

Can the U.S. and China Ease Tensions with a Clean Tech Détente?

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Introduction

A techno-economic conflict is raging between China and the United States as well as its allies. It has escalated in the past two years. In July 2023, China imposed export restrictions on critical minerals and equipment for the semiconductor and electric vehicle (EV) manufacturing sectors. These export controls on gallium and germanium, which are both important raw materials for manufacturing semiconductor microchips, were likely in retaliation for the United States banning the export to China of key semiconductor manufacturing equipment in August 2022.¹

Following the emergence of low-cost Chinese EVs, a result of excess domestic capacity and China's unique brand of industrial policy, the United States announced in May 2024 tariff increases on a range of Chinese products, including EVs, solar cells, EV batteries, non-EV lithium-ion batteries, natural graphite, and permanent magnets.² The conflict escalated again in fall 2024 with China placing restrictions on antimony,³ a critical mineral for the defense industry, and the U.S. Commerce Department recommending a ban on Chinese software and hardware in internet-connected vehicles.

The United States and other Western countries have justifiable reasons to support their domestic industries, just as China has good reasons to support its economy's growth sectors. While U.S.-China strategic competition may be unavoidable, runaway economic and security escalation is neither inevitable nor desirable. An expanding trade war may harm both countries' economies and slow the clean energy transition. In the end, deteriorating trade relations may leave both sides worse off and create more ill will in an already fraught relationship. To limit the damage from an escalating trade dispute, the United States and China should negotiate a clean tech détente to balance support for domestic industries given the reality of the countries' economic interdependence.

Downsides to Deteriorating U.S.-China Relations

There are legitimate reasons for the United States and other Western governments to view overdependence on Chinese inputs as a national security threat. China has a long track record of weaponizing its dominance in supply chains to achieve political and security ends,⁴ including export controls associated with clean energy technologies.⁵ China's manufacturing subsidies can also (unintentionally or intentionally) drive out competitors as Chinese firms crowd these markets. Overcapacity in Chinese upstream mining and downstream processing in battery supply chains is also causing price volatility for lithium, nickel, cobalt, and other metals, which complicates the ability of Western countries to diversify their supply chains. Facing higher costs, some Western mining firms have halted mining operations until prices rebound.⁶

Increasing the clean energy industrial base outside of China is therefore a net positive. It will be easier to sustain the clean energy transition politically if the benefits are distributed more widely around the world. It is also sensible for U.S. and Western policymakers to seek to reduce China's ability to use its outsized role as a trade partner and its dominance of supply chains as a coercive tool. Some trade measures are necessary to avoid overreliance on China for clean energy systems, but it must be done strategically and pragmatically.

Escalating tariffs on clean technologies risks slowing down the clean energy transition at a critical time in these industries' maturation. Tariffs pass costs on to consumers, making clean technologies less palatable and thereby slowing the transition. At the same time, China's investments in solar cells, wind, batteries, and EVs are lowering the prices of technologies critical for mitigating climate change.⁷ Recent progress on climate mitigation owes significantly to the cost reductions of clean energy systems China has enabled. In 2023, China deployed nearly twice as much net renewable energy capacity as the rest of the world combined.⁸

Although the United States is mobilizing its allies and trade partners to de-risk their economies from China's supply chains through efforts such as the Minerals Security Partnership, complete de-coupling from Chinese suppliers is not feasible, nor is it desirable. The world cannot reach global carbon emissions goals without China's manufacturing capacity. Most of the production base for almost all major clean energy technologies is currently in China. Table 1 shows the production capacity for five clean energy technologies—solar, wind, batteries, electrolyzers, and heat pumps—and the required growth rate of the global industrial base if China were isolated from the global economy.

