EuroHub4Sino

European Hub
for Contemporary China

China's Future(s): A Strategic Foresight Report

Funded by
the European Union

European Hub for Contemporary China (EuroHub4Sino) is a three-year project funded by the European Union's Horizon Europe programme. Its principal objective is to facilitate the independent knowledge production on contemporary China and promote cooperation among fragmented China expertise in Europe by developing a cutting-edge digital platform (eh4s).

Editor:
Prof. Shaun Breslin, The University of Warwick, UK

Authors:
Anja Désirée Senz, Heidelberg University, Germany.
Belinda Uebler, Heidelberg University, Germany.
Błażej Sajduk, Jagiellonian University, Poland.
Jeremy Garlick, Prague University of Economics & Business, Czechia.
Łukasz Gacek, Jagiellonian University, Poland.
Marcin Grabowski, Jagiellonian University, Poland.
Maud Descamps, Institute for Security & Development Policy, Sweden.
Niklas Swanström, Institute for Security & Development Policy, Sweden.
Paolo Pizzolo, Jagiellonian University, Poland.
Shaun Breslin, The University of Warwick, UK.
Sławomir Wyciślak, Jagiellonian University, Poland.
Weronika Krupa, Jagiellonian University, Poland.
Yu Jie, Chatham House, UK.
Zhu Yi, Heidelberg University, Germany.

Disclaimer and Other Legal Information

The project "European Hub for Contemporary China (EuroHub4Sino)" has received funding from the European Union's Horizon Europe Reforming and Enhancing the European R&I System programme under grant agreement number 101131737. UK participants in this project are supported by UKRI grant numbers 10108183 and 10108749.

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.

Cite this report as:

EuroHub4Sino. 2026. China's Future(s): A Strategic Foresight Report [S. Breslin (ed.)]. EuroHub4Sino, Brussels. https://doi.org/10.31175/eh4s.r9k4

Cite a chapter as:

Surname, Name. 2026. "Chapter Title." In China's Future(s): A Strategic Foresight Report [S. Breslin (ed.)]. EuroHub4Sino, Brussels.

European Hub for Contemporary China – EuroHub4Sino
For more information visit www.eh4s.eu
eh4s@eh4s.eu

Table of Contents

Introduction

Building a Knowledge Base for Effective Planning

Shaun Breslin

Reliably predicting the future – any future not just China's – is an inherently difficult task. Perhaps it is even impossible. And this was the case well before many of the previous certainties about the nature of international alliances and principles proved to be far from certain after the 2024 US Presidential election. Even if we put the international environment to one side for the moment, Xi Jinping himself has warned of the dangers of not effectively dealing with both known weaknesses and threats and unexpected and unforeseen crisis as they (all but inevitably) emerge; challenges that have been enhanced by the nature of the economic transition that he wants to lead China through:

> *Our country has entered a period of development in which strategic opportunities, risks, and challenges are concurrent and uncertainties and unforeseen factors are rising. Various "black swan" and "gray rhino" events may occur at any time. We must therefore be more mindful of potential dangers, be prepared to deal with worst-case scenarios, and be ready to withstand high winds, choppy waters, and even dangerous storms*[1].

Presumably at some point the Chinese Communist Party will also have to deal with the thorny question of leadership succession. Given how far the party has gone in establishing one individual as the source of wisdom and the driver of China's national rejuvenation, not to mention many of the tensions, anxieties and frustrations that have built up but not always been expressed during Xi's leadership, this might not be an easy transition to carry off.

If China is successful, then dealing with it in the future is only going to get trickier than it already is, and tough choices will lie ahead. But even if things do not go as China's leaders want them to go and some sort of crisis lies in the future, the size and scope of China's international interactions will generate a different set of problems and challenges that will need to be resolved.

Fortunately, it is not our intention to be precise or come up with a single firm prognosis. On the contrary, we present a number of future trajectories that may or may not play out depending on how Chinese strengths, weaknesses, opportunities and threats play out in each of our six issue areas. To be sure, some of these futures are more likely than others. But the whole point of a foresight report is to try to avoid the despairing claim at some future point

that with the benefit of hindsight, things would have been done differently. With informed foresight, then it should be possible to better prepare for a range of outcomes and not just one.

And while each of the chapters have their own specific focus and conclusions, one of the overall messages of the collection as a whole is very simply the importance of looking to the future. This might sound obvious. Hopefully it is. But it is understandable why at least some analysts and policy makers are focussed on dealing with the here and now instead. After all, thinking about China is already a key part of the equation when it comes to thinking about dealing with a wide range of current challenges; cyber security, foreign political interference, the nature of military/security relationships and alliances, the location of technological innovation and knowledge, economic dependencies and asymmetries, environmental transformations, and the shifting normative basis of global governance. That's why so many EuroHub4Sino policy papers have focussed on outlining the nature of these real and present issues (all available online at eh4s.eu/publications).

Yet if we understandably think China looms large today, it is likely that it is going to loom even larger in a greater number of issue areas going forwards. This is in part because another common and collective conclusion is that the nature of the Chinese political system gives the state the sort of capacity to set and strive for objectives that is missing or only partial in many other polities. It is important here to repeat the caveat that we cannot just assume a smooth and trouble free future political and economic evolution in China, and the importance of contingency planning for other outcomes. But at the same time, it is also essential to prepare for an even more likely scenario where China gains greater significance, heft and influence. Or put another way, in some areas we probably haven't really seen anything yet.

Moreover, we also stress the need to look beyond the admittedly important direct impact on and consequences for Europe. What China does in, with and to other countries will have important indirect effects too. The consequences of US-China rivalry and Chinese support for Russia might be the most obvious contemporary examples, and they are unlikely to become less important in the future. We add to these what seems likely to be an even greater and wider set of relations with countries in the global south, which will impact on global flows of goods, resources and finances, and also potentially support for Chinese global initiatives and alternatives to the liberal underpinnings of the global order. Dealing with China, then, will not only entail dealing with China itself, but also all those who might become followers of whatever it is that China has to offer.

This does not mean that all in the global south should be expected to ally themselves with China on all issues. While it is tempting to look backwards towards a previous period dominated by two rival great powers to understand what the future will look like, our analyses suggest that expecting a return to Cold War style bipolarity is not particularly helpful. In

science, attraction to a pole cannot be partial. Not only do you stick to (and with) one pole, but this means by definition that you are repelled by the other. To be sure, in the Cold War some states stayed non aligned and others occasionally abandoned their ally. Nevertheless, the basic idea was of a binary dichotomisation of the world into two fixed and exclusive camps or blocs. This does not seem to be the world that we are heading towards today. This is in part because of the nature of China as the challenger global power, and whether its future actions will match its current words and promises to act as a different type of Great Power compared to other previous Western ones. It's also in part because of the mission to Make America Great Again, and whether this mission will continue after the end of the Trump presidency.

Rather, we seem to be seeing a world with different configurations of interests and alliances depending on the issue area at hand. One where Europeans might seek cooperation with China over shared environmental concerns whilst being on opposing sides when it comes to security issues or defining Human Rights and other normative principles. One where India and China can have a shared agenda for shifting the distribution of power in the major institutions of global financial governance (and also providing alternatives to them) notwithstanding competing territorial claims (and at times military clashes).

Indeed, a number of countries in Southeast Asia have long been confronted by a China that is at the same time a major (and often the biggest) economic partner and the best bet for a prosperous future, and also the major (and often the biggest) threat to national security and potential source of some form of unpeaceful future. Indeed, not just a potential security threat but for some, already a real and active one. For Europeans, this would be something akin to the opportunities and challenges presented by Germany and Russia being combined in a single country that occupying a large part of the regional neighbourhood.

Clearly, the nature of the security challenges that China presents to Europe are rather different from the more obvious and immediate consequence of rival territorial claims or control of strategic waters. Even so, Europe was perhaps somewhat behind the curve in identifying China as simultaneously a systemic rival and economic competitor on the one hand whilst also a cooperation partner in some issue areas on the other hand; a country that you need to find ways of getting along with whilst simultaneously seeking to defend yourself from.

This in turn might partially explain why the derisking agenda does not seem to have been massively successful to date in reducing the network of trade relationships that tie European economies to China's. Though as we argued in an early EuroHub4Sino paper, one of main reasons that derisking is so tricky is that the governments that might want to achieve it might see China somewhat differently from those commercial actors who have established those trade and investment links in the first place[2]. To get them to move away from China would entail either making it commercially advantageous to shift production sites or partners (providing incentives to do so), or making it unprofitable to maintain their

existing lings (using sticks and building barriers). As such, successful derisking would probably result in increased costs for either governments, producers or consumers; and possibly all three.

It might also entail cutting European economies off from leading edge technological advances on broader (economic) security grounds. The question of whether to accept and embrace the benefits of Chinese electronic vehicle advances (and in particular, developments in battery technologies) is a good example of how difficult it already is to balance potential economic (and in this case also environmental) gains against greater potential economic (and potentially broader) vulnerabilities and insecurities. As a number of the chapters in this report suggest, it is likely that this dilemma will only get harder to resolve in the future as China develops more technologies in more sectors. And also as the nature of the China challenge evolves as well. There will be both more to lose and to gain.

The whole point of the EuroHub4Sino research agenda has been to provide a European knowledge base on China; a knowledge base that should make it at least somewhat easier to prepare for what lies ahead. In addition to establishing a platform to provide access to wider scholarship on China, this has included EuroHub4Sino researchers producing over 50 policy papers (of various types and lengths) over the last three years already noted above. While these papers have informed what is said in each of the chapters in this report, each individual paper contains much that we hope (and think) adds to our understanding of what China is, where it might be going, and what this means for Europe. So while in some respects this report is a final word produced towards the end of the project, it might also serve as a starting point too if it opens the doors to the much greater body of work available on the project website (www.eh4s.eu).

Endnotes

1 Xi Jinping “Full text of the report to the 20th National Congress of the Communist Party of China”, 2nd August 2023, available at https://www.idcpc.org.cn/english2023/tjzl/cpcjj/20thPartyCongrssReport/, last accessed 27th May 2026.

2 Shaun Breslin, Liisa Laupilla and Elina Sinkkonen, “Is De-Risking Possible? Responding to China-Relation Economic Insecurities”, Eurohub4Sino Policy Paper 2024/4, 9th April 2024, available at https://eh4s.eu/publication/is-de-risking-possible-responding-to-china-related-economic-insecurities, last accessed 1st June 2026.

Chapter 1

Upgrading the Chinese Economy:
Obstacles, Opportunities And Options

Shaun Breslin

Introduction

The Chinese economy is in the midst of a major transformation. Perhaps that sentence should have started with "once again", as China seems to have been undergoing one transformation or another pretty much continually since the foundation of the People's Republic of China (PRC) in 1949. Undergoing any one of land reform, cooperativitisation, collectivisation, or communisation would have been a generational challenge on its own for the Chinese people. So it is almost impossible to imagine what it was like to go through all four of these economic revolutions in less than a decade.

As significant as they were for China (and the Chinese people), domestic changes in China in the 1950s did not have much of an impact at all on the rest of the world (and certainly not on Europe). The same was true of the even more traumatic events during the Cultural Revolution in the 1960s and 1970s. And while the abandonment of Mao's preferences and policies and the start of the transition to a new economic paradigm after his death in 1976 (and more clearly and rapidly in the 1980s) might have been of interest to foreign observers, it did not immediately have a **significant** international impact.

As China became more embedded in the global political economy, China's international economic interactions inevitably had an ever greater impact on the rest of the world. So perhaps we can point to the start of an era of increasing foreign investment driving increasing Chinese exports in the early 1990s as a changing point in China's global economic importance and impact; and then add on the start of a new era of financial flows out of China in the early 2000s as the beginning of a new chapter. When it comes to the consequences for Europe specifically, then maybe the increase of inward FDI from China in the

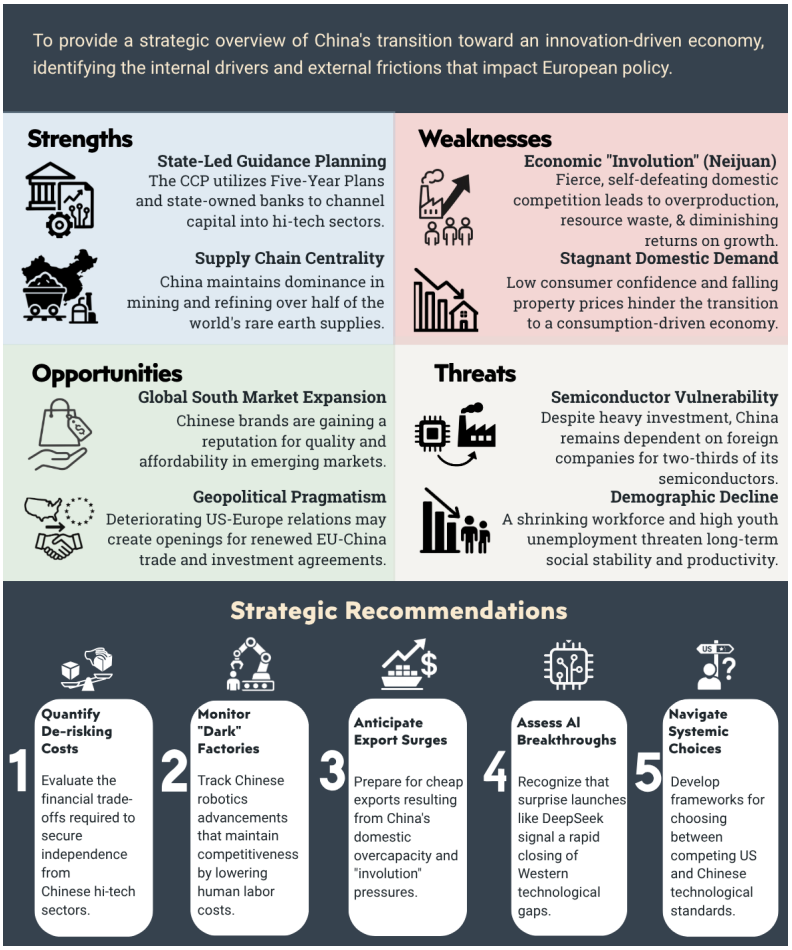
2010s marked a key turning point (and also resulted in a shift in the way that at least some Europeans viewed China too).[1]

But something else changed as well; and here it is much harder to work out exactly when that change occurred. As argued in EuroHub4Sino paper 2025/1, at some point, the Chinese economy reached the size and heft that domestic economic shifts had international implications even when they were inward facing in nature and not directly intended to have an external impact. Moreover, domestic considerations "also has a direct but secondary impact when the *primary* Chinese objective is not to do things to Europe, but to do things overseas to reduce Chinese insecurities".[2]

The main objective of this chapter is to weigh up the tools and strengths that China and its leaders possess that might ease the transformation to an economy that is increasingly driven by innovation and technological change (an ambition discussed in detail in EuroHub4Sino paper 2024/6).[3] And also to identify the problems and obstacles that might get in the way too.[4] It will suggest that while some sort of change is indeed very likely (and has already happened to an extent), it is change that is going to be accompanied by a number of challenges – both internal and external – that the party will need to handle with care. Some of these are pre-existing and long-standing issues, whilst others will be consequences of the nature of the desired transformation itself.

Irrespective of how this plays out in detail, there are going to be important implications for Europeans. Perhaps the most obvious (and arguably most concerning) is if China successfully gains increasing dominance (and even leadership) in a number of advanced hi-tech sectors. But even areas of domestic weaknesses could easily have external consequences too; for example, potentially in the form of ever greater and cheaper Chinese exports.

As established in EuroHub4Sino paper 2025/01, there is a very real desire to reduce Chinese dependence on unreliable or even antagonistic western economic "partners". China's evolving economic relationship with economies in the global south will also be important too.[5] And just to add an extra layer of complexity, there is the unknown unknown of what President Trump (and his potential successors) might do to make previous certainties ever more uncertain. There is a relatively strong school of thought (including within China) that sooner or later, US actions are going to force Europeans to choose; and it is not uncommon to find the assumption that Europe can no longer choose the US over China.



Forging Chinese Economic Transitions: Strengths and Capabilities

The Chinese economy is too big and too complex for any leader to make it act exactly as they want it to. That being said, as outlined in EuroHub4Sino paper 2025/16, the state does possess a number of tools that give it the ability to direct the nature of economic activity as they try to shift from the previous era of focussing on rapid growth to a new one that emphasises quality, innovation and technological advancement.[6]

Economic Change as Political Campaign

There is and always has been a campaigning dimension to the promotion of economic change in China. The propaganda system and the broader media are mobilised to disseminate big visions and goals (like the New Quality Productive Forces agenda) as designed by an enlightened and benevolent leadership to guarantee the people's future security and prosperity. And to ensure the nations rejuvenation too despite the hostility of major western countries that have constructed a global order that serves their interests, and not China's. As argued in the very first EuroHub4Sino paper, the already very strong nationalist dimension of the Chinese Communist Party has become even more pronounced under Xi.[7]

The search for, (sustainable) prosperity and security are bundled together and presented as part of China's national project – perhaps even national destiny - to encourage buy-in and support for the leadership's objectives.

Moreover, in making their plans for future change, the CCP leadership does not have to worry about political repercussions in the way their counterparts do in liberal democracies. To be sure, they are concerned about negatively impacting on large sections of the population to the extent that there is social unrest. But they absolutely do not have to worry about winning elections or timing announcements and changes to maximise their impact on voters.

Economic Tools

As detailed in EuroHub4Sino paper 2025/16, these grand visions are supported by a complex network of guidance planning; not just the Five Year Plans but the numerous sectoral and regional plans that are then generated to identify specific deliverable goals in specific areas, and ways of attaining them.[8] The state can then utilise significant levers of economic control to turn aspiration into action. These include the role of State Owned Enterprises in key economic sectors; the disguised nature of state ownership in many companies and increasing oversight of private economic activity (particularly of large private sector actors); and the role of local governments in shaping local economic activity.[9] Perhaps most important of all, China's commercial banks are used to channel money into places that politicians want it to go. Indeed, the banks are formally mandated to "conduct their business of lending in accordance with the needs of the national economic and social development and under the guidance of the industrial policies of the State".[10]

As perhaps most clearly shown in the Electric Vehicle (EV) sector, the emphasis on high quality and hi-tech innovation based production has already generated some success. The development of 3D printing and robotics are two other examples of areas where Chinese producers are also on the way to potentially becoming global leaders. The unveiling of robots that get very close to emulating human movement has a much more dramatic impact than a robot arm performing more mundane tasks in a factory; it is a very visible sign of what China can do (and arguably how far ahead it is). Perhaps, though, the collective impact of millions of lower-level robots doing what people used to do might well add up to something more important in the long run. And as a sign of how quickly things can change, Chinese robotics exports increased by nearly 50 per cent in 2025 alone, transforming it into a net robotics exporter for the first time.[11]

The robotics case is a good example of how first trying to serve a large domestic market can create companies and technologies that then subsequently have an international reach. Quite simply, the size of the domestic Chinese market clearly creates possibilities for Chinese economic planners that do not exist in many other economies. Robotics are also

transforming other sectors too through the development of "dark" factories that can operate 24 hours a day with minimal human employment. This suggests that China will not only be very competitive in the future in hi-tech sectors, but also remain competitive in other sectors by lowering the traditional major sources of costs in previously labour-intensive industries.

Supply Chains

As will be discussed shortly, China's reliance on imports is typically regarded as a weakness; not least within China itself. In some areas, though, China does possess the resources it needs to further develop its high-tech industries (and resources that others want and need too). China not only mines the majority of the world's rare earths, but has been increasing its capacity to refine them as well. Even though geopolitical tensions have accelerated the search for alternative sources, the International Energy Agency thinks that China will still mine just over half of the world's supplies in 2030, and refine about two-thirds of them.[12] This leaves China well placed to control its own hi-tech destiny; and maybe the destinies of some others too.

More generally, China's role in many supply chains in many areas – and centrality in a number of them – clearly does create some sort of strength for China's leaders. At the very least, the extent, density and complexity of supply chain interdependencies mean that it is not easy (or cheap) for others to quickly unravel them and damage China's interests. As shown in EuroHub4Sino paper 2026/6, the extent to which European car producers depend on Chinese made chips gave the Chinese government considerable leverage during the dispute with the Netherlands over chip production in 2025.[13]

Mitigating Challenges

China's leaders are also relatively well placed to deal with at least some of the negative consequences of their desired transition. For example, they can (and do) use price controls when deemed necessary; for example, when rapidly rising prices are causing problems for consumers, or rapidly falling prices harm the income of farmers. The state is ready and able to step in to provide bailouts when it wants to, and to maintain production (and employment) for socio-political reasons even when commercial logic might point in other directions. Importantly, there is not so much a societal acceptance of state intervention in times of trouble, but an expectation and demand for it.

In addition, the still relatively closed nature of the Chinese financial system makes it easier for debt to be recycled through different parts of the financial ecosystem. China's managed floating exchange rate system and closed capital account also provides a degree of financial sovereignty and autonomy that more liberal economies do not have. It also makes it difficult for finance to flee the country in the ways that caused financial crises in the past

in other more open economies (for example, in other Asian economies in 1997).

Weaknesses: Persistent Problems and Developing Dilemmas

While debt might be less risky in China than in some more open economies, it doesn't mean that it isn't a problem at all. It has been and remains a major issue - particularly for the many local governments that are struggling to meet their financial obligations (as discussed in EuroHub4Sino paper 2025/18)[14]. And the need to deal with it has been explicitly acknowledged by China's top leaders. Indeed, Xi and others have been very open in pointing to the many problems that the party and/or the country face. This openness is in part at least because pointing to challenges ahead and highlighting insecurities can have a positive political outcome for the party if it results in an acceptance of a need to not rock the boat, and to fall in line and unquestioningly support the party's ambitions and leadership.

Confidence and Demand (and the lack of it)

That said, there does appear to be a general lack of confidence in the general public about China's economic future that has resulted in a reluctance to consume; and the cautious messages coming from the leadership might be part of the reason for this. Falling property and real estate prices have played their part too. Amongst younger generations, there is an increasing lack of confidence that the system will give them what they demand or expect in the future (an issue we will return to later). And while we are talking about confidence, it's also probably fair to question if there is confidence amongst private sector actors that their interests (or even legal rights) will be protected in the future (given what has happened to some of them in the fairly recent past).

So while the size of the domestic market was noted as a strength above, the relative lack of development and maturity of this market to date means that it might be considered a weakness at the same time. Or perhaps it should be considered to represent an opportunity (and be dealt with in the next section); important as it already is, the domestic economy will be even more important if it can be fully utilised. Once again, our evidence that this is a weakness comes from Xi himself. In December 2025, *Qiushi* published a selection of Xi's various speeches calling for a transition to greater domestic demand driven growth that he had made at various times over the previous ten years.[15] In his own words, although China's 400 million "middle income earners is the largest in the world, there is much more to be done": "the optimization and upgrading of residents' consumption, combined with modern technology and production methods, holds enormous growth potential", and "expanding the size of the middle-income group should be a key policy objective."[16] If you add concerns about a shrinking population to the as yet still not fully developed domestic market, the result is the fairly urgent need for an emphasis on "human capital investment" to:

> *enhance people's capabilities … thereby stimulating endogenous economic*

> *growth. Such investments cover projects to enhance people's education, skills and health, support childcare and elderly care services, boost employment, optimize the income distribution system and cultivate innovative and research talent. Such investment helps unleash the potential of consumption, [and] allows innovation to play a bigger role in economic growth*[17]

So the leadership clearly acknowledges what the problems are, and what needs to be done. This might be taken as a sign that there is nothing to worry about. However, the fact that ten years on from the first of his published speeches Xi was still talking of the need to change and unleash this "enormous growth potential" shows how difficult it had previously been to engineer the desirable degree of rebalancing away from exports and investment. We might also note that Wen Jiabao committed the party to investing in human capital, education and healthcare as part of his "putting people first" agenda way back in 2004.[18]

The same might be said about the oft repeated commitment to creating a unified national market (examined in EuroHub4Sino paper 2025/18).[19] On one level it is a sign of awareness and commitment, but at the same time an indication of the failure of previous attempts to deal with local governments controlling local economies for local reasons (rather than strategic national ones). For local governments, it makes sense to foster and support local producers to maintain local employment and keep revenues in the hands of local companies. In this respect perhaps it can even be thought of as a strength of a political economy that allows on-the-ground concerns to be prioritised over economic efficiency arguments. But this can result at an aggregate national level in the duplication of production, overcapacity, and a waste of resources as less efficient factories continue to operate with the support of local governments.

Neijuan

The way that local governments favour local producers during government procurement processes (irrespective of quality or price) is linked to the problem of "involution" (*neijuan* in Chinese); "excessive and self-defeating competition among Chinese companies for limited resources and opportunities" resulting in "diminishing returns, overproduction and fierce price wars".[20] Involution is also a consequence of more straightforward commercial competition in an attempt to drive others out of hyper competitive markets. Once again, the concern for the leadership is that inputs (money and other resources) are not generating the gains that they could do. Or put another way, growth (including the shift to better quality high tech growth) is costing more than it should do.

This includes those environmental costs covered elsewhere in this foresight report. Here, given the importance of water in many of the high-tech production processes that Xi wants China to develop, it will suffice to repeat Parton's now long-standing warning that while the

leadership can print money to overcome economic challenges, they "cannot print water".[21]

Opportunities (and Opening Doors)

Companies like Haier and Hisense and particularly Chinese EV producers are playing an important role in developing a reputation for quality in the West. This not only creates opportunities for these producers, but also for other new Chinese market entrants as well. A decade or so ago (perhaps even more recently than that), Chinese brands were typically equated with a low price but also low quality. Today, the possibility that a Chinese company you hadn't heard of before can compete on both price and quality has to be taken very seriously. So too does the idea that in the future, buying Chinese might mean that you are buying cutting-edge technology.

Compared to Europe, Chinese brands have had much greater visibility for a longer period (and a better reputation too) in other parts of the world. As such, the status barrier is much lower and easier to clear for Chinese producers in some markets than in European (and North American) ones. Moreover, market fragmentation in many emerging economies provides opportunities too. For example, China's Transsion Holdings has become a major competitor to Samsung and Apple in African mobile phone markets supplying high end tech (through its Tecno brand). At the same time, it also produces mid-range affordable phones (through Infinex) and entry level low tech options (through the Itel brand). The importance of affordability (rather than the latest tech) in many emerging markets suggest that there is considerable room to occupy more of those market sectors that Samsung and Apple do not tend to target in the future. At the same time, Infinex, Huawei and Xiaomi will compete with them in high end markets.[22]

This is one of the reasons that there is a widespread expectation in China that it can build on its already strong relations with countries in its regional neighbourhood and the global south more generally. There are political reasons too. At the risk of oversimplifying a vast array of different types of views of China in the broadly defined global south, this is in part because the political consequences of engaging China seem a lot less prominent than they are in Europe and North America (or deemed secondary to more pragmatic commercial and developmental objectives).

Great changes unseen in a century[23]

There is also relatively widely held belief in China (including Hong Kong) that at some point, the traditional allies of the US will have to make a choice, with the reset in Canada-China relations in January 2026 taken as "a bellwether for other Western powers".[24] There is a hope – indeed, more than just a hope - that at the very least, previous European concerns about relations with China will need to be moderated as US-Europe relations deteriorate. Moreover, getting closer to China just seems to make pragmatic sense in many

Chinese eyes. For example, from a Chinese perspective, Chinese dominance in the EV sector (not least in the development of quick charging long range batteries), European environmental ambitions and targets, European energy dependencies on unreliable "partners" like Russia, and deteriorating US-China relations combine to mean it makes no sense for Europe to maintain its current positions. And if Europeans find it harder or more expensive to sell things to the US, then they will need to cultivate other markets to take up the slack. While any assumption that the sidelined/shelved EU-China Comprehensive Agreements on Investment would quickly return to the table have not materialised, its rehabilitation is still thought of in China as a possible consequence of ongoing geostrategic transitions. Who knows, maybe even an EU-China Free Trade Agreement is not impossible.[25] And the idea of choosing sides goes further than just economic and investment relations, potentially extending into technological systems and standards.

It also extends into international payments structures and currency use. However, if the Renminbi is to play an increasingly important international role in the future – and who knows, perhaps ultimately to challenge the dominance of the US Dollar – this will create a policy dilemma for the Chinese leadership. This is because they would need to loosen (and maybe even lose) the controls and limitations that they currently deploy to allow for the ever greater international use of the Renminbi; those very same controls that were noted as a strength and capability above. This reminds us that seizing opportunities is very rarely (if ever) without cost or risk free.

Threats and Obstacles

Great changes unseen in a century (again)

It would be wrong, though, to think that the shifting geopolitical environment as wholly positive for China, and there remains a real risk that US political preferences and actions could damage China and impede the leaderships' economic upgrading agenda. After all, the US remains China's second biggest export market; and the single biggest if the EU is disaggregated into its individual member states. The US is also one of the biggest sources of China's trade surplus; and with the same proviso about the EU, probably the biggest source once re-exports (from China to Hong Kong and then from Hong Kong to somewhere else) are taken into account. To put it as simply as possible, some people in China are making a lot of money by selling things to the US, and they might find it harder to do so as a result of American policy changes. Whilst these changes have at times been dramatic and almost overnight in the second Trump presidency, there now seems to be a bipartisan view about China in the US, and the overall nature and direction of Washington's China policy is unlikely to radically change in the future.

Moreover, notwithstanding the attempts to diversify supplies and do more at home, the US is also an important source of imports in some sectors. And Chinese vulnerability to US

policy shifts are exacerbated if you factor in the influence that the US can exert over others to shape what they trade with China. Here we might think of the sort of controls that President Biden introduced on high-tech exports to China from other countries made with US technology and equipment. Despite massive investment, China still remains dependent on foreign companies when it comes to the production of semi-conductors. Just over a third of those used in China were domestically sourced in 2025, a rise of 10 per cent over 2024.[26] So if you focus on the very impressive speed of the increase then you will see a glass a third full and quickly getting fuller. The quality of Chinese products is increasing too. But if you focus on the remaining two-thirds then you can see where the potential threats might still lie.

We might also add to this indirect impact the consequences of US action elsewhere. Oil exports to China might have been more important for Venezuela than those imports were for China. But in addition to the direct impact, that the US is prepared to act militarily to do things in its own regional backyard could change regional thinking on the benefits and wisdom of dealing with China. The impact of the US-Iran war was even more significant for global oil flows and prices, further illustrating how events far away that have nothing directly to do with China can still impact on the Chinese leaderships reform agenda.

As stretched relations with both the Netherlands and the UK over semiconductor production show, this is not just a story about vulnerability to direct and indirect relations with the US alone. Moreover, and as already noted, despite the growing importance of the domestic economy, growth in China still remains more dependent on exports than China's leaders would like it to be. So Chinese concern about investment and trade related vulnerabilities are not simply focused on relations with the US. It would certainly be a mistake for Chinese policy makers to ignore indigenous home-grown European concerns about China and assume that all previous concerns have disappeared, even if many European leaders seem keen to establish some sort of reset in their China policies.

Domestic challenges

There is something of a consensus, though, amongst those who study the Chinese economy in detail that the greatest threats are internal rather than external. And by and large, the main threats are identified as not dealing with the structural weaknesses already noted above. What will happen if China doesn't deal with debt at some point, or sort out its housing and real estate markets, or find a way of funding local governments properly, or deal with involution (and so on)? As very briefly noted earlier, there are also concerns about the consequences of generational transformations covered in some detail in EuroHub4Sino paper 2025/17.[27] In the longer-term future, this includes population decline, and a demographic shift with an increasingly aging population with a smaller number of in-work Chinese to support them. In the immediate term, we are already seeing emerging generations of young Chinese who are concerned about the future, and the chances of them getting the jobs and having the lifestyles that they aspire too. And increasing youth unemployment

too, not least (but not only) because the number of Chinese university graduates continues to increase.

