Balancing Act
Managing European Dependencies on China for Climate Technologies

By Ilaria Mazzocco

THE ISSUE
The concentration of climate technology supply chains in China has raised security and economic concerns in Europe and may lead to increasing trade measures to limit dependencies on Chinese exports. Enacting diversification and derisking policies will require careful evaluation of actual security and economic risks, which vary significantly across technologies like solar photovoltaics and lithium-ion batteries. Ultimately, remaining open to foreign direct investment, including from China, will be important to achieve a more robust supply chain within Europe, even though it will likely result in continued interdependence with China for the foreseeable future. Policymakers should closely monitor trends in existing and emerging technologies to manage risk without slowing the energy transition.

When European Commission president Ursula von der Leyen announced in September 2023 an anti-subsidy investigation into Chinese-made electric vehicles (EVs) exported to Europe, observers had mixed reactions. The response reflects the ambivalence around Europe’s commercial relations with China and its dependence on China for the technologies needed for a clean-energy transition, which is a key priority for the commission and many member states. On the one hand, competition, Chinese manufacturing, and integrated research and development (R&D) have provided consumers with more choices and have enabled widespread deployment of solar energy and EVs, among other technologies. On the other hand, a variety of economic and security concerns have come to the fore as supply chains are increasingly concentrated in China, potentially threatening the viability of existing or emerging domestic industries in Europe, with negative implications for long-term growth and employment.

Better identifying the risk associated with dependency on China for technologies needed to decarbonize the economy and finding ways to manage that risk are key challenges for many governments. European countries are facing this issue with particular urgency due to rising imports from China in key climate technologies. Cautious openness to Chinese investment, especially greenfield investment, may offer significant opportunities to enhance supply chain development outside China and within Europe, especially if it enables true diversification rather than trade diversion. Regardless, it will be important to find solutions that leave Europe’s economy stronger but do not slow the pace of energy transition, which can also improve EU energy security.

The policy choices made across the Atlantic also matter for Washington policymakers and the United States as a whole. The European Union is a strategic security partner of the United States, and economic policymaking can have significant repercussions on the security environment.
Moreover, the United States is currently grappling with how to assess the growing importance of Chinese companies on the international sphere, especially when it comes to climate technologies. The European Union’s experience can provide lessons and potential new ways to move forward on managing risk and making the most from cooperation in this space. Finally, the economic and trade-related decisions that the European Union and its member states make will have real impacts on the deployment of climate technologies with sweeping implications for greenhouse gas emissions globally.

Climate policy has become increasingly interlinked with broader geopolitical competition and concerns over domestic political economy. Governments need to balance the implications of the energy transition for jobs, growth, and industrial competitiveness, as well as dependencies on foreign countries and, of course, the risks posed by climate change. As a consequence, trade and industrial policy are becoming increasingly important tools to stimulate manufacturing in climate technologies and mitigate the effect of foreign competition. The risk is that these types of actions may raise costs, potentially slowing the pace of the transition, with negative implications for energy security and costs. The result is an increasingly complex and, in some cases, shrinking space for policymakers to operate in as they seek to juggle multiple goals.

These issues are particularly striking in the case of the European Union. A leading actor in climate diplomacy, Brussels has adopted ambitious targets and has promoted rapid deployment of renewable energy over the last two decades, playing an important role in the development of these technologies. Yet, as the economic costs of the clean energy transition have become clear, so has the political economy of the transition.

Today, the European Commission and EU member states are grappling with the interlinked challenges of mitigating climate change, investing domestically to ensure EU industries are well-equipped to compete in a low-carbon economy, creating jobs and economic growth, and avoiding overdependence on a single source that could be liable to disruptions or economic coercion. Ultimately, however, much of Europe’s success in meeting its climate, diversification, and competitiveness goals will depend on how it chooses to respond to trade and investment from China in the climate technology space.

