

**Decoupling, Derisking  
and Diversifying:  
Rethinking Russia,  
China and  
Global Supply Chains**

**3**

Geopolitical tensions, economic disruptions, and ongoing pandemic shocks have forced countries and companies alike to take a hard look at vulnerabilities and dependencies they had acquired during the go-go years of hyper-globalization. North Americans and Europeans are reconsidering their regional and global supplier networks. They are adopting new approaches to protect their societies and promote their competitiveness. And they are spearheading

an unprecedented effort to support Ukraine and punish Russia for its horrific war, as we discuss in Chapter 1.

While Russia’s aggression is creating headline disruptions, the deeper rethink centers around China, given U.S. and European concerns about inordinate dependencies on another potent strategic rival, and the country’s far greater importance as a critical node in global supply chains.

**Strategic sectors with vulnerable supply chains for both the U.S. and the EU**

-  **Semiconductors**
-  **Pharmaceuticals**
-  **Batteries**
-  **Critical materials**
-  **ICT and cloud technologies**
-  **Defense-related technologies**

**How Dependent Are Europe and the United States on China?**

In 2021, the European Commission and the United States published reviews of their respective supply chains, identifying dependencies and policies that could mitigate potential vulnerabilities.<sup>1</sup> Each identified semiconductors, pharmaceuticals, batteries and critical materials as strategic sectors with vulnerable supply chains due to highly concentrated reliance on a small number of suppliers. The EU report identified heightened import dependencies on China (52%), Vietnam (11%), and Brazil (5%); the U.S. report highlighted heavy reliance on China, in terms of both supply and demand. Tables 1 and 2 track common U.S./EU dependencies vis-à-vis the rest of the world and China in particular.

**Table 1. EU and U.S. Dependencies on China and the Rest of the World**

	Number of Dependent products	Potential for Diversification				Share in Total Import Value
		Low	Medium	Medium-High	High	
U.S./EU Dependencies on China	20	61%	9%	9%	21%	EU: 2.8% U.S.: 4.1%
U.S./EU Dependencies on Rest of the World	70	25%	8%	22%	45%	EU: 4.6% U.S.: 5.1%

Source: Sources: European Commission; United States Government; Ganyi Zhang, “EU-US: Public policies take up the challenges of the supply chain,” Upplly, July 23 2021, <https://market-insights.upply.com/en/eu-us-public-policies-take-up-the-challenges-of-the-supply-chain>.

**Table 2. EU and U.S. Mutual Dependencies on China and the Rest of the World: Examples by Sector**

	Health	Critical Materials	Renewables	Digital/ICT
U.S./EU Dependencies on China	APIs; Covid-19 related goods (face masks, gloves)	Tungstates, ferro-alloys, etc.	Permanent magnets	Laptops, cell phones, radio-broadcast receivers
U.S./EU Dependencies on Rest of the World	APIs; Covid-19 related goods (face masks, gloves)	Various	Permanent magnets Type electric accumulators	Laptops, cell phones, radio-broadcast receivers

Source: European Commission; United States Government; Zhang.

The U.S. and the EU are particularly focused on their inordinate dependence on China for many critical materials, and products needed for the green and digital transitions, such as permanent magnets, electric accumulators, cell phones, and radio broadcast receivers. When it comes to rare earths, for example, China accounts for 98% of EU imports and 80% of U.S. imports. In photovoltaics, China accounts for 97% of global wafer production, 80% of worldwide polysilicon, cells and modules production, and 70% of solar panel manufacturing. About four-fifths of wind-turbine components are manufactured in China.<sup>2</sup>

Beijing's massive state subsidies for Chinese firms in many of these areas have priced U.S. and European companies out of the market, and it has sometimes used its exports of these materials as a trade weapon. In addition, through its Belt and Road Initiative, China is locking in lower standards for carbon content in products among a wide swath of countries across Eurasia and Africa, while the U.S. and the EU struggle to scale up higher-standard infrastructure initiatives.<sup>3</sup>

Washington and Brussels have turned to their Trade and Technology Council (TTC) to facilitate joint efforts to enhance the resiliency and robustness of their respective supply chains, especially in highly-vulnerable ecosystems. Areas of shared concern beyond critical materials include Covid-related goods and active pharmaceutical ingredients (APIs, including vitamins, antibiotics, and hormones), semiconductors, ICT and cloud technologies, artificial intelligence, and defense-related technologies.

Such efforts notwithstanding, specific dependencies stand out. For example, despite growing transatlantic consensus that equipment provided by companies owned and affiliated with the Chinese government and military can pose significant security risks, Chinese vendors account for more than 50% of the 5G radio access networking technologies deployed in 8 notable European countries. Huawei enjoys a greater market share in Berlin than in Beijing.<sup>4</sup>

### Western Companies in the China Market

Most Western companies are in China because they seek to expand their presence in the Chinese domestic market, not because China is a cog in their extended global supply chains. China now accounts for a quarter of global sales

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of clothes, nearly a third of jewelry and handbags, and around two-fifths of cars, plus a significant share of packaged food, beauty products, pharmaceuticals, electronics and more. It is the world's largest market for machine tools and chemicals, and its construction industry is the largest buyer of building equipment.<sup>5</sup>

The Chinese market's overall importance to the U.S., Japanese or European economies, however, is less than generally suggested. For all listed U.S. firms, China accounts for just 4% of sales, according to Morgan Stanley. For Japanese and European companies, the figures are 6% and 8% respectively.<sup>6</sup>

The situation is different for specific sectors and individual companies. The top 200 U.S., European and Japanese companies that disclose sales in China earned \$700 billion there in 2021, or about 13% of their global sales, up from \$368 billion, or 9% of sales, in 2017. Of that total, 30% was generated by technology-hardware firms, 26% by consumer-facing businesses, and 22% by industrial companies, with carmakers and commodity businesses also important. Thirteen multinationals reported over \$10 billion of revenue a year in China, including Apple, BMW, Intel, Siemens, Tesla and Walmart. In 2022 China accounted for 25% of Tesla's global sales; 22% of Volkswagen China's global revenue; and similar percentages for Apple (19%) and Nike (18%).<sup>7</sup>

For many companies, however, the trend is negative; non-Chinese companies have lost share in 14 of 20 industries with sizable multinational presence over the past three years.<sup>8</sup> Indigenous Chinese firms are becoming more competitive, rules governing foreign companies have tightened, aid from the Chinese state is more targeted, and geopolitical challenges are mounting.



**Share of rare earths imports from China**

**98%**

**EU**

**80%**

**U.S.**

## Goods Trade

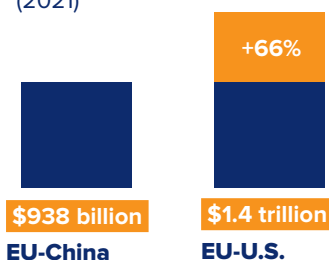
China remains a powerhouse in goods trade. China's share of global goods exports by value increased over the course of the pandemic, to 15% by the end of 2021, from 13% in 2019, while the U.S. share slipped to 7.9% from 8.6%, Germany's share shrank to 7.3% from 7.8%, and Japan's share declined to 3.4% from 3.7%. China's gains in higher-end manufactured products are eating into the global market share of countries such as Germany, which traditionally excels at making and exporting such products. State-subsidized Chinese firms are also making inroads in more technology-intensive areas that have been strengths for U.S. and various European countries.<sup>9</sup>

China accounted for 10.2% of overall EU exports in 2021, behind both the United States (18.3%) and the UK (13%), according to Eurostat. EU imports of goods from China totaled \$558 billion in 2021, a more than eight-fold increase from 2000. However, China only accounted for 8.6% of EU total imports for the year (\$6.5 trillion). Meanwhile, the EU accounted for 15.4% of China's goods exports in 2021. That figure is down from the levels of 2007 to 2010.

European countries have very different types of commercial relationships with China. For instance, southern and eastern European countries primarily import high-tech goods from China and export raw materials, agricultural products and low-tech goods back to China. The pattern is different for Germany, France, the UK, and other northern and western European countries, which tend to export high-tech goods in exchange for critical materials and lower-end consumer products, although China's share of higher-end exports to these countries is growing. Germany is one of China's largest goods trading partners, and both German goods exports and imports to and from China have surged in past decades. However, Eurostat reports that the percentages are relatively modest as a share of either country's global total of goods exports and imports.



### Trade in goods and services (2021)



U.S. goods trade with China also remains sizable, despite official efforts to curtail it. U.S. imports of goods from China totaled \$536.8 billion in 2022, a 6.3% increase from the prior year and close to the record \$538.5 billion reached in 2018. U.S. goods exports to China grew 1.6% to \$153.8 billion last year, pushing total goods trade between the two countries to a record \$690.6 billion.<sup>10</sup>

## No, China is Not Your Top Commercial Partner

These numbers have reinforced a fairly widespread view that China has become the top commercial partner of the United States and of Europe. This is incorrect, for many reasons.

First, just sticking with trade in goods: U.S.-Europe trade in goods reached an all-time high of \$1.2 trillion last year. U.S.-EU trade in goods in 2022 – a record \$909.45 billion – exceeded EU-China goods trade of \$897.36 billion and was 25% higher than U.S.-China goods trade of \$690.56 billion.