The table shows different technologies' current production (row A), current production outside China (row B), and the production that would be required in 2035 for a net-zero emissions pathway (row C). While current production is adequate for solar, there is a large production gap for most other clean technologies (rows D and E). If China, which is expected to have 18.5 percent of global GDP in 2035, only produced for its home market due to decoupling, the rest of the world would be required to increase production of clean technologies at a dramatic rate (row F) that is unlikely to be achieved, despite recent progress.⁹

Table 1. Global Clean Energy Manufacturing Capacity

	Solar gigawatts GW	Wind GW	Batteries gigawatt hours	Electrolyzers GW	Heat Pumps GW
2023 Manufacturing Base (A)	1,160	180	2,530	33.5	120
2023 Manufacturing Base Outside China (B)	219	65.5	365	10.3	73
2035 Global Production (Net-zero pathway) (C)	1,266	385	9,600	570	473
2035 Net- zero Production Gap (D) (C minus A)	106	205	7,070	537	353
Gap as Percentage of 2023 Production (E) (D divided by A)	9%	114%	279%	1,601%	294%
Gap in Scenario of Total Decoupling (F) (C*81.5%-B)/B	371%	379%	2,044%	4,410%	428%

There are also geopolitical risks of continued and worsening trade relations between the United States and China. China may well use its trade leverage over the United States and partners to further squeeze supplies of graphite and permanent magnets, at a time when the United States and partners are only now scaling up their production of these materials. China’s leadership may react to amped trade tensions with reprisals against Western companies operating in China, such as Tesla, or against other Western exporters to China.

China’s entire growth engine (and the social stability it engenders for the Chinese Communist Party) is built around export-driven, government-subsidized, industrial buildout. China has been aiming this engine at clean energy for years now. In 2023, clean energy (primarily solar, storage, and EVs) accounted for 40 percent of growth in the Chinese economy.¹⁰ Now those years of investment have paid off. In recent speeches, Chinese leadership have referred to “new quality productive forces” (新质生产力) when speaking about the nation’s shift in economic development, specifically through technological innovation and leadership.¹¹ These goals has already materialized in the EV market, as evidenced by the designs, cost, and features of EVs from BYD and other Chinese firms.¹²

Any Western effort that seeks to overly restrict China’s largest avenue of growth will risk transforming what was previously seen as a mutually beneficial trade relationship into a zero-sum competition.¹³ China’s rapid growth of clean technology does provide net benefits for the world but also has some downsides for other countries. At a moment of increasing security tensions, a disruptive rift in economic relations could elevate mutual perceptions of animosity and existential threat that could end in catastrophe not just for the two nations but also for the world.

Abruptly shutting China out of clean energy supply chains will not immediately improve the economic security of the United States or Western countries. Joint ventures and technology transfers can help the United States and Western countries catch up with China. However, political pressure led Ford to scale back its plans for a battery plant in Michigan that would use technology from the Chinese giant CATL.¹⁴ While that project is still slated to go forward, Ford is trying to navigate the complex emergent rules for tax credits associated with the Inflation Reduction Act (IRA) and rules about Foreign Entities of Concern. If projects like the Ford-CATL licensing agreement cannot survive the U.S. domestic political environment, the United States may risk falling further behind China.¹⁵

Now, China and the United States are in an escalatory cycle where each country's moves to support its own industries are perceived as threats to the other superpower, which responds with aggressive moves of its own. This negative cycle could result in a deeper and abrupt decoupling that is hugely disruptive at a critical time. Clean energy is at the center of these tensions. Avoiding a dramatic self-defeating rupture in U.S.-China economic relations is the rationale for a clean tech détente. But what would it look like?

Potential Desired End State: A Clean Tech Détente

Currently, there is no clear picture of what an ideal U.S.-China clean energy industrial relationship should look like, and in this climate of hawkishness, even actions that benefit the United States on net can be shot down.¹⁶ While many U.S. decisionmakers have recognized that completely cutting out China is impossible, Washington has not figured out what level of clean energy imports or investments in the American market would be acceptable, much less desirable.¹⁷ Equally, China should not be surprised that other powers have responded to its quest for dominance of future energy technologies with trade and regulatory measures to protect their own consumers and producers.

Without a vision for an end state that is acceptable for both countries, it will be difficult for either country to justify taking actions to rein in their respective tit-for-tat tactics. For example, from the perspective of Beijing, it is hard to square statements by U.S. Treasury Secretary Yellen that “China’s economic growth need not be incompatible with U.S. economic leadership” as the United States throws up trade barriers to China’s fastest growing sectors and even pushes allies in Europe to deny China access to key chipmaking technology.¹⁸

We propose a pathway toward continued U.S. competitiveness in strategic industrial sectors and an acceptable, yet limited, market for Chinese clean energy products.