If Xi attains his objective of transforming the nature of Chinese economic activity, it seems pretty obvious that there will be losers as well as winners. If new productive forces come to dominate, what happens to those many millions who are employed in "old productive force" sectors? Or who are replaced by robots? Or who lose the support previously offered by local governments in the search for a leaner more efficient national economy? After all, it was in the transition from one mode of production to another that Marx saw the origins of dislocations that would eventually lead to political turmoil and upheaval. And even if the consequences of Xi's desired for technological transformation fall short of Marx's expectations, they are likely to provide a significant political challenge for not just him, but whoever succeeds him when that time finally comes.

Conclusion: Hard Choices on the Horizon

It is not particularly profound to suggest that China is unlikely to make a full transition to an economy where growth is entirely a result of innovation powered by domestic demand and only utilising domestically sourced materials and resources. Nor is it heretical to point to the many economic challenges that will need to be addressed – some of them long standing, some of them newer – as China's latest economic transformation unfolds. As we have seen, Xi Jinping and other Chinese leaders have been very clear about the number and severity of the problems that they will face going forwards.

That said, they are also quick to point to what a good job they have done in the past in dealing with previous problems and challenges, and how well they are doing **despite** the enormous challenges that confront them. For example, while Premier Li Qiang started off by referring to "complex and challenging developments marked by mounting external pressures and growing domestic difficulties" in his 2025 report on the work of government, he very quickly turned to the way that the Chinese people had overcome them and argued that:

> *China's economic strength, scientific and technological capabilities, and composite national strength continued to rise, and solid new strides were made in advancing Chinese modernization. These achievements have filled us with even greater confidence and resolve as we press forward on the new journey*[28]

The trick for China's leaders in sending messages to their people (and to others) is to find a balance between concern and confidence. The overarching message is yes, the country faces significant problems, but the party has proven that it has the wisdom and experience to first identify them and then to find solutions if the people play their part and rally behind the party and the leader for the national good.

That they are still talking about the need to resolve problems first identified a long time ago suggests that it will certainly not be easy to resolve the challenges that the leadership will face as they continue this journey. And even if the domestic market does develop as Xi wants it to do, it's hard to believe that China will stop exporting to Europe any time soon. Moreover, as James Kynge argues, the surprise launch of the DeepSeek platform in 2025 that very suddenly punctured assumptions about the extent of Western AI tech superiority is unlikely to be a one off event.[29] Given Chinese ambitions and the money available to support them, it is unlikely (to say the least) that AI, robotics and EVs will be the only hi-tech sectors that will witness a rather rapid change in Chinese capabilities in the near future. It would certainly be prudent for policy makers to assume that this will be the case. And that China will continue to be a major exporter in existing lower-tech industries too.

Having to choose China (or the US for that matter) in an exclusive bipolar split as some in China hope for (and some even expect) sounds a bit far-fetched. That being said, at least some European politicians seem more comfortable with Chinese preferences and policies than was the case a decade ago. Perhaps comfortable is not the right word; maybe its more about balancing up a range of considerations and putting up with Chinese positions for pragmatic practical reasons.

But even if Europeans they don't what to take sides once and for all, decision makers are going to face a number of difficult China related policy choices in the future. Simply put, they will have to decide if they are prepared to "de-risk" economic relations with China as China becomes an ever more important actor in rapidly evolving hi-tech industries. And also while previous geostrategic and security assumptions are challenged and/or unravel. Moreover, if they do want to de-risk, how much are they prepared to spend to achieve what degree of security, and how much are they prepared to forego (for example, in terms of hitting environmental targets)? Whilst this might already be the case, the stakes are likely to get higher as China occupies a greater share of the hi-tech industrial landscape in the future.

Endnotes

1 For a detailed analysis of why dominant perceptions of China have shifted in Europe, see Shaun Breslin and Mikael Mattlin, "Bundling Threats: Why Dominant Perceptions of China Changed in Europe", Chinese Journal of International Politics, 18 (2), 2025: 196-219.

2 Shaun Breslin, "Chinese Economic Insecurities: Where they Come From (and Why they Matter)", Eurohub4Sino Long Read 2025/1, 12th February 2025, available at https://eh4s.eu/publication/chinese-economic-insecurities-where-they-come-from-and-why-they-matter, last accessed 4th February 2026 .

3 Shaun Breslin and Ren Xinyuan, "What's New About China's New Quality Productive Forces?", EuroHub4Sino Policy Paper 2024/6, 18th June 2024, available at https://eh4s.eu/publication/whats-new-about-chinas-new-quality-productive-forces, last accessed 4th February 2026.

4 This analysis has been informed by two rounds of discussions in China with Chinese political economy specialist, and meetings with professional finance and investment experts in Hong Kong.

5 Shaun Breslin, "Chinese Economic Insecurities: Where they Come From (and Why they Matter)", Eurohub4Sino Long Read 2025/1, 12th February 2025, available at https://eh4s.eu/publication/chinese-economic-insecurities-where-they-come-from-and-why-they-matter, last accessed 4th February 2026.

6 Shaun Breslin, "Parsing the Plan: Why it Matters, But Maybe Not as Much as you Think", Eurohub4Sino Policy Paper 2025/16, 1st October 2025, available at https://eh4s.eu/publication/parsing-the-plan-why-it-matters-but-maybe-not-as-much-as-you-think, last accessed 4th February 2026.

7 Shaun Breslin, "The Two Integrations and the (Increasing) Chineseness of Chinese Marxism", Eurohub4Sino Long Read 2024/1,25th March 2024,available at https://eh4s.eu/publication/The-Two-Integrations-And-The-Increasing-Chineseness-of-Chinese-Marxism, last accessed 2nd February 2026.

8 Shaun Breslin, "Parsing the Plan: Why it Matters, But Maybe Not as Much as you Think", Eurohub4Sino Policy Paper 2025/16, 1st October 2025, available at https://eh4s.eu/publication/parsing-the-plan-why-it-matters-but-maybe-not-as-much-as-you-think, last accessed 4th February 2026.

9 For details, see a short online lecture for EuroHub4Sino's sister project, ReConnect China, available at https://www.youtube.com/watch?v=P9WClZmHCuI

10 Andrew Szamosszegi and Cole Kyle (2011) 'An analysis of state- owned enterprises and state capitalism in China', US- China Economic Security Review Commission report, 26 October, available at https://www.uscc.gov/sites/default/files/Research/10_26_11_Capital-

TradeSOEStudy.pdf, p. 51, last accessed 20th January 2026.

11 "GT Voice: Industrial robot exports show China shares tech gains with intl markets", Global Times, 15th January 2026, available at https://www.globaltimes.cn/page/202601/1353238.shtml last accessed 20th January 2026.

12 Ronald Fink, "Breaking China's Grip on Rare Earth Elements", Global Finance, 6th January 2026, available at https://gfmag.com/capital-raising-corporate-finance/china-grip-rare-earth-elements/ last accessed 27th January 2026.

13 Jeremy Garlick, "How China is de-risking better than Europe", EuroHub4Sino Policy Paper 2026/6, 13th March 2026, available at https://eh4s.eu/publication/how-china-is-de-risking-better-than-europe last accessed 24th June 2026.

14 Shaun Breslin, "What's Rational for the National and What's Focal for the Local: Building a 'Unified National Economy'", Eurohub4Sino Long Read 2025/18, 18th November 2025, available at https://eh4s.eu/publication/whats-rational-for-the-national-and-whats-focal-for-the-local-towards-a-unified-national-economy, last accessed 4th February 2026.

15 "Kuoda neixu shi zhanlue zhi ju [Expanding Domestic Demand is a Strategic Move]", General Secretary Xi Jinping's important remarks on expanding domestic demand as a strategic move from October 2015 to October 2025, Qiushi, 15th December 2025, available at https://www.qstheory.cn/20251215/de041a1229c845f183c6b5a707c119b7/c.html last accessed 15th December 2025.

16 This specific quote is from Xi Jinping, "2020 nian 4 yue 10 ri zai zhongyang caijing weiyuanhui di qi ci huiyi shang de jianghua [Speech at the Seventh Meeting of the Central Financial and Economic Affairs Commission on April 10, 2020]. This forms part of the collection of speeches from Qiushi referenced above.

17 Liu Ying, "Human Capital Investment Critical Economic Booster", China Daily, 3rd February 2026, available at https://www.chinadaily.com.cn/a/202602/03/WS6981d9c4a310d6866eb3742a.html last accessed 5th February 2026.

18 Wen Jiabao, "Report on the Work of Government", 16th March 2004, available at https://en.people.cn/200403/16/eng20040316_137651.shtml last accessed 5th February 2026.

19 Shaun Breslin, "What's Rational for the National and What's Focal for the Local: Building a 'Unified National Economy'", Eurohub4Sino Long Read 2025/18, 18th November 2025, available at https://eh4s.eu/publication/whats-rational-for-the-national-and-whats-focal-for-the-local-towards-a-unified-national-economy, last accessed 4th February 2026.

20 Chi Lo, "China – Involution, deflation and structural reform", BNP Viewpoint, 11th August 2025, available at https://viewpoint.bnpparibas-am.com/china-involution-deflation-and-structural-reform/ last accessed 27th January 2026.

21 Charlie Parton, "China's Looming Water Crisis", China Dialogue, April 2018, available at efaidnbmnnnibpcajpcglclefindmkaj/https://chinadialogue-production.s3.amazonaws.com/uploads/content/file_en/10608/China_s_looming_water_crisis_v.2__1_.pdflast accessed 24th January 2026.

22 Fredrick Eghosa, "Mobile phone market share in Africa by region: Brand breakdown for 2025", Intelpoint, 14th October 2025, available at https://intelpoint.co/blogs/mobile-phone-market-share-in-africa-by-region/ last accessed 26th January 2026

23 A phrase that is often used in China to refer to the impact of a declining USA (and the West more generally) and China's rise.

24 Ji Deqiang, Liu Qianhui and Liu Na, "Canada's China recalibration a bellwether for other Western powers", Global Times, 19th January 2026, available at https://www.globaltimes.cn/page/202601/1353628.shtml last accessed 20th January 2026.

25 "China talks up EU trade deal, years after investment pact was frozen", Reuters, 6th November 2025, available at https://www.reuters.com/world/china/china-says-it-is-willing-explore-trade-investment-agreements-with-eu-2025-11-06/ accessed 26th January 2026.

26 Eunice Xu, "The great chip leap: China's semiconductor equipment self-reliance surges past targets', South China Morning Post, 9th January 2026, available at https://www.scmp.com/tech/big-tech/article/3339366/great-chip-leap-chinas-semiconductor-equipment-self-reliance-surges-past-targets last accessed 26th January 2026.

27 Shaun Breslin, "When Things No Longer Inevitably Get Better: The Political Economy of Demographic Change in China", Eurohub4Sino Policy Paper 2025/17, 4th November 2025, available at https://eh4s.eu/publication/when-things-no-longer-inevitably-get-better-the-political-economy-of-generational-change-in-china, last accessed 3rd February 2026.

28 Li Qiang, "Report on the Work of the Government", 5th March 2025, available at https://english.www.gov.cn/atts/stream/files/67d179afc6d0c78809900055 last accessed 26th January 2026.

29 James Kynge, Global Tech Wars: China's Race to Dominate, Pushkin Industries Audiobook, 2025.

Chapter 2

Science, Technology and Innovation in China: Challenges and Opportunities

Łukasz Gacek, Marcin Grabowski, Weronika Krupa,
Paolo Pizzolo, Błażej Sajduk, Sławomir Wyciślak

Introduction

In recent years, China has established itself as a global pioneer of science, technology and innovation. Covering diverse sectors and disciplines, it has affirmed its leading position within the global tech environment. Currently, China views itself as a world leader in green tech,[1] a giant of AI innovation,[2] an advanced developer of military technology[3] and even a pioneer in space exploration,[4] to name a few. China excels in producing transportation, is the world's first EV manufacturer, strengthens its semiconductor sector and pursues rapid innovation in robotics and ICT.[5]

Though remarkable, China's technological growth is not without its obstacles: the COVID-19 pandemic, global geopolitical shifts and internal economic turbulations have all affected the Chinese economy and technology sectors.[6] This chapter will present an overview of the Chinese tech industry and identify its major strengths, weaknesses, opportunities and threats. It will base its analysis on the hard work of researchers and authors within the EuroHub4Sino project, allowing for the project's findings to establish a firm base for future examinations.

Strengths

Systemic advantages, linking research and development infrastructure and expenditure, political support, and industrial implementation capacity

China's position in science, technology and innovation (STI) is shaped by a set of structural advantages that extend beyond individual technological achievements. What matters is not only what China produces, but how its system links policy direction, industrial development and implementation capacity. This produces an innovation model built on coordination, scale and the ability to move quickly from development to deployment. These strengths do not operate in isolation. In several cases, they are closely linked to the structural vulnerabilities discussed in the following sections.

A defining feature of this model is the state's capacity to coordinate technological development over extended time horizons. Industrial policy aligns political priorities with sectoral strategies, reducing fragmentation and enabling sustained investment in selected technologies. Instruments such as Five-Year Plans provide direction while maintaining continuity. In practice, this allows resources to be mobilized and redirected relatively quickly. This has been particularly visible in sectors identified as strategic, including artificial intelligence, advanced manufacturing and clean energy. The system is less dependent on short-term market signals than in more decentralized economies, which gives it a degree of stability under external pressure and allows China to maintain momentum in key technological domains.[7]

The scale of the domestic innovation ecosystem is equally important. China combines a large internal market with dense networks of firms, research institutions and production capacity. In major urban clusters, universities, startups and large technology firms operate in close proximity, shortening the distance between research, development and commercialization. Companies such as Huawei, Tencent and Alibaba Group play a central role, not only as market actors but also as providers of infrastructure and investment. At the same time, the education system produces a large number of STEM graduates. This matters because scale in human capital supports both incremental improvements and more advanced research, strengthening China's ability to sustain technological development across sectors.

Digital ecosystem for domestic market development and international trade

These dynamics are reinforced by the size of China's digital ecosystem. As of early 2026, the country has more than 1.1 billion internet users, with penetration exceeding 80 per cent. Connectivity is overwhelmingly mobile-based, which allows digital services to spread rapidly across regions and income groups. User engagement is high across multiple domains, including payments, entertainment and online services. Adoption of newer technologies is also notable, with hundreds of millions of users engaging with generative AI applications. This creates a large data environment that feeds back into technological development and provides China with a structural advantage in data-driven innovation.

This is particularly visible in the e-commerce sector. China is not only the largest e-commerce market globally; its scale exceeds that of several other major markets combined. In 2025, online retail sales reached approximately $2.2 trillion (159.7 trillion yuan), reflecting an annual growth rate of 8.6%. E-commerce accounted for over a quarter of total retail sales (around 26%), confirming its structural importance in the economy.[8] Penetration levels are high, and the vast majority of transactions are conducted via smartphones. Platforms such as Taobao, Tmall, JD.com and Pinduoduo operate at a scale that allows for continuous

testing and refinement of new solutions. Scale translates directly into data, and data into technological capability. Artificial intelligence is already deeply embedded in these platforms, particularly in logistics, customer service and recommendation systems. This creates an environment in which applied innovation can be tested and deployed rapidly, reinforcing China's position in digital industries.

Clear energy sector global advantage

A similar pattern is visible in the clean energy sector. Electric vehicles, batteries and photovoltaic technologies are often treated as separate industries, but in the Chinese case they function as a connected system. Electric vehicle production reached approximately 16.6 million units in 2025, with EVs accounting for close to half of new car sales. In some segments, they are already becoming the default rather than the alternative. Companies such as BYD Company illustrate how scale and technological capability reinforce each other, strengthening China's position in the global transition toward electric mobility.

Batteries sit at the centre of this system, linking transport with energy infrastructure. They are used both in vehicles and in energy storage. China plays a leading role in their production and export, consolidating its position in global supply chains. Photovoltaic technologies complete the picture. Capabilities extend across the value chain, from manufacturing to installation and grid integration. The key point is not the strength of each sector individually, but the way they interact. Electric vehicles require batteries; batteries depend on energy systems; renewable energy relies on storage and grid capacity. This creates a self-reinforcing cycle that strengthens China's position in the global energy transition. By 2025, the clean energy sector was valued at approximately $2.1 trillion (15.4 trillion yuan), accounting for around 11.4% of the economy, up from 7.3% in 2022. Importantly, clean energy industries, including photovoltaics, new energy vehicles and batteries, contributed to over one-third of GDP growth and more than 90% of investment growth, underlining their central role in sustaining China's economic expansion.[9] Without this segment, overall growth would have been significantly weaker and would likely have fallen short of official targets.[10]

Openness and support of cutting-edge R&D sectors

At the same time, China is actively shaping future technological trajectories. Recent policy frameworks emphasize a shift toward "high-quality development", moving away from growth based primarily on capital accumulation and low-cost labour. The focus is increasingly on productivity, innovation and technological upgrading. The concept of "new quality productive forces" reflects this shift, placing advanced technologies at the centre of economic transformation. It's important to stress that Chinese R&D expenditure share in GDP has reached 2.69% in 2024 (close to the OECD average of 2.72%, with the EU average 2.13 and the

U.S. average 3.44), surpassing the U.S. in the absolute amount spend on R&D (China: 1 028 344 million USD, U.S.: 1 009 275 million USD – PPP-adjusted).[11]

This is reflected in the prioritization of a set of frontier sectors expected to drive future growth. These include artificial intelligence, quantum technologies, controlled nuclear fusion, biotechnology, brain science, advanced medical innovation, deep-sea and polar exploration, and space technologies. The breadth of these areas is deliberate. The objective is not only to compete within existing industries, but to position China in sectors likely to define future technological competition. This prioritization is supported by long-term industrial policy, public funding and private capital, allowing for coordinated development from research to commercialization and deployment. The focus is not only on breakthrough innovation, but also on scaling and integrating new technologies into the economy. At the same time, traditional industries are being upgraded through digitalization and automation, enabling gradual restructuring while maintaining existing strengths. This dual approach helps limit transition risks and supports broader productivity gains.

Technological self-reliance

In addition to this, China is placing increasing emphasis on technological self-reliance. In the context of growing geopolitical tensions, reducing dependence on foreign technologies has become a central objective. From an STI perspective, what matters is the scale of this effort. Investment in research and development continues to grow, reaching over RMB 3.9 trillion in 2025, with policy targets set to sustain annual growth of above 7 per cent in the coming years.[12] This suggests that R&D intensity will continue to increase, supporting long-term technological capacity and reducing external dependencies. Priority is given to sectors considered critical for technological capability, including semiconductors, industrial machinery, software, advanced materials and biomanufacturing. Additionally, certain technologies are not only led by China, but are also highly monopolised by this country. They include i.a. nanoscale materials and manufacturing, coatings, advanced radio-frequency communications (incl. 5G and 6G), hydrogen and ammonia for power, supercapacitors, electric batteries, synthetic biology, photonic sensors. It is worth mentioning that critical technologies tracked by ASPI Critical Technology Tracker are predominately led by China, minor of the by the U.S., but none of them by the European Union.[13]

At the same time, the role of enterprises in the innovation system is being expanded. Policy measures aim to strengthen venture capital, improve talent mobility, enhance tax incentives for R&D and reinforce intellectual property protection. This points to a more diversified innovation model in which state and market mechanisms interact, strengthening China's capacity to build technological autonomy.

Control over key raw materials, including rare earth elements

Another factor reinforcing China's position is its control over key raw materials and value chains, particularly rare earth elements. China is not only a major producer but also dominates processing and downstream applications. These materials are critical for sectors such as batteries, renewable energy, electronics and semiconductors. This position reduces China's exposure to supply-side disruptions and strengthens its leverage within specific segments of the global technology economy. China is basing is especially focused on getting control over rare earth elements, as they're crucial for most sophisticated industries, hence not only focuses its own reserves, but also actively gains control on resources from other countries. According to INSS report China controls 70% of mining, 90% of processing and almost 40% of global reserves of REEs.[14]

Finally, China's manufacturing base remains a central pillar of its STI system. The country continues to occupy a leading position in global industrial production, supported by extensive and integrated supply chains. This facilitates the transition from research to large--scale production. In many innovation systems, this stage represents a bottleneck. In China's case, implementation capacity is a core strength. The growing use of automation and advanced manufacturing technologies further reinforces this advantage, reducing the gap between innovation and commercialization and strengthening China's competitiveness in global markets.

Taken together, these elements point to a system in which policy coordination, market scale and industrial capacity are closely interconnected. In several cases, the same features that enable rapid development and deployment also generate the structural vulnerabilities discussed in the following section. At the same time, they explain why China is able not only to develop new technologies, but also to deploy them at scale and integrate them across sectors, maintaining a strong position in global technological competition.

Weaknesses

Despite China's rapid ascent as a global leader in science, technology, and innovation (STI), significant structural weaknesses persist within its technological model. These weaknesses are not only internal to China's innovation ecosystem but also emerge in its external projection of technological power, particularly in regions such as the Western Balkans (WBs). Taken together, they reveal systemic vulnerabilities linked to governance structures, technological dependence dynamics, and the dual-use nature of digital infrastructures.

Politicization and instrumentalization of technology in China

A first major weakness concerns the politicization and instrumentalization of technology within China's governance model, which constrains the credibility and attractiveness of

its innovation ecosystem internationally. In this sense, Chinese technological expansion is closely intertwined with the logic of "sharp power", whereby digital technologies are deployed not only for economic development but also for political influence, propaganda, and coercion.[15] This blurring of boundaries between civilian innovation and political control reduces trust in Chinese technological systems, particularly in democratic contexts. Rather than being perceived as neutral tools of modernization, Chinese technologies – especially in the digital domain – are often associated with surveillance, manipulation, and state control.[16] This perception constitutes a structural weakness, as it limits the global scalability and legitimacy of Chinese STI exports, particularly in regions with strong regulatory frameworks such as the European Union (EU).

Links between Chinese technology firms and state intelligence structures

Closely related to this issue is the embedded link between Chinese technology firms and state intelligence structures, which raises significant concerns regarding data governance and sovereignty. As illustrated in the case of Serbia's "Safe City" project, Chinese companies such as Huawei operate within a legal framework that obliges them to cooperate with national intelligence authorities. This creates systemic vulnerabilities for host countries, as sensitive data – such as biometric information collected through facial recognition systems – may be accessible to external actors. In this sense, Chinese digital infrastructures can compromise the confidentiality, integrity, and availability of data systems, thereby exposing governments and institutions to cybersecurity risks.[17] From an STI perspective, this represents a critical weakness: technological advancement is undermined by governance structures that erode trust and create long-term dependency risks.

Risks connected with the dual-use of Chinese technological innovation

A third weakness lies in the dual-use nature of Chinese technological innovation, particularly in digital infrastructure and telecommunications. While dual-use capabilities are not unique to China, the integration of civilian and military objectives within China's broader strategic framework amplifies the risks associated with technology transfer and adoption. Digital technologies are frequently embedded within hybrid warfare strategies, including cyberattacks, disinformation campaigns, and influence operations.[18] This dual-use ambiguity complicates international cooperation in science and technology, as foreign partners must account for potential security externalities. In this sense, China's STI model generates a paradox: its technological sophistication increases its global influence, but the securitization of innovation simultaneously restricts its acceptance in sensitive sectors.

Dependence-inducing nature of Chinese technological ecosystems

Another structural weakness concerns the dependence-inducing nature of Chinese techno-

logical ecosystems, particularly in emerging and developing regions. Chinese investments in digital infrastructure, such as 5G networks, smart surveillance systems, and telecommunications platforms, often create long-term structural dependencies that are difficult to reverse. Technological infrastructure may translate into long-term structural dependency, highlighting the asymmetrical nature of these relationships. Unlike traditional economic dependencies, digital ecosystems are deeply embedded in governance, security, and everyday societal functions, making disengagement costly and technically complex. While this may initially appear as a strength for China, it also constitutes a weakness: dependency-based influence is inherently fragile, as it can provoke political backlash, regulatory pushback, and efforts at diversification, particularly within the EU's "de-risking" framework.

Furthermore, China's STI expansion reveals a reliance on hybrid and indirect mechanisms of influence, which may limit its effectiveness in high-trust environments. Chinese technological engagement often operates through proxy networks, media partnerships, academic exchanges, and digital platforms designed to shape public discourse.[19] While such strategies can be effective in contexts characterized by weak institutions and limited regulatory oversight – such as parts of the WBs – they are less effective in consolidated democracies. This creates a structural limitation in China's ability to translate technological capabilities into sustainable influence across diverse governance environments.

Cybersecurity risks

In addition, the security vulnerabilities associated with Chinese digital technologies represent a critical weakness in the STI domain. Cybersecurity risks – including data breaches, cyber intrusions, and system manipulation – are repeatedly identified as central concerns.[20] These risks are not merely theoretical but are embedded in the architecture of digital systems that may be susceptible to exploitation. The expansion of Chinese 5G networks, for instance, has been widely debated due to concerns over potential backdoors and supply chain vulnerabilities. Such issues undermine the reliability of Chinese technological solutions and reinforce scepticism among policymakers and security communities.

Another important limitation relates to the context-dependent effectiveness of Chinese technological influence. To be sure, the impact of Chinese digital and informational strategies varies significantly across regions, with influence often overstated in certain contexts. For example, while public opinion in the WBs may be relatively favourable toward China, this does not necessarily translate into deep or uncontested influence. Moreover, the reliance on human-mediated disinformation and influence operations – rather than purely technological sophistication – suggests that China's STI capabilities in this domain may not be as advanced or autonomous as often assumed. This reliance introduces inefficiencies and limits scalability.

Normative incompatibility between China's technological governance model and European regulatory frameworks

Finally, the normative incompatibility between China's technological governance model and European regulatory frameworks constitutes a structural weakness in the context of EU-China relations. European approaches to STI emphasize transparency, data protection (e.g., GDPR), and the rule of law, whereas China's model prioritizes state control, data centralization, and political stability. This divergence creates friction in areas such as data sharing, interoperability, and joint innovation. As illustrated in the Serbian case,[21] the integration of Chinese-built systems into European structures raises concerns about intelligence security, data flows, and institutional compatibility. Such incompatibilities limit the potential for deeper technological cooperation and reinforce calls for strategic autonomy within the EU.

In sum, China's STI model is characterized by a series of interconnected weaknesses that stem from its political foundations, governance structures, and strategic use of technology. These include the politicization of innovation, lack of trust in data governance, dual-use ambiguities, dependency dynamics, cybersecurity vulnerabilities, and normative divergence with European standards. While these weaknesses do not negate China's technological achievements, they significantly constrain the global acceptance, sustainability, and long-term impact of its STI expansion – particularly in regions where security, transparency, and regulatory alignment are paramount.

Opportunities

China's opportunities are systemic rather than sector specific. It's main technological advantage in the next decade is its ability to leverage its four strengths – market scale, industrial depth, policy-driven finance, and rapid commercialization. It also stems from the interaction between state planning, industrial ecosystems, capital allocation, and rapid deployment, which together allow Beijing to transform external pressure for technological self-reliance into a broader strategy of industrial upgrading. This is especially important in a period when traditional drivers of growth are weakening and China is seeking new sources of productivity, competitiveness, and international leverage.

Global Artificial Intelligence boom

At the heart of China's current industrial shift lies artificial intelligence – not as a standalone niche, but as a cross-cutting driver of the country's broader economic restructuring. The AI+ agenda signals a move toward what Beijing calls "new quality productive forces" and positions AI less as one sector among many than as a system-wide enabler of industrial upgrading and governance modernization.[22] China's 15th Five-Year Plan places AI at the center of digital-intelligent development by explicitly linking it to scientific and technological

innovation, industrial development, culture, public services, and social governance, while also promoting AI-enabled applications across manufacturing, education, healthcare, and other sectors. At the operational level, the AI+ agenda combines computing power, model and algorithm development, and high-quality data supply with sectoral implementation, it calls for national compute hubs, high-performance intelligent computing resources, multimodal models, agents, embodied intelligence, open-source ecosystems, and dedicated high-quality datasets for sectors such as energy, transport, manufacturing, education, health, and finance. This gives China an opportunity to compete not only through frontier model development, but also through the rapid and relatively low-cost diffusion of AI across the real economy. Even if China does not lead every segment of the global AI frontier, it may still gain significant advantages through industrial application, deployment at scale, and the accumulation of commercially valuable data—an assessment consistent with broader evidence of China's expanding weight across critical technologies and with expert expectations of especially strong Chinese progress in AI in 2026.[23]

External pressure connected with a need to construct sovereign digital stack

A second major opportunity is the construction of a more sovereign digital stack under external pressure. U.S.-led export controls have not eliminated Chinese technological ambitions; rather, they appear to have reinforced Beijing's emphasis on self-reliance in key and core technologies, with strong emphasis on integrated circuits, system software, advanced materials, and biomanufacturing, while simultaneously expanding the nationwide integrated computing power network and the broader Digital China agenda.[24] The 15th Five-Year Plan proposal explicitly calls for strengthening the efficient supply of compute, algorithms, and data, implementing the "AI+" initiative, and supporting high-tech enterprises as well as S&T-based small and medium-sized firms, while outside analysis interprets the National Unified Computing Power Network as a system for coordinating infrastructure, energy, scheduling, and markets at national scale in order to maximize the utility of available computing resources.[25] At the same time, Reuters reports that Chinese banks are redirecting capital toward advanced manufacturing, AI, semiconductors, and biotechnology, with some institutions targeting around 30 percent growth in new lending to high-tech and innovation firms and outstanding loans to small and medium-sized tech firms reaching 3.63 trillion yuan at the end of 2025.[26] If successful, this combination of industrial planning, domestic financing, and ecosystem-building could reduce China's exposure to external chokepoints while creating a more self-reinforcing innovation environment at home.

Green turn in global economy and politics

China's dominance in the green technology sector is no longer just about catching up, it is increasingly about shaping the terms of global competition. A third opportunity lies in the

sectors in which China has already moved from technological catch-up to system-shaping market power namely green technologies, electric vehicles, batteries, telecommunications and drones. Rhodium Group's assessment of the legacy of Made in China 2025 identifies some of China's clearest successes in clean technologies, EVs and connected vehicles, information and communication equipment, drones, and high-tech ships, especially in sectors characterized by high capital intensity, strong state-backed demand, and the absence of an entrenched global leader.[27] The IEA similarly shows that China remained the world's EV manufacturing hub in 2024, accounting for more than 70 percent of global EV production and almost two-thirds of global electric car sales, while Chinese producers controlled about 85 percent of global battery manufacturing capacity and dominated cathode and anode active material production.[28] Taken together, these advantages make the opportunity here larger than simple export expansion – they give China growing leverage over the industrial architecture of transport, storage and electrification systems. From a European perspective, Bruegel argues that Chinese EV investment can support decarbonization while simultaneously creating strategic risks and new dependencies, underscoring that China's role is now system-shaping rather than merely competitive.[29] Moreover, Rhodium argues that the core objectives of Made in China 2025 did not disappear when the label faded from official discourse in 2018, but continued under alternative frameworks and initiatives, suggesting that Beijing is consolidating rather than relaxing its advantage in strategically important green industries.[30]

Global shift towards physical AI (including robotics, industrial automation)

A fourth opportunity concerns robotics, industrial automation, and the broader shift toward physical AI. This is particularly important because automation can serve two goals simultaneously, because it can expand China's position in advanced manufacturing and it can preserve competitiveness in more traditional sectors by reducing labor dependence.[31] The 2026 government work agenda lists robotics, aviation and aerospace, integrated circuits, biomedicine, and the low-altitude economy among the industries to be actively fostered, alongside explicit plans to use robots in labor-short sectors and to increase investment in embodied AI and humanoid robotics. China's progress in foundational technologies such as AI, advanced materials, and semiconductors is likely to reinforce downstream industries including robotics and telecommunications.[32] Crucially, it highlights how robotics and "dark factory" models may allow China not only to lead in high-tech sectors, but also to remain competitive in industries previously defined by low-cost labor. This makes automation one of the clearest channels through which China can respond to demographic pressure while strengthening export capacity.