U.S.-China trade may have grown to record numbers, but higher U.S. growth in goods trade with other regions meant that China's share of U.S. goods imports actually fell to 16.5% in 2022 from 21.6% in 2017, while the share of the rest of Asia jumped to 24.8% from 20.9%. The EU+UK accounted for 19% of U.S. goods imports in 2022, roughly the same as in 2017, and greater than China's share.<sup>11</sup>

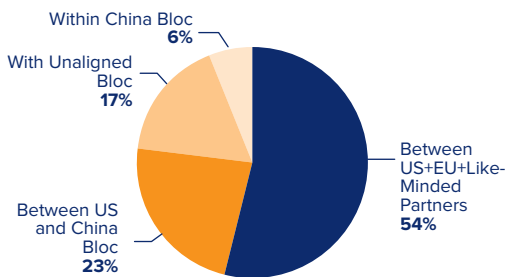
These trends could continue as ongoing disruptions redraw the global trade map. BCG projects that by the end of 2031 U.S.-China goods trade could decrease by \$63 billion and EU-China goods trade grow by just \$72 billion. This contrasts with BCG's forecast that U.S.-EU goods trade will grow by \$338 billion, and that the U.S. and the EU will each expand goods trade considerably with ASEAN countries, Africa, the Middle East, and India.<sup>12</sup>

In fact, U.S.-China goods trade links have been weakening for more than 15 years. If one looks at mutual exports standardized by GDP of the exporting country, China's goods exports reliance on the U.S. peaked in 2005, and that of the U.S. on China, in 2017. Levels in 2020 were at 28% and 82% of their respective highs. Looking at mutual exports standardized by GDP of the importing country, China's reliance on U.S. goods imports peaked in 2006, and U.S. reliance on Chinese goods imports, in 2014. 2020 levels were at 48% and 78% of their respective highs.<sup>13</sup>

Second, many commentators wrongly equate international commerce only with trade in goods. Trade between countries, however, doesn't just consist of trade in goods. It also includes trade in services, which most media accounts do not include. Services trade has been growing faster than goods trade. More European and American jobs depend on services than on goods, and the United States and the EU remain by far each other's top services trade partner. EU27 services trade with the U.S. of \$702.12 billion in 2021 was 6 times EU-China services trade of \$115.54 billion.<sup>14</sup>

Putting goods and services together, EU-US trade totaled \$1.413 trillion in 2021. EU-China trade in goods and services of \$938 billion was only 66% as large. In short, if you look at overall trade flows and not just one kind of flow, it is clear that the largest trading partner for the EU is actually the United States, and the largest trading partner for the United States is the EU, as it has been for decades. And while China's global trade is rising, it still accounts for only 6% of global trade. Most trade still happens between the U.S., Europe and like-minded partners, according to Capital Economics (Table 3).

**Table 3. Global share of goods and services trade (%)**



Sources: Capital Economics; Neil Shearing, "World economy is fracturing, not deglobalizing," Chatham House, February 8, 2023, <https://www.chathamhouse.org/2023/02/world-economy-fracturing-not-deglobalizing>.

### The Two-Lane Highway vs. the Twelve-Lane Autobahn

Moreover, just as trade is more than just flows of goods, international commerce is more than just trade. Reducing complex commercial ties to just trade in goods and services ignores the importance of a host of additional economic ties that bind Europe and the United States in far deeper ways than those that bind either to China.<sup>15</sup>

U.S. and European commercial ties with China are each akin to a two-lane highway, whereas their

**The largest trading partner for the EU is actually the United States, and the largest trading partner for the United States is the EU.**

commercial ties with each other are more like a twelve-lane *Autobahn*.

The highways to and from China are full of goods. They are busy, and they are crowded. Any type of accident on a two-lane highway can really snarl traffic – as we saw when supply chains were disrupted by the pandemic and throughout the U.S.-China tariff dispute.

Alongside the China goods highway is another lane for trade in services, but that remains narrow, as we discussed earlier.

A further lane for investment has been under construction for some years, but it continues to face many roadblocks, as U.S. and European officials sanction China for human rights abuses, express security concerns about Chinese investments, tighten investment screening and export control procedures, and as each side of the Atlantic unveils new laws and directives aimed at boosting its respective competitiveness with China. China's onerous restrictions on foreign ownership, forced technology transfer rules, opaque and politically-influenced regulatory procedures, and its own sanctions on Western officials and legislators all serve to further dampen inward investment flows. The EU-China Comprehensive Investment Agreement (CAI), inked in December 2020, remains in the deep freeze. Investment by foreign companies in China tumbled to its lowest level in 18 years in the second half of last year.<sup>16</sup>

U.S-European investment lanes, in contrast, drive a huge amount of transatlantic commerce. The U.S. accounted for almost 25% of the EU27's total outward FDI position globally in 2020 – 10 times more than China, which accounted for less than 2.5% of the total. Total European stock in the United States of \$3.2 trillion in 2021 was more than three times the level of comparable investment from all of Asia. Germany's total FDI stock in the United States totaled \$403 billion in 2021. Chinese FDI stock in the United States was less than one-tenth of that total (\$38 billion).

Europe's role vis-à-vis the United States is very similar. Measured on an historic cost basis, the



**U.S. and European commercial ties with China are each akin to a two-lane highway, whereas their commercial ties with each other are more like a twelve-lane *Autobahn*.**

total stock of U.S. FDI in Europe was \$4 trillion in 2021 – just over 61% of America’s total global investment position and more than four times U.S. investment in the Asia-Pacific region. U.S. FDI in the UK alone in 2021 was over eight times more than such investment in China.

When flows from holding companies are removed, Europe still accounted for over half of total U.S. FDI outflows globally and more than double the share to Asia from 2009 through 2021.

In the first three quarters of 2022, U.S. companies invested \$172 billion in Europe – 10 times more than what they invested in the BRICs (\$16.5 billion total in Brazil, Russia, India and China) and 26 times more than what U.S. firms invested in China (\$6.7 billion). And despite economic uncertainties related to Russia’s war against Ukraine, U.S. companies in 2022 earned an estimated \$325 billion from their operations in Europe – 48 times what they earned from operations in China.

U.S. companies spent about \$11 billion in 2022 buying or investing in Chinese companies, according to the data service firm Dealogic. That is a small slice of the more than \$1.5 trillion that U.S. companies invested globally last year.<sup>17</sup> Looking at mutual FDI flows standardized by GDP of the receiving country, China’s reliance on U.S. FDI peaked in 2005, while U.S. reliance on Chinese FDI topped in 2016. 2020 levels were down considerably from the respective maximum level, at 8% for U.S. FDI in China and 13% for Chinese FDI in the United States.<sup>18</sup>

Chinese companies were responsible for just over 2% of foreign acquisitions in the EU in 2021, while U.S. and U.K. companies accounted for roughly 32% and 26%, respectively.<sup>19</sup> While Chinese FDI in Europe rose by 25% to \$12.8 billion in 2021, that was from pandemic-depressed levels, and was skewed by one single \$4 billion purchase of Philips’ home appliances unit by Hong Kong-based private equity firm Hillhouse Capital. The annual figure was 77% below its 2016 peak of \$41 billion. Chinese FDI in Europe remains overall on a downward trajectory, due to tougher scrutiny in Europe and China’s own domestic economic

struggles. Mergers and acquisitions accounted for 69% of Chinese FDI in Europe in 2021; greenfield investments of roughly \$3.5 billion focused on the automotive and ICT industries.<sup>20</sup>

Meanwhile, Chinese FDI in the United States is very modest: just 6 deals worth \$1.8 billion in 2021 and 5 deals valued at \$3.2 billion in 2022. Both are far below the 2016 peak of 63 deals worth \$53.5 billion.<sup>21</sup>

Despite geopolitical tensions, mainland Chinese companies remain eager to list their shares abroad as a way to raise capital and lift their brand visibility. They are now sidestepping the U.S., the UK and major EU exchanges by turning to Switzerland. Following a Switzerland-China Stock Connect deal signed in July 2022, Chinese companies raised more money in Zurich than in New York last year, although the amount – \$3 billion – is relatively small. That figure is likely to increase, however, as dozens of Chinese companies join the listing pipeline.<sup>22</sup>

FDI from the EU into China totaled €5.5 billion between January and June 2022, higher than the €4.8 billion registered during the same period in both 2021 and 2020, and up slightly from the €5.4 billion invested in the first half of 2019. These figures pale in comparison with EU FDI in the United States. Also, they are not due to new European firms entering the Chinese market, they reflect a growing concentration, both in terms of the companies that are investing there, the countries they come from and the sectors in which they operate.<sup>23</sup>

In terms of countries, Germany leads the way, accounting for 43% of the total between 2018 and 2021, vs. 34% in the previous decade. According to the Rhodium Group, Germany, the Netherlands, the UK, and France made up 87% of European investment in China over the past four years, up from 69% in the previous decade.<sup>24</sup>

European investment in China by sector has been concentrated in autos, food processing, pharma, chemicals, and consumer products. It has also been defined by just a few companies. According to Rhodium, just four German firms – BMW, Mercedes, Volkswagen and BASF – accounted for a third of all European investment in China by value from 2018 to 2021. The top 10 European investors in China in each of the past four years made up nearly 80%, on average, of total European direct investment in the country, whereas over the previous decade the top 10 European investors in China made up just 49% of the total European investment value. Barely any



**Share of the EU’s total outward FDI position globally (2020)**

**25%**

**U.S.**

**2.5%**

**China**



European companies are investing in the Chinese service sector, which as of 2020 made up 53% of the country's gross domestic product.<sup>25</sup>

From January to July 2022, China only recorded \$15 billion worth of inbound M&A transactions, and in the third quarter of the year inflows dropped to a 20-year low. If one accounts for distortions from financial arbitrage and capital control circumvention, the data suggests that real economy foreign direct investments in China have actually been declining since 2020. Even if one uses the inflated official Chinese statistics, China's inward FDI stock has grown at a slower pace than its overall GDP, and the FDI intensity of China's economy is far behind most OECD countries.<sup>26</sup>

In addition, as we outline elsewhere in this report, these bustling transatlantic investment lanes are joined by innovation lanes hosting research and development flows that are the most intense between any two international partners. Jobs lanes provide employment for 16 million Europeans and Americans. And transatlantic digital lanes carry the vast majority of global digital content. In short, the commercial highway connecting Europe with the United States looks less like a two-way road than a twelve-lane Autobahn, with busier traffic and fewer speed limits.