Keeping the United States Competitive

Allowing a peer competitor to dominate supply chains in battery and electric vehicle manufacturing is not in the U.S. national interest. These industries will be major sources of wealth generation this century and serve other defense purposes should necessity arise.¹⁹ While preventing Chinese dominance of the twenty-first century American energy supply chain is a good impulse, it requires building a competitive U.S. supply chain. It is not clear that can be done without Chinese know-how.

The United States is making progress toward securing access to critical minerals for its manufacturing sector, but it has a long way to build up its processing and manufacturing capabilities of intermediate products and specialty chemicals such as battery active materials and rare earth magnets. There is a risk that the manufacturers that have invested heavily in batteries to take advantage of IRA credits will find themselves unable to compete with Chinese firms.²⁰

From a Western perspective, part of China's cost advantage comes from lower environmental and social standards in sourcing and processing minerals and partly from significant explicit and implicit state subsidies (including cheap capital, cheap land, and export quotas). But Chinese firms also are now leading producers of scientific and engineering research of clean energy technologies. For example, Chinese firms are increasingly better at manufacturing certain battery chemistries and designing EVs.²¹

The United States can and should learn from China's value chain expansion of the 1990s and early 2000s, when it accepted foreign direct investment and access to its market in exchange for strong local content requirements and technology transfers.²² The United States should be open to (and actively court) Chinese investment, while simultaneously enacting mandates around domestically managed joint ventures, technology transfer, and added value manufacturing requirements on U.S. soil.²³ Europe, for instance, is instituting tariff barriers with the aim of both supporting its own national champions and inducing Chinese producers to onshore more added value processes in the European Union.²⁴

There are historical precedents here. In the 1980s, when the United States was worried about Japanese car exports undermining domestic manufacturing capability and competitiveness, the Ronald Reagan administration negotiated voluntary export restraints from Japan and Japanese foreign direct investment in automobile manufacturing into the United States.

President-elect Donald Trump has on a couple of occasions signaled that Chinese EV makers should establish manufacturing facilities in the United States.²⁵ It is unclear how strongly he believes that or how widely that belief is shared among other policymakers.

To the extent there are manageable solutions, Chinese automakers investing in America could provide jobs for U.S. workers, deliver more affordable EVs to consumers, and onshore the latest in manufacturing processes, putting helpful competitive pressure on American automakers to innovate. Whether it be through joint ventures or foreign direct investment, the United States can learn much from China.

Acceptable Markets for Chinese Clean Energy Products

Whatever happens with U.S. domestic production, China will continue to produce a significant share of global inputs to and supplies of clean technologies. The United States has bristled at China's investments and overseas exports, particularly in the Americas and the Pacific, seeing this as part of China's wider efforts to enhance its influence in regions strategically important to the United States. However, closing access to markets needed to sustain China's economic growth is a non-starter for China as the Chinese Communist Party's legitimacy is linked to the social stability that comes from domestic industrial production.

While Washington would prefer U.S. automakers and technology companies to provide the inputs used by the Global South to meet their energy transition needs, Chinese firms are better positioned in the short- and medium-term to meet developing countries' needs for clean technologies.

A more nuanced conversation is needed about where and under what conditions China's export of green technology might be welcome. In a world that desperately needs to decarbonize, Chinese clean energy exports provide clear benefits. At the same time, there are risks because China dominates entire supply chains, making it challenging for other countries to develop manufacturing capabilities of their own. China's software and hardware could also lead to dependencies via technical standards, making it hard for Western firms to compete later.

A balance needs to be struck wherein Washington does not view Chinese exports to emerging markets as inherently contrary to U.S. interests. China will remain a global leader in exporting and manufacturing affordable clean technologies to the developing world.