Constant rise of demand on biotechnology, biomedicine, and biomanufacturing technologies

A fifth opportunity lies in biotechnology, biomedicine, and biomanufacturing. Unlike green technologies, this is not yet an area of fully consolidated Chinese dominance, which is precisely why it should be understood as an opportunity rather than a current strength. Official Chinese planning documents for the 2026–2030 period now place biomedicine among the strategic emerging industries and biomanufacturing among the future industries expected to become new drivers of growth.[33] MERICS describes China as a global powerhouse in biotech research, and ASPI's *Critical Technology Tracker* likewise places China first in synthetic biology and biological manufacturing by high-impact research output.[34] China was involved in 29 percent of new clinical trials in 2023, compared with 16 percent for Europe, giving Chinese firms important advantages in speed, recruitment scale, and cost efficiency in drug development.[35] Yet much of China's biotech success still lies in the earlier stages of the innovation chain, and biomanufacturing remains significantly smaller than in the United States or Europe, in 2023 it accounted for only 2.4 percent of China's manufacturing added value, compared with 11 percent in the United States and 6.2 percent in Europe.[36] The opportunity, then, is to move from research strength and clinical scale toward deeper commercialization in innovative drugs, genomics, medical AI, and bio-industrial production. Given China's ageing society and expanding policy support for health and elderly care, biotechnology remains one of the most consequential medium-term openings in the STI landscape.[37]

Development of frontier sectors and "future industries"

A sixth opportunity is embedded in the category of "future industries," where Beijing is attempting to enter frontier sectors early enough to influence standards, commercialization pathways, and ecosystem formation.[38] Official 2026 formulations identify quantum technology, biomanufacturing, green hydrogen and nuclear fusion power, brain-computer interfaces, embodied AI, and 6G mobile communications as future industries and new drivers of growth.[39] This matters because China is not treating these areas merely as abstract long-term aspirations. Instead, these sectors are being systematically backed by investment-growth and risk-sharing mechanisms, future-industry demonstration projects, and the active exploration of viable business models and application scenarios. This practical approach is further reinforced by the establishment of concept-verification centers and future-industry pioneer zones.[40] The quantum sector already illustrates how this logic works in practice. *China Briefing* describes a policy shift from research grants toward commercialization support, including government procurement, manufacturing subsidies, application deployments, and large regional funds, while CSIS documents cloud access, early commercial rollouts, and ecosystem building across several quantum modalities.[41] Whether all of

these sectors mature at the same speed is less important than the fact that China is positioning itself early in the standard-setting and early-deployment phase.[42] In the case of quantum communications, practical deployment experience can translate into influence over standards and system architecture, and by extension, early scale can become a form of strategic power.

China's strategic opportunities remain particularly strong outside the traditional Western core. As current analyses highlight, Chinese enterprises are experiencing a significant shift in their global reputation. In many sectors, they have successfully shed the label of mere low-cost producers, emerging instead as highly competitive actors capable of combining affordable pricing with reliable quality and growing technological sophistication. This evolution is especially impactful in emerging markets. There, lower barriers regarding brand prestige and highly fragmented demand allow Chinese companies to operate successfully across premium, mid-range, and mass-market tiers simultaneously.

This dynamic extends across the Global South, where pragmatic development objectives generally outweigh the political reservations often seen in North America or Europe. For European markets, the current policy of „de-risking" does not mean the end of Chinese economic opportunities; rather, it suggests that such engagement will become more targeted and strategic. Beijing will continue to find valuable openings wherever Europe's drive for decarbonization, digital transformation, and cost efficiency intersects with China's established strengths—namely in battery technology, electric vehicles, power infrastructure, telecommunications, and industrial artificial intelligence. Ultimately, Beijing's primary advantage lies not in any single industry, but in its capacity to translate its massive domestic scale into exportable technological ecosystems, thereby securing lasting influence over global standards and supply chains.

Threats

China's ambitions to lead in Science, Technology and Innovation (STI) face a convergence of external pressures that could, singly or in combination, significantly constrain the trajectory of its technological rise. These threats are not trivial and cannot be overcome by state resources alone. They are systemic and mutually reinforcing.

Coordinated system of technology export controls (led by the U.S.)

The structurally significant external threat to Chinese STI capacity is the coordinated system of technology export controls assembled by the United States and its allies since 2018, progressively tightened through the Biden administration's October 2022 and 2023 rounds of controls, and extended under the Trump administration's March 2025 actions.[43] These measures target the precise technological layers on which advanced innovation depends:

high-bandwidth memory, extreme ultraviolet (EUV) lithography equipment, advanced graphics processing units (GPUs), and the electronic design automation (EDA) software without which chip design is impossible. Semiconductors are the focal point. China has made progress in producing its own chip manufacturing equipment. By the end-2025, domestically developed equipment accounted for 35 per cent of China's requirements — up from 25 per cent in 2024 and above Beijing's own 30 per cent target.[44] But this progress does not resolve the deeper dependency. Approximately two-thirds of the semiconductors consumed in China are still sourced from foreign suppliers. This is a structural vulnerability across China's most strategic STI sectors — from military AI to autonomous vehicles and quantum computing. The United States exploits this dependency with precision. Performance thresholds on chip speed and compute density determine exactly which processors are restricted. Chinese firms are forced to operate below the technological frontier.[45] China develops workarounds: multipatterning on DUVi equipment, Huawei's Ascend ecosystem, domestic GPU startups. The controls then tighten in response.[46] ASML, the sole global producer of EUV lithography systems, derived a disproportionately large share of its 2024 system sales from China, largely through strong demand for DUV tools, before new Dutch and US restrictions moved to curtail this access.[47]

Limitations in joint research between China and technologically leading nations

China's innovation capacity has historically depended on access to the global scientific ecosystem. That access is now under threat. China–US co-authorship of scientific publications declined sharply between 2019 and 2023.[48] This matters because international collaboration has been a primary engine of Chinese research quality and frontier access. Its securitisation which is driven by mutual restriction regimes on both sides imposes a long--run cost that domestic investment alone cannot compensate for.[49] The 15th Five-Year Plan (2026–2030) is expected to accelerate domestic substitution across technology sectors. This will deepen isolation from global knowledge flows. The risk is that China's state-directed innovation system becomes increasingly self-referential. Diminishing returns and self-defeating internal competition, what Chinese scholars call involution may emerge within the innovation system itself.[50] State investment can fund laboratories. It cannot easily replicate the cross-border knowledge exchange that drives genuine scientific breakthroughs.

Talent retention and the brain drain paradox

China produces more top-tier AI researchers by country of origin than any other nation. This is not matched by retention. Most elite Chinese-born researchers in frontier fields work at US-based institutions rather than in China. Production and retention are not the same asset. A country can lead in generating frontier talent and still lose the strategic ben-

efit of it. China currently does both. The causes are structural. Financial incentives and repatriation programmes have had partial effect but cannot replicate what drives talent to leave in the first place. Research freedom, access to frontier peers, and the informal knowledge ecosystems that form around leading Western institutions are not administratively reproducible. When researchers leave, they take with them not only their own capabilities but the collaborative networks through which frontier science moves. These networks do not reconstitute simply because an individual returns. This matters beyond the individual level. China's STI strategy depends on sustaining a frontier research base across multiple technology domains simultaneously. That requires anchoring talent, not only producing it. Gaps in retention accumulate over time into gaps in the collective knowledge base that no volume of domestic R&D spending fully compensates for. Hardware dependencies can in principle be substituted given sufficient investment. Human capital at the frontier operates differently. It is built slowly, through cumulative exposure to the best work in a field and once lost to a competitor system it does not return on demand.

Water shortages limiting semiconductor and high-performance computing capabilities

Advanced semiconductor manufacturing and high-performance computing are among the most water-intensive industrial processes in the modern economy. Parton's warning remains relevant: China's leadership can mobilise financial resources, but it ‚cannot print water'.[51] China's semiconductor manufacturing clusters face water stress regardless of geography. Northern hubs such as Beijing and Xi'an sit in genuinely arid regions. The Yangtze River Delta hosts the largest concentration of fabs in the country. It is eastern and coastal, not northern or inland, yet the WRI Aqueduct Atlas classifies it as facing extremely high--water stress. Industry, agriculture, and urban demand compete for the same depleted systems. The constraint is not regional, it is national.[52] This is a physical constraint that state investment cannot remove. As China scales its high-tech ambitions, this constraint becomes more binding, alongside the water demands of a rapidly urbanising population and the agricultural sector. These pressures do not operate independently. The push for domestic self-sufficiency in semiconductors concentrates investment decisions centrally, which reinforces the political oversight structures that constrain the research environment, which in turn makes retaining the researchers the strategy requires more difficult. These are not separate problems. China has made measurable progress in semiconductors reaching 35 per cent equipment localisation ahead of its own target. The harder question is whether it can be sustained across multiple fronts simultaneously, in an environment that the preceding pressures are making progressively more difficult to manage.[53]

Taiwan's technological domination in specific sectors

Taiwan represents a structural threat to China's STI trajectory. TSMC produces the

overwhelming majority of the world's most advanced chips. Any military contingency in the Taiwan Strait would trigger immediate allied sanctions. Technology embargoes would follow. Supply chains on which China's high-tech sectors depend would be severed. This is not a remote scenario. It is priced into the investment decisions of every major technology firm in the region.

Changing EU approach towards STI cooperation with China

The European Union's de-risking framework poses a distinct external constraint. The EU Chips Act and foreign subsidy the Foreign Subsidies Regulation are reducing European appetite for technological interdependence with China. These are not temporary political positions. They reflect durable structural shifts in how China's most significant trading partners are reorienting their STI strategies.

Conclusion

Having established itself as a leading technological superpower, China is met with both outstanding opportunities and significant challenges to secure its position. China excels in innovation: its robotics, clean energy, ICT and chip sectors are among the worlds' best. Its centralized governance allows the PRC to conduct large-scale projects over prolonged periods of time without the uncertainty over governmental or systemic change. Moreover, with its vast capital, highly digitalised society and outstanding array of natural resources, China has the potential to take the lead in terms of global technological advancement.

Nonetheless, China too faces obstacles and threats, both internal and external. Its centralized structure means that its sectors are highly interconnected and interdependent, vulnerable in times of struggle. Its reliance on international economic exchange and partnerships highlight its lack of self-sufficiency, for example in the semiconductor sector. China's mixed global reputation leads to a lack of trust among foreign actors, while its digitalised ecosystem is prone for cyberattacks and security risks.

If China were to become economically isolated, it could become a major threat to its STI industry – though this could also, ironically, push it towards its goal of self-reliance. With Taiwan's global lead in the semiconductor sector, the numerous tariffs imposed on the PRC by the Trump administration as well as China's changing power projection in the Global South, the future of Chinese science, technology and innovation remains dependent on both internal and external forces.

Endnotes

1 Senz, A. 2025. EuroHub4Sino Policy Paper 2025/11. https://doi.org/10.31175/eh4s.5294.

2 Dziwisz, D. & Sajduk, B. 2024. EuroHub4Sino Policy Paper 2024/12. https://doi.org/10.31175/eh4s.2014.12.

3 Abassy, M. & Krupa, W. 2025. EuroHub4Sino Policy Paper 2025/8. https://doi.org/10.31175/eh4s.3c7e.

4 Diallo, F. 2025. EuroHub4Sino Policy Paper 2025/9. https://doi.org/10.31175/eh4s.2ca6.

5 MSCI. 2021. China and the race for global tech leadership: Opportunities and risks in the innovation economy. https://www.msci.com/documents/1296102/22103036/ThematicIndex-ChinaTechcbr-en.pdf.

6 Breslin, S. 2025. EuroHub4Sino Policy Paper 2025/17. https://doi.org/10.31175/eh4s.bdd1.

7 Outline of the 15th Five-Year Plan for National Economic and Social Development of the People's Republic of China (Draft) (中华人民共和国国民经济和社会发展第十五个五年规划纲要(草案)), March 2026, on-line: https://npcobserver.com/wp-content/uploads/2026/03/15th-Five-Year-Plan-Draft_NON-FINAL.pdf, last accessed: April 17, 2026.

8 Economic Development Advances Toward Higher Quality and Innovation (2025年经济发展向新向优 预期目标圆满实现), National Bureau of Statistics of China (国家统计局), January 19, 2026, on-line: https://www.stats.gov.cn/sj/zxfbhjd/202601/t20260119_1962330.html?utm_source=chatgpt.com, last accessed: April 17, 2026.

9 Lauri Myllyvirta, Belinda Schaepe, Analysis: Clean energy drove more than a third of China's GDP growth in 2025, Carbon Brief, February 5, 2026, on-line: https://www.carbonbrief.org/analysis-clean-energy-drove-more-than-a-third-of-chinas-gdp-growth-in-2025/ last accessed: April 17, 2026

10 Lauri Myllyvirta, Belinda Schaepe, Analysis: Clean energy drove more than a third of China's GDP growth in 2025, Carbon Brief, February 5, 2026, on-line: https://www.carbonbrief.org/analysis-clean-energy-drove-more-than-a-third-of-chinas-gdp-growth-in-2025/ last accessed: April 17, 2026.

11 OECD overall R&D growth stable; government R&D budgets decline and reorient towards defence, Statistical Release, March 31, 2026, on-line: https://www.oecd.org/en/data/insights/statistical-releases/2026/03/oecd-overall-rd-growth-stable-government-rd-budgets-decline-and-reorient-towards-defence.html, last accessed: April 17, 2026.

12 Draft Outline of the 15th Five-Year Plan Proposes Average Annual Growth of Over 7% in National R&D Expenditure (规划纲要草案提出'十五五'我国全社会研发经费投入年均增长7%以上), Xinhua (新华), March 6, 2026, on-line: https://www.gov.cn/zhuanti/2026nztj/2026qglh/yw/202603/content_7061044.htm, last accessed: April 17, 2026.

13 J. Gaida, J. Wong-Leung, S. Robin and D. Cave, ASPI Critical Technology Tracker, Australian Strategic Policy Institute, Canberra 2023, on-line: https://ad-aspi.s3.ap-southeast-2.amazonaws.com/2023-08/ASPIs%20Critical%20Technology%20Tracker.pdf?VersionId=nVmWySgLSX2FMaS1U.uQVgQvvd_W427G, last accessed: April 17, 2026.

14 Y. Kalinski, How China is Acquiring Control of Global Metal & Mineral Markets, The Institute of National Security Studies, on-line: https://www.inss.org.il/strategic_assessment/metal/, last accessed: Apr. 17, 2026.

15 Pizzolo, P. 2024. Ukraine and the Debacle of Russian Soft Power. The International Spectator, 59(2), 37-57. https://doi.org/10.1080/03932729.2024.2316746.

16 Pizzolo, P. 2024. EuroHub4Sino Policy Paper 2024/9. https://doi.org/10.31175/eh4s.2014.09.

17 Pizzolo, P. 2024. EuroHub4Sino Policy Paper 2024/9. https://doi.org/10.31175/eh4s.2014.09.

18 Pizzolo, P. 2024. Ukraine and the Debacle of Russian Soft Power. The International Spectator, 59(2), 37-57. https://doi.org/10.1080/03932729.2024.2316746

19 Pizzolo, P. 2024. EuroHub4Sino Policy Paper 2024/9. https://doi.org/10.31175/eh4s.2014.09.

20 Pizzolo, P. 2024. EuroHub4Sino Policy Paper 2024/9. https://doi.org/10.31175/eh4s.2014.09.

21 Vladisavljev, S. China's 'Digital Silk Road' Enters the Western Balkans. Association for International Affairs, 2021.

22 Government of the People's Republic of China. 2026. Outline of the 15th Five-Year Plan for National Economic and Social Development of the People's Republic of China (2026–2030). https://big5.www.gov.cn/gate/big5/www.gov.cn/yaowen/liebiao/202603/content_7062633.htm

23 MERICS. 2025. MERICS China Forecast 2026: High expectations for Chinese innovation, low expectations for relations with US and EU. https://merics.org/en/comment/merics-china-forecast-2026-high-expectations-chinese-innovation-low-expectations-relations; Wong Leung, J., Robin, S. & Cave, D. 2024. ASPI's two-decade critical technology tracker: The rewards of long-term research investment. Australian Strategic Policy Institute. https://www.aspi.org.au/report/aspis-two-decade-critical-technology-tracker/

24 Central Committee of the Chinese Communist Party. 2026. Proposal of the Central Committee of the Chinese Communist Party on drawing up the 15th Five-Year Plan for national economic and social development [Translation]. Center for Security and Emerging Technology. https://cset.georgetown.edu/publication/china-fourth-plenum-proposal-2026/; Dorman, D. 2026. China's National Unified Computing Power Network: Wired for AI. Digital China Wins the Future. https://digitalchinawinsthefuture.com/china-national-unified-computing-power-network/; Reuters. 2026. Chinese banks boost loans to tech sector as Beijing ramps up AI push. https://www.reuters.com/business/finance/chinese-banks-

boost-loans-tech-sector-beijing-ramps-up-ai-push-2026-03-12

25 Central Committee of the Chinese Communist Party. 2026. Proposal of the Central Committee of the Chinese Communist Party on drawing up the 15th Five-Year Plan for national economic and social development [Translation]. Center for Security and Emerging Technology. https://cset.georgetown.edu/publication/china-fourth-plenum-proposal-2026/; Dorman, D. 2026. China's National Unified Computing Power Network: Wired for AI. Digital China Wins the Future. https://digitalchinawinsthefuture.com/china-national-unified-computing-power-network/

26 Reuters. 2026. Chinese banks boost loans to tech sector as Beijing ramps up AI push. https://www.reuters.com/business/finance/chinese-banks-boost-loans-tech-sector-beijing-ramps-up-ai-push-2026-03-12/

27 Boullenois, C., Black, M. & Rosen, D. H. 2025. Was Made in China 2025 successful? Rhodium Group. https://rhg.com/research/was-made-in-china-2025-successful/

28 International Energy Agency. 2025. Global EV Outlook 2025: Expanding sales in diverse markets. IEA. https://www.iea.org/reports/global-ev-outlook-2025

29 Tagliapietra, S., Trasi, C. & Sebastian, G. 2025. A smart European strategy for electric vehicle investment from China. Policy Brief 21/2025. Bruegel. https://www.bruegel.org/policy-brief/smart-european-strategy-electric-vehicle-investment-china

30 Boullenois, C., Black, M. & Rosen, D. H. 2025. Was Made in China 2025 successful? Rhodium Group. https://rhg.com/research/was-made-in-china-2025-successful/

31 International Federation of Robotics (IFR). 2024. Global robot density in factories doubled in seven years. https://ifr.org/ifr-press-releases/news/global-robot-density-in-factories-doubled-in-seven-years

32 Boullenois, C., Black, M. & Rosen, D. H. 2025. Was Made in China 2025 successful? Rhodium Group. https://rhg.com/research/was-made-in-china-2025-successful/

33 Xinhua News Agency. 2026. 中华人民共和国国民经济和社会发展第十五个五年规划纲要 [Outline of the 15th Five-Year Plan for national economic and social development of the People's Republic of China]. Supreme People's Procuratorate of the People's Republic of China, 12, 19-21. https://www.spp.gov.cn/spp/tt/202603/t20260313_723954.shtml

34 Brown, A. & Groenewegen-Lau, J. 2025. Lab leader, market ascender: China's rise in biotechnology. Mercator Institute for China Studies, 7-8. https://merics.org/en/report/lab-leader-market-ascender-chinas-rise-biotechnology; Gaida, J., Wong-Leung, J., Robin, S. & Cave, D. 2023. ASPI's critical technology tracker: The global race for future power. Policy Brief Report No. 69/2023. Australian Strategic Policy Institute, 58-60. https://www.aspi.org.au/report/critical-technology-tracker/

35 Brown, A. & Groenewegen-Lau, J. 2025. Lab leader, market ascender: China's rise in biotechnology. Mercator Institute for China Studies, 8. https://merics.org/en/report/lab-leader-market-ascender-chinas-rise-biotechnology

36 Brown, A. & Groenewegen-Lau, J. 2025. Lab leader, market ascender: China's rise in biotechnology. Mercator Institute for China Studies, 13-14. https://merics.org/en/report/lab-leader-market-ascender-chinas-rise-biotechnology

37 Xinhua News Agency. 2026. 中华人民共和国国民经济和社会发展第十五个五年规划纲要 [Outline of the 15th Five-Year Plan for national economic and social development of the People's Republic of China]. Supreme People's Procuratorate of the People's Republic of China. https://www.spp.gov.cn/spp/tt/202603/t20260313_723954.shtml

38 Xie, F. 2026. The 15th Five-Year Plan: China's blueprint for a brighter future, and a list of opportunities for the world – Remarks by H.E. Ambassador Xie Feng at the "China in Springtime: China's development opportunities for the world" global dialogue U.S. session. Embassy of the People's Republic of China in the United States of America. https://us.china-embassy.gov.cn/eng/dshd/202604/t20260415_11892582.htm; Tomoshige, R. 2026. Understanding China's quest for quantum advancement. Center for Strategic and International Studies (CSIS). https://csis-website-prod.s3.amazonaws.com/s3fs-public/2026-01/260129_Tomoshige_China_Quantum.pdf

39 Xie, F. 2026. The 15th Five-Year Plan: China's blueprint for a brighter future, and a list of opportunities for the world – Remarks by H.E. Ambassador Xie Feng at the "China in Springtime: China's development opportunities for the world" global dialogue U.S. session. Embassy of the People's Republic of China in the United States of America. https://us.china-embassy.gov.cn/eng/dshd/202604/t20260415_11892582.htm; Xinhua News Agency. 2026. 中华人民共和国国民经济和社会发展第十五个五年规划纲要 [Outline of the 15th Five-Year Plan for national economic and social development of the People's Republic of China]. Supreme People's Procuratorate of the People's Republic of China. https://www.spp.gov.cn/spp/tt/202603/t20260313_723954.shtml

40 Xinhua News Agency. 2026. 中华人民共和国国民经济和社会发展第十五个五年规划纲要 [Outline of the 15th Five-Year Plan for national economic and social development of the People's Republic of China]. Supreme People's Procuratorate of the People's Republic of China. https://www.spp.gov.cn/spp/tt/202603/t20260313_723954.shtml

41 Shang, Y. 2026. China's quantum technology: The 15th Five-Year Plan's push from lab to market. China Briefing. https://www.china-briefing.com/news/chinas-quantum-technology-15th-fyp-commercialization/; Tomoshige, R. 2026. Understanding China's quest for quantum advancement. Center for Strategic and International Studies (CSIS). https://csis-website-prod.s3.amazonaws.com/s3fs-public/2026-01/260129_Tomoshige_China_Quantum.pdf

42 Tomoshige, R. & Singerman P. 2026. Understanding China's quest for quantum advancement. Center for Strategic and International Studies (CSIS). https://csis-website-prod.s3.amazonaws.com/s3fs-public/2026-01/260129_Tomoshige_China_Quantum.pdf

43 Congressional Research Service. 2025. U.S. Export Controls and China: Advanced Semiconductors (CRS Report R48642), updated 19 September 2025. https://www.congress.gov/crs-product/R48642; CSIS. 2025. 'The Limits of Chip Export Controls in Meeting the China Challenge.' 7 May 2025. https://www.csis.org/analysis/limits-chip-export-controls-meeting-china-challenge.

44 CSIS. 2026. 'China's Localization Drive in Semiconductors Gains Impetus from Allied Chip Export Controls.' Center for Strategic and International Studies. https://www.csis.org/analysis/chinas-localization-drive-semiconductors-gains-impetus-allied-chip-export-controls

45 'The Burn and the Choke: Why Semiconductor Controls Will Outlast China's Rare Earth Weapon.' War on the Rocks, 5 January 2026. https://warontherocks.com/2026/01/the-burn-and-the-choke-why-semiconductor-controls-will-outlast-chinas-rare-earth-weapon/.

46 CNAS. 2025. 'The Export Control Loophole Fuelling China's Chip Production.' 19 December 2025. https://www.cnas.org/publications/commentary/cnas-insights-the-export-control-loophole-fueling-chinas-chip-production

47 ASML, 2024 Annual Report: Powering technology forward with you, https://www.asml.com/en/investors/annual-report/2024

48 OECD. 2025. Science, Technology and Innovation Outlook 2025. Paris: OECD Publishing. https://doi.org/10.1787/5fe57b90-en.

49 World Economic Forum. 2025. 'US-China tensions risk us setting science back by decades.' 11 March 2025. https://www.weforum.org/stories/2025/03/us-china-tensions-risk-setting-science-back-decades.

50 Semiconductor Industry Association (SIA). 2025. Comments re USTR 2025 China WTO Compliance Report. 24 September 2025. https://www.semiconductors.org.

51 Parton, C. 2018. 'China's Looming Water Crisis.' China Dialogue, April 2018

52 Wishnick, E. China's Thirsty Chips, https://www.cna.org/our-media/indepth/2024/01/china-thirsty-chips, Jan. 5, 2024; Aqueduct: Water Risk Atlas, https://www. wri.org/applications/aqueduct/water-risk-atlas/, last accessed: Apr. 17, 2026.

53 Shivakumar, S. et al. 2026. China's Localization Drive in Semiconductors Gains Impetus from Allied Chip Export Controls. Center for Strategic and International Studies. https://www.csis.org/analysis/chinas-localization-drive-semiconductors-gains-impetus-allied-chip-export-controls.

Chapter 3

Dealing with the inevitable:
Examine China's Science and Innovation Policy through an inside-out Lense

Yu Jie

Introduction

Over the past four decades, China has undergone a profound transformation from a technologically dependent economy into an increasingly influential global innovator. This transformation has been driven by deliberate and sustained state intervention, strategic planning, significant investment in science and technology and general societal acceptance towards embracing technology in daily life.

Policies such as "Made in China 2025" laid the foundation for Beijing's ambition to move up the global value chain and the recently published 15th Five-Year Plan has further confirmed its plan to lead technology breakthroughs while achieving a greater self-reliance.[1] Beijing's technology prowess is not only driven by growing geopolitical tensions but also derived from a deeper worry of slower economic growth in the coming decades.

As a result, China's science and innovation policy cannot only be examined only as part of the country's industrial policies. Instead, Beijing has taken a whole of nation approach to treat science and innovation as a growth engine to strengthen its national capabilities and a diplomatic tool to expand its global influence.

China's innovation system cannot be fully understood through economic indicators or policy outputs alone. It is deeply embedded within a complex domestic political structure char-

acterized by bureaucratic bargaining, inter-agency competition, and central-local dynamics. These political processes shape not only the formulation of innovation policy but also its implementation and outcomes. At the same time, China's rise as an innovation power has far-reaching global implications, influencing international competition, governance norms, and development trajectories.

This chapter will not repeat other colleagues have already penned on the general understanding of Beijing's overall technology policy. Instead, the chapter argues that while China's political system exhibits formidable strengths in state coordination and resource mobilization, it is also constrained by bureaucratic fragmentation and political incentives that can undermine efficiency and creativity.

China's domestic political dynamics equally play a critical role in shaping both the strengths and weaknesses of its innovation system. The country's emergence as a global innovation leader presents both opportunities and challenges for the international system, contributing to shifting patterns of technological competition and governance.

Like all the rest of the chapters, the author will also utilise a SWOT (Strengths, Weaknesses, Opportunities, Threats) framework to evaluate China's science and innovation policy. The chapter will draw from both primary and secondary sources to fulfil the analyses. In particular, the author will draw from her previous publications and other existing publications under European Hub for Contemporary China Studies project.

SWOT Analysis Framework

SWOT analysis provides a structured approach to evaluating complex systems by identifying internal strengths and weaknesses alongside external opportunities and threats. All chapters in this strategic foresight report adapts the SWOT analysis on an individual topic related to China. It enables a systematic assessment of both institutional capacities and structural vulnerabilities. However, a purely descriptive SWOT analysis risks overlooking the political processes that generate these characteristics.

Given the complexity and long-lasting implications of Beijing's science and innovation policies, the author also utilises the SWOT analysis but combined with an understanding of bureaucratic politics model to present a nuanced picture.

To address the limitation of SWOT analysis, this chapter integrates the bureaucratic politics model, which conceptualizes policy outcomes as the result of bargaining among multiple actors with distinct interests, resources, and institutional positions.

As I discussed in a policy brief in this project, key players who determine China's science and innovation policies include the Chinese Communist Party (CCP), which exercises overarching authority; the Ministry of Science and Technology (MOST), responsible for nation-

al innovation policy; the Ministry of Industries and Information Technology in charge of scaling up technologies into industries and the National Development and Reform Commission (NDRC), which plays a central role in economic planning and resource allocation. In addition, provincial governments, state-owned enterprises (SOEs), private firms and even individual scientists all participate in shaping innovation outcomes.[2]

Although China is often characterized as a highly centralized system, policy-making in practice involves significant negotiation and competition among these actors. Central directives are frequently adapted, reinterpreted, or contested at the provincial level, while ministries compete for authority, funding, and influence. As a result, the strengths and weaknesses identified in the SWOT analysis are not static features but are continuously produced and reshaped through political processes.

Strengths

State Capacity and Strategic Coordination

One of the most significant strengths of China's science and innovation policy is its strong

state capacity. The Chinese government possesses an unparalleled ability to formulate long-term strategies and align national resources toward specific technological goals. Central planning frameworks such as five-year plans provide clear priorities, timelines, and performance metrics, enabling coordinated action across multiple sectors. For the latest iteration of its Five Year Plan, Beijing has placed science and innovation at the front and centre as the engine for the world's second largest economy.[3]

As many have observed, China takes a whole-of-nation approach to sustaining its level of commitment to science and innovation. This involves decision-making, resource allocation and coordination between companies and governments at various levels. In the case of science and innovation policies, many Chinese domestic companies have created the policy demand from the decision-makers.

But this state capacity is not born out of nowhere. It derives from the Chinese leadership's own assessment on national capabilities and perception of risks driven by geopolitical disruption.[4] Beijing's current intense focus on addressing technological 'chokepoints' reflects China's concerns about the extent of the country's dependence on overseas suppliers for a wide range of cutting-edge technologies and other critical components to produce these products. On several public occasions prior, the Chinese President Xi Jinping warned that China is at the mercy of advanced economies regarding several 'chokepoint' technologies, and that 'key core technologies are controlled by others'.[5]

This capacity for strategic coordination is particularly evident in large-scale national projects, such as the development of high-speed rail, space exploration, renewable energy infrastructure and data centres for training latest algorithm and Artificial General Intelligence.[6] The state's ability to mobilize financial resources, human capital, and institutional support allows China to pursue ambitious technological objectives that might be difficult to achieve in more decentralized systems.

In particular, this coordination effort builds a solid infrastructure across the country, such as digital connectivity, sustainable and cost-efficient water and electricity supplies, to enable enterprises experimenting with innovation breakthroughs with relative low costs.[7]

From a bureaucratic politics perspective, this strength reflects the ruling communist party's ability to impose overarching policy direction while still allowing limited competition among subordinate actors. Ministries and local governments operate within a framework of centralized priorities, which helps ensure alignment even in the presence of competing interests.

Policy Experimentation and Local Innovation

China's innovation and industrial policies are highly centralised in design but highly de-

centralised in execution. As several China specialists have pointed out, provincial governments are not passive recipients of policy directives but active players with a degree of autonomy; they often navigate – and at times, strategically balance – the priorities of different central ministries in Beijing.[8]

China's decentralized administrative structure allows for significant policy experimentation at the local level. Special economic zones, high-tech development zones, and pilot programs enable local governments to test new approaches to innovation policy before they are scaled up nationally.

