latvia introduced sector-specific restrictions on high-risk suppliers and at a time when China was largely viewed regionally as a technological and economic opportunity. In February 2019, Bite Latvia’s former technical director Gints Butens publicly affirmed the company would proceed with Huawei-built 5G networks, noting that there was “no reason to doubt Huawei’s credibility.”¹⁸

This changed later in 2019 as security concerns gained prominence nationally and at the EU level, when Latvian State Security Services (VDD) identified Chinese technologies in private and public sectors as carrying “the most significant risk,” citing China’s legal obligations requiring companies to cooperate with state security and intelligence services to access information circulating via China-related technologies without the usual legal safeguards standards in Western countries, like prior appraisal, neutrality, or the rule of law.¹⁹

A regulatory shift followed in early February 2020, when Latvia aligned more closely with transatlantic security priorities by signing a Joint Declaration with the US on strengthening 5G infrastructure.²⁰ This move followed the European Commission’s December 2019 amendments to cybersecurity legislation on 5G networks²¹ and the Prague Proposals and was justified by Latvia as necessary to strengthen NATO alliance and prevent critical infor-

Latvian State Security Services identified Chinese technologies in private and public sectors as high-risk

mation from reaching third parties whose actions cannot be traced- an implicit reference to China's Huawei in Latvia. The declaration established that supplier evaluations should assess exposure to foreign government control without access to independent judicial review, as well as the transparency of ownership, governance, and compliance with legally regulated business ethics standards.²²

Latvia did not adopt explicit exclusion policies to limit the role of Chinese suppliers in critical digital infrastructure

Latvia did not adopt explicit exclusion policies, instead it relied on regulatory alignment and risk-based governance to limit the role of Chinese suppliers in critical digital infrastructure. Then-Foreign Minister Edgars Rinkēvičs emphasised the need for a coordinated NATO and EU approach to 5G security that does not compromise security interests, while representatives of the Ministry of Defence cautioned that “banning one product does not solve the problem,” preferring risk-based governance over blanket exclusions.²³ Within this policy environment, Latvian operators diversified toward European suppliers.²⁴ Latvia's largest operator, LMT, partnered with Finland's Nokia in 2022 and Sweden's Ericsson in 2025.

Biotechnology and genomics: Sector with the most significant technological Chinese presence

The most significant Chinese technological presence in Latvia's biotechnology and genomics sector is Latvia MGI Tech SIA (MGI Latvia). MGI Latvia was registered in October 2017 as a subsidiary of MGI Tech Co.,²⁵ itself then a subsidiary of BGI (Beijing Genomics Institute) Group. The registration followed a trilateral MoU signed at the sixth China-CEE leaders' summit between BGI, the Wuhan National Bio-industry Base, and Latvia's Ministry of Economics.²⁶ The Latvian Investment and Development Agency celebrated the initial €20 million investment as a “success story.”²⁷

MGI Latvia entered the company register before the EU's FDI Screening Regulation, and Latvia did not then apply security-focused screenings for greenfield investments;²⁸ its establishment therefore involved no systematic review of national security or data-governance risks.

In 2022, the BGI Research Foundation Latvia was registered, with objectives covering multi-omics research across biological species (humans, agricultural, animals, plant micro-organisms), and R&D of “related technologies.”²⁹

Since MGI Tech Co. listed on the Shanghai Stock Exchange in 2022 and formally separated from BGI Group,³⁰ Chinese officials and MGI representatives have maintained that no legal connection exists between the two entities.³¹ However, this formal separation has not severed the de facto relationship between MGI Latvia and the broader BGI ecosystem.

First, beneficial ownership has not changed. According to the Latvian company register, the MGI Latvia's sole beneficial owner remains Wang Jian (汪建), co-founder and chairman of BGI Group.³² Wang Jian has stated plans to “bring at least half of our [BGI] subsidiaries to Latvia,” citing the availability of “skilled workforce” and envisaging expansion across education, basic research, a National GeneBank, agricultural biotechnology, and potentially a future hospital.³³ At the same time, BGI has been listed by the US Department of Defence as a Chinese military company since 2022,³⁴ but this designation has not resulted in operational restrictions on MGI Latvia.

Second, senior personnel hold simultaneous roles across both entities. Mu Feng (牟峰), head of MGI Latvia's board since 2017,³⁵ concurrently serves as CEO of MGI Tech Co. and

remains listed in BGI Group's leadership section.³⁶ These overlapping positions carry specific data-governance implications. In November 2023, Mu Feng - in his capacity as MGI Tech Co. CEO - signed a joint laboratory agreement with the Shenzhen Municipal Centre for Disease Control and Prevention, integrating genomic sequencing, biological samples, and data-management systems for public-health surveillance.³⁷

Previous research on MGI operations in Latvia has found that BGI maintains close links with its former subsidiary MGI including through direct leadership involvement and public donations on the subsidiary's behalf, shared research activities connected to the China National Gene Bank, and Latvia hosting the second largest BGI-affiliated facility outside China.³⁸

Furthermore, BGI Group leadership has acted on behalf of MGI Latvia. In April 2023, a year after the formal separation, BGI Group CEO Yin Ye (尹烨) donated EUR 2.8 million to a Latvian children's hospital³⁹ on behalf of MGI Latvia.⁴⁰ Ye holds the honorary title of "Excellent Communist Party Member" in Shenzhen's Yantian district and has publicly linked BGI's work to Xi Jinping's "community of shared future for mankind" in the context of biological advancement.⁴¹

These affiliations situate MGI Latvia's parent ecosystem within a political environment where commercial enterprise and party-state objectives frequently overlap. Despite being registered as a private limited company,⁴² PRC state institutions - including the Chinese embassy in Latvia⁴³ and the Ministry of Commerce⁴⁴ describe MGI Latvia as a "Chinese-funded" enterprise. While then-VP Andis Šlaitis dismissed any link between the donation and data-governance concerns,⁴⁵ he no longer occupies a senior role, and most top management positions are held by Chinese nationals.

MGI Tech Co. President Duncan Yu has stated that the company chose Latvia because it "feels safe" for developing a life-sciences platform in Europe that would "help advance" higher-level research capabilities in China through supply chains, technical support, and market access.⁴⁶ China's Biosecurity Law and Data Security Law treat genetic data as a matter of national sovereignty and oblige companies to cooperate with state authorities. Any data accessible through MGI Latvia's operations is therefore, in principle, subject to Chinese state demands - and Latvia currently lacks the legal mechanisms to ensure effective isolation of the subsidiary's data from its parent company or from potential access by Chinese state and CCP structures.⁴⁷

Latvia's Security Service (VDD) has monitored MGI Latvia since its establishment, concluding that China's regulatory framework obliges Chinese companies to support state security and intelligence services when required, and that cooperation with any Chinese firm therefore entails intelligence risks related to the potential transfer of data, intellectual property, and technological know-how to Chinese state institutions⁴⁸ - stating that for China the "acquisition of and research on genetic data, domestically and internationally, are essential to strengthen its position as a global leader in biotechnology."⁴⁹

Latvia's fluctuating rhetoric toward China stems from security concerns linked to China enabling Russia's war against Ukraine

Policy adjustments: China's continuous support of Russia contributes to high-risk awareness across tech sectors

Despite Latvia's rhetoric on China as "systemic rival, competitor, and cooperation partner,"⁵⁰ Latvian embassy in China continues to promote cooperation in "transport and lo-

gistics, high value-added investment, trade, tourism and academic exchanges.”⁵¹ Latvia’s fluctuating rhetoric toward China stems from security concerns linked to China enabling Russia’s war against Ukraine.

Former Foreign Minister Krišjānis Kariņš, in his January 2024 address to parliament characterised Latvia’s earlier China policy as “naïve,” describing China as simultaneously “all those things,” a partner, a risk, and an opportunity. While acknowledging China’s unavoidable role in global supply chains, Kariņš warned that “the main point is not to create a new dependency,” cautioning against replacing Latvia’s recent disengagement from Russian energy with new technological or economic dependencies on China and stressing the need to “keep our eyes open for risks, including in terms of technology,” particularly given China’s refusal to comply with sanctions against Russia.⁵²

From 2018 onwards, Latvia’s security services (SAB and VDD), developed increasingly convergent assessments of risks linked to China’s technological engagement. VDD initially focused on China’s legal framework, noting that Chinese technology companies are required to “provide support to the intelligence services,”⁵³ and by 2019 situating this obligation within Beijing’s ambition of “becoming a global superpower” in the field of technology.⁵⁴ In parallel, from 2019, SAB warned of increased Chinese cyber operations and espionage, advising public institutions to avoid having critical IT products from states with offensive cyber programs targeting NATO and the EU.⁵⁵

By 2020, VDD linked China’s intelligence priorities to its transition toward innovation-driven growth, cautioning that “scientific projects with high innovation potential” in NATO countries would become targets.⁵⁶ From 2021 onwards, both services expanded their focus to economic, technological, and academic domains: VDD highlighted China’s sustained investment in innovative products and interest in strategically important sectors,⁵⁷ while SAB warned in 2023 that cooperation with China “may pose risks not only to the involved parties but also to national security,” stressing that “short-term economic gain can turn into a long-term loss” and that “jointly developed technologies and acquired knowledge” are vulnerable to state appropriation.⁵⁸

These assessments converged most clearly in 2023-2024, when SAB identified China’s “whole-of-society approach” as a source of dependency and data-security risks,⁵⁹ and VDD characterised China’s use of “soft power” as “systemic, gradual and oriented towards long-term goals,” aimed at achieving technological supremacy in areas such as AI, quantum technologies, robotics, and biotechnology.⁶⁰

Among Latvian companies, responses to China-related technological risks have varied

Among Latvian companies, responses to China-related technological risks have varied, with the largest mobile network operator, LMT, adopting an early precautionary approach that prioritised independence from Chinese suppliers in critical network infrastructure. According to an interview with an LMT representative, this strategy was driven by internal risk assessments rather than regulatory pressure, with the company stating that it “didn’t really need that advice” from state institutions and that its management “geopolitically understands approximately what is happening.”

In practice, LMT pursued exclusive partnerships with European suppliers Nokia and Ericsson, invested in domestic manufacturing through cooperation with the Latvian firm Mikrotikls, and implemented strict cybersecurity controls across its operations. This China-independent approach has since been positioned as a competitive advantage for LMT,

particularly for government and defence clients, exemplifying convergence between corporate risk management and national-security priorities.⁶¹

Among academic institutions, engagement with China has taken a more adaptive form. According to an interview with a representative of the Institute of Economics of the Latvian Academy of Sciences, cooperation is described as primarily academic and pragmatic, focused on “mutual learning,” particularly in areas where China has advanced technological expertise.

Following the 2018 S&T agreement, Chinese interest initially centred on Latvia's ICT sector but later shifted toward biotechnology, life sciences, and medicine as regulatory conditions changed, a transition described as accommodated by Chinese partners when cooperation in sensitive areas became restricted. The institute maintains cooperation agreements with the Chinese Academy of Social Sciences and the China-Central and Eastern Europe Institute, producing regular analytical briefings on developments in Latvia that are translated into Chinese, while information on China's domestic situation, Five-Year Plans, and strategic priorities is exchanged mainly through in-person conferences and seminars.

Geopolitical developments, including the war in Ukraine, have affected the institute's work, though it characterises its approach as “neutral.” Regarding state guidance on cooperation with China, the institute notes that instructions from ministries have emphasised caution and partner scrutiny without explicitly directing termination. In practice, the institute has limited engagement with politically sensitive actors and topics as a form of “self-preservation,” while continuing cooperation deemed scientifically and economically relevant.⁶²

Outlook: Increased need for caution due to China's growing clout in standard setting

Over the next five years, technological competition between the US, EU, and China is likely to intensify. As the US reassesses aspects of the liberal, rules-based order, regulatory gaps are emerging that China has the capacity and intent to occupy through standards-setting, supply chains, and overseas technological platforms. For Latvia, this increases the need for caution, as legally compliant economic and technological engagement may still generate longer-term strategic effects.

Latvian state institutions are likely to continue limiting deeper technological cooperation with China, aligning closely with EU and NATO guidance to avoid engagement in sensitive areas to critical infrastructure and national security. At the same time, engagement by private companies is likely to remain uneven, due to differing risk and commercial opportunity perceptions. Cooperation with China is likely to persist selectively, driven primarily by firm-level decisions within EU regulatory boundaries rather than by coordinated national strategy. A more consequential scenario concerns the management of Chinese technological actors already established in Latvia, most notably MGI Latvia, whose presence cannot be easily reversed. In this context, the principal risk is not immediate dependence or regulatory non-compliance, but the role such entities play within China's broader innovation and industrial strategy.

Chinese biotechnology companies operating abroad comply with host-country law while remaining embedded in a policy environment that treats technology, data, and global market access as instruments of national development. Overseas platforms such as MGI Lat-

Latvian state institutions are likely to continue limiting deeper technological cooperation with China

via function as nodes supporting technological self-reliance, industrial upgrading, and the expansion of Chinese-owned supply chains, in line with the CCP's goals for developing "high-quality productive forces" needed to become "innovation powerhouse" as laid out in the latest China's five-year plan (2026-2030).

In practical terms, activities conducted legally in Latvia, including localised manufacturing, R&D cooperation, and integration into European supply chains, can contribute incrementally to China's strategic objectives without overt coordination or traceable violations. This creates a governance challenge for Latvia, as such effects emerge cumulatively and indirectly, complicating monitoring and mitigation. Absent more coordinated oversight of technology transfer and data governance, Latvian actors may continue to facilitate China's global innovation strategy unintentionally, while remaining exposed to abrupt regulatory or sanctions-related disruptions should EU-China or NATO-China relations deteriorate further.

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Lithuania

**Not exactly “free” of
Chinese technology
solutions yet**



Lithuania: Not exactly “free” of Chinese technology solutions yet

By Konstantinas Andrijauskas, Associate Professor, Institute of International Relations and Political Science (IIRPS), Vilnius University

While Lithuania is a country with comparatively limited technological exposure to China, interaction in this area has been an increasingly important factor in the development of their bilateral relationship, including its ongoing crisis phase since late 2021. Having first perceived China as a priority partner for technology and innovation cooperation, especially in the fintech sector, since 2020, Lithuania has gradually transformed its position on that country as a technological power to one of the most alarmist in Europe. Four technology sectors – telecommunications, surveillance tech, photonics, and greentech – have been closely intertwined with the progression of the bilateral relationship crisis, becoming targets of either Lithuanian securitisation or Chinese retaliatory economic coercion. Lithuania’s alarmism has been further strengthened by China’s tech-related support to Russia’s aggression against Ukraine.

Recent trends: Ambitious “values-based foreign policy” favoured de-risking from Chinese tech solutions

Lithuania has gradually become an outlier in Europe regarding bilateral relations with China since the end of 2020. It was then that the 18th Lithuanian government (2020–2024), composed of a coalition between three centre-right political parties, embarked on the country’s ambitious “values-based foreign policy”. This policy incorporated a comprehensive review of its bilateral relationship with China and a concomitant “strategic diversification” to more “like-minded” Indo-Pacific actors, notably including Taiwan, as its two key components.

Lithuania’s progress towards de-coupling or at least de-risking from Chinese technology solutions will continue to at least in part depend on Taiwan’s expected role as a substitute

In this context, even a governmental transition since late 2024 has thus far not produced any apparent changes in Lithuanian outlook. On practical terms, Lithuania’s progress towards de-coupling or at least de-risking from Chinese technology solutions will continue to at least in part depend on Taiwan’s expected role as a substitute for some of those. Meanwhile, the southernmost Baltic state remains not exactly “China-free” in this important regard. Moreover, the issue of Lithuania’s potential dependence on Chinese economy in general and technology in particular has been an important feature of these policies,¹ sometimes framed as a farsighted shift towards de-risking, if not necessarily de-coupling, from a country increasingly perceived as a threat to its national security.² Practical implementation of such goals has been mired with political controversy and associated with economic costs from Beijing’s punitive multi-dimensional pressure campaign, that could have contributed to a governmental transition towards the centre-left since late 2024. Therefore, subsequent Lithuanian cabinets have inherited a globally unique situation of leading a country that has no ambassadorial ties with China, while maintaining official bilateral relations, yet hosts the world’s only “Taiwanese Representative Office” in its capital, Vilnius.³

In October 2022, Lithuania’s then Minister of Foreign Affairs and one of the architects of the Indo-Pacific policy shift, Gabrielius Landsbergis, boldly declared his country “China-free.”⁴ This statement came despite the apparent recovery of bilateral trade and investment ties after the apex of Beijing’s economic coercion less than a year earlier, leaving his immediate successor, Kęstutis Budrys, to specify that this statement applied only to dependencies in sectors deemed strategic.⁵ Therefore, it appears fitting to tackle the issue of Lithuania’s response to China as a technological power through the examination of its recent drive towards this ambitious goal and the relevant results achieved thus far.