However, other nations' desires to build their own indigenous clean energy industrial base present an opportunity to support greater diversity of global suppliers. The United States should work with partners and multilateral institutions to help countries develop their own clean energy industrial capacities to avoid China possessing a stranglehold on any particular technology or component. A global clean tech market without China is not feasible, but it should be possible to reduce Western dependency on Chinese supply chains, deliver more clean technology to the developing world, and lower the temperature in U.S.-China trade relations.

Reducing Tensions and Making Room for Cooperation

To get out of this spiral of retaliatory trade measures, the United States and China need to reassess their interests and reach an understanding. China needs expanding export markets to keep its economy afloat. The United States needs to build a more competitive manufacturing base, at home and in like-minded countries, instead of relying on materials and technologies produced in China that might disappear in a crisis.

There may be a zone of limited cooperation where the two countries find their interests are better served, which could help build some trust over time. We propose four measures.

Encourage Joint Ventures

The United States should encourage Chinese participation into the U.S. battery and EV sectors through joint ventures, licensing agreements with American firms, and possibly foreign direct investment. Chinese firms would gain access to the U.S. market, and U.S. firms could learn advanced manufacturing techniques from Chinese suppliers. Just as China benefits from joint ventures with Western firms and the subsequent adoption of technology, so too can the United States benefit in areas where China is now the technological leader.

Assuming IRA tax incentives remain in some form under the Trump administration, U.S. firms might need assurance from U.S. regulators that joint ventures with Chinese firms do not violate the terms of the foreign entity of concern (FEOC) guidance. Chinese firms would be expected to adhere to IRA rules and higher environmental, social, and governance (ESG) standards. China's government would have to refrain from imposing restrictions on exports of battery technology manufacturing processes. While Chinese firms are establishing facilities in Mexico, Morocco, and other countries with free trade agreements with the United States,²⁶ China should exercise caution in pursuing these avenues in lieu of direct manufacturing in the United States. Moves that solely bring industrial capacity and employment to U.S. trade partners but not to the United States could bring political blowback in the United States, making it harder to sustain, for example, the United States-Mexico-Canada Agreement (USMCA) or provisions of the IRA that allow for sourcing minerals from U.S. free trade partners.

Boost Transparency of Minerals Markets

China and the United States should work with the International Energy Agency and alternatives or complements to the London Metal Exchange to improve market information on minerals pricing. Minerals markets are opaque and thin, subject to volatility and manipulation.²⁷ More transparent markets, including enhanced efforts to create buffer stocks, would help reduce extreme market fluctuations.

To increase transparency, China should reduce overcapacity in upstream mining and batteries by ensuring plants meet basic utilization rates and certain environmental criteria to operate.²⁸ This would reassure other countries that the actions of Chinese firms are not primarily intended to drive other countries' operators out of the market.

Acknowledge Benefits of China's Exports to the Global South

The United States should signal a willingness to support Chinese exports of clean technology to the Global South (while supporting certain states in carving out their own clean energy industrial plays). This would require additional reciprocal steps including willingness by Chinese firms to adhere to international ESG standards. If the United States is worried about technological lock-in to Chinese standards and communication systems for EVs, then it should negotiate global standards for internet-connected vehicles.²⁹

This would also require mobilization of concessionary climate finance by Western countries and multinational lending institutions to support clean technology investments in the Global South. Lending institutions should be agnostic to the origins of the inputs for these investments, provided they adhere to high ESG standards and transparency. With multilateral climate finance linked to high standards, other clean technology exporters from Europe and the United States ought to be better positioned for these contracts. G7 countries, international lending institutions, and China could also embrace debt relief to provide developing countries with fiscal space to support investment in both imported and domestically produced clean energy systems.

U.S. climate envoy John Podesta has raised increased Chinese climate financing as a goal in U.S.-China climate diplomacy as part of a "new Collective Quantified Goal."³⁰ Increased Chinese financing (potentially in the form of debt relief) could be bargained for in exchange for greater U.S. openness to Chinese clean energy products in emerging markets.

Stop Imposing Trade Restrictions

The United States and China should refrain from further countermeasures and signal explicitly that they would like to move away from ever worsening trade relations over minerals and related supply chains. As a sign of good faith, China could remove export restrictions and controls on antimony, graphite, rare earth technologies, germanium, and gallium. At the very least, China could refrain from adding restrictions on graphite, non-EV lithium-ion batteries, and permanent magnets.