This experimentation is often driven by competition of overlapping responsibilities, as local officials seek to attract investment, promote economic growth, and achieve political advancement. Successful initiatives can be adopted by the central government, creating a process of "experimentation under hierarchy," as a scholar argued back to 2008.[9]

One critical factor shaping these dynamics is that the political promotion of provincial governors and party secretaries has historically been closely tied to indicators such as local economic growth and productivity. As a result, provincial leaders are incentivized to mobilize financial resources and political capital to support policies that can deliver measurable economic outcomes. In the past, one of the key deliverables is the level of foreign direct investments of each province whereas the ability to have cutting-edge technology enterprises have also become a key indicator in recent years.

For example, over the past decade, Shanghai, Hangzhou and Shenzhen, three of China's most economically dynamic cities, have been vying to position themselves as the leading hub for China's home-grown AI industry. Each city brings distinct advantages to this competition, from talent pools and industrial ecosystems to geographic location and existing technology clusters.[10]

The interaction between central guidance and local experimentation represents a distinctive feature of China's innovation system. It allows for flexibility and adaptation while maintaining overall strategic coherence.

Massive Investment in Research and Development

China's rapid increase in research and development (R&D) spending is another key strength. Over the past two decades, the country has become one of the world's largest investors in R&D, with significant funding directed toward both basic research and applied technologies. This investment has been accompanied by a dramatic expansion of higher education, producing a large and growing pool of scientists, engineers, and technical specialists.

According to Beijing's 15th Five Year Plan, the Chinese government will increase its overall national research and development spending by around 7 per cent in the next five years

compared to the period between 2021 and 2025.[11] And it also proposes to make digital economy industries account for 12.5 per cent of the overall GDP in the following five years—a number well above the US and Europe.[12]

Beijing places particular emphasis on the value of 'basic research' – also termed fundamental research or pure research – meaning scientific investigations conducted to expand knowledge and understanding in a particular field without any immediate or specific application in mind.[13] Although basic research may not have immediate practical applications, it serves as the foundation for applied research and technological advancements. Many significant discoveries and breakthroughs in science and technology (for example the discovery of penicillin, leading to the wider development of antibiotic drugs) have emerged.

The scale of China's investment enables it to compete with leading innovation economies and to make rapid progress in emerging technologies. Moreover, the integration of universities, research institutes, and industry facilitates knowledge transfer and commercialisation.

But nonetheless, bureaucratic competition plays an important role in sustaining this investment. Ministries and local governments compete to secure funding and demonstrate innovation performance, creating strong incentives to support R&D activities. While this competition can lead to inefficiencies, it also contributes to the overall dynamism of the system.

China's recent efforts to develop a domestic semiconductor industry provide a clear illustration of the policymaking structure that are driven by bureaucracies. Establishing a semiconductor fabrication plant requires massive capital investment, alignment with national industrial policy and support for technological breakthroughs.

As a result, semiconductor companies in China must engage with multiple ministries: seeking early-stage research funding from Ministry of Science and Technology; ensuring their technical and industrial standards align with Ministry of Information, Industries and Technologies regulations and ultimately obtaining approval on any major investments from the NDRC. While companies rarely publicly align themselves with specific bureaucratic actors, in practice they must navigate these institutional channels to secure funding, regulatory support and political capital.

Weaknesses

Bureaucratic Fragmentation and Rivalry

Despite its strong central authority, China's innovation system is characterized by significant bureaucratic fragmentation. Multiple agencies, including MOST, MIIT and the NDRC,

have overlapping responsibilities in areas such as research funding, industrial policy, and technological development. This overlap can lead to competition, duplication of efforts, and policy inconsistency.

Inter-agency rivalry is often driven by the desire to control resources and enhance institutional influence. As a result, coordination challenges can arise, particularly in complex and rapidly evolving technological fields. Given the rapid progress technological breakthrough, many policy frameworks and regulations require frequent updates so does the technology standards themselves. Both government agencies and tech companies can become de-facto agenda setter for emerging technologies. As a result, these changes and challenges may reduce the efficiency of policy implementation and hinder the development of coherent strategies.

A notable example is Unitree Robotics, one of China's leading robotics companies. In late February 2026, the German Chancellor Friedrich Merz visited the company and was greeted by a line-up of robots demonstrating their advanced functionality.[14] Unitree illustrates how technology firms can play an important role in shaping China's science and innovation policy landscape. The company's founder, Wang Xingxing, was appointed deputy chair of China's humanoid robot standards committee, allowing industry engineers to participate directly in shaping national technical standards.[15]

Inefficiencies in Resource Allocation

The political nature of resource allocation in China can also create inefficiencies. Investment decisions are often influenced by political priorities, performance targets, and bureaucratic incentives rather than purely market-based considerations. This can lead to overinvestment in certain sectors, underinvestment in others, and the persistence of unproductive projects.

In 2025, President Xi himself openly offered a blunt criticism to provincial governments against overinvestments in AI, electric vehicles, as these sectors continue to endure cutting-throat competition and inevitably led to inefficiencies in resource allocation.[16]

In some occasions, State-owned enterprises, which play a prominent role in strategic industries, may benefit from preferential access to funding and policy support. While this can facilitate large-scale projects, it may also crowd out private firms and reduce overall innovation efficiency.

Yet in the field of technology and innovation, private firms are more likely to adapt a competitive environment and being more persuasive through technology breakthrough and existing political connection to obtain generous state grants to fund their business.

From a bureaucratic politics perspective, these inefficiencies reflect the incentives faced by

officials at different levels of government. Local leaders may prioritize short-term economic growth or visible achievements, while central agencies may focus on meeting national targets, sometimes at the expense of long-term sustainability.

Constraints on Creativity and Openness

Another significant weakness of China's innovation system is the potential constraint on creativity and open inquiry. Political control over information, academic research, and public discourse can limit the free exchange of ideas, which is often essential for breakthrough innovation.

While China has made significant progress in applied technologies and incremental innovation, some analysts argue that these constraints may hinder its ability to achieve leadership in fundamental scientific research. The tension between political control and intellectual freedom remains a key challenge for China's innovation ambitions.

From the perspective of many researchers in advanced economies, a strong capacity for technological innovation tends to go hand in hand with respect for individual political freedoms. A key question, therefore, is the extent to which a deepening of the one-party state under Xi may support or impede innovation over the long term. China may have the ambition and enormous state-funded resources to advance its science and technology agenda, but what is now lacking is the political will to nurture critical thinking and to allow a new generation of researchers to challenge conventional wisdom and existing authority.

In 2020, Chinese universities awarded some 1.4 million engineering degrees at bachelor's level, compared with roughly one-seventh of this number in the US.[17] China's advantage in terms of the sheer number of its STEM graduates thus already gives it a solid foundation on which to pursue its ambitions to become a world leader in science and technology. At the same time, however, a shrinking of the space for individual freedoms and creativity within the country's institutions has discouraged potential global partners from working with China's scientists in recent years.[18]

As Beijing has sharpened its ideological focus on managing the Chinese economy through a security lens, and many young engineering graduates now expect to compete for government jobs rather than solve the riddle of producing semiconductors for an 'iron rice bowl' of civil service post, the implications for the success of the drive for scientific self-reliance are far from clear.[19]

Opportunities

Leadership in Emerging Technologies and Higher Societal Acceptance

China's focus on emerging technologies presents substantial opportunities for global leadership. Fields such as artificial intelligence, quantum computing, biotechnology, and renewable energy are central to China's strategic priorities. By investing heavily in these areas, China aims to shape the future of global technological development.

The state's ability to coordinate resources and set long-term goals provides a strong foundation for pursuing these opportunities. Moreover, the integration of digital technologies into China's economy creates a large domestic market that can support rapid innovation and scaling. For example, China's government is placing stronger emphasis on fundamental breakthroughs in future industries such as brain-computer interfaces, quantum technology and semiconductor supply chains. Beijing is also promoting the 'AI Plus' initiative – an effort to integrate artificial intelligence across manufacturing, logistics, healthcare, and urbanization as part of key elements in its Five Years Plan.[20]

The widespread societal acceptance of advanced technologies within Chinese society represents a significant opportunity for both Beijing and the global innovation landscape. Unlike many Western societies, where public debates surrounding artificial intelligence and digital technologies are often dominated by concerns over privacy, surveillance, and job displacement, the Chinese public has generally demonstrated a more positive and pragmatic attitude toward technological adoption.[21]

Many Chinese citizens perceive the expansion of AI and other cutting-edge technologies as instruments for improving everyday life, enhancing economic opportunities, and increasing social convenience. This comparatively high level of public acceptance provides the Chinese government with a favourable domestic environment for the rapid deployment of emerging technologies at scale, thereby accelerating innovation, data accumulation, and industrial modernization. In turn, China's ability to integrate advanced technologies into daily social and economic life strengthens its position as a leading global innovator and increases its influence over the future direction of technological development worldwide.

Global Partnerships and Expansion

China's innovation policy is increasingly linked to its global economic strategy. Initiatives such as the Belt and Road Initiative facilitate the expansion of Chinese technology and standards into international markets, particularly in the Global South.

Through infrastructure projects, technology transfer, and digital connectivity, China is positioning itself as a key provider of innovation-driven development. This creates opportunities to influence global standards, build strategic partnerships, and enhance its interna-

tional standing.[22]

China's promotion of technological development offers an alternative model of modernization that differs from the liberal market-oriented approach traditionally associated with Western powers. Beijing presents its state-led innovation system as evidence that strong governmental coordination, long-term planning, and industrial policy can successfully produce technological advancement. This model has become particularly attractive to some developing countries seeking rapid modernization without fully adopting Western political or economic frameworks.

China's ambition for technological leadership is additionally linked to strategic competition with the U.S.-led west, including the European Union. Beijing increasingly views technological superiority as essential to national security, economic resilience, and international status. Achievements in advanced technologies therefore serve both symbolic and practical functions: they demonstrate China's emergence as a major power while reducing dependence on foreign technologies that could be restricted during geopolitical tensions. In this sense, technological innovation has become a critical component of China's broader strategy to transition from a regional economic power into a global leader capable of shaping the future international order.[23]

Threats

Geopolitical Tensions and Technological Decoupling

China's rise as an innovation power has intensified geopolitical competition, particularly with the United States and Europe. Efforts by the United States and its allies to limit China's access to advanced technologies, such as semiconductors, highlight the vulnerabilities associated with global interdependence. These tensions may lead to the fragmentation of global technology ecosystems, reducing opportunities for collaboration and knowledge exchange.

This dynamic has created a cycle of mutual distrust that reinforces decoupling pressures. China's policies, including support for domestic champions and industrial strategies, are often interpreted in the West as efforts to challenge existing technological hierarchies and reduce foreign influence. In response, the United States has imposed restrictions on advanced tech exports, including chips and aircraft engines and encouraged transatlantic allies to limit technological cooperation with Chinese firms. Consequently, global supply chains are becoming increasingly politicized and fragmented.

However, complete technological decoupling remains unlikely. China is deeply integrated into the global economy, and many multinational firms continue to depend on Chinese manufacturing capacity, markets, and innovation ecosystems.[24] Likewise, China still relies

on foreign expertise and components in several critical technological areas. Economic interdependence therefore imposes practical limits on full separation.

Instead, the more probable outcome is partial decoupling, in which strategic sectors tied to national security become increasingly separated, while lower-risk commercial sectors remain interconnected. China's technological ambitions will therefore accelerate the restructuring of global technology networks, contributing to a more divided and competitive international system, but not necessarily a unilaterally bifurcated one.

Risks of Over-Centralization

In response to external geopolitical pressure, the Chinese government has adopted a state-led, centralized approach to its innovation policy in critical strategic sectors. While centralisation can enhance coordination among ministries, local governments and enterprises, it has most certainly reduced political leeway, limit local experimentation, and stifle private sector dynamism.

One of the defining strengths of China's innovation model has historically been its capacity for decentralized experimentation. Local governments were often encouraged to test policies, compete for investment, and develop region-specific innovation ecosystems. This flexibility contributed significantly to China's earlier technological successes, particularly in digital commerce and manufacturing.

However, as the central government places greater emphasis on national strategic priorities and technological self-reliance, innovation policy has become increasingly centralized and politically driven. In sectors such as humanoid robotics, central authorities have introduced ambitious industrial targets, funding programs, and political performance incentives that encourage local governments to align closely with national directives.

While this central coordination can accelerate resource mobilization, it may also discourage bottom-up experimentation. Local officials increasingly prioritize compliance with central objectives over genuinely innovative or risky initiatives, since political advancement depends heavily on demonstrating alignment with Beijing's priorities. As a result, local governments may duplicate projects or pursue highly visible investments regardless of market viability.

At the same time, stronger state direction may constrain private sector dynamism, which has historically been one of the key drivers of Chinese technological innovation. Private firms often thrive in environments characterized by flexibility, market competition, and tolerance for experimentation. Yet increasing regulatory intervention and political oversight can reduce entrepreneurial confidence and discourage long-term investment.

For example, in the humanoid robotics sector, private companies frequently depend on

state funding, regulatory approval, and political support, which may incentivize alignment with government priorities over independent innovation. Firms may therefore focus on securing political favour and subsidies rather than pursuing disruptive technological advances or commercially sustainable models.

The balance between control and autonomy is therefore a critical issue for China's innovation system. Excessive centralization could undermine some of the strengths that have contributed to China's success.

Key Lessons to be learnt by Europe:

Europe can draw important lessons from China's state-led approach to innovation, particularly in the areas of long-term strategic planning, industrial coordination, and public investment in emerging technologies. China's innovation model demonstrates how sustained state support, clear national priorities, and coordinated industrial policy can accelerate technological prowess in strategically important sectors such as AI and advanced manufacturing. Compared to Europe's often fragmented innovation landscape, where regulatory complexity and national divisions can slow collective action, China's centralized coordination has enabled faster allocation of capital, infrastructure, and attracting talent.

For Europe, one key lesson is the importance of developing more coherent and strategically focused innovation policies at both the national and supranational levels. The European Union (EU) has frequently struggled to compete with both China and the United States in frontier technologies due to fragmented funding structures, uneven industrial strategies, and lengthy regulatory processes. Greater coordination between European institutions, national governments, universities, and private industry could strengthen Europe's technological competitiveness, particularly in critical sectors such as semiconductors, dual-use technologies, and digital infrastructure. However, this is easier said than done.

Europe must also avoid replicating some of the weaknesses associated with China's centralized innovation system. Excessive state direction can encourage bureaucratic infighting, repetition of projects, and politically motivated investment decisions. China's experience illustrates how overlapping institutional mandates and competition between ministries and local governments may generate inefficiencies despite strong central coordination.

Europe therefore faces the challenge of balancing strategic state support with institutional flexibility and market dynamism. Rather than adopting a highly centralized model, Europe may benefit more from a hybrid approach that combines targeted industrial policy with strong protections for competition, entrepreneurship, and decentralized experimentation.

Importantly, Europe retains comparative advantages that China's system sometimes struggles to replicate, including academic openness, strong legal protections, and highly innovative private-sector ecosystems. Preserving these strengths while improving strategic

coordination may offer a more sustainable path for European innovation.

At the global level, China's growing technological prowess has already contributed to a gradual redistribution of power within the international system. Historically, technological leadership has been intricately linked to geopolitical influence, economic dominance, and the ability to shape international norms. As China expands its capabilities in advanced technologies and digital infrastructure, it gains greater influence over global supply chains, technical standards, and governance frameworks. This shift may reduce Europe's relative influence, particularly if European states fail to maintain competitiveness in strategic industries.

China's expanding role in areas such as 6G infrastructure, the rollout on AI Plus initiative, and digital platforms increasingly positions Beijing as a central actor in the global innovation order. Through initiatives connected to the Belt and Road Initiative and Global Development Initiative, China has also strengthened technological and economic ties with countries across the Global South, further expanding its geopolitical reach.

Beijing's success in promoting innovation through state-led strategies may influence other countries, particularly in the developing world. Governments seeking to accelerate technological development may adopt elements of China's approach, including industrial policy, state investment, and strategic planning.

However, the successful transfer of this model to another economy is not guaranteed, as it depends on specific political, economic, and institutional conditions. Nevertheless, China's experience contributes to a broader debate about the role of the state in innovation.

In contrast, Europe risks becoming squeezed between the technological dominance of the United States and the rising influence of China. Yet, Europe's influence is unlikely to disappear entirely. The EU continues to exercise substantial regulatory power through its ability to shape global standards in areas such as data protection, digital governance, environmental regulation, and competition law.

Rather than a complete displacement of European influence, the more probable outcome is a transition toward a more multipolar technological order in which Europe remains influential but no longer occupies a dominant position. In this emerging system, Europe's future relevance will depend on its ability to innovate strategically while preserving the institutional openness that distinguish its model from both China and the United States.

Conclusion

China's science and innovation policy represents one of the most ambitious and consequential efforts to transform a national economy in the modern era. Through the lens of SWOT analysis, this chapter has highlighted the key strengths, weaknesses, opportunities,

and threats associated with this policy framework. China's strong state capacity, higher societal acceptance to advanced technologies, and ability to coordinate and experiment provide a solid foundation for innovation. At the same time, bureaucratic fragmentation, inefficiencies, and constraints on creativity pose significant challenges.

Crucially, these characteristics are not merely technical or economic in nature but are deeply rooted in China's domestic political system. Bureaucratic bargaining, inter-agency competition, and central-local dynamics play a vital role in shaping policy outcomes. Understanding these processes is essential for a comprehensive assessment of China's innovation trajectory. Rather than holding the conviction of Beijing being monolithic, it would be more helpful to understand who decides the policies and who implements them.

At the global level, China's rise as an innovation power has far-reaching implications. It is reshaping patterns of competition, influencing governance structures, and offering alternative models of development. It also challenges the narrative led by the United States and Europe than innovation and path to modernity can only take place by market force with private capital.

Whether China can sustain its current momentum to innovate will depend not only on its ability to overcome external challenges but also on its capacity to manage internal political dynamics and maintain a balance between state control and flexibility as well as a balance between geopolitical competition and increasing job opportunities through innovation. In this sense, the future of China's innovation system—and its impact on the world—will be determined as much by politics as by technology.

Endnotes

1 Xinhua (2026), "China approves 2026-2030 blueprint, maps out high-quality path toward modernization", 13 March 2026, Xinhua News Agency, https://english.www.gov.cn/news/202603/13/content_WS69b36c11c6d00ca5f9a09d96.html

2 Yu, J (2026), "One or many: the decision-making behind China's science and innovation policies", EuroHub4Sino, 29 April 2026, https://eh4s.eu/publication/one-or-many-the-decision-making-behind-chinas-science-and-innovation-policies

3 Yu, J (2025), "China's leaders' meeting confirms Xi's authority and shows technological self-reliance is now the priority", Chatham House, 28 October 2025, https://www.chathamhouse.org/2025/10/chinas-leaders-meeting-confirms-xis-authority-and-shows-technological-self-reliance-now

4 Yu, J (2025), "3 Lessons China Learned From the United States", Foreign Policy, 11 December 2025, https://foreignpolicy.com/2025/12/11/lessons-china-learned-superpower/

5 Xi, J. (2021), '努力成为世界主要科学中心和创新高地' [Strive hard to become the world's major science centre and innovation hub], Qiushi, 15 March 2021, http://www.qstheory.cn/dukan/qs/2021-03/15/c_1127209130.htm.

6 Jones, A (2026), "China backs orbital data center startup with $8.4 billion in credit lines", Space News, 22 April 2026, https://spacenews.com/china-backs-orbital-data-center-startup-with-8-4-billion-in-credit-lines/

7 Wu,Z et Olcott,E (2025), "China offers tech giants cheap power to boost domestic AI chips", Financial Times, 3 November 2025, https://www.ft.com/content/cad2cdd6-7cce-4de3-8710-977de667378c?syn-25a6b1a6=1

8 Breslin, S. (2025), What's rational for the national and what's focal for the local? Towards a "unified national economy"?, European Hub for Contemporary China Policy, Paper Series 2025/18, London: Royal Institute of International Affairs: https://doi.org/10.31175/eh4s.8d67;Yu, J. and Ridout, L. (2021), Who decides China's foreign policy? The role of central government, provincial-level authorities and state-owned enterprises, Briefing Paper, London: Royal Institute of International Affairs, https://www.chathamhouse.org/2021/11/who-decides-chinas-foreign-policy.

9 Heilmann, S (2008), "Policy Experimentation in China's Economic Rise," Studies in Comparative International Development, 43, 2008, pp. 1–26. https://doi.org/10.1007/s12116-007-9014-4

10 Chan, K. et al. (2025), "Full stack: China's evolving industrial policy for AI," Rand Expert Insight, 26 June 2025 https://www.rand.org/pubs/perspectives/PEA4012-1.html.

11 Xinhua (2026), "China hits record R&D spending, unveils innovation push through

2030", Xinhua News Agency, 5 March 2026, https://english.www.gov.cn/archive/statistics/202603/05/content_WS69a96a44c6d00ca5f9a09933.html

12 Ibid, 11

13 Reuters (2026), "Xi urges China to boost basic research and innovation capacity", Reuters, 30 April 2026, https://www.reuters.com/sustainability/climate-energy/xi-urges-china-boost-basic-research-innovation-capacity-2026-04-30/

14 Cao, A. (2026), 'Germany's Merz meets China's tech vanguard, including Alibaba and Unitree CEOs', South China Morning Post, 27 February 2026, https://www.scmp.com/tech/article/3344835/germanys-merz-meets-chinas-tech-vanguard-including-alibaba-and-unitree-ceos

15 Xinhua (2026), 'China's first national standard system for humanoid robotics poised to spur industry development', Xinhua News Agency, 3 March 2026, https://english.news.cn/20260303/0e51ac8f66c542c5bacf2af3f80b3a40/c.html.

16 Leahy et al (2025), "Xi Jinping warns Chinese officials against over-investment in AI and EVs", Financial Times, 18 July 2025, https://www.ft.com/content/9c19d26f-57b3-4754-ac20-eeb627e8723e?syn-25a6b1a6=1

17 Jones, H. and Goldman, D. P. (2022), 'US-China AI rivalry a tale of two talents', Asia Times, 2 July 2022, https://asiatimes.com/2022/07/a-tale-of-two-talents/

18 Burke, M. (2022), 'What next for scientific collaboration as stand-off between China and the west heats up?', Chemistry World, 18 October 2022, https://www.chemistryworld.com/news/what-next-for-scientific-collaboration-as-stand-off-between-china-and-the-west-heats-up/4016361.article.

19 The 'iron rice bowl' is term commonly used in China to refer to 'jobs for life' with good social welfare provisions, funded by the state or state-owned enterprises.

20 Yu, J (2026), "China's Five Year Plan commits to economic resilience – as the Iran war exposes the fragility of global supply", 13 March 2026, Chatham House, https://www.chathamhouse.org/2026/03/chinas-five-year-plan-commits-economic-resilience-iran-war-exposes-fragility-global-supply

21 Toh, V (2025), "Why China's Tech Giants Are Actively Embracing The Elderly", Forbes, 22 September 2025, https://www.forbes.com/sites/viviantoh/2025/09/22/why-chinas-tech-giants-are-actively-embracing-the-elderly/

22 Sheehan,M et Feldogise, J (2023), "What Washington Gets Wrong About China and Technical Standards", Carnegie Endowment for International Peace, 27 February 2023, https://carnegieendowment.org/research/2023/02/what-washington-gets-wrong-about-china-and-technical-standards

23 Yu, J (2026), “China First: As Trump Meets Xi, How Beijing Sees the World Now”, 13 May 2026, Time Magazine, https://time.com/article/2026/05/13/china-first-trump-xi-beijing-summit/

24 MacConnell, M (2026), “Inside Volkswagen’s Push to Build Software-Defined Cars In China”, 29 January 2026, Forbes Magazine, https://www.forbes.com/sites/matthewmacconnell/2026/01/29/inside-volkswagens-push-to-build-software-defined-cars-in-china/

Chapter 4

Neither Decoupling by Default Nor Partnering by Narrative

Anja Senz, Zhu Yi, Belinda Uebler

Introduction

Although increasingly overshadowed by rising geopolitical tensions, armed conflicts, and authoritarian consolidation, climate change and associated environmental challenges remain among the most pressing global challenges. Against the backdrop of the United States largely retreating from international environmental commitments and climate policy leadership, China has emerged as an increasingly important player in global climate governance and technology competition.

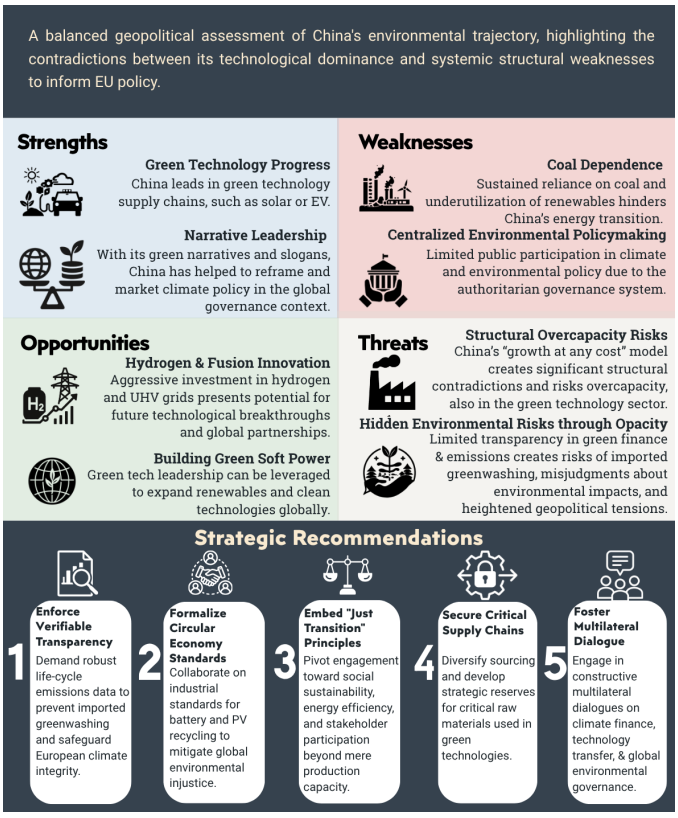
In recent years, China has made record investments and progresses in new energy technologies and manufacturing capacity, enabling rapid deployment while consolidating a dominant position across global clean-energy supply chains, from solar panels and wind turbines to electric vehicles and their batteries. Official policy discourse presents China as a proactive, innovation-driven frontrunner, capable of translating ambitious visions into large-scale technological solutions. However, this image remains constrained by policy frameworks assessed as "highly insufficient" by Climate Action Tracker[1], persistent structural and systemic challenges, uneven implementation, and a continued reliance on fossil fuels.[2]

At a time when China is advancing rapidly but still faces key structural and policy gaps, this moment offers a critical opportunity to assess China's current climate and environmental trajectory, identify areas where the European Union can engage constructively, and determine where further efforts are needed to enhance the effectiveness of Chinese climate action.

Strengths

In the context of global decarbonization efforts, China has assumed a central role in the development, deployment, and scaling of "green technologies" [3] such as renewable energy and new mobility solutions. The country dominates large segments of the global solar market and is also a leading developer and implementer of wind and hydropower technologies.[4] This position is underpinned by China's structural strengths, including highly integrated supply chains, access to raw materials, downstream processing capacities, extensive transportation infrastructure, and a large, skilled workforce. Although many green technologies are not yet fully mature in terms of environmental performance due to coal-intensive production processes, dependence on carbon-intensive inputs or scarce resources, and the creation of significant overcapacity, their large-scale development in China has contributed substantially to technological learning and cost reductions. This expansion has played a key role in accelerating innovation and driving down costs across global markets. Over time, these dynamics are expected to enable cleaner, more efficient, and less emission-intensive technologies than earlier production models.

Beyond technological development, China has demonstrated a notable capacity to promote and frame its environmental progress internationally. Through slogans such as "Ecological Civilization" or "Clear waters and green mountains are as valuable as gold and silver mountains", China presents environmental protection as a positive and development-oriented objective. [5] These narratives have gained particular traction in supranational institutions, especially within the United Nations. The concept of "Ecological Civilization", for instance,



was incorporated into a 2013 draft decision of the United Nations Environment Programme and later adopted as the overarching theme of the 2020 UN Biodiversity Conference.[6] Such narratives contribute to raising the visibility of environmental and climate issues and can foster broader international engagement. However, they also carry the risk of remaining largely rhetorical, potentially facilitating greenwashing or obscuring persistent ecological shortcomings.

Another important pillar of China's climate policy is the gradual development of its national emissions trading system (ETS). Implementing an ETS in a country of China's size and economic heterogeneity poses considerable challenges, yet China has made notable progress. The ETS seeks to reduce greenhouse gas emissions by establishing a binding emissions cap and enabling cost-effective mitigation through emissions trading. Although China has criticized the European Union's Carbon Border Adjustment Mechanism (CBAM), arguing that it could disadvantage Chinese green technology exports, it has continued to advance its own ETS, which could eventually partially align with CBAM.[7] Between 2011 and 2013, China launched regional ETS pilot schemes across seven provinces to support policy learning. The national ETS was formally introduced in 2021, initially covering the power sector, and has since been expanded to include energy-intensive industries such as steel, cement, and aluminum smelting, with further sectoral expansions planned. Unfortunately, China's ETS still faces significant limitations. Allocation rules favoring fossil fuel-intensive firms, limited sectoral coverage, weak targets based on emissions intensity rather than absolute emissions, and record-low carbon prices in 2025 have meant that, in practice, the ETS has so far exhibited no effective steering effect.[8] Nevertheless, the ETS is widely regarded as a key instrument for supporting China's long-term decarbonization efforts.[9]

China's energy and environmental policies also exert influence beyond its borders through an extensive network of bilateral and multilateral partnerships, including the Belt and Road Initiative and the China–UN Global South–South Development Facility. These initiatives aim, among other objectives, to disseminate green technologies, promote environmental protection, and support their adoption in partner countries. In addition to providing technologies, China often supports the establishment of local production facilities and training programmes to build domestic capacities for operation and maintenance.[10] China's appeal as a partner is largely based on its emphasis on cooperative engagement on an equal footing, rapid implementation, and diverse financing options. Many countries are particularly attracted to Chinese renewable energy technologies and associated financing models. Despite their potential benefits, these partnerships also carry substantial risks, including market distortions from low-cost Chinese imports, asymmetrical trade patterns, limited transparency in climate finance, and misalignment with recipient countries' climate strategies; these issues, alongside growing resource and financial dependencies, environmental externalities, and weak accountability, are discussed in greater detail in the following

chapters on weaknesses and risks.[11]

Domestically, China has increasingly integrated environmental and climate objectives into its national policy guidelines, clearly communicating priorities to lower administrative levels and the broader economy. These policy signals are reinforced by nationwide campaigns, regulatory measures, and legal frameworks targeting air and water pollution, deforestation, and other environmental challenges, thereby shaping governance practices and economic behavior.

Finally, China has made substantial contributions to climate change mitigation and adaptation through large-scale research, development, and implementation of engineering and nature-based solutions. Projects such as sponge cities, sea walls, and large dams operate at the scale of entire cities or regions and are designed to address flooding, water scarcity, and other climate-related risks. As instruments of climate impact management, they play an important role in enhancing resilience to climate change.[12]

Overall, China's approach to climate and environmental challenges exhibits a range of significant strengths that provide a solid foundation for further development and policy maturation, with the potential to generate benefits that extend beyond China's borders.