### The Importance of Intangibles and Indirect Trade

Conventional trade statistics also overplay China's role and underplay the role of the United States and Europe in other ways. For instance, standard metrics do not capture the value of intangibles in global value chains. Intangible assets include intellectual property, patents, trademarks, copyrights, brand names, product designs, software, databases, and certain types of business organization structures.<sup>27</sup> Failure to account for these intangibles in global supply chains substantially underestimates the nature and value of developed country exports and distorts trade balances between developed and emerging economies.

Extended supply chains have turned trade in goods into trade in tasks. Companies fragment their production processes and their services activities into a number of intermediate tasks, which are undertaken in many different places to exploit the specific comparative advantage of each location. These intermediate or indirect linkages now account for at least 70% of all global trade flows.<sup>28</sup>

Global supply chain tasks, in turn, can be broken down into three types: pre-production;

production; and post-production. Pre-production tasks include research and development, product design, and branding. Post-production tasks include marketing, distribution, and retailing. Conventional trade measures account for only one of these tasks: manufacturing production. They ignore both pre- and post-production, the two tasks that on average add twice as much value, and account for more jobs, than production tasks. Moreover, the firms that specialize in pre- and post-production also determine where these tasks take place – and those firms by and large tend to be in developed economies, including the United States and in Europe.<sup>29</sup>

The concept of trade in factor income basically adds in what is missing from conventional metrics. Doing so results in new ways of looking at global trade flows. To take an example, Apple reaps 59% of its iPhone X's value added from pre- and postproduction tasks.<sup>30</sup> The least value-added is derived from its production tasks, which are located in China. Nonetheless, when those phones are exported to the United States and Europe, they are recorded as goods exports from China, even though most of the value accrues to a U.S. company. Moreover, Apple's additional billions in sales in China do not turn up in U.S. trade statistics. The trade-in-factor-income approach adds Apple's profits from within China to U.S. exports to China, because, as a recent Asian Development Bank (ADB)/WTO report puts it, "that is the underlying economic reality, not the accounting fiction". Doing so across all U.S. companies cuts the U.S.-China goods trade deficit by one-third.<sup>31</sup>

Extended supply chains have turned trade in goods into trade in tasks

#### Intermediate tasks in global supply chains



Intermediate tasks add twice as much value and account for more jobs than production tasks.

**For governments, derisking means seeking ways to both promote trade and investment and protect core economic and security interests and human rights values. For companies, derisking means identifying strategies to maintain and expand commercial ties with China while mitigating supply chain vulnerabilities and being careful not to run afoul of growing government restrictions.**

This underscores the importance of intellectual property as a driver of both supply chains and investment flows. It also highlights its value as a source of income for developed economies such as the United States and Europe: 90% of the value of firms in the S&P 500 corresponds to intellectual property, which contributes twice as much to the value of trade as does physical capital.<sup>32</sup>

An additional lens through which we can understand the role of the United States and European companies in global supply chains is through indirect trade, which is the amount of trade conducted through intermediaries instead of a simple direct exchange between two parties. According to the ADB/WTO, Germany, the United States, France and the Netherlands account for four of the world's top five indirect exporters. And while conventional trade statistics portray China as the world's leading exporter, it ranks third in terms of indirect exports. Moreover, its share is falling – due to rising labor costs and the declining share of trade in China's economy. At the same time, the integration of various European and East Asian countries in cross-border supply chains is rising.

### Derisking, not Decoupling

“Decoupling” has become a favorite buzzword to depict efforts to undo critical dependencies on suspect firms or antagonistic states. The term continues to resonate, yet it is misleading as a description of how either countries or companies are acting in this competitive and turbulent age of disruption. “Decoupling” suggests completely unhooking two connected entities. A closer look reveals a more nuanced picture.

Evidence is sparse that major economies have actually “decoupled” from one another. Russia has been the leading target of Western decoupling efforts over the past year, thanks to Moscow's invasion of Ukraine. But the results have been mixed, as we discuss in Chapter 1. China has been the larger focus of “decoupling” efforts, but there are only scattered signs of disentanglement in some limited technology sectors.

Most countries and companies are not looking to cut the cord with China. They are “derisking,” not decoupling. For governments, derisking means seeking ways to both promote trade and investment and protect core economic and security interests and human rights values. For companies, derisking means identifying strategies to maintain and expand commercial ties with China while mitigating supply chain vulnerabilities and being careful not to run afoul of growing government restrictions.

### The U.S. Protect and Promote Agenda

The United States has informally labeled its approach the “protect and promote” agenda. The “protect” element of the policy seeks to impede technological and military advances in countries of concern, like China, Russia, North Korea and Iran. Washington's tools are tougher export controls, stricter inbound and outbound investment screening, and human rights measures such as the Uyghur Forced Labor Prevention Act and forced labor bans in the US-Mexico-Canada Agreement (USMCA). The “promote” strand seeks to foster innovation and use subsidies and other forms of industrial policy to maintain “as large of a lead as possible” in sectors where there is a “national security imperative,” including semiconductors, quantum computing, artificial intelligence, biotechnology and clean energy.<sup>33</sup>

One key tool in the “protect” agenda is the “Entity List” of companies which must apply for permission to buy goods with potential military uses. The number of firms on this list increased from 130 in 2018 to 568 in 2022; a quarter of them are Chinese. A second tool, the Foreign Direct Product Rule (FDPR), restricts sales of items using U.S. technology, even if they are designed and manufactured abroad. A third tool is investment screening. Scrutiny of inward investment has already been tightened, and the Biden administration is about to unveil measures to promote greater transparency in U.S. outbound investments, particularly in advanced technologies, in China.<sup>34</sup>



In August 2020, the Trump administration used the FDPR to cut Chinese company Huawei off from American technology. The firm's revenues plunged by 29% in 2021 and its smartphones disappeared from the market altogether. In February 2022 the Biden administration issued additional FDPRs to cut off Russia from all U.S. elements of global technology supply chains. In October 2022, it followed these actions with severe FDPR restrictions that blocked U.S. firms from shipping high-end microchip manufacturing equipment to China and making it easier to crack down on countries that do not follow suit. Japan and the Netherlands agreed in January 2023 to join the restrictions. As a result, China is effectively barred from advanced semiconductors.<sup>35</sup> In February 2023, US chipmakers were told that they could only receive money under the CHIPS Act if they agreed not to expand capacity in China for a decade, and not to engage in any joint research or technology licensing effort involving sensitive technologies with a "foreign entity of concern."

In November 2022, the U.S. Federal Communications Commission (FCC) barred Huawei and Chinese tech company ZTE from selling equipment in the United States – the first time ever that the FCC has banned electronics equipment on national security grounds. In December 2022 the administration added another three dozen Chinese companies to the Entity List and applied the FDPR to 21 additional entities.<sup>36</sup>

These measures are proceeding in tandem with the "promote" agenda: a \$2 trillion overhaul of the U.S. economy that seeks to do many things at once: address climate change, boost manufacturing, curb dependence on China, and revive regions of the country that had been lagging. It is the largest set of U.S. industrial policies since the New Deal, embodied in three major pieces of legislation: the \$1.2 trillion Infrastructure Investment and Jobs Act; the \$280 billion CHIPS and Science Act; and the Inflation Reduction Act (IRA), which was valued initially at \$396 billion, yet could be much more, since some of the tax credits it offers are not capped. The Chips and Science Act has triggered \$200 billion of private investment in U.S. chipmaking capacity.<sup>37</sup> The IRA could spur \$1.7 trillion in public and private investments, according to Credit Suisse. We discuss the IRA in Chapter 4.

These federal outlays, which are already reshaping supply chains, are being complemented by subsidies offered by some individual states. Georgia, for instance, provided over \$3 billion in financial incentives last year to two carmakers building electric vehicle factories.<sup>38</sup>

## The EU's Protect and Promote Agenda

While the EU and its member states do not use the phrase "protect and promote" to describe their derisking agenda, essentially this is also what they, and the UK, are doing.

The EU's "protect" agenda is complicated because member states, not the European Commission, retain authority over many sensitive areas, and each tends to address dependency issues differently. When serious challenges arise, member states have shown a willingness to act. In the last year alone European governments spent €570 billion to shield their own societies from the energy shocks generated by the war.<sup>39</sup> They guard their prerogatives jealously.

Nevertheless, the EU does have tools at its disposal. It has long had the ability, if not always the will, to use trade defense instruments to impose anti-subsidy and antidumping duties on unfairly cheap imports. It has imposed a broad range of export controls on Russia, as we discuss in Chapter 1. Member states have extended the Xinjiang sanctions they first imposed in March 2021.

In addition, Germany's Supply Chain Due Diligence Act, which came into force on January 1, requires companies to meet extensive obligations to ensure human rights and environment best practices in their supply chains. A related, and even more stringent, EU Supply Chain Due Diligence Directive will be debated in the European Parliament this year.

