McKinsey Global Institute

The FDI shake-up

How foreign direct investment today may shape industry and trade tomorrow

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At a glance

— **Foreign direct investment has transformed industries from oil to electronics.** Providing initial funding is just the start; cross-border deals that take root also transfer knowledge and spur ongoing domestic investment. Today's patterns of greenfield FDI announcements signal a new shake-up.

— **FDI promises to shape advanced manufacturing, AI infrastructure, and the resources that power them.** Since 2022, three-quarters of cross-border announcements have gone to these types of future-shaping industries as well as energy and mining projects—up from about half pre-2020. While not all announcements proceed, historically 60 to 80 percent have.

— **Pledged investment has increasingly followed geopolitical lines.** Advanced economies announced more investment into one another—particularly to the United States—but decreased flows to China by nearly 70 percent. China pivoted from net investee to prominent investor in future-shaping industries, boosting announcements to Europe, Latin America, and the Middle East and North Africa by over two-thirds. Emerging economies attracted investment pledges from across the geopolitical spectrum.

— **To win globally, multinationals are placing bigger bets.** While megadeals over $1 billion represent only 1 percent of cross-border deals, they account for half the total value—a jump from one-third five years ago. New data centers, semiconductor fabs, and battery factories don't come cheap.

— **Stakes are high and change is afoot.** If successful, FDI projects announced since 2022 could more than quadruple current battery manufacturing capacity outside China, nearly double the global data center capacity that powers AI, and draw the United States into the circle of top leading-edge semiconductor-producing nations. Patterns like these can help decision makers anticipate the shifting geometry of global trade and the future map of international business.

Introduction

Oil. Copper. Semiconductors. Foreign direct investment (FDI) has seeded and transformed these and many other global industries.

Cross-border investments in the late 19th century forged the global oil industry as money and know-how flowed from the United States and Europe to Baku (present-day Azerbaijan) and Sumatra (modern-day Indonesia), followed by investment around the globe in the 20th century.[1] Similarly, foreign investments shaped mineral-rich economies. For example, Chile's position as a world-leading copper exporter for most of the past 140 years was catalyzed by multinational firms that developed vast open-pit mines and transferred geological, engineering, and operational expertise.[2]

Following World War II, foreign direct investment played a critical role in spurring global manufacturing.[3] South Korea's semiconductor industry first emerged from successive waves of FDI, particularly from US and Japanese multinationals, starting in the 1970s.[4] FDI fueled China's rise to become a leading manufacturing power as multinational enterprises built factories, transferred knowledge, and nurtured labor and supplier ecosystems.[5]

What can FDI today tell us about global industry in the future?

While tomorrow's trade map is still being drawn, patterns may emerge from major companies' announcements of greenfield FDI. These are cross-border investments that create fresh productive capacity such as new mines, factories, and data centers in new places.

FDI offers a window to what's coming. Since 2017, the geometry of global trade has been shifting toward geopolitically closer partners, a trend that could accelerate, given new tariffs, security concerns, and more muscular, domestically driven industrial policies.

Our analysis of about 200,000 announced FDI projects from 2015 through May 2025 signals that geopolitics will play an increasing role in global trade (see sidebar "Methodology"). While FDI still bridges vast geographic distances, the average geopolitical distance of greenfield FDI announcements since 2017 shrank about two times faster than that of trade (Exhibit 1).[6]

While tomorrow's trade map is still being drawn, patterns may emerge from major companies' announcements of greenfield FDI.

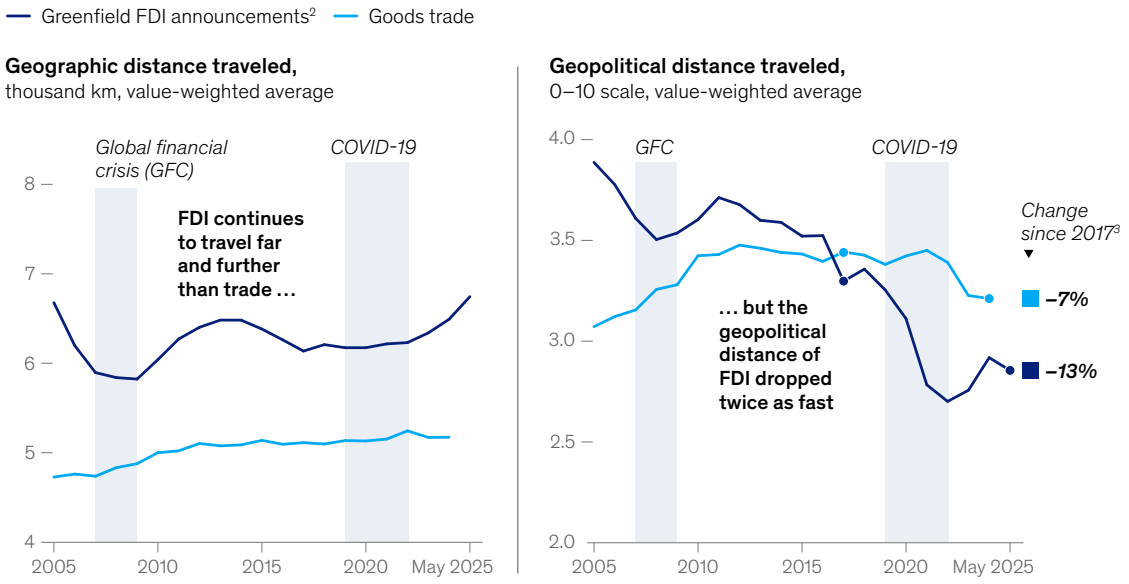
What does this mean for economies? Announced projects could more than quadruple battery manufacturing capacity outside China, almost double the global data center capacity that powers AI, and draw the United States into the circle of nations that are the biggest producers of leading-edge semiconductors.[7] These are examples of how FDI may mold future-shaping industries while also rewiring cross-border economic ties.

This report explores shifts underway in FDI and offers foresight for decision-makers navigating a high-stakes environment of intensifying global economic competition and shifting geopolitical dynamics.

Exhibit 1

Geopolitical distance has fallen twice as fast for FDI as for trade.

Greenfield FDI announcements and goods trade indicators,[1] 2005–May 2025



[1]Distance measures the value-weighted average distance. Geopolitical distance measures the value-weighted average partner similarity based on analysis of UN General Assembly voting patterns between 2005 and 2022. Economies without UN representation are excluded.
[2]3-year rolling average.
[3]For goods trade, this figure represents the change between 2017 and 2024.
Source: Using data provided by fDi Markets; UN Comtrade; UN Digital Library; Voeten (2017); World Bank; McKinsey Global Institute analysis

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Sidebar

Methodology

Tracking greenfield FDI—approach and limitations

This report studies the dynamics of how multinationals plan on reconfiguring their footprints and the implications for the future of sectors and economies. Here we describe our approach for doing so, highlighting areas of limitation.

We look at greenfield FDI, a subset of global capital flows aimed at creating new capacity

Our analysis focuses on greenfield FDI projects announced in the last decade. These are cross-border investment projects that create net new capacity. Expansions at existing sites are included as greenfield FDI as long as they expand productive capacity.[1]

Our scope does not include other types of FDI, such as mergers and acquisitions, since these involve changes of ownership rather than changes to productive footprint. Furthermore, since only greenfield FDI announcements are considered, our analysis does not cover any projects developed wholly by domestic companies (regardless of their financing, even if in part from foreign sources).

Our analysis focuses on announcements of greenfield FDI

Announcements of FDI provide forward-looking indications of productive capacity creation and can be analyzed at a granular level. That is why this report analyzes companies' stated investment plans, not the actual disbursements of FDI (flows of capital across borders registered in the international balance of payments). Such aggregate flow data can include transactions that do not increase capacity. Disbursements can also include some so-called conduit FDI—counting twice the investment flows that are routed from a source country to a conduit country to a final destination. While international statistical organizations make substantial efforts to remove such double counting, they cannot do so entirely because of data limitations and complex financing structures.[2]

That said, announcements are an imperfect metric with important limitations. Companies may either revise up or down how much they ultimately spend, depending on how project implementation unfolds—and in some cases, announce plans that never materialize at all. At the same time, there are no universal norms for what to include in announced project values. Company practices differ, for example, on costs for site preparation (like roads and utilities), furniture and fixtures, software licenses, and patents. Furthermore, companies are generally not required to publicly announce their FDI projects at all (though sometimes disclosure to government authorities is mandatory) and in some cases may choose not to. For these reasons, a dollar announced is not always equivalent to a dollar spent.[3]

Still, FDI announcements are reliable indicators of future projects on the ground. Realization rates (that is, percentages comparing the original FDI announcements with the eventual value of projects actually developed) are hard to pinpoint and vary by industry and region, but studies that track projects from announcement to completion, alongside analyses by national statistical agencies of company-reported data, generally find rates above 60 percent.[4]

For example, a 2025 analysis found that about 80 percent of announced investments in the United States between 2017 and 2020 ultimately materialized, on a dollar-weighted average basis. This is despite high-profile exceptions, such as an electronics factory in Wisconsin.[5]

Our data source for greenfield FDI announcements

Analysis of greenfield FDI announcement data in this report used data provided by fDi Markets, from the Financial Times.

The data set covers about 180,000 individual records announced between 2015 and May 2025, covering more than 190 economies and all sectors of the economy. Each data record corresponds to a single deal announced by a single multinational company. When reporting the number of deals, we treat each individual production facility (or a completely new large line within a facility) separately. A single corporate announcement can therefore include multiple deals, and of course, the same deal can be discussed in multiple announcements but would only be captured once in our analysis.

Based on fDi Markets documentation, each individual record's associated capital investment is derived, as far as possible, using public data like company announcements, filings, and press releases. In the absence of disclosures, fDi Markets estimates figures based on their proprietary algorithm. The data

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1 Colloquially, expansions at existing sites are sometimes referred to as "brownfield."

2 *The rise of phantom FDI in global tax havens*, International Monetary Fund, September 2019; Bruno Casella, Maria Borga, and Konstantin M. Wacker, *Measuring multinational production with foreign direct investment statistics: Recent trends, challenges, and developments*, IMF working paper WP/23/113, International Monetary Fund, June 2023.

3 "Methodological note for greenfield foreign direct investment (FDI) 2003 to 2023," UK Department for Business and Trade, February 26, 2025.

4 For a bottom-up analysis of projects, see Cathy Ge Bao and Maggie Xiaoyang Chen, 2018. "Foreign rivals are coming to town: Responding to the threat of foreign multinational entry," *American Economic Journal: Applied Economics*, 2018, Volume 10, Number 4. National statistics agencies often also collect data for estimating realization rates based on official data on "contracted FDI" (committed at approval) and "utilized FDI" (actual disbursement). See Abigail S. Hornstein, "Words vs actions: International variation in the propensity to fulfil investment pledges in China," *China Economic Review*, 2017, Volume 45; *Report on Foreign Direct Investment*, Vietnam Ministry of Planning and Investment. A review of multiple studies of emerging Asian economies is included in *Handbook on Policies, Promotion and Facilitation of Foreign Direct Investment for sustainable development in Asia and the Pacific*, UN Economic and Social Commission for Asia and the Pacific (ESCAP), 2017.

5 "Global economics comment: "Tracking inbound US investment announcements," Goldman Sachs, May 16, 2025.

Sidebar (continued)

Methodology

set also assigns a "source economy" and "destination economy" to each record. The source is the country in which the ultimate parent company is headquartered. For multinationals with dual listings or joint headquarters, a single location is assigned—that of the original headquarters. The destination is based on the physical location of the projects to be developed. We have not independently verified this data.

We analyze data by region and country as well as by sector

We group economies into eight regions. Three regions represent our group of advanced economies: United States and Canada; Europe, including the European Union (EU), the United Kingdom (UK), Switzerland, Norway, and a group of other smaller economies that in aggregate account for around 3 percent of FDI in the region; and advanced Asia (Australia, Japan, New Zealand, Singapore, South Korea, and Taiwan).[6] We aggregate Mainland China, Hong Kong, and Macao as part of the China region. Finally, four regions represent our emerging economies: Latin America and the Caribbean, the Middle East and North Africa (which also includes Türkiye), sub-Saharan Africa, and emerging Asia (which includes Asia–Pacific excluding economies in advanced Asia and China).

Unless explicitly stated, flows within Europe are included in global totals. However, when discussing Europe specifically and comparing it with other regions, intra-European flows are excluded and correspondingly noted.[7]

Sectors are established at the deal level rather than at the level of the announcing company. Conglomerates, for example, can announce investments across a broad swath of industries. fDi Markets' taxonomy considers nearly 270 subsectors, which we aggregate into six high-level groups: advanced manufacturing (knowledge-intensive industries including semiconductors, automotive and batteries, pharmaceuticals, and others), communications and software (including data centers in addition to other software services and telecommunications services), energy (including fossil fuels and renewable energy), metals and minerals, basic manufacturing and consumer products (including less knowledge-intensive manufacturing like rubber and plastics or textiles), and operational and professional services (a broad range spanning construction, logistics, and financial and business services).

We adjust for inflation and, to correct for volatility, use two comparison periods

We inflation-adjust all numbers to 2024 dollar terms. Then, because annual figures are volatile, we avoid single-year comparisons and instead use time windows. The most recent covers 2022 through May 2025, to make the analysis as current as possible (initial testing of June data, not fully available at time of writing, suggests that including it would keep a broadly constant picture). We compare this with a reference period of 2015 through 2019. We exclude 2020 and 2021 due to COVID-19-related turbulence.

For comparability across time periods of different length, all numbers are annualized. For example, for the period from January 2022 to May 2025, we take all values from January 2022 to May 2025 and divide them by approximately 3.4.[8]

To investigate whether trends of FDI announcements have shifted this year, we also run some analyses on 2025 data alone. To compare them with the 2022-to-2024 interval, we annualize data up to May by scaling it up to a full year. These annualized figures should not be seen as a projection but rather a well-defined way of making data comparable for the purpose of analysis. In general, FDI flows are quite volatile, because large projects can shift overall numbers, as can a host of other factors like commodity prices and exchange rates. This may be even more the case over a period like the first five months of 2025, during which there was considerable uncertainty about tariffs and other cross-border considerations. In fact, 2025 data is lumpier than any other year we've examined. For example, March 2025 corresponds to the highest month of announced greenfield FDI on record, while May 2025 corresponds to the lowest in the last decade, meaning extrapolations from 2025's early months are particularly uncertain.

To estimate potential FDI impact on capacity in a few specific industries, we examine the largest projects in detail

To estimate potential capacity increases for some industries—such as batteries and data centers—we examine foreseen capacity for each of at least the largest 20 announcements in that industry.[9] This enables us to derive an initial dollar-to-capacity ratio, which we calibrate with industry benchmarks and then apply across all FDI announcements in that industry. For data centers, for example, we consider dollars per megawatt.

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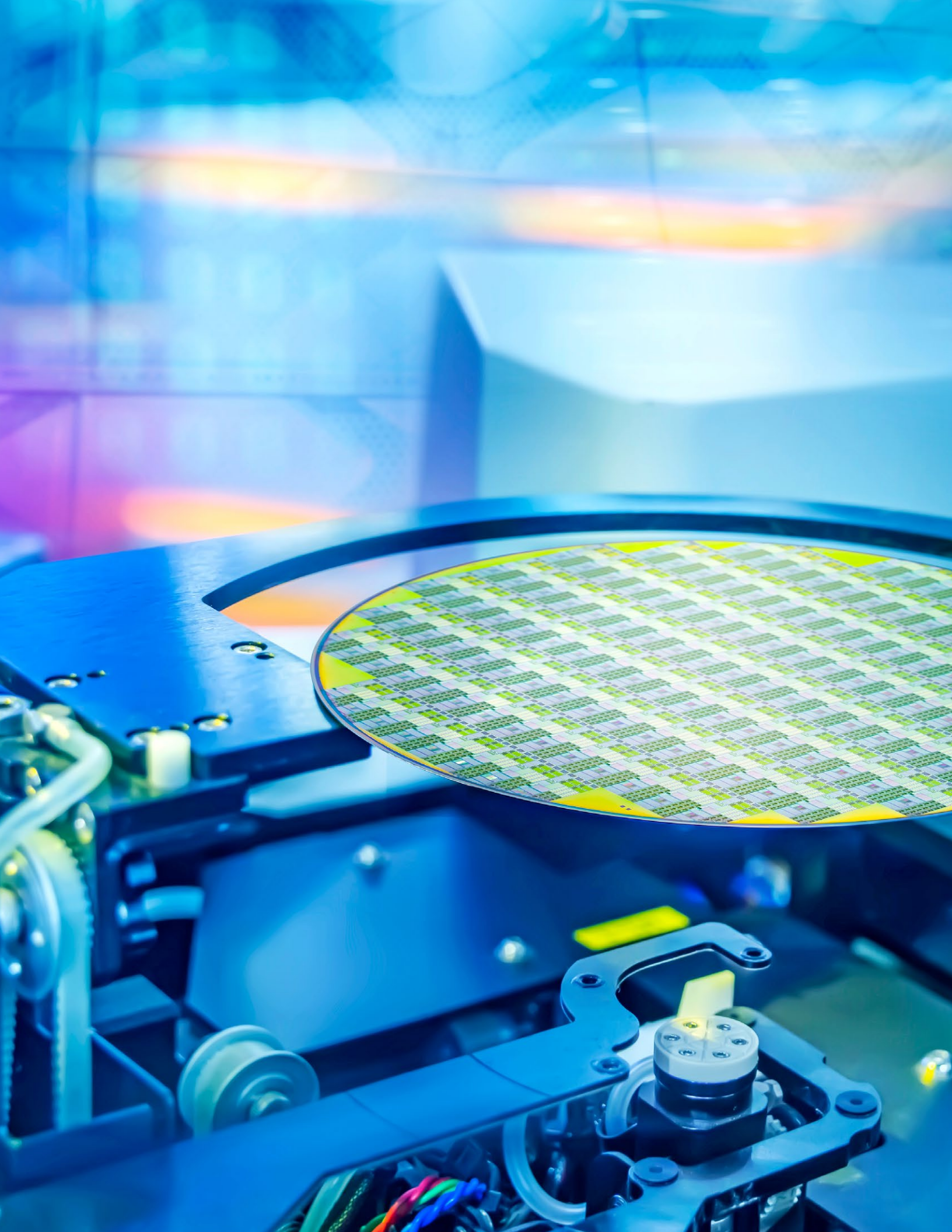
6 The other economies in Europe include Albania, Andorra, Belarus, Bosnia-Herzegovina, Iceland, Liechtenstein, Moldova, Monaco, Montenegro, North Macedonia, Republic of Kosovo, San Marino, Serbia, and Ukraine.

7 Intra-European flows are almost wholly driven between countries with deep economic integration from both a trade and investment perspective, with free-trade agreements among each other. About 60 percent of flows occur within the European Union, about 30 percent correspond mostly to flows between the United Kingdom and the European Union, and about 10 percent occur between the European Union and countries of the European Free Trade Association (Iceland, Liechtenstein, Norway, and Switzerland).

8 Forty-one months of data, divided by 12.

9 In the case of leading-edge semiconductors, the analysis looks at all announced greenfield FDI projects as captured in the McKinsey Semiconductor Supply and Demand Model. In the case of metals and minerals, the analysis looks at the largest 120 projects, of which 44 relate to iron and steel and 62 relate to critical minerals.



CHAPTER 1

FDI promises to mold the industries of the future

Announced FDI flows increasingly target industries that will shape the global economy and the resources that power them. Future-shaping industries include data centers powering artificial intelligence (AI), semiconductor fabrication facilities (fabs), electric vehicle (EV) and battery manufacturing facilities, and a range of other advanced manufacturing from pharmaceuticals to robots (see sidebar "What are future-shaping industries?").

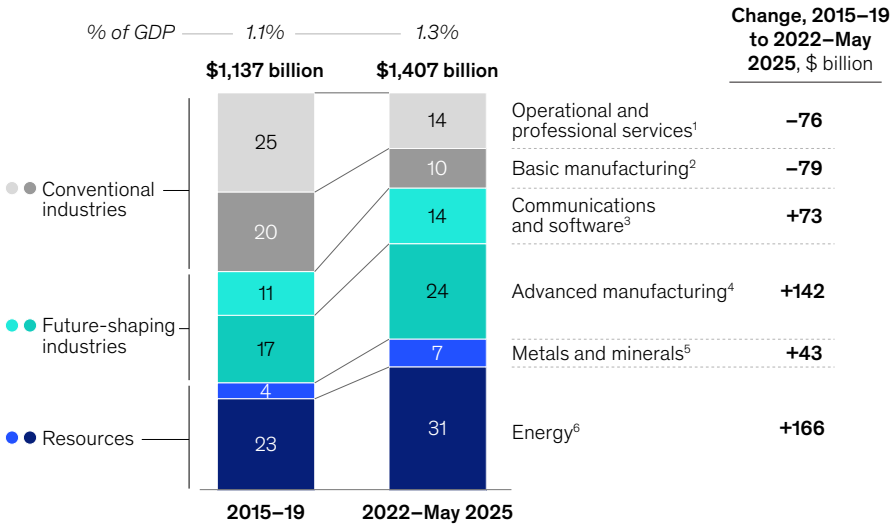
Together, future-shaping industries and resources accounted for three-quarters of greenfield FDI announcements from 2022 through May 2025. In inflation-adjusted, 2024-dollar terms, this was up from around 55 percent during the 2015 to 2019 period—the pre-COVID-19 period we use as a baseline for comparison (Exhibit 2).[8] Such investments could substantially expand the capacity of these industries and shift their global footprint into new locations.

Together, future-shaping industries and resources accounted for three-quarters of greenfield FDI announcements from 2022 through May 2025.

Exhibit 2

Greenfield FDI is increasingly targeting future-shaping industries and the resources that power them.