Weaknesses

In recent years, China's energy transition has faced notable setbacks, with no consistent structural shift away from fossil fuels. This has weakened the foundation for the expansion of genuinely low-carbon technologies. Coal remains deeply embedded in China's power system and continues to benefit from strong and diverse vested interests. Rather than declining, coal-fired power capacity has expanded again after an apparent slowdown in the late 2010s[13], with new construction reaching a ten-year high in 2024.[14]

Fig.1: Progress of new coal power projects and retirements in China (Qi Qin, CREA, and Christine Shearer. 2025. "Coal Is Losing Ground but Not Letting Go: Structural Inertia and the Struggle to Shift Coal's Role in China's Power System – Centre for Research on Energy and Clean Air." *Centre for Research on Energy and Clean Air*, August 25. https://energyandcleanair.org/publication/chinas-coal-is-losing-ground-but-not-letting-go/.)

The endurance of coal is also reflected in China's energy mix: despite the expansion of renewable energy sources such as solar and wind power, the share of coal in China's energy mix continued to rise until recently. Consequently, the growth of renewables has so far not led to a meaningful reduction in coal-fired power generation or, therefore, to a significant decline in CO_2 emissions in China.

Electricity production by source, China

(Measured in terawatt-hours)

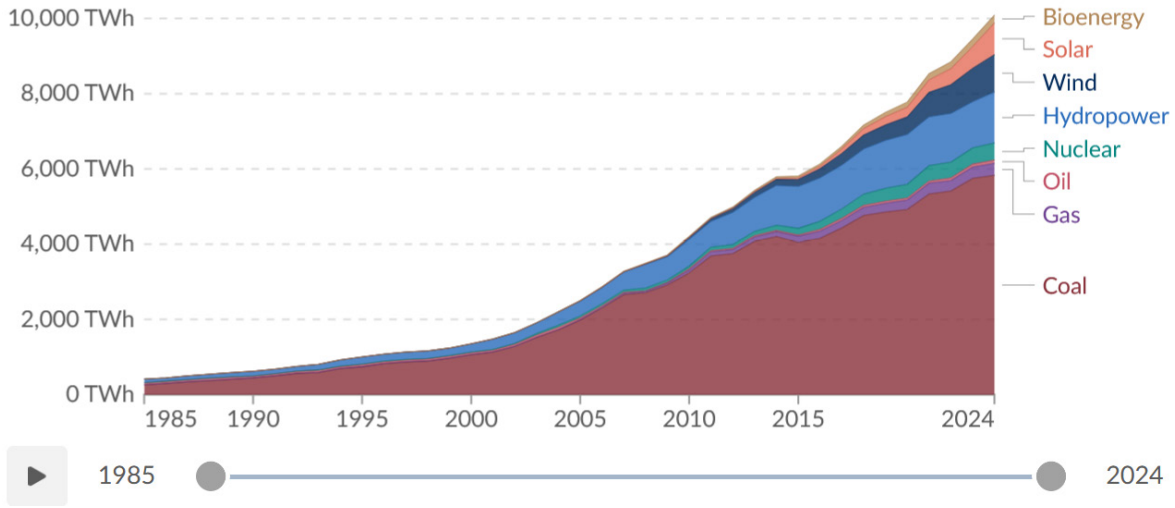


Fig. 2: Development of China's Electricity Mix (Our World in Data. 2026. "Electricity Production by Source, China." Accessed February 26, 2026. https://ourworldindata.org/grapher/electricity-prod-source-stacked?country=~CHN.)

A key challenge to renewable energy integration is the geographic mismatch between supply and demand: generation is concentrated in western regions, while demand is highest in eastern provinces, prompting China to invest heavily in long-distance transmission infrastructure. However, these projects have repeatedly encountered technological and cost-related difficulties.[15] Moreover, despite the rapid expansion of renewable capacity, effective utilization remains constrained by grid dispatch problems and an increasingly overloaded electricity system.[16] From 2021 on, distributed solar[17] has also been rapidly and aggressively expanded in some regions, particularly in Shandong province. However, in some cases, installations have faced grid connection constraints and have been unable to operate at full capacity.[18]

Many technologies promoted as "green" are also less environmentally benign when their full life-cycle emissions are considered. Rather than eliminating emissions, they frequently displace them to other stages of production or to different regions. Electric vehicles, for example, reduce urban air pollution, but given coal's continued dominance in the electricity mix, emissions are effectively relocated to electricity-producing regions. Similarly, the production of solar panels and batteries is highly resource-intensive and dependent on rare earth elements and other critical raw materials, with recent research suggesting higher carbon footprints than previously assumed.[19] In addition, China increasingly frames its hydrogen expansion as a key green development, yet often overlooks distinctions between green, blue, brown, and grey hydrogen[20], with much of its hydrogen production still relying on coal.[21] Such forms of greenwashing allow substantial emissions to persist under the banner of low-carbon development.

These challenges are compounded by significant data opacity. This issue extends beyond emissions statistics and energy data to include limited transparency surrounding so-called "green" funds. While China has claimed to allocate substantial resources to international green finance, little public information is available on how or where these funds are distributed, making their actual use and impact difficult to verify.[22] China also continues to support environmentally harmful projects abroad, particularly through resource extraction under the Belt and Road Initiative, e.g. coal extraction in Central and Southeast Asia and Africa; mining of cobalt in the Democratic Republic of the Congo, and lithium in South America, among others. Moreover, extensive infrastructure construction, both internationally through the BRI and domestically to stimulate economic activity, has contributed to a significant and often unnecessary rise in CO_2 emissions and resource waste, as many new projects remain underutilized.[23]

Furthermore, contrary to international expectations, China has not assumed a leadership role in global climate negotiations such as the annual COP conferences. Instead, it has articulated relatively limited ambitions and has frequently contested policy initiatives advanced by the European Union, most notably the Carbon Border Adjustment Mechanism (CBAM) and other unilateral trade measures.[24]

Domestically, non-state organizations and communities have little influence over climate policymaking, with no pathways for bottom-up participation or independent advocacy.[25] While earlier decades saw the periodic emergence of an environmental public sphere, the party-state's perception of civil society shifted in the mid-2010s "from a cautious positivity to a deep suspicion and even rejection".[26] Civil society is increasingly framed as a state security threat, reflected in ideological tightening, surveillance, and censorship.[27] This regulatory tightening, including laws governing both domestic and foreign NGOs, has sharply reduced the operational space for independent non-state actors. Following the Foreign NGO Management Law of 2016, the number and scope of international NGOs operating in China

declined significantly.[28] Domestic actors that remain active often do so by aligning closely with state priorities and engaging in self-censorship.

Climate politics are therefore dominated by state-led targets, narratives, and governance channels. The official concept of ecological civilization, frequently invoked in policy documents and state-led discourse, reinforces this top-down orientation. In Xi Jinping's "top-down design," ecological civilization calls for "tighter management and stronger authority – not democracy".[29]

As addressed in another EuroHub4Sino report, China's recent achievements in energy technologies have fueled debates over "authoritarian environmentalism" as a model for climate governance.[30] While proponents highlight its capacity for swift implementation, critics question its long-term sustainability and social legitimacy, arguing that China's ongoing energy transition creates severe social injustices, such as unemployment and social unrest "due to lack of policies to alleviate negative impacts from the central government".[31] The "winner-takes-all" dynamic in China's green transition is evident across regional, social, and industrial dimensions. Economically advanced coastal provinces are the primary beneficiaries of low-carbon restructuring, leveraging a "siphoning effect" that attracts the bulk of green investment while displacing carbon-intensive activities to less developed inland regions.[32] At the household level, emissions growth is driven largely by affluent urban groups, with the wealthiest 10% generating roughly four times the global warming impact of the average citizen.[33] Conversely, environmental mandates often impose regressive costs on lower-income populations. In the electric vehicle sector, extensive state subsidies favour "national champions" such as BYD, while smaller suppliers face payment delays and consumers lack adequate protection. These systemic imbalances indicate that China's green transition is reinforcing existing hierarchies rather than mitigating them.

Opportunities

At the latest National People's Congress (NPC), China's 2026 government work report explicitly highlights "future energy" as a priority area, signalling strong political backing for next-generation technologies such as hydrogen and advanced nuclear fusion power.[34] A key opportunity for China lies in replicating the aggressive economies of scale that it previously used to dominate the global solar PV and battery markets. By subsidizing research and deploying massive domestic pilot projects, combined with the country's vast internal market, China can significantly drive down cost curves for these emerging technologies. Such scaling effects could enable Chinese firms to dominate new sectors before global competitors reach maturity.[35] Additionally, China is investing heavily in ultra-high-voltage (UHV) grid infrastructure, with plans to build at least 15 new UHV transmission lines over the next five years. These projects are expected to enable the integration of around 200

gigawatt-hours of renewable electricity into the grid each year.[36] Historically, many UHV lines were designed to transmit stable baseload power, primarily from hydropower and coal. However, if deployed effectively, UHV transmission can facilitate the large-scale integration of renewable energy and reduce reliance on coal by transporting clean electricity across regions.[37]

Overall, China's opportunity extends beyond technological development to a broader model that combines industrial scale, infrastructure investment, and state-backed research. This model may allow China to set global cost benchmarks and technical standards, positioning itself as a rule-setter in certain areas of the global energy transition.

Accordingly, the second major opportunity for China lies in leveraging its technology dominance to build "green soft power,"[38] particularly across the Global South. China is increasingly exporting solar panels, EVs, batteries, and grid infrastructure to developing countries.[39] These exports are often bundled with financing, construction services, creating long-term dependencies and partnerships. For many governments in emerging economies, China's "turnkey" clean-energy solutions offer pragmatic and cost-effective alternatives to more fragmented or expensive Western approaches.[40] Beyond exporting physical products, China also has a strategic opportunity to diffuse its broader technological ecosystem, including engineering standards, grid protocols, and maintenance systems. Also in Europe, China sees a significant opportunity to deepen its engagement, against the backdrop of a second Trump administration and the US retreat from international climate commitments. Beijing is increasingly positioning itself as a stabilising partner in global climate governance, creating a strategic opening for enhanced EU–China cooperation, while also raising important risks for Europe.[41]

Faced with domestic overcapacity in sectors such as solar, batteries, and EVs, relocating segments of China's industrial overcapacity to European markets has been identified as a feasible means of easing domestic saturation while reducing geopolitical tensions.[42] For Chinese firms, production in Europe offers an escape from intense domestic "race to the bottom" competition while maintaining demand for intermediate goods. For Europe, welcoming regulated Chinese investment could strengthen industrial capacity, create employment, foster new supply chains, and facilitate technology transfer.

However, this opportunity is conditional: investment should be welcomed to the EU only where it strengthens European industrial capacity and accelerates decarbonization, while simultaneously safeguarding European security, including cybersecurity[43]. To this end, comprehensive security assessments, compliance and governance trainings, labour protections, and robust monitoring mechanisms should be established from the outset to ensure that Chinese firms operate in accordance with European regulatory frameworks and social and environmental standards.

Another opportunity for China-EU cooperation lies in emissions trading and carbon pricing. China's national ETS, launched in 2021 and initially covering only the power sector, has recently expanded to heavy industries such as steel, cement, and aluminium. The gradual shift to absolute caps marks an important step toward aligning the Chinese ETS with CBAM.[44] With the CBAM's official start at the beginning of this year, full alignment remains distant, though ongoing cooperation could foster regulatory convergence and improve the cross-border auditability of emissions.

Furthermore, a major opportunity concerns circular economy governance across clean-technology value chains and the development of standards for responsible recycling. Although China's Pre-2030 Carbon Peaking Action Plan acknowledges the need for recycling systems[45], its regulatory framework remains underdeveloped, particularly when compared to the EU's Waste Electrical and Electronic Equipment (WEEE) Directive[46]. Informal recycling practices, often concentrated in rural areas, rely on rudimentary and environmentally destructive methods (see more details in risk-analysis below). At the same time, recycling and circular use of critical materials offer substantial economic potential, and Chinese authorities have strong incentives to improve existing practices. In this context, the EU can provide regulatory expertise and industrial standards, promoting circular-economy models and responsible waste management. Such cooperation would help prevent a new cycle of ecological injustice.

In sum, China's energy transition has thus far largely followed a "growth at any cost" paradigm, often generating significant social and environmental inequalities. A more sophisticated opportunity for China now lies in shifting from quantity-driven decarbonisation toward quality-driven transformation. The adoption of a Just Transition Mechanism at COP30 in late 2025 provides a timely platform for a new phase of EU–China cooperation. The EU's comparative advantage lies in areas where China continues to face challenges: energy efficiency, sustainable consumption, and stakeholder participation. By embedding "just transition" principles into bilateral cooperation, Europe can shape the next phase of China's transition toward long-term resilience and social sustainability.

Risks

If the opportunities outlined in the previous section are not effectively utilized, China's current energy transition trajectory may pose significant risks not only to its domestic sustainability prospects but also to the global fight against climate change.

One major risk concerns the carbon footprint of ostensibly "green" technologies exported from China, including solar panels and EVs. Due to limited transparency in emissions accounting and insufficient life-cycle data, these products may embody significantly higher carbon emissions than commonly assumed.[47] For the European Union, this constitutes a

structural challenge. Without robust and verifiable emissions data across value chains, the EU risks importing technologies that do not meaningfully reduce global emissions, or that merely relocate emissions geographically. This is not simply a technical accounting problem but also a political legitimacy issue for climate policy: in the absence of stringent disclosure and verification mechanisms, such imports risk undermining the environmental integrity of European climate governance.

An even more pressing risk arises from the rapidly approaching wave of end-of-life clean-energy equipment. China's renewable sector developed largely under a "pollute first, clean up later" industrial model, which has already generated severe pollution and hazardous labor conditions. As early-generation solar panels and batteries reach retirement age, environmental risks are escalating.

According to Chinese media reports, China is expected to generate approximately 1.7 million tonnes of retired photovoltaic modules by 2030[48], while EV battery retirements are projected to surge beginning in 2026. Alarmingly, more than 70% of used EV batteries currently flow into informal recycling channels, where workers are exposed to toxic substances and rudimentary processes release pollutants into soil, water, and air[49]. Since the EU's New Battery Regulation entered into force in 2023, it has had tangible effects on the Chinese battery industry: companies such as CATL and BYD have actively sought partnerships in Europe to establish local "green ecosystems" covering production, use, and recycling, in order to meet EU requirements on origin and minimum recycled content. However, if domestic recycling practices within China remain unaddressed, this looming waste crisis risks transforming China's green transition into a new cycle of environmental injustice with global consequences.

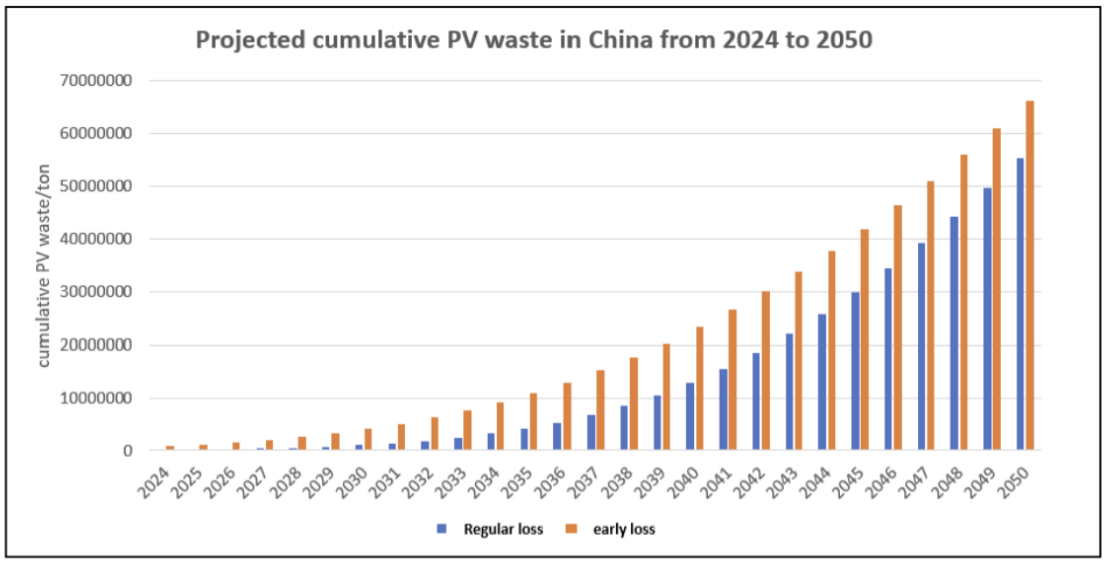


Fig. 3: Projected cumulative PV waste in China from 2024 to 2050. Source: Agraffeil et al. (2025), Fig. 2.2-6., Accessed 09 April, 2026, https://iea-pvps.org/wp-content/uploads/2025/07/IEA-PVPS-T12-31-2025-REPORT-Status-Module-Recycling.pdf.

A third major risk stems from structural overcapacity in China's new energy industries. Following the collapse of the property sector, local governments pivoted aggressively toward EVs, batteries, and renewables to sustain GDP growth. Manufacturers were incentivized through cheap land, subsidies, tax breaks, and state-backed credit. This has resulted in massive overcapacity: by 2025, factory utilization rates in parts of the EV sector reportedly fell to around 50%.[50] This overcapacity has generated a race-to-the-bottom dynamic, often described as "involutionary competition", which drives destructive price wars, widening losses, product homogeneity, and improper business practices[51], and can weaken environmental safeguards. Despite central government rhetoric opposing such competition, analysts remain sceptical that overcapacity can be resolved without deeper fiscal and governance reforms.[52] The outcome is a destabilizing cycle of inflated GDP figures, rising local debt, wasted public resources, and weakened environmental protections, with spillover effects on global markets and trade relations.

A fourth, still insufficiently assessed risk arises from China's rapidly expanding artificial intelligence (AI) sector and its associated energy demand. The scaling of AI systems can substantially increase electricity consumption, water demand for cooling, and electronic waste generation, potentially slowing decarbonization.[53] In 2024, data centers accounted for approximately 1.5% of global electricity demand, with China responsible for roughly 25% of that total, second only to the United States.[54] Electricity consumption from AI-related data centers in China alone could exceed 1,000 TWh by 2030, placing immense strain on the power system and significantly increasing emissions if fossil fuels remain dominant in

the electricity mix.[55] This surge threatens to offset gains from renewable deployment and further entrench coal dependence, particularly in regions hosting energy-intensive data infrastructure.

Moreover, AI's environmental impacts extend beyond operational electricity use to include embodied emissions in hardware and infrastructure.[56] Because China is both a major AI market and a major electricity consumer, the interaction between AI expansion and power-system reform functions as a genuine climate-risk multiplier.

Finally, a specific and often underestimated risk lies not within China's energy transition per se, but in the European Union's tendency to engage with it through overly simplified and narrative-driven frameworks. On the one hand, the EU has grown increasingly anxious about major shifts in U.S. engagement with global climate cooperation; on the other, parts of EU climate discourse have been shaped by the assumption that China's scale-driven deployment of new technologies necessarily equates to climate leadership. This creates a form of strategic naivety: China has become highly adept at deploying climate narratives such as "ecological civilization" or "green development", which resonate internationally while remaining loosely coupled from domestic practice. For the European policy makers and climate advocates, accepting such narratives at face value creates the risk of imported greenwashing and weakens its regulatory leverage. If China is framed primarily as an indispensable climate savior rather than as a complex partner with significant governance gaps, the EU's willingness to enforce high standards on carbon accounting, recycling, labor rights, and environmental permitting may erode. This risk is further amplified by internal political incentives within the EU to demonstrate rapid progress toward decarbonization targets, which can encourage reliance on external "green" solutions at the expense of deeper domestic structural change.

Conclusion

In conclusion, China has undertaken substantial progress in recent years in the areas of energy transition. Climate governance already plays a significant role in both China's domestic and international policy frameworks as well as in its political communication and as an economic factor.

However, China's climate trajectory is less a straightforward success story than a structural contradiction, combining notable strengths with persistent weaknesses that will shape future outcomes. On the one hand, China's industrial capacity, technological learning curves, and cost reductions have reshaped global markets and accelerated the deployment of low-carbon technologies worldwide. On the other, coal expansion, structural overcapacity, weak transparency, uneven implementation, and authoritarian governance mechanisms undermine the credibility and durability of that progress. Additionally, with regard to the

Global South, competition over resources is another important aspect and forms part of the environmental and access-related risks that China poses internationally. At the same time, China acts as both a strong competitor and an attractive partner, particularly because it does not attach political conditions to its engagement.

For the European Union, the most productive stance is neither decoupling by default nor partnership by narrative. Credible engagement requires a balanced, strategic approach. First, the EU should insist on greater transparency in green finance, life-cycle emissions data, and carbon accounting for green-technology products to prevent greenwashing and safeguard environmental integrity. Second, it should address the growing challenges associated with waste generation, industrial overcapacity, and the environmental and social externalities produced by the rapid growth of new green industries. Third, EU engagement with China should be grounded in a realistic assessment of China as a complex systemic actor rather than an unqualified climate leader, extending beyond emissions reporting and recycling standards to include labor rights, social justice, governance accountability, and China's role in the Global South, where climate cooperation can operate as a double-edged sword.

China will remain central to the global climate future. But scale alone does not equal leadership, and production capacity does not guarantee transformation. The decisive question for the coming decade is whether China's green expansion becomes a foundation for structural decarbonization. For Europe, the task is not to amplify China's climate narrative, but to shape the conditions under which cooperation produces real, durable, and verifiable sustainable outcomes.

Endnotes

1 Other major economic powers such as the United States, Canada, India, and the EU are also rated as “insufficient” or even “critically insufficient” by the Climate Action Tracker with regard to their measures and overall climate policy frameworks. (Climate Action Tracker. 2025. “Country Summary: China.” Accessed February 09, 2026. https://climateactiontracker.org/countries/china/.)

2 Senz, Anja. 2025. “Greening the Red Giant: China’s Quest for a Sustainable Future.” Accessed February 09, 2026. https://eh4s.eu/publication/greening-the-red-giant-chinas-quest-for-a-sustainable-future.

3 “Green technologies” is an umbrella term encompassing all technologies aimed at reducing greenhouse gas emissions, conserving resources, and mitigating environmental impacts. However, the term green technology can be misleading, as it suggests environmental friendliness without fully accounting for the ecological impacts of production, resource extraction, and disposal. Moreover, there is no precise definition of which technologies can be classified as “green.” The term is therefore placed in quotation marks.

4 Zhang, Shuwei. 2024. Zhuan xing zhong de dian li xi tong - Ben ti lun yu ren shi lun (转型中的电力系统 - 本体论与认识论) [Power Systems in Transformation: Ontology and Epistemology]. Guo jia neng yuan zhuan xing yu tan zhong he cong shu. Beijing: Jingji guanli chubanshe.

Yu, Aiqun, Sophie Lu, Kasandra O’Malia, and Shradhey Prasad. 2024. “China Continues to Lead the World in Wind and Solar, with Twice as Much Capacity Under Construction as the Rest of the World Combined.” https://globalenergymonitor.org/report/china-continues-to-lead-the-world-in-wind-and-solar-with-twice-as-much-capacity-under-construction-as-the-rest-of-the-world-combined/.

Yang, Muyi et al. 2025. “China Energy Transition Review 2025.” Accessed February 09, 2026. https://ember-energy.org/app/uploads/2025/09/China-Energy-Transition-Review-2025.pdf.

5 Geall, Sam, and Adrian Ely. 2018. “Narratives and Pathways Towards an Ecological Civilization in Contemporary China.” The China Quarterly 236:1175–96. https://doi.org/10.1017/S0305741018001315.

6 Dong, Liang, and Haoning Chen. 2025. “China’s Path to a Global Ecological Civilization: Concepts and Practices for Sustainable Development.” Chinese Journal of Population, Resources and Environment 23 (3): 295–300. https://doi.org/10.1016/j.cjpre.2025.07.001.

UNEP WCMC. 2019. “Building an Ecological Civilization: Theme for 2020 UN Biodiversity Conference Announced.” Accessed February 09, 2026. https://www.unep-wcmc.org/en/news/building-an-ecological-civilization--theme-for-2020-un-biodiversity-conference-

announced.

7 Carbon prices paid under the Chinese ETS may eventually be recognized under CBAM when importing Chinese products into the EU. This could reduce or offset CBAM obligations for Chinese exporters. Both instruments would then contribute to comparable carbon pricing across jurisdictions.

8 Iyer, Ramnath N., and Shuxuan Tan. 2025. "Asia's Carbon Markets Are Expanding but Undermined by Low Prices." Accessed February 09, 2026. https://ieefa.org/articles/asias-carbon-markets-are-expanding-undermined-low-prices.

Stankova, Theodora. 2025. "China Carbon Prices Hit Two-Year Low as Market Faces Oversupply Pressures." Carbon Herald, October 10. https://carbonherald.com/china-carbon-prices-two-year-low-market-oversupply/.

9 International Carbon Action Partnership. n.d. "China National ETS." Accessed February 10, 2026. https://icapcarbonaction.com/system/files/ets_pdfs/icap-etsmap-factsheet-55.pdf.

International Carbon Action Partnership. n.d. "Emissions Trading Worldwide: Status Report 2025." Accessed February 10, 2026. https://icapcarbonaction.com/system/files/document/250612_icap_sr25_june-updates.pdf?utm_source=chatgpt.com.

Qi, Shaozhou. 2024. China's Emission Trading System in the Transition to a Low-Carbon Economy. Beijing: World Scientific.

10 Zhang, Chuanhong, and Haisen Lin. 2024. "China's Climate and Energy Partnerships in the Global South." Accessed February 10, 2026. https://saiia.org.za/research/chinas-climate-and-energy-partnerships-in-the-global-south/.

Yue, Mengdi. 2025. "Redefining Models for Global Green Cooperation: Lessons from China's Emerging Partnerships." Accessed February 10, 2026. https://www.bu.edu/gdp/2025/11/19/redefining-models-for-global-green-cooperation-lessons-from-chinas-emerging-partnerships/.

11 Binetti, Bruno, and Lekai Liu. 2025. "China and the Climate Future of the Global South." E3G, July 14. https://www.e3g.org/news/china-global-south/.

12 Wallenwein, Fabienne. 2024. "The Sponge City Approach in China: Empty Metaphor or Promising Climate Change Adaptation Strategy?" Accessed February 10, 2026. https://eh4s.eu/publication/the-sponge-city-approach-in-china-empty-metaphor-or-promising-climate-change-adaptation-strategy.

13 Qi Qin, CREA, and Christine Shearer. 2025. "Coal Is Losing Ground but Not Letting Go: Structural Inertia and the Struggle to Shift Coal's Role in China's Power System – Centre for Research on Energy and Clean Air." Centre for Research on Energy and Clean Air, August

25. https://energyandcleanair.org/publication/chinas-coal-is-losing-ground-but-not-letting-go/.

14 Patel, Anika. 2025. “China’s Construction of New Coal-Power Plants ‘Reached 10-Year High’ in 2024.” Carbon Brief, February 13. https://www.carbonbrief.org/chinas-construction-of-new-coal-power-plants-reached-10-year-high-in-2024/.

15 Zhang, Shuwei. 2024. Zhuan xing zhong de dian li xi tong - Ben ti lun yu ren shi lun (转型中的电力系统 - 本体论与认识论) [Power Systems in Transformation: Ontology and Epistemology]. Guo jia neng yuan zhuan xing yu tan zhong he cong shu. Beijing: Jingji guanli chubanshe.

Ng, Eric. 2016. “China’s Under-Utilised Ultra-High-Voltage Power Lines No Silver Bullet to Rid Grid of Bottlenecks.” South China Morning Post, February 14. https://www.scmp.com/business/article/1912878/chinas-under-utilised-ultra-high-voltage-power-lines-no-silver-bullet-rid.

16 García-Herrero, Alicia, and Haoxin Mu. 2025. “China Can Decarbonise the World – but Even That Won’t Fix Its Overcapacity Problem.” Accessed February 10, 2026. https://www.bruegel.org/analysis/china-can-decarbonise-world-even-wont-fix-its-overcapacity-problem.

17 In contrast to centralized (utility-scale) solar, distributed solar is typically installed on the rooftops of private households or commercial and industrial buildings. While it offers the advantage of generating electricity closer to demand centers, particularly in densely populated areas, in practice it is often less economically attractive and more challenging to integrate into the grid and to utilize efficiently. (SolarNPlus. 2024. “Sunny Showdown: Rooftop Solar Vs. Utility-Scale Solar.” Accessed February 10, 2026. https://www.solarnplus.com/sunny-showdown-rooftop-solar-vs-utility-scale-solar/.)

18 Howe, Colleen. 2024. “China’s Blistering Solar Power Growth Runs into Grid Blocks.” Reuters Media, May 22. https://www.reuters.com/business/energy/chinas-blistering-solar-power-growth-runs-into-grid-blocks-2024-05-22/.

19 Mariutti, Enrico. 2025. “The Limits of the Current Consensus Regarding the Carbon Footprint of Photovoltaic Modules Manufactured in China: A Review and Case Study.” Energies 18 (5): 1178. https://doi.org/10.3390/en18051178.

20 Hydrogen can be produced through a variety of methods, commonly referred to as different “colours.” Among these, green hydrogen is the only type that is produced in a climate neutral way. (De Blasio, Nicola. 2024. “The Colors of Hydrogen.” Belfer Center, July 8. https://www.belfercenter.org/research-analysis/colors-hydrogen.)

21 Zhang, Shuwei. 2024. Zhuan xing zhong de dian li xi tong - Ben ti lun yu ren shi lun (转型中的电力系统 - 本体论与认识论) [Power Systems in Transformation: Ontology and Epis-

temology]. Guo jia neng yuan zhuan xing yu tan zhong he cong shu. Beijing: Jingji guanli chubanshe.

Marchant, Nathalie. 2021. “Grey, Blue, Green – Why Are There so Many Colours of Hydrogen?” World Economic Forum, July 27. https://www.weforum.org/stories/2021/07/clean-energy-green-hydrogen/.

22 Li, Shuo, and Kate Logan. 2025. “China Climate Hub Monthly Reflections: COP30 Dispatch: How China Is Shaping Dynamics Inside and Outside the Negotiations”.

23 Senz, Anja, and Belinda Uebler. 2024. “Reevaluating the ‘China Model’: The Carbon Emission Burden of China’s Infrastructure Overinvestment.” Accessed February 10, 2026. https://eh4s.eu/publication/reevaluating-the-china-model-the-carbon-emission-burden-of-chinas-infrastructure-overinvestment.

24 Senz, Anja, and Belinda Uebler. 2026. “Reserved yet Influential: China’s Role in COP30“. Accessed March 10, 2026. https://eh4s.eu/publication/reserved-yet-influential-chinas-role-in-cop-30.

25 Westman, Linda Katrin, Vanesa Castán Broto, and Ping Huang. 2019. “Revisiting Multi-Level Governance Theory: Politics and Innovation in the Urban Climate Transition in Rizhao, China.” Political Geography 70:14–23. https://doi.org/10.1016/j.polgeo.2019.01.002.

26 Guo, Li. 2024. “Public Participation in China’s Green Leap Forward.” Accessed February 10, 2026. https://ebulletin.mepielan.gr/articles/2024/public-participation-in-chinas-green-leap-forward-paradoxes-and-changing-mode-in-the-era-of-political-control-and-environmental-technocracy/?utm_source=chatgpt.com.

27 Fu, Diana, and Emile Dirks. 2021. “Xi Jinping-Style Control and Civil Society Responses.” China Leadership Monitor, September 2. https://www.prcleader.org/post/xi-jinping-style-control-and-civil-society-responses.

28 Wang, Smiley. 2023. “Environmental Protection in China: International NGOs Play Crucial Role.” Accessed February 10, 2026. https://chinadevelopmentbrief.org/reports/environmental-protection-in-china-international-ngos-play-crucial-role/.