Moreover, at the urging of the Commission, nearly all member states now have inward investment screening mechanisms, and some have tightened the laws they already had, as has the UK. This year the Commission is looking at ways to screen outbound investments.

Finally, the EU's new Foreign Subsidies Regulation, which comes into force on July 1, 2023, empowers the Commission to prevent state-subsidized companies from producing in Europe or bidding for public procurement contracts there. While the rule was originally intended with China in mind, it could negatively affect U.S. companies deemed to be enjoying state subsidies under the IRA or related legislation.<sup>40</sup>

The EU's "promote" agenda has centered on NextGenerationEU, a €806 billion funding program to help EU member states recover and revive from the pandemic. It is the largest stimulus

package ever financed in Europe. The funds are being reinforced by elements of the EU's long-term budget, bringing the total of deployable funds to €2.018 trillion in current prices, to help create, in the EU's words, a "greener, more digital and more resilient" Europe. Elements of the package have been reshaped in response to ongoing events, particularly the need to shift away from energy dependencies on Russia.<sup>41</sup> Debates about repurposing the funds have been reenergized by European concerns over massive cleantech subsidies being offered by China and the United States, as we discuss in Chapter 4.

The "promote" agenda also includes the European Chips Act, which is intended to strengthen semiconductor value chains within the EU, with a goal of achieving 20% of worldwide production capacities. While the Act boasts a budget of more than €43 billion, it has not yet been approved, and much of the money is drawn from existing EU programs, from member states, or assumed private investments.

### Derisking Made in China

The derisking phenomenon is not confined to the U.S. and Europe. When Beijing announced its "Made in China 2025" program eight years ago, it was explicit in its ambition to free China from dependence on Western technologies and to direct massive government support to make the country a world-beater in a number of critical sectors. It has since adjusted some aspects of this effort, but the essentials remain. Beijing also proclaimed a "military-civil fusion strategy" intended to use technological advances to align its commercial and defense sectors, and prioritized the capability to master "choke point" technologies. China's current five-year plan emphasizes industrial strategies to catch up and lead in critical technology domains. U.S. Secretary of State Antony Blinken says Beijing's plan seeks to make "China less dependent on the world and the world more dependent on China".<sup>42</sup> The

European Chamber of Commerce in China adds that Beijing's policies are causing China to lose its "allure," as many foreign firms reconsider their China presence.

### Corporate Strategies

Even before the pandemic and Russia's renewed aggression, many companies had grown concerned about vulnerabilities and fragilities that had been accumulating in their deeply intertwined supply chains. The subsequent conflation of so many shocks has now led to an across-the-board rethink of the hyper-globalization model.

Some firms have been forced to divest or divert production from Russia or China. We address Russia in Chapter 1. Divesting from China is a path being chosen by such prominent firms as Carrefour, Gap, Yahoo, Epic Games and Microsoft-owned LinkedIn. U.S. computer maker Dell aims to stop using chips made in China by 2024 and has told suppliers to significantly reduce the amount of other "made in China" components.<sup>43</sup> According to the Asian Development Bank, more than 83% of North American businesses and about 90% of European firms have announced plans to relocate at least part of their supply chains away from China.<sup>44</sup>

Most firms are simply not coming to China. The number of greenfield FDI projects in China announced by foreign investors fell to historic lows in 2020 and 2021, both in absolute and relative terms, accelerating a downward spiral that began in the middle of the last decade. China's share of global FDI projects has sunk by a factor of five over the past two decades, from roughly 15% in 2003 to 3.3% in 2021, behind Poland (3.4%) and India (3.4%), according to fDi Markets. Twenty years ago, China attracted one in six FDI projects announced globally. Now it attracts just one in 33. And these figures are likely to be even lower, when one considers that 71% of China's inbound FDI came from Hong Kong in 2021. A large portion of those inflows originated from Chinese companies, bringing into question how "foreign" such direct investments are.

Greenfield FDI is also becoming more concentrated, in terms of numbers of firms and countries. Notably, fDi Markets data shows that German and Japanese companies have traded places. In 2010, Japanese companies accounted for 14.7% of the greenfield FDI market in China; German firms occupied roughly 8.6%. In 2021,

**Even before the pandemic and Russia's renewed aggression, many companies had grown concerned about vulnerabilities and fragilities that had been accumulating in their deeply intertwined supply chains.**

German companies were responsible for 14.6% and Japanese companies for only 8.1%.

### From Chains to Webs

Some corporations are adopting separate supply chain models for the China and non-China markets. Apple, Yum! Brands, and McDonald's are among the companies that have split out their China business. Many are adopting "China plus one" or "China plus two" approaches: retaining existing production facilities in China, but striking additional supply deals, or setting up additional manufacturing plants, in other countries.<sup>45</sup>

Many corporations are shifting from supply chains to supply webs. They are replacing single-sourcing of critical components with multiple, and sometimes geographically diverse, suppliers so as to prioritize uninterrupted deliveries over just-in-time efficiencies. By the end of 2022 almost half of companies had diversified their supplier base, and less than 15% were relying on "just-in-time" deliveries.<sup>46</sup>

Vietnam has been the biggest beneficiary of this trend. Half of Google's newest Pixel phones will be made in Vietnam this year. Apple is supplementing its operations in China by producing iPads, MacBooks, AirPods and smartwatches in Vietnam. Apple's many suppliers are following. The results are impressive: high-tech goods as a share of Vietnam's exports hit 42% in 2020, up from 13% in 2010. Vietnam's economy has more than doubled in size over the past decade.<sup>47</sup>

India is also gaining from corporate diversification away from China, as multinationals invest not just in low-cost labor but in higher-end innovation activities. Between January and October 2022, India attracted 225 FDI projects in R&D activities – a third of the global total and as many projects as the U.S., UK and China combined. Its global market share of handset production, including smartphones and feature phones, grew from 9% in 2016 to 16% in 2021, whereas China's share, while still dominant, declined from 74% in 2016 to 67%. Apple and its suppliers are developing India as a source of growth and as a strategic production base, with exports intended for Europe and other markets.<sup>48</sup>

### Near-shoring and Friend-shoring

Related to these shifts is a phenomenon dubbed "near-shoring," "friend-shoring," or "ally-shoring," which means production and sourcing/shifting

**Twenty years ago, China attracted one in six FDI projects announced globally.**

**Now its attracts just one in 33.**

supply chains away from geopolitical rivals toward more politically friendly countries, or to close allies. U.S. and European officials have publicly endorsed "friend-shoring" approaches. The U.S. CHIPS Act includes provisions prioritizing partnerships with allies as well as guardrails to weaken commercial ties with China. So does the U.S. Inflation Reduction Act, although with significant discriminatory elements, as we discuss in Chapter 4. The EU's still-pending Chips Act also targets "excessive dependencies" and foresees friend-shoring components such as "semiconductor international partnerships with like-minded countries." Japan, too, has offered incentive packages to U.S. and European firms to expand cooperation in tech fields, including semiconductor production. U.S. and European labor-abuse laws have been an additional factor prompting major textile brands to near-shore closer to home, although China remains a major production site for most.<sup>49</sup>

Semiconductors, fueled by offers of massive government subsidies, lead the field when it comes to friend-shoring initiatives. Intel, TSMC, and Samsung, the world's three biggest chipmakers, have announced commitments to invest at least \$380 billion over the next decade to build new factories in Japan, Germany, Ireland, Israel, Japan, South Korea, Taiwan and the United States. Intel says its goal is to reduce Asia's share of its global semiconductor manufacturing from 80% to 50% by the end of the decade, with the U.S. accounting for 30% and Europe for 20%.<sup>50</sup>

Overall, however, friend-shoring initiatives have yet to progress beyond early-stage efforts. One attempt is the Minerals Security Partnership launched in 2022. Its members – Australia, Canada, the European Commission, Finland, France, Germany, Japan, South Korea, Sweden, the UK and the United States – have declared their intent to form a supply-chain bloc for critical materials mining through refining to manufacturing and recycling, based on Western standards and excluding China, which currently is central to the production and refining of many critical materials.<sup>51</sup>

### Box 1. Mexico's "Geopolitical Planetary Alignment"

Mexico is the new face of nearshoring, as companies seeking to avoid China tensions and supply chain disruptions relocate production facilities closer to, but just outside, the U.S. market. U.S. investors have put more money into Mexico than China in each of the past two years, and Mexico exported 18% more goods (\$455 billion) to the United States in 2022 than it did in 2021. These trends reflect the deeply intertwined nature of supply chains across the North American market; roughly 40% of the value of Mexico's exports to the U.S. consists of parts and components made at U.S. factories. This contrasts greatly with U.S. imports from China, only 4% of which are U.S.-made.<sup>52</sup>

Mexico had failed earlier to capitalize on the U.S.-China trade conflicts: between 2018 and 2021 the proportion of manufactured goods exported into the U.S. from Mexico barely changed, whereas non-Chinese Asian manufacturers increased their share of U.S. manufactured goods imports from 12.6% to 17.4%. Now, however, European and Asian companies are joining U.S. firms to locate production in Mexico. BMW will invest an additional €800 million to boost electric vehicle production in Mexico, which stands to benefit from its inclusion in U.S. subsidies under the Inflation Reduction Act. Scores of Taiwanese and even mainland Chinese

companies are following trailblazing South Korean and Japanese companies that have been using Mexico as a nearshoring base within the vast market covered by the USMCA agreement.<sup>53</sup>

These moves are refashioning supply chains within North America. Rather than offloading containers from Asia at Southern California ports, more U.S. companies are using Mexico's Pacific port of Manzanillo. A significant number of those containers are then transported to the Mexican border state of Nuevo Leon, where their contents are either further processed or brought across the border to Texas. The results are striking: since October 2021, the state of Nuevo Leon has attracted more than \$7 billion in foreign investment – more FDI that has flowed into China during that period. What is equally striking is that Chinese companies have accounted for 30% of those investments, second only to the United States at 47%. "Nuevo Leon is having a geopolitical planetary alignment," says the state's governor.<sup>54</sup>

These new dynamics also reconfiguring supply routes within the United States, as more goods flow to America's largest inland port of Laredo, Texas, and from there on to the U.S. Midwest and East Coast. Previously, Midwest/East Coast demand accounted for two-thirds of the shipments out of Southern California ports.