Greenfield FDI announcements by industry, annual average 2015–19 and 2022–May 2025, % of total



Note: All $ figures are in terms of 2024 US dollars.
[1]Includes business services, construction and real estate, financial services, healthcare, hotels and tourism, leisure and entertainment, and transportation and warehousing. [2]Includes building materials, chemicals, consumer products, food and beverage, glass, paper, plastics, rubber, textiles, and wood. [3]Includes broadcasting, cloud infrastructure, computer programming services, data centers, telecommunications, and video games. [4]Includes aerospace and defense, automotive and batteries, electronics, industrial machinery, medical devices, other transport equipment, pharmaceuticals, and semiconductors. [5]Includes the extraction and processing of minerals, as well as the production of metal products, such as steelmaking. [6]Includes coal, oil, and gas extraction, transport and processing, renewable energy generation, and production of low-emission fuels such as hydrogen and its derivatives. Does not include solar panel and other equipment manufacturing, which are included in advanced manufacturing.
Source: Using data provided by fDi Markets; McKinsey Global Institute analysis

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This shift reflects the structure of these sectors: They are winner-takes-most, technologically advanced, and capital intensive, so only a handful of global firms have the capabilities to compete. At the same time, governments, eager to host them and reduce reliance on geopolitically distant partners, are deploying powerful carrots and sticks. The result is a surge of announced megadeals (exceeding $1 billion) that drive most FDI growth and shape the global economy.

In contrast, annual announced investments in conventional industries have dropped by more than 30 percent. This category includes a wide range of basic manufacturing sectors—including consumer products, food and beverages, and textiles—as well as operational and professional services, a broad category that spans construction, real estate, logistics, and financial services.

This year has brought fresh uncertainty. International trade surged into the public spotlight in April 2025, when the United States unveiled large tariffs. Since then, the United States has announced trade deals with multiple countries. Some include pledges of future investment into the United States; details remain pending. Still, uncertainty persists globally, and firms may be waiting to act in hopes of more clarity down the road.

Sidebar

What are future-shaping industries?

Future-shaping industries are advanced, knowledge-intensive segments of manufacturing and services. This report reveals that, in many cases, they recently have been recipients of rapidly increasing greenfield FDI announcements.

In a separate research effort, MGI identified 18 future arenas that could account for up to a third of total GDP growth by 2040.[1] These arenas include extensions of today's fast-growing sectors such as e-commerce, electric vehicles, and semiconductors; spin-off segments from existing industries such as AI software and services; and emergent new areas such as space. They are often characterized by outsize growth and dynamism as well as "escalatory" investments in frontier technologies where quality improvements result in big gains in market share.

Although these lines of research are distinct, we found they are closely connected. Most of the future arenas rely on FDI that is directed into future-shaping industries in some form. Advanced manufacturing sectors such as semiconductors and batteries are the main recipients of FDI, while digital advertising, cloud, and streaming benefit from capital flows into communications and software. The linkage between the arenas of future competition and FDI in future-shaping industries reflect winner-takes-most dynamics. Leading companies in these sectors typically pursue global scale—an objective that requires cross-border investment. Nonetheless, the two concepts are not one and the same, and future-shaping industries in our analysis include additional subsectors such as some consumer electronics and machinery.

Conversely, some arenas have received surprisingly limited FDI so far. Few FDI announcements were directed to robotics, for example, during our period of analysis, even though the industry is increasingly viewed as transformative for future production systems. Historically, major robotics firms based in China, Germany, Japan, and the United States have concentrated investments domestically. However, growing global demand is beginning to shift this pattern. Recent announcements include European firms scaling regional production to meet rising demand for AI-enabled industrial robots used in high-volume manufacturing, and for collaborative robots equipped with advanced vision, learning, and adaptive control for sectors like electronics. At the same time, European and Japanese companies are expanding in the United States.

Defense is another sector where announced greenfield FDI has been limited. Cross-border defense flows most often take the form of government-to-government procurement, foreign aid in equipment transfers, offset obligations, joint ventures, or licensed production, rather than classic "foreign-owned" new plants. US prime contractors generally manufacture domestically. While offsets can involve setting up new facilities, foreign original equipment manufacturers (OEMs) usually provide technology or tooling, partnering with a local entity rather than owning facilities outright.[2] Furthermore, due to the sensitive nature of defense-related products, many defense projects are not reported publicly and therefore are not captured as FDI.

Still, recent developments suggest potential change. South Korea has secured multibillion-dollar agreements to co-produce tanks and howitzers with Poland. The European Union has also begun establishing repair hubs and ammunition facilities in and for Ukraine.

Moreover, although direct defense-sector FDI remains limited, many future-shaping industries produce dual-use technologies and components, bridging civilian and defense applications. Semiconductors, shipbuilding, robotics, and AI technologies are just some notable examples, highlighting the fact that FDI in these areas indirectly shapes defense capabilities and strategic considerations.

[1] These include AI software and services, batteries, cloud services, cybersecurity, digital advertising, drugs for obesity and related conditions, e-commerce, electric vehicles, future air mobility, industrial and consumer biotechnology, modular construction, nuclear fission power plants, robotics, semiconductors, shared autonomous vehicles, space, streaming video, and video games. For more, see "The next big arenas of competition," McKinsey Global Institute, October 23, 2024.

[2] Frank Coleman et al., *Defense offsets: From 'contractual burden' to competitive weapon*, McKinsey, June 2014; Paige Williams, "Japan produces its first F-35A," *Defense News*, June 6, 2017.

Against this backdrop, so far in 2025, the overall rate of FDI announcements has leveled off amid an even greater global focus on future-shaping industries. Announcements in these areas are on pace to reach $840 billion, versus the $490 billion average annual level between 2022 and 2024, driven entirely by increases in data centers globally and in semiconductor fabs, particularly in the United States. In other major investment areas across advanced manufacturing, resources, and conventional industries, announcements are down, and FDI announcement rates have fallen to 20-year lows across all of China, emerging Asia, Latin America, the Middle East and North Africa (MENA), and sub-Saharan Africa (see sidebar "2025 announcements have focused on data centers and semiconductors").

Announcements are, of course, not firm commitments, and not every potential project sees the light of day. Still, past studies have found that FDI announcements reliably predicted capacity creation on the ground, with realization rates between 60 and 80 percent. Our analysis finds that, since 2022, more than half of the largest announced projects in future-shaping industries are under construction or already operational. Among those that have not yet started construction, about half were announced after the beginning of 2025.[9] As a general matter, it is too soon to gauge feasibility and progress of announcements made this year.

The biggest growth in announced investments, including in 2025, is for AI infrastructure and semiconductors

Growth in FDI announcements has not been uniform across future-shaping industries and resources. Rather, pockets of rapid growth in some subsectors have been responsible for the bulk of the expansion.

For instance, huge growth in AI and even bigger expectations for its future have accelerated cross-border investment in communications and software. Data centers—a key piece of infrastructure needed for AI—have accounted for more than 85 percent of announced greenfield FDI in this sector since 2022, or about $170 billion annually.[10] Momentum escalated in 2025. If the early-2025 pace continues, data center announcements are on track to reach over $370 billion by year end.

Advanced manufacturing has accounted for one-quarter of global FDI announcements since 2022. One-third of that share, or about $115 billion annually, has been dedicated to new semiconductor fabs.[11] Another third went to assembly lines for EVs and new gigafactories for batteries—which are primarily used in automotive manufacturing but increasingly relevant to broader applications. The remainder was directed to other industries, including pharmaceuticals (notably drugs to combat obesity), electronics, and smaller but fast-growing FDI-related areas such as robotics and technologies linked to defense. In the first months of 2025, announcements directed to semiconductors surged threefold, while those for EVs dropped by over three-quarters, all on an annualized basis.

As energy- and material-hungry industries expand, resource sectors also are attracting growing investment. In metals and minerals, roughly 50 percent of announced FDI since 2022 (or $50 billion annually) went to projects to extract and refine minerals critical to advanced manufacturing—for example, copper, lithium, and nickel. Most of the other half went to the steel value chain, particularly to newer, lower-emissions steelmaking processes.

Energy-related announcements also have risen, but here the evolution over the past several years is more complicated. About three-quarters of the total since 2022, or nearly $330 billion annually, focused on expanding low-emissions technologies, doubling from 2015 to 2019 levels. Within this total, announced investments in established renewable sources, like solar and wind, and in nascent electrolytic hydrogen production have attracted roughly equal shares.[12] The remainder, or $105 billion annually, went to conventional fossil fuel projects, falling from more than $150 billion in the earlier period. In 2025, the landscape of FDI announcements in energy has shifted meaningfully; announcements in liquified natural gas (LNG) and solar have remained about constant, while those going to low-emissions hydrogen, offshore wind, and oil and gas extraction have all dropped by around 70 percent. Announcements going to both nuclear and enhanced geothermal have more than doubled—but from such a low base that they hardly dent the aggregate energy FDI announcement numbers.

Sidebar

2025 announcements have focused on data centers and semiconductors

Do FDI announcements during the first part of 2025 signal new change? Of course, it is perilous to generalize much from only five months of FDI announcements. Even on an annual basis, FDI announcements are quite volatile, because large projects can shift overall numbers, as can factors like commodity prices and exchange rates. That said, announcements so far this year indicate that some trends are continuing but—at least for the moment—firms have put FDI announcements on hold in many areas.

In the first five months of 2025, announced greenfield FDI totaled about $600 billion, which in annualized terms would equate to about the same $1.4 trillion observed in the 2022 to 2024 period.[1] Investments in future-shaping industries and resources continue to make up about 75 percent of the total.

The similarities end there. Industries of the future played an even greater role, representing 58 percent of the total, up from 35 percent. AI-related projects surged, with announced investments in data centers more than doubling in annualized terms and totaling $150 billion through May. While US hyperscalers drove the boom from 2022 to 2024, investment vehicles in Gulf Cooperation Council economies entered the arena in 2025, announcing multibillion-dollar projects in France and the United States. Annualized announced FDI in semiconductors tripled. Announcements made through May totaled nearly $120 billion, of which $100 billion went to the expansion of the TSMC project in Arizona.

Outside of AI and semiconductors, greenfield activity dropped by one-third of 2022–24 levels, totaling about $325 billion through May, as trade policy uncertainty led many investors to adopt a wait-and-see approach. Investments in resources fell by about half in annualized terms for both conventional and low-emissions energy, as well as for metals and minerals. Electronics and EVs experienced similar drops. These declines came as firms from all regions except advanced Asia and the Middle East reduced their outbound FDI announcements.

The United States stands out. It has seen over 100 percent growth in annualized announced FDI in every sector except electric vehicles and basic manufacturing. For semiconductors, nearly 90 percent of global FDI announcements through May were directed to the United States, up from about 40 percent between 2022 and 2024. Even for data centers, where global FDI announcements remained robust globally, the United States attracted about 20 percent of the total, up from less than 10 percent over the previous three years.

Other advanced economies—including in Europe and advanced Asia—have seen increases in announced FDI but at more modest levels. This has come from the net result of significant drops in many sectors, particularly energy and advanced manufacturing, offset by a relatively small number of large data center projects. This is a shift from the headier period of 2022 to 2024, when FDI announcements were increasing across most categories in many advanced economies.

The picture in emerging economies has been starkly different. Annualized FDI announcements through May 2025 in each of the emerging Asia, Latin America, MENA, and sub-Saharan Africa regions are at 20-year lows.[2] In aggregate, FDI announcements across these regions have fallen by 50 percent from their levels during the 2022–24 period, on an annualized basis.

Beyond questions about geopolitics, macroeconomics, and technological progress, future FDI flows may depend upon the ultimate form of trade deals between the United States and its partners. Multiple deal announcements made over the past several months have included pledges of future investment. It is not known to what degree FDI versus other forms of investment might be driven by recent announcements without detailed final agreements in place. That said, to get a sense of the order of magnitude, consider that the widely reported values of investment from the European Union, Japan, and South Korea total $1.5 trillion.[3] Compare this with $200 billion, which was the average annual value of FDI announcements into the United States between 2022 and 2024 and just under the value of announcements made to the United States through May 2025.

1 Considering simple annualization of scaling up five to 12 months.
2 Excluding the COVID-19 crisis.
3 "President Donald J. Trump secures unprecedented U.S.–Japan strategic trade and investment agreement," White House fact sheet, July 23, 2025; "Joint statement on a United States–European Union framework on an agreement on reciprocal, fair and balanced trade," European Commission Directorate-General for Trade and Economic Security, August 21, 2025.

The shift toward future-shaping industries has occurred across all regions

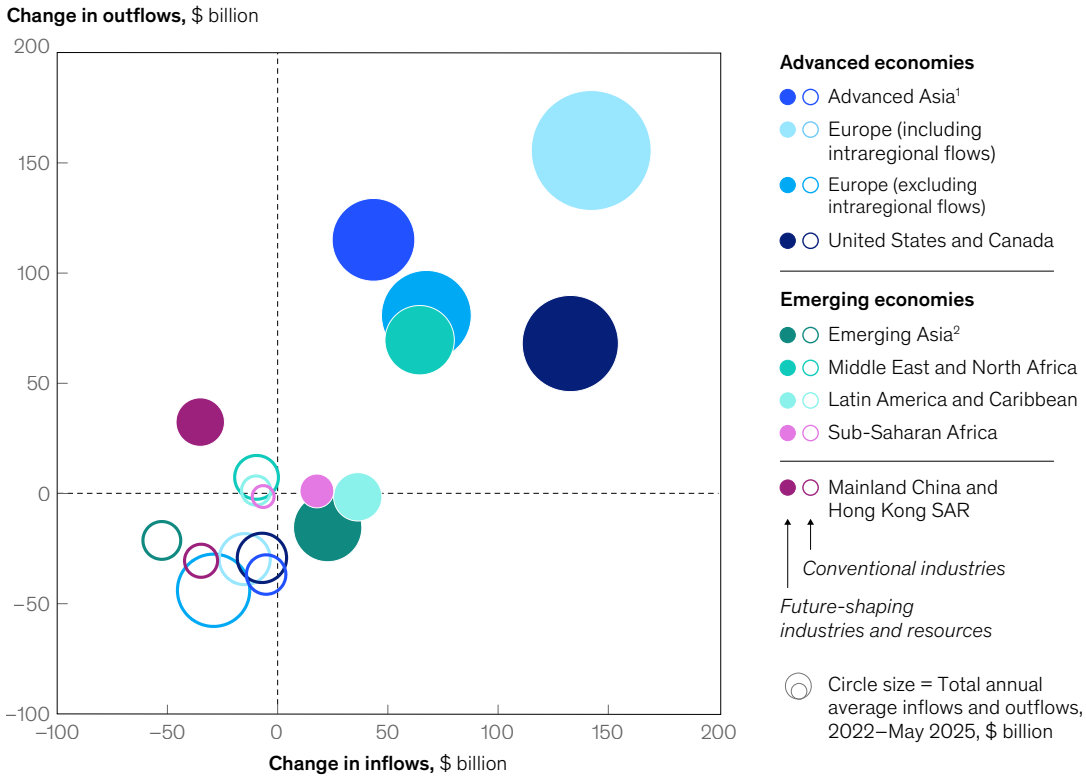
Future-shaping industries and resources have gained importance, and not just for a handful of top-performing economies. This is a global trend, as increasing FDI inflows and outflows are announced across nearly all regions. Advanced economies, MENA and China have, in aggregate, increased investment announcements in these sectors. Announced inflows have gone up everywhere, with the notable exception of China (Exhibit 3).

Conventional industries show the converse pattern: Announcements of FDI inflows and outflows are down in nearly every region. Only companies in Latin America and MENA have increased announced outflows, and only by a little.

Exhibit 3

Future-shaping industries drove growth in inflows and outflows almost everywhere except China.

Greenfield FDI announcements, inflows and outflows by region, annual average 2022–May 2025 vs. 2015–19, $ billion



Note: All $ figures are in terms of 2024 US dollars.
[1]Advanced Asia includes Australia, Japan, New Zealand, Singapore, South Korea, and Taiwan, China.
[2]Emerging Asia includes all Asian economies outside advanced Asia and excludes mainland China.
Source: Using data provided by fDi Markets; McKinsey Global Institute analysis

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FDI could create new hubs for future-shaping industries

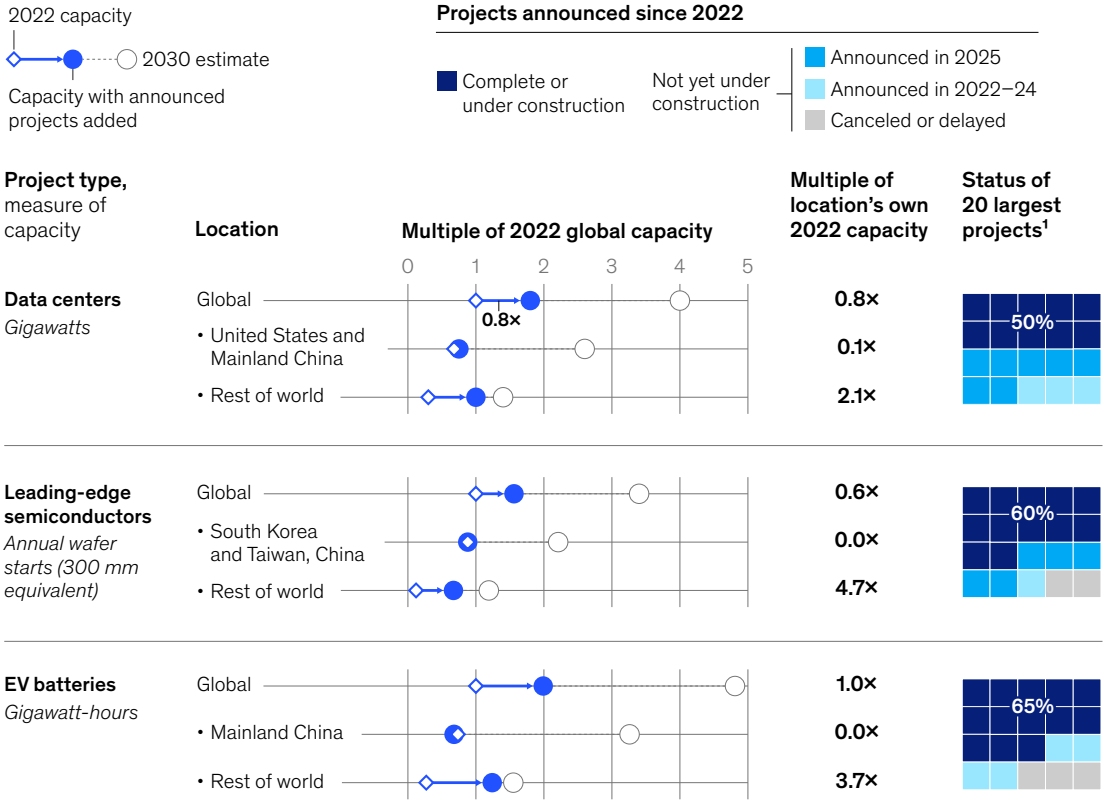
Announcements suggest that greenfield FDI is emerging as an engine for future-shaping industries. These announcements have grown much faster than total capital investment, creating the potential to boost global capacity and to expand the worldwide footprint of these industries (see sidebar "FDI may be gaining importance relative to domestic investment").

In the case of data centers and EV batteries, announced FDI projects could add roughly as much capacity as existed in 2022. For leading-edge semiconductors, FDI projects could add about 60 percent to 2022 global capacity (Exhibit 4).[13]

Exhibit 4

FDI could drive growth in future-shaping industries, especially outside today's hubs.

Potential increase in production capacities from announced greenfield FDI projects, multiple



[1]Considering the 20 largest megadeals in each industry through May 2025, with status assessed in July 2025. For leading-edge semiconductors, the figure given covers the 20 largest megadeals across all semiconductor-related projects. For EV batteries, the figure given covers the 20 largest megadeals across all EV battery-related projects, including EV assembly.
Source: Using data provided by fDi Markets; McKinsey Data Center Supply and Demand Model, McKinsey Semiconductor Supply and Demand Model; McKinsey Battery Insights, press search; McKinsey Global Institute analysis

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Sidebar

FDI may be gaining importance relative to domestic investment

Globally, greenfield FDI announcements have grown much faster than total capital investment (exhibit).[1]

Across advanced economies, greenfield FDI announcements flowing to future-shaping industries averaged roughly 15 cents for every dollar of capital expenditure since 2022, nearly double the value of the previous period. For resources, a similar pattern played out, since investment in low-emissions hydrogen, low-emissions steel, and unconventional oil and gas projects often require expertise and capital from globally relevant firms.

These proportions run even higher for emerging economies, many of which currently do not host an industry's leading firms and, therefore, are less able to domestically mobilize the financial and intangible capital they need. For example, in the communications and software sector, the ratio of greenfield FDI announcements to capital expenditure was more than ten times higher in countries outside the United States and China—which are home to the world's leading technology firms—than it was within those two countries.

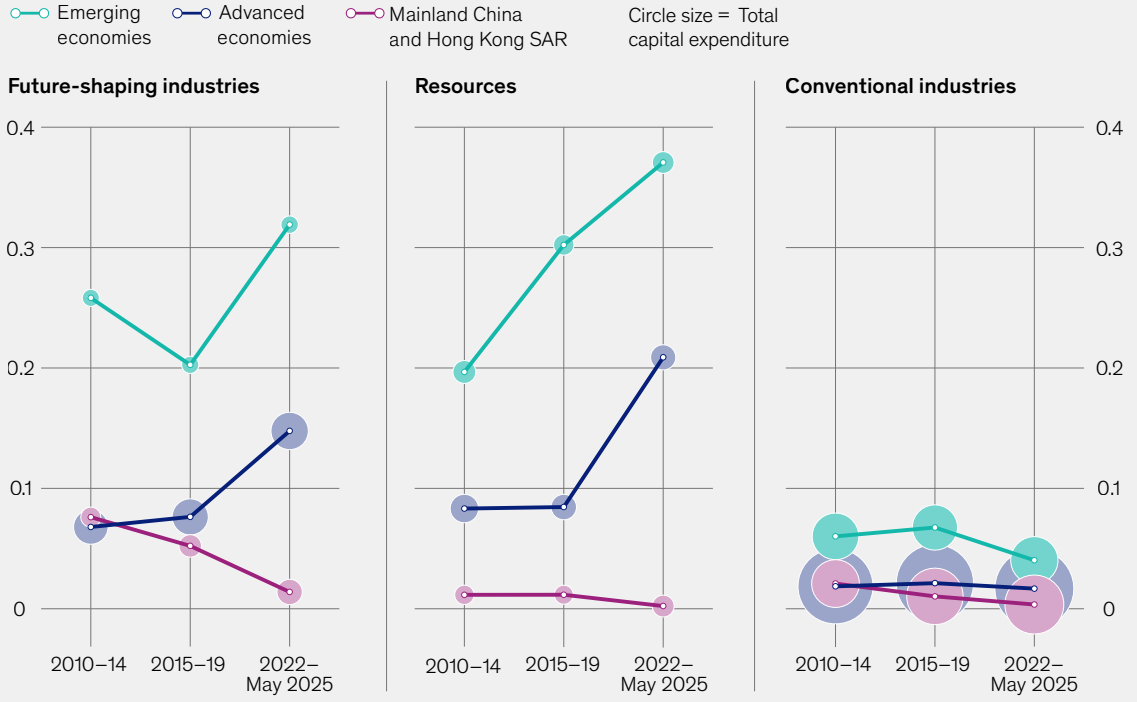
China has been the major exception to the growing role of incoming FDI for its future-shaping industries and resources. For every dollar decrease in greenfield announcements in future-shaping industries and resources, total investment in China actually grew by more than $10. While the decline of capital inflows from greenfield FDI is somewhat immaterial, the reduced access to know-how and human capital could be more relevant in future-shaping sectors where China still lags some economies.