29 Buckley, Lila. 2021. “Engaging with China’s Ecological Civilisation: A Pathway to a Green Economy?” https://www.greeneconomycoalition.org/assets/reports/GEC-Reports/GEC-IIED-China-EcoCivilisationPaper-A4-Feb21-V4b.pdf. Accessed February 10, 2026.

30 Senz, Anja. 2025. “Greening the Red Giant: China’s Quest for a Sustainable Future.” Accessed February 09, 2026. https://eh4s.eu/publication/greening-the-red-giant-chinas-quest-for-a-sustainable-future.

31 Wang, Xinxin, and Kevin Lo. 2021. “Just Transition: A Conceptual Review.” Energy Research & Social Science 82: 102291. https://www.sciencedirect.com/science/article/pii/

S2214629621003832.

32 Liu, Yishuang, and Li Deng. 2024. “Mapping Carbon Emission Networks in China: Insights from Province-Level Spatial Differentiation.” Carbon Footprints 3 (18). https://www.oaepublish.com/articles/cf.2024.26?to=fig1. Accessed February 10, 2026.

33 Schöngart, Sarah, Zebedee Nicholls, Roman Hoffmann, Setu Pelz, and Carl-Friedrich Schleussner. 2025. “High-Income Groups Disproportionately Contribute to Climate Extremes Worldwide.” Nature Climate Change (15): 627–33. https://www.nature.com/articles/s41558-025-02325-x. Accessed February 10, 2026.

34 Xinhua. 2026. “China to nurture emerging, future industries”, Accessed April 08, 2026, http://english.scio.gov.cn/topnews/2026-03/05/content_118362437.html.

35 Huxiu. 2026. “The government’s work report first mentions future energy and green fuel”, Accessed April 08, 2026, https://www.huxiu.com/article/4839413.html.

36 Reuters. 2026. “China t build 15 more ultra-high voltage power lines over the next five years”, Accessed April 08, 2026, https://www.reuters.com/business/energy/china-build-15-more-ultra-high-voltage-power-lines-over-next-five-years-2026-03-03/.

37 Yu Aiqun, Huang Ye and Christine Shearer. 2026. “Done right, China’s UHV grid can help phase out coal rather than lock it in”, Accessed April 08, 2026. https://dialogue.earth/en/energy/done-right-chinas-uhv-grid-can-help-phase-out-coal-rather-than-lock-it-in/.

38 Logan, Kate. 2026. “Can China Turn Its Clean Energy Dominance into Green Soft Power?” Accessed April 08, 2026, https://centerforchinaanalysis.asiasociety.org/p/can-china-turn-its-clean-energy-dominance.

39 Aylett, Chris and Bernice Lee. 2026. “China’s clean tech charm offensive wins Global South hearts and minds”, Accessed April 08, 2026 https://dialogue.earth/en/energy/chinas-clean-tech-charm-offensive-wins-global-south-hearts-and-minds/.

40 Kissane, Carolyn. 2026. “How China won the clean energy race”, Accessed: April 08, 2026, https://www.eco-business.com/opinion/how-china-won-the-clean-energy-race/#:~:text=Rather%20than%20waiting%20on%20fragmented,grid%2C%20pragmatism%20often%20trumps%20geopolitics.

41 Senz, Anja, and Belinda Uebler. 2026. “Reserved yet Influential: China’s Role in COP30“. Accessed March 10, 2026. https://eh4s.eu/publication/reserved-yet-influential-chinas-role-in-cop-30.

42 Tan, Junyu. 2024. “Made in China. How China Can Deal with Its Industrial Overcapacity.” Accessed February 10, 2026. https://www.coface.com/news-economy-and-insights/made-in-china.-how-china-can-deal-with-its-industrial-overcapacity.

43 A new report by the Center of Eastern Studies suggests that the EU should build a com-

prehensive, enforceable regulatory framework for connected vehicles' cybersecurity drawing on China's own strict regulations to limit sensitive data transfers and cyber vulnerabilities.

44 Climease. 2025. "CBAM 2.0 — Defaults, China's ETS Shift, and Why the EU Should Raise the Bar." September 22. https://climease.com/en/cbam-2-0-defaults-chinas-ets-shift-and-why-the-eu-should-raise-the-bar/.

45 National Development and Reform Commission. 2021. "ACTION PLAN for CARBON DIOXIDE PEAKING BEFORE 2030." Accessed February 10, 2026. https://en.ndrc.gov.cn/policies/202110/t20211027_1301020.html.

46 European Commission. n.d. "Waste from Electrical and Electronic Equipment (WEEE)." Accessed February 10, 2026. https://environment.ec.europa.eu/topics/waste-and-recycling/waste-electrical-and-electronic-equipment-weee_en.

47 Mariutti, Enrico. 2025. "The Limits of the Current Consensus Regarding the Carbon Footprint of Photovoltaic Modules Manufactured in China: A Review and Case Study." Energies 18 (5): 1178. https://doi.org/10.3390/en18051178.

48 China Power. 2023. "Guangfu Tuiyi Chao Kaiqi, Yi Bai Qi Shi Wan Dun Baofei Zujian "Qu Nar"? (光伏退役潮开启,170万吨报废组件"去哪儿"?) [The Wave of Photovoltaic Retirements Begins—Where Will 1.7 Million Tons of Scrapped Modules Go?]." July 20. http://mm.chinapower.com.cn:42808/tynfd/sckx/20230720/209661.html.

49 n.a. 2026. "Dianchi Huishou Hei Hui Baoli Chanye Pugang! Chai Yi Liang Zhuan Yi Wan, Qi Shi Wu Baifei Dianchi Liuxiang Le Xiao Zuofang (电池回收黑灰暴利产业曝光！拆一辆赚1万，75%废旧电池流向了小作坊) [The Dark, Illicit Profiteering Industry of Battery Recycling Exposed! Dismantling a Single Vehicle Can Net 10,000, and 75% of Used Batteries End up in Small, Unregulated Workshops.]." Shanghai Observer, January 29. https://www.shobserver.com/staticsg/res/html/web/newsDetail.html?id=1059747&sid=11.

50 Hou, Qijiang, and Initium Media. 2025. "Will China's Electric Vehicle Industry Face Its Own Evergrande Moment?" Echowall, September 5. https://www.echo-wall.eu/off/will-chinas-electric-vehicle-industry-face-its-own-evergrande-moment.

51 Pettis, Michael. 2025. "What's New About Involution?" Carnegie, August 26. https://carnegieendowment.org/posts/2025/08/whats-new-about-involution?lang=en.

García-Herrero, Alicia, and Haoxin Mu. 2025. "China Can Decarbonise the World – but Even That Won't Fix Its Overcapacity Problem." Accessed February 10, 2026. https://www.bruegel.org/analysis/china-can-decarbonise-world-even-wont-fix-its-overcapacity-problem.

52 Breslin, Shaun. 2025. "What's Rational for the National and What's Focal for the Local? Towards a "Unified National Economy"?" Accessed February 10, 2026. https://eh4s.eu/publication/whats-rational-for-the-national-and-whats-focal-for-the-local-towards-a-unified-

national-economy.

53 United Nations Environment Programme. 2025. “AI Has an Environmental Problem. Here’s What the World Can Do About That.” November 13. https://www.unep.org/news-and-stories/story/ai-has-environmental-problem-heres-what-world-can-do-about.

54 International Energy Agency. 2024. “Electricity 2024: Analysis and Forecast to 2026.” Accessed February 10, 2026. https://www.iea.org/reports/electricity-2024.

55 Chen, Zhan-Ming, Qiyang Xiong, Jiahui Duan, Jianhong Ma, Zhuo Chen, and Shan Guo. 2025. “AI Carbon Footprint in China Sets to Double Post-2030 Carbon Peaking.” Energy Economics 150:108880. https://doi.org/10.1016/j.eneco.2025.108880.

56 Ligozat, Anne-Laure, Julien Lefevre, Aurélie Bugeau, and Jacques Combaz. 2022. “Unraveling the Hidden Environmental Impacts of AI Solutions for Environment Life Cycle Assessment of AI Solutions.” Sustainability 14 (9): 5172. https://doi.org/10.3390/su14095172.

Chapter 5

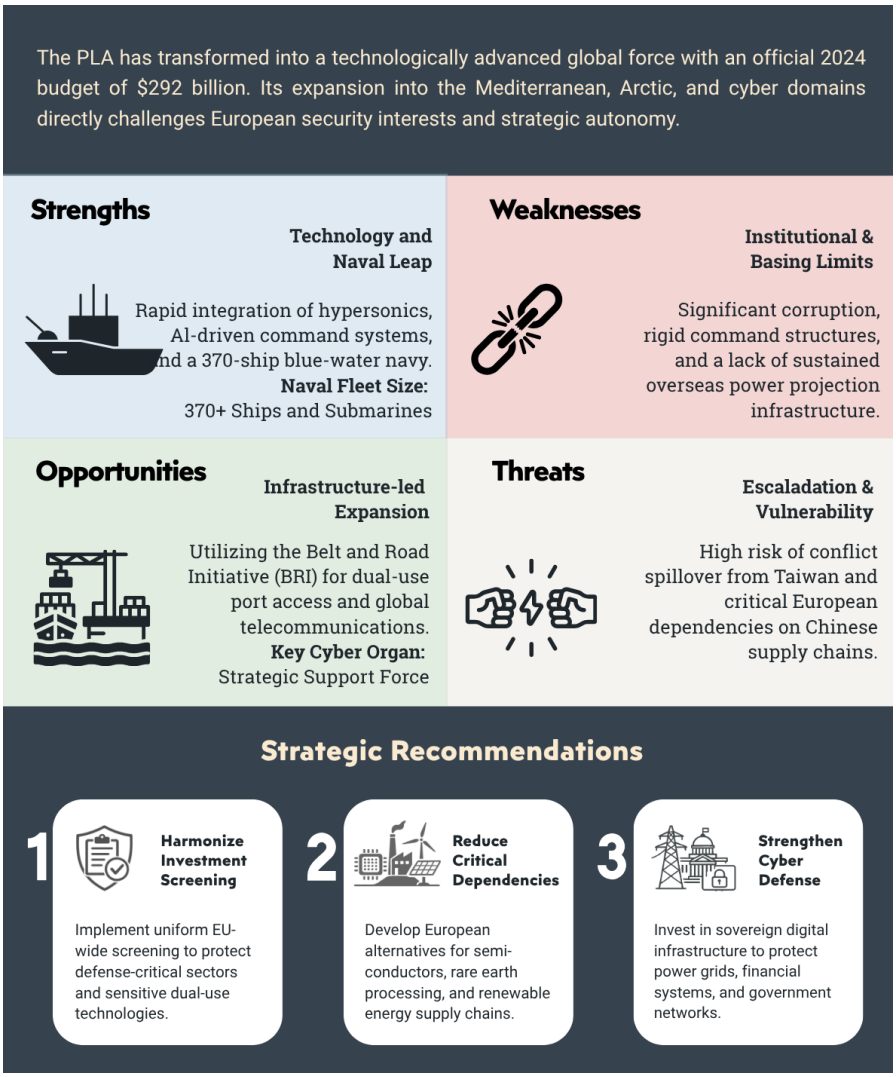
The People's Liberation Army in Global Context: Strategic Implications for European Security and Policy

Niklas Swanström, Maud Descamps

Introduction: China's Military Rise and European Security

Over the past two decades, the People's Liberation Army (PLA) has transformed from a large but technologically outdated force into one of the world's most capable militaries. This evolution reflects China's broader rise as a global power and its ambition to reshape international security architecture. Under President Xi Jinping, military modernization has accelerated significantly (officially $292 billion in 2024, the second largest after the United States), sweeping institutional reforms. However, the true scale of Chinese defense spending is likely higher when accounting for off-budget spending and purchasing power parity. These resources support a sweeping modernization effort encompassing virtually every aspect of military capability from conventional forces and nuclear arsenals to emerging technologies in space, cyber, and artificial intelligence.

The PLA's expanding international activity now extends beyond the Asia-Pacific, impacting European interests. China's activities in the Mediterranean, Eastern Europe, through partnerships with Russia, the Arctic, and parts of Africa[1] and the Middle East, where European nations maintain substantial economic and security interests, highlight this shift. The opening of China's first overseas military base in Djibouti (2017) and its increased engagement in the Arctic with Russia in the 2020s is underscore of its willingness to project power in a region of European interest. This analysis draws on open-source intelligence, EU member states and allies' defense assessments, and China's own strategic documents. While some aspects of the PLA remain opaque, sufficient information exists rigorously assessing trends and implications for European security.



SWOT Analysis: PLA International Engagement

Strengths

Rapid Military Modernization

The PLA's modernization program represents one of the most comprehensive military transformations in contemporary history. It involves far more than acquiring advanced weapons systems but fundamental reforms[2] to doctrine, training, organizational structure, and operational concepts. The pace and scope of this transformation have surprised many Western defense analysts, and a major shift in global military capabilities.

A key aspect is China's progress in **hypersonic weapons**. Over the past decade, the PLA has developed and tested several hypersonic glide vehicles, notably the DF-17 missile system, which is reportedly rival or potentially exceeds those of other major powers. These weapons challenge existing missile defense systems due to their extreme speed, maneuverability, and unpredictable flight paths. For European security, this development signals

China's growing technological sophistication while also contributing to risks of strategic instability in scenarios of great-power conflict.

Artificial intelligence integration is another critical element. China's national strategy links AI development to military use, with heavy investment in machine learning for intelligence, autonomous systems, decision support, and command and control. The PLA explores AI applications across military operations, from logistics to battlefield awareness and potentially autonomous weapons. This is supported by China's leading civilian AI industry, creating synergy between commercial innovation and military capability.

Cyber warfare constitutes a core element of PLA modernization. The Strategic Support Force, established in 2015, consolidates cyber, space, and electronic warfare functions, reflecting the PLA's recognition of these domains as critical battlegrounds in modern conflict. Chinese cyber operations involve extensive intelligence gathering, intellectual property theft, and potential pre-positioning for future operations targeting critical infrastructure. For Europe, the cyber dimension represents perhaps the most immediate and persistent security challenge from PLA capabilities.

China's **space capabilities** have expanded rapidly as well. The PLA has demonstrated anti-satellite weapons, developed its own global navigation satellite constellation (BeiDou)[3], and pursued ambitious space exploration programs with clear military relevance. Space is viewed as essential for modern warfare, enabling communication, navigation, intelligence, surveillance, and reconnaissance. China's counterspace capabilities—including kinetic anti-satellite weapons, directed-energy systems, and cyber tools targeting space assets—carry significant implications for European security, given Europe's heavy reliance on space-based civilian and military infrastructure.

Global Naval Expansion

The transformation of the PLA Navy (PLAN) from a coastal defense force into a blue-water navy is among the most striking elements of China's military rise. With more than 370 ships and submarines, the PLAN now exceeds the U.S. Navy in total hull count, though not in overall tonnage or operational experience. The fleet includes modern surface combatants, submarines, aircraft carriers, and amphibious warfare vessels designed for sustained operations far from China's shores.

China has commissioned two aircraft carriers and is constructing additional vessels. While these carriers currently lack the operational sophistication of U.S. counterparts, they reflect growing ambition and capability. Carrier operations require complex support structures—including escort ships, logistics vessels, and submarine protection—which China is methodically developing.

The PLAN's operational reach has expanded accordingly. Chinese naval deployments now extend to the Indian Ocean, the Mediterranean Sea, and even Arctic waters. Since 2008,

anti-piracy operations in the Gulf of Aden have provided valuable operational experience while normalizing a permanent distant naval presence. These deployments demonstrate China's intent to protect global economic interests, particularly critical sea lines of communication.

For European security, the PLAN's expansion introduces a new strategic actor into maritime domains where European navies have traditionally operated with limited external competition. While opportunities for cooperation exist—such as counter-piracy or humanitarian missions—the presence of a major non-European naval power in Europe's maritime periphery requires strategic adjustment and reinforces the need for enhanced European naval capabilities.

Military-Civil Fusion Strategy

China's Military-Civil Fusion (MCF) strategy deliberately blurs the line between civilian and military sectors. Elevated to a national strategy under President Xi Jinping, MCF seeks to harness civilian technological innovation into military applications. This approach complicates foreign assessments of Chinese entities, including for the EU.[4]

Under MCF, civilian companies, universities, and research institutions are expected to support military objectives. This creates structured pathways for dual-use technologies—such as AI, quantum computing, advanced materials, biotechnology, and robotics—to flow from civilian innovation into PLA applications. The strategy spans sectors from telecommunications and aerospace to pharmaceuticals and energy.

For European security, the PLAN's expansion introduces a new strategic actor into maritime domains where European navies have traditionally operated with limited external competition. While opportunities for cooperation exist—as counter-piracy or humanitarian missions — the presence of a major non-European naval power in Europe's maritime periphery requires strategic adjustment and reinforces the need for enhanced European naval capabilities.

Strategic Partnerships and Alignments

China has also cultivated military partnerships that expand its global reach and offer alternatives to U.S.-led security architectures. The most significant of these is its relationship with Russia, characterized by increasingly sophisticated military cooperation, joint exercises, arms sales, and diplomatic coordination on security issues. While stopping short of a formal alliance, the depth of this partnership poses clear challenges for European security. Joint exercises near Europe, coordinated strategic messaging, and mutual diplomatic support create a de facto alignment that European planners must take into account. Beyond Russia, China has expanded military engagement with Iran, Pakistan, and various African and Southeast Asian countries. These relationships vary in depth and strategic significance but collectively expand PLA operational experience, access, and influence. Arms sales

provide China with revenue, diplomatic leverage, and opportunities to establish training and maintenance relationships that create long-term dependencies and access.

Weaknesses

Limited Overseas Basing Infrastructure

Despite growing global ambitions, the PLA faces significant limitations in sustained overseas power projection due to minimal permanent basing infrastructure. China only confirmed overseas military base is in Djibouti, though reports suggest potential additional facilities under development in various locations. This contrasts sharply with the United States, which maintains hundreds of military installations globally, or even France and the United Kingdom, which retain significant overseas basing networks.

The absence of overseas bases constrains PLA operations in multiple ways.[5] Naval deployments must rely on extended logistics chains or commercial port access, limiting operational tempo and flexibility. Airlift capabilities cannot match those of the United States for sustained operations distant from Chinese territory. Intelligence gathering, command and control, and operational support all face challenges without permanent forward infrastructure.

China faces political obstacles to expanding overseas basing. Many nations are wary of hosting Chinese military facilities due to sovereignty concerns, domestic political sensitivities, or relationships with the United States and its allies. quasi-military arrangements —such as port facilities or logistics hubs developed under Belt and Road Initiative—face international scrutiny and potential restrictions regarding dual-use implications.

For European security, this weakness provides opportunities. The PLA's limited overseas presence constrains its ability to project power into European domains or maintain sustained operations affecting European interests. However, this limitation is temporary. China is determined to expand its overseas access, and its substantial financial resources, combined with the growing economic dependencies created by Belt and Road investments, will gradually overcome political resistance to basing arrangements.

Transparency Deficit and Trust Gap

The PLA's operational opacity represents a significant weakness in international military affairs. Unlike democratic militaries subject to legislative oversight and public accountability, the PLA operates with minimal transparency regarding defense spending, operational capabilities, doctrine, command structures, and strategic intentions. China's rare defense white papers remain vague on crucial details and are published irregularly.[6]

This transparency deficit generates mistrust in international relations, limiting mutual understanding. When China's capabilities and intentions remain unclear, other nations tend

to assume worst-case scenarios, fueling arms races, increasing tensions, and complicating crisis management. This deficit also hinders arms control efforts and confidence-building measures requiring verification.

Military-to-military dialogue, particularly with Western nations, remains limited despite some progress in recent years. The PLA's participation in international military exchanges, exercises with non-aligned nations, and professional military education programs involving foreign officers have increased but remain constrained compared to Western military engagement. This limited dialogue reduces opportunities to decrease misperceptions, establish crisis communication channels, and build professional relationships that can prevent escalation during tensions.

For European security policy, this opacity complicates strategic planning and risk assessment. European defense ministries and intelligence services must devote substantial resources to understanding PLA capabilities and intentions with incomplete information. The transparency deficit also limits opportunities for cooperation in areas of potential common interest, such as counterpiracy, humanitarian assistance, or arms control initiatives.

Internal Institutional Challenges

Despite modernization, the PLA faces significant internal challenges constraining effectiveness. Corruption has been a persistent problem, with President Xi Jinping launching multiple anti-corruption campaigns specifically targeting military leadership and arguably dissenting views.[7] While these efforts may have reduced some corrupt practices, the need for repeated campaigns suggests deeply rooted problems and/or dissenting views in the PLA. However, corruption has undermined military effectiveness by distorting procurement decisions, degrading readiness, and corroding units of cohesion and morale.

Political loyalty requirements may hinder operational flexibility and honest assessment of problems. The PLA is explicitly an instrument of the Chinese Communist Party rather than the state.[8] Officers must demonstrate political reliability, which may conflict with professional military judgment. This politicization can discourage innovative thinking, frank reporting, or questioning of flawed strategies if these actions might appear politically unreliable.

Command structures remain relatively rigid compared to Western militaries that emphasize decentralized decision-making and mission-type orders. The PLA's organizational culture tends toward hierarchical authority and centralized political control. This can slow decision-making, reduce tactical flexibility, and limit junior leader initiative—potential disadvantages in dynamic combat environments.

Limited combat experience is another weakness. Unlike the United States and European militaries with recent combat history, the PLA has not engaged in significant combat since

the 1979 war with Vietnam. While training and exercises can develop certain capabilities, they cannot fully replicate the stresses of actual combat. This experience gap may prove significant in complex operations requiring rapid adaptation to unexpected circumstances.

Opportunities for the PLA

Infrastructure-Enabled Strategic Expansion

China's Belt and Road Initiative (BRI) creates opportunities for expanding a strategic footprint while bypassing traditional military basing resistance. Through commercial investments in ports, telecommunications, undersea cables, and transportation infrastructure, China can establish a presence serving both economic and potential security purposes. This approach proves politically more acceptable to host nations than explicit military bases while creating similar strategic advantages.

Port investments exemplify this dual-use potential.[9] Chinese companies have acquired ownership stakes or operating rights at numerous strategic ports globally, including several in Europe. While ostensibly commercial, these ports can provide logistics support, intelligence gathering, and potential military access during crises. The distinction between commercial and military use can be deliberately ambiguous, particularly in China's governance system, where companies may be required to support state security objectives.

Telecommunications infrastructure, particularly 5G networks developed by companies like Huawei, represents another domain where commercial activity intersects with security implications. Network equipment can potentially enable intelligence gathering, provide leverage, or create vulnerabilities in critical communications infrastructure. European debates over Huawei's participation in 5G networks reflect these dual-use concerns.

Control over rare earth minerals and critical supply chains provides economic leverage with security implications. China dominates global rare earth production and processing, creating dependencies exploitable during international tensions. This control extends to materials essential for defense industries, renewable energy, and advanced manufacturing. Strategic stockpiling and processing capacity give China potential leverage over nations dependent on these materials.

For the EU, these infrastructure-based expansion opportunities create vulnerabilities requiring policy responses. European nations must balance economic benefits from Chinese investment against security risks. This challenge is acute given Europe's economic relationships with China and the reality that many infrastructure investments provide genuine economic value while creating potential security concerns.

Hybrid Warfare and Gray Zone Operations

The PLA's growing capabilities in cyber operations, cognitive warfare, and information

manipulation provide opportunities for coercion below the threshold of conventional military conflict.[10] These hybrid approaches allow China to pursue strategic objectives while maintaining plausible deniability and reducing risks of escalation. Cyber operations enable intelligence collection, intellectual property theft, and potentially pre-positioning for future conflicts affecting critical infrastructure. Chinese cyber actors have been linked to extensive campaigns targeting government networks, defense contractors, technology companies, and critical infrastructure globally. These operations provide strategic intelligence, economic advantage through stolen intellectual property, and potential future operational capabilities.[11]

Information operations and cognitive warfare aim to shape perceptions, sow division, and influence decision-making in target societies. China employs sophisticated propaganda, social media manipulation, and influence operations to advance its narratives, discredit critics, and shape international discourse. While perhaps less aggressive currently than some Russian operations, Chinese information campaigns operate at scale and with high sophistication.

Economic coercion represents another gray zone tool. China employs economic measures—including import restrictions and regulatory actions —to punish countries for political positions China opposes.[12] This approach provides leverage without military action but can prove effective against smaller nations dependent on Chinese markets.

These hybrid capabilities advance China's interests while constraining response options for democratic societies bound by the rule of law and transparency requirements. The attribution challenges in cyber operations, the difficulty of countering information campaigns without compromising free speech, and the complexities of responding to economic coercion without escalating tensions all create asymmetric advantages for authoritarian systems.

Legitimization Through Global Security Contributions

China's participation in UN peacekeeping operations, counterterrorism efforts, and humanitarian assistance missions provides opportunities to legitimize expanded global military presence while contributing to international security. This engagement allows the PLA to gain operational experience, establish an international presence, and demonstrate responsible great power behavior.

As a permanent UN Security Council member, China has increased its contributions to peacekeeping missions, becoming one of the largest troop contributors among permanent members. These deployments provide PLA units with valuable overseas experience, particularly in logistics, multinational cooperation, and sustained deployments. They also enhance China's diplomatic standing and provide presence in strategically significant regions.

Counterterrorism cooperation and counterpiracy operations offer additional avenues for engagement. China's anti-piracy deployments in the Gulf of Aden have normalized PLA Navy presence in the Indian Ocean.[13] Counterterrorism cooperation, particularly regarding shared concerns about extremism in Central Asia, provides platforms for security engagement with multiple nations.

Humanitarian assistance and disaster relief operations enable the PLA to demonstrate capabilities while contributing to global public goods. Military forces are often well-suited for disaster response due to logistics capabilities, organizational capacity, and disciplined personnel. Chinese participation in international disaster relief enhances its image and provides operational experience in coordination with foreign militaries.

Threats to the PLA

Geopolitical Pushback and Containment

The PLA's expansion faces growing strategic resistance from the United States, NATO, and Indo-Pacific partners. This pushback includes enhanced military capabilities, strengthened alliances, increased defense spending, and strategic investments in technologies where China seeks dominance. The cumulative effect could constrain Chinese strategic options and increase expansion costs.

The United States has shifted focus toward great power competition, viewing China as the pacing threat.[14] This manifest in force posture adjustments, increased presence in the Indo-Pacific, technology investments, and alliances like AUKUS, a partnership between Australia, the United Kingdom, and the United States that provides Australia with nuclear-powered submarines.

Similarly, the U.S., Japan, South Korea, Taiwan, and Southeast Asian nations are enhancing defense capabilities and strengthening security relationships – such as the Quad partnership[15] – to balance Chinese power. European nations have also evolved their stance. NATO's 2022 Strategic Concept explicitly identified China as a systemic challenge, marking a significant evolution in alliance thinking. European defense ministries are reassessing risks, implementing stricter investment screening for defense-critical sectors, and considering China in long-term capability planning.

This geopolitical resistance creates a strategic environment in which China faces simultaneous challenges across multiple fronts. The risk for China is encirclement by coordinated rivals, a scenario Beijing seeks to avoid. However, excessive Chinese assertiveness may paradoxically accelerate the very balancing behavior China fears, creating a security dilemma dynamic.

European Strategic Vulnerability

PLA-linked entities gaining access to EU critical infrastructure pose risks to sovereignty, security, and economic independence. These vulnerabilities manifest across multiple sectors, from energy and telecommunications to ports and technology supply chains. The challenge for European policymakers is managing these risks without triggering excessive economic disruption or appearing to embrace complete decoupling from China.

Energy infrastructure represents a particular concern. While Europe has made substantial progress in reducing dependency on Russian energy, dependencies on Chinese supply chains for renewable energy technologies create new vulnerabilities. Renewable energy goods and battery technology supply chains are dominated by Chinese companies. This creates leverage that China could potentially exploit while simultaneously making Europe's energy transition dependent on Chinese products.

Telecommunications networks face similar challenges. The debate over Huawei's role in European 5G networks exemplifies tensions between economic efficiency and security concerns.[16] Chinese equipment may offer cost advantages and technical capabilities, but also creates potential vulnerabilities through backdoors, supply chain attacks, or dependency on a potentially adversarial supplier. Different European nations have adopted varying approaches, creating inconsistencies in security postures.

Port infrastructure and logistics networks represent another domain where Chinese investment creates dual-use concerns. Chinese acquisitions in ports like Greece, Belgium, and Spain bring capital but provide intelligence opportunities and create dependencies that could be exploited during crises.

Critical supply chains for defense industries, semiconductors, rare earth materials, and advanced manufacturing face similar vulnerabilities. Europe's relative lack of domestic production capacity for certain critical inputs gives China an advantage in terms of strategic leverage. This realization has prompted initiatives to develop European alternatives, but progress remains incomplete and faces substantial economic and technical challenges.

Escalation Risks and Conflict Spillover

PLA assertiveness in Taiwan[17], the South China Sea, and cyber domains increase the risk of conflicts that could spill over to affect European interests even if Europe is not directly involved. The interconnected nature of modern global systems means that major conflicts inevitably have worldwide repercussions regardless of geographic location.

Taiwan represents the most acute flashpoint. Chinese military pressure on Taiwan has increased substantially, including record numbers of military aircraft incursions into Taiwan's air defense identification zone, major amphibious exercises, and explicit statements that force remains an option for unification. Any conflict over Taiwan would likely involve

the United States due to longstanding commitments, creating a great power war scenario with global implications.

For Europe, the Taiwan conflict would create multiple challenges even without direct military involvement, including economic disruption due to Taiwan's critical role in global semiconductor supply chains and broader East Asian manufacturing networks. European companies with substantial Asia exposure would face difficult choices about continuing operations during conflict. Maritime trade routes through contested waters would face disruption, affecting European imports and exports. The United States would likely press European allies for political support and sanctions against China, testing European unity and transatlantic relationships.

South China Sea[18] disputes, while currently managed below the threshold of major conflict, represent ongoing risks. China's extensive construction of artificial islands, military installations, and assertive maritime operations challenges the principle of freedom of navigation while creating friction with Southeast Asian claimants and outside powers like the United States. European nations with global maritime interests have increasingly conducted freedom of navigation operations in the region, demonstrating that this is not merely a regional issue.

Cyber conflict poses perhaps the most immediate escalation risk. Unlike conventional military operations, Cyberattacks have no geographic boundaries. A major U.S.-China confrontation would likely include cyber dimensions potentially affecting European systems through deliberate targeting, collateral damage to global networks, or escalatory dynamics where initial cyber operations expand beyond their intended scope. European critical infrastructure, financial systems, and government networks could face disruption even if Europe maintains neutrality in the originating dispute.

Implications for the European Union

Cybersecurity and Digital Infrastructure

The PLA's sophisticated cyber capabilities represent perhaps the most immediate security challenge for Europe.[19] These capabilities enable intelligence collection, intellectual property theft, potential sabotage of critical systems, and information operations that can affect democratic processes and social cohesion. Unlike conventional military threats requiring physical presence, cyber operations can instantly target European systems from anywhere, operating continuously rather than only during overt crises.

European critical infrastructure—including power grids, water systems, telecommunications networks, financial systems, and transportation infrastructure—faces persistent cyber threats. The increasing interconnection of these systems through digital networks, while enabling efficiency and capability improvements, also creates vulnerabilities where

cyber-attacks could cascade across multiple sectors. China's Military-Civil Fusion strategy means that ostensibly civilian entities may support intelligence gathering or capability development for potential future operations.