### 3. Decoupling, Derisking and Diversifying: Rethinking Russia, China and Global Supply Chains

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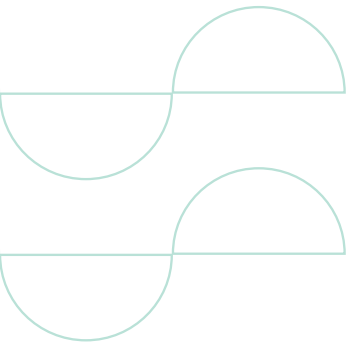






**Transatlantic Energy  
Transformations**

**4**



Three major shifts are transforming the transatlantic energy economy. First, the United States has become a critical energy supplier to Europe. Second, groundbreaking U.S. and EU policy initiatives are generating some adjustment challenges, yet ultimately promise to accelerate each party's efforts to address climate change, supercharge the transition to cleaner energies, boost competitiveness, and reduce strategic vulnerabilities. Third, already dense and now deepening transatlantic linkages among energy investors, innovators and firms offer substantial opportunities for North America and Europe to spearhead the next generation of clean technologies.

### The United States: A Critical Energy Partner for Europe

Europe has reduced its dependence on Russian gas from 40% to 10% in less than one year.<sup>1</sup> Spiking prices have fallen back to pre-war levels. Europeans used less gas, built up their strategic reserves, and switched to alternative energy sources. They benefited from a relatively mild winter. Critical gaps were filled by a surge in gas imports from other countries – notably the United States. U.S. liquefied natural gas (LNG) exporters supplied more than three-fourths of Europe's additional gas needs in the critical months following the outbreak of the war, and accounted

for more than 50% of Europe's LNG supplies for the year as a whole.<sup>2</sup> More than half of U.S. global LNG exports went to Europe in 2022. U.S. exporters shipped roughly 2.5 times more LNG supplies to Europe in 2022 than in 2021, and 3 times more than they supplied to all of Asia in 2022 (Table 1).

Europe has been slower at weaning itself off Russian oil, but a package of recent measures – including price caps on Russian oil and bans on seaborne imports of Russian crude and refined petroleum products – could shrink Russian oil supplies by 90% in 2023. In the meantime, U.S. crude oil exports to Europe jumped 70% in 2022, and now account for 12% of Europe's oil supplies. In the first six months of 2022 Europe surged ahead of Asia as the top purchaser of U.S. crude oil.<sup>3</sup>

#### Three major shifts



**U.S. as critical energy supplier to Europe**

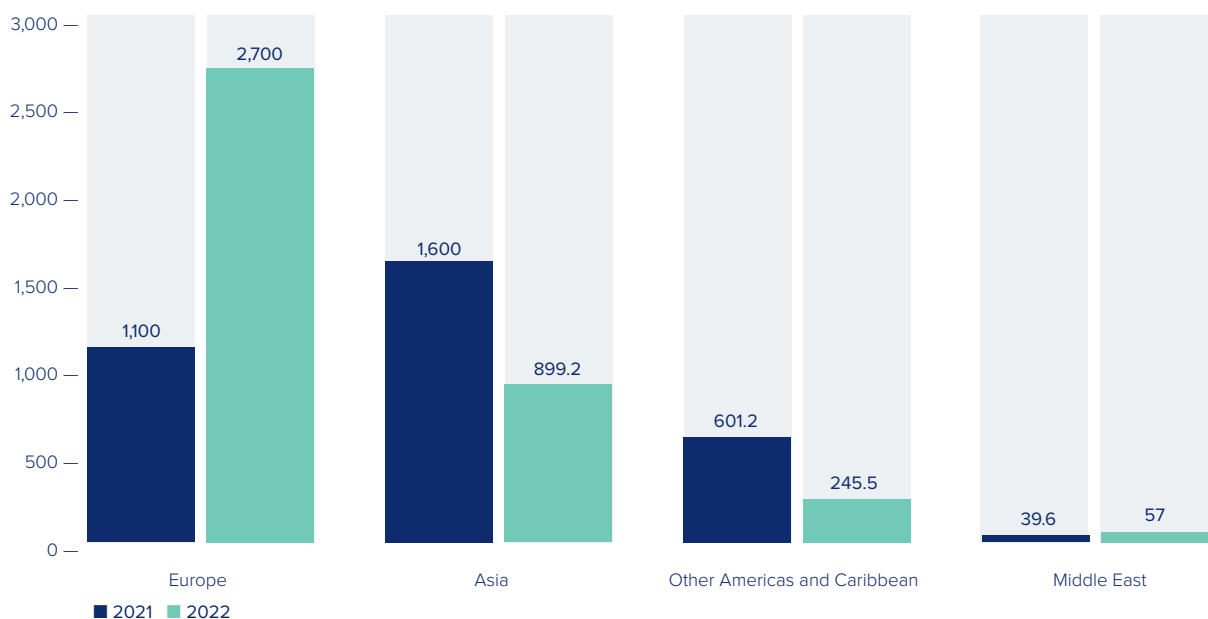


**New policy initiatives to accelerate green transition and boost competitiveness**



**Substantial opportunities in clean technology for private sector**

**Table 1. U.S. LNG exports to Europe more than doubled in 2022** (U.S. Liquefied Natural Gas Exports in Thousand Cubic Feet, By Region)



Sources: U.S. Department of Energy; Benjamin Storrow, Sara Schonhardt, "How Russia's war shattered global energy routes," E&E News Climate Wire, February 21, 2023.

## Comparing U.S. and EU Green Subsidies

### The Inflation Reduction Act

The U.S. Inflation Reduction Act (IRA) passed by the U.S. Congress in 2022 is by far the single biggest climate investment in U.S. history. It puts the U.S. on a path to roughly 40% emissions reductions by 2030. It is fueled by \$369 billion in subsidies and tax credits to qualifying parties. As we discuss in Chapter 3, it is part of an even larger U.S. effort to position its domestic economy for a cleaner energy future, to be more globally competitive, and to mitigate critical materials dependencies on China and other suppliers. The IRA could spur \$1.7 trillion in public and private investments, according to Credit Suisse. BCG forecasts that the IRA could lower global clean-energy costs by as much as 25% (\$120 billion) this decade.<sup>4</sup>

European officials have hailed the IRA's climate goals yet expressed concerns about the Act's discriminatory local content provisions, and its market-distorting manufacturing subsidies that might induce European firms to shift their production to the United States. Such concerns are amplified by far lower U.S. energy costs. The U.S. and the EU have established a Task Force to explore whether the IRA may be implemented in ways that alleviate EU worries.

Some concerns are being addressed. Used clean vehicles, which comprise 70% of the market, will benefit from tax credits and are not subject to local sourcing requirements. The new implementing rules also allow subsidies for "commercial clean vehicles" produced by European and other foreign carmakers if they are leased and not purchased, a favored option of U.S. consumers. Currently half of German electric vehicles in the United States are leased.<sup>5</sup>

Discussions continue about batteries. The IRA stipulates that batteries must meet a gradually increasing threshold of critical minerals extracted and processed in countries with "free trade agreements" with the U.S., beginning at 40% in 2023 and increasing by 10% each year through 2026. Neither the EU nor the UK has a free trade agreement with the United States. Drawing on their 2022 Minerals Security Partnership with a number of other countries, the U.S. and the EU are advancing critical materials pacts facilitating freer trade of these materials amongst signatories. These limited arrangements might qualify the EU and others as "free trade" partners, without

**Europe has reduced its dependence on Russian gas from 40% to 10% in less than one year.**

requiring congressional approval for formal, comprehensive Free Trade Agreements.

U.S. carmakers have joined their European counterparts in their concern about how fast they will be able to meet the IRA's provisions that restrict tax credits to new electric vehicles that do not include battery components or critical materials coming from "foreign entities of concern," including China, which is the source for many such materials.

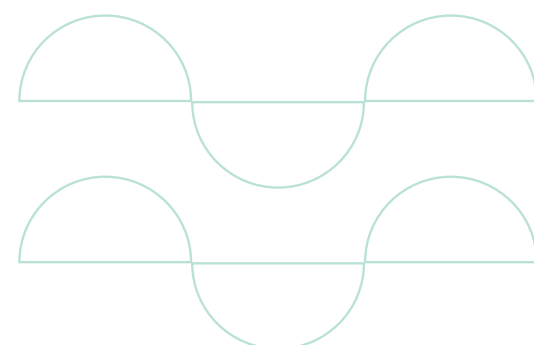
Some European carmakers have complained that their exports could be hit by IRA provisions limiting tax credits to manufacturers that complete "final vehicle assembly" in North America. This ignores the dense transatlantic linkages that underpin the auto industry. The main European automakers already conduct "final vehicle assembly" at their plants in the United States. Volkswagen is the largest European seller of electric vehicles in the U.S., for instance, and it produces its best-selling model in Chattanooga, Tennessee. Mercedes produces its electric EQS in Tuscaloosa, Alabama. Two of BMW's electric vehicle brands are produced at its plant in Spartanburg, South Carolina, which is bigger than its home plant in Munich.