Greenfield FDI announcements in conventional industries in emerging markets have dropped to about four cents on the dollar, down from seven cents. In some regions, the shift has been more pronounced. For example, in consumer and basic manufacturing industries in sub-Saharan Africa, the ratio reached 15 cents on the dollar during the period from 2015 to 2019 but has recently dropped to about four cents.

Exhibit

FDI is an increasingly important source of capital for future-shaping industries and their critical resource inputs.

Greenfield FDI announcements to total capital expenditure, X:1 ratio[1]



Note: Development classification based on IMF definitions. China capital expenditure estimates are based on gross fixed capital formation from the World Bank; goods and service segmentation based on fixed asset investment from the National Bureau of Statistics of China; and sector segmentation based on capital expenditure from S&P Global Market Intelligence.
[1]Greenfield FDI announcement values are expressed relative to total capital expenditure in the X:1 ratio, so that values close to 0 indicate very low levels of FDI.
Source: Using data provided by fDi Markets; Gartner; IEA; S&P Global Market Intelligence; IMF; National Bureau of Statistics of China; World Bank; McKinsey Global Institute analysis

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[1] Greenfield FDI announcements represent planned future investments, typically disbursed over multiple years, and capital expenditure reflects actual in-year investment activity. While not directly comparable, the ratio of the two provides a view of the potential role of greenfield FDI in future capital formation. Estimated ratios are based on annual average greenfield FDI announcements from 2022 through May 2025, relative to capital expenditure from 2022 to 2024.

The impact could be many times higher outside the core hubs where these industries are concentrated today. If all announced projects come to fruition, new FDI-driven data center capacity outside the United States and Mainland China would be nearly twice the total 2022 capacity. For battery manufacturing outside Mainland China, it could be almost four times. And for leading-edge semiconductor capacity outside of South Korea and Taiwan, the FDI-driven increment could be nearly five times total 2022 capacity. In all these cases, FDI-driven projects could account for the majority of total capacity growth outside core hubs up to 2030.

It remains uncertain how many of these announced investments will be fully realized, but the direction of travel is clear. The pipeline is progressing in a healthy way: Between one-half and two-thirds of the projects announced in these industries since 2022 are well underway, and many are already live. It remains to be seen what share will succeed; three of the top 20 EV projects have been put on hold, including a project in Canada worth about $10.5 billion and one in Mexico worth about $5 billion.[14]

FDI's potential near-term impact on resources industries is limited to specific segments

Greenfield FDI announcements in resources are small compared with total current production capacity, contributing at most an incremental increase of less than 10 percent over 2022 levels. After all, energy and mining are massive, well-established industries. Within specific segments, however, the FDI pipeline could still play a meaningful role.

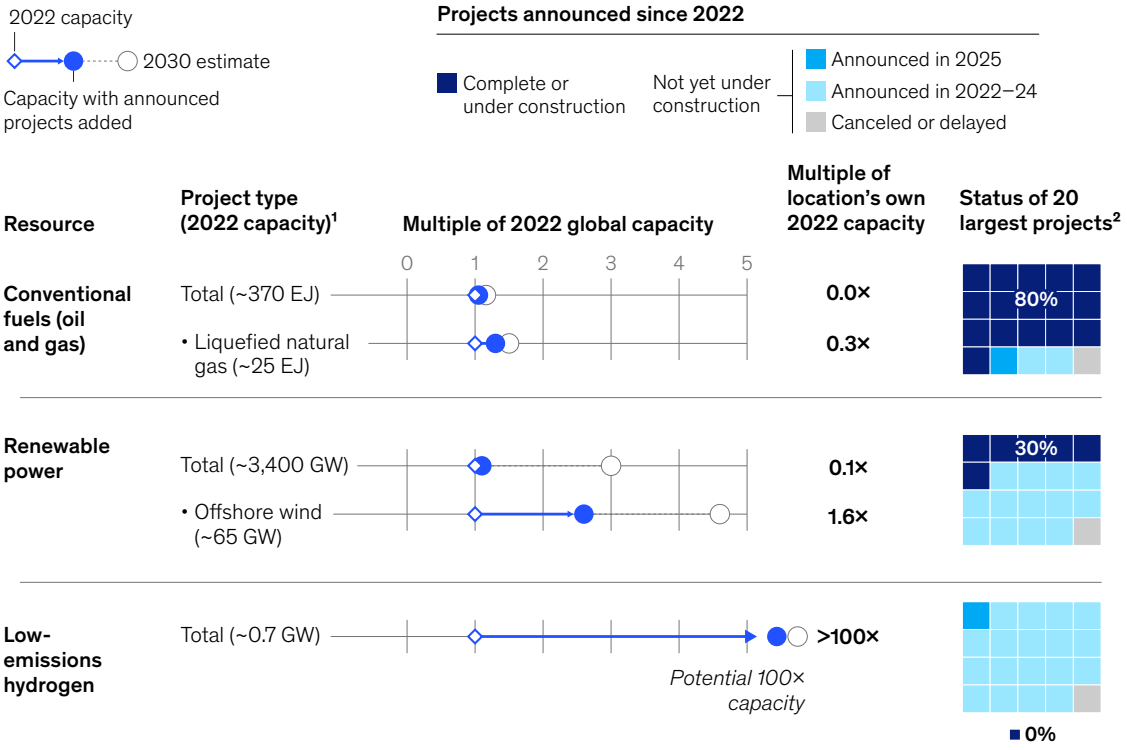
In the case of fossil fuels, approximately 80 percent of conventional energy projects are already under construction or operational (Exhibit 5). Oil and gas firms have over a century of experience in announcing and developing cross-border energy projects, so it is perhaps not surprising that such a substantial percentage are already underway. However, even if all projects came online, their impact on the overall extraction of oil and gas would be modest and add, at most, less than 5 percent to total 2022 extraction capacity. But for LNG capacity, this number could be as high as 25 percent, potentially creating new energy corridors to replace geopolitically sensitive gas pipelines.

If announcements come to fruition, FDI also has the potential to play a substantial role in low-emissions projects that are big and generally more complex, including offshore wind and low-emissions primary steel.[15] Most strikingly, announced low-emissions hydrogen projects would increase capacity over 100-fold above current, almost negligible, levels. However, none of the largest 20 electrolytic hydrogen projects announced since 2022 have reached the construction stage.[16]

Exhibit 5

FDI could reshape some resource segments, despite limited impact on total volumes.

Potential increase in production capacities from announced greenfield FDI projects, multiple



[1]Units of measurement include exajoules (EJ) and gigawatts (GW).
[2]Considering the 20 largest megadeals in each industry through May 2025, with status assesed in July 2025. The 20 largest projects across the total sector are considered.
Source: Using data provided by fDi Markets; Hydrogen Council; International Energy Agency: LNG Global; press search; McKinsey Global Institute analysis

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CHAPTER 2

Multinationals are investing big and increasingly along geopolitical lines

Multinational corporations are making bigger bets on future-shaping industries, driven by competitive urgency and a need to establish themselves as global players in key sectors. These bets are reshuffling geopolitical ties, with multinationals—especially from advanced economies—bringing investment closer to home.

Megadeals are increasingly important for firms in future-shaping industries

Megadeals, which are greenfield FDI projects valued at over $1 billion in inflation-adjusted terms, are growing in importance as firms race to compete globally in future-shaping industries.

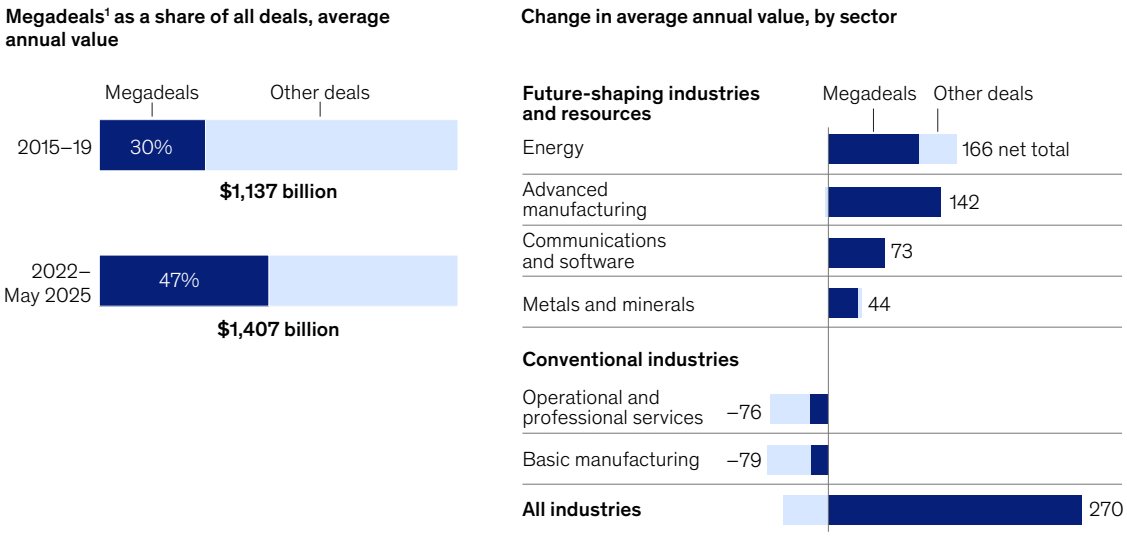
About 200 megadeals annually—representing 1 percent of all deal announcements—now account for approximately half of announced greenfield FDI, a significant increase relative to the previous period, when they accounted for under one-third (Exhibit 6). In fact, this category of big deals drove almost all of the growth in announced FDI in future-shaping industries, as well as about 75 percent of the growth in resources.

Megadeals drove almost all of the growth in announced FDI in future-shaping industries, as well as about 75 percent of the growth in resources.

Exhibit 6

Megadeals fueled growth as FDI shifted toward capital-intensive industries.

Value of greenfield FDI announcements, 2015–19 and 2022–May 2025, $ billion



Note: All $ figures are in terms of 2024 US dollars.
[1]Greenfield FDI announcements worth more than $1 billion each.
Source: Using data provided by fDi Markets; McKinsey Global Institute analysis

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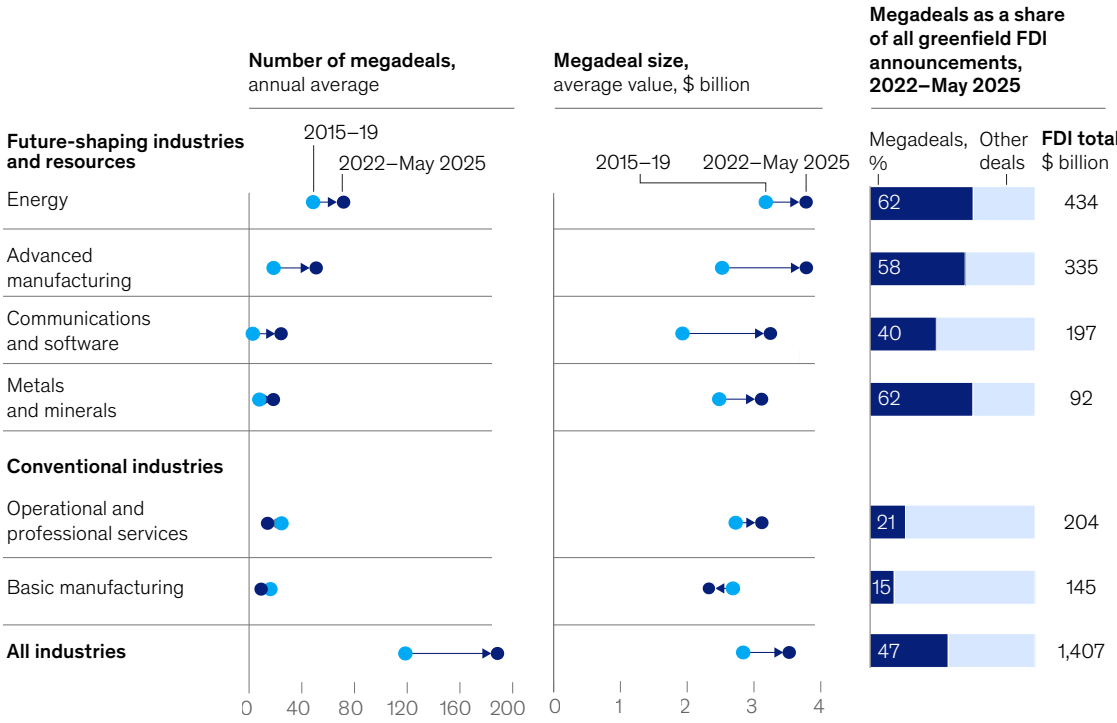
Megadeals have grown in size and frequency, particularly in future-shaping industries, where average deal size has doubled. Megadeals now account for about 60 percent of total announced FDI in resources and advanced manufacturing, as well as 40 percent for communications and software (Exhibit 7).

At the same time, the importance of cross-border megadeals is rising, as they reflect the complex, capital-intensive, and highly competitive nature of future-shaping industries. Advanced manufacturing and digital infrastructure require specialized know-how, intellectual property, and highly skilled workforces to build out the infrastructure necessary to translate complex technologies into production. This raises the price tag of these projects, meaning only a few multinationals have the capabilities, financial strength, and risk appetite to develop them. For example, leading-edge semiconductor manufacturing is arguably the most precise production process ever conducted, and a single fab may require an investment of at least $10 billion.[17] Similarly, each gigafactory or multi-hundred-megawatt data center costs upward of $1 billion.[18]

Winner-takes-most dynamics in rapidly evolving markets further push multinational organizations toward megadeals. Companies compete to establish global relevance, leading to an escalation in investment sizes. For instance, hyperscalers have engaged in an accelerating global investment race in the communications and software industry for over a decade.[19] Data center announcements have expanded in size by one and sometimes even two orders of magnitude over the past decade; the largest recent announcements are for gigawatt facilities, compared with the previous decade's data centers, built to consume dozens of megawatts.[20] And as data centers got bigger, so did deal sizes in the sector, which roughly doubled in average value.

Exhibit 7

Megadeals in future-shaping industries and resources are growing in both size and number.



Note: All $ figures are in terms of 2024 US dollars.
Source: Using data provided by fDi Markets; McKinsey Global Institute analysis

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Resource-related megadeals tend to be more complex projects with higher price tags. Oil and gas, including LNG projects, require significant capital and specialized expertise; for example, the announced LNG terminal in Calcasieu Parish, Louisiana, has a $17.5 billion sticker price.[21] New, low-emissions projects for hydrogen or steel also require considerable investment and risk, as evidenced by the fact that nearly all announced hydrogen projects are megadeals, but none of the largest projects are yet under construction.

Public policy may play a role in the growth of megadeals across industries—or at least in the way they are announced. As economies compete to attract projects, stated incentives offered to firms have multiplied. For example, analysts found that announced FDI incentives reached record highs in 2023, particularly in advanced manufacturing, such as EVs and semiconductors.[22]

Of course, not all FDI announcements involve the largest firms. About half of them are not megadeals, and in conventional sectors, roughly 80 percent of all deals are for less than $1 billion. Firms with ambitions to seize opportunities but lacking some of the financial muscle of their large peers can find space to invest. For instance, as megadeals grow, so will the size of their support ecosystems, including component manufacture, infrastructure, logistics, business services, financing, and more.

Multinational firms took different paths in response to geopolitical pressures

The rapid evolution of new technologies is not the only change afoot. Geopolitical tensions are higher than they have been in decades, and firms looking to expand abroad are taking note.

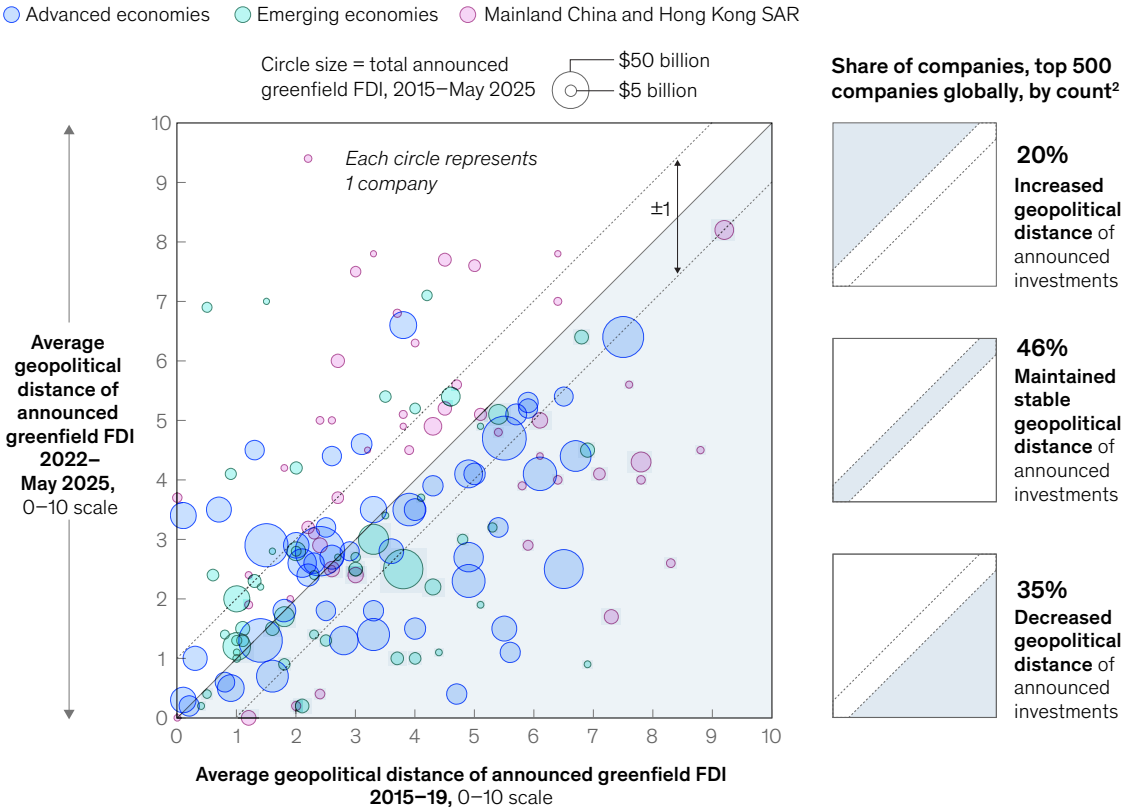
Greenfield FDI announcements have increasingly tracked geopolitical alignments. Indeed, the geopolitical distance of FDI announcements has dropped by more than 20 percent since just after the global financial crisis—from 3.6 in 2010 to below 3.0 as of 2025 on our ten-point scale.[23] (For more on how we measure geopolitical distance, see sidebar "Defining geopolitical distance.") Advanced economies' investment in China fell from 10 percent to 2 percent of total FDI announcements by value, while flows among advanced economies increased from 35 percent to 45 percent.

These trends reflect the aggregate effect of investment decisions. Among the largest companies, 35 percent decreased the average geopolitical distance of their announced FDI between the 2015 to 2019 period and the 2022 to 2025 window, while only 20 percent increased geopolitical distance (Exhibit 8).

Exhibit 8

Advanced-economy multinationals tended to reduce geopolitical distance of investment more than others.

Geopolitical distance of announced greenfield FDI, top 50 companies by group of economies,[1] 2015–May 2025



[1]Companies with the largest announced greenfield FDI between 2015 and May 2025, with at least 2 announced investments, together valued over $50 million, in both the 2015–19 period, and the 2022–May 2025 period. Companies headquartered in economies that do not vote at the UN General Assembly are not included in the analysis. A change in geopolitical distance is considered stable if it remains within a 1-point movement on our scale.
[2]Numbers may not sum due to rounding.
Source: Using data provided by fDi Markets; McKinsey Global Institute analysis

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Sidebar

Defining geopolitical distance

Previous MGI research developed a measure of geopolitical alignment analogous to geographic distance. It is based on UN General Assembly voting records of economies between 2005 and 2022.[1] We used principal component analysis to map each voting country on a one-dimensional voting spectrum ranging from zero to ten (exhibit). Explicitly, we did not define this spectrum based on any specific country or pair of economies. We then took the geopolitical distance between any two economies to be their difference on this scale.[2]

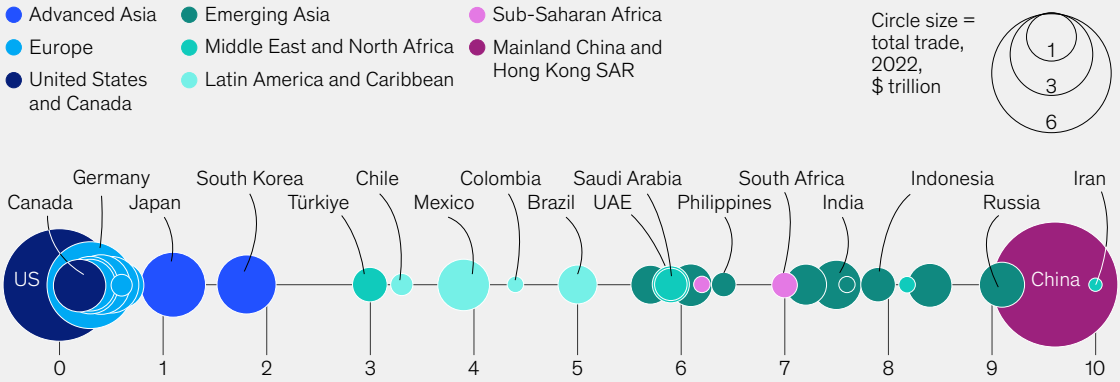
The geopolitical distance of greenfield FDI announcements is the difference between the announcement's investor and investee on the zero-to-ten scale. This distance is assumed to be fixed over the period considered in this report. In other words, changes in the average geopolitical distance of announced investment reflect different mixes of investment across partners, rather than a change in the geopolitical distance between any two economies.