Lithuania’s science and technology collaboration with China is limited, but not non-existent

According to perhaps the most comprehensive index measuring China’s influence worldwide, Lithuania is a country with comparatively limited technological exposure to this emerging superpower.⁶ However, technology collaboration has been an increasingly important issue in the development of the Sino-Lithuanian relationship, notably also during its crisis phase since late 2021. Officially, this aspect of ties between the two countries has been guided by the bilateral Agreement on Scientific and Technological Cooperation that was signed in spring 1992, less than a year after the mutual recognition establishing the relationship itself.⁷ Yet, it took two decades until Lithuania’s involvement with the nascent China–Central and Eastern European Countries (China–CEEC) platform for this kind of collaboration to become more tangible.

Despite comparatively limited technological exposure, technology collaboration has been increasingly important in the Sino-Lithuanian relationship

In early 2019, the Ministry of the Economy and Innovation listed China as the tenth priority country in terms of technology and innovation cooperation above Lithuania’s all immediate neighbours and such global tech-powerhouses as South Korea, Israel and Japan.⁸ In the end of that same year, Vilnius hosted the China–CEEC platform’s High-Level Fintech Forum and established its “network of fintech coordinators.” According to the Bank of Lithuania, the country’s national regulator, nine Chinese capital financial technology companies had secured their licenses by that time.⁹

While fintech cooperation has largely fallen victim to the bilateral relationship crisis since 2021, including Lithuania’s pullout from the China–CEEC platform that year, four other technology sectors have been closely intertwined with the progression of this continuing diplomatic dispute. Having first named China as a threat to their national security in 2019, the following annual threat assessment issued by Lithuanian intelligence agencies specifically highlighted the fifth-generation (5G) communication technology as a new risk factor, without, however, explicitly mentioning the challenge of Chinese providers in this context.¹⁰

Just ahead of the late 2020 parliamentary elections, Lithuania joined the US-led and 5G-focused Clean Network initiative.¹¹ It was left for the newly formed 18th government to act upon those novel obligations. Thus, in late spring the following year, the Seimas (Lithuanian parliament) effectively banned Huawei from developing a local 5G network.¹² The shift in the new government’s approach to Chinese technology solutions became particularly apparent on paper in a late 2021 amendment to Lithuania’s National Security Strategy, which explicitly stated that:

“In Europe, the People’s Republic of China strengthens its position mainly by creating economic and technological dependence. It supports the development of private Chinese business in the West, while obliging them to act for its benefit, including through the unlawful collection and transmission of data to its government. It sets up prerequisites for impeding the Western countries’ economic and technological progress, eroding their unity and lessening their independence, and spying on them. Therefore, all of these trends are threatening the security of the whole democratic world.”¹³

Lithuanians’ heightened concern about China’s data gathering and spying was more specifically reflected in their scrutiny of its surveillance-related technology. Having also made headlines worldwide by recommending that consumers avoid using Chinese smartphones due to their alleged inbuilt censorship capabilities,¹⁴ Lithuania’s Ministry of National Defence identified numerous security risks in Chinese video surveillance cameras,¹⁵ prompt-

ing later changes to the public procurement legal framework designed to address this issue by effectively banning the use of Chinese technology hardware in the country's most important public institutions.

However, Lithuanian investigative journalists revealed that Chinese-made smartphones, drones and surveillance cameras remained omnipresent among these a year after that reform due to the reasons of competitive pricing and technological dependency.¹⁶ The latter challenge was best exemplified by Lithuania's practical inability to ban Nuotech x-ray scanners from all of its border posts for lack of a quick alternative, having to limit the ban on this Chinese technology to airports.¹⁷

Moreover, different dimensions of bilateral technological collaboration at least briefly served as a target of China's punitive multi-dimensional pressure campaign against Lithuania. In fact, both of its most idiosyncratic economic coercion measures used at the apex of the Sino-Lithuanian relationship crisis in late 2021 to early 2022 – namely, a near-total embargo on the entire bilateral trade, including exports of Chinese industrial components, and pressure on third country multinational companies to exclude Lithuanian-made components from the China-bound global supply chains – had a clear technological edge to it.¹⁸ This appeared to be particularly true of the photonics sector, long the mainstay of bilateral science and technology collaboration and perhaps the most recognisable part of Lithuania's innovation ecosystem.

To illustrate this, the exports of Lithuanian industrial lasers to China, their key market for years, tumbled in late 2021,¹⁹ prompting one of the sector's most prominent representatives to come out in public with a scathing critique of the government's decisions. In this entrepreneur's own words, his business had been sacrificed for this "values-based" foreign policy.²⁰

Beijing's tech-related pressure has left a complex impression on the general public

Beijing's tech-related pressure has apparently left a complex impression on the general public, as almost two fifths of Lithuanians polled in mid-2023 had no clear opinion on the statement that "China's information technology is affordable, and therefore should be of no limits to use in Lithuania even if there are some security risks," while more than a third of them agreed, and more than a quarter disagreed.²¹

Nevertheless, the 18th Lithuanian government remained undeterred, finishing its term by addressing the fourth and final main sector of concern to it – greentech. Just ahead of the late 2024 governmental shift to the centre-left, Lithuania emerged as one of ten EU member states that helped to push through the imposition of additional tariffs on imports of Chinese-made electric vehicles,²² while domestically passing the law that effectively blocked Chinese remote access to its larger solar and wind farm control systems.²³ Despite intensified rhetoric about the need to "normalise" relations with China by some of Lithuania's key representatives of the political centre-left,²⁴ their late 2024 entry into the government has thus far not led to any apparent shifts in this regard, including the area of science and technology. As has been argued in the preceding ETNC report, aside of policy inertia and more pressing priorities in the context of Russia's continuing aggression against Ukraine, this "wait and see" mode regarding the bilateral relationship crisis with China may be explained by Lithuania's belief that its recent policy shift on that country could be considered an asset by Donald Trump's administration as well.²⁵

Outlook: Continuing alarmism and Taiwan’s substitutive role

As of the time of writing, Lithuania remains alarmed about Chinese technology, often perceived in conjunction with a more comprehensive and nearly existential threat from Russia, especially since the early 2022 beginning of the full-scale war against Ukraine. This perception is clearly encapsulated in Lithuania’s most recent strategic documents, where China is called “one of the most significant enablers [...] of Russia’s war of aggression,” including through their mutual technological cooperation.²⁶ To illustrate this alarmism, that largely transcended the Lithuanian governmental transition, only weeks after DeepSeek made global headlines in early 2025, the newly composed Seimas moved to prohibit the Chinese chatbot’s usage in all of its employees’ official devices.²⁷

In conclusion, it is pertinent to point out that the key contentious issue in the Sino-Lithuanian bilateral relationship, Lithuania’s outreach to Taiwan, has a clear focus on technology, as exemplified by the island’s admittedly small but cautiously targeted investments into its new partner’s laser, biotechnology, greentech, fintech, artificial intelligence, and emerging semiconductor industries, that is precisely those sectors that Vilnius officially identified as its strategic priorities.²⁸ However, it would necessarily take time and much more mutual effort for Taiwan, or indeed any other global high-tech actor, to at least in part substitute Chinese hard and software technology solutions in the afore-mentioned sectors, to some of which Lithuania remains embedded even during the continuing estrangement in diplomatic relations.

The key contentious issue in the Sino-Lithuanian bilateral relationship, Lithuania’s outreach to Taiwan, has a clear focus on technology

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Netherlands

A stylized map of Europe is shown in the background. The map is rendered in shades of blue and dark blue, with white outlines for country borders. The Netherlands is highlighted in a bright yellow color, making it stand out from the rest of the map. The map covers most of the frame, with the text overlaid on the top left portion.

**Chipping away
at technological
dependencies on China
and the cases of ASML and
Nexperia**

The Netherlands: Chipping away at technological dependencies on China and the cases of ASML and Nexperia

By Rosaline Lantink, Tobias Koster, Xiaoxue Martin, Anouschka Modak, The Netherlands Institute of International Relations Clingendael

Technology plays a crucial role in Sino-Dutch relations. The Netherlands has a strong high-tech industry that is entangled with and dependent on Chinese players. Simultaneously, China is still reliant on critical technology and expertise from Dutch universities and companies like chip machine manufacturer ASML. This gives the Netherlands leverage - but also makes it vulnerable to the US-China technological competition. The duality is reflected in tech policy and practice. The Dutch government encourages cooperation in areas such as green governance, agritech, and water management. However, it also has a strong focus on economic security and technological de-risking. This causes tensions in the relationship with China, as the case of Nexperia showed. The Dutch government intervened in this Chinese-owned semiconductor company over concerns of dependencies and technology and knowledge leakage. The resulting diplomatic conflict with China persists. Looking ahead, the challenge for the Netherlands lies in operationalising a delicate balance between protection and cooperation.

Recent trends: Dutch government increasingly focuses on economic security and technological de-risking

This chapter analyses how the Netherlands engages with and responds to China as a technological and innovation power. After discussing the main trends in government policy, academia, business, and politics, it dives into two relevant cases: ASML and Nexperia. The chapter concludes with an outlook of the main challenges ahead related to China's technological development, arguing that strengthening economic resilience is the most pressing issue for the newly appointed Dutch government.

The Netherlands is a global player in science, technology, and innovation (STI), and technology is a key aspect of Sino-Dutch relations. Dutch companies are active in several high-tech sectors, such as semiconductor, agritech and quantum technology, while the Netherlands ranked 8th in the 2025 WIPO Global Innovation Index.¹ The country also has one of the world's most open economies.² Consequently, the Netherlands is highly interconnected with China's rise as an STI powerhouse.

Dutch players like chip machine maker ASML hold strategic positions in global supply chains, producing technology that China cannot yet do without. This makes the Netherlands important for the EU's ambition to increase strategic autonomy in critical tech sectors. However, while providing the Netherlands – and more broadly the EU – with leverage towards China, it also puts the Netherlands at the heart of the US-China tech rivalry.

Dutch government policy towards China is underpinned by the 2019 note 'The Netherlands-China: A New Balance'.³ Its main principle is: 'open where possible, protecting where necessary'. The policy note underscores the need to cooperate with China on shared global challenges, while protecting economic and national security. The Dutch government has since then invested in increasing China knowledge across government institutions, for example with the establishment of the Dutch China Knowledge Network.⁴

The same leverage towards China that the Netherlands has in critical technologies also puts it at the heart of the US-China tech rivalry

Navigating the technological landscape: Dutch government actions on Sino-Dutch tech engagement



Source: Clingendael Institute

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Figure 1

Dutch public opinion and the parliament are important drivers of government policy. Overall, Dutch public opinion on China is among the lowest in Europe. The Dutch population, as in most Northern European countries, holds a more negative image on China compared to their Southern counterparts, although this turned slightly more positive in 2025.⁵ Reflecting these negative views, the Dutch parliament also consistently pressures the government to tighten its China policy.

The constant balancing between cooperation and protection is broadly reflected in the Netherlands' technological engagement with China. For example, the Netherlands Innovation Network in China seeks opportunities for Sino-Dutch cooperation in technologies key to the energy transition, agrifood, public health and more.⁶ In addition, China and the Netherlands signed a Memorandum of Understanding (MoU) in 2023 on STI cooperation in areas including agritech, water management, climate, healthcare, circular economy, green chemistry, energy materials, AI, and photonics.⁷

Simultaneously, Dutch policy has increasingly shifted towards de-risking, resilience, and (economic) security.⁸ As described by the Dutch intelligence services: "China is both the biggest threat to the economic and knowledge security of the Netherlands and a formidable trade partner." Their annual reports consistently warn that China actively seeks to gain Dutch knowledge and technology through espionage, cyberattacks, and legal methods like "buying high-tech companies or funding students and academics who can obtain sensitive information."⁹ In 2024, the national military intelligence service even publicly attributed an intrusion into the Dutch defence system to China.¹⁰ The Dutch government is also critical of China's weaponisation of economic dependencies and the country's indirect role in the Ukraine war. In line with these warnings, Dutch citizens perceive cyber sabotage of critical Dutch infrastructure as the most pressing threat to national security.¹¹

The Dutch government has taken several, often country-agnostic, measures to institutionalise economic security in a whole-of-government approach. The Netherlands is a front-

runner in the EU on economic security policy. In 2022 and 2023, it published the National Knowledge Security Guidelines and opened national contact points for knowledge and economic security for the private sector and academia.¹² The Ministry of Education is also working on a new bill to screen all incoming foreign students and researchers who wish to work with sensitive knowledge in the Netherlands.¹³ This proposal has sparked criticism from organisations like the Dutch Research Council, concerning potential discrimination against specific nationalities¹⁴ and declining international appeal of Dutch research institutions.¹⁵

In 2023, the government also enacted the Foreign Direct Investment Screening Act (*Wet Vifo*).¹⁶ The act allows authorities to block transactions that involve vital providers and processes, as well as companies in sensitive fields. The government aims to expand the act to include additional sectors and technologies. In 2023, it already established the 'Economic Security Safeguard Mechanism' (*Beschermingsvoorziening Economische Veiligheid*). This allows the government to take an immediate stake in strategically important companies if national security is threatened.¹⁷

On the promotion and partner side, the Dutch government aims to boost the Dutch tech sector and diversify partnerships. For example, the National Technology Strategy introduced in 2024 identifies ten key technologies¹⁸ with potential for Dutch businesses and institutions to gain international key positions.¹⁹ Partnerships with likeminded countries happen both bilaterally, such as with India,²⁰ Singapore,²¹ and South Korea,²² and multilaterally. Examples of the latter are the international Semicon Coalition launched at the initiative of the Netherlands in 2025 to reinforce European cooperation throughout the semiconductor ecosystem, and the Dutch government joining the opening of the US-led coalition Pax Silica.²³

Dutch academia: securitisation of knowledge and continuing collaboration with China

The Netherlands has several universities that specialise in sensitive technologies. In line with changing government policy, Dutch academia has taken measures to increase knowledge security. While some universities have not (publicly) altered their strategies, most have adopted a more cautious approach in admitting Chinese students, collaboration with Chinese counterparts, and broader scientific cooperation. For example, Twente University has introduced a China strategy explicitly stating that collaborations in the field of 'critical technologies' will be subject to strict controls, and Delft University of Technology is working on improving the 'China Tools' it launched in 2021.²⁴ In addition, some universities have suspended or ended their collaboration with the China Scholarship Council (CSC) over concerns of obligatory loyalty pledges to the Chinese Communist Party,²⁵ security risks, as well as inadequate scholarship funding.²⁶

Overall, however, Sino-Dutch academic collaboration continues. A 2025 study showed that there were approximately 500 ties between Dutch universities and research centres and Chinese entities, with around 40% involving institutions linked to the People's Liberation Army.²⁷ The study assesses half of these collaborations as posing 'high' or 'very high' risks.