China recently lifted restrictions on Tesla vehicles operating throughout China. Movements of Tesla vehicles had previously been restricted on some Chinese roads out of fears of their surveillance capabilities. An agreement to use Chinese information systems facilitated this breakthrough and led to Chinese local governments also being able to purchase Tesla

vehicles. In the United States, there have been similar concerns that Chinese EVs and autonomous vehicles could pose a national security risk due to their networked capacities, including the September 2024 recommendation by the U.S. Department of Commerce to ban Chinese software and hardware in internet-connected vehicles.³¹ Here, U.S. efforts to address data security of Chinese EVs, such as the housing of data servers in the United States but permitting their entry into the U.S. market, could pave the way for Chinese EV makers and parts suppliers to manufacture in the United States.³²

These items and associated actions are not meant to be exhaustive but do represent various options aimed at lowering tensions. Should a clean tech détente between the United States and China take place, much effort should go toward defining and observing these signals. It is also prudent to think through hedging options against China's potential use of deceptive measures. Any strategy would therefore need to incorporate signposts or red flags that if observed would signal a potential break away from the détente.

Conclusions

The current policy trajectory, which assumes that a future conflict between China and the United States might be possible, could inadvertently make a conflict more likely by generating tensions. A clean tech détente presents a pathway to de-escalation and could help bolster the clean energy transition. This approach necessitates more trust building between the United States and China, recognizing the dangers of deteriorating trade relations. Both nations can move beyond the counterproductive cycle of retaliatory actions and mitigate the immediate risks of economic and security escalation while supporting a sustainable and secure global energy future.

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Notes

- 1 “China Export Curbs Choke Off Shipments of Gallium, Germanium for Second Month,” Reuters, October 10, 2023, <https://www.reuters.com/world/china/china-export-curbs-choke-off-shipments-gallium-germanium-second-month-2023-10-20>.
- 2 Reva Goujon and Charlie Vest, “US-China Trade War, Volume 2,” Rhodium Group, May 15, 2024, <https://rhg.com/research/us-china-trade-war-volume-2>.
- 3 Gracelin Baskaran and Meredith Schwartz, “China’s Antimony Export Restrictions: The Impact on U.S. National Security,” Center for Strategic and International Studies (CSIS), August 20, 2024, <https://www.csis.org/analysis/chinas-antimony-export-restrictions-impact-us-national-security>.
- 4 Victor Cha, “Examining China’s Coercive Economic Tactics,” CSIS, May 10, 2023, <https://www.csis.org/analysis/examining-chinas-coercive-economic-tactics>.
- 5 “Why Is China Blocking Graphite Exports to Sweden?,” Economist, June 22, 2023, <https://www.economist.com/business/2023/06/22/why-is-china-blocking-graphite-exports-to-sweden>.
- 6 Teesta Prakash, “Indonesia’s Nickel Supremacy, China’s Backing, and Australia’s Decline,” Australian Institute of International Affairs, February 16, 2023, <https://www.internationalaffairs.org.au/australianoutlook/indonesias-nickel-supremacy-chinas-backing-and-australias-decline>.
- 7 Michael Davidson et al., “Risks of Decoupling from China on Low-Carbon Technologies,” Science, September 15, 2022, <https://www.science.org/doi/10.1126/science.abq5446>.
- 8 Brett Christophers, “We Must Not Mistake China’s Success on Green Energy for a Global One,” Financial Times, July 21, 2024, <https://www.ft.com/content/3043fca2-111c-441f-985b-557aa2efa3a0>.
- 9 All solar and wind manufacturing base figures and the 2035 NZ Pathway production target are from the IEA, “World Energy Outlook 2024,” October 2024, <https://iea.blob.core.windows.net/assets/5e9122fc-9d5b-4f18-8438-dac8b39b702a/WorldEnergyOutlook2024.pdf>. Battery production figures and expected 2035 NZ pathway are sourced from figure 202 and figure 220 of BloombergNEF, “Long-Term Electric Vehicle Outlook 2024,” 2024. Production figures for electrolyzers are sourced from figure 12 of the BNEF 2H 2023 Hydrogen Electrolyzer Market Outlook, while the 2035 NZ Pathway figures is estimated using a compound annual growth rate (CAGR) and total installed 2035 electrolyzer capacity as provided in IEA, “Net Zero Roadmap a Global Pathway to Keep the 1.5 °C Goal in Reach.” September 2023, https://iea.blob.core.windows.net/assets/9a698da4-4002-4e53-8ef3-631d8971bf84/NetZeroRoadmap_AGlobalPathwaytoKeepthe1.5CGoalinReach-2023Update.pdf. Heat pump production is sourced from IEA, “Heat Pump