Of course, relations between countries are dynamic. The United States and countries that, by our definition, are close have diverged over some high-profile UN General Assembly votes in 2025. But this has happened before; UN votes are a noisy measure of geopolitical alignment, with countries' voting practices varying from session to session. Time will tell if recent voting patterns signal a more permanent shift in geopolitical relations.

Exhibit

Economies hold different geopolitical positions.

Geopolitical position based on UN General Assembly voting patterns,[1] 2005–22, 0–10 scale



[1]Calculated by principal component analysis of UNGA voting records in 2005–22, reduced to a 0–10 scale. To exclude procedural votes, a subset of UNGA votes are considered. For 2005–21, these exclude votes not designated as "important" in "Voting practices in the United Nations," US Department of State. For 2022, votes addressing the war in Ukraine are included.
Source: *Geopolitics and the geometry of global trade*, McKinsey Global Institute, Jan 2024

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[1] Overall, the analysis includes 201 votes, or about 15 percent of all UN General Assembly votes from 2005 to 2022. Since many votes were procedural or repeated, we included only votes designated as "important" by the US Department of State.

[2] Economies that do not vote at the UN General Assembly are excluded from the analysis. We conducted robustness checks over different time windows between 2005 and 2022 and found that for many economies—including China, European economies, Japan, South Korea, and the United States—their geopolitical position by our measure did not vary significantly. However, the position of some economies, such as Brazil and Mexico, was more variable, although always toward the center of the spectrum.

Beneath the summary statistics lurks tremendous variability across the investment decisions of thousands of individual multinational corporations (MNCs). Each MNC faces its own set of considerations, depending on sector, geographic footprint, competitive position, cost of capital, and so on. Some firms meaningfully increased the geopolitical distance of their announced FDI. Of the 500 firms with the largest announced greenfield FDI since 2015, about 30 increased the geopolitical distance of these announcements by at least three notches on our scale. (To give a sense of scale, this is equivalent to a US company shifting investments from Japan to Mexico or from Nigeria to Mainland China.)

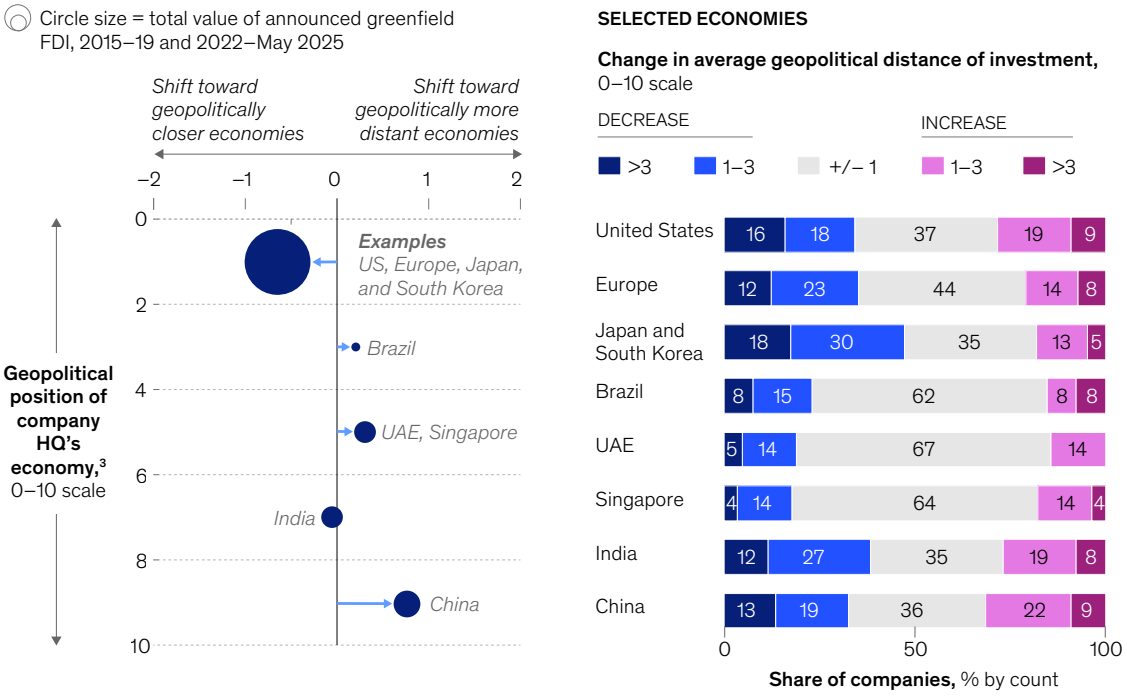
While there was variability among firms in every country, multinationals from advanced economies tended to shift investment announcements closer to home. MNCs from emerging economies and China did not (Exhibit 9). Within advanced economies, Japanese and South Korean firms reduced the geopolitical distance of their investments the most, followed by companies based in Europe (the United Kingdom and the EU countries).[24] The declines were driven primarily by advanced manufacturing firms, especially automotive and semiconductors. Firms in these sectors had

Exhibit 9

Within each economy, firms adopted a range of approaches to the geopolitical distance of their investments.

Shifts in geopolitical distance of companies' announced greenfield FDI, by company headquarters (HQ) location

Change in average geopolitical distance of announced greenfield FDI,[1] 2015–19 to 2022–May 2025



[1]Analysis includes all companies with at least 2 announced investments, together valued over $50 million, in both the 2015–19 period, and the 2022–May 2025 period.
[2]Average within a "bin" of size 1 on the geopolitical distance scale (i.e., 0–1, 1–2, etc.), weighted by total value of announced greenfield FDI between 2015 and May 2025. Values are only represented if 10 or more companies meeting the inclusion criteria exist within the given bin.
[3]A company's home economy is taken as the location of its headquarters. The geopolitical position of an economy on the 0–10 scale is based on McKinsey Global Institute analysis of UN General Assembly (UNGA) voting records, 2005–22, and is assumed to remain constant over the time period analyzed. Companies headquartered in economies that do not vote at the UNGA are excluded from the analysis.
Source: Using data provided by fDi Markets; McKinsey Global Institute analysis

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previously expanded extensively into distant locations, particularly China, and have now shifted investment announcements to more closely aligned partners, mostly the United States and Europe.

Some advanced-economy firms bucked the trend. Major US technology firms investing heavily in data centers globally kept the geopolitical distance of their investments relatively stable on average, and some expanded their footprints into more geopolitically distant emerging markets. Even in Europe, Japan, and South Korea, multiple resource companies—steelmakers and energy firms—invested further afield than before.

A further counterweight to the global drop in geopolitical distance came from outside advanced economies. Chinese firms have, on average, increased the geopolitical distance of their announced investments. This occurred as companies announced proportionately more investment in Europe—notably by EV and battery manufacturers—as well as in Mexico and the Middle East. To be sure, some Chinese firms have also focused announcements on geopolitically closer places. Over 30 percent of firms have seen decreased geopolitical distance of FDI announcements, similar to the trend in the United States. For example, a Chinese automotive player shifted announced investments from the United States to Malaysia and Brazil, while a Chinese pharmaceutical company redirected investments from the United States to Singapore.

Major emerging-economy MNCs tended to hold the geopolitical range of their FDI announcements more constant. In each of Brazil, Singapore, and the United Arab Emirates, roughly 65 percent of companies maintained the geopolitical distance of FDI announcements—in contrast to about 35 percent in the United States, Japan and South Korea, and China. Firms from these economies tended to invest disproportionately in conventional industries and had since 2015 already invested in comparatively closer partners, so their shift was less pronounced. India's pattern was slightly different: More companies made larger moves, but because some increased while others decreased geopolitical distance, they canceled out such that India maintained investment ties across the geopolitical spectrum.

These patterns echo previous McKinsey Global Institute work that found economies in Europe and the United States have shifted their goods trade toward geopolitically closer partners since 2017, while emerging economies have typically continued to trade across the geopolitical spectrum.

Patterns of FDI differ among industries

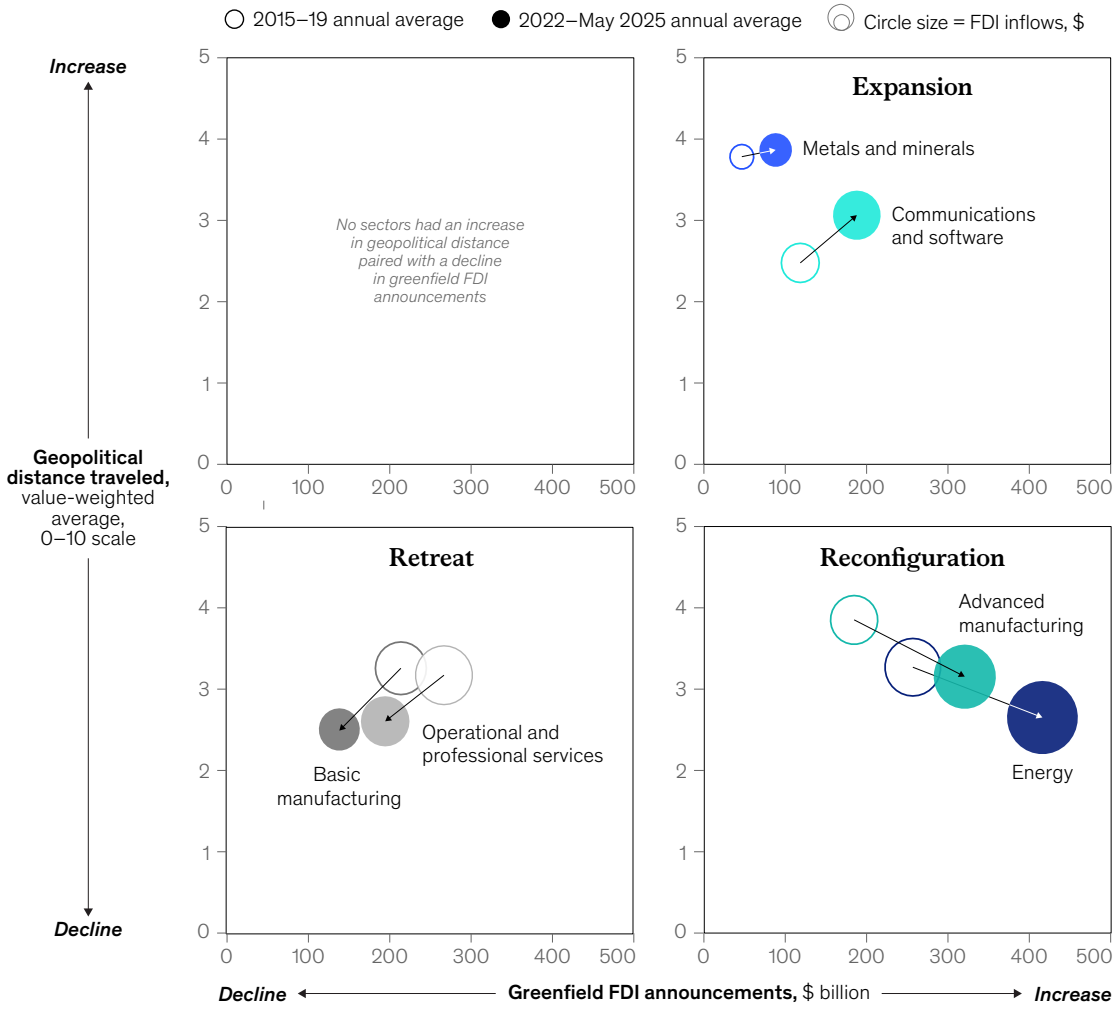
The combination of company-level moves is leading to differing trajectories for global economic ties across industries, in terms of aggregate annoucement values and geopolitical distances. Three distinct patterns—*expansion*, *reconfiguration*, and *retreat*—emerge from the shifts in investment levels and geopolitical distances in FDI announcements by MNCs (Exhibit 10). Two patterns characterize future-shaping industries and resources, which are increasingly powered by megadeals, while the third applies to conventional industries.

Chinese firms have, on average, increased the geopolitical distance of their announced investments.

Exhibit 10

Sectors are diverging on investment attractiveness and geopolitical dynamics.

Changes in geopolitical distance and greenfield FDI announcement value[1]



Note: All $ figures are in terms of 2024 US dollars.
[1]Geopolitical distance measures the value-weighted average partner similarity based on analysis of UN General Assembly voting patterns between 2005 and 2022. Economies without UN representation were excluded from the analysis.
Source: Using data provided by fDi Markets; UN Digital Library; Voeten (2017); McKinsey Global Institute analysis

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Expansion of FDI in data centers and in metals and minerals

FDI announcements related to communications and software—particularly data centers—and metals and minerals increased in value, even across geopolitically distant partners. As economies rushed to secure connections to tangible resources like minerals and intangible ones like data, new linkages formed across geopolitical divides. Examples include Chinese mining companies starting new projects in Serbia and US technology companies investing in Malaysia. This shift slightly increased geopolitical distance in these two industries.

Reconfiguration of FDI in advanced manufacturing and energy

Announced FDI in advanced manufacturing and energy projects increased in value and decreased in average geopolitical distance. Companies aimed to manage geopolitically sensitive dependencies by setting up new production hubs and potential trade corridors.

MNCs in advanced economies sought alternatives to advanced manufacturing supply chains by setting up new production hubs. For example, companies from Japan, South Korea, and Taiwan in the semiconductor and EV value chains announced investments in the United States while all but stopping new investments in China.

In energy, FDI has historically spanned wide geopolitical distances, as firms invested in conventional energy projects around the world. Since 2022, geopolitical distance of announced energy investments decreased, driven by a shift to lower-emissions projects, which tend to link geopolitically closer partners, including companies within Europe and within MENA. While conventional energy deals continued to span large geopolitical distances, they aimed to create alternatives to sensitive trade routes, such as shipments through the Strait of Hormuz and gas pipelines from Russia to Europe.

Retreat of FDI in conventional industries

Greenfield FDI announcements in conventional industries, such as basic manufacturing and operational and professional services, have declined in recent years relative to the 2015-to-2019 period.

This trend was most pronounced in the corridors between geopolitically distant partners, especially flows from advanced economies into China—declines not offset by significant growth elsewhere. As just one example, greenfield FDI announcements in China's plastics sector since 2022 have been under $500 million per year, 80 percent less than levels from 2015 to 2019. At the same time, investment in plastics in the rest of the world also fell by roughly 50 percent.

New announced projects were largely between geopolitically aligned partners. Around 45 percent of investment in conventional sectors flowed between advanced economies, for example, to strengthen infrastructure and logistics networks. These included intra-European flows, such as German retailers expanding across continental neighbors and the United Kingdom and EU logistics firms developing regional warehouses and distribution centers. American MNCs announced increased investment in Europe in similar sectors.

FDI announcements for future-shaping industries could transform the global economy and reshuffle geopolitical ties for years to come. The next section explores how these investments may affect key industries across economies.

CHAPTER 3

How shifts in FDI announcements today may shape industry dynamics tomorrow

FDI is shifting the global footprint of future-shaping industries and the cross-border ties that connect countries and regions. Some economies that have long relied on imports for key products like semiconductors or batteries may instead see large boosts in their domestic capacity, a development that could have a cascading impact on trade flows.

This section examines the dynamics of FDI announcements in data centers, critical minerals, semiconductors, EVs and batteries, and energy. The dynamics in data centers and critical minerals show an expansion pattern, with investment value and geopolitical distance both increasing. The dynamics of the three remaining sectors show reconfiguration, corresponding to increased value but decreased geopolitical distances.

Expanding AI infrastructure globally

As interest in AI surges, greenfield FDI announcements in data centers have expanded, increasing in value and spanning wider geopolitical distances. These shifts promise to change future flows of technology, digital services, and data.

Growing AI adoption and related workloads are fueling demand for data centers to host and process data across the world. Since 2022, FDI announcements dedicated to data centers have totaled about $170 billion annually, doubling the average level of investment announced in the 2015-to-2019 period.

At the same time, announced investments have stretched across increased geopolitical distances. Localizing data centers in the places they serve is often important for both commercial and regulatory reasons. The rapid deployment of AI means economies are demanding new capacity, and global MNCs and investors are racing to build it.

Today, China and the United States together account for over half—and perhaps as much as two-thirds—of global data center capacity.[25] In these economies, domestic investment drives most of the capacity expansion.

But in other regions, FDI could become the main engine of data center capacity growth. Announced projects could add about twice the capacity that existed outside of China and the United States in 2022, supporting more than half of total capacity growth out to 2030.[26]

US firms, including hyperscalers such as Amazon Web Services and Microsoft, were the biggest sources of this announced FDI. In addition to ongoing large investments in Europe and other advanced economies, such firms have announced increased investment across emerging markets. Destinations included India and Southeast Asia, as well as Saudi Arabia (Exhibit 11).

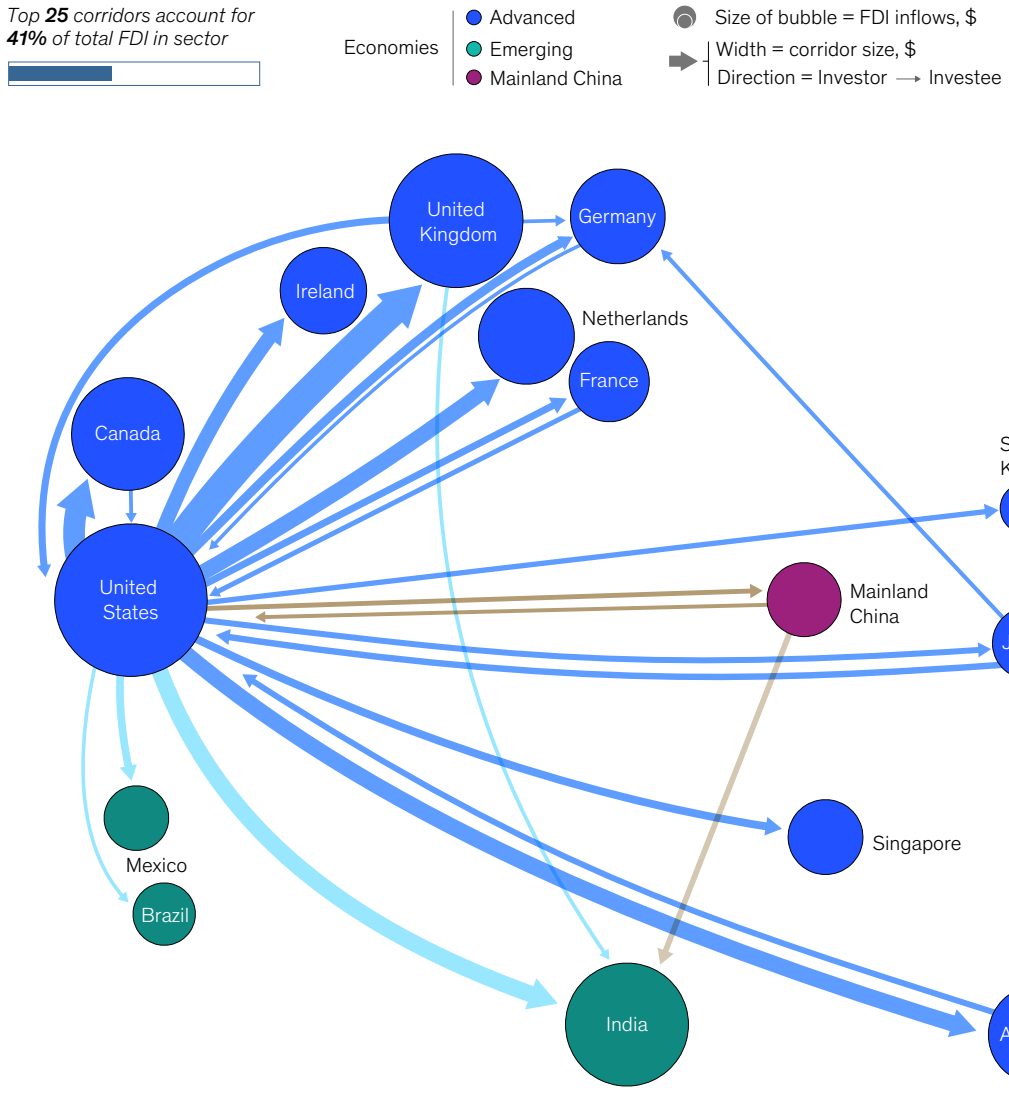
US firms are not the only ones stepping up investment abroad. In early 2025, for example, investors from Middle Eastern economies announced some of the largest data center projects ever in France and the United States, contributing to the expanding geopolitical distances of recent FDI announcements.

Exhibit 11

FDI in data centers was driven by US expansion into emerging economies and the UAE into large projects.