Ultimately, Dutch universities emphasise the need to continue collaborating with China - although more selectively - as the country is an innovative powerhouse, a global leader in technological research, and a key partner to address global sustainability challenges.²⁸ The 2024 MoU between the Chinese Academy of Sciences and the Dutch Research Council signals this commitment.²⁹

Sino-Dutch academic collaboration continues amid measures to increase knowledge

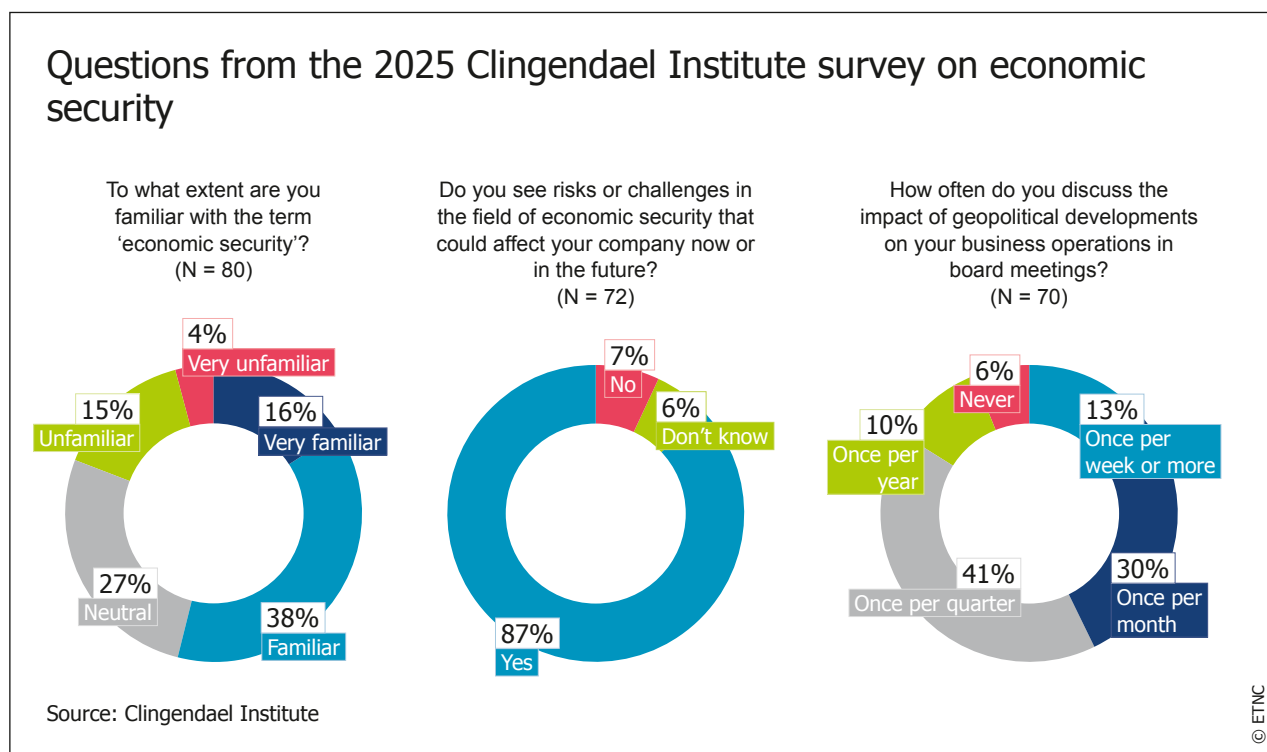


Figure 2

The private sector: strong tech players but varying awareness of economic security

Home to the Port of Rotterdam, which positions itself as the gateway to Europe, the Netherlands is the largest importer of goods from China within the EU.³⁰ Furthermore, the Dutch high-tech sector has attracted ample Chinese investment. This is reflected in the establishment of European headquarters and distribution centres by Chinese firms such as Hutchison Ports, BYD, and Huawei. In 2022, more than 900 companies active in the Netherlands are at least 50% owned by a Chinese company, or a state-linked entity.³¹ A notable amount of these companies operate in sectors considered 'sensitive' or 'vital infrastructure', such as the energy sector, data services, IT, communications, money transfer, surveillance, and semiconductors.^{32,33}

A 2025 Clingendael Institute survey researched how Dutch tech firms in strategic sectors perceive economic security, including overdependence on China and geopolitical tensions between China and the US.³⁴ Nearly 90% of the respondents see risks or challenges in the field of economic security that could affect their company (see figure 4). Nevertheless, large gaps persist between risks perception and response, partly due to the additional costs. Moreover, there is a lack of awareness amongst Dutch companies about the government's economic security toolkit to support businesses, and there is room for improvement amongst companies and the government to jointly enhance economic resilience.³⁵

Policy in practice: The cases of ASML and Nexperia

Two cases illustrate how the Dutch government and private sector struggle with China as STI power and the entanglement of geopolitics and tech: semiconductor companies ASML and Nexperia.

ASML: leverage and vulnerability vis-à-vis China and the US

2019	The Netherlands bans the export of EUV chipmaking machines to China amid pressure from the US, and national and economic security concerns.
2020/22	The EUV ban remains in place, while DUV machines continue to be exported. This creates a temporary “middle ground”.
2022	Washington extends the Foreign Direct Product Rule (FDPR) to retain control over semiconductor “chokepoints”. ASML and other companies must ask permission to the US for exports to China.
Sept 2023	The Dutch government introduces export licensing requirements for advanced DUV systems.
Oct 2023	The US updates FDPR controls to cover a much larger set of technologies.
Early 2024	The US pressures the Netherlands to restrict maintenance and updates for chipmaking machines already in China.
Sept 2024	The Netherlands tightens export restrictions on DUV lithography machines. Dutch companies must once again apply for licences with the Dutch government rather than the US.
Apr 2026	US Congress proposes the 'Multilateral Alignment of Technology Controls on Hardware Act' (MATCH) Act.

Figure 3

Home to the world’s sole provider of the most advanced chipmaking machines, the Netherlands found itself in the middle of US-China rivalry for technological leadership in 2019. The US initially pressured the Netherlands to restrict Chinese access to ASML’s most advanced chip making machines, which are key to manufacture semiconductors for cutting-edge technology and advanced AI. Over the years, the US continued to raise security concerns and pressured the Netherlands to implement stricter national controls on semiconductor technology. The Netherlands shared several concerns, leading to national security measures further restricting ASML’s exports to China.

Since 2024, the US has also pushed for restrictions on ASML machine servicing for certain Chinese chipmakers. In April 2026, the US Congress proposed the MATCH Act, which includes extraterritorial measures that would force ASML to follow tighter US export controls on chipmaking equipment to China. The Dutch government has expressed its concern about these measures to the US “at all levels”.³⁶ ASML is a cause of conflict in Sino-Dutch relations, but so far tensions have been managed diplomatically.

Timeline of developments involving Nexperia

2023/25	Talks between the Ministry of Economic Affairs and Nexperia about concerns of mismanagement by Chinese CEO Zhang Xuezheng.
Early 2025	The US informs the Dutch Ministry of Foreign Affairs that it will extend export controls to impact Nexperia, unless the CEO is removed.
Sept 2025	The US issues a rule extending US export control restrictions to Nexperia.
Sept 2025	Dutch Economic Affairs Minister Karremans invokes Goods Availability Act to seize control over Nexperia, citing mismanagement and economic security.
Oct 2025	Enterprise Chamber rules that CEO Zhang must be removed due to mismanagement.
Oct 2025	China issues export controls on Nexperia chips made in China.
Nov 2025	Trump and Xi make a trade deal, as part of which China announces to ease export controls on chips.
Nov 2025	Minister of Economic Affairs suspends measures on Nexperia.

Figure 4

Nexperia: Not letting the chips fall where they may

In late 2025, developments around the semiconductor company Nexperia reached international headlines. Using Cold War-era legislation that had never been invoked before, former Dutch Minister of Economic Affairs Vincent Karremans seized control of the company. He cited management shortcomings and transfer of crucial technology and knowledge to China.³⁷ This intervention, as well as the court decision the day after to remove the Chinese CEO Zhang Xuezheng, caused a diplomatic conflict between China and the Netherlands in which the EU ended up being cut off from less advanced, but crucial chip technology.

Four takeaways from the ASML and Nexperia cases:

Although the developments around Nexperia and ASML are still ongoing, four conclusions can be drawn.

First, both cases illustrate the ever-widening scope of economic security. Although ASML's strategic value creates leverage for the Netherlands in its relationship with China, it also prompted the Dutch government to broaden its conceptualisation of economic security. The Netherlands subsequently revised its national security regulations in strategically sensitive high-tech sectors. The Nexperia case, in turn, showcased that economic security risks are no longer limited to high-tech industries. The recent shortages of Nexperia's low-tech chips led to immediate bottlenecks in production in European, American, and Japanese car industries,³⁸ and disrupted global supply chains.

Second, the two cases underline the need to understand your counterparts when manoeuvring in a politically fragile situation. In the case of ASML, the Dutch government has been successful in balancing the security concerns of long-standing partner the US, and Dutch interests of national and economic security, and strategic autonomy - all while avoiding strong Chinese retaliation. This was likely the result of China's wish to prevent further restrictions on ASML's technology, combined with structured dialogue between China and the Netherlands, open and transparent communication, and high-level visits to China. The careful manoeuvring of the Ministry of Foreign Affairs played an important role here.

The case of Nexperia stands in stark contrast with ASML. The intervention by Economic Affairs Minister Karremans, which had not been coordinated with or communicated to the Chinese government, was followed by strong Chinese countermeasures. This caught the Netherlands by surprise. Prior to intervening, Minister Karremans had assessed that a Chinese far-reaching response was unlikely,³⁹ despite China's track record of using economic instruments as geopolitical tools as well as the Dutch government's different handling of ASML. This case shows the need for the Dutch government to further optimise and coordinate knowledge and policy on China across departments, as well as with other EU member states.

Third, the Nexperia case illustrates that China is actively seeking to decrease European leverage. China's export controls on Nexperia chips painfully made clear that Beijing ultimately had the upper hand, and was able and willing to leverage European dependencies in the chips supply chain. The move pushed the Netherlands into an awkward position, causing tensions with the European Commission and partner countries in Europe. By exploiting European vulnerabilities, China drove a wedge between European countries and put pressure on European unity.

Finally, the developments showcase the importance of narrative. The Dutch government was initially hesitant to be fully transparent about and proactive in publicly communicating the reasoning behind Minister Karremans' intervention. This gave China the opportunity to shape the narrative of the situation. Rather than the mismanagement by Nexperia's CEO, the risk of technology and knowledge leakage and security threats, a different story was in the headlines: as the developments took place parallel to the US extending export restrictions to Nexperia, the Chinese framed the intervention as solely driven by pressure from Washington to decouple from China. This placed the Netherlands at a disadvantage, even though reconstructions and court documents later contradicted the alleged connection.⁴⁰

Outlook: Tensions lowered, but uncertainty over Nexperia and ASML remains

The new Dutch government coalition, formed in February 2026, is tasked with managing the relationship with China in the aftermath of the Nexperia crisis. Although the long-term impact on the Sino-Dutch relationship remains unclear, China has shown willingness to cooperate with the new government. It is welcoming the newly appointed Dutch Foreign Trade Minister Sjoerd Sjoerdsma to China for high-level consultations and a trade mission,⁴¹ despite being sanctioned by China during his tenure in parliament.

This development will smoothen future cooperation and allows both sides to address possible future developments around ASML, Nexperia, or other issues in the bilateral trade relationship. Former Economic Affairs Minister Karremans was appointed Minister of Infra-

The ASML and Nexperia cases have led the Netherlands to revise its national security regulations in strategically sensitive high-tech sectors

structure and Water Management, a role that involves strong collaboration with China on topics like water and climate adaptation.

Although the Dutch private sector, academia and the broader public are increasingly more aware of vulnerabilities caused by dependencies, broader investments are necessary to further strengthen strategic autonomy and resilience, from the private and public sector, and nationally and at the European level. The Nexperia case showed once more how major powers can easily weaponise dependencies. The newly formed Dutch government is entrusted with the difficult task to decide where openness ends and safeguarding begins.

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Poland

**Policy in the making on
China as a tech power**



Poland: Policy in the making on China as a tech power

By Justyna Szczudlik, Polish Institute of International Affairs (PISM)

Technology itself is not a distinguishing feature of Poland's approach to China. Nevertheless, technological elements have been incorporated into Poland's security and economic policies regarding China. Recent developments in Poland, such as the introduction of a new cybersecurity law including a 'high-risk vendor' category, the announcement of the Taiwanese company Foxconn (instead of the Chinese Geely) as a strategic partner for development of Polish EV and the decision of the Polish military chief to prohibit Chinese cars from entering military areas, demonstrate incremental changes in the Polish administration's perception of China.

Recent trends: Wake-up calls on China's tech-related topics

Since Poland's decision to strengthen its relations with China in 2008–2009, science, technology, and education have been recognised as an area for bilateral cooperation. Three main documents devoted to scientific cooperation have been signed by the two countries and remain in place: an agreement on science and technology cooperation in 1995; an agreement on cooperation in higher education in 2011; and a document on the mutual recognition of academic degrees and diplomas in higher education during Xi Jinping's visit to Poland in 2016.

One of Poland's objectives for closer cooperation with China in education and science was to encourage more Chinese students to study in Poland. This was partly due to the country's low birth rate, but also because Polish universities need to find alternative sources of funding. Polish universities were promoted as being more affordable than those in Western Europe, while still offering a high-quality education. Furthermore, China was viewed as a potential partner in science due to its well-developed academic infrastructure.

In 2018, the Polish National Science Centre launched the SHENG programme to fund joint Polish-Chinese research projects in basic sciences, including chemistry, medicine, and energy. The programme has been running normally and there are no signals for halting it regarding SHENG.¹ One possible reason for this is that the sums of money involved are rather minimal,² and most Polish scientists are primarily interested in accessing the Chinese scientific infrastructure.

Since Poland began adopting a more cautious approach towards China in 2017, a similar trend has emerged in the tech sector, even though this area was not previously considered distinct. The most significant example of this was the heated debate about the contribution of Chinese companies — primarily Huawei and ZTE — to 5G infrastructure. This debate, that was launched around in 2017/2018, marked a turning point in the Polish administration's evolving view of China as a tech power posing threats. The debate was largely sparked by the publication of 'Made in China 2025', pressure from the US,³ and the EU's initiative to set up an investment screening mechanism to defend against Chinese economic and technological coercion.

The most recent concerns have become apparent since 2023. A significant moment came in 2024/2025 when it was realised by companies and authorities that Poland's battery sector, considered a tech success story, was vulnerable due to its dependence on Chinese

Since Poland began adopting a more cautious approach towards China in 2017, a similar trend has emerged in the tech sector

minerals such as lithium and graphite. In 2025 in particular, there was a visible increase in the number of Chinese cars⁴ on Polish roads. Furthermore, over the past two to three years, there has been significant growth in Chinese e-commerce platforms in Poland, including Temu, Shein, and Alibaba.

Spot on 5G, batteries, cars and e-commerce

When it comes to Poland-China cooperation, four China-related technology topics have recently been discussed: 5G, lithium-ion batteries, cars (BEV, PHEV and combusive) and e-commerce. It seems that the topic of 5G is rather outdated and no longer the subject of heated debate. A hot debate took place between 2018 and 2020. Little discussion took place during the final stage of work on the National Cybersecurity System Law (NCSL), which was finally adopted in early 2026. In the weeks before the law was adopted the discussion about China's role was virtually non-existent. Previously the debate had focused on signals of lobbying from China to block or dilute the law.⁵

China's export restrictions on rare earths in 2023 raised awareness of potential vulnerabilities

In the case of batteries, this sector was seen as one of Poland's success stories in 2023. Batteries manufactured in Poland were a hit with export markets. Poland played a leading role in the battery sector's supply chain at that time. Lithium-ion batteries accounted for 2.4% of Polish exports in 2023, and the value of exports in the battery sector has increased 38-fold over the past six years. In 2023 Poland accounted for 9% of global battery production.⁶ Most of the plants in Poland are owned by companies with no links to the PRC. Therefore, it was believed that Poland was immune to potential Chinese coercion and dependence in this sector. However, most of the minerals needed for EV batteries, such as lithium and graphite, originate from China. China's export restrictions on gallium, germanium and graphite in 2023 raised awareness in Europe, including Poland, of potential vulnerabilities in relations to China.