**HOW DID CHINESE CLIMATE TECHNOLOGIES BECOME A THREAT?**

Today, China is by far the largest producer of climate technologies. Two-thirds of lithium-ion batteries are made in China, 80 percent of solar photovoltaic (PV) module capacity is located in China, and large shares of many of the key minerals used for the production of clean energy technologies, such as rare earths, lithium, and graphite, are mined or refined in China or by Chinese firms internationally. This phenomenon is, in part, thanks to the massive domestic demand for these products: over a third of solar and almost 40 percent of global wind installations by generation capacity are in China, and about 60 percent of all EVs sold globally were sold in China in 2022. A significant portion of clean energy spending is happening within China itself, accounting for about a third of overall spending in 2022 (Figure 1).

Increasingly, Chinese companies or firms producing in China are supplying these technologies to the rest of the world, raising concerns in various capitals over the implications of Beijing’s climate technology leadership. When looking at the planned expansion of manufacturing of key technologies, including batteries, solar PV, and wind turbines, China is expected to continue to lead despite ongoing efforts by other countries to build alternative supply chains, potentially undermining diversification efforts in the solar or battery
Figure 1: Clean Energy Spending in Selected Regions, 2022


Figure 2: Lithium-Ion Battery Manufacturing Capacity, 2022-2030

industry, for example (Figure 2).

China did not become a climate technology giant overnight. The current supply chain distribution is the result of long-standing global market trends, explicit government policies aimed at promoting manufacturing and strategic industries, international cooperation and integrated supply chains, and entrepreneurship. Moreover, government policies aimed at attracting domestic and foreign investment in targeted industries created highly competitive environments. In other words, China's manufacturing advantage is not just the result of subsidies, though those have been significant. Therefore, reproducing alternative supply chains can be challenging, and matching subsidies or tariffs have generally been insufficient on their own in creating the same conditions elsewhere.

The importance of globalized value chains in the development of these technologies should also be a reminder of the challenges that lie ahead in pursuing policies explicitly aimed at creating redundancies in supply chains. This process, however, in many cases raises costs. For example, some studies suggest that in 2022 solar PV manufacturers in Europe faced a 20–25 percent disadvantage relative to the lowest global cost levels due to high energy, capital, material, utility, and labor costs, even if they were to achieve economies of scale. Given current goals under the REPowerEU plan, some estimates indicate it would cost an extra $36 billion if all solar panels were made in the European Union.

Multinational companies rely on China for inputs and components, which is particularly evident in the refining of critical materials. But perhaps less understood is how China has now become central to many international corporations’ innovation systems. Interviews with companies and business associations indicate that many rely on the Chinese market for commercialization of products but also, increasingly, R&D. Scientific collaboration is also central to innovation, and Chinese universities are increasingly involved in fruitful exchanges with research institutions and scholars internationally, including Europe. In some cases, European companies (for example Volkswagen) have been investing in or creating joint ventures with promising Chinese companies, adding a layer of complexity to identifying a firm’s nationality.

These trends put in stark relief the challenge for European governments and the European Commission as they chart a path forward. Given China’s centrality in climate technology supply chains and the growing global footprint of Chinese companies abroad, the debate should comprehensively address the role of Chinese companies as they internationalize and invest in Europe and other parts of the world. Part of the solution lies in identifying more clearly what risks need to be addressed in a derisking policy for climate technologies.

DEFINING THREATS

There are several concerns regarding China’s heft in the climate technology industry, many of which are laid out in the European Economic Security Strategy released in June 2023. First, there are security concerns of overreliance on a single source for critical products or inputs or vulnerability in critical infrastructure, as outlined by Davidson et al. Second come economic concerns that center on the loss of manufacturing competitiveness and the threat to established domestic industries like the automotive one.

National security and economic security concerns over dependencies in technology and energy have been heightened since Russia’s invasion of Ukraine and the subsequent economic fallout, including restrictions on gas exports to Europe from Russia. Relying on a single source for minerals or manufactured goods—especially when the producing country is an economic competitor or systemic rival—could make European importers more exposed to price surges, shortages, and potential export bans.

Indeed, in the course of 2023, China expanded export license requirements for gallium and germanium—and more recently, graphite—raising the specter of weaponization of critical materials needed for clean energy technologies such as batteries. The move was likely aimed to signal China’s ability to leverage its position in an industry where it holds a relative advantage in response to the tightening of U.S. export controls on advanced semiconductors.