Communications and software: Top 25 corridors by announced greenfield FDI, $ billion

2015–19



Note: Adjusted for inflation based on World Bank US CPI, indexed at 2024.
Source: Using data provided by fDi Markets; McKinsey Global Institute analysis

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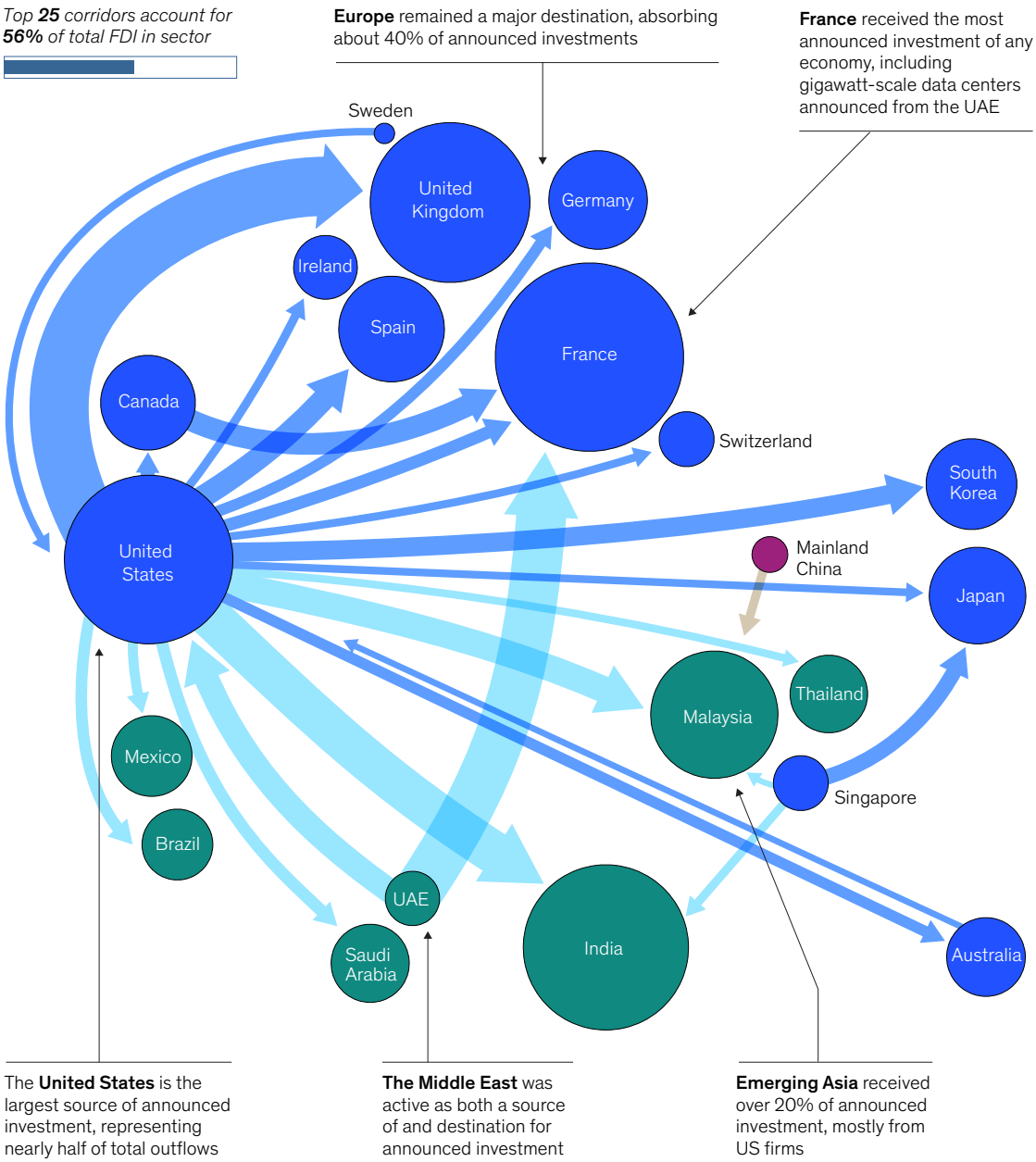
Exhibit 11 (continued)

2022–25



The impact of recent FDI announcements could soon become apparent, as roughly half of the 20 largest projects announced since 2022 are under construction; a wave of FDI-driven data centers is planned to come online in 2025 and 2026. Most of the remaining projects, often even larger, were announced in the first half of 2025. These could bring multi-gigawatt campuses online by 2030.

As these projects move toward execution, uncertainties remain. For example, rolling them out depends on ongoing growth in demand for enormous capacities, which in turn relies on the continued evolution of AI use cases and compute-intensive workloads. It also depends on supporting regulatory frameworks and agreements that facilitate transfer of intellectual property, chips, and data.

These projects also require massive amounts of power. At a global level, data centers are a small but increasing power draw: By 2030, their electricity demand could represent up to roughly 5 percent of the global total.[27] The impact locally could be more substantial. An FDI megadeal announced in 2025 to develop a 1.4-gigawatt data center in Paris would require 10 to 15 percent of the city's current electricity consumption to operate.[28]

If successful, data center investments could transform cross-border flows in many economies. Demand for advanced chips in locations where new data centers are built, for example, could shift trade routes for high-tech electronic components. FDI projects also could create new opportunities to offer digital services and could unleash larger absolute flows of data, enabling more localization of sensitive data.

Expanding critical minerals production to support future-shaping industries

Lithium powers batteries, germanium accelerates chip speed, neodymium drives efficient electric motors, and copper wires our world. These and other critical minerals are essential to future-shaping industries, so demand for them has been rising.[29] The mining and refining of critical minerals is highly geographically concentrated, with refining for most occurring predominantly in China.[30] FDI projects are a mechanism for China and other economies to secure supply of these minerals in future. Correspondingly, associated FDI announcements across the critical minerals value chain are expanding.

Critical minerals may account for nearly 50 percent of FDI announcements in the metals and minerals category, while most of the rest goes toward the steel value chain.[31] Steel has long been a backbone of manufacturing, since the invention of the Bessemer process in the 1850s enabled its mass production. Today it remains important for advanced applications, from spaceships to scalpels, and also basic manufacturing, such as rebar and railway track. (While we do not focus on the steel sector as part of this chapter, see sidebar "FDI could help forge lower-emissions steel, amid uncertainty," for more on the specific role FDI could play in the low-emissions segment.)

In the realm of critical minerals, announced greenfield FDI has reached around $50 billion annually since 2022, roughly doubling relative to the period from 2015 to 2019. FDI outflows from China drove the largest share of this increase (over 40 percent), followed by flows among advanced economies (about 30 percent), and those from advanced economies to emerging markets (about 20 percent).

China has held a preeminent position in refining critical minerals for the past two decades. Its firms own the facilities responsible for refining over 90 percent of the world's rare earth elements, roughly 80 percent of cobalt, 70 percent of lithium, 60 percent of nickel, and 40 percent of copper.[32] Correspondingly, Chinese enterprises have long been the largest foreign investors in critical minerals, accounting for about one-quarter of the total of announced FDI over the past decade.

Since 2022, FDI investments in critical minerals announced by Chinese firms have increased and broadened both geographically and geopolitically. Deals have averaged $16 billion annually—three times the average for 2015 to 2019.[33] Chinese investment announcements across Latin America, sub-Saharan Africa, and emerging Asia have remained robust. For example, during the past three years, companies have announced roughly $15 billion for mineral-linked projects in Indonesia, mostly related to nickel. The somewhat newer development is that Chinese firms have expanded announced investments into both Europe and North Africa. These include a copper mine in Serbia and battery-related refining and manufacturing projects in Morocco.

Sidebar

FDI could help forge lower-emissions steel, amid uncertainty

Steel is a building block of our material world. About 1.8 billion tons of steel is produced every year—enough to build the equivalent of 24,000 Golden Gate Bridges.[1] Steel production also directly contributes just under 10 percent of global carbon emissions, creating an impetus to shift to lower-emissions routes of steel production.[2]

FDI has emerged as a potential engine for projects that produce lower-emission steel. We estimate that over 40 percent of all announced steel-related FDI since 2022—roughly $15 billion annually—is in such projects, up from a negligible base in 2015 to 2019.

Most lower-emissions projects center on producing steel using direct reduced iron (DRI), a process that typically uses natural gas to reduce iron ore, rather than coal.[3] Generally, these new projects are described as "hydrogen ready," meaning that in the future, they could use green hydrogen as a reductant—a way of producing steel that emits even less carbon.

About half of the largest, lower-emissions steel projects have been announced in MENA, which has registered a more than fourfold increase in the value of its inbound steel FDI announcements since 2022 relative to the period from 2015 to 2019. This is partly because of its access to cheap natural gas and potential for hydrogen and also because of its proximity to European markets, where lower-emissions steel may command a premium.

While FDI-driven lower-emissions steel projects are unlikely to have a significant impact on overall global steel production, they could add as much as 40 percent to 2022 levels of lower-emission capacity. However, the outlook for lower-emissions steel remains highly uncertain. Global steel overcapacity, sluggish demand for lower-emissions steel, and more challenging economics due to higher energy costs raise questions about viability. Currently, only two of the ten largest such FDI projects announced since 2022 have started construction. And even for the projects that do progress, it is uncertain whether or when the anticipated switch from natural gas to hydrogen will become economically feasible.

1 Mekala Krishnan et al., *The hard stuff: Navigating the physical realities of the energy transition*, McKinsey Global Institute, August 2024.
2 Figures are for direct emissions as a share of total emissions of the energy system and exclude indirect emissions, such as from power generation. See "Global Energy Perspective 2023," McKinsey, October 18, 2023.
3 For projects and capacity estimates for lower-emission steel, we consider only primary steel production using natural gas or hydrogen for DRI and exclude coal-based DRI and secondary steel production via the scrap-to-electric-arc-furnace route.

At the same time, companies headquartered in advanced economies have stepped up their announced investments. Since 2022, deals averaged about $30 billion a year, up from closer to $15 billion in the prepandemic period. A growing fraction of these have gone toward other advanced economies—35 percent since 2022, compared with only 20 percent between 2015 and 2019. Most such projects targeted Canada and the United States. Some of the largest of these investment announcements relate to processing battery materials, while others span mining lithium to rare-earth processing. These investments were complemented by several notable announced inflows to United States from emerging economies, including a Middle Eastern investor's 2025 megadeal that proposes to nearly double US capacity to smelt new aluminum.

At the time of writing, announced critical-minerals projects appear to be progressing. Looking at the largest critical-mineral FDI deals announced since 2022, about half are complete or under construction. Most of the remainder are progressing through feasibility studies or permitting.[3,4]

The potential impact of FDI projects on global supply is meaningful for some minerals. For example, announced greenfield FDI in copper mining announced since 2022, if deployed, could represent a production increase of about 10 percent compared with 2022. For lithium, additional production from announced FDI could exceed 30 percent.

Beyond increases in absolute production, some of these projects could signal the first steps of trade flow rewiring. For example, FDI announcements directed at North America suggest some potential for localizing critical-mineral value chains. Domestic capital is complementing such investment in the case of, for example, rare-earth processing.[35]

Moreover, FDI announced by advanced Asian, European, and US companies destined for mineral-rich countries may shift trade toward more exports of processed minerals directly to end markets, especially as mineral-rich countries seek to expand domestic value-addition through refining activities. For example, some FDI copper and lithium projects in Latin America explicitly include refining.[36]

However, the contours of this potential shift remain fuzzy, given uncertainties around the extent to which new refining capacity will materialize, how it will integrate into global value chains, and how it may interact with the evolution of China's own refining capacities. Chinese companies have, for instance, announced their own substantial investments in lithium projects in Latin America.

Reconfiguring leading-edge semiconductor production, especially by boosting US capacity

The future global economy will run on leading-edge semiconductors, the most advanced chips produced today.[37] Potential applications range across generative AI, robotics, defense, and many other sectors. A large language model can require hundreds of thousands of these chips.[38]

Amid escalating geopolitical tension, companies and countries are seeking to diversify production away from Taiwan and South Korea and build capability closer to home. Correspondingly, associated greenfield FDI announcements have been reconfiguring—that is, increasing in value but decreasing in geopolitical distance. Since 2022, FDI announcements into semiconductors have reached $115 billion per year, a fivefold increase from the 2015-to-2019 period. Strikingly, half of this amount was focused on building new leading-edge facilities, which didn't feature in the previous round of foreign investments.[39]

Until recently, production of leading-edge chips was heavily concentrated in Taiwan and South Korea. In 2022, these economies were home to about 65 and 25 percent, respectively, of global leading-edge capacity.[40] Geographic concentration can create significant vulnerabilities. For instance, export controls have recently been applied to semiconductor-related raw materials and manufacturing machinery, as well as the chips themselves, especially those at the leading edge. In fact, some researchers have found that export controls target the semiconductor value chain most.[41]

However, building capacity for the production of leading-edge semiconductors at scale is, to put it mildly, neither easy nor cheap. A single fab can cost $10 billion or more. They are incredibly complex and precise; less than a handful of companies globally have the capabilities to develop them.

Against this backdrop, FDI has emerged as an engine that could expand capacity globally. In fact, if all announced FDI projects were realized, they could add the equivalent of almost 60 percent of total global leading-edge capacity in 2022. FDI could add five times the existing capacity outside Taiwan and South Korea, dramatically expanding the footprint of the industry. Europe, Japan, and the United States' combined share of global leading-edge semiconductor production capacity could increase from about 10 percent in 2022 to more than 30 percent in 2030, with more than half of that increase driven by FDI projects.

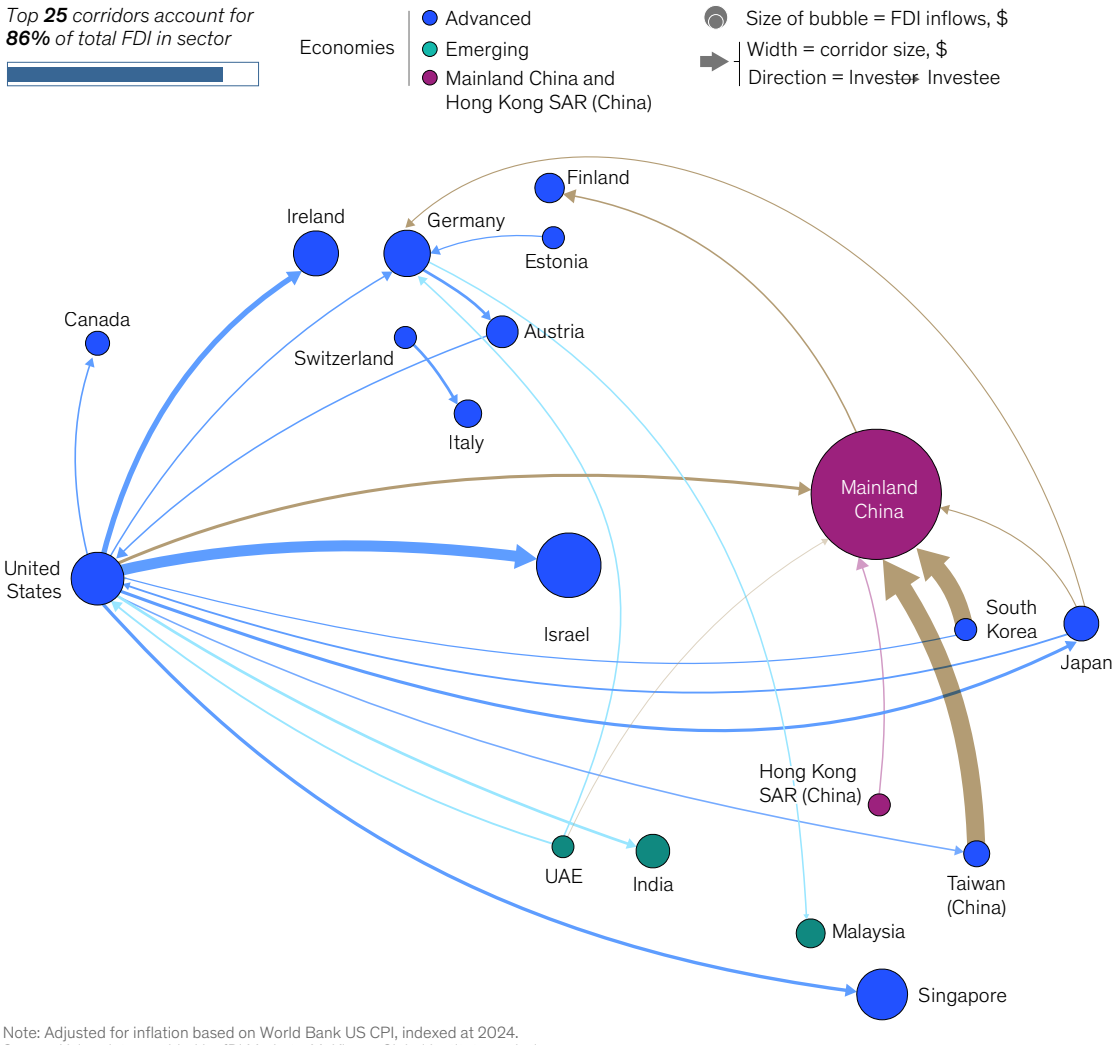
By some estimates, the United States could become the second-largest producer of leading-edge chips by the early 2030s, home to more than 20 percent of global capacity, thanks to investments from TSMC and Samsung, the leading players from Taiwan and South Korea (Exhibit 12).[42] This additional capacity could reduce US reliance on foreign sources for leading-edge chips. However, absent major shifts in other steps of the semiconductor value chain, overseas dependencies could persist. These include, for example, US reliance on imports for some semiconductor manufacturing equipment and for many raw materials and chemicals used in manufacturing, as well as dependence on overseas capacity to assemble, package, and test semiconductors.[43]

Exhibit 12

FDI in semiconductors reconfigured sharply toward the United States.

Semiconductors: Top 25 corridors by announced greenfield FDI, $ billion

2015–19

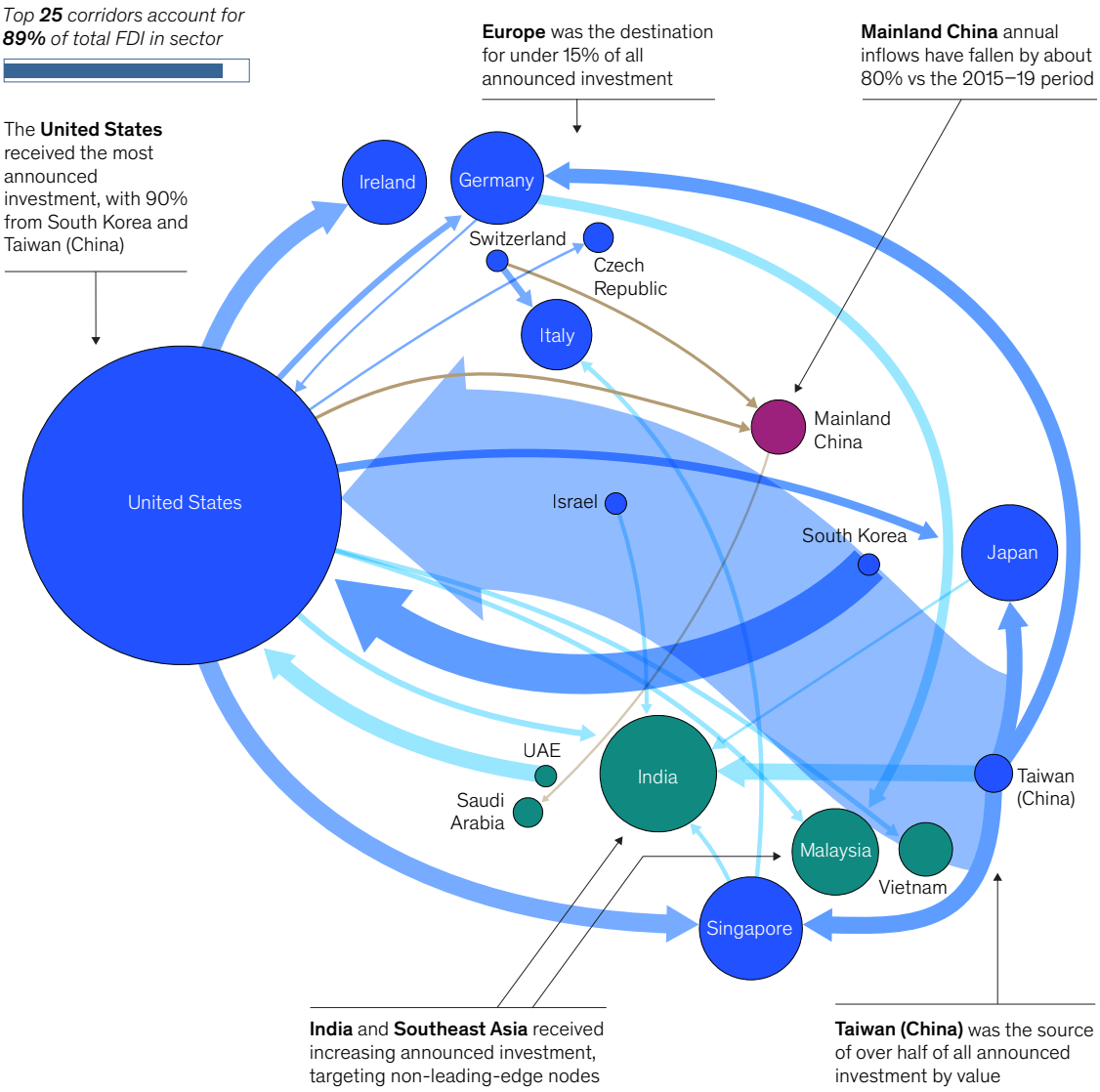


Note: Adjusted for inflation based on World Bank US CPI, indexed at 2024.
Source: Using data provided by fDi Markets; McKinsey Global Institute analysis

McKinsey & Company

Exhibit 12 (continued)

2022–25



Europe's (primarily Ireland's) and Japan's shares may grow too but would likely remain in the single digits, as only a few projects have been announced.

As announced FDI in advanced economies increased, the value of announced semiconductor-related investment in China dropped about 80 percent during the period since 2022, compared with 2015 to 2019, when China was the destination of most flows. This loss of FDI could lead to difficulty or delay in scaling leading-edge chip production, due in part to reduced inflows of know-how from leading global players combined with more limited access to advanced semiconductor manufacturing equipment.

Early signs of FDI's impact in advanced economies are already visible. At TSMC's site in Arizona, one facility started high-volume production of leading-edge chips in late 2024. A second has completed structural building, and a third is under construction. In Europe, FDI-driven projects have already led to leading-edge chip production in Ireland, with additional FDI announced to scale production, including even more advanced nodes. Of the 20 largest megadeals announced globally since 2022, two are already online, and a further ten are under construction. Of the eight remaining megadeals that have not yet broken ground, five were announced in 2025.[44]

In addition to leading-edge semiconductors, FDI also plays a role in the production of mature and advanced chips. These chips have important applications in, for example, cars, appliances, and industrial equipment. In Japan and Germany, FDI has helped scale their production. Construction is also underway on megadeal-driven projects in India; one of these could be first to develop semiconductor production capacity in the country.