Manufacturing Capacity by Country or Region According to Announced Projects and in the Net Zero Scenario,” April 4, 2023, <https://www.iea.org/data-and-statistics/charts/heat-pump-manufacturing-capacity-by-country-or-region-according-to-announced-projects-and-in-the-net-zero-scenario>; and global heat pump manufacturing capacity is also estimated using a CAGR and total installed 2035 heat pump capacity as provided in the 2023 Update of the IEA Net Zero Roadmap.

- 10 Lauri Myllyvirta, “Analysis: Clean Energy Was Top Driver of China’s Economic Growth in 2023,” Carbon Brief, January 25, 2023, <https://www.carbonbrief.org/analysis-clean-energy-was-top-driver-of-chinas-economic-growth-in-2023>.
- 11 Arthur R. Kroeber, “Unleashing “new quality productive forces”: China’s strategy for technology-led growth,” Brookings, June 4, 2024, <https://www.brookings.edu/articles/unleashing-new-quality-productive-forces-chinas-strategy-for-technology-led-growth/>.
- 12 Kevin Williams, “American Test Of \$11,500 BYD Seagull: (This Doesn’t Come Across Cheap,)” Inside EVs, February 27, 2024, <https://insideevs.com/news/710364/byd-detroit-import-seagull-caresoft/>.
- 13 Gregory Wischer and Morgan Bazilian, “Monitoring China’s Mineral Stockpiling and Understanding Its Military Implications,” The Diplomat, July 26, 2024, <https://thediplomat.com/2024/07/monitoring-chinas-mineral-stockpiling-and-understanding-its-military-implications/>.
- 14 Joseph White, “Ford Scales Back Michigan Battery Plant, Restarts Construction,” Reuters, November 21, 2023, <https://www.reuters.com/business/autos-transportation/ford-scales-back-michigan-battery-plant-restarts-construction-2023-11-21/>; Katie Heid, “Gotion’s New Completion Date Pushed to 2031,” Michigan News Source, July 25, 2024, <https://www.michigannewsource.com/2023/07/gotions-new-completion-date-pushed-to-2031/>; Sam Metz and Associated Press, “Chinese EV Battery Makers Build Factories in Morocco and US amid IRA Subsidies,” Fortune, July 3, 2024, <https://fortune.com/asia/2024/07/03/chinese-ev-battery-makers-factories-morocco-us-ira-subsidies/>; and Reuters, “Microvast Eyes Options After US Energy Dept Cancels \$200 Million Grant,” May 24, 2023, <https://www.reuters.com/business/microvast-eyes-options-after-us-energy-dept-cancels-200-mln-grant-2023-05-24/>.
- 15 Joshua Busby, Morgan Bazilian, and Emily Holland, “China, Clean Technologies, and National Security,” War on the Rocks, October 2, 2024, <https://warontherocks.com/2024/10/china-clean-technologies-and-national-security/>.
- 16 Jude Blanchette and Lily McElwee, “Defining Success: Does the United States Need an ‘End State’ for Its China Policy?,” Center for Strategic and International Studies, October 7, 2024, <https://www.csis.org/analysis/defining-success-does-united-states-need-end-state-its-china-policy>.
- 17 Michael Mazarr, “Imagining the Endgame of the US-China Rivalry,” Engelsberg Ideas, July 23, 2024, <https://engelsbergideas.com/essays/imagining-the-endgame-of-the-us-china-rivalry/>.
- 18 U.S. Department of the Treasury, “Treasury Secretary’s Remarks on the US-China Relationship,” April 20, 2023, <https://home.treasury.gov/news/press-releases/jy1425>.
- 19 Joshua Busby, Morgan Bazilian, and Emily Holland, “China, Clean Technologies, and National Security,” War on the Rocks, October 2, 2024, <https://warontherocks.com/2024/10/china-clean-technologies-and-national-security/>.
- 20 Steve LeVine, “The Electric: A Battery Chemical Company Falls Victim to the China Playbook,” The Information, August 26, 2023, <https://www.theinformation.com/articles/the-electric-a-battery-chemical-company-falls-victim-to-the-china-playbook>.
- 21 Kevin Williams, “I Went To China And Drove A Dozen Electric Cars. Western Automakers Are Cooked.” Inside EVs, May 9, 2024, <https://insideevs.com/features/719015/china-is-ahead-of-west/>.
- 22 Robinson Mayer and Jesse Jenkins, “Shift Key Podcast, Episode 20: Iliaria Mazzocco on China’s Energy and Climate Policies,” Heatmap, June 19, 2023, <https://heatmap.news/podcast/shift-key-episode-20-ilaria-mazzocco>.
- 23 Adam Posen, (2023, August 2). “The End of China’s Economic Miracle,” Foreign Affairs, August 2, 2023, <https://www.foreignaffairs.com/china/end-china-economic-miracle-beijing-washington>.
- 24 “Carmakers Respond to EU Tariffs on Chinese-Made EVs,” Reuters, July 3, 2024, <https://www.reuters.com/business/autos-transportation/carmakers-respond-eu-tariffs-chinese-made-evs-2024-07-03/>.