Apart from the issue of dependence, there has been a visible change in the Polish battery sector in 2024/2025: a dramatic decrease in demand for batteries manufactured in Poland. Reasons for this include lower demand from Germany and Mexico. When it comes to Germany, which was an importer of around 50% of Polish batteries, decrease of demand stems from the end of the electric car subsidy programme and rising competition from China. In case of Mexico, which has abundant lithium resources, the country has launched its own production with some cooperation with China. In the first half of 2024, battery deliveries from Poland were 58.2% lower than in the previous year.⁷

At the same time, the import of Chinese cars to Poland increased notably in 2025. According to the Samar Institute, the market share of Chinese brands in Poland increased from 0.03% in 2023 to 1.9% by the end of 2024, reaching 6.2% by June 2025.⁸ Data published by Samar in late November 2025 shows that 75 different models of Chinese cars are currently being registered, accounting for around 7% of sales in the first nine months of the year, rising to over 10% in October.⁹ Concurrently, discussions have emerged regarding the security implications of Chinese cars, particularly their potential to collect data and engage in espionage activities.

It is also worth mentioning the Izera project that was launched under the previous Poland's centre-right government. The aim was to develop a Polish electric vehicle. To this end, the state-owned company ElectroMobility Poland (EMP) was established in 2016 and the Izera brand was unveiled in 2020. Then it was decided that a manufacturing plant was to be built

in Jaworzno in southern Poland. In 2022, EMP announced a collaboration with the Chinese company Geely, which would supply platforms for the construction of Polish EVs.¹⁰ However, in December 2024, the new Polish government, established after elections in 2023, announced the end of the Izera programme. Rather than producing its own EV brand, the new government has announced plans to transform the previous project into an ‘electromobility cluster’ (or ‘hub’), aiming to cooperate with various partners to produce electric vehicles in Poland but under foreign brands.¹¹

The future of this project remained uncertain until early May this year. Geely, the Chinese company that had been negotiating cooperation with EMP under new “electromobility hub” idea, finally withdrew after prolonged talks with no visible prospects for a positive outcome. It was also discussed that other potential partners might be another Chinese company, Cherry. However, according to media reports, the Polish government was very cautious when it comes to considering cooperation with a Chinese partner. As a result, the CEO of the EMP resigned in March, seeing no prospects of prompt implementation of the project.¹² Then, on 7 May, the Polish government announced that an agreement had already been reached with the Taiwanese company Foxconn, which would become the EMP’s strategic partner in developing the Polish electric vehicle.¹³

The final important aspect of cooperation with China in the tech sector is e-commerce. Chinese e-commerce platforms such as Temu, Shein and Aliexpress have experienced significant growth in Poland and have already overtaken Polish platforms such as Allegro.¹⁴ Allegro used to be a very popular and profitable company, as well as being an example of the success of the Polish online trade model. It is estimated that the share of e-commerce platforms from third countries, mainly Chinese, is 6–11%. Concerns include the threat to Polish companies and manufacturers of losing their jobs and being pushed out of the market by Chinese entities, as well as issues relating to product safety, personal data protection and intellectual property infringement. There has also been discussion about the possibility that Chinese platforms could gather large amounts of data about Polish consumers.¹⁵

Policy adjustments: Rising awareness of China’s tech prowess has brought about mitigation measures

Raising awareness of China as a tech power led to the adoption of mitigation measures. The first publicly visible adjustment from Poland was its vote on 4 October 2024 in favour of the Commission’s proposal to introduce countervailing duties on imports of battery electric vehicles (BEVs) imported from China. Poland is open to Chinese high-tech investments, including EVs, but only on the condition of technology transfer and based on not simply becoming an assembly site for Chinese products. Talks are ongoing, but China is extremely reluctant to agree to these conditions.¹⁶

Raising awareness of China as a tech power led to the adoption of mitigation measures

The most significant step forward was the finalisation of work on the National Cybersecurity System Law. It was a very long process. The NCSL was adopted in 2018. In September 2020, the first draft amendment to the NCSL was released. The NCSL implements the EU’s Network and Information Security (NIS) Directive. The amendment was proposed amid discussions about Chinese involvement in Poland’s 5G network, following the announcement of the US–Poland Joint Declaration on 5G. Following years of discussions, parliament finally adopted the NSCL and it was signed by the Polish president in January 2026. The process was very rocky, largely due to Chinese pressure to halt the process, or at least remove the ‘high-risk vendor’ category¹⁷ which has finally been added to the law.¹⁸ Despite

this category being country-agnostic, there is a tacit public assumption that it mostly refers to China.

Another noteworthy adjustment is the recent decision made by the Polish Army in January 2026. According to the communiqué, the Chief of the General Staff of the Polish Armed Forces decided to introduce a ban on the entry of motor vehicles manufactured in the People's Republic of China into areas of protected military facilities as a result of the risk analysis related to the growing integration of digital systems in vehicles and the potential for these systems to acquire and use data.¹⁹

The decision to cooperate with the Taiwanese company Foxconn instead of a Chinese company as a strategic partner for Electromobility Poland could also be seen as a sign of distancing from the PRC due to security concerns.

Apart from concrete, law-related steps, there has been more discussion within the administration regarding China's status as a tech power. A rather new topic is the security of scientific cooperation with China. Poland has already launched discussion within the administration on this, consulting with other countries to share their good practices. It is also worth mentioning that the Technology Security Team has recently been established within the MFA's Department of Economic Cooperation.

Outlook: Warsaw is waking up to threats posed by China as a tech superpower

First steps have been taken towards a national mechanism to mitigate the negative impact of Chinese technology

The perception of China as a tech superpower that could offer Poland opportunities (such as profits for logistics and transport companies which handle shipments from Chinese e-commerce platforms)²⁰, but also pose a serious threat, is slowly taking root within the administration. The first steps have been taken in the form of setting up a national mechanism to mitigate the negative impact of Chinese technology, such as banning Chinese cars from military facilities, introducing a 'high-risk vendor' category in the NCSL and partnership with Foxconn to develop Polish electric vehicles.

These steps are expected to continue and increase in number. Poland is also following the EU's agenda of imposing customs duties on low-value parcels (the so-called 'de minimis' policy) in order to crack down on cheap Chinese e-commerce imports. This requires a change to Poland's tax system.

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PORTUGAL

**Engaging China, but
anchored in Europe**



Portugal: Engaging China, but anchored in Europe

By Carlos Rodrigues, University of Aveiro

Portugal is seeking to harness China's technological and innovation capacities in technologically advanced sectors such as green energy, mobility, and ICT, while simultaneously ensuring its alignment with EU and NATO frameworks. Accordingly, the approach relies on an effort to paradigmatically balance ambition with geopolitical and regulatory constraint, resulting in a mix of high-profile investments, research partnerships, and adaptive strategies.

Recent trends: Complementarities and synergies as discursive drivers

Portugal's engagement with China as a technological and innovation power is grounded in a mix of collaborative openness, economic pragmatism, and caution amidst intense geopolitical competition and rivalry. It is a matter of reaping the benefits from opportunities to collaboratively engage with a driver of global technological innovation without troubling the country's commitment to the EU and NATO and their strategic positioning towards China. In this context, an incremental growth of Portugal-China collaborative projects and initiatives in strategically relevant technological fields is visible.

Hitherto, the need for managing eventual risks is rarely acknowledged. This signals the compliance efforts to keep cooperation arrangements within the limits imposed by supranational regulatory frameworks. It also gives strong indication that risk management, if perceived as necessary, would tend to be delegated to the realm of EU policies and mechanisms (e.g., critical infrastructure protection).

Seemingly, the Portuguese officials' discourse underpinning the effort to attract Chinese FDI has resumed the enthusiastic tone that had gradually faded from 2019 onwards due to pressure from the United States and the consequences of the systemic rivalry framework imposed by the EU on China. The low-profile approach that followed¹ was recently replaced by a loud and clear expression of the Portuguese willingness to develop friendly relations with China and the national interest in Chinese investment, including in strategic technological sectors, namely electrical mobility, energy production, storage and distribution, ICT, and biopharmaceuticals.

The high-level official visit paid by the Portuguese prime-minister, Luis Montenegro, to Beijing in September 2025, proved highly revealing. Montenegro met chairman Xi Jinping, premier Li Qiang and the National Congress president Zhao Leji. The common thread, along with Portugal's willingness to reinforce cooperation and strengthen economic and trade ties with China, was the expression of high expectations about the development of partnerships between the two countries in science, technology and innovation.²

The Ministry of Economy and Territorial Cohesion, Manuel Castro Almeida, who accompanied Montenegro on the visit to Beijing (together with the ministers responsible for foreign affairs and the environment and energy portfolios) highlighted the "strong complementary and synergy" between the two sides that can result from "the combination of Portugal's academic and research strength with China's know-how and capacity for technological innovation", opening up broad prospects for cooperation.³

Portuguese official discourse underpinning the effort to attract Chinese FDI has resumed an enthusiastic tone

Portugal's business community views China as an opportunity rather than a risk

The weak politicisation of Portugal-China relations mirrors a structural continuity

The increasing depiction of China as a strategic innovation partner in public discourse, hitherto, did not generate any substantive political debate. It is worth noticing that the weak politicisation of Portugal-China relations should not be understood as a conjunctural outcome of a particular government. On the contrary, it mirrors a structural continuity that has endured across successive government cycles, regardless of their political colour. In this context, the debate is largely confined to the business community, which looks at China as a major opportunity and shows some scepticism about Portugal's capacity to translate the discursive lines into tangible results.

Bernardo Mendia, general-secretary of the Portugal-China Chamber of Commerce and Industry, states that “the gap between rhetoric and practice lies in the ability to monitor projects and hold parties accountable, establishing systematic follow-up with clear targets”.⁴ This ability, according to Mendia, can be challenged by government decisions like the one that, in May 2023, banned Chinese 5G technology providers in the Portuguese market “without clear technical justification”.⁵ He adds: “Within the European context, Portugal has adopted a position that is difficult to understand, with repercussions extending across society, businesses, and consumers. This approach may be interpreted as a narrow vision that sacrifices economic and technological development in favour of geopolitical criteria that can be seen as discretionary.”⁶

These criticisms notwithstanding, some public agencies are actively engaged in promoting the capacity to transform wishful narratives into effective outcomes. This is the case of AICEP, the Portuguese Agency for Investment and Foreign Trade.⁷ In fact, 2025 was marked by AICEP's intense activity in China, involving an on-the-ground engagement with Chinese industry players operating in technologically advanced sectors, such as green energy and mobility, ICT, and biopharmaceuticals.

The effort rests on the idea that China, as a technology and innovation powerhouse, is “a country of primary importance”⁸ to enhance Portugal's industrial innovative capacity.⁹ This idea underpins the acknowledgement of complementarities that may arise as beneficial for both parties. The win-win expectations include the access of Chinese innovation activities gaining access to relevant Portuguese engineering resources, highly qualified in several technological fields, as well as a better access to EU markets.¹⁰

AICEP's presence in China has in fact played a crucial role in facilitating a number of recent high-profile Chinese FDI deals/projects in Portugal, some of them heralding the potential to materialise the expected win-win gains in the realm of technology and innovation. Still, the materialisation of this potential remains aspirational and largely concentrated on green mobility. Accordingly, the recent dynamics of Chinese investment in Portugal further build upon established technology and bilateral cooperative efforts in innovation evolving in the country.

In what follows, an ‘aspirational’ case is briefly analysed, together with two established examples of technology cooperation in sensitive sectors, one of them associated with the early 2010s privatisation wave, which facilitated the acquisition of majority stakes by Chinese firms in Portuguese large strategic companies, the other stemming from the growth and global expansion of a Chinese ICT company.

Case studies: Aspirational, established and recalibrated collaboration in tech-related sectors

EV batteries: The EUR 2 billion investment of CALB in Sines:

The Chinese CALB Group, one of the top ten global manufacturers of EV batteries, is building a EUR 2 billion EV batteries plant in Sines, 100 km south Lisbon. The unit is planned to start producing in 2027, to account for around 4% of Portugal's GDP and generate 2500 direct jobs, some of them highly qualified. CALB signed the investment contract with the Portuguese government last January. It establishes that the company will receive an incentive of EUR 350 million, granted by a public fund aimed at developing strategic projects of national interest. This battery mega-factory is a good illustration of the Portuguese expectations about the benefits of "greater industrial traction from China", considered the place in the world "where innovation is increasingly coming from [...]."¹¹

Chinese battery mega-factory illustrates high expectations towards the benefits of "greater industrial traction from China"

The aspiration consists of the new plant's impact on the enhancement of Portuguese expertise on advanced manufacturing and the creation of opportunities for fostering innovation in national SMEs that are expected to cluster around CALB's investment and integrate their supply chain both in terms of intermediate goods and support services.¹² Actually, this set of expectations recalls, by similarity, the strategy associated with the foundation of Auto-Europa in 1991, a Ford-Volkswagen investment in Portugal that proved to be an important driver of innovation for national SMEs operating in the automotive supply chain.

Energy infrastructure: China as a major stakeholder and R&D partner of Portugal's largest state grid

REN – Redes Energéticas Nacionais – is the largest energy infrastructure company in Portugal. State Grid SA, the Chinese state-owned company, has been REN's majority stakeholder since 2011. REN and State Grid, in 2013, jointly founded R&D Nester, aiming to promote "research, development, innovation and demonstration in the power transmission and system management areas"¹³ in Portugal. The centre is active in conducting research on simulation of electrical power systems; management of renewable energy; technologies for smart grids; the energy markets and economics. It is heavily involved in EU dynamics directed at promoting energy transition, as evidenced by the participation in many European-funded projects (e.g., Horizon 2020, Horizon Europe, Interreg), as well as in EU organisations, such as the ETIP-SNET (European Technology and Innovation Platforms-Strategic Energy Technology Plan. Nuno Souza e Silva, R&D Nester's chief executive, is also chair of one ETIP-SNET's working group).

R&D Nester also has collaborative partnerships beyond the EU, including with higher education institutions, companies and other energy-related stakeholders. This insertion in global networks, following the centre's official communication outlets, enables it "to contribute and influence the clean energy systems of the future, while, at the same time, keep tracking of most innovative and state of the art technologies disrupting the energy world".¹⁴ Among the several partnerships established with Chinese entities, the most prominent one concerns the China Electric Power Research Institute, a State Grid's subsidiary knowledge centre.

Huawei maintains a high level of cooperation with Portuguese higher education institutes

ICT: Huawei cooperating with Portuguese higher education

Huawei maintains a high level of cooperation with Portuguese higher education institutes, particularly in the field of ICT education and training, through initiatives like Huawei's ICT Academy programme. Huawei's relationship with the University of Aveiro (UA), through the local branch of the national Telecommunications Institute (IT- Instituto de Telecomunicações) constitutes an exception to this predominantly educational cooperation pattern, as it includes a strong research component in 5G relevant domains such as radio frequency and wireless circuits.

Huawei Technologies has been listed as one of IT's funding institutions since 2011, alongside, among others, the European Commission and the European Space Agency. In 2021, Huawei Technologies funded a research laboratory at UA, the 5G + AI Networks Reliability Centre (5GAIner), structured around four major lines of action¹⁵: i) deployment of infrastructure supporting the development of novel 5G solutions; ii) facilitation of industrial access to that infrastructure; iii) use of the infrastructure for educational purposes; and iv) provision of technical support to specific industrial demands.

In addition to several joint projects with public actors (e.g., the Port of Aveiro) and private companies (e.g., Bosch), the 5GAIner group has demonstrated a strong record of participation in major EU-funded projects on 5G and 6G technologies (notably under the Smart Networks and Services programme), as well as significant research activity at master and doctoral levels.

The extent to which the 2023 decision by the Portuguese government to exclude non-NATO suppliers from the development of 5G infrastructure — affecting Huawei in particular — has impacted this joint research facility is difficult to assess. Available evidence suggests that research activities have continued at a stable pace in strict alignment with international rules, albeit accompanied by a low-profile approach in terms of public communication. In a rather speculative vein, the coexistence of operational continuity and reduced public visibility suggests a strategic recalibration rather than any disruptive development.