The success of FDI-driven projects in building leading-edge semiconductor capabilities is not guaranteed. Developing new and competitive leading-edge manufacturing centers outside Taiwan and South Korea is a formidable endeavor, especially without the same ecosystem of value chain partners and talent. Moreover, projects in newly seeded hubs may face different regulatory or environmental requirements, as well as potential challenges in accessing utilities and infrastructure. Accessing low-cost electricity may be difficult, especially in Europe. Indeed, economic concerns loom large: Operating expenses of semiconductor manufacturing facilities may be 30 percent higher in Europe and the United States than in Taiwan.[45]

Reconfiguring EV and battery production networks beyond China

China currently is by far the largest manufacturer of batteries, which are fast becoming critical components of the global economy—powering not only EVs but also consumer electronics, robotics, drones, and energy storage for homes and electric grids. Greenfield FDI announcements are reconfiguring as multinationals in advanced economies boost investment and redirect attention away from China to geopolitically closer partners and as MNCs from China expand into other economies.

Today, China accounts for more than 80 percent of active material processing and global battery manufacturing capacity and an even larger share, about 90 percent, of lithium-iron-phosphate (LFP) cells, a newer, rapidly growing battery technology. EV assembly is only marginally more dispersed, with China home to roughly 70 percent of global capacity.[46]

Now FDI is beginning to drive reconfiguration to a more geographically diverse battery production footprint. Annual announced greenfield FDI in EVs and battery production since 2022 has totaled $110 billion per year, corresponding to a 40 percent increase in annual investment versus the 2015-to-2019 period. Nearly all of this has flowed to economies outside China. If fully realized, these projects could more than quadruple capacity outside of China, almost doubling global battery capacity (all compared with 2022 levels).

European economies and the United States are the primary recipients of announced investments in automotive and batteries, attracting about 50 percent of total FDI announcements since 2022. While these regions have homegrown businesses attempting to scale domestically, FDI projects may provide important capabilities and could account for most of the capacity growth in these regions.

In the case of the United States, which accounted for roughly 30 percent of total announced inflows, about half of investment has come from leading Japanese and South Korean players in automotive assembly and batteries, with the remainder mostly coming from Europe. Leading Chinese companies made up less than 10 percent of the total.

Europe has a distinct dynamic. Chinese firms, including EV producers and battery makers, have emerged as the largest prospective investors, accounting for about $10 billion in yearly announcements since 2022, with about 55 percent of announced FDI coming into the region from partners outside of Europe. Projects by leading Chinese battery manufacturers in Germany, Hungary, Portugal, and Spain include some of Europe's largest planned gigafactories, most of which could produce LFP cells, while projects by EV makers include new assembly lines in Slovakia and Spain. Announced investment from non-European advanced economies was limited, accounting for about 30 percent of the total. At the same time, European companies have intensified cross-border investments within the region, representing roughly $12 billion in yearly announcements since 2022.

China's investment footprint goes beyond Europe. In fact, Chinese players are set to become the biggest investors in emerging economies around the globe. In Morocco and Vietnam, they have announced battery projects, and in Malaysia, Mexico, Saudi Arabia, and Türkiye, they have announced large EV assembly projects (Exhibit 13).

As Chinese players continue to invest abroad, their ownership of global capacity could remain at around 75 to 80 percent.[47] Since China also continues to invest heavily domestically to preserve its industry leadership, the majority of this capacity is expected to remain domestic, equivalent to roughly two-thirds of the global total.[48]

Exhibit 13

FDI in electric vehicles and batteries reconfigured away from China and into a broad set of new hubs.

Batteries and auto OEM: Top 25 corridors by announced greenfield FDI, $ billion

2015–19

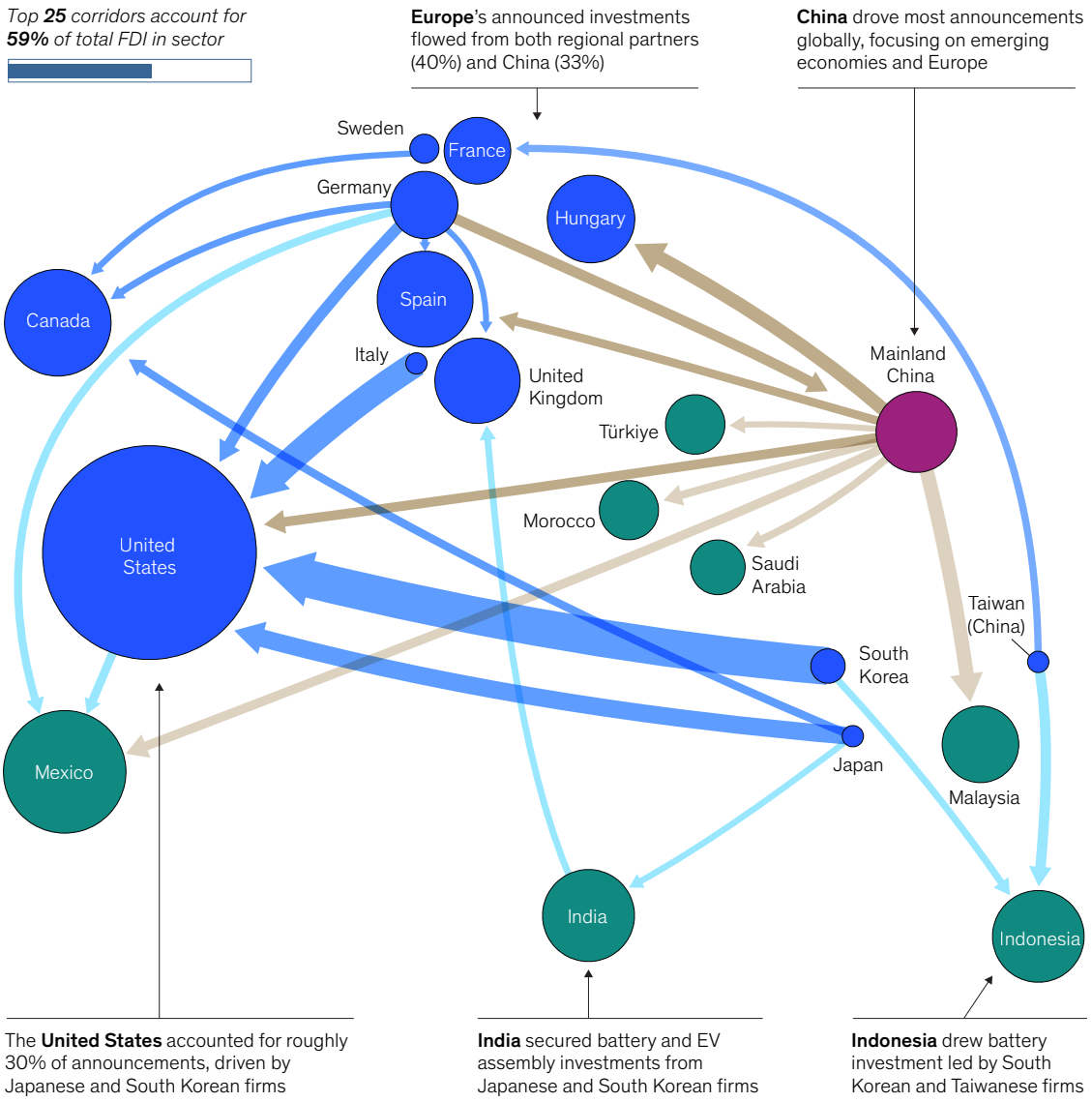
*Top **25** corridors account for **51%** of total FDI in sector*

Note: Adjusted for inflation based on World Bank US CPI, indexed at 2024.
Source: Using data provided by fDi Markets; McKinsey Global Institute analysis

McKinsey & Company

Exhibit 13 (continued)

2022–25



Some emerging economies have also attracted investments from MNCs based in advanced Asia. India has secured battery and EV assembly investments from Japanese and South Korean firms, and Indonesia also has drawn South Korean investment, primarily for battery production.

About half of the projects announced since 2022 are currently under construction. A first wave of FDI-driven gigafactories is now operational in Europe and the United States, with more expected online by 2026. For example, a leading Chinese manufacturer is developing two gigafactories, one in Hungary slated to begin production in 2025 and one in Spain with a targeted opening in 2026. Together, just these two projects could add 150 gigawatt-hours of battery manufacturing capacity, roughly the amount of capacity Europe had in 2022. In the United States, two gigafactories, one developed by Panasonic and the other by a Hyundai–SK On joint venture, are scheduled to open by the end of 2025 and could add more than 60 gigawatt-hours of capacity, increasing the country's total from approximately 100 gigawatt-hours in 2022.

Nonetheless, some FDI announcements face a bumpy road. Recent shifts in US trade and energy policy have affected planned investments in Mexico and Canada, placing several projects on hold. Furthermore, ongoing restrictions on trade with China pose supply chain challenges for advanced Asian battery makers establishing US facilities, because Chinese suppliers provide key inputs. Elsewhere, questions remain about the ability of other countries to compete effectively with China's battery production scale and cost efficiency advantages.

Energy investments may reconfigure LNG corridors

Energy, one of the biggest and most global industries, has been shaped by FDI projects since its inception. Today, major trade arteries crisscross the world, running from fossil fuel exporters like Russia and Saudi Arabia to major importers, especially advanced Asian economies, China, India, and Europe. The United States has the distinction of being both a large importer and exporter.

Today the energy system is being reevaluated. Concerns about energy security have intensified, following disruptions to historically important flows, from Russia's invasion of Ukraine and other geopolitical events.[49] At the same time, many companies and countries have been attempting to transition to lower-emissions energy. And increasingly countries are focusing on energy as a driver of national competitiveness, from powering AI to ensuring low-cost energy for manufacturing.

Large-scale readjustment will take money and time, and the exact contours of the end state are far from clear. To give a sense of scale, existing global capacity for fossil fuel extraction is more than seven times larger than what the current trajectory of investment might add, and 20 times bigger than what FDI since 2022 could. In the case of renewables, energy generation capacity has been growing quickly, but more than 95 percent of expected growth up to 2030 could come from domestic projects.

That said, today's announced FDI has potential to play a decisive role in a few areas. It might lead to meaningful capacity increase in the fast-growing LNG segment. This is the most flexible way of trading natural gas across large distances, thus enabling countries without their own supplies to buy from more geopolitically aligned partners. Second, some see low-emissions hydrogen as a potential energy carrier, and announced FDI could increase its production 100-fold from today's negligible base, but these projects are the most uncertain of any industry we examined. In this context, greenfield FDI announcements are reconfiguring: Amounts are growing while at the same time shifting to more geopolitically aligned partners. Overall, total values have grown by 60 percent to about $430 billion since 2022.

Limited overall impact on upstream extraction of oil and gas

The aggregate impact on global oil and gas volumes of all FDI projects since 2022 could be no more than 5 percent of current production. That said, announced new upstream extraction projects, accounting for about $50 billion per year since 2022, could open up new routes for fossil fuel trade, leading to a relatively bigger change for a few producing countries. Since 2022, almost half of oil

and gas extraction greenfield FDI (excluding LNG projects) targeted Latin America, mostly driven by new offshore projects in Brazil and Guyana. That's up from less than 15 percent on average since the 2010s. Countries buying from these exporters might see diversification benefits with the potential to reduce reliance on corridors running from MENA countries, which generally have to traverse the Strait of Hormuz or the Suez Canal.

These projects look likely to happen. Despite long lead times, roughly 80 percent of the largest oil and gas projects announced since 2022 are under construction—the highest rate among sectors we examined—and many are slated to come online within two to three years.

Potential for meaningful growth of liquified natural gas

Announced FDI does have the potential to reshape one subsector of fossil fuels: liquified natural gas. Historically, pipelines have accounted for most cross-border movements of gas, but with increased demand in new markets, LNG's role grew to become the main form of interregional trade since the turn of the decade. Russia's invasion of Ukraine and subsequent severing of most pipeline flows to Europe further raised the strategic importance of and demand for LNG since 2022.[50]

Since then, LNG-related FDI projects, which totaled over $35 billion per year, could add as much as 25 percent additional capacity relative to what existed, equivalent to more than half of all the projected expansion by 2030.[51] Projects have scaled up capacity at existing exporters, including Qatar's North Field and a liquefaction hub in Louisiana, but they could also seed a whole new source of supply from Latin America, including projects in Argentina's Vaca Muerta basin and on Mexico's Pacific coast (Exhibit 14). These projects could help to diversify Europe's imports away from Russian gas and open additional Pacific routes from the Americas to Japan and South Korea, reducing exposure to shipping bottlenecks and other sensitive chokepoints, as well as serving demand from new markets.

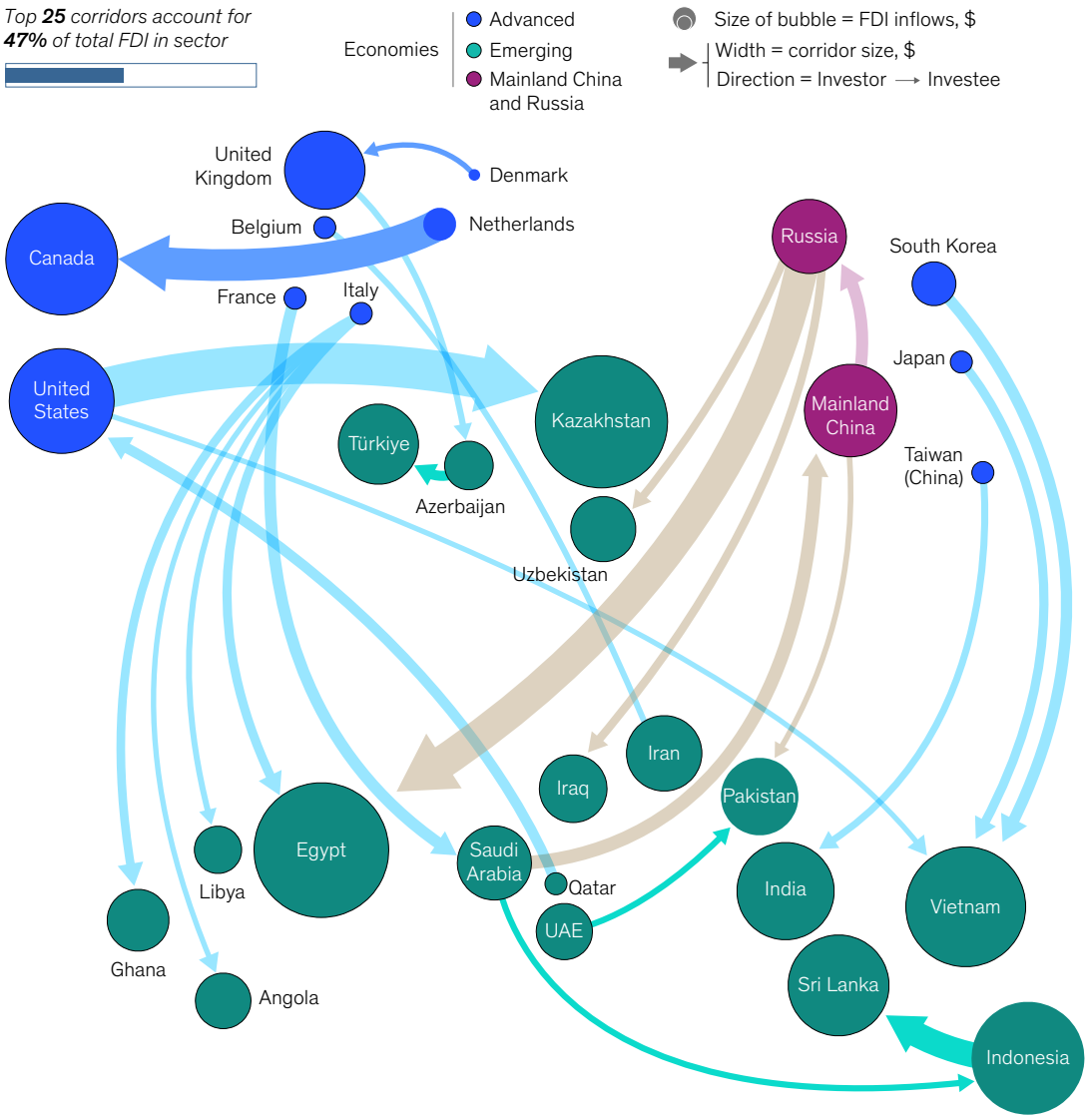
LNG-related FDI projects, which totaled over $35 billion per year, could add as much as 25 percent additional capacity relative to what existed in 2022.

Exhibit 14

FDI in fossil fuels flowed into Latin America, Qatar, and the United States.

Oil and gas extraction and LNG: Top 25 corridors by announced greenfield FDI, $ billion

2015–19

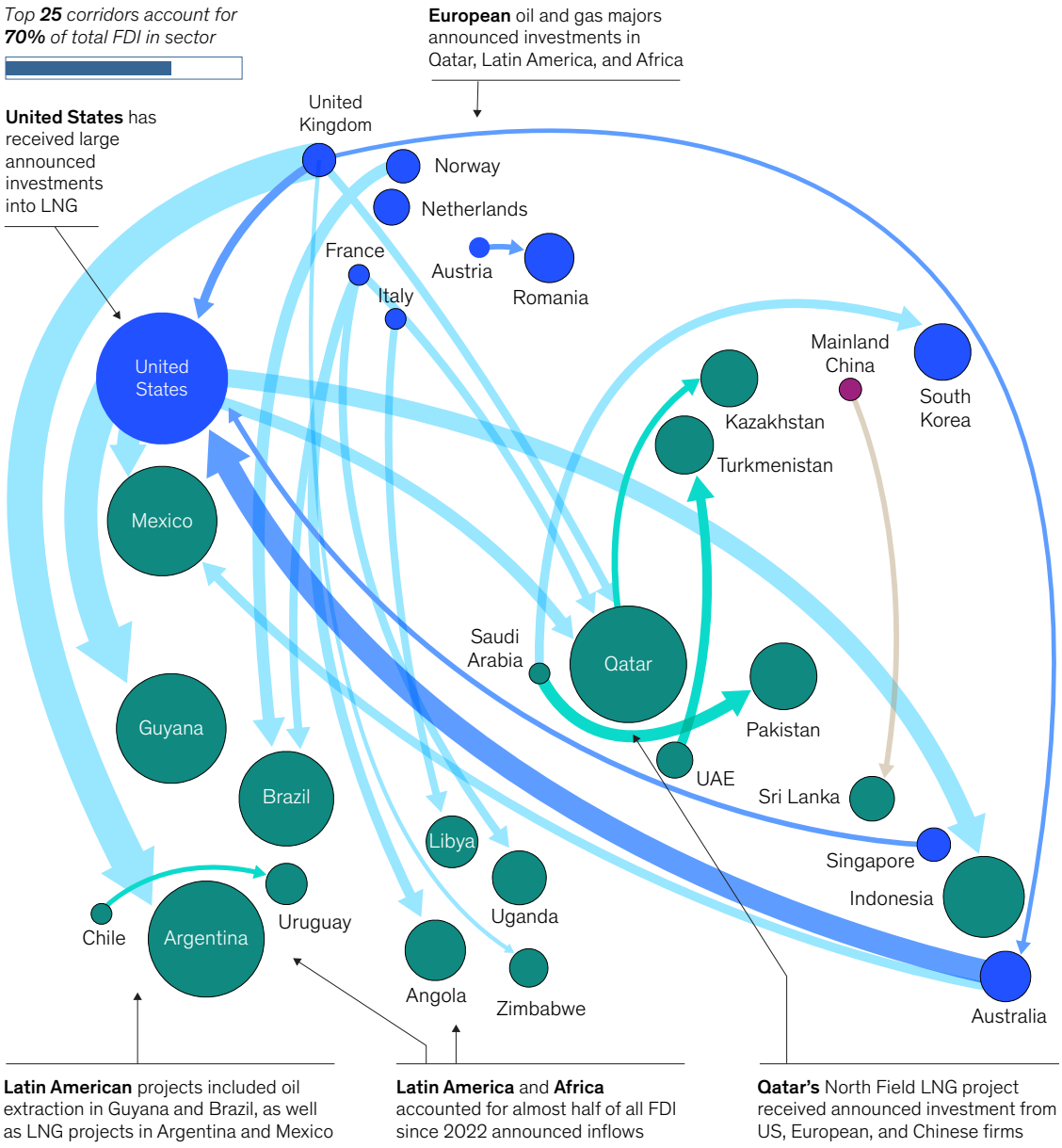


Note: Adjusted for inflation based on World Bank US CPI, indexed at 2024.
Source: Using data provided by fDi Markets; McKinsey Global Institute analysis

McKinsey & Company

Exhibit 14 (continued)

2022–25



Limited impact on renewables

FDI in renewable power generation has reached about $170 billion per year since 2022—similar to the amount flowing into data centers. However, the potential impact on already-large existing capacity would be negligible; in this domain, capacity continues to be developed domestically.

Offshore wind, with its larger and more complex projects, is the potential exception.[52] If realized, announcements since 2022, making up about $50 billion per year, could as much as triple current capacity. The majority of such projects have been announced for the North Sea, in Europe, mostly by European investors.[53] However, while about 30 percent have started, many face delays or cancellations.

Potential for growth in hydrogen but with high uncertainty

Low-emissions hydrogen holds potential as a fuel (or input) for industry, transport, and power. Still, it faces important physical challenges, and associated FDI projects are attempting to essentially build a new industry from scratch.[54] The track record is limited, and price tags run into billions (and sometimes tens of billions) of dollars, since projects generally require building large solar or wind projects in addition to the actual electrolytic hydrogen production. Still, appetite has been high. For exporters in MENA and Australia, hydrogen could be a future export if the fossil fuel trade declines; for importers pursuing decarbonization (especially European ones), it could act as a new, lower-emissions supply option.

Announced greenfield FDI in hydrogen has surged from negligible levels during the period from 2015 to 2019 to roughly $160 billion per year since 2022—strikingly, about 50 percent more than all conventional-energy FDI. Most deals tended to be struck between closer partners, including within Europe, within MENA, or within advanced Asia (Exhibit 15).