Data sovereignty represents another critical dimension. Chinese laws requiring companies to cooperate with intelligence services[20] create concerns about data stored or processed by Chinese-owned entities or using Chinese equipment. For Europe, this raises questions about the protection of citizen data, industrial secrets, and government information that might be accessed through Chinese-controlled networks or platforms.[21] The EU's General Data Protection Regulation provides some safeguards but faces challenges from global data flows and complex international supply chains.

Strategic Autonomy and Economic Security

China's expanding global economic influence[22], combined with PLA modernization and the Military-Civil Fusion strategy[23], challenges European aspirations for strategic autonomy—the ability to act independently in pursuit of European interests without excessive dependency on external powers. This challenge manifests across multiple domains where Chinese economic leverage intersects with security considerations.

Critical supply chain dependencies create vulnerabilities where China could potentially exercise economic coercion. European dependencies on Chinese inputs for renewable energy, electronics, pharmaceuticals, and numerous other sectors mean that disruptions—whether deliberate or resulting from conflicts—would have serious economic and social consequences. The COVID-19 pandemic demonstrated how supply chain disruptions can affect European welfare, highlighting the security dimensions of economic dependencies.

Technology development represents another domain where strategic autonomy concerns intersect with China relations. Europe seeks to maintain competitiveness in critical technologies, including artificial intelligence, quantum computing, biotechnology, and advanced materials. However, Chinese companies are major players in many of these fields, creating tensions between cooperation for innovation and concerns about technology transfer, intellectual property, and dependencies in strategic sectors.

Defense industrial dependencies pose specific security challenges. While European defense industries remain largely independent from Chinese suppliers for direct military equipment, dual-use technologies and components create potential vulnerabilities. Semiconductors, advanced materials, and various electronic components essential for modern defense systems often involve Chinese suppliers or manufacturing.[24] This creates potential vulnerabilities in wartime scenarios while also raising peacetime concerns about technology security and supply reliability.

Military Balance and Force Planning

The PLA's expanding capabilities, while primarily focused on Asia-Pacific scenarios, affect European defense planning in several ways. Long-range missile systems capable of striking across continents mean that European territory could theoretically be targeted in extreme great power conflict scenarios. Growing naval capabilities and potential overseas basing in regions of European concern require consideration in maritime security planning. Space and cyber capabilities affect European military systems and operations regardless of geography.

European defense planning must account for potential scenarios where military assets might be required simultaneously in multiple theaters. A major crisis in Asia involving NATO's most powerful member—the United States—would inevitably affect European security by straining transatlantic alliance resources. European forces might face increased responsibility for their own defense if U.S. forces are heavily committed in the Indo-Pacific. This possibility has prompted calls for enhanced European defense capabilities and reduced dependency on U.S. security guarantees.

The Mediterranean and Eastern European security environments could be affected by China-Russia cooperation. Chinese support for Russia through arms sales, technology sharing, or diplomatic backing affects European security directly, given Russia's actions in Ukraine and ongoing tensions along NATO's eastern frontier. While China has been cautious about explicit military support for Russia amid the Ukraine conflict, the broader strategic partnership influences overall power balances affecting Europe.

Arctic security[25] is emerging as another domain where PLA capabilities intersect with European interests. China has declared itself a 'near-Arctic state'[26] and is investing in Arctic research, infrastructure, and capabilities. As climate change opens new Arctic shipping routes and resource extraction opportunities, the region's strategic significance increases. European Arctic nations—Norway, Denmark, Finland, and Sweden—must consider Chinese military capabilities and strategic intentions in their northern security planning.

Policy and Diplomatic Implications

EU Cohesion and Unity Challenges

China's engagement strategy toward Europe often emphasizes bilateral relationships with individual EU member states rather than dealing with the EU as a unified entity. This approach exploits divergent interests and perspectives within the EU, potentially undermining collective European positions on security, economic, and foreign policy issues. Member states' varying economic dependencies on China, historical relationships, and strategic priorities create opportunities for Chinese diplomacy to fracture European consensus.

Economic leverage varies significantly across EU members. Some nations have substantial

trade relationships with China and host significant Chinese investments, creating constituencies favoring accommodating policies toward Beijing. Others have limited economic exposure and a greater willingness to adopt stricter security measures. These divergences can paralyze EU decision-making, particularly when unanimous agreement is required, and undermine attempts to develop coherent European China strategies.

The 17+1 format—China's engagement with Central and Eastern European countries—exemplifies divisive potential. While officially a platform for cooperation, critics argue it enables China to circumvent Brussels and deal directly with member states, potentially extracting concessions or blocking unified EU positions. Southern European nations' economic vulnerabilities and receptiveness to Chinese investment similarly create divergences from northern or western European perspectives on China policy.

These challenges extend beyond economics to security policy. Debates over Huawei's role in 5G networks, Chinese investment screening mechanisms, responses to Chinese human rights issues, and positions on Taiwan and South China Sea disputes all expose intra-EU divisions. China's ability to exploit these divisions poses a fundamental challenge to European strategic autonomy and global influence.

Investment Screening and Economic Security

The recognition that foreign investments can pose security risks has prompted strengthened investment screening mechanisms across Europe. The EU Foreign Direct Investment Screening Regulation, implemented in 2020, established a framework for member states to screen investments for security risks while enabling information sharing and coordination. However, implementation varies across member states, and screening remains contentious given the economic benefits from foreign investment.

Effective screening requires identifying sectors where foreign control poses unacceptable risks. Critical infrastructure, defense industries, dual-use technologies, and sectors involving sensitive data clearly require scrutiny. However, China's Military-Civil Fusion strategy complicates assessments by making virtually any technology potentially relevant to military capabilities. This creates tensions between security concerns and economic openness, particularly as overly broad restrictions could deter beneficial investments and harm European economic competitiveness.

The challenge extends beyond initial investment screening to monitor ongoing operations. Chinese acquisition of European companies creates persistent security questions: Will the acquired entity maintain independence in sensitive decisions? Could it be compelled to serve Chinese intelligence interests? Will it transfer technology or intellectual property to China? These questions require ongoing vigilance, not merely one-time screening at acquisition.

Balancing security and economic interests remain fundamentally challenging. Foreign

investment provides capital, creates jobs, enables technology transfer, and supports economic growth. Restrictions inevitably impose costs and determining where to draw lines between acceptable and unacceptable risks involves difficult judgments. European policymakers must develop sophisticated frameworks that protect genuine security interests without unnecessarily restricting economic activity or appearing to embrace blanket protectionism.

Strategic Dialogue and Crisis Management

Effective management of great power relationships requires robust channels for dialogue, crisis communication, and conflict prevention. The EU's relationship with China would benefit from enhanced strategic dialogue addressing security concerns, reducing misperceptions, and establishing protocols for managing tensions. However, developing such dialogue faces obstacles from China's preference for bilateral rather than multilateral engagement with Europe, and from fundamental differences in political systems[27] and values.

Military-to-military dialogue specifically remains underdeveloped. While some European nations maintain defense contacts with China, these are limited compared to relationships with other major powers. Establishing regular military-to-military exchanges, joint exercises in uncontroversial areas like counterpiracy or humanitarian assistance, and crisis communication hotlines could reduce risks of miscalculation. However, both sides face domestic constituencies skeptical of such engagement.

The EU must also coordinate its China policy with allies, particularly the United States and other democratic partners. While European and American interests align in many respects, differences in priorities, economic relationships, and strategic cultures can create friction. Effective transatlantic coordination on China requires respecting these differences while building consensus around core principles and avoiding scenarios where China exploits transatlantic divisions to weaken democratic solidarity.

Strategic Recommendations

Based on the analysis above, the following recommendations aim to help EU institutions and member states navigate the complex security landscape created by PLA modernization and expanding global engagement:

- **Strengthen Cybersecurity Infrastructure:** Invest substantially in cyber defense capabilities, critical infrastructure protection, and incident response capacity. Establish EU-wide standards for critical infrastructure cybersecurity with mandatory compliance and regular auditing. Develop sovereign capabilities for sensitive systems where Chinese equipment or software poses unacceptable risks.

- **Harmonize Investment Screening:** Develop a more uniform implementation of investment screening across member states to prevent forum shopping and ensure consistent security standards. Expand screening to cover sensitive technologies beyond traditional defense sectors, accounting for dual-use applications under Military-Civil Fusion. Establish clear guidelines for identifying sectors requiring enhanced scrutiny.

- **Reduce Critical Dependencies:** Implement strategic programs to develop European alternatives in sectors where Chinese dominance creates unacceptable vulnerabilities. Prioritize semiconductors, rare earth processing, critical pharmaceutical ingredients, and renewable energy supply chains. This requires substantial investment but is essential for genuine strategic autonomy.

- **Enhance Defense Capabilities:** Increase European defense spending and capability development to reduce dependency on U.S. security guarantees in scenarios where American forces might be committed elsewhere, or simply not reliable. Focus on areas where Europe is particularly vulnerable, including air defense, cyber capabilities, and maritime security.

- **Maintain EU Unity:** Resist Chinese attempts to exploit intra-EU divisions through bilateral arrangements that undermine collective positions. Strengthen EU-level China policy coordination while respecting member state sovereignties. Ensure economically vulnerable member states receive support enabling them to resist economic coercion.

- **Develop Strategic Military Dialogue:** Despite tensions, establish channels for security dialogue with China to reduce miscalculation risks. Propose military-to-military exchanges in uncontroversial areas, crisis communication protocols, and regular strategic discussions addressing mutual concerns. Engagement does not require agreement but can prevent dangerous misunderstandings.

- **Coordinate with Allies:** Strengthen transatlantic coordination on China policy whi-

le respecting differences in interests and approaches. Develop common positions on core security issues while allowing flexibility on economic matters. Engage Indo-Pacific partners facing more immediate challenges from Chinese military power to understand their perspectives and coordinate responses.

- **Protect Research and Innovation:** Implement measures protecting sensitive research from unauthorized technology transfer while maintaining legitimate international scientific cooperation. Establish guidelines for university collaborations with Chinese institutions, particularly in dual-use fields. Support European technology champions in strategic sectors to reduce dependencies on Chinese alternatives.
- **Monitor Infrastructure Vulnerabilities:** Conduct comprehensive assessments of Chinese access to European critical infrastructure through port facilities, telecommunications networks, energy systems, and transportation. Develop contingency plans for scenarios where access must be restricted or controlled during crises. Consider gradual replacement of highest-risk systems where alternatives exist.
- **Prepare for Multiple Contingencies:** Develop scenarios and response plans for various China-related crises, from Taiwan conflict to cyber-attacks to economic coercion. Ensure European institutions and member states understand potential requirements and have consulted in advance on appropriate responses. Regular exercises can test and improve contingency plans.
- **Communicate Clearly:** Articulate European security concerns regarding PLA expansion clearly and consistently to Chinese counterparts, avoiding ambiguity that might invite miscalculation. Simultaneously, identify areas where cooperation serves mutual interests and pursues pragmatic engagement. The goal should be relationship management rather than either containment or appeasement.

Conclusion

The People's Liberation Army's transformation into a technologically sophisticated, globally engaged military represents one of the most significant shifts in international security since the end of the Cold War. While China's military modernization primarily reflects its interests and security concerns in the Asia-Pacific region, its scope and pace inevitably impact European security.

For the European Union, China's rise as a military power presents complex challenges requiring nuanced, sophisticated responses. Unlike the Soviet Union during the Cold War, China is simultaneously a major economic partner, a strategic competitor, and a potential security threat. This multifaceted relationship defies simple characterization and requires policy approaches that can advance European interests without forcing artificial choices.

The analysis presented in this paper demonstrates that PLA capabilities pose real security challenges for Europe across multiple domains. Cyber threats to critical infrastructure are persistent and evolving. Strategic dependencies in supply chains and technology create vulnerabilities that could be exploited. The potential for conflicts in distant theaters to affect European interests through economic disruption, alliance pressures, or direct spillover effects requires serious contingency planning.

However, these challenges should not be exaggerated into existential threats or used to justify abandoning all engagement with China. European interests are best served by policies that protect genuine security concerns while maintaining beneficial economic and diplomatic relationships. This requires discrimination between acceptable and unacceptable risks, investing in capabilities that provide genuine resilience and strategic autonomy, and maintaining channels for dialogue that can prevent miscalculation and manage tensions.

European unity represents perhaps the most critical factor determining success in managing China's relationships. Chinese strategy deliberately attempts to exploit intra-EU divisions, offering bilateral arrangements that may benefit individual member states at the cost of collective European interests. Resisting these tactics requires strong EU institutions, mechanisms for supporting vulnerable member states, and recognition that long-term European interests depend on maintaining cohesion even when this imposes short-term costs on particular nations.

The recommendations outlined in this paper—from strengthening cybersecurity to reducing critical dependencies to enhancing defense capabilities—require substantial political will and financial investment. However, these investments are essential for genuine strategic autonomy and security in an era where great power competition is reshaping global order. The costs of inadequate preparation would likely exceed the costs of prudent investment in resilience and capability.

Ultimately, European policy toward China and the PLA must balance multiple objectives: protecting security interests without unnecessarily sacrificing economic benefits; maintaining values and principles while engaging pragmatically; coordinating with allies while respecting European perspectives; and managing competition without foreclosing possibilities for cooperation where interests align. This balance is difficult but not impossible to achieve with clear-eyed analysis, strategic patience, and commitment to European unity and values.

The evolving security landscape, shaped by China's rise as a military power, demands that European policymakers prepare systematically to protect its interests and values in this evolving security landscape.

Endnotes

1 Fatoumata Diallo and Maud Descamps, "China's Security Engagement with Africa and the 'Global South' Narrative", EuroHub4Sino Policy Paper 2024/16, 21st October 2024, available at China's Security Engagement with Africa & The "Global South" Narrative, last accessed 4th February 2026.

2 Niklas Swanström and Yifei Zhu, " China's Quest for Military Technology through Foreign and Civil Sources: Strategic Trends under Xi Jinping and Tactical Adjustments amid Geopolitical Challenges", EuroHub4Sino Policy Paper 2024/7, 22nd July 2024, available at China's Quest for Military Technology through Foreign and Civil Sources: Strategic Trends under Xi Jinping and Tactical Adjustments amid Geopolitical Challenges, last accessed 4th February 2026.

3 Fatouma Diallo, "China's Military-Civil Fusion in Space: Strategic Transformation and Implications for Europe", EuroHub4Sino Policy Paper 2025/9, 30th June 2025, available at https://eh4s.eu/publication/chinas-military-civil-fusion-in-space-strategic-transformations-and-implications-for-europe, last accessed 4th February 2026.

4 Maud Descamps, Jingdong Yuan and Yifei Zhu, "Military-civil Fusion is a key Chinese Strategy with long-term Implications: An Interview with Jingdong Yuan and Yifei Zhu", ISDP Experts Take, April 2025, available at https://www.isdp.eu/publication/military-civil-fusion-is-a-key-chinese-strategy-with-long-term-implications/, last accessed 4th February 2026.

5 Howard Wang, Nathan Bauchamp-Mustang, "Not Ready for a Fight -Chinese Military Insecurities for Overseas Bases in Wartime", Rand Research Report, June 2024, available at https://www.rand.org/content/dam/rand/pubs/research_reports/RRA1800/RRA1800-2/RAND_RRA1800-2.pdf, last accessed 16th February 2026.

6 Caitlin Campbell, "China Primer: The People's Liberation Army (PLA)", Congressional Research Service, IF11719, 4th September 2024, available at https://www.congress.gov/crs-product/IF11719 , last accessed 16th February 2026.

7 Niklas Swanström, "Command without Trust: Zhang Youxia's Fall and the Crisis inside the PLA", 30th January 2026, ISDP Voices 117, available at https://www.isdp.eu/command-without-trust-zhang-youxias-fall-and-the-crisis-inside-the-pla/, last accessed 16th February 2026; Fatoumata Diallo, "When Loyalty Becomes Liability: The Fall of Zhang Youxia and Xi's Grip on the PLA", ISDP Voices 118, available at https://www.isdp.eu/wp-content/uploads/2026/01/Blog-118-Fatoumata.pdf, last accessed 16th February 2026.

8 "Constitution of the People's Republic of China, The People's Republic of China, Updated 20th November 2019, available at https://english.www.gov.cn/archive/lawsregulations/201911/20/content_WS5ed8856ec6d0b3f0e9499913.html, last accessed 16th February 2026.

9 Zongyuan Zoe Liu, "Tracking China's Control of Overseas Ports", Council on Foreign Relations, 26th August 2024, available at https://www.cfr.org/trackers/china-overseas-ports, last accessed 16th February 2026.

10 Gabriel Honrada, "New PLA unit underscores intelligentized warfare shift", *Asia Times*, 22nd April 2024, available at https://asiatimes.com/2024/04/new-pla-unit-underscores-intelligentized-warfare-shift/, last accessed16th February 2026.

11 David Kertai, "From Trade Deals to Trojan Horses: China's Expanding Digital Aggression on Europe", ITIF, 1st August 2025, available at https://itif.org/publications/2025/08/01/from-trade-deals-to-trojan-horses-chinas-expanding-digital-aggression-on-europe/, last accessed 16th February 2026.

12 Covington, "China Amends Foreign Trade Law to Expand Countermeasure Toolkit", 8th January 2026, available at https://www.cov.com/en/news-and-insights/insights/2026/01/china-amends-foreign-trade-law-to-expand-countermeasure-toolkit, last accessed 16th February 2026.

13 Jevans Nyabiage, "Somali piracy has waned, so why is China's navy still in the Gulf of Aden?", South China Morning Post, 26th October 2025, available at https://www.scmp.com/news/china/military/article/3330194/why-does-chinas-navy-still-sail-gulf-aden-despite-lack-somali-pirate-attacks, last accessed 16th February 2026.

14 The White House, National Security Strategy of the United States of America, November 2025, available at https://www.whitehouse.gov/wp-content/uploads/2025/12/2025-National-Security-Strategy.pdf , last accessed 4th February 2026.

15 U.S. Department of State, "The Quad", available at https://www.state.gov/the-quad/ , last accessed 5th February 2026.

16 Arthur Sullivan, "Europe consider cutting out Huawei and China for good", DW, 19th November 2025, available at https://www.dw.com/en/europe-china-huawei-zte-ban-internet-telecommunications-artificial-intelligence-chips-5g/a-74798073 , last accessed 10th February 2026.

17 Jingdong Yuan and Yifei Zhu, "The Fourth Phase in the Taiwan Strait Military Standoff: Emerging Dynamics and the Prospect of War", EuroHub4Sino Policy Paper 2025/12, 31st July 2025, available at https://eh4s.eu/publication/the-fourth-phase-in-the-taiwan-strait-military-standoff-emerging-dynamics-and-the-prospect-of-war, last accessed 4th February 2026.

18 Niklas Swanström, "The role of the People's Armed Forces Maritime Militia: Implications for Maritime Security and European interests", EuroHub4Sino Policy Paper 2024/10, 5th September 2024, available at https://eh4s.eu/publication/the-role-of-the-peoples-armed-forces-maritime-militia-implications-for-maritime-security-and-european-interests, last ac-

cessed 4th February, 2026.

19 Błażej Sajduk and Dominika Dziwisz, "Comparative Analysis of AI Development Strategies: A Study of China's Ambitions and the EU's Regulatory Framework", EuroHub4Suno Policy Paper 2024/12, 20th September 2024, available at https://eh4s.eu/publication/comparative-analysis-of-ai-development-strategies-a-study-of-chinas-ambitions-and-the-e-us-regulatory-framework , last accessed 4th February 2026.

20 Maud Descamps, "China Cybersecurity Legislation: A Paper Tiger or an Institutionalized Theft?", May 2020, available at https://www.isdp.eu/publication/chinas-cybersecurity-legislation-paper-tiger-institutionalized-theft/, last accessed 16 February 2026.

21 *idem*

22 Niklas Swanström, Frederik Erixon, Mrittika Guha Sarkar, *The US and EU, and the Emerging Supply Chain Network*, American Foreign Policy Council press, 2024, pp.99-103.

23 Elsa Kania & Lorand Laskai, "Myths and Realities of China's Military-Civil Fusion Strategy", CNAS,28th January 2021, available https://www.cnas.org/publications/reports/myths-and-realities-of-chinas-military-civil-fusion-strategy , last accessed 16th February 2026.

24 Antonio Calcara, Joris Teer, and Ivan Zaccagnini, "Technological Underpinnings of European Autonomy and US-China Competition." Journal of European Integration 47 (6), 13th September 2025, pp. 943–63, available at https://doi.org/10.1080/07036337.2025.2536828 , last accessed 16th February 2026.

25 Niklas Swanström, "PLA in the Arctic : under the ice ?", EuroHub4Sino Policy Paper 2025/4, 31st March 2025, available at https://eh4s.eu/publication/pla-in-the-arctic-under-the-ice, last accessed 4th February 2026.

26 Maud Descamps, "The Ice Silk Road: IS China a 'Near Arctic State'?", ISDP Focus Asia, February 2019, available at https://www.isdp.eu/publication/the-ice-silk-road-is-china-a-near-artic-state/, last accessed 4th February 2026.

27 Yu Jie, "China 'under siege': How the US's hardening China policy is seen in Beijing", EuroHub4Sino Policy Paper 2024/8, 25th July 2024, available at https://eh4s.eu/publication/china-under-siege-how-the-u-ss-hardening-china-policy-is-seen-in-beijing, last accessed 4th February 2026.

Chapter 6

Global China:
Normative Impacts on the International Order

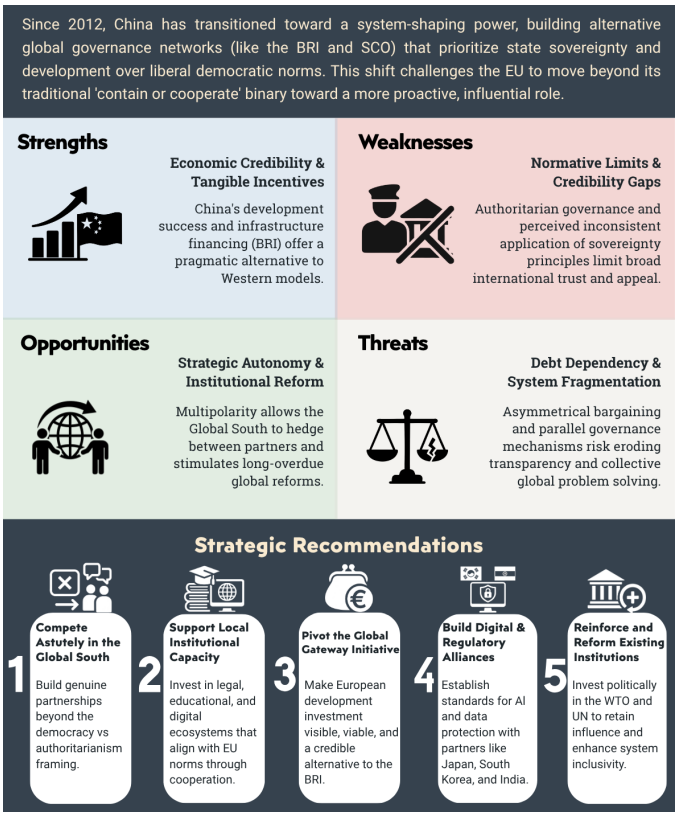
By Jeremy Garlick

Introduction

China's international relations have undergone a marked transformation since 2012, when Xi Jinping assumed the leadership of the Chinese Communist Party (CCP). This period has been characterized by greater strategic ambition, more centralized foreign-policy decision-making, and an explicit effort to reshape China's external environment in line with long-term national rejuvenation goals.[1] China's growing role in the Global South, its intensifying rivalry with the United States, and its complex relationship with the European Union define the core dynamics of its contemporary international posture.

The following SWOT analysis offers a structured framework for understanding China's international relations in the Xi era. This approach is particularly useful because China's global position is neither purely dominant nor purely constrained. Instead, it reflects a hybrid condition: China is a system-shaping power in parts of the world, especially the Global South, while simultaneously facing resistance and competition from advanced industrial democracies.

China is gradually building an alternative system of global governance that differs from the Western-led liberal international order. Rather than directly replacing existing institutions,



China is expanding its influence through parallel networks, partnerships, and initiatives that particularly engage countries in the Global South.[2] This presents a problem for the EU, which must decide whether to compete with China in the developing world or to find ways to cooperate – as a paper presented at the September 2025 EuroHub4Sino conference in Brussels demonstrated.[3]

A key mechanism for this effort is the **Belt and Road Initiative (BRI)**, launched in 2013, which uses infrastructure investment, trade, and financing to strengthen economic and political ties with developing countries.[4] China also promotes new or expanded international institutions and forums—such as **BRICS+**, the **Shanghai Cooperation Organization (SCO)**, and regional cooperation platforms—that often exclude Western powers and thereby create alternative governance structures.[5] In September 2025, President Xi Jinping also introduced China's new **Global Governance Initiative**, accompanying it with a clear statement of intent to reform the international system, an initiative he described as being led by the SCO.[6]

China's strategy emphasizes principles such as state sovereignty, non-interference, and development-led cooperation. Through bilateral deals and regional forums like the **Forum on China–Africa Cooperation (FOCAC)** and the **China–Arab States Cooperation Forum (CASCF)**, Beijing deepens political and economic relationships while positioning itself as a partner for development. This approach is qualitatively different from what the EU and the US are offering in that Chinese aid is not conditional on adhering to liberal democratic norms. China offers a 'do as I do' model rather than the 'do as I say, not as I do' model offered by

the US and the EU, which is often viewed as hypocritical by countries in the Global South.

The SWOT analysis focuses primarily on China's attempts to reform the international order, especially based on engagement with the Global South. It also offers a comparison with what the EU is offering. After the analysis, there are two additional sections evaluating opportunities and threats for the EU and Global South countries emerging from China's attempts to alter the norms of the international order. The paper concludes with a policy recommendations section that outlines strategic choices and trade-offs facing European policymakers.

Strengths arising from China's attempts to construct an alternative international order

China's efforts to influence and reshape elements of the rules-based international order – also sometimes called the liberal international order (LIO) – around norms that reflect its own governance model and strategic preferences possess several notable strengths. These strengths stem from China's economic scale, its ability to link normative ideas with material benefits, its flexible diplomatic approach toward developing states, and its growing capacity to shape institutions and global agendas.[7]

A central strength of China's approach lies in the credibility it derives from its economic development experience. Since the early 1980s, China has transformed itself from a relatively poor country into the world's second largest economy, lifting hundreds of millions of people out of poverty and becoming a major engine of global growth.[8] This trajectory allows China to present its governance model as an alternative pathway to development that prioritises economic growth, social stability, and long-term planning. For many developing countries in the Global South facing urgent development challenges, China's emphasis on state-led development and infrastructure investment appears practical and results-oriented. As a result, Chinese norms that prioritize development rights, policy autonomy, and gradual institutional reform can resonate with governments seeking policy flexibility rather than externally imposed governance models.

Closely related to this is China's ability to link normative influence with tangible economic incentives. Unlike purely ideological or rhetorical efforts to shape international norms, China often couples its ideas with financing, infrastructure projects, trade opportunities, and technological cooperation. The BRI provides participating countries with access to capital, construction capacity, and connectivity projects that might otherwise be difficult to obtain due to requirements attached by international institutions such as the World Bank. This combination of material benefits and normative messaging – such as promoting principles of "mutual benefit," "win-win cooperation," and respect for national development paths – enhances China's appeal in parts of Asia, Africa, Latin America, and the Middle East.

China's rising soft power is also assisted by negative perceptions of U.S. foreign policy in the second Trump administration.[9] At any rate, by embedding its norms within concrete economic partnerships, China increases the likelihood that its practices and principles will gain practical acceptance.[10]

Another strength lies in China's emphasis on sovereignty and non-interference. Many governments, particularly in the Global South, have historically been wary of international systems that they perceive as enabling external actors to intervene in domestic political affairs. China's diplomatic rhetoric stresses respect for national sovereignty, opposition to regime change, and the right of each country to pursue its own development model. These principles align with the preferences of states that seek to minimize external scrutiny of domestic governance or maintain greater autonomy in policymaking. In this sense, China's normative framework can be attractive not because it replaces existing global norms entirely, but because it provides an alternative set of principles that governments can invoke when resisting external pressure.

China also benefits from a pragmatic, adaptive diplomatic strategy which is flexible rather than (as some scholars have suggested) fragmented.[11] Instead of seeking to dismantle existing institutions outright, China often works within them while gradually promoting adjustments that reflect its interests. At the same time, China has supported the creation of new institutions such as the Asian Infrastructure Investment Bank (AIIB) or regional initiatives such as the FOCAC or CASCF. This dual strategy allows China to shape the evolution of the international system incrementally rather than through abrupt transformation.

By creating or supporting new regional cooperation platforms China can promote norms that emphasize development cooperation, infrastructure connectivity, and South–South partnerships.[12] These institutions often provide platforms for countries that feel underrepresented in traditional Western-led institutions such as the World Bank. For instance, the China- and Russia-led SCO began as a Central Asian cooperation forum, but has expanded to include India and Pakistan as full members and Arab states as dialogue partners, giving all participants an alternative to existing LIO structures.[13] By presenting itself as a champion of reform and greater representation for developing countries, China can frame initiatives such as these as efforts to democratize global governance rather than simply advance national interests, broadening support for China's role as a norm entrepreneur.

China's long-term strategic planning further strengthens its approach, not least by focusing on reducing security risks to a minimum level.[14] Chinese foreign policy initiatives tend to be embedded within a multi-decade vision that integrates economic, technological, and geopolitical objectives with the goal of enhancing what the Chinese call 'comprehensive national security'.[15] This long-term planning horizon allows China to pursue gradual changes in international norms and practices. Over time, sustained engagement through

infrastructure networks, supply chains, technological standards, and development partnerships can normalize Chinese preferences in areas such as digital governance, economic cooperation, and state-led development.

Finally, China's growing technological and industrial capabilities enhance its capacity to influence emerging global standards. In areas such as digital infrastructure, telecommunications, renewable energy, and e-commerce, Chinese firms and regulatory frameworks increasingly shape the technologies and practices adopted in other countries. When technological ecosystems expand across borders, they often carry embedded regulatory norms and governance principles with them. This dynamic provides China with an additional channel for diffusing its preferred approaches to data governance, cybersecurity, and digital development.

Taken together, these strengths give China a multifaceted toolkit for influencing the evolution of the international order. By combining economic resources, development partnerships, institutional engagement, and long-term strategic planning, China can advance its normative preferences in ways that are both gradual and pragmatic. While this approach does not guarantee that China will fully reshape the existing rules-based system, it provides significant advantages in promoting alternative norms and expanding its role as a major architect of global governance.

Weaknesses arising from China's attempts to construct an alternative international order

China's attempts to reshape the rules-based international order around norms and principles more closely aligned with its own political and developmental model contain a number of structural weaknesses. These weaknesses arise from contradictions between China's preferred norms and widely accepted international practices, limits in institutional legitimacy, concerns among partner states, and internal constraints within China itself.

First, a key weakness lies in the limited normative appeal of China's governance model. Many of the principles China promotes – such as strict state sovereignty, non-interference, and regime stability – resonate with some governments, particularly authoritarian regimes concerned about external criticism of domestic governance. However, they compete with global norms emphasising transparency, rule of law, human rights, and democratic accountability, which the EU supports. These norms, based on a universal interpretation of human rights, constitute the bedrock of the so-called 'liberal international order' or 'rule-based international order.' This contrasts with China's relativist approach based on economic-social rights rather than civil-political ones.[16] While China presents its model as emphasizing economic development and political stability, many countries, most notably in Europe but also in other parts of the world, remain sceptical about adopting norms per-

ceived as legitimizing authoritarian governance. This normative shortcoming constrains China's ability to build broad coalitions around its preferred international rules.