Outlook: Portugal-China bilateral engagement can be best understood as an adaptive and evolving dynamic

These cases of Portugal-China cooperation in technology and innovation illustrate three crucial aspects. Firstly, the idea that expectations about industrial capacity upgrading, skills development, and innovation spillovers are central to the Portuguese effort to attract Chinese high-tech firms' investment. Secondly, the existence of long-established cooperative research arrangements in which Chinese entities can be embedded in European research systems operating within the EU regulatory, normative, and funding frameworks. Thirdly, the possibility of deployment of recasting strategies to ensure persisting cooperation within constraining conditions.

In sum, Portugal-China bilateral engagement can be best understood as an adaptive and thus evolving dynamic, rather than a mere binary choice between openness and exclusion. It is a matter of taking advantage of opportunities to cooperate with a global technological and innovation powerhouse, without putting under strain the compliance with the constraining conditions imposed by supranational structures, such as the EU and NATO.

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Romania

**Timid embrace of the topic
of China's rise to a tech
power**



Romania: Timid embrace of the topic of China's rise to a tech power

By Andreea Brinza, Romanian Institute for the Study of the Asia-Pacific (RISAP)

The technological paths of Romania and China rarely intersect. Despite many Memoranda of Understanding signed between Romanian and Chinese institutions, no real tech output has resulted from them but only headlines. Usually, Romania resides at the end of the production chain, as the final importer of goods. Though various tech components might also be imported, there is almost no productive Romania-China tech cooperation. Nor is there any government interest in the topic of China's tech rise and the associated risks or dependencies, as shown by the adoption of Chinese surveillance technology – CCTV cameras – in Romanian public institutions. Still, there is some public interest in Chinese technology, which has become more popular as of late.

In tech, China and Romania have different strengths

Recent history shows that technological success does not always rely on innovation. Sometimes, mimicking the most advanced countries and then building on their technology leads to success too. This was the story of Japan between the 1970s and 1980s, and it is China's story today. For many decades, China was just the workshop of the world, churning out low-cost products without much focus on brand or reputation. Today though, China stands as an important technological powerhouse due to its sprawling tech companies, leading status in EVs, green tech, robotics, AI, telecommunications, quantum computing, biotechnology, and pharmaceuticals.

On the other pole of the global technological map is Romania, which remains a very modest player in the tech realm. While Romania does not have domestic companies that can enrol in the innovation and tech competition, it has a significant student "brain pool" that has achieved notable results in international contests and Olympiads in mathematics, robotics, IT or with a track record of inventions.¹ This is where China's and Romania's interests may converge. But cooperation or worries about competition or risks are lacking.

Talks without traction: Assessing Romanian-Chinese technological MoUs

Since 2019, the EU has perceived China simultaneously as a partner, competitor and even rival, in accordance with its interests – it was a partner for cooperation and dialog, a competitor in economic issues and a rival in the ideological realm. The partner-competitor duality manifested itself in Romania as well, even though for different reasons Bucharest drew a very blurred line between partnership and competition when it comes to China.² Despite the fact that Romania banned Chinese companies (Huawei, ZTE) from building its 5G network in 2021, it did not care much about the Chinese presence in surveillance systems, energy grid (solar panels) or public transportation (electric busses).

This means that at the national narrative level, China is seen as a competitor or a threat, but in numerous individual instances, security concerns coming from China do not exist. Many institutions, including the Romanian army and secret services, public authorities from large cities and even small villages are using Chinese surveillance systems,³ mainly because they are cheaper. Numerous cities, including Bucharest, decided to buy Chinese buses or

At the national narrative level, China is seen as a competitor or a threat, but in numerous individual instances, security concerns coming from China do not exist

MoUs, partnerships and exchanges between Chinese and Romanian institutions are frequent but have had limited impact and importance

trolleybuses.⁴ This shows that the Romanian government isn't interested or worried about China's role in the tech sector and the risks or dependencies that could come along.

While this is the larger picture, a more detailed one is painted by the plethora of MoUs, partnerships and exchanges between Chinese and Romanian institutions, though their impact and importance have been limited, providing more headlines than substance.

The most recent technology MoU signed between China and Romania was in 2024 in agriculture. More precisely, the University of Agronomic Sciences and Veterinary Medicine (UASVM) from Bucharest and the Institute of Environment and Sustainable Development in Agriculture from the Chinese Academy of Agricultural Sciences inaugurated "China-Romania Joint Laboratory for Cooperation in Agriculture".⁵ The laboratory was branded by the then-Chinese ambassador to Romania as part of the "Belt and Road Science and Technology Innovation Action Plan,"⁶ fostering deeper scientific, technological, and cultural exchanges between the two nations.⁷

China's interest for Romanian agricultural technology is not new, dating back to 1995,⁸ but a new step was taken when both parties built the "China-Romania Agricultural Science & Technology Demonstration Park" in Bucharest, in 2019 – 7 years after it was first brought up.⁹ It was deemed an agricultural-tech park focused on "research and development of high-efficiency and energy-saving construction and environment control technology, research and development of equipment for precise control of water, fertilizer pesticide coupling, research and development of industrialised production technology for vegetables and fruits,"¹⁰ that will enable the technological transfer in agriculture between China and Central and Eastern European countries, boosting the innovation capacity in the region.¹¹ Yet, it ended up simply as a zone that hosts a Chinese greenhouse, a mushroom cultivation facility, an experimental cherry orchard with 10 varieties, a few bilateral research projects and exchange activities.¹²

This type of MoUs are frequent between institutions in China and Romania, as we can see in the case of the 2024 MoU between the Northeast Institute of Geography and Agroecology (IGA) of the Chinese Academy of Sciences and Romania's Danube Delta National Institute for Research and Development (DDNI) aiming for cooperation for scientists on ecological protection, climate change research and sustainable land management;¹³ the 2021 MoU that established a "China-Romania Research Centre in Applied Mathematics" at the University of Craiova, with participation of professors from different universities to enhance mathematical research;¹⁴ or the 2021 MoU signed between Tianjin Chengjian University and the Technical University of Civil Engineering of Bucharest (UTCB) for activities such as academic collaboration, scientific research and staff and students exchanges;¹⁵ the 2024 MoU between "Mihai Drăgănescu Research Institute for Artificial Intelligence" and Shanghai Artificial Intelligence Research Institute for a scientific partnership.¹⁶

If we also add the prospective collaboration between the Politehnica University of Timișoara (UPT) and the Nanjing University of Information Science & Technology (NUIST) for applications of meteorological satellite products, geodesy and geoinformatics, AI, computing and telecommunications,¹⁷ there is an interesting pattern: too much noise and no action. Many of these MoUs were signed just for the headlines, without a concrete implementation plan or notable technological and research outcomes.

The only MoUs that generated more concrete outcomes were in the private sector and both are related to Huawei Romania – one of the oldest and most important Chinese tech

actors in Romania. Huawei signed an MoU with the Politehnica University in Bucharest to support the university's innovation, research and development projects by offering IT gadgets, training programmes and jobs for students.¹⁸ In 2023, EnergoBit (one of the main Romanian electric equipment producers) signed an MoU with Huawei for digital solutions in building photovoltaic, energy storage, and innovative digital power solutions across utility-scale, commercial, industrial, and residential segments in Romania.¹⁹

Renewables: Chinese sales of solar tech and EVs are blooming in Romania

But while the presence of Chinese solar panels in Romania is blooming,²⁰ as is the case of INTEC-CHINT Partnership, which aims to build Romania's largest solar power plant,²¹ or other Romanian photovoltaic parks built with Chinese technology, Romania only imports this green technology from China, without contributing at all on the production chain. Not only did many Romanian solar parks use Chinese panels, but many households installed Chinese solar panels paid with EU funds, as part of an EU-funded national green program.²²

When it comes to the EVs story, while in the past China was perceived by Romanians as the land of cheap products, today many of them are buying Chinese cars. Thus the numbers of Chinese vehicles, including EVs, sold in Romania almost tripled between 2024 and 2025.²³ But the EV story is limited to consumption, as when it comes to production, Romania hasn't attracted Chinese factories: BYD, for example, decided to open its factories in Hungary due to its more favourable geographical position and its political openness to China.

As part of the Renault Group, one may say that Dacia, Romania's most important car brand, benefits from technological engagement with China, but in reality, it only imports components from China and builds its electric cars in China, in a Renault joint-venture factory.

Biotech: Romanians are avid consumers of drugs made in China

China's technological footprint can be better seen in Romania's biotech and healthcare services, a tech branch that is less visible in the media and for the public. Romanians are notorious for consuming many supplements and drugs without medical prescriptions, such as Paracetamol or Algocalmin (Metamizole).²⁴ Their active ingredient is imported only from China and India, in the case of Paracetamol, and only from China, when we talk about Algocalmin.²⁵ This is a potential vulnerability for Romania.

Meanwhile, the only notable Chinese biotech company present in Romania is Beike Biotechnology, a Chinese biotechnology company focusing on adult stem cell therapies, which opened a rehabilitation centre using, among others, traditional Chinese rehabilitation techniques, including acupuncture.²⁶

Debates: Chinese tech between trust and tensions

While the political, public and media debates around China as a technological power have gained greater prominence on the international level as of late, in Romania the trend is the opposite: it ceased to exist after the government decided to ban Chinese companies from taking part in building its 5G network. As that decision came after US pressure, it seems that the government has little organic interest for China in tech.

Political, public and media debates around China as a technological power has largely ceased to exist

When it comes to politicians, opinions vary: for example, ex-prime minister Victor Ponta proposed following Germany's example in Romania's engagement with China,²⁷ while President Nicușor Dan obliquely referred to China as a threat, while at the same time softening his tone in order to maintain good Romania-China economic relations.²⁸

The media and the influencers, on the other hand, are more prone to praise Chinese tech successes. Many tech youtubers who test Chinese gadgets seem to have a positive opinion about China, praising its tech capacity that thrived in a difficult political environment – according to some of them.

Outlook: Increasing public interest in Chinese tech, not much government action to be expected

While Romania prides itself for its pool of IT and STEM²⁹ talent, this potential hasn't been realised and Romania suffers from a years-long brain drain process. When it comes to Chinese tech investments, these are almost non-existent, even though numerous Western tech companies established a local presence. Chinese R&D investments would probably not have drawn scrutiny, especially considering the lack of government worries about Chinese tech risks.

Without foreign recommendations or pressure from the US or the EU, it is unlikely that the Romanian government will pay any attention to Chinese tech or risks that stem from it

Over the next few years, it is unlikely that the Romanian government will pay any attention to Chinese tech or risks that stem from it, unless there are any foreign recommendations or pressure from the US or the EU. In the meantime, public interest for Chinese tech products is likely to increase, while Sino-Romanian tech cooperation will remain limited or non-existent.

Similar to the lack of interest for Chinese tech risks, the Romanian government has also shown little interest to provide state support for tech research institutes and companies, leaving the country in an unenviable position in this new technological era mainly dominated by the two great powers, the United States and China. When it comes to both tech and China, Romania remains largely unprepared and lacking the interest to dedicate the necessary resources.

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Slovakia

Seeking to climb China's
technology ladder



Slovakia: Seeking to climb China's technology ladder

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Slovakia's relations with China, including in the domain of technology and innovation, have been characterised over the past five years by pendulum-swinging positions driven by differing political ideologies among governing parties.

The coalition led by Prime Minister Robert Fico (SMER-SD), which came to power after the 2023 snap elections, pursues cordial relations with China across all domains of interaction. This stands in contrast with the positions taken by the previous center-right coalition ruling from 2020 to 2023 (Prime Ministers Igor Matovič and Eduard Heger; both from OĽANO party at the time). While it did not shy away from economic cooperation with Beijing, its position was more balanced by taking into account not only economic interests but also potential security ramifications.

The Heger government characterised China primarily through the EU trifecta of China being a “partner, competitor, systemic rival”, while noting in the 2021 National Security Strategy that “China is significantly increasing its power potential and political influence, supported by rapidly growing military capabilities, which it uses assertively to advance its interests, combined with economic power and strategic investments.”¹

Since the political comeback of Robert Fico in 2023, the approach to China, under the “all-azimuth” foreign policy (i.e., prioritising economic cooperation with partners beyond the tradition Trans-Atlantic focus of Slovak diplomacy, regardless of political regime), has firmly moved towards the partner pole while largely neglecting the aspects of China as a competitor and systemic rival.

In the technology field, China is presented as a partner that can help Slovakia climb up the value-added ladder

In the technology field, China is presented as a partner that can help Slovakia climb up the value-added ladder, with Slovak policy focusing primarily on investment promotion in key areas such as electromobility and batteries. The current Slovak policy is solely focused on the expansion of economic cooperation, without explicit consideration of risks.

Recent trends: Technology cooperation is part of the Sino-Slovak strategic partnership

The increased cooperation with China has been exemplified by the elevation of bilateral ties to the level of a strategic partnership during Prime Minister Fico's state visit to China in late 2024. Fico's trip was the largest-ever foreign trip by a governmental delegation from Slovakia —Fico was accompanied by eight ministers, two deputy ministers, and 56 companies, including those from high-tech sectors like AI, cybersecurity, semiconductors, telecommunications, or space.²

In the strategic partnership document, Slovakia and China declared to be “ready to further strengthen policy dialogue in the fields of economy, trade, and science and human-centric technology development and deployment, and provide support for cooperation between enterprises, chambers of commerce, and industry associations of the two countries.”³

Slovakia's bullish view on technological cooperation with China also translated into signing several sectoral memoranda of understanding (MoU) during the prime minister's 2024 trip, including on the digital economy and green development. Cooperation on green technologies and promotion of "low-carbon energy sources such as solar, vehicles, geothermal and wind power" is framed as a means towards "enhancing energy security,"⁴ although continued reliance on Russian fossil fuels and partnership with the US in nuclear energy appear to be preferred methods of the current Slovak government.

The areas of cooperation outlined in the respective MoUs include 5G, cloud computing, satellite navigation, data centres, artificial intelligence, the Internet of Things, and others. This represents a clear break from the earlier cautious approach towards cooperation with China in the digital sphere—back in 2020, Slovakia signed a Clean Networks Memorandum with the United States and subsequently updated its cybersecurity laws. In 2021, the Slovak Intelligence Service also issued warnings about Chinese efforts to infiltrate critical technological infrastructure.⁵ However, the share of Chinese vendors' equipment in 5G Radio Access Networks in Slovakia remains relatively low in comparison with other EU countries, at 15%, according to Strand Consult.⁶ The situation is markedly different in 4G networks, which are dominated by Chinese components.⁷

The focus on cooperation with China in the field of innovation and technology is also reiterated in the 2026 Indo-Pacific strategy, within a broader focus on the potential of the Indo-Pacific region.⁸ Fico's government has been promoting economic and technological cooperation with China, also by increasing the number of economic diplomats and trade representatives posted to China.

SARIO, the Slovak investment promotion agency, appointed an official to the Slovak consulate in Shanghai, starting from January 2026. The stated focus for SARIO is attracting investments in fields with high value added.⁹ Based on the Slovak officials' pronouncements, the government is seeking to attract more Chinese investments, complementing the two large-scale projects of Gotion and Volvo, particularly in less developed regions of Slovakia.¹⁰

Under the Fico government, Slovakia has assumed a cautious view on restrictions on technology, trade, and investment cooperation with China at the EU level. For example, Fico has been a consistent critic of the EU's countervailing duties against China-made BEVs, decrying them as "nonsensical trade war pursued by the European Commission", and arguing that the EU should compete on quality rather than adopting restrictions.¹¹

Slovak citizens are less concerned about cooperation with China in the economic and technological sphere than their Visegrad Four (V4) neighbours, based on the results of the 2025 poll by the Central European Institute of Asian Studies (CEIAS)¹². These views reflect the generally more positive views of Slovaks on China among the V4, although on average, China is still seen rather negatively even in Slovakia.¹³

On a more localised level, Chinese manufacturer Gotion's plans to open a battery gigafactory in southwest Slovakia in cooperation with Slovak InoBat have been met with consistent local opposition. Concerns have been raised about the environmental and governance impacts of the investment, as well as the potential influx of foreign workers. To assuage the concerns, several local citizens of the Šurany township (including members of the Town Council) were invited on a junket trip to visit the Hefei HQ of Gotion, just a few days prior

The focus on cooperation with China in the field of innovation and technology is also reiterated in the 2026 Indo-Pacific strategy

to the Prime Minister's visit. The engagement of local officials, who voted on permission for the project, sparked concerns about corruption.¹⁴

Concerns regarding tech cooperation with China are also raised by political opposition, albeit the topic only occasionally comes up, since opposition work is currently dominated by domestic political issues, such as countering democratic backsliding under Fico's fourth term in office.