- 25 “Trump Welcomes China to Build Cars in US in Departure From Biden,” Bloomberg News, July 19, 2024, <https://www.bloomberg.com/news/articles/2024-07-19/trump-welcomes-china-to-build-cars-in-us-in-departure-from-biden/>.
- 26 Sam Metz, “Chinese firms eye Morocco as way to cash in on US electric vehicle subsidies,” Associated Press, July 2, 2024, <https://apnews.com/article/china-morocco-electric-vehicles-batteries-subsidies-ea055ee37c5da66d30a38df80e4d198e>.
- 27 Cullen Hendrix and Morgan Bazilian, “Markets for Critical Minerals Are Too Prone to Failure” Barrons, December 17, 2023, <https://www.barrons.com/articles/markets-critical-minerals-lithium-cobalt-copper-51671227168>
- 28 “What do China’s plans to regulate battery capacity expansions mean for the industry?,” Benchmark Source, May 19, 2024, <https://source.benchmarkminerals.com/article/what-do-chinas-plans-to-regulate-battery-capacity-expansions-mean/>.
- 29 Joshua Cregger et al., “Global Harmonization of Connected Vehicle Communication Standards,” Center for Automotive Research, July 12, 2016, <https://www.cargroup.org/publication/global-harmonization-of-connected-vehicle-communication-standards/>.
- 30 “Top US Climate Diplomat to Visit China, September 4-6,” Reuters, September 3, 2024, <https://www.reuters.com/world/us/top-us-climate-diplomat-podesta-visit-china-sept-4-6-2024-09-03/>.
- 31 Marina Yue Zhang, “The Geopolitics of Tesla’s China Breakthrough,” The Diplomat, May 2, 2024, <https://thediplomat.com/2024/05/the-geopolitics-of-teslas-china-breakthrough/>; and Joann Muller, “U.S. Moves to Ban Chinese Tech From Connected Vehicles,” Axios, September 23, 2024, <https://www.axios.com/2024/09/23/us-ban-chinese-tech-connected-vehicles>.
- 32 Jim Pollard, “US Planning Aggressive Rules on Data Security for Chinese EVs,” Asia Financial, June 28, 2024, <https://www.asiafinancial.com/us-planning-aggressive-rules-on-data-security-for-chinese-evs>; and Matt Perrault, “Has TikTok Implemented Project Texas?,” Lawfare, May 10, 2024, <https://www.lawfaremedia.org/article/has-tiktok-implemented-project-texas>.

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