Second, China's approach often faces credibility challenges stemming from perceived inconsistencies between its stated principles and its actions. For example, China strongly advocates respect for sovereignty and territorial integrity, yet critics point to its assertive behaviour in disputed regions such as the South China Sea[17] or lack of criticism of the Russian invasion of Ukraine[18] as evidence of selective application of these principles.[19] Such discrepancies can weaken trust among other states and make it harder for China to portray itself as a reliable steward of alternative international norms. When normative leadership is perceived as instrumental or inconsistent, it limits the persuasive power required to reshape international rules.

Third, China's efforts to promote alternative norms frequently rely primarily on state-centric institutions and bilateral relationships despite the fact that Beijing promotes inclusive multilateral frameworks. New organisations and institutions such as BRICS and the AIIB have arguably expanded China's global influence, but their governance structures are often opaque or unclear. For example, the expansion of BRICS to BRICS+ with the addition of six new members[20] – including bitter enemies Iran and Saudi Arabia – did not clarify how the mechanism was supposed to work or what role it should play in the resolution of regional wars such as the 2026 US-Israel attack on Iran. This lack of transparency means that the Chinese approach to global governance and investments can also generate concerns about debt sustainability and political leverage.[21] As a result, some participating states such as Malaysia[22] have reassessed or renegotiated agreements, and others such as Indonesia[23] remain cautious about deepening engagement. The perception that China's initiatives primarily advance national interests rather than collective goods undermines their attractiveness as foundations for a new rules-based system.

Fourth, strategic competition with other major powers such as the U.S. and the EU limits China's ability to redefine global rules and instead creates a fragmented environment in which normative influence is contested.[24] China's approach may also encounter resistance from some middle powers and developing countries that wish to avoid overdependence on any single great power. Although many states welcome Chinese investment and cooperation, some of them, most notably in Southeast Asia, pursue hedging strategies that maintain ties with multiple partners.[25] Concerns about economic dependency, political influence, or loss of strategic autonomy can limit willingness to fully embrace Chinese norms. In this sense, China's growing influence does not automatically translate into normative leadership.

Fifth, institutional inertia and power structures within the existing international system also constrains China's transformative ambitions. The current rules-based order is embed-

ded in a dense network of treaties, organizations, and legal regimes based around the Bretton Woods institutions and developed since the Second World War. While China has increased its participation and influence within many of these institutions, fundamentally altering their norms requires broad consensus among member states, some of whom – those with the most to lose such as the U.S. – are likely to be opposed. This means that achieving such consensus is difficult, especially given the veto power of permanent members of the UN Security Council, which includes China and Russia but also the UK, France and the U.S. At any rate, existing international institutions are embedded in hierarchical power structures that originate with what Branko Milanovic calls the 'political West', meaning that it is highly unlikely that China will be allowed to transform them as it prefers.[26]

Finally, domestic factors within China create additional limitations. The Chinese leadership must balance international ambitions with internal economic and political challenges arising from issues such as China's aging population.[27] Economic slowdown, rising debt levels, demographic deficits, and the need to maintain social stability may constrain the resources available for expansive global initiatives. Moreover, the centralized nature of China's political system may reduce flexibility in responding to international criticism or adapting norms to diverse global contexts.

Taken together, these weaknesses suggest that while China possesses significant economic and diplomatic tools to influence the international system, translating that influence into widely accepted normative leadership remains challenging. The gap between China's preferred norms and prevailing international expectations, especially in the political West, combined with strategic resistance and institutional constraints, limits the extent to which China can successfully transform the rules-based international order in its own image.

Opportunities for China

The world is arguably at an inflection point, a transition period of global disruption and transformation.[28] A great deal of it is now produced by the actions of the Trump 2.0 administration. In the midst of this, building on the nation's remarkable economic rise over the last forty years, China has an historic opportunity – in the medium- to long-term – to try to remould the world order in its own image if it so wishes.[29] Beijing has an increasing amount of clout in the Global South, enhanced since October 2023 by negative perceptions of US foreign policy. As a previous EuroHub4Sino paper[30] demonstrated, US support for Israel in Gaza, allied with the Trump 2.0 administration's withdrawal of aid in many regions (plus the 2026 war against Iran), have given China a popularity boost – relative to a decline in US favourability ratings – evidenced in numerous global opinion surveys. This gives China a growing support base it can use to build momentum for its bid to alter global governance structures. Indeed, in 2025, Chinese officials saw their opportunity to taking a leading role in changing the international order and jumped at it. The most obvious exam-

ple of this was Premier Li Qiang's speech at the BRICS Summit in July, when he stated that:

> *All parties have come to see the growing necessity and urgency to reform the global governance system. And all are participating in and promoting the reform of global governance through various means, either on their own initiative or otherwise. China believes that in this process, one must firmly safeguard the shared interests of the international community and always stand on the right side of history. This is the only way to avoid taking a wrong turn or backpedaling, and to march forward in big strides toward peace, security, prosperity and sustainable development.*[31]

The membership of China-led international organisations such as BRICS and the Shanghai Cooperation Organization (SCO) has been expanding over the last decade. BRICS doubled its membership in 2024 and 2025 by adding Egypt, Ethiopia, Iran, Indonesia, and the United Arab Emirates. The SCO added India and Pakistan in 2017, with Iran joining in 2023 and Belarus in 2024. Many other Global South nations are partners and observers in these two organisations. Undoubtedly, China (and Russia, which is also a member of both organisations) will want to add more nations as full members in the coming years. China also cooperates with countries in the developing world through regional organisations such as the China-Arab States Cooperation Forum (CASCF) and the Forum on China-Africa Cooperation (FOCAC). These constitute a vital part of Beijing's expanding global influence network and its attempts to reform global governance.

Another major opportunity is in the field of renewable energy, in which China is rapidly becoming the runaway world leader. China now produces far more solar and wind energy than any other country on the planet: China's output is more than four times that of the US, which is in second place.[32] In 2025, China increased its exports of solar panels to African countries by 48 percent year-on-year. Africa's share of Chinese total exports went up from under three percent in 2022 to almost eight percent in 2025.[33] China is also the world's leading manufacturer of electric vehicles, producing more than 70 percent of the world's EVs in 2024: 12.4 million vehicles out of a global total of 17.3 million.[34] China's economies of scale and state subsidies mean that China's renewable technology is cheaper than anyone else's. Since renewables are on course to become the world's main source of energy long-term, the PRC's dominance in the field is certain to deliver Beijing an enormous amount of influence in global affairs. The political West's slowness over the last few decades to recognise the economic potential of renewable energy technology has effectively handed China the world on a plate. Beijing is sure to capitalise on market leadership by using it in the service of the nation's global interests.

Threats for China

There are many factors which could derail China's global takeover attempt. Chief among them is China's aging demographics. The birth-rate has reached record lows and the na-

tion's population has begun to decline.[35] This means that there is likely to be a shortage of labour in the medium-term, requiring China to rely increasingly on foreign workers as its companies expand overseas or import employees to China. The likelihood is that demographics will act as a drag on the economy, which will act as a brake slowing Beijing's capacity to gradually reform the international order at the head of a coalition of like-minded partners.

China's ongoing economic slowdown and increasing amounts of internal debt are also creating increasing difficulties for the government.[36] Working out how to maintain a degree of growth against the backdrop of debt, demographics, and rising salaries – which make China less competitive in global markets – is going to preoccupy the Chinese government in the coming decade. Efforts to restimulate markets generally just add even more debt to the national burden. Again, the repercussions for the Chinese government's ability to gain international influence and eventually aim to replace the US as the global hegemon are clear.

Meanwhile, China has to keep a constant watch on geopolitics in its neighbourhood and beyond. Territorial disputes in the South and East China Seas sit in the background of China's relations with Japan, Vietnam, and the Philippines, as well as other Southeast Asian countries. US bases dot the oceans around China and ensure that Beijing can never completely feel secure in its own supposed sphere of influence. To the south, border disputes with India undermine the potential for fruitful cooperation with the world's most populous nation, which remains at loggerheads with Pakistan, a stalwart China ally. In the Middle East, Beijing has to weigh up how to react to US aggression against Iran and US support for Israeli aggression against Gaza and Lebanon.

Linked to this is the question of chokepoints. The US attack on Iran in March 2026 revealed what had long been known to analysts: that marine chokepoints such as the Strait of Hormuz are vital to the world's energy supplies and shipping routes. Another such chokepoint is the Strait of Malacca, through which China trades with the Middle East, East Africa and Europe. The Suez Canal and the Bab-El-Mandeb strait at the entrance to the Red Sea are further crucial chokepoints on the route to Europe, which is one reason why the PRC has established a military base at Djibouti and has established increasingly friendly relations with Egypt, including BRI infrastructure investments connected to Suez.[37] Maintaining energy supplies and imports of other raw materials from Africa is an essential part of what China calls its 'comprehensive national security', which requires doing everything possible to keep shipping routes open.[38]

The Chinese policy of non-interference is constantly being challenged by crisis situations in which it is pressured to take a stance. Not least among these is the Russian invasion of Ukraine. Beijing has implicitly sided with Moscow even if it has officially avoided making any explicit commitment to the Russian cause. Amid conflicts such as these, it is doubtful that the PRC can maintain the façade of being aloof and uninvolved for much longer. Yet

Beijing does not want to be dragged into wars not of its own making.

Above all, China has to be aware of the activities of its enemies and to plan a raft of potential countermeasures, sometimes pre-emptive, to ensure that it is not contained in the Indo-Pacific region. Security alliances such as the Five Eyes[39] – made up of the leading Anglophone countries, namely the US, the UK, Canada, Australia and New Zealand – and The Quad[40] – which consists of the US, Japan, Australia, and India – seek to contain any military expansion on China's part and potentially to cut off supply routes. This is why China constantly demonstrates that it has the military capacity to push back at its enemies by staging naval exercises in the East and South China Seas. If it did not do so, this might be perceived as weakness. Hence, military exercises in the East China Sea and island-building in the South China Sea should not be interpreted as unwonted aggression on China's part, but as a necessary aspect of signalling its defensive and offensive capabilities to deter action by its enemies, foremost among them the US.

Opportunities for the EU and Global South countries

China's efforts to promote alternative norms and principles within the international order create a range of opportunities for other actors. For countries in the Global South, China's global economic engagement has significantly increased the availability of capital for large-scale infrastructure projects in regions that historically struggled to access such funding through traditional international financial institutions. Investments in transport corridors, ports, energy infrastructure, and digital connectivity can contribute to economic growth, regional integration, and industrial development. Even when countries do not fully adopt China's normative framework, they can benefit from the practical resources associated with Chinese initiatives. The presence of additional development partners also allows these states to negotiate more favourable terms by comparing offers from multiple external actors.

Closely related to this is the opportunity for greater strategic autonomy among developing states. The emergence of China as a major normative and economic actor has reduced the degree to which international rules and development models are shaped by a narrow group of advanced economies. This diversification of influence can enable governments in Africa, Latin America, Asia, and the Middle East to pursue more flexible foreign policies. Rather than aligning exclusively with a single set of norms or institutions, many countries can adopt hedging strategies that combine cooperation with multiple partners, reducing exposure to risk.[41] In practice, this may involve drawing on Chinese investment while simultaneously maintaining engagement with Western-led institutions and regional organizations. Such flexibility can enhance bargaining power and allow states to pursue development strategies tailored to domestic priorities such as maintaining political control by being seen to have stimulated economic growth.

For the European Union, China's efforts to reshape aspects of the international order can generate opportunities to redefine and strengthen its own role as a normative and regulatory actor. The EU has long emphasized rules-based multilateralism, international law, and institutional cooperation as central elements of its external identity. As China advances its own interpretations of international norms, the EU has an opportunity to articulate and promote its vision of global governance more clearly. By positioning itself as a defender of transparent, rules-based cooperation while remaining open to reform, the EU can strengthen its credibility as a mediator between different models of international order.

At the same time, China's growing global presence can encourage the EU to deepen partnerships with countries in the Global South. In many regions, governments are actively seeking diversified economic and political partnerships rather than exclusive alignments. This environment creates space for the EU to expand development cooperation, infrastructure investment, and trade agreements that complement existing Chinese initiatives while offering alternative governance standards. European initiatives focused on sustainable development, environmental standards, and transparent financing can become more attractive when countries have multiple external partners competing to provide resources and expertise.

Another opportunity for the EU lies in shaping the regulatory environment of emerging technologies and global economic sectors. As China promotes its own standards in areas such as digital governance, telecommunications, and green technologies, the EU can leverage its regulatory influence to establish alternative frameworks based on transparency, privacy protection, and open markets. This dynamic competition over standards may encourage innovation and lead to hybrid governance models that incorporate elements from different normative traditions.

More broadly, China's attempts to transform aspects of the international order may stimulate long-overdue discussions about reforming global institutions such as the World Trade Organization (WTO).[42] In consultation with China, developing countries in the form of the Group of 77 have long argued that institutions created in the mid-twentieth century do not adequately reflect contemporary economic realities or provide sufficient representation for emerging economies.[43] China's rise and its calls for institutional reform can amplify these concerns and create momentum for adjustments in voting structures, leadership representation, and development priorities within major international organizations. If they can work together, the EU and countries in the Global South may find opportunities to shape these reforms in ways that enhance inclusivity and legitimacy.

In this context, China's normative initiatives do not simply challenge the existing international order; they also create new spaces for negotiation, adaptation, and cooperation. For the European Union and many developing countries, the resulting multipolar normative

environment can provide greater flexibility, increased access to resources, and opportunities. This can positively influence the evolution of global governance as the historical trend moves towards what Amitav Acharya has called a 'multiplex world', in which many countries and systems vie for influence amidst general disruption to the international order.[44] While navigating this environment requires careful balancing of interests and values, it also offers the possibility of a more diverse, fair, and responsive international system.

Threats for the EU and Global South countries

China's efforts to promote norms and principles that diverge from aspects of the existing rules-based international order also create a range of potential threats for other actors. These threats are not limited to geopolitical competition but also involve economic dependency and the possible erosion of widely accepted governance standards. As China's normative influence expands through economic partnerships and institutional initiatives, other actors may face increasing challenges in preserving autonomy and maintaining coherent systems of global governance. These disruptive effects have sometimes been noted as occurring even in Central and Eastern Europe as China conducts bilateral diplomacy at the national level.[45]

For countries in the Global South, one of the most frequently discussed risks concerns the potential for economic dependency and so-called 'debt traps.' While Chinese investment and infrastructure financing can support development goals, large-scale lending and project financing may create long-term financial obligations that limit policy flexibility.[46] If countries accumulate significant debt linked to Chinese institutions or projects, they may face pressure to align with Chinese political or strategic preferences in international forums. Even when such pressure is informal, the perception of dependency can affect domestic political debates and external relations. In some instances, as in the well-known case of Hambantota port in Sri Lanka, renegotiations of infrastructure contracts or debt terms have highlighted the asymmetrical bargaining power that can emerge when smaller economies rely heavily on a single external partner.[47]

A related threat is the possibility that Chinese-led initiatives could reshape governance standards in ways that reduce transparency and accountability. Many Chinese-funded projects are negotiated through bilateral agreements that may not follow the same disclosure practices or procurement standards commonly used by multilateral development institutions. This can create risks for recipient countries such as weaker environmental and labour safeguards, as well as increased opportunities for corruption. Over time, if such practices become normalized, they could weaken institutional quality in countries that are still developing regulatory frameworks for large-scale development projects.

China's growing influence in digital infrastructure and technology governance also pres-

ents potential challenges, especially as far as defenders of civil rights are concerned. Chinese companies play a prominent role in building telecommunications networks, digital platforms, and surveillance technologies in many developing countries. While these technologies can accelerate digital connectivity and economic development, they may also introduce governance models that emphasize centralized control of data and information flows.[48] Moreover, dependence on a single technological ecosystem can create vulnerabilities if geopolitical tensions disrupt supply chains or technological cooperation.

For the European Union, a major concern is the potential erosion of multilateral norms and institutions. The EU's global influence relies heavily on stable international rules governing trade and legal dispute resolution. If China's approach leads to the proliferation of parallel institutions or more transactional forms of international cooperation, this could make it more difficult for the EU to promote universal standards in areas such as human rights, product safety, environmental protection, and international law. If Chinese standards become dominant in certain regions, European firms may face barriers when entering these markets, while the EU's ability to project regulatory influence could diminish.

From a global perspective, the creation of parallel governance mechanisms such as BRICS and financial institutions such as the Asian Infrastructure Investment Bank (AIIB) may weaken coordination across the international system. While diversification of institutions can sometimes improve representation, it can also lead to overlapping mandates and inconsistent standards. Effective cooperation on issues such as climate change depends on strong, coordinated institutions. If normative competition undermines these structures, both developed and developing countries could face greater difficulty addressing shared challenges. For the EU, this shift could undermine decades of efforts to embed principles concerning human rights or environmental standards within international institutions. For countries in the Global South, the weakening of these norms may limit external support for strengthening domestic governance systems or protecting vulnerable populations.

Geopolitical polarization also represents a broader strategic threat affecting both the EU and countries in the Global South. As China's normative initiatives increasingly intersect with strategic competition between major powers, other states may face pressure to align with one side or another. For developing countries such as Malaysia and Indonesia that prefer balanced relationships with multiple partners, such polarization can reduce diplomatic flexibility and complicate foreign policy decision-making. In extreme cases, countries may find themselves navigating competing infrastructure projects, technological ecosystems, or security arrangements that divide rather than integrate the international system.

In sum, China's efforts to reshape aspects of the international order introduce a complex set of risks for other actors. Economic dependency, regulatory competition, and geopolitical polarization all represent potential challenges for both the European Union and countries

in the Global South. While these actors may benefit from aspects of China's growing influence, managing the associated threats will require careful balancing of economic cooperation, political autonomy, and commitment to stable and transparent global governance structures.

Conclusion: policy implications for the EU

This SWOT analysis reveals a balance of formidable strengths and significant constraints, particularly in the Global South where China's influence is most pronounced. Comparative analysis shows that while China offers an appealing alternative to Western models, at least in the Global South, its long-term success depends on enhancing legitimacy and aligning engagement with sustainable development goals.

China's trajectory will shape the future of the international system, not through outright replacement of existing powers, but through gradual reconfiguration toward a more contested and pluralistic global order. For the EU, the question regarding China isn't as simple as 'contain or cooperate,' but how to stay influential in rule-making while protecting its core principles. Here are five policy recommendations for how the EU can stay relevant as China uses its growing clout to reshape the international order:

1) **Normatively, the EU should compete more astutely for influence in the Global South**. China's appeal is strongest in developing countries, where traditional forms of EU messaging can seem didactic, overbearing and hypocritical. The EU needs to reconfigure its approach, emphasising partnership and co-development as well as values promotion, while avoiding the binary framing of democracy versus authoritarianism.
2) **The EU should support local capacity building in Global South countries in areas in which it has competitive advantages over China.** Europe should play to its strengths in areas such as legal and educational systems. Training programmes and educational exchanges should be offered. There should be efforts to install institutional ecosystems (legal, financial and digital) which align with EU norms. Values can still be promoted, but through indirect means which address the needs and concerns of partner countries rather than through the blunt instrument of lecturing countries about their human rights shortcomings.
3) **The EU should ensure that it is offering a competitive, pragmatic alternative to China's development investment through the BRI.** China's BRI promotes a fast, state-led, less conditional form of financing for infrastructure construction. Meanwhile, the EU's Global Gateway has seemingly made little headway in terms of either credibility or real-world results. The Global Gateway – or a rebranded, relaunched version of the initiative – needs to be more visible in terms of political promotion and more viable in terms of sources and implementation of finance. Alternatively, if

this cannot be achieved, the EU should look for more ways to co-finance projects through multilateral banks or partnerships with like-minded actors such as Japan and South Korea.

4) China promotes a state-centric model of digital sovereignty, which competes directly with EU regulatory ideals. Much of China's influence comes from shaping technical standards (in areas such as AI, 5G, digital payments, and infrastructure norms). **The EU needs to increase its presence in regulatory bodies and build standards alliances with partners such as Japan, South Korea, and India, especially in areas such as AI governance, data protection, and green technologies.** The EU should build a digital coalition around GDPR-style frameworks tailored for the rest of the world, exporting EU digital rules about trusted data flows. At the same time, there need to be investments in European tech capacity in the areas of AI, cloud storage, and chips, in order to move beyond mere regulation.
5) While trying to gradually reshape existing international institutions from within, China is working to boost the influence of multilateral institutions such as BRICS and the SCO which exist outside the standard parameters of the rules-based international order. **This means that the EU needs to work to reinforce existing international institutions by suggesting reforms to make them more effective.** In large part, this can be achieved by building coalitions with partners in the Global South, working with them rather than against them. The EU needs to invest politically and financially in multilateral bodies such as the WTO and the UN to retain influence.

In the end, the emerging multipolar or 'multiplex' global order which is arising amidst global disruptions demands a more proactive stance from the EU concerning cooperation with Global South countries. The EU needs to be seen as a facilitator of global change, an actor rather than reactor. The time for vacillation is over: only by altering its image in the eyes of other countries can Europe hope to compete with China – or, better still, complement or enhance what China is inevitably going to continue doing in the coming years and decades.

Endnotes

1 Heath, T.S. (2016). *China's New Governing Party Paradigm: Political Renewal and the Pursuit of National Rejuvenation*. Abingdon: Routledge.
2 Garlick, J. (2024). China's alternative global order: a primer. EuroHub4Sino Policy Paper 2024/3, 8th April. Available at: https://eh4s.eu/publication/chinas-alternative-global-order-a-primer.

3 Garlick, J., and Senz, A. (2026). China's increasing influence in the Global South: what does it mean for the EU? EuroHub4Sino Policy Paper 2026/1, 16th January. Available at: https://eh4s.eu/publication/chinas-increasing-influence-in-the-global-south-what-does-it-mean-for-the-eu.

4 Garlick, J. (2020) The Impact of China's Belt and Road Initiative: From Asia to Europe. Abingdon: Routledge.

5 Breslin, S., & Garlick, J. (2024) China's new global governance institutions. EuroHub4Sino Policy Paper 2024/2, 2nd April. Available at: https://eh4s.eu/publication/Chinas-new-global-governance-institutions.

6 Xu, W. (2025). Xi unveils Global Governance Initiative at SCO. China Daily, 2nd September. Available at: https://www.scochina2025.org.cn/en/n3/2025/0902/c518818-20361093.html.

7 Garlick, J. (2024) Advantage China: Agent of Change in an Era of Global Disruption. London: Bloomsbury Academic.

8 Kynge, J. (2006). China Shakes the World: The Rise of a Hungry Nation. London: Weidenfeld & Nicolson.

9 Garlick, J., & Senz, A. (2025) Choosing to lose: how US and EU policy decisions contribute to greater Chinese influence in the Global South. EuroHub4Sino Policy Paper 2025/5, 16th May. Available at: https://eh4s.eu/publication/choosing-to-lose-how-us-and-eu-policy-decisions-contribute-to-greater-chinese-influence-in-the-global-south.

10 Garlick, J., & Qin, F. (2024). China's 'do-as-I-do' paradigm: practice-based normative diplomacy in the global South. The Pacific Review, 37(5), 985–1015.

11 Taylor, M., & Garlick, J. (2025). 'Flexible' versus 'fragmented' authoritarianism: evidence from Chinese foreign policy during the Xi Jinping era. Australian Journal of International Affairs, 79(2), 189–208.

12 Jakóbowski, J. (2018). Chinese-led Regional Multilateralism in Central and Eastern Europe, Africa and Latin America: 16 + 1, FOCAC, and CCF. Journal of Contemporary China, 27(113), 659–673.

13 Garlick, J. (2025) Beyond Central Asia: the ever-expanding influence of the Shanghai Cooperation Organization. EuroHub4Sino Policy Paper 2025/2, 21st February. Available at: https://

eh4s.eu/publication/beyond-central-asia-the-ever-expanding-influence-of-the-shanghai-cooperation-organization.

14 Garlick, J. (2026) How China is de-risking better than Europe. EuroHub4Sino Policy Paper 2026/6, 13th March. https://eh4s.eu/publication/how-china-is-de-risking-better-than-europe#_edn19.

15 Drinhausen, K., & Legarda, H. (2022) "Comprehensive national security" unleashed: how Xi's approach shapes China's policies at home and abroad. MERICS, 15th September. Available at: https://merics.org/en/report/comprehensive-national-security-unleashed-how-xis-approach-shapes-chinas-policies-home-and.

16 Garlick, J. (2026). The internationalisation of China's approach to human rights: implications for the EU. EuroHub4Sino Policy Paper 2026/3, 19th February. Available at: https://eh4s.eu/publication/the-internationalisation-of-chinas-approach-to-human-rights-implications-for-the-eu.

17 Dutton, P. (2011) Three disputes and three objectives: China and the South China Sea. Naval War College Review, 64(4), 42–67.

18 Cheng, E. (2022). China refuses to call Russian attack on Ukraine an 'invasion', deflects blame to U.S. CNBC, 24th February. Available at: https://www.cnbc.com/2022/02/24/china-refuses-to-call-attack-on-ukraine-an-invasion-blames-us.html.

19 Gonzalez-Vicente, R. (2015). The limits to China's non-interference foreign policy: pro-state interventionism and the rescaling of economic governance. Australian Journal of International Affairs, 69(2), 205–223, p. 206.

20 Garlick, J. (2024) A few more BRICS in the wall: how to respond to China and Russia's emerging bloc of nations. EuroHub4Sino Policy Paper 2024/5, 15th April. Available at: https://eh4s.eu/publication/a-few-more-brics-in-the-wall-how-to-respond-to-china-and-russias-emerging-bloc-of-nations.

21 Duke, R. (2025). Peak repayment: China's global lending. Sydney: Lowy Institute, 27th May. Available at: https://interactives.lowyinstitute.org/features/peak-repayment-china-global-lending/#key-findings.

22 Ng, E. (2019). Malaysia: revised China deal shows costs were inflated. The Diplomat, 16th April. Available at: https://thediplomat.com/2019/04/malaysia-revised-china-deal-shows-costs-were-inflated/#:~:text=Although%20the%20rail%20project%20will,of%20work%20had%20been%20completed.

23 Rakhmat, M.Z. (2026). Survey: Indonesians see China as an opportunity, not an ally or threat. China Global South Project, 7th January. Available at: https://chinaglobalsouth.com/analysis/indonesia-public-opinion-china-pragmatic-engagement/.

24 Bettiza, G., & Lewis, D. (2020). Authoritarian Powers and Norm Contestation in the Liberal International Order: Theorizing the Power Politics of Ideas and Identity, Journal of Global Security Studies, 5(4), 559–577.

25 Kuik, C. C. (2016). How Do Weaker States Hedge? Unpacking ASEAN states' alignment behavior towards China. Journal of Contemporary China, 25(100), 500–514.

26 Milanovic, B. (2025). The Great Global Transformation: National Market Liberalism in a Multipolar World. London: Allen Lane.

27 Breslin, S. (2025) When things no longer inevitably get better: the political economy of generational change in China. EuroHub4Sino Policy Paper 2025/17, 4th November. Available at: https://eh4s.eu/publication/when-things-no-longer-inevitably-get-better-the-political-economy-of-generational-change-in-china.

28 Milanovic, B. (2025) The Great Global Transformation: National Market Liberalism in a Multipolar World. London: Allen Lane.

29 Garlick, J. (2024) Advantage China: Agent of Change in an Era of Global Disruption. London: Bloomsbury Academic.

30 Garlick, J., & Senz, A. (2025) Choosing to lose: how US and EU policy decisions contribute to greater Chinese influence in the Global South. EuroHub4Sino Policy Paper 2025/5, 16th May. Available at: https://eh4s.eu/publication/choosing-to-lose-how-us-and-eu-policy-decisions-contribute-to-greater-chinese-influence-in-the-global-south.

31 Ministry of Foreign Affairs of the People's Republic of China (7 July 2025) Remarks by Chinese Premier Li Qiang at the session on peace and security and global governance reform of the XVII BRICS Summit. Available at: https://www.fmprc.gov.cn/eng/xw/zyjh/202507/t20250707_11666502.html.

32 Kocakuşak, D., and Zhang, M. (2026) Global wind and solar 2025: the G7 gap. Global Energy Monitor. Available at: https://globalenergymonitor.org/report/global-wind-and-solar-2025-the-g7-gap/#:~:text=China%20has%20passed%201.6%20TW,operating%20wind%20and%20solar%20capacity.

33 Berman, N. (5 April 2026) China's solar industry follows the sun to Africa. The Wire China. Available at: https://www.thewirechina.com/2026/04/05/chinas-solar-industry-follows-the-sun-to-africa/.

34 International Energy Agency (2025), Global EV Outlook 2025, IEA: Paris. Available at: https://www.iea.org/reports/global-ev-outlook-2025.

35 Peng, D. (2023) Negative population growth and population ageing in China. China Population and Development Studies 7(2), 95–103.

36 Wang, Y. (2026). China's debt after the global financial crisis: a review. Journal of Chi-

nese Economic and Business Studies, 1–42.

37 Rakha, A., & El-Aasar, K. (2024). Economic impacts of the maritime silk road initiative on the Suez Canal. Journal of Applied Economics, 27(1), 1-17.

38 Norris, W.J. (2016). Chinese Economic Statecraft: Commercial Actors, Grand Strategy, and State Control. Ithaca, NY: Cornell University Press, p. 5.

39 Papageorgiou, M., and Leoni, Z. (2025). The Five Eyes Allies and China: Assessing Threat Perceptions and Power Dynamics, Journal of Chinese Political Science 30(4), 647–677.

40 Wei, Z. (2022). The evolution of the 'QUAD': driving forces, impacts, and prospects. China International Strategy Review 4(2), 288–304.

41 Kuik, C.-C. (2021). Getting hedging right: a small-state perspective. China International Strategy Review 3(2), 300–315.

42 Jevans Nyabiage (2024). China rallies G77 countries for major reform of WTO and Bretton Woods at Kampala Summit. South China Morning Post, 22nd January. Available at: https://www.scmp.com/news/china/diplomacy/article/3249336/china-rallies-g77-countries-major-reform-wto-and-bretton-woods-kampala-summit.

43 Position Paper of the Group of 77 and China on the reform of the international and financial economic system (2010). United Nations, New York, 27th May5. Available at: https://www.g77.org/statement/getstatement.php?id=100527#:~:text=3.,making%20process%20within%20the%20BWIs.

44 Acharya A. (2017). After Liberal Hegemony: The Advent of a Multiplex World Order. Ethics & International Affairs, 31(3): 271-285.

45 Turcsányi, R. (2014). Central and Eastern Europe's courtship with China: Trojan horse within the EU? EU-Asia at a Glance, Brussels: European Institute for Asian Studies. Available at: https://ceias.eu/wp-content/uploads/2014/08/china-cee.pdf.

46 Carmody, P. (2020). Dependence not debt-trap diplomacy. Area Development and Policy, 5(1), 23–31.

47 Abi-Habib, M. (2018). How China got Sri Lanka to cough up a port. International New York Times, 26th June. Available at: link.gale.com/apps/doc/A553227911/AONE?u=anon~777daff&sid=googleScholar&xid=debf432f.

48 Mozur, P., Kessel, J.M., & Chan, M. (2019). Made in China, Exported to the World: The Surveillance State. International New York Times, 26th April. Available at: link.gale.com/apps/doc/A595638326/AONE?u=anon~5252a4ed&sid=googleScholar&xid=48954773.

This EuroHub4Sino Strategic Foresight Report contains links to external third-party websites. These links to third-party sites do not imply approval of their contents. EuroHub4Sino has no influence on the current or future contents of these sites. We therefore accept no liability for the accessibility or contents of such websites and no liability for damages that may arise as a result of the use of such content.

The project "European Hub for Contemporary China (EuroHub4Sino)" has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement number 101131737.

Funded by the European Union. Views and opinions expressed are however those of the authors) only and do not necessarily reflect those of the European Union or European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.