Sectoral cooperation: Automotive, digital and academia

Automotive sector: Flagship investments in battery production

Technological cooperation with China is dominated primarily by the automotive sector, specifically EV and battery production

From a sectoral perspective, technological cooperation with China is dominated primarily by the automotive sector, specifically EV and battery production. This is spearheaded by two flagship investments: the Gotion-Inobat (GIB) joint venture for the production of lithium batteries in the southwest town of Šurany and the Geely-owned Volvo plant near the eastern city of Košice.

The negotiations over the two investments had already started under the preceding, China-critical governments (and in the case of Volvo, also concluded) but were presented as successes of the more China-friendly Fico government. The two projects secured the largest state-aid packages ever granted by the Slovak government for individual investments: EUR 267 million in direct subsidies for Volvo and EUR 150 million in direct support for GIB, complemented by a further EUR 135 million in tax incentives.¹⁵ The Fico government also introduced a new national visa program (annual quota of 1,000) specifically for Chinese citizens employed by companies implementing projects labelled as "important investments".¹⁶

The investment of Gotion has been presented by the investor and the Slovak government as an important impetus for the economy due to its R&D component, the introduction of advanced battery technology and the potential for technology transfer. The government's special envoy for the investment has claimed that thanks to the deal, Slovakia would attract a network of suppliers, and the region of Šurany would become "an electromobility capital" of Europe.¹⁷ Gotion has sought to highlight its contribution to the Slovak economy, e.g., through engaging local universities for workforce development programs.¹⁸

Two Chinese companies are also planning to enter the battery and EV upstream supply chain. Meta Systems is planning to produce on-board chargers,¹⁹ while Shenzhen Unicon is set to invest in battery contact systems manufacturing.²⁰ Besides e-mobility, Chinese companies also play a role in Slovakia's combustion engine car production, having a role of upstream suppliers to other, non-Chinese, manufacturers.

Digital: Talks over digital governance and AI

Cooperation has also developed in the digital sphere. In September 2025, Slovakia's Ministry of Investment, Regional Development and Informatics received a delegation headed by Zhuang Rongwen, Director of the Cyberspace Administration of China. The ministry stated that the talks focused on digital governance and emerging technologies.

An additional MoU on cooperation in AI is reportedly under preparation.²¹ Slovak officials have also held multiple meetings with representatives of Huawei during visits to China,

signalling interest in expanding collaboration, particularly in electromobility and related technology sectors.²²

Academia: Another focus area of bilateral ties

Academic cooperation has been another focus area for bilateral ties. As of 2023, mapping of academic cooperation between the two countries identified 136 instances of cooperation, 28% of which happened with Chinese universities with known or suspected links to the People's Liberation Army and Chinese military-industrial complex.²³ Within the EU, this is a comparatively lower share of PLA-linked academic cooperations.²⁴ This includes cooperation in fields like AI, semiconductors, materials science, robotics, aviation, medicine, and biotechnology.

In some cases, cooperation has been conducted with the Chinese universities belonging to the Seven Sons of National Defence group—including aviation research with Beihang University, materials science research with the Harbin Institute of Technology and with Nanjing University of Science and Technology, or semiconductors research with Nanjing University of Aeronautics and Astronautics—raising concerns about dual-use technology transfers and support for the development of Chinese military.²⁵

Chinese companies are also active in cooperating with Slovak academia. Huawei appears to be most active, having supported the establishment of a research centre on safe cities, procuring materials science research, and repeatedly placing Slovak students into the Seeds for Future, Huawei's young talent recruitment program.

The interest of Slovak academia to pursue ties with China can be traced back to Slovakia joining the China-CEEC Cooperation Platform in 2012.²⁶ Under the China-CEE cooperation, Slovakia has taken on the role of a coordinator for the area of innovation, research, development, and technology transfer. Under this role, Slovakia has set up the Virtual Technology Transfer Centre in Bratislava.²⁷ The platform appears to be largely dormant, however. Elevating the ties with China to a strategic partnership has provided a new impetus to Slovak academia for pursuing ties with Chinese counterparts.

Academic cooperation with the Chinese universities belonging to the Seven Sons of National Defence group has raised concerns about dual-use technology transfers

Policy adjustments: Aiming to improve economic security, while research security is not a priority

Despite current openness to China on a political level, Slovakia has in the past adopted some measures aimed at improving its economic, knowledge, and innovation security. The Slovak National Security Authority (NBÚ) continues to play a critical role in evaluating cyber-risks posed by Chinese technologies, even under the current China-friendly approach of governmental policy.

In January 2025, NBÚ issued a warning against the use of China's AI LLM DeepSeek, highlighting the large-scale gathering of personal and other data, which lacks protection under China's legal regime, and the platform's censorship practices.²⁸ Prior to that, already in 2020, NBÚ issued public warnings against the use of TikTok, highlighting especially the risks of installing and running the application on devices used by civil servants and employees of operators of essential digital services.²⁹

In March 2023, the Slovak parliament explicitly banned the use of TikTok on devices used by its employees and recommended the same to the legislators. However, it is currently

not clear whether the ban still stands since the 2023 snap elections and the emergence of a SMER-SD-led coalition.

Slovakia has also adopted an investment screening regime, in force since March 2023, albeit largely motivated by risks related to Russian, rather than Chinese, investments. Mandatory screenings are required in certain sectors—production of weapons and military technology, dual-use technology, biotech in the healthcare sector, critical infrastructure, providing of basic services under the Cybersecurity Act, providers of digital services in cloud computing, companies involved in the development of data encryption technology, certain categories of mass media and press services.³⁰

In other areas, screenings are possible but not mandatory. According to the Ministry of Economy's annual reports on screening of foreign investments,³¹ no Chinese investment has been subjected to screening so far.³²

In 2020, Slovakia was among the countries that signed up to the US-led 'Clean Networks' initiative, which aimed at the development of 5G networks without relying on Chinese vendors. Coupled with the EU's own 5G security toolbox, it served as a basis for Slovakia's upgrading of the Cybersecurity Act, under which the NBÚ was empowered to ban the use of specific vendors, components, or technologies in Slovakia's critical digital infrastructure. However, this competence has not been used yet, and NBÚ has instead opted for issuing non-binding warnings and advocacy dialogue with network operators to limit the use of China-made components in Slovak 5G networks.

Research security is arguably the least developed area of Slovakia's economic security toolbox. Currently, there are no binding or non-binding guidelines on the safe conduct of international research cooperation. The Action Plan for Coordination of Countering Hybrid Threats, adopted under Prime Minister Eduard Heger, called for implementing several research security measures, including preparing risk assessment guidelines, improving transparency of international collaborations and financial flows.³³

Implementation of these tasks has been mostly abandoned since the Fico government came to power in late 2023. Furthermore, since the academic community exhibits a high degree of resistance towards implementing research security measures (with the Slovak Academy of Science being a noteworthy exception), there is only limited bottom-up development in this area.³⁴

Similarly, there is essentially no debate about research and innovation security in commercial settings—especially startup ecosystems—except for narrow coverage via the national investment screening regime. And as the case of Gotion's investment into the local battery startup InoBat shows, even this tool is not deployed to ensure a proper risk assessment.

Outlook: Slovakia looks set to continue its open approach to tech cooperation with China

Slovakia looks set to continue its open approach to tech cooperation with China

Under the Fico government, Slovakia is set to continue to pursue an open approach to technology cooperation with China. Slovakia will seek to attract even more Chinese investments, especially in areas of electromobility, which is a strategic priority of the government.

The Fico government is unlikely to pursue any policies that would curtail cooperation with China in the technology sphere. However, Chinese investments in Slovakia might

be impacted by measures currently discussed on the EU level regarding local content requirements and technology transfers. Similar impact can be expected regarding research cooperation, as the EU Commission is introducing research security conditionality under the Horizon Europe funding scheme and restrictions on collaboration with China in critical technologies. A change in government after the 2027 elections could lead to a reconsideration and return to a more balanced approach vis-à-vis China, which takes into account economic security considerations.

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Slovenia

**Navigating between
agency and constraints in
technological engagement
with China**



Slovenia: Navigating between agency and constraints in technological engagement with China¹

Anastas Vangeli and Katja Zajc Kejžar, School of Economics and Business, University of Ljubljana

With one of Europe's highest manufacturing shares of GDP² and among the global top 10 in robot density,³ Slovenia punches above its weight as a technology producer. This position now faces pressure from geopolitical fragmentation, supply-chain re-regionalisation, and slowing EU demand. The central question for Slovenia is not whether to engage China as a technological power, but how to do so without undermining its anchoring in EU regulatory, technological, and security architectures.

Recent trends: Slovenia sees China as an attractive technology partner, but remains anchored in EU frameworks

Slovenia increasingly considers China an attractive partner in technology, primarily with the goal to create additional options and reduce dependence on a slowing European industrial base. Yet, at the same time, Slovenia's political, economic, and institutional ties remain firmly anchored in the EU, which sets clear limits on how far this engagement can go.

In 2025, Slovenia sent government–business delegations to the China-CEEC Expo in Ningbo⁴ and the China International Import Expo in Shanghai.⁵

While officially framed as milestones, these visits primarily reflected export-promotion, with limited evidence of sustained technological partnerships. Slovenian policymakers and firms have remained acutely aware of the risks associated with industrial cooperation, in particular in terms of capital goods and critical material dependencies.⁶

Slovenia's engagement with China as a technological power follows three objectives:

1. Slovenia seeks recognition as a technologically advanced economy, using high-tech credibility as a precondition for deeper partnerships.
2. It pursues market access for export-oriented boutique manufacturers and engineering-intensive niche suppliers, particularly in automotive, green tech, biotech and selected deep-tech segments, both in China and China-centred global supply chains. Reducing the persistent bilateral trade deficit in goods is an explicit motivation.
3. Slovenia is open to Chinese investment and technology transfer, but only under conditions that support local engineering capacity, upgrade domestic suppliers, and avoid extractive ownership models.⁷

Notably, the strongest push for closer cooperation comes from Slovenian companies themselves. While firms value the presence and support of state representatives, they also point out that recent high-level engagements have yet to translate into substantive results.

Slovenia's legal framework for scientific and technological cooperation with China is anchored in a bilateral agreement⁸ dating back to 1994 and a 2019 Memorandum of Under-

Slovenian policymakers and firms have remained acutely aware of the risks associated with industrial cooperation with China

standing on joint research funding.⁹ Under this framework, the Mixed Committee for Scientific and Technological Cooperation—comprising Slovenia’s Ministry of Education, Science, and Sport, the Slovenian Research Agency (ARIS), and China’s Ministry of Science and Technology—was established to oversee collaborative projects, facilitate R&D exchanges, and align activities with national science and technology strategies.

Projects are, in principle, self-financed, with each country covering its own researchers’ costs. Nonetheless, Slovenia’s scientific and technological cooperation with China remains, to some extent, episodic and personality-driven. The Slovenian Strategy for the Internationalisation of Higher Education and Science until 2030¹⁰ does not explicitly list China among priority partners and situates cooperation primarily within EU-led bilateral and multilateral frameworks.¹¹

Focus areas: FDI and capital goods imports, research and automotive

FDI: Chinese companies have successfully acquired Slovenian champions

Chinese direct investment in Slovenia remains modest in aggregate terms – typically below 1% of annual inflows.¹² Yet, its strategic significance outweighs its quantitative footprint. Official statistics also understate exposure, as Chinese-owned investment is routed through Hong Kong¹³ and European subsidiaries of Chinese companies, particularly in Luxembourg. China’s largest investments in Slovenia include Outfit7, Hisense, and Porton. In total, 154 Chinese-owned or jointly-owned companies are active in the country, with major players such as Elaphe, Woodlands, Hisense, Porton, Oric, Tam, and Imedia.¹⁴

The acquisition of Gorenje, a famed Slovenian appliances brand, by the Luxembourg-based Hisense Europe initially raised concerns but ultimately resulted in tangible outcomes: stabilising the firm’s finances, preserving domestic employment and social stability in its hometown of Velenje, and embedding Slovenian engineers in global R&D networks¹⁵.

However, while Chinese companies have successfully acquired Slovenian champions, expectations regarding a substantial increase in Chinese greenfield or high-value-added investment that could reinvigorate Slovenia’s tech sector have largely remained unmet, despite repeated political signaling, Slovenian officials have recently met leading Chinese companies, including Alibaba and Geely in an attempt to lure them to invest and do business with Slovenia,¹⁶ whereas cooperation in the domains of “high-end manufacturing, scientific and technological innovation, health and medicine, green energy and artificial intelligence” were highlighted by China’s MFA Wang Yi during his visit to Ljubljana in September 2025.¹⁷

Capital goods: Imports indicate growing presence of Chinese technology in Slovenian economy

In Slovenia, the share of imported capital goods (i.e., machinery, equipment, and production-related technologies) originating from China generally increased between 2017 and 2022, reaching a peak in 2022 when nearly 10% of all capital goods imports came from China. This trend indicates a growing presence of Chinese technology embodied in machinery, equipment, and ICT within the Slovenian economy. The industries most reliant on Chinese capital goods are ICT and construction (See Fig. 1). However, since 2022, this share has been declining, particularly in the ICT sector.

Expectations regarding a substantial increase in Chinese greenfield or high-value-added investment that could reinvigorate Slovenia’s tech sector have largely remained unmet

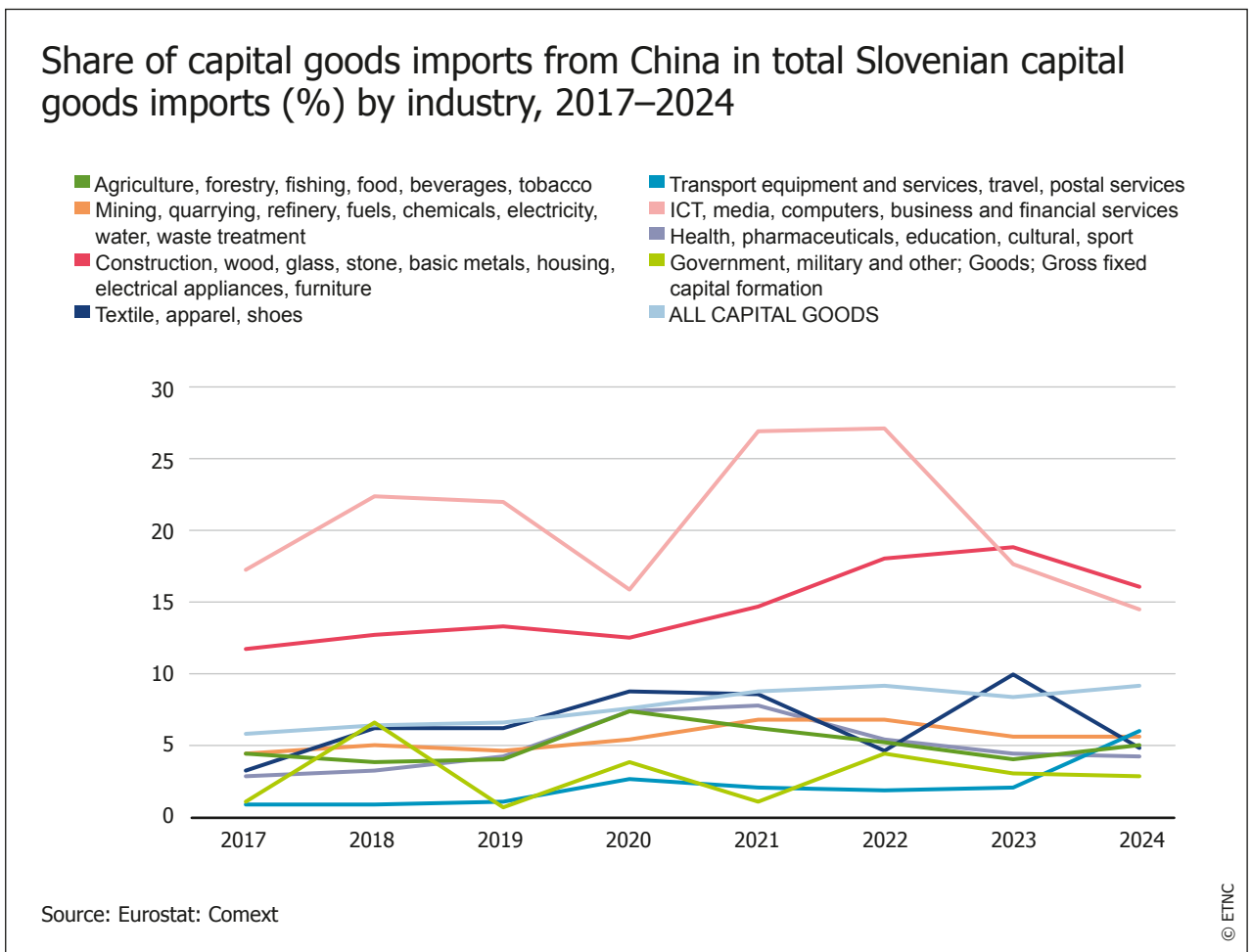


Figure 1

Joint research: Projects and publications focused on STEM subjects

Academic cooperation and joint research projects between Slovenian and Chinese universities and research institutions encompasses the whole STEM spectrum.¹⁸

A bibliometric analysis based on the Web of Science Core Collection database for the period 2005–2025 indicates that Slovenian and Chinese authors, often collaborating with other Western partners, produce approximately 430 joint scientific publications per year on average, with an increasing trend over the past decade. Over 42% of these publications are in physics, followed by astronomy and astrophysics, engineering, chemistry, mathematics, and materials science.