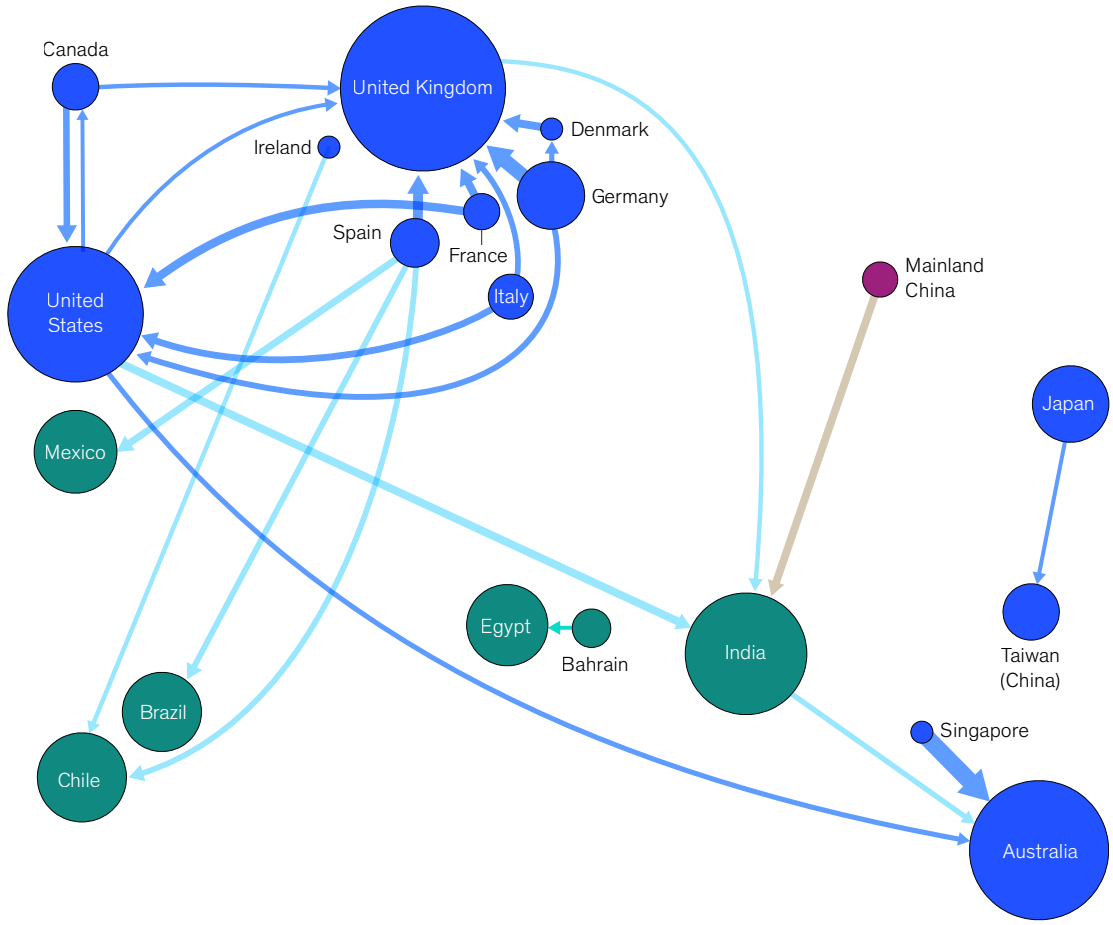
Exhibit 15

FDI in low-emissions energy grew in MENA and Europe, driven by hydrogen and wind projects.

Renewables and hydrogen: Top 25 corridors by announced greenfield FDI, $ billion

2015–19

*Top **25** corridors account for **34%** of total FDI in sector*

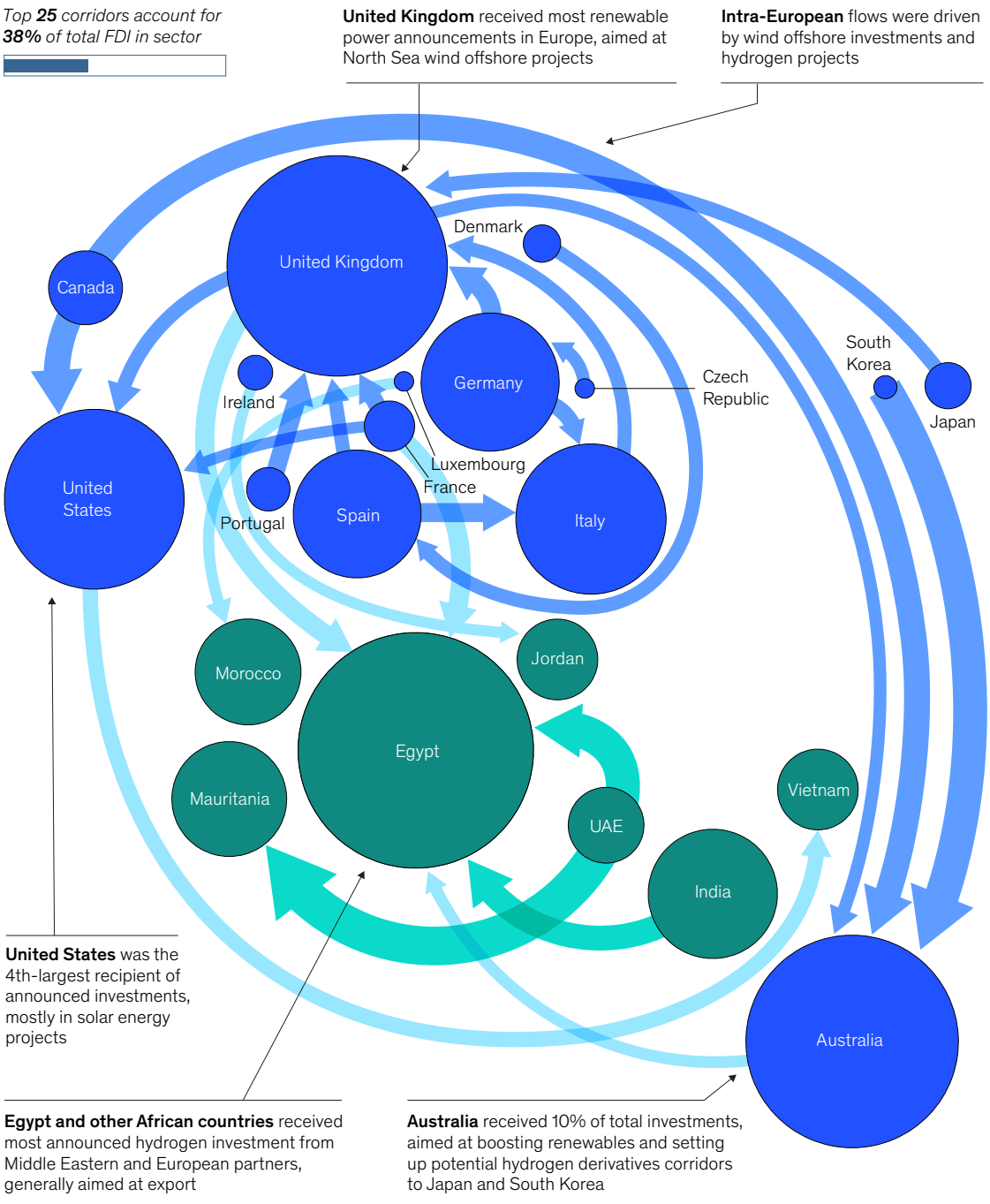


Note: Adjusted for inflation based on World Bank US CPI, indexed at 2024.
Source: Using data provided by fDi Markets; McKinsey Global Institute analysis

McKinsey & Company

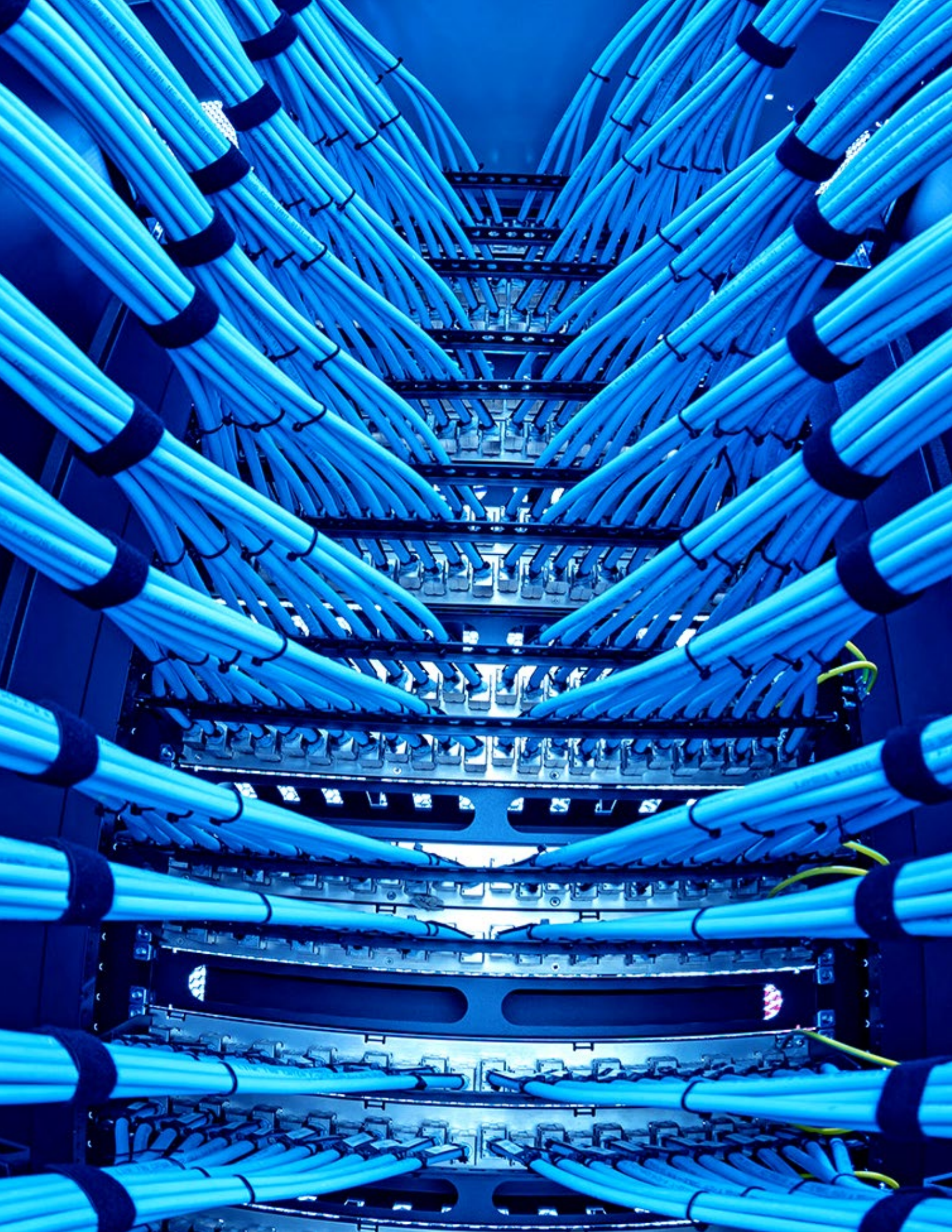
Exhibit 15 (continued)

2022–25



If fully realized, these projects could increase global low-emissions hydrogen capacity by multiple orders of magnitude compared to its currently very limited base, opening new low-emissions fuel trade routes from MENA to Europe or from Australia to East Asia. However, hydrogen projects face substantial uncertainties regarding scalability and economic viability. In fact, hydrogen stands out as the only sub-sector examined in which none of the largest 20 announced projects have begun construction. Globally, only about 10 percent of announced hydrogen projects in the European Union and United States have reached a final investment decision, raising doubts about the likelihood that many announced plans will fully materialize.[55]

Trends in FDI will have a major impact on future-shaping industries setting the course for the global economy. In the next section we examine how these trends will affect key economic regions.



CHAPTER 4

Shaping economic competitiveness across the world

For more than a century, FDI has spurred economic growth and export competitiveness—from foreign investment in copper in Chile in the early 1900s to manufacturing in China in the 2000s (see sidebar "Greenfield FDI can unlock export growth under the right conditions").[56]

Will the new wave of greenfield FDI projects provide fresh opportunities? Since 2022, advanced economies attracted more investment—mostly from one another. China's share has plunged. Emerging economies present a nuanced picture. The absolute value of announcements has gone up in recent years, but the share of the total has declined (Exhibit 16). Moreover, about half of these economies' total population lives in countries where greenfield FDI announcements since 2022 have been lower on average, relative to GDP, than they were in 2015 to 2019.

The year 2025 brought more uncertainty. In the first five months of the year, new FDI announcements in emerging economies dropped by half, in annualized terms, versus the 2022-to-2024 period, with this trend playing out similarly across these types of economies.

Sidebar

Greenfield FDI can unlock export growth under the right conditions

FDI announcements represent company plans to build new or expand existing facilities—for example, constructing new semiconductor fabs or expanding existing mines. In principle, FDI can be an important engine of growth, both directly and via spillover effects that make domestic firms more competitive.[1]

Do the countries that receive more FDI manage to boost their exports? The short answer is a qualified yes. FDI can help, but other conditions need to be in place, too. Those conditions include sufficient human capital and infrastructure, a way to integrate into global value chains, and meaningful subsequent domestic investment.

Our analysis looked at more than 900 country–sector pairings over a 20-year period, starting in 2003. In about 65 percent of cases, an economy's share of global exports in a sector increased when it received an outsize share of greenfield FDI announcements relative to its share of global GDP (exhibit).[2] An example illustrates the calculation: If, within a sector, an economy received 10 percent of greenfield FDI announcements by value while its GDP accounted for just 1 percent of global GDP, it got *more* than its proportional share of FDI.

Looking at case studies across our sample, we find that the three conditions mentioned above are typically in place for the 65 percent of cases where an economy grows export share after receiving outsize FDI—consistent with the broad existing literature on this topic. First, an economy receiving FDI becomes integrated into global value chains by making upstream or downstream

[1] Christine Zhenwei Qiang, Yan Liu, and Victor Steenbergen, *An Investment Perspective on Global Value Chains*, World Book, May 2021; Holger Görg and David Greenaway, "Much ado about nothing? Do domestic firms really benefit from foreign direct investment?" *World Bank Research Observer*, September 2004.

[2] Our analysis looks at more than 900 economy–sector pairings over the 2003 to 2023 period. We conducted a parallel analysis using greenfield FDI announcements and production rather than exports, based on gross output data from IHS Markit. While this approach yielded a smaller sample, the pattern held: In about 65 percent of cases, an economy's share of global production in a sector increased when its share of greenfield FDI announcements in that sector exceeded its share of global GDP.

Sidebar (continued)

Greenfield FDI can unlock export growth under the right conditions

linkages with other countries.[3] Second, an economy has adequate human capital, infrastructure, and regulatory frameworks to absorb incoming technology, skills, and knowledge generated by spillover effects.[4] Finally, FDI spurs domestic investment. In economies that see export growth on the back of FDI, domestic investment also surges after FDI provides the initial seeds.[5]

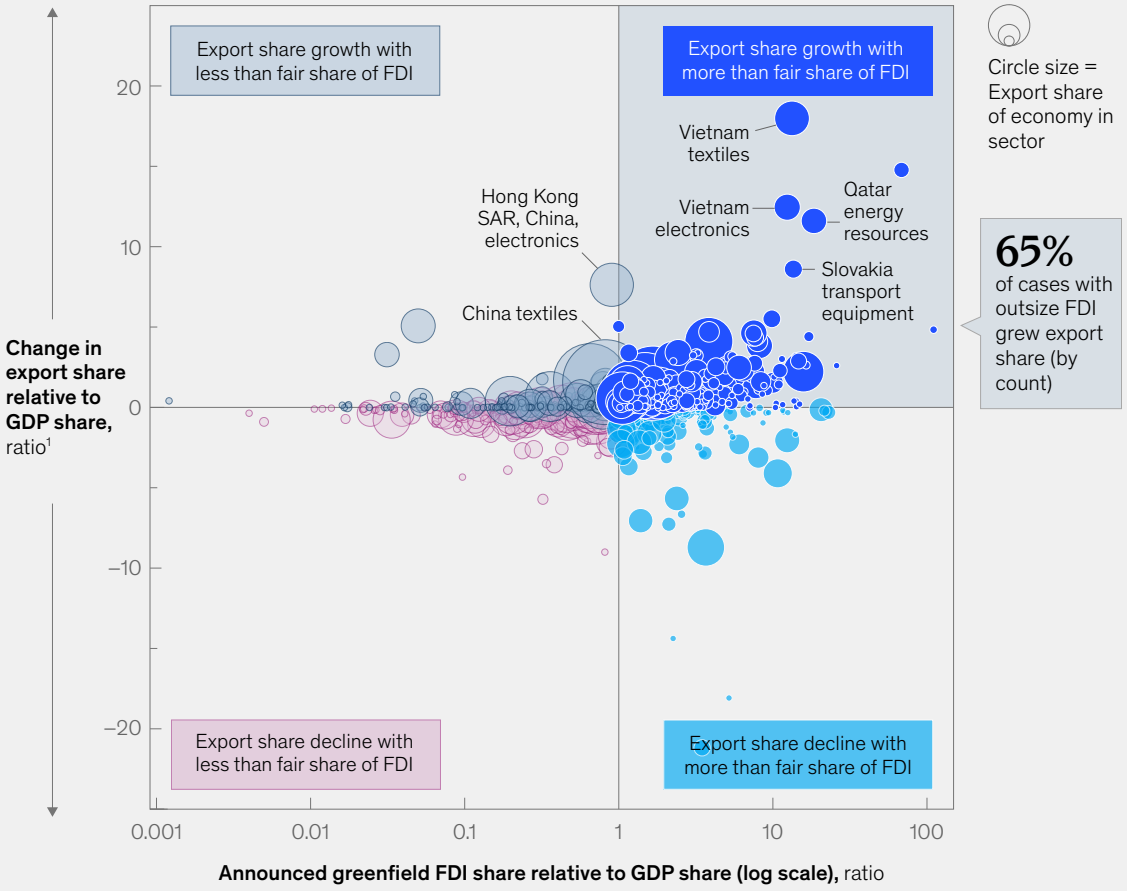
For instance, the Czech Republic, Hungary, Poland, and Slovakia benefited from an initial wave of FDI that seeded further sustained domestic investment, together translating into a boost in the countries' productive capacity and export share during the early 2000s.[6] These economies capitalized on their accessibility to EU markets, competitive labor costs, and improved infrastructure.

Similarly, FDI in Vietnam's textile sector spiked during the mid-2000s, attracted by the country's proximity to major regional Asian supply chains, competitive labor costs, and a range of new trade agreements. That FDI resulted in modernized production techniques, increased productivity, and integration into multinational supply chains, which encouraged substantial domestic investment and significantly increased Vietnam's share of global textile exports.[7]

Exhibit

Announced greenfield FDI can catalyze transformations in export performance.

Greenfield FDI announcements' prevalence and changes in export share, 2003–23



[1]Normalized by each economy's average GDP share in global GDP (2003–23).
Source: Using data provided by fDi Markets; World Bank; UNCOMTRADE; McKinsey Global Institute analysis

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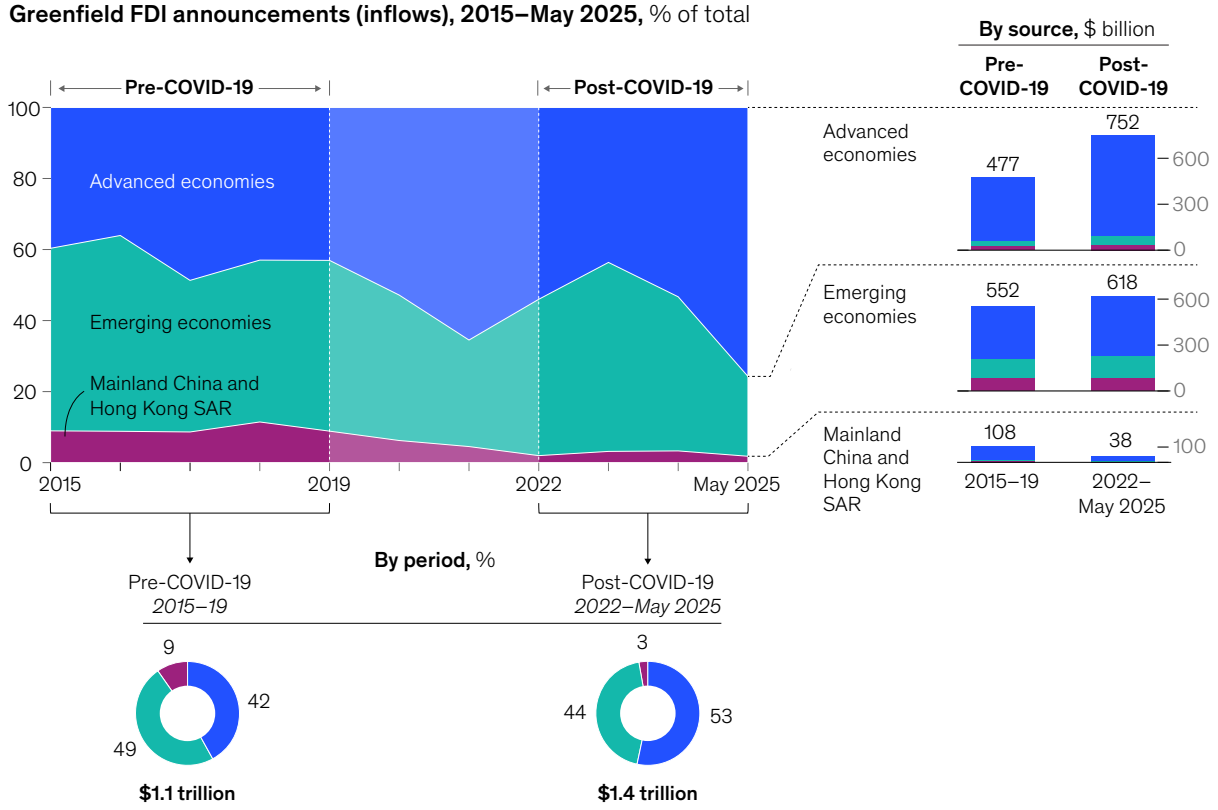
[3] Joshua Aizenman, "FDI and trade—two-way linkages?" *The Quarterly Review of Economics and Finance*, July 2006, Volume 46, Number 3; *World investment report 2001: Promoting linkages*, UN Conference on Trade and Development, 2001.
[4] Christine Zhenwei Qiang, Yan Liu, and Victor Steenbergen, *An Investment Perspective on Global Value Chains*, World Book, May 2021.
[5] E. Borensztein, J. De Gregorio, and J.-W. Lee, "How does foreign direct investment affect economic growth?" *Journal of International Economics*, June 1998, Volume 45, Number 1.
[6] Petr Pavlínek, Bolesław Domański, and Robert Guzik, "Industrial upgrading through foreign direct investment in Central European automotive manufacturing," *European Urban and Regional Studies*, January 2009, Volume 16, Number 1.
[7] Chapter 12 of Fukunari Kimura, ed., *Viet Nam 2045: Development issues and challenges*, Economic Research Institute for ASEAN and East Asia (ERIA), November 2023.