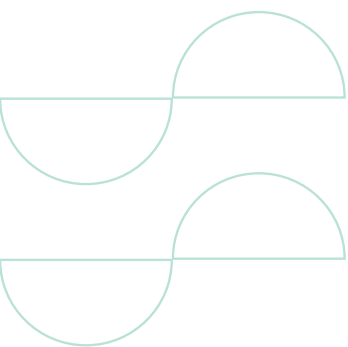
These activities mean that European exports of finished electric vehicles to the United States are quite low. Those that are exported from Europe face a 2.5% tariff when they enter the U.S., but that is far lower than the 10% tariff the European Commission imposes on every U.S. car exported to the EU. In fact, most European auto-related exports to the U.S. do not consist of finished vehicles. They are components shipped from one part of a European firm based in Europe to its affiliate in the United States.



**Inflation Reduction Act subsidies and tax credits**

**\$369 billion**





### The EU's Green Subsidies

In February 2023, the European Commission proposed a Green Deal Industrial Plan for the Net-Zero Age, accompanied by a Net Zero Industry Act, as new elements to the EU's existing array of measures intended to speed up and incentivize development of clean technology. To power the Plan, the Commission wants to repurpose roughly \$250 billion in loans from the NextGenerationEU pandemic recovery fund that have not been drawn down. It has proposed establishing a European Sovereignty Fund to drive joint investment in specific clean technology projects. The Commission wants to hone in on a key set of industries, including the production of batteries, solar panels, wind turbines, heat-pumps, electrolyzers and carbon capture usage and storage as well as related critical raw materials.<sup>6</sup> Any potential joint funding could draw on new funding instruments or an array of existing industrial policy tools and mechanisms designed to achieve energy breakthroughs, including the RePower EU initiative, the cohesion funds, the large-scale Important Projects of Common European Interest (IPCEI), and the Green Deal.

Many EU member states offer additional support measures. For instance, almost every EU country subsidizes the purchase of electric vehicles; Bruegel estimates such support totaled \$6.5 billion and averaged about \$6,500 per vehicle in 2022 (compared to IRA tax credits of up to \$7,500 per vehicle). And while EU rules limit state aid by member governments as a way to ensure smaller and poorer states are not swamped by bigger and richer ones, those limits were loosened for the pandemic recovery and again after Russia's 2022 invasion of Ukraine. EU rules are now likely to be relaxed once more, at least until 2025, in response to the IRA.

### Comparing U.S. and EU Initiatives

Bruegel concludes that EU and U.S. IRA subsidies for electric vehicles and cleantech manufacturing are roughly similar in size, and that European subsidies for renewable energy production are four times higher than subsidies foreseen by the IRA (Table 2).

**Lost in the transatlantic debate about competing transatlantic subsidies is the challenge posed by China.**

**Table 2. Clean and Green: Notional U.S. and EU Subsidies, 2022-2031**

Category	IRA	EU
Electric vehicle purchases	\$7,500/vehicle	\$6,500/vehicle
Cleantech manufacturing*	\$37 billion**	\$37 billion
Renewable energy subsidies	\$208 billion	\$845 billion

\*excludes national-level state aid except for Important Projects of Common European Interest. \*\*Congressional Budget Office estimate. Since these tax credits are not capped, they could be far higher. Credit Suisse estimates the total at closer to \$250 billion. IRA figures exclude state- and local-level support and federal programs outside the IRA. Sources: Bruegel; European Automobile Manufacturer's Association; Rhodium Group. Credit Suisse, "US Inflation Reduction Act: A catalyst for climate action," Treeprint, 2022; Congressional Budget Office, "Estimated Budgetary Effect of Public Law 117-169, to Provide for Reconciliation Pursuant to Title II of S. Con. Res. 14," <https://www.cbo.gov/publication/58455>.

These figures suggest that Europe's challenge is not a lack of financial or state resources, but its own fragmentation and the legacy effects of its overreliance on cheap Russian energy. Bruegel concludes that U.S.-EU differences are less about the sheer size of their respective efforts and more about how those initiatives are being rolled out. It judges IRA clean tech subsidies to be simpler, faster, and less fragmented than those in Europe, but argues that some discriminate against foreign producers, while most EU subsidies do not. IRA subsidies are focused mainly on mass deployment of current generation technologies, whereas EU-level support is more focused on spurring innovation and new technologies.

Lost in the transatlantic debate about competing transatlantic subsidies is the challenge posed by China. As President von der Leyen has said, "The true pressure, the unleveling of the playing field, is not our American friends, it's China – with massive hidden subsidies, with a lot of denial of access to our companies to the Chinese market and of course there is strategic shopping towards here, the European Union."<sup>7</sup> China invested \$546 billion in the energy transition in 2022, nearly four times the amount the U.S. spent, according to Bloomberg.<sup>8</sup>

Going forward, the two parties would do well to manage those differences that do exist, avoid subsidy wars, mitigate their respective critical-material dependencies, and improve their attractiveness for green investments by proactively harnessing transatlantic synergies.

## Empowering the Transatlantic Energy Innovation Economy

Transatlantic investment is not a zero-sum game, as we demonstrate throughout this book. That is particularly true regarding the transatlantic energy economy. U.S. and European firms are deeply embedded in each other’s fossil-fuel and renewable energy markets – through trade,

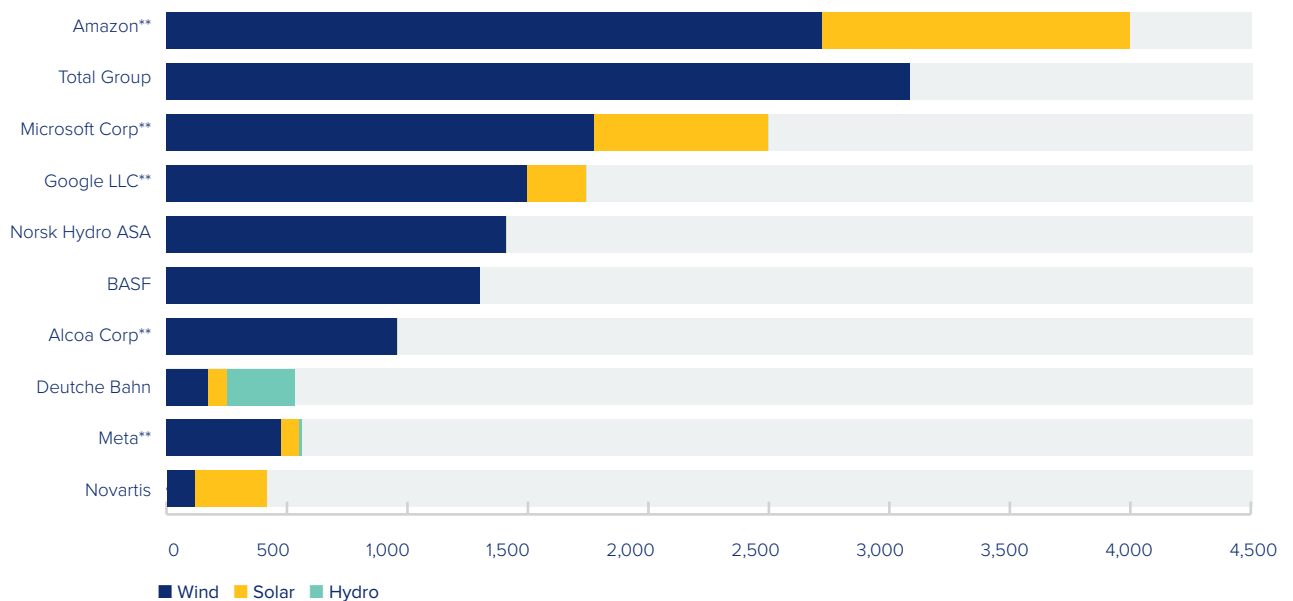
foreign investment, cross-border financing, and collaboration in research and development (R&D).<sup>9</sup> U.S. companies in Europe have become a driving force for Europe’s green revolution, accounting for more than half of the long-term renewable energy purchase agreements signed in Europe since 2007 (Table 3). European companies are the leading source of foreign direct investment (FDI) in the U.S. energy sector (Table 4).



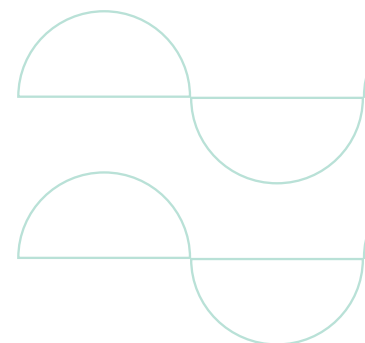
**Global clean technology market value by 2030**

**\$870 billion**

**Table 3. Top Purchasers of Renewable Energy in Europe, 2008-2021** (Megawatts)



\*\* Companies with asterisks are U.S. companies and represented by darker shading of bars. Europe is the EU plus Norway, Iceland, Switzerland and the U.K. Source: Bloomberg New Energy Finance. Data as of February 2022.