Automotive: Value chains as channels of technological exposure

In the automotive domain, Slovenia engages China as a technological and industrial reference point amid systemic uncertainty. Deeply embedded in German-led automotive and manufacturing value chains, Slovenia has long depended on exporting high-complexity industrial inputs. As Germany's automotive sector has struggled with competition from Chinese EV producers, Slovenia faced its own "second China shock" transmitted through German-centred value chains¹⁹ (Veselinovič, 2026: 9–10).

Against this backdrop, Slovenian government and business have reassessed China as a technological power shaping global production standards, particularly in electric vehicles,

batteries, and related advanced manufacturing. An important milestone was Slovenia's 2024 vote against EU anti-subsidy tariffs on Chinese EVs, justified domestically through consultations with industry representatives. Additionally, the Automotive Cluster of Slovenia has signed an MoU on the strategic importance of China's automotive industry.

At company level, engagement has unfolded through partnerships, capital injection, and embedded technical collaboration. Several automotive suppliers from Slovenia (both in the EV and ICE domains) have partnered with Chinese counterparts or have expanded to the Chinese market. The truck and bus factory TAM in Maribor restored profitability after acquisition by a Chinese investor.²⁰

Chinese expertise has been also crucial in developing the new Renault Twingo, the landmark EV produced by Revoz Novo Mesto. Meanwhile, the Port of Koper has emerged as a logistical gateway for Chinese-made EVs entering the European market, further contributing to Slovenia's nodal position in China-linked industrial flows and networks. Leading Chinese EV brands have already entered the Slovenian market, including BYD in early 2026. However, the broader goal of attracting substantial investment in production has yet to materialise.

Outlook: No wholesale embrace, Slovenia will remain strategically cautious

In sum, the intensification of cooperation with China in the EV domain does not amount to a strategic pivot or wholesale embrace. It primarily reflects a pragmatic attempt to hedge technological and market risks arising from dependence on the German industrial core.

From the vantage point of Slovenia's automotive sector, China no longer appears only as a potential alternative but emerges as an immanent force within Europe's own industrial (i.e. green technological) transformation.

There is, however, an underlying wariness about the fine line between engagement and exposure, and concerns about technological sovereignty, strategic autonomy, and value-chain resilience persist.²¹ For now, Slovenia remains strategically cautious, opting for calibrated engagement under constraint rather than resolute alignment or disengagement.

Slovenia's approach reflects a pragmatic attempt to hedge technological and market risks arising from dependence on the German industrial core

Endnotes

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Spain

A stylized map of Europe is shown in the background, rendered in shades of blue. The map uses white outlines to delineate national borders. The country of Spain is highlighted in a bright yellow color, making it stand out from the rest of the map.

**Balancing openness,
risk management and
industrial strategy in
dealing with China's
technological rise**

Spain: Balancing openness, risk management and industrial strategy in dealing with China's technological rise

By Mario Esteban and Miguel Otero, Elcano Royal Institute

China's technological rise has made it central to Europe's debates on de-risking, strategic dependencies and industrial policy. Spain approaches this challenge pragmatically: it still sees Chinese investment and technological cooperation as tools for industrial upgrading and the green transition, even as concerns about resilience, security and asymmetry grow. Spain is moving towards selective engagement rather than either unrestricted openness or outright restriction: limiting risk in sensitive areas such as 5G core networks, relying heavily on Chinese capabilities in photovoltaics and storage, and trying to embed Chinese investment in EVs and batteries within broader industrial goals. This could give Spain a distinctive role in shaping an EU China policy that combines openness, risk management and industrial conditionality.

Recent trends: Institutionalising technology relations amid growing strategic awareness

China's emergence as a technological power is reshaping European debates on de-risking, technological sovereignty and strategic dependencies. For Spain, the issue is not only how to reduce vulnerabilities, but also how to use engagement with China to support industrial modernisation and the green transition. This paper reviews bilateral science and technology ties and analyses three sectors - 5G, photovoltaic energy and storage, and electric vehicles and batteries - to assess Spain's evolving position and its potential influence on EU policy towards China. Spain-China scientific cooperation has become more structured and politically anchored over the past decade, reflecting China's growing technological weight.¹ Bilateral collaboration rests on intergovernmental agreements and political dialogue, reaffirmed through Joint Commissions on Scientific and Technological Cooperation, most recently in 2024.² These frameworks have been reinforced by new memoranda of understanding, including between Spain's State Research Agency (AEI) and China's National Natural Science Foundation (NSFC), and by sector-specific agreements on green growth, health technologies and digital trade.³ The Spain-China Action Plan 2025-2028 identifies innovation, advanced technologies and researcher mobility as key pillars.⁴

Cooperation operates through several modalities. Bilateral R&D funding programmes—most notably CHINEKA, managed by Spain's CDTI and China's Ministry of Science and Technology—support applied, market-oriented projects involving firms, research centres and universities. The 7th CHINEKA Joint Call (2025-2026) targets areas such as sustainable cities, clean technologies, advanced materials and biomedicine, with generous funding on both sides.⁵

Academic collaboration continues through joint projects, co-publications and mobility schemes involving institutions such as the CSIC and the Chinese Academy of Sciences. Company-level cooperation and investment have also expanded, particularly in sectors where Chinese firms hold global competitive advantages. Thematic cooperation aligns with shared priorities: renewable energy, green technologies, advanced materials, health and biotechnology, agri-tech and selected digital applications. These areas reflect complementarities as well as China's leadership, especially in energy-related technologies.⁶

Spain-China scientific cooperation has become more structured and politically anchored over the past decade

Spain's framing of China has gradually evolved. While China remains viewed as a valuable innovation partner, awareness is growing of risks related to dependence, security and asymmetric competition, echoing EU debates. Spain's pragmatic posture reflects its structural position: historically more dependent on technology diffusion, Spain sees China's rise less as direct technological displacement than as a mix of opportunity and vulnerability.

Public perceptions reinforce this dynamic. Chinese technology products are highly popular in Spain: Xiaomi holds over 30% of the smartphone market, while Chinese car sales exceeded 100,000 units in 2025, with particularly rapid growth in electric vehicles.⁷ Chinese manufacturers already account for over 20% of Spain's EV sales, led by BYD.⁸

Key case studies: 5G, photovoltaics, EVs and batteries

These three sectors - 5G, photovoltaic energy, and electric vehicles and batteries - best capture how Spain manages the opportunities and risks created by China's technological rise.

1. 5G networks: Risk management rather than formal exclusion

Spain's approach to Chinese involvement in 5G reflects incremental risk management rather than formal exclusion.

Spain's approach to Chinese involvement in 5G reflects incremental risk management rather than formal exclusion. Chinese suppliers Huawei and ZTE have operated alongside European vendors through market-based procurement decisions.

By early 2026, Spain's main telecom operators had effectively excluded Huawei from 5G core networks, reflecting the higher security sensitivity of core functions, while continuing to deploy Huawei equipment in radio access networks (RAN).⁹ This differentiated approach prioritises core security while preserving cost efficiency in less sensitive segments. However, it raises longer-term issues related to vendor lock-in, upgrade paths and strategic autonomy.

Spain applies the EU's 5G Security Toolbox through a risk-based approach that considers not only technical factors but also governance structures and exposure to third-country influence—criteria that in practice point to Chinese suppliers as high-risk.¹⁰ Yet Spain has avoided legally binding bans, relying instead on guidance, assessments and operator-led adjustments.

Pressure increased in late 2025 as the European Commission moved toward mandatory EU-wide derisking of high-risk suppliers. Spain has shown reluctance to support explicit bans, citing proportionality, costs and deployment timelines, while also seeking to avoid political escalation that could affect cooperation in other strategic sectors.¹¹

2. Photovoltaic power and grid-scale storage: Driven by deployment needs and cost efficiency

In contrast to 5G, Spain's interaction with China in utility-scale photovoltaic is driven primarily by deployment needs and cost efficiency rather than explicit security governance. Chinese firms dominate key equipment segments, especially inverters and energy management systems. Huawei and Sungrow together accounted for over half of global solar inverter shipments in 2023, a dominance reflected in Spain's large PV installations and hybrid PV-plus-storage projects.¹²

Concern about dependence exists but remains uneven. At EU level, the Commission has begun exploring cybersecurity risks linked to concentrated reliance on a few inverter suppliers.¹³ In Spain, public discourse focuses more on rapid deployment, system flexibility and industrial competitiveness than on supply-chain security. Business debates tend to emphasise Europe's difficulty in sustaining domestic clean-tech manufacturing¹⁴, but some elaborate on explicit security risks.¹⁵

This configuration creates potential critical dependencies in inverters, software updates and long-term maintenance of energy infrastructure. Spain's discourse in this area remains less securitised than the Commission's emerging economic-security framing.

3. Electric vehicles and batteries: Both industrial priority and vulnerability for Spain

The automotive transition is the most visible expression of China's technological rise in Spain. Electric mobility is both an industrial priority and a vulnerability for Spain, which seeks to preserve its role as a major European vehicle producer amid China's dominance of EV supply chains.

China's advantage combines scale leadership in battery technology and production, upstream control of raw materials and competitive EV models. This has translated into rapid market expansion in Spain, especially in the BEV segment, where Chinese brands now exceed one-fifth of sales.

More strategically significant is investment. Spain has positioned itself as a destination for battery and EV manufacturing, leveraging its automotive ecosystem, EU recovery funds and the PERTE programme. CATL's gigafactory in Zaragoza, with Stellantis, would strengthen Spain's battery role while also deepening reliance on Chinese technology and inputs.¹⁶

The Chery–Ebro joint venture in Barcelona, linked to the former Nissan plant, is particularly illustrative.¹⁷ Spain aims to use Chinese investment to achieve localisation, supplier integration, employment creation, certain technology transfer and governance of data flows in connected vehicles, although this area is less developed. Lacking a strong legal basis to impose conditions, the government relies on negotiated understandings and informal commitments, and this is one of the reasons why it supports the “Reverse Deng” conditionality proposed in the Commission's Industrial Accelerator Act (IAA).

Spain's strategy foreshadows a broader European approach: neither excluding Chinese investment nor accepting it on purely market terms, but embedding it within industrial and governance frameworks.

Policy adjustment: Spain takes a pragmatic stance vis-à-vis China

Spain's approach remains rooted in economic pragmatism, but with growing attention to risk. Unlike more security-focused member states, Spain still views Chinese technology and investment as important for industrial modernisation and the green transition. Its strategy is best described as managing duality rather than reversing engagement.

The automotive transition is the most visible expression of China's technological rise in Spain.

While Spain lacks a national China strategy, concepts such as resilience, critical dependencies and technological sovereignty are increasingly present

Spain lacks a national China strategy. Instead, policy is evolving through incremental shifts in discourse and sectoral governance shaped largely by EU de-risking debates, while official language still emphasises partnership and opportunity.

At the same time, concepts such as resilience, critical dependencies and technological sovereignty are increasingly present, signalling implicit recognition that some cooperation requires differentiated governance. Spain broadly aligns with the EU's de-risking—not decoupling—framework.

The most concrete policy evolution concerns investment screening. Since 2020, Spain has expanded its ability to review foreign investments in strategic sectors through mechanisms introduced under Royal Decree-law 8/2020 and later consolidated.¹⁸ While country-neutral, these tools are increasingly relevant for Chinese investment in green and digital sectors.

Spain applies screening selectively and pragmatically, treating it as a risk-management tool rather than as a presumption against Chinese capital. This is especially visible in batteries, EVs and renewables, where Chinese firms are often the most competitive actors.

On export controls, Spain has adopted national measures covering certain dual-use technologies that go beyond the EU common control list.¹⁹ Pursuant to Article 9 of Regulation (EU) 2021/821, Spain introduced an autonomous national control list through Order ICT/534/2023, amending Royal Decree 679/2014, thereby subjecting to licensing requirements specific technologies that are not included in Annex I of the EU Dual-Use Regulation.²⁰

Research cooperation remains one of the most open areas of Spain–China relations. While awareness of dual-use risks and technology transfer vulnerabilities is growing, Spain lacks a consolidated research security framework. Guidance remains fragmented, leaving institutions to manage risks individually.

Alongside defensive tools, Spain actively pursues selective investment attraction. The Chery–Ebro project illustrates an effort to tie Chinese investment to localisation, employment and corporate governance goals through informal mechanisms. If effective, this model could help reconcile green-transition needs with dependency risks.

Outlook: Seeking to shape an EU-China policy that leaves room for cooperation while supporting resilience in critical areas

Spain's engagement with China encapsulates a broader European dilemma: how to harness cooperation and investment without entrenching dependency. Projects such as the CATL gigafactory and the Chery–Ebro joint venture show Spain's preference for managing Chinese industrial presence rather than excluding it.

EU-level debates are intensifying on high-risk suppliers and clean-tech dependencies. Spain's current path aligns with EU de-risking rhetoric, but a harder EU stance could force difficult trade-offs with its investment-attraction strategy.

Given the stakes for Spain's industrial base, especially in the automotive transition, Madrid is unlikely to remain passive. Spain may instead seek to shape an EU-China policy that preserves room for investment and cooperation while supporting resilience in critical technologies.

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Sweden

A stylized map of Europe is shown in a dark blue color. The country of Sweden is highlighted in a bright yellow color, making it stand out from the rest of the map. The map includes the outlines of major European countries and their internal regional boundaries.

**National security at home,
free trade abroad**

Sweden: National security at home, free trade abroad

Miriam Tardell, Swedish National China Centre

China's dominance in several technology areas has become a controversial issue in Sweden, at least since the mid-2010s. Security aspects have shaped policy adjustments in the past five years, for example in foreign direct investment screening and public procurement legislation. Sweden continues to develop its technology exchanges with Chinese counterparts, while simultaneously restricting Chinese companies' economic activities in Sweden. As China increasingly emerges as a competitor, Sweden's policy might shift towards viewing the country as an economic challenge, rather than a security threat.