Exhibit 16

FDI grew mostly among advanced economies, and much less went into China.



Note: All $ figures are in terms of 2024 US dollars. Development classification based on IMF definitions.
Source: Using data provided by fDi Markets; IMF; McKinsey Global Institute analysis

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The US is attracting more FDI than Europe or advanced Asia

While most advanced economies have experienced growing inflows of announced FDI, the United States stands out. Its announced annual inflows have roughly doubled compared with the prepandemic period, and amounts going to future-shaping industries have increased by even more (Exhibit 17). Japan, South Korea, and Taiwan were the primary contributors, announcing many investments aimed at semiconductors and EVs—the bedrock of advanced Asia's existing technological strength and the target of incentives in the United States' CHIPS Act and Inflation Reduction Act.[57]

Europe experienced more modest growth through the two periods studied—around 40 percent across the United Kingdom and European Union. Not counting in-region flows, Europe's FDI attraction relative to the United States has dropped to just 70 percent since 2022 after being roughly equal in 2015 to 2019.[58] A big reason was that, unlike North American economies, Europe did not attract substantial investment from firms in advanced Asia. Nonetheless, Europe did see some growth engines, particularly data centers. Investments from Chinese companies were another. Since 2022, such investments have totaled about $20 billion per year—60 percent higher than during the prepandemic period and more than double the amount that Chinese firms directed to the United States. This growth was driven by EV and battery projects in Hungary, Slovakia, Spain, and Portugal.

Advanced Asia's announced inflows grew at roughly the same pace as Europe's, so the region also lost ground to the United States. Since 2022, announcements were about half of US totals, down from 75 percent in the previous period. Resource projects made up about 70 percent of the growth, primarily from advanced economies looking to tap into Australia's renewable energy potential and mineral endowments.[59]

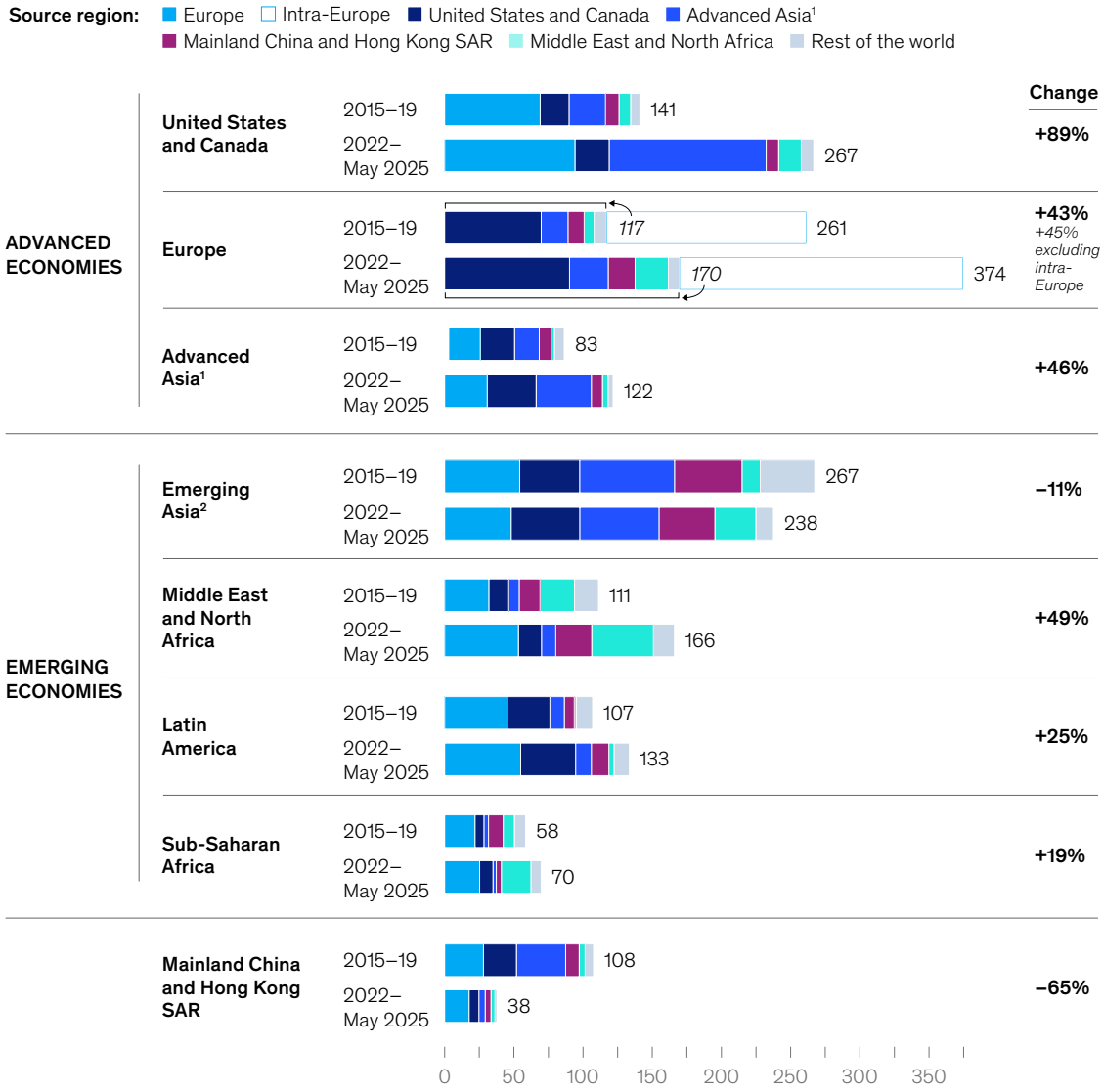
Over the past decade, European and advanced Asian firms have announced about double the outbound FDI that their respective regions have received.[60] In advanced Asia, this asymmetry is particularly strong in advanced manufacturing, which makes up about half of all the region's outbound flows: For every dollar of FDI inflows announced for advanced Asia, the region's companies have announced around $6 flowing abroad.

In the first five months of 2025, announced FDI into the United States more than doubled, in annualized terms, relative to the 2022-to-2024 period.

Exhibit 17

US and Canada grew inflows the most, driven by announcements from advanced Asian economies into advanced manufacturing.

Greenfield FDI announcements, inflows by region, 2015–19 and 2022–May 2025, annual average, $ billion



Note: All $ figures are in terms of 2024 US dollars.
[1]Advanced Asia includes Australia, Japan, New Zealand, Singapore, South Korea, and Taiwan, China.
[2]Emerging Asia includes all Asian economies outside Advanced Asia and excludes Mainland China.
Source: Using data provided by fDi Markets; McKinsey Global Institute analysis

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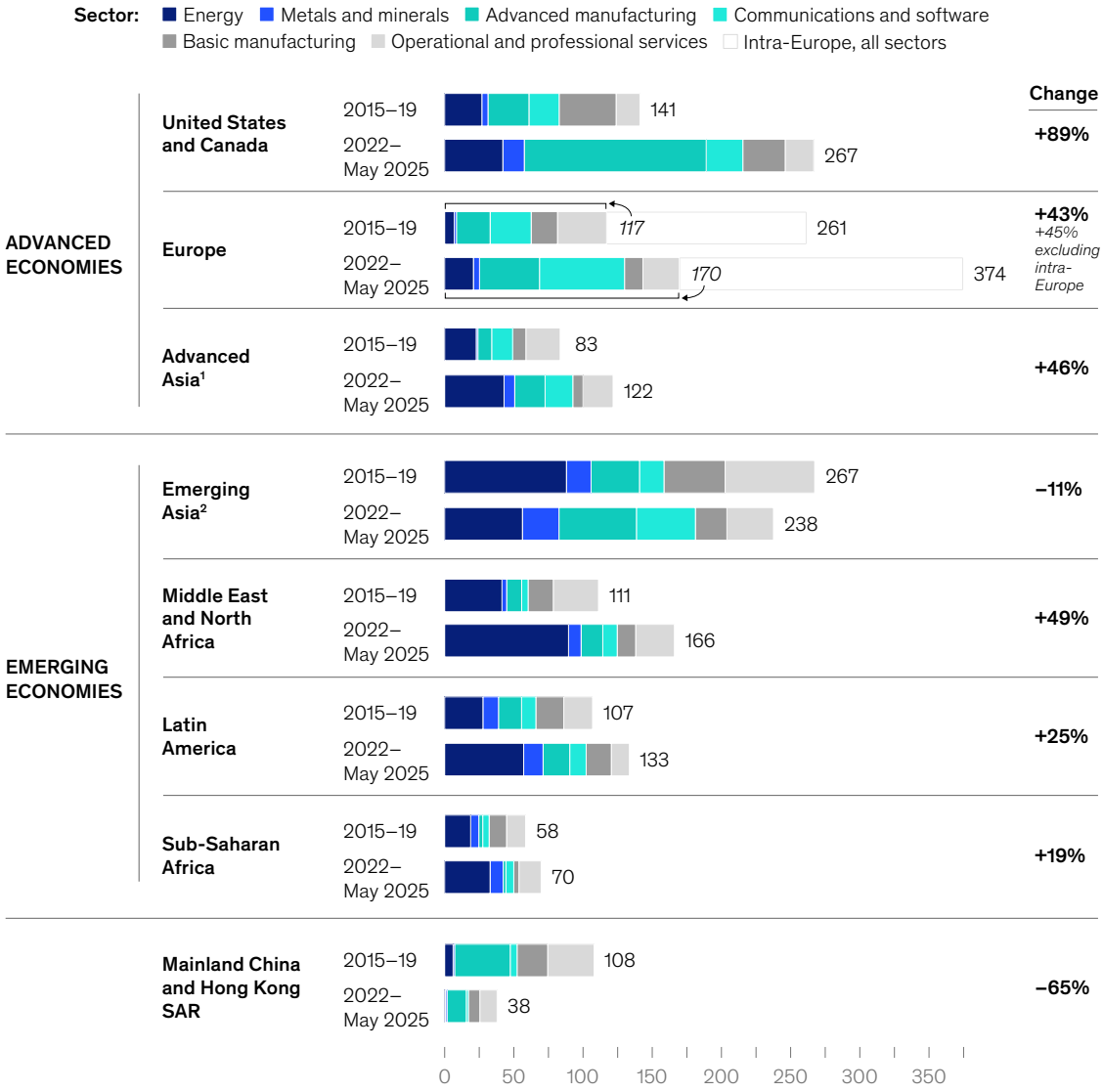
Exhibit 17 (continued)

US and Canada grew inflows the most, driven by announcements from advanced Asian economies into advanced manufacturing.

Greenfield FDI announcements, inflows by region, 2015–19 and 2022–May 2025, annual average, $ billion



Note: All $ figures are in terms of 2024 US dollars.
[1]Advanced Asia includes Australia, Japan, New Zealand, Singapore, South Korea, and Taiwan, China.
[2]Emerging Asia includes all Asian economies outside Advanced Asia and excludes Mainland China.
Source: Using data provided by fDi Markets; McKinsey Global Institute analysis

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In the first five months of 2025, the disparity between the United States and other advanced economies widened further. Announced FDI into the United States more than doubled, in annualized terms, relative to the 2022-to-2024 period, with gains in all sectors except EVs and basic manufacturing. With this surge, the United States received more than twice as much announced FDI as it was investing across borders—in other words, its announced FDI inflows-to-outflows ratio was more than 2:1, compared with approximately 1:1 between 2022 and 2024 and about 1:2 during the prepandemic period. Strikingly, about half of this early-2025 surge in FDI to the United States reflects $100 billion worth of announcements from a single company, TSMC. If similarly significant announcements are not made in the second half of the year, annualized projections based on the first half of this year would be overstated.

Europe saw a 65 percent increase (excluding intraregional flows)—small only by comparison to the jump in the United States. But this growth was entirely for data center projects, while almost every other sector declined. FDI flows into advanced Asia stayed roughly flat, again with broad-based declines and just a few significant increases, notably for data centers in South Korea and semiconductors in Singapore.[61]

China has pivoted in future-shaping industries from net investee to net investor

Geopolitical tensions and heightened domestic competition have dramatically reduced announcements of foreign investment in China. Compared with 2015 to 2019, announced greenfield FDI inflows have declined about two-thirds across nearly all sectors and partners since 2022, a decline that has continued in 2025. Advanced Asian economies in particular have shifted investment away from China and toward the United States.

Yet China has not vanished from the FDI landscape. As in the past decade, China has continued to be the leading investor in metals and minerals. What's new is that, since 2022, it has pivoted from being the largest investee to the largest investor in automotive and electronics, making up about 25 percent of total outbound announced investments for both.

Emerging Asia has remained the main destination for announced Chinese investment over the past decade, largely aimed at integrating those economies into Chinese value chains. However, most of the recent increase in outbound Chinese investment announcements was destined for two regions, Europe and MENA, both of which experienced announced inflows rising by about 70 percent for the period since 2022 versus 2015 to 2019. Chinese investment in Europe was primarily driven by EV-related projects aimed at accessing the market, followed by mineral and metals deals. Chinese FDI announced for MENA, particularly Saudi Arabia and Egypt, was diversified across multiple industries, including batteries, semiconductors, steelmaking, and energy.

FDI is expanding emerging Asia's presence in future-shaping industries

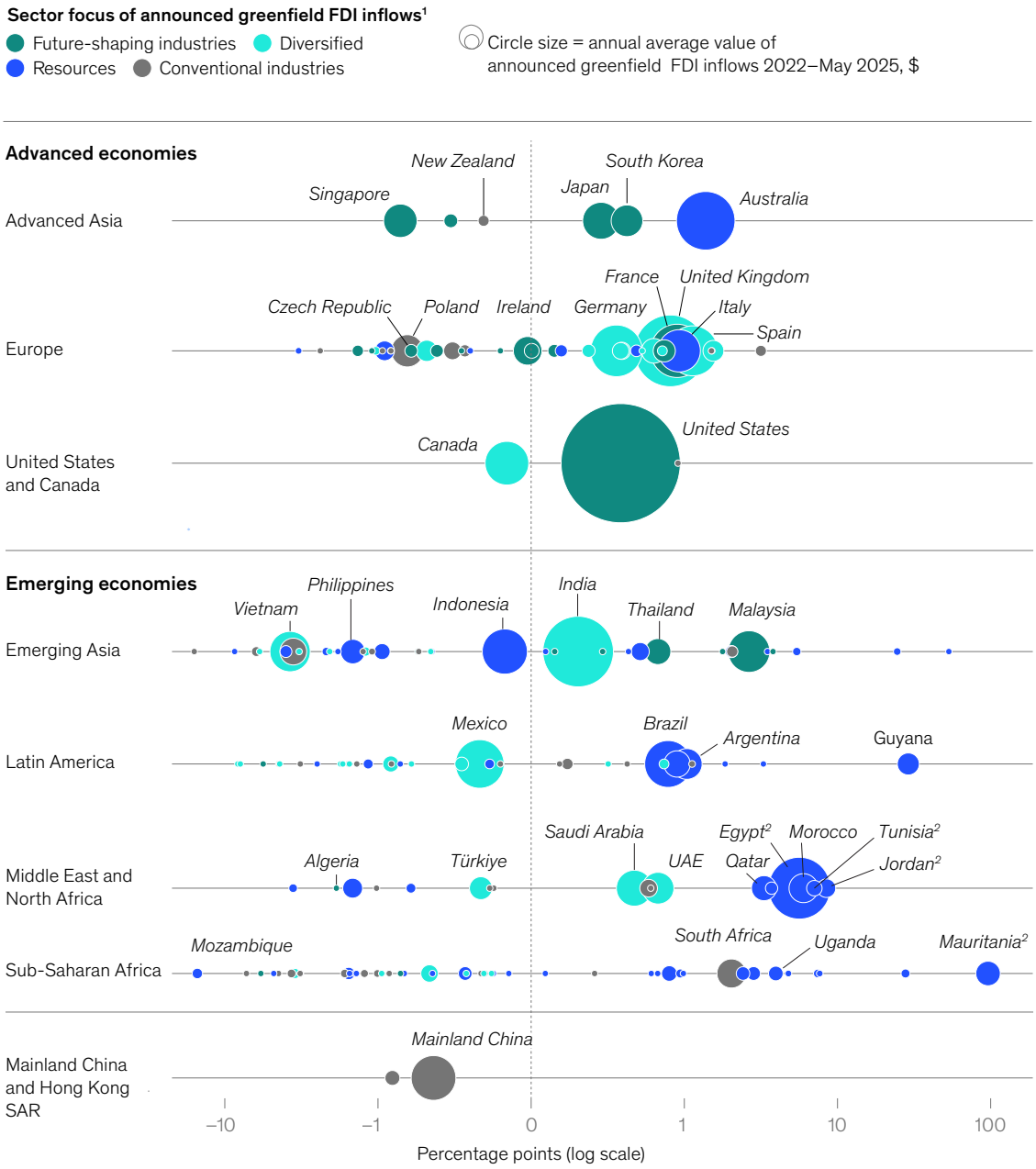
Historically, emerging Asia has attracted roughly half of all FDI announcements flowing into emerging economies. In the period since 2022, announced FDI inflows into emerging Asia have fallen 10 percent from the elevated baseline of the 2015-to-2019 period.

Two distinct patterns emerge beneath the slight decline. First, greenfield FDI announced for fossil fuels and conventional industries, especially real estate and construction, fell by more than half. As a result, some FDI mainstays, most notably Vietnam and Indonesia, have seen FDI announcements fall as a portion of GDP since 2022 (Exhibit 18).

Exhibit 18

Emerging economies saw the largest swings in greenfield FDI, often driven by energy; most advanced ones saw diversified gains.

Change in announced greenfield FDI inflows as a share of each economy's GDP, 2022–May 2025 vs 2015–19, percentage points (log scale)



Note: All $ figures are in terms of 2024 US dollars.
[1]If no sector accounts for more than 50% of total announced greenfield FDI inflows, the economy is classified as diversified. Otherwise, it is classified according to the sector receiving the largest share.
[2]More than 50% of inflows into low-emissions hydrogen.
Source: Using data provided by fDi Markets; McKinsey Global Institute analysis

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At the same time, inflows destined for future-shaping industries nearly doubled as MNCs looked to diversify the base of their supply chains. India and Malaysia have been noteworthy beneficiaries. Together, they account for over 60 percent of announced inflows in future-shaping industries across emerging Asia. Notable examples include FDI projects aimed at kickstarting India's semiconductor ecosystem and boosting Malaysia's EV supply chain. Vietnam and Indonesia also attracted some meaningful inflows, including solar panel production in Vietnam and critical metals processing in Indonesia.

Amid the uncertainty of 2025, this pattern stalled in its first five months. Total FDI announcements are on track to drop to their lowest levels in more than two decades, a 40 percent decline from the annual average between 2022 and 2024. Nearly all sectors have been hit; even advanced manufacturing fell by one-third, returning to the pre-COVID-19 baseline. Data centers and semiconductors are points of light. In annualized terms, FDI announcements into data centers are still growing slightly and are on pace to surpass $40 billion by year-end, twice the level of 2015 to 2019. Semiconductor-related FDI announcements are up tenfold since the prepandemic period, at $17 billion annualized.

Latin America, the Middle East, and Africa attracted primarily energy-related FDI

Latin America, the Middle East, and Africa have historically attracted disproportionate cross-border investment in energy, compared with other regions. This has intensified since 2022. In each region, energy projects accounted for more than 80 percent of the growth in announced FDI relative to the level for 2015 to 2019. In Latin America, FDI announcements in fossil fuels drove the step up, while in MENA and sub-Saharan Africa, the increase came overwhelmingly from announcements of investment in low-emissions hydrogen.

Across both low-emissions and conventional energy, announced investment came mostly from European and Middle Eastern firms, often with an eye to creating more energy security for European and Asian markets. As examples, some strategically positioned conventional energy projects in Argentina, Guyana, and Mexico could bypass vulnerable shipping routes like the Suez Canal and Strait of Hormuz. Substantial LNG projects in Qatar could provide Europe with additional alternatives to Russian gas and may supply some Asian markets, including China. Finally, some of the largest project announcements (none yet under construction) are low-emissions hydrogen in Egypt, Jordan, Mauritania, Morocco, and Tunisia that aim in part to supply European energy needs.

While energy was the major driver of FDI announcement growth for MENA and Latin America, a wider swath of sectors also received growing inflow between 2022 and 2024 in both regions. For example, annual announcements of inflows into communications and software and advanced manufacturing grew by 74 percent in MENA and 23 percent in Latin America, compared with their pre-COVID-19 baseline.

Increases were even more pronounced in some countries. For example, Saudi Arabia and the United Arab Emirates attracted substantial and more diversified FDI by tapping investors across the geopolitical spectrum. These countries secured pledges for resources and data centers from investors in advanced and emerging economies and from Chinese MNCs in steel, semiconductors, and other advanced manufacturing industries. To give a sense of the scale, increases in announced FDI into future-shaping industries rose 562 percent in Saudi Arabia and 124 percent in the UAE between the 2015-to-2019 and 2022-to-2024 periods. However, fewer than five of the 20 largest projects announced in the region had broken ground at the time of writing.

In the first five months of 2025, FDI announcements declined substantially in Latin America, the Middle East, and Africa. On an annualized basis, almost 40 percent of the reduction is due to lower hydrogen-related investments. Nonetheless, given the inherent volatility of FDI and the particular uncertainty of 2025, it remains to be seen whether this drop will persist.

The transformative potential of FDI can hinge on a few key investors

Many emerging economies rely on just a small number of MNCs for their inward investment. Specifically, in about 100 predominately small economies, three or fewer investors accounted for more than half of announced FDI inflows since 2022. In about 65 economies, they accounted for more than 80 percent (Exhibit 19).