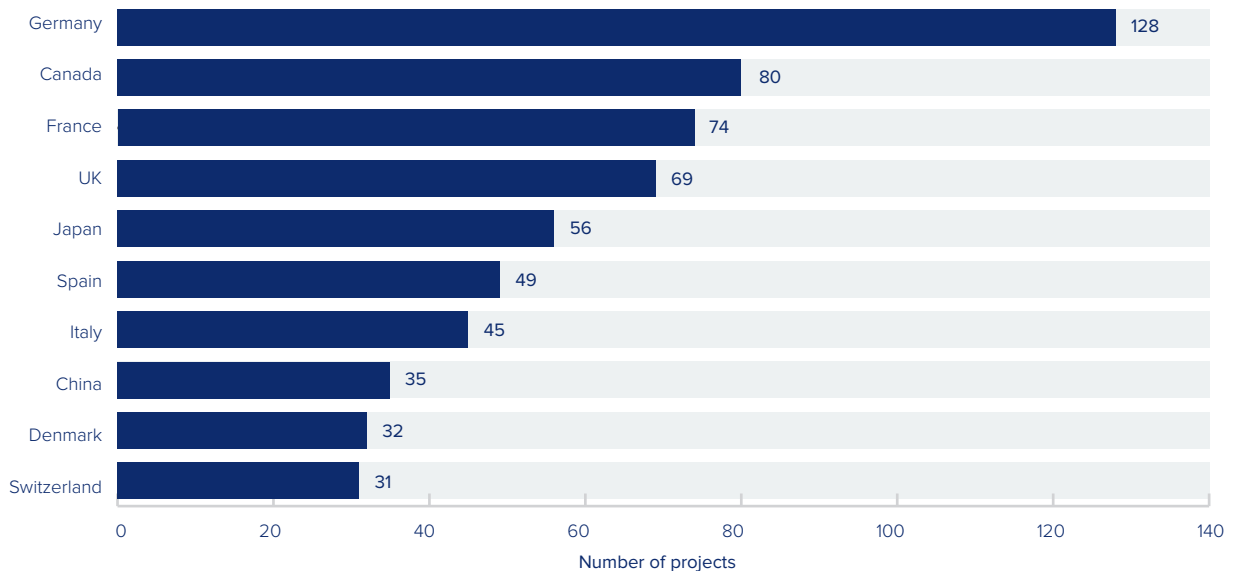


**U.S. companies in Europe have become a driving force for Europe’s green revolution, accounting for more than half of the long-term renewable energy purchase agreements signed in Europe since 2007. European companies are the leading source of FDI in the U.S. energy sector.**

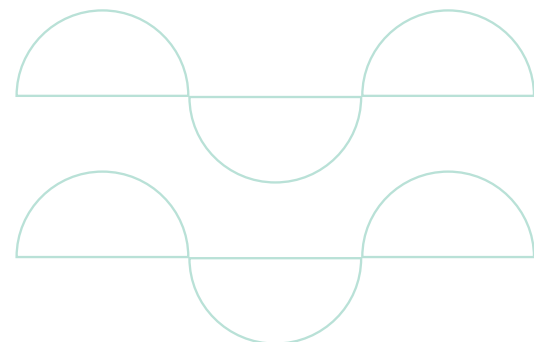
The U.S. and EU share both interest and capacity to accelerate innovative frontier technologies that can provide abundant, affordable, clean energy and manufactured goods. The potential is significant. According to the International Energy Agency, by 2030 the global clean tech market will surpass the value of the oil market, rising from \$122 billion to \$870 billion.

Transatlantic flows of risk capital are critical to cleantech innovation. EU investors are tapping into U.S. innovation and U.S. venture investors are providing scale-up capital for EU startups. Between 2017 and 2022, U.S. investors participated in 758 EU-based cleantech deals and EU investors joined 682 U.S.-based cleantech deals, according to CleanTech Group analysis (Tables 5 and 6). On average, U.S. and EU companies that received transatlantic investments reached growth stage, and received growth funding, faster than those that did not: 20% faster for EU-based companies; 8% faster for U.S.-based companies (Tables 7 and 8). Deal sizes for EU innovator investment rounds that included U.S. risk capital were significantly larger than those that did not involve a U.S. investor. 31% of EU deals that included U.S. investors were over \$100 million. Only 8% of EU deals without a U.S. investor were over \$100 million (Table 9).<sup>10</sup>

**Table 4. Top Sources of Inward FDI in U.S. Energy** (813 Total Announced Greenfield Projects, July 2011 - June 2021)

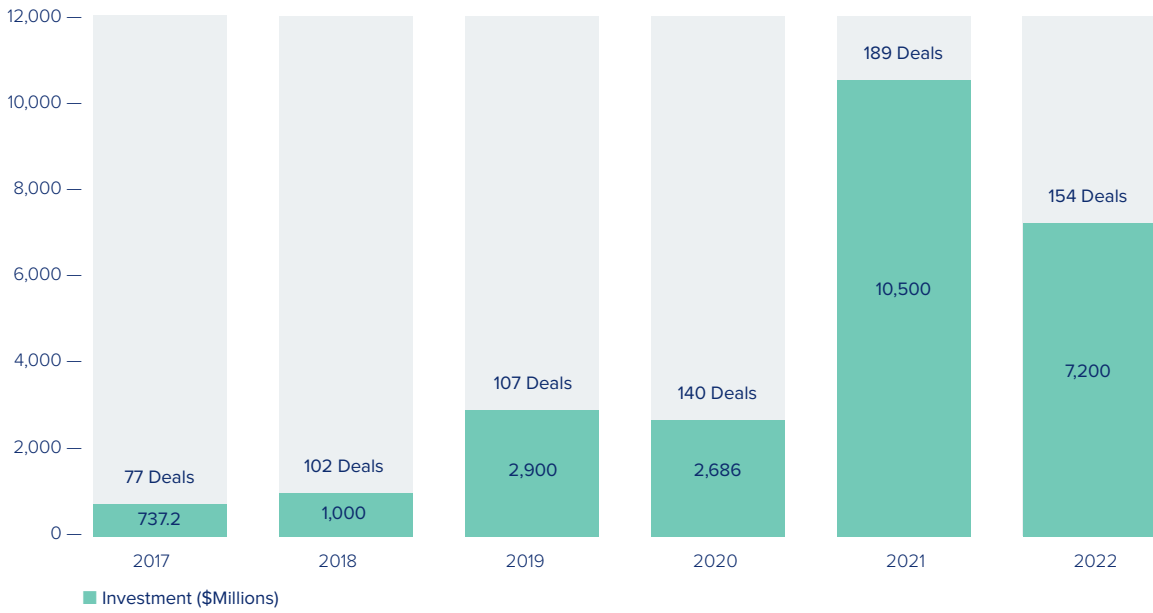


Source: SelectUSA, U.S. Department of Commerce. Data as of August 2021.



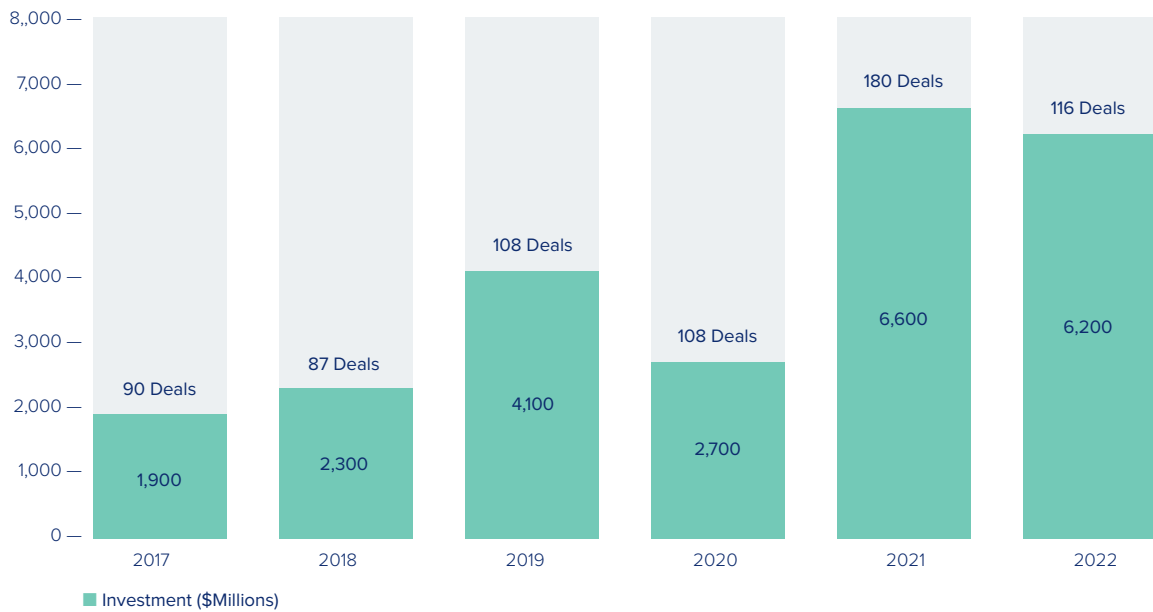


**Table 5. U.S. Investment in EU Innovators** (\$ of Investments Represent Total \$ Raised in the Rounds By Innovator)

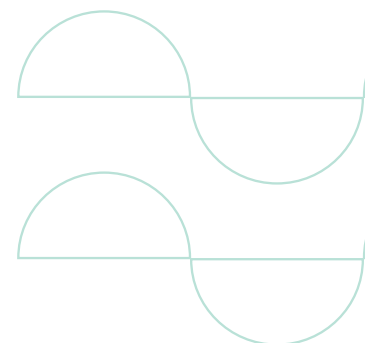


Source: Cleantech Group analysis.