Research and development: China is an increasingly important partner

After Chinese Geely acquired Swedish carmaker Volvo Cars in 2010, China has become the largest source of foreign-owned companies' research and development (R&D) investments in Sweden. In 2023, Chinese-owned companies' R&D investments in Sweden surpassed the equivalent of EUR 1.5 billion, an increase of almost 300% since 2013.¹ In addition, China has become, in recent years, the second most important destination for R&D investments by Swedish companies.² Such companies argue that they need to have a presence in China to stay updated on new developments, including in digitalisation and electrification. Recent examples include truck maker Scania, which inaugurated a new factory in Rugao, Jiangsu Province, in 2025 – the first wholly-owned truck plant by a Western company in China.³

After a period of rather frosty Sino-Swedish relations in the late 2010s and early 2020s, the two countries have in 2025 resumed their dialogue in the China-Sweden Joint Committee on Economic, Industrial and Technical Cooperation, a bilateral cooperation format based on an agreement by Sweden's Ministry for Foreign Affairs and China's Ministry of Commerce, that had been stalled for eight years.⁴ A new "Working Group on Green Transition Investments" was set up to support investments by Swedish and Chinese companies in energy, transportation, urban development, and the circular economy.⁵ The China-Sweden Joint Committee on Science and Technology Cooperation, a similar scheme involving Sweden's Ministry of Education and Research and China's Ministry of Science and Technology, held their latest meeting in 2024, focusing on sustainability, climate, global health and life sciences.⁶ The Swedish Research Council and the National Natural Science Foundation of China (NSFC) opened a new joint call in May 2026 to finance research collaborations in disease prevention.⁷

Networks, green energy and pharma: Swedish tech collaboration with China

Sweden has been one of China's top partners in the EU in the telecommunications sector, with the Swedish telecom company Ericsson second only to Finland's Nokia in the number of patent applications filed together with Chinese stakeholders.⁸ Meanwhile, this collaboration has become more complicated in recent years. Sweden, as one of few EU countries, adopted an explicit ban on equipment from Chinese companies Huawei and ZTE in 5G networks in 2020.⁹ Following this decision, Ericsson reported a sharp drop in revenue in the Chinese market.¹⁰ In addition, recent additional security reviews in Chinese tenders have put Ericsson and other foreign companies at a disadvantage.¹¹

Sweden, as one of few EU countries, adopted an explicit ban on equipment from Chinese companies Huawei and ZTE in 5G networks in 2020

In medical technology and pharmaceuticals, the availability of large datasets in China is a key motivation for joint research collaborations.¹² In health sciences, Sweden's Karolinska Institute leads EU27 institutions in co-publications with Chinese partners.¹³ Health and biotechnology was also the second biggest sector (in terms of number of companies) among Swedish companies acquired by Chinese entities as of 2019.¹⁴

Anglo-Swedish pharmaceutical company AstraZeneca in 2025 announced both an investment worth 2.5 billion dollars in an R&D hub in Beijing and a collaboration worth up to 5.3 billion dollars with China's CSPC Pharmaceutical Group on AI-driven research in Shijiazhuang, Hebei Province. China is AstraZeneca's second biggest market.¹⁵ In 2025, the company also advanced their existing collaboration with Chinese company Harbour BioMed.¹⁶

In green technology, Chinese presence in the Swedish wind energy sector has been a topic of debate for some time, but has increasingly focused on supply chain risks, rather than ownership. China provides 70–80 percent of many key components globally and accounts for nearly 100 percent of the refining of key rare-earth elements. Dependence on China in green technology supply chains constitutes a potential vulnerability for Sweden.¹⁷ In batteries, the bankruptcy of Swedish company Northvolt in 2025 has prompted the Christian Democrats, one of the smaller parties in the current coalition government, to argue against Chinese ownership of battery manufacturing in Sweden.¹⁸

The Christian Democrats have also voiced concerns over Volvo Cars' plans to bring in a Chinese technology partner in their proposed battery plant, which originally involved Northvolt.¹⁹ ²⁰ From the other end of the political spectrum, opinion makers connected to labour unions have argued that Sweden should invite Chinese companies to transfer their technology and know-how through local production, instead of maintaining import dependencies on Chinese suppliers.²¹

Policy adjustments: Managing China as a rival and a partner

Swedish security agencies take an active role in shaping measures that limit technology exchanges with Chinese stakeholders

Sweden's governance model is characterized by a large degree of independence of government agencies, which execute policy and make decisions without political interference. Sweden's China policy is often discussed in terms of national security.²² As a result, Swedish security agencies take an active role in shaping measures that limit technology exchanges with Chinese stakeholders.

In public comments, such agencies frequently highlight the rival dimension of the relationship with China. For example, when the Swedish Post and Telecommunications Agency (PTS) in 2020 excluded Huawei and ZTE from Sweden's 5G networks, the Swedish Security Service publicly described China as "one of the biggest threats against Sweden".²³ This correlates with Swedish public perceptions of China, which stand out as very negative in comparison with views in other European countries. In a 2023 poll, 26 % of Swedes described China as an "adversary with which we are in conflict", the highest of all EU Member States included.²⁴

Although not naming China specifically, a new policy proposal for revised public procurement legislation allows government agencies, municipalities, and regions to exclude bidders from so-called "antagonistic states" from tenders, based on their nationality. The minister in charge emphasised that the new legislation would enhance IT security and prevent

infiltration.²⁵ Since 2019, Swedish media have reported on several cases where Chinese companies have participated in public procurements and the ensuing potential security risks.²⁶

Regarding research security, the government in March 2026 commissioned an investigation into possible measures to protect research and innovation data more efficiently.²⁷ While Sweden's foreign direct investment screening mechanism is country-agnostic, risks associated with Chinese investments have featured prominently in public debate leading up to its adoption in late 2023.²⁸ In contrast with the 5G decision, the screening mechanism does not rule out Chinese companies as partners. By attaching conditions to some of its decisions²⁹, the regulator may allow Chinese companies to invest through a joint venture model.³⁰ The decision in the battery supplier Putailai's case is an example of this approach. In this case, however, the imposed conditions, including Swedish-majority ownership and the requirement that European nationals serve on the board, ultimately led the company to shelving its plans.³¹

Outlook: China as a competitor

Using the Chinese market to stay tuned in to business trends remains an attractive choice for Swedish companies. Nonetheless, Swedish companies' exchanges with Chinese counterparts in advanced technology sectors could become more restricted in the future if the EU were to use export controls as leverage against China. High-precision bearings and machine tools are sectors in which Swedish companies SKF and Sandvik are leading and could be affected.³²

Swedish politicians are generally sceptical of using trade barriers to counter Chinese influence. In 2024, Sweden abstained from voting on EU tariffs on electric vehicles.³³ However, Sweden has also been ranked fourth among EU Member States in terms of exposure to competition from Chinese exports.³⁴ Investment promotion agency Business Sweden has lamented that Chinese state-supported makers of electric vehicles and 5G networks in the Global South are seeking to undermine European and Swedish industry through price dumping. The agency has suggested that the EU attach conditions to investment projects in developing countries, including requirements that European companies be awarded contracts in EU projects.³⁵

This suggests that competition between Swedish businesses and their Chinese counterparts in third markets could become more pronounced in the coming years, potentially making China a greater economic challenge than security threat for Sweden.

Swedish companies' exchanges with Chinese counterparts in advanced technology sectors could become more restricted in the future if the EU were to use export controls as leverage against China

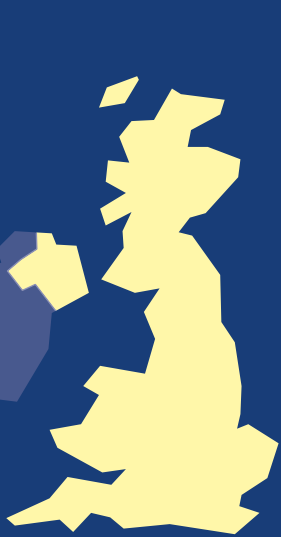
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United Kingdom

**Long-standing technology
ties increasingly securitised**



United Kingdom: Long-standing technology ties increasingly securitised

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The UK and China have a long-standing collaborative relationship in science, technology and innovation. The underlying logic for collaboration is based on the UK's traditional research strengths in science and innovation, complemented by the more recent rise of China as a major power in research and development. Collaboration between research institutions is the ballast for the relationship, with government support through dialogues and high-level visits. At the 2025 bilateral joint commission on science and technology, it was agreed that there should be a particular focus on climate and environmental science, planetary science and astronomy, health research, and agriculture and food research. However, bilateral research and technology ties have become increasingly securitised over recent years, and the object of domestic political pressure on the government in the UK. As a result, future collaboration is likely to be more constrained.

Recent trends: High level of engagement in science and technology collaboration

Science and technology collaboration has been a significant part of the relationship between the UK and China for several decades.¹ This is not surprising: the UK's university and research sectors are one of its global comparative advantages, and China has developed over time to become something of a higher education and research and development 'superpower'.² In a major speech on foreign policy in December 2025, Prime Minister Keir Starmer described China as a 'defining force in technology, in trade and global governance', justifying his government's continued engagement with China.³ Elsewhere, the British government highlights both British and Chinese strengths in these areas, noting China's spending on research and development (over RMB3.6 trillion in 2024), its R&D workforce (6.35 million), its significant number of globally-ranked universities, the volume of research publications and patents, as well as its US\$1.2 trillion tech sector.⁴

In response to these trends, successive British governments have engaged with Chinese counterparts (in particular the Ministry of Science and Technology, the National Natural Science Foundation of China and the Chinese Academy of Sciences) in research and innovation and science and technology collaboration. Bilateral initiatives have included high-level visits and a Joint Commission on Science and Technology. UK Research and Innovation (UKRI) - a non-departmental public body sponsored by the Department for Science, Innovation and Technology (DSIT) which brings together the seven disciplinary research councils, Research England and the UK's innovation agency, Innovate UK - has had an office in Beijing to support engagement with China since 2007.⁵

Successive British governments have engaged with Chinese counterparts in research and innovation and science and technology collaboration

UK Research and Innovation: A high level of China-related activities

Since 2007 UKRI China:

- supported 804 joint research and innovation projects
- had £440 million UKRI funding matched by China
- funded 228 lead organisations across 16 regions
- resulted in 10,490 scholarly publications
- achieved a field-weighted citation impact of 2.7, nearly three times higher than the global average and well above the average citation impact in the UK
- received 4,200 citations in policy literature
- engaged over 3,500 research organisations
- saw 800 technical outputs reported
- created more than 100 intellectual property outputs benefitting the UK
- funded 27 joint research centres
- created 24 UK spinout companies
- created or maintained 300 UK jobs

Source: <https://www.ukri.org/what-we-do/international-funding/our-international-offices/ukri-china/>

In November 2025, UK Science Minister Lord (Patrick) Vallance visited China with a delegation from the UK's national academies, universities and UKRI. Vallance highlighted the international nature of science and the benefits of cooperation and visited the Institute for Carbon Neutrality at Tsinghua University and a UK-China Carbon Capture, Utilisation and Storage Centre in Guangzhou. Vallance and the Chinese Vice Minister of Science and Technology chaired the 11th meeting of the Joint Commission on Science and Technology.⁶

In terms of research output, collaboration between British and Chinese researchers has grown over time. According to British government statistics, in 2021, 60% of UK research outputs had an international co-author. The most frequent collaborations between 2018 and 2021 were with the US, China and Germany, and during that period UK-China collaborations grew 34.7%, compared to 8.2% and 8.9% with the US and Germany respectively.⁷

Domains of collaboration: Climate, astronomy, health, agriculture

At the 11th Joint Commission in November 2025 the two governments agreed that there should be a particular focus on four themes in future collaboration: climate and environmental science, planetary science and astronomy, health research, and agriculture and food research. These are not quite as broad as the list of sectors agreed in the 2017 Joint Strategy for Science, Technology and Innovation Cooperation,⁸ but there is significant continuity with many of the areas highlighted in that agreement.

The focus on climate and environmental cooperation was a centrepiece of a March 2025 ministerial visit to China, by the UK Energy Secretary, Ed Miliband. At a formal UK-China Energy Dialogue the two sides discussed collaboration in technologies in clean energy, energy transition, renewables and grid modernisation. There has been separate bilateral dialogue on Artificial Intelligence (in May 2025 in Beijing), and science and technology has featured in the Economic and Financial Dialogue, revived in Beijing in January 2025.⁹

Meanwhile, there have been changes in the extent of collaboration with Chinese organisations carried out in the UK. Prior to 2019, successive British governments welcomed Chinese investment across different sectors, from nuclear power to telecommunications. The idea was that such cooperation tapped into British strengths or demand, and could help to develop further capabilities in the UK for the long term. Prominent Chinese investors included Huawei, which spent significant amounts on R&D in the UK.¹⁰

On his state visit to the UK in 2015, President Xi Jinping visited Chinese technology company Huawei's UK operations and the National Graphene Institute in Manchester.¹¹ But after a reversal of policy by the Conservative government in 2020, Huawei was required to phase out its investment in 5G, and its business in the UK has reduced dramatically.¹²

The scope for research by Chinese companies in the UK has reduced significantly. In the other direction, major British companies have a track record of investment and collaboration in technological development in China. A recent example is AstraZeneca's investment of USD 2.5 billion in a global R&D centre in Beijing,¹³ and its support for Cambridge University collaboration with China in life sciences.

Policy adjustments: Increasing securitization of science and technology relations

This highlights the shifting politics around science and technology relations. British officials and the research and innovation community have long sought to engage with Chinese counterparts in science and technology, and in an earlier phase where global collaboration in innovation was generally seen as win-win, there was limited politics around this in the UK.¹⁴

However, as the broader relationship between the two countries entered a more contested phase from the late 2010s onwards, science, technology and academic collaboration became increasingly securitised,¹⁵ and discussion of 'dependencies' grew, though with limited detailed analysis to demonstrate this.¹⁶

The debate over Huawei's presence in the UK - fiercest in 2019 and 2020 - brought to the fore arguments about perceived risk from Chinese technology, which critics argued could be used to undermine the UK's national security.¹⁷ The focus and tone of interactions has changed over time and the most recent engagements have seen the introduction of language of national security in discussion of research ties.

By 2025, this framing had become a core component of the public policy debates about China. Ministerial statements and interactions on science and technology (such as the visits by Reeves, Miliband and Vallance) included frequent references to the protection of national security.

Since 2020, a number of policy measures have been introduced or tightened to regulate interactions in these areas more strictly. These include the government's Research Collaboration Advisory Team, which 'provides advice to research institutions on the national security risks linked to international research'.¹⁸ Some universities advise caution in broad terms, which could potentially cover much interaction with Chinese institutions.¹⁹ There has been a tightening of reviews of foreign investment in the UK, and reports of investigations

As the broader relationship between the two countries entered a more contested phase from the late 2010s onwards, science, technology and academic collaboration became increasingly securitised

by the security services into Chinese green technology in the UK.²⁰ One of the most high profile cases was the blocking by the UK government of a Chinese-backed company's acquisition of Newport Wafer, a semi-conductor firm in Wales (in the end, it was sold to a US firm).²¹

There has been growing political pressure in the UK from groups sceptical of closer ties with China

As in other areas of bilateral relations, there has been growing political pressure in the UK from groups sceptical of closer ties with China. Media reports, for example in the Daily Telegraph, have criticised British universities for collaborations with Chinese counterparts.²² The security-focused think tank, Council on Geostrategy, has published commentary arguing that China is seeking to 'dominate' certain science and technologies and leverage them for geopolitical impact, calling for more steps to restrict the potential outflow of British technology.²³

What is missing from much of this commentary is a reflection on the growing strength and depth of research and technology in China itself. The assumption is often that it is the UK which is ahead, whereas in many fields (in particular green technology), China has a strong capacity to engage in and deliver cutting-edge research, and the UK could develop capability best through collaboration. Recognition of this is limited in the political debate, though there has been some acknowledgement of the trends, for example in a Financial Times editorial which argued that the West has 'little choice but to take advantage of low-cost Chinese wind and solar technologies'.²⁴

Outlook: Future collaboration with China is likely to be more constrained

The politics shows ways in which the framing of China in this field has been shifting. The British government and research communities see China clearly as an important technology and innovation power, highlighting its rapid development and strengths. As a result, China is perceived as a significant partner, and evidence of growing collaboration between researchers supports this.

At the same time, the growing political emphasis on security leads China to be seen as a competitor, leaving a conflictual framing of China as a technological power. As a result, future collaboration is likely to be more constrained than in an earlier phase of bilateral relations.

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