A restriction on the trade of climate technologies or their components would likely be less crippling than an oil or gas embargo. Moreover, a conflict in Taiwan could lead to wide-reaching shortages of a variety of technological inputs, including semiconductors, leading to a crisis.
reaching well beyond climate technology supply chains. As a consequence, the actual likeliness of climate technologies being weaponized in a meaningful way is relatively low.

However, high dependencies on key goods may limit countries’ willingness to enact punitive policies that could raise costs or lead to disruptions—something that may have slowed the response to Russia’s invasion of Ukraine, for example.

Economic risks including threats to domestic employment can at times outstrip security ones. Central to the whole discussion is an overarching concern over deindustrialization in Europe and lack of competitiveness, in part accelerated by high energy costs triggered by Russia’s invasion of Ukraine. Europe’s economic situation has become an increasingly urgent topic given the current challenges in the face of increasing competition with China and the United States.

Retaining some of the economic benefits of the large investments needed to achieve decarbonization domestically is politically necessary to ensure continued taxpayer support for the energy transition. Policymakers should also be prepared to address shocks to legacy industries and potential job losses from adjustments to the economy.

The distinction between security and economic concerns is important because these imply related but distinct policy actions. They may also help determine how strict derisking policies should be when it comes to managing exposure to Chinese supply chains.

Policymakers should also track changes in the Chinese industrial landscape when adopting policies to support manufacturing of specific technologies. At least three trends are already observable to varying degrees. As noted, Chinese firms continue to scale up existing capacity to meet growing demand. This has already been observed in the case of solar panels, where record deployment in Europe since 2021 has been met by a surge in exports from China.

Second, Chinese firms can reinvest profits in R&D, which government programs also support. This means Chinese firms may be in an advantageous position when developing and commercializing the next generation of some technologies—for example, solid-state batteries. This advantage could further solidify China’s leadership position in some of these supply chains and make it even harder for non-Chinese companies to compete without collaboration with China.

Finally, supply chain diversification, insofar as it is happening, is also the result of internationalization of Chinese firms. Companies in the solar, EV, and battery industry are expanding production in countries outside China to access local markets or qualify for subsidies under the Inflation Reduction Act (IRA). Europe is an important destination for some of this investment, especially for the battery industry, which is now one of the main drivers of Chinese foreign direct investment (FDI) into the European Union. In the EV industry, several Chinese firms have also indicated they are considering setting up production in Europe, thus overcoming the risk of tariffs as a result of the ongoing anti-subsidy investigation the European Commission launched in September 2023.

The internationalization of Chinese manufacturing may bring some global benefits. EU countries have high environmental and labor standards, so as long as enforcement is carried out effectively, this could potentially lower the carbon footprint of production and reduce concerns over transparency. Moreover, in theory, by facing the same costs as local companies and hiring local staff, they would be competing more fairly with local firms and contribute to the local economy. Outside of the European Union, there are opportunities for countries in the developing world to attract more Chinese investment in manufacturing of climate technologies and upgrade their economy.

The European Union finds itself in a fragile position when it comes to balancing its priorities for climate, economic growth, and national security. Since the outbreak of the Covid-19 pandemic and the 2022 Russian invasion of Ukraine, the region has faced multiple crises affecting its competitiveness and long-term growth prospects, with important implications for climate policy. Companies report in private interviews and public statements that high energy costs are particularly
concerning for future manufacturing plans in the region. Trade and industrial policy instruments deployed in other countries, such as the generous subsidies linked to localization requirements introduced to attract domestic investment in the United States through the IRA, may put Europe at a further disadvantage.

These challenges are reflected in recent regulatory activity in Europe, and official documents put out by the European Commission including the Net Zero Industry Act, the European Critical Raw Minerals Act, the Carbon Border Adjustment Mechanism, and a series of other trade instruments that are increasingly important in the clean energy technology space. Member states’ inbound investment screening tools will also likely become more important as Chinese manufacturers’ investment in the European Union expands. The European Commission’s recent announcement that it would launch an anti-subsidy investigation into EV exports from China is now putting to the test the efficacy of trade defense tools in the climate space.

Trade defense tools may be effective in defending certain industries and redirecting trade, but they are often insufficient in securing long-term competitiveness and can raise costs with harmful consequences for the deployment of certain goods. Strong industrial policy can be helpful in strengthening companies’ ability to compete effectively, but a green industrial policy includes tools to attract FDI. This requires taking a closer look at derisking efforts in solar, battery, EV, and wind industries and the implications for policy moving forward.

**SOLAR: REVISITING A SETTLED ARGUMENT?**

Until recently, the rise of the solar PV industry was seen as a remarkable achievement of globalization. Building on years of R&D and small-scale production in the United States, Japan, and Germany, the solar industry achieved maturity thanks to integrated manufacturing in China starting in the late 2000s. Also, the industry rapidly scaled thanks to generous subsidies for deployment in Europe and, later, China, which allowed commodification of solar modules. However, in the process, production became increasingly concentrated in China, which today accounts for 80 percent of solar module manufacturing.

The dynamics that enabled the growth of the Chinese solar industry are coming under closer scrutiny due to concerns about concentrated supply chains and energy security. Identifying how the European Commission might have better prevented this reorganization of supply chains when it investigated Chinese exports a decade ago, however, may be challenging because the rapid decline in solar prices is linked to Chinese large-scale manufacturing. The European Commission’s decision to pursue an anti-subsidy investigation on Chinese EV exports ex officio, rather than wait for an official complaint, was likely shaped by the sense that action was taken too late in the PV industry.

Solar Power Europe estimates there are about 49,000 full-time equivalent positions in solar manufacturing in Europe, an insignificant share of the 195 million people employed in the European Union today. Because the industry is highly concentrated in China, the actual impact on employment or potential economic implications of deepening reliance on China is not as high as in other industries.

There are, however, very high risks of disruption due to the highly concentrated nature of supply chains. The European Union was an early leader in solar but only accounts for about 1 percent of solar PV module production today. Although the International Energy Agency expects manufacturing in the European Union to double, it predicts that 70 percent of deployment will be met through imported modules in 2030.

Solar module manufacturing capacity in China is expected to expand by another 500 gigawatts (GW) by 2030, adding close to 1,000 GW of manufacturing capacity. This presents a real challenge because the industry is already facing overcapacity in China, which has lowered profit margins and make it more challenging for companies to compete effectively. Thus, even partially achieving the Net Zero Industry Act’s target of ramping up PV manufacturing in the European Union to 30 GW across the entire supply chain will require significant state support. Given the type of concern associated with dependence on China for this technology, maintaining a small but comprehensive supply chain within the European Union could help reduce some of the risk of Europe’s dependence on China even though it is unlikely to lead to a competitive
domestic industry in the foreseeable future.

Another important strategy that can help enhance security is to promote diversified sourcing from places like India and certain Southeast Asian nations, where alternative supply chains are also being developed. This strategy could have positive effects for global development, though in some cases supply chains are still highly dependent on upstream inputs from China, for example wafers.

**EVS AND BATTERIES: BALANCING COMPETITION AND COMPETITIVENESS**

If the concentration of solar PV manufacturing in China mainly raises concerns over potential disruptions to supply chains, the risks to overall economic welfare are far higher in the case of the EV and battery industries. In fact, the automotive industry is quickly evolving into a flash point for EU-China relations. The rapid rise in exports from China to Europe (Figure 3) has raised concerns that a key export industry for several countries, including Germany, might be at risk.

The rise of EV exports from China to Europe is particularly challenging to address because of the importance of EVs for decarbonizing transportation. European automakers have so far been slower in meeting growing consumer demand for EVs, and Chinese-made vehicles are generally cheaper. A further complication is that some Western automakers, most notably Tesla, are exporting from China (Figure 4).

Policymakers should pay close attention to this trend. It may decline naturally as more production capacity comes online in Europe, but given that the production capacity exists within China, there are strong incentives to use it for the export market. The ongoing anti-subsidy investigation launched by the European Commission will likely incentivize firms to find alternative solutions to access the European market.

The automotive industry’s importance in the EU

---

**Figure 3: Electric Vehicle Exports from China by Region, 2018–October 2023**

USD, Millions

<table>
<thead>
<tr>
<th>Year</th>
<th>Africa</th>
<th>Asia</th>
<th>Europe</th>
<th>Latin America and the Caribbean</th>
<th>North America</th>
<th>Oceania</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2021</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2022</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2023 Jan-Oct</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: EVs include plug-in hybrid and battery electric vehicles. The HS codes used to look up and calculate EV exports are 870360, 870370, and 870380. Please reference the interactive web version for specific values.
The economy makes it far more strategic than the solar industry. For one, the current manufacturing capacity within the European Union and the market share of European automakers are significant. The European Automobile Manufacturers’ Association estimates about 2.4 million people are directly employed in automotive manufacturing in Europe, which amounts to over 3 million when including indirect manufacturing jobs. However, automotive jobs are far more concentrated in some countries meaning that the effect of a contraction in the industry may be felt more sharply in certain regions.

As with solar panels, one of the leading challenges for manufacturers based in Europe is to achieve price competitiveness with production in China, which has benefitted from scale, lower energy prices, and significant industrial policy support over the years. A comprehensive green industrial strategy that includes openness to FDI could be effective. The localization of Japanese automotive production in North America in the 1980s provides a good example of how FDI can reduce trade tensions by creating local jobs and value added. Already, there are reports of some leading Chinese companies exploring production in Europe, including BYD and SAIC, which owns the MG brand. This trend was probably accelerated by the political signal sent by the European Commission when it launched the investigation into exports from China. However, the path forward for Chinese companies is likely to be more challenging given the current geopolitical environment.

The growth of the battery industry in Europe and significant Chinese investment in this area may provide some data points for further analysis when it comes to risks and opportunities. The industry is at the moment highly concentrated in East Asia, especially China, where 80 and 90 percent of cathode and anode production capacity, respectively, is currently located. According to some estimates, half of the world’s top 10 battery companies by market share are now Chinese, with CATL and BYD leading by a wide margin. Given the growth of the EV industry in Europe and existing relations between Chinese EV manufacturers and European automakers in the Chinese market, it is not surprising that the past few years have seen a surge of Chinese greenfield investment in Europe in this sector.

A careful collection and reviewing of open-source data...
materials, including company announcements, government documents, and news reports, reveals that just under 10 percent of existing battery manufacturing capacity in Europe today is owned by a Chinese company. This figure will rise to almost 13 percent once the Gotion High-Tech factory in Gottingen, Germany, which opened in September 2023, comes online in early 2024. When looking at future plans, including those for plants under construction and those that have only been announced, the share of Chinese investments increases to 23.5 percent (see Figure 5). These numbers clearly show that already today Europe’s targets for expanding battery manufacturing hinge on openness to FDI. Should the European Union reduce opportunities for FDI and collaboration with Chinese firms, it would likely find it harder to meet its ambitious goals.

From an economic dimension, investment (including from China) into Europe is desirable since it provides more jobs and investment and brings technological know-how in a new industry. It can also raise competition within the European Union spurring innovation and benefiting consumers. Given the high price tag attached to derisking and industrial policy efforts in the clean energy technology space, which BNEF sets at $98 billion in initial manufacturing investment to meet European demand in 2030, attracting more private sector investment is crucial.

It is also increasingly complicated to disentangle business partnerships to identify nationality. Take the case of InoBat, the battery company headquartered in Slovakia and incorporated in Norway that has at least two factories in the pipeline in Europe and an active R&D center in Slovakia. In September 2023, the Chinese battery firm Gotion acquired a 25 percent stake in InoBat and signed a pre-joint venture agreement to build a factory in Europe. The issue is further complicated by the fact that German automaker Volkswagen is Gotion’s largest shareholder (with a 24.77 percent share). This is not an isolated case, Stellantis and CATL announced in late November 2023 that they would establish a joint venture to build a factory in Europe.

Figure 5: Current and Future Battery Manufacturing Capacity in Europe

Note: Please reference the interactive web version for specific values.
Source: Author calculations based on company websites, press releases, and news reports.
There are some open questions over risk management in countries where the share of Chinese ownership in current and future plans is particularly high such as Hungary and Germany (see Figure 5). The data for these two countries reflects some of CATL’s largest scheduled investments outside of China. However, while Germany’s dependence on Chinese investment is projected to decline as other plants come online, the concentration of Chinese firms in Hungary is expected to grow.

Derisking policies should account for several factors. First, they should consider the relative share of Chinese investment and whether it is displacing desirable investments from other countries or if it presents political risks. Current data does not suggest this is an issue at the moment, with the possible exception of Hungary.

Second, policymakers should evaluate how these investments are affecting supply chain diversification efforts. If these factories were to continue to rely exclusively on components from China, bringing very little value added and production to Europe, then more should be done to incentivize further diversification. There are challenges in achieving this, as current estimates indicate the cost of battery production in Europe is 33 percent higher than in China. Some of this increase may be ameliorated through economies of scale spurred through more manufacturing and continued growth in demand or by facilitating clustering effects. However, some broader issues, including high energy costs, will require more comprehensive policy responses.

Third, and perhaps most challenging, policymakers should consider how best to enable technological diffusion to help catalyze more domestic innovation and investment—for example, encouraging firms to conduct more R&D and technical training in the European Union or providing incentives to partner with local firms. Here, however, replicating localization policies introduced in China in the automotive industry would be unfeasible and undesirable given current institutional frameworks.

Finally, a closer analysis and more transparency on how member states are engaging with Chinese firms and the types of agreements and concessions that have been made available would be beneficial. Overall, more coordination would help prevent situations that could pose a risk to the economic security and integration of the European Union by helping to reduce unforeseen risk exposure.

THE NEXT BATTLEGROUNDS: BALANCING INDUSTRIAL COMPETITIVENESS, ECONOMIC EFFICIENCY, AND CLIMATE ACTION

Looking beyond batteries and EVs, the issue of cost-effectiveness and competitiveness will continue to pose a dilemma for policymakers. The biggest risk is that, even with a surge of investment from China, products made in Europe continue to be more expensive. This risk requires actions to address structural issues that are more generally affecting competitiveness and driving deindustrialization. Moreover, if trade instruments are deployed to limit imports, local firms may fail to innovate as quickly due to a lack of direct competition or partnership with companies operating on the technological frontier. This problem arises because quickly deploying climate technologies is central not just to meeting climate goals but also to diversifying and securing Europe’s energy supply. Domestic electricity production through renewables could reduce costs and reliance on imported gas and oil.

Finally, if companies were to retreat from the Chinese market as a result of derisking policies, there could be negative implications on their innovation capacity. Policies should be assessed carefully throughout the implementation process to evaluate their impact on supply chains. This process will require considerable research, data collection, and analysis on the ground to inform policymakers of actual developments and implications for supply chains and security.

This brief has considered the trade-offs in security and economic concerns for solar PV and EVs and lithium-ion batteries—key technologies needed to make progress on decarbonization. While there is a strong economic argument for supporting the EV and battery industry and attracting investment from foreign countries such as China when they meet conditions that strengthen Europe’s economy and security, support in the case of solar manufacturing will likely continue to be driven by concerns surrounding potential exposure to shocks. Several other technologies should be analyzed. For example, the European wind industry has been struggling to compete in recent years, with high risks
for economic growth and security. Here too, as in the automotive case, the economic costs of losing these supply chains could be high, meaning there may be a role for more institutional support. The European Commission’s recent European Wind Power Action Plan begins to address some of those issues. Providing support for innovation and domestic manufacturing will likely continue to be a key condition for success with trade measures providing only temporary solutions.

In the long term, however, policymakers should evaluate the cost-effectiveness of supporting industries that cannot compete effectively on their own, especially if this raises costs of deployment significantly. Even more important for the future is how supply chains develop for technologies that have not yet reached maturity. Governments investing in technologies including green hydrogen, green steel, carbon capture and storage, heat pumps, next-generation batteries, and grid-related technologies will need to continue to balance security and economic interests but should maintain climate policy front and center.

Ilaria Mazzocco is a senior fellow with the Trustee Chair in Chinese Business and Economics at the Center for Strategic and International Studies in Washington, D.C.

The author would like to thank Andrea Leonard Palazzi, Qin (Maya) Mei, Scott Kennedy, Matt Barocas, Nic Rogers, and fall research interns Vicky Tu and Jessica Shao. All opinions and errors should be understood to be solely those of the author.

Please note that earlier versions of Figures 3 and 4 were used in the “Electric Shock: Interpreting China’s Electric Vehicle Export Boom” brief.

This brief is made possible by the generous support of the European Climate Foundation.