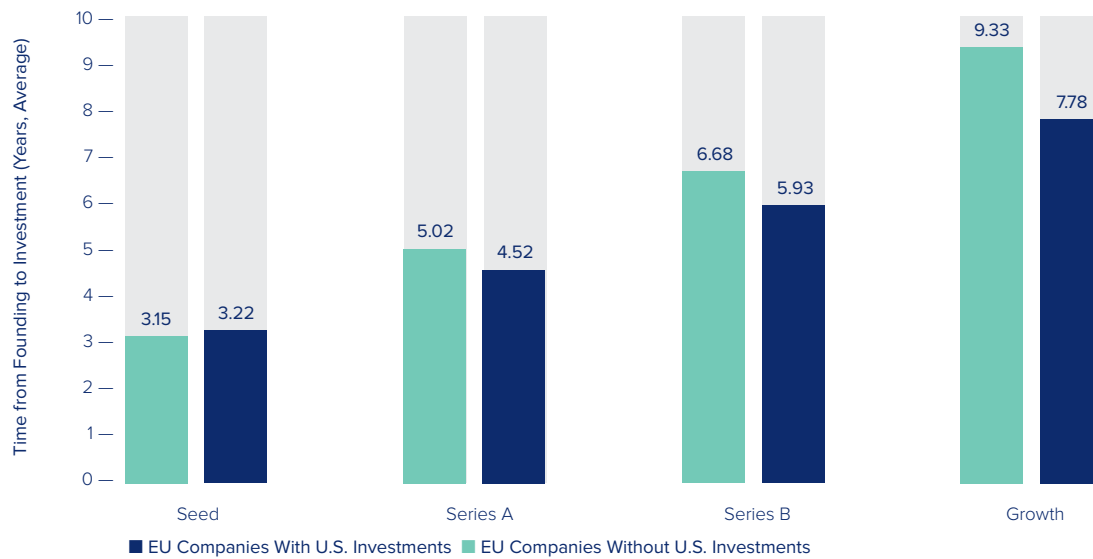
**Table 6. EU Investment in U.S. Innovators** (\$ of Investments Represent Total \$ Raised in the Rounds By Innovator)



Source: Cleantech Group analysis.

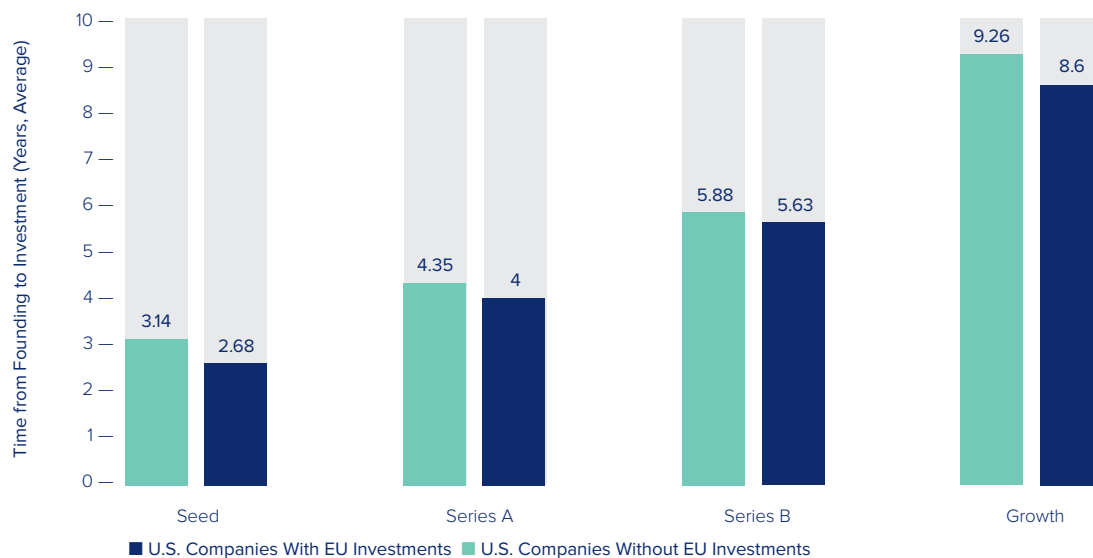


**Table 7. Average Growth Timeline for EU Companies With and Without U.S. Investments**



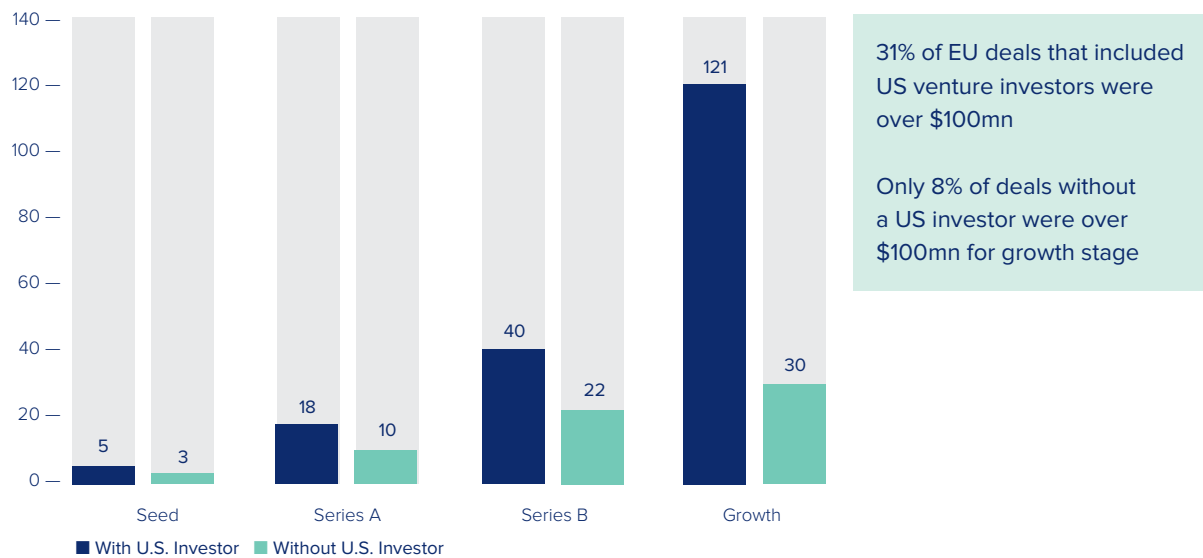
Source: Cleantech Group.

**Table 8. Average Growth Timeline for U.S. Companies With and Without EU Investments**



Source: Cleantech Group.

**Significant transatlantic R&D synergies remain untapped.**

**Table 9. VC Investment in EU Innovators: Average Deal Size (2017-2022, \$Millions)**

Source: Cleantech Group.

## Mind the Gaps

These figures underscore that transatlantic risk capital can be deployed successfully by venture investors to advance clean technologies at the innovation frontier. However, full transatlantic potential is being hampered by two major gaps along the innovation lifecycle.

First, the voices of innovation are absent in transatlantic policy discussions. There is no place for cleantech innovators and investors to inform and exchange views with U.S. and EU officials. As a result, significant transatlantic R&D synergies remain untapped. The U.S. and the EU have separately prioritized R&D focus areas between now and 2040-2050. Yet CleanTech Group research reveals that many official priorities and the actual state of innovation are not fully aligned. Innovators are ahead of governments in some areas, and they are exploring other breakthrough technologies that are not on official radars. Neither side of the Atlantic alone is likely to develop, fund, and scale technologies needed to reach net-zero targets at sufficient speed. The voices of innovators and investors can help inform R&D priorities and generate synergies between the U.S. and EU ecosystems to accelerate innovation, funding and scale-up to commercialization.

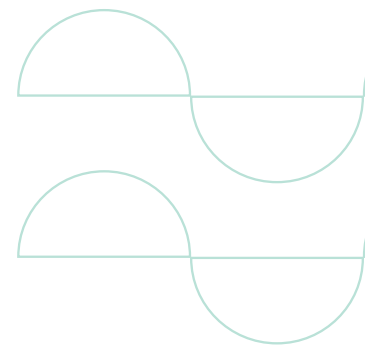
Second, large corporations and other demand owners that have made net-zero pledges need access to relevant innovators who have been accelerated by risk capital, and who are ready to scale up to meet net-zero targets as fast as

possible. Yet access is fragmented and does not take advantage of transatlantic innovation or the potential to scale faster through coordinated engagement. Easier access to innovation could increase the pool of potential solutions, and innovation scaled up on one side of the Atlantic could quickly spur growth on the other.

## Time for TACTA

These gaps could be addressed, and transatlantic synergies catalyzed more effectively, if the U.S. and the EU moved forward on the pledge made at the June 2021 U.S.-EU Summit to “work towards a Transatlantic Green Technology Alliance that would foster cooperation on the development and deployment of green technologies, as well as promote markets to scale such technologies.” At the time, European Commission President Ursula von der Leyen said the two parties would join forces to “enable breakthrough technologies and amazing innovations to be competitive on the market.”<sup>11</sup>

Almost two years later, little progress has been made, despite the tremendous potential – and the urgency – of such an initiative. It’s time for TACTA: a Transatlantic Clean Technology Alliance.<sup>12</sup> As a platform for officials, demand owners, and the investor/innovation community to share perspectives and identify priorities, TACTA could highlight and support synergies among existing EU and U.S. cleantech efforts, identify and close gaps, and prioritize innovations that reduce, rather than exacerbate their critical materials dependencies.



## 4. Transatlantic Energy Transformations

### Notes

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- 6 Under the plan, national state aid cannot exceed €100 million, or €300 million for poor regions per project. See Bruegel.
- 7 Cited in *Politico* Brussels Playbook, January 27, 2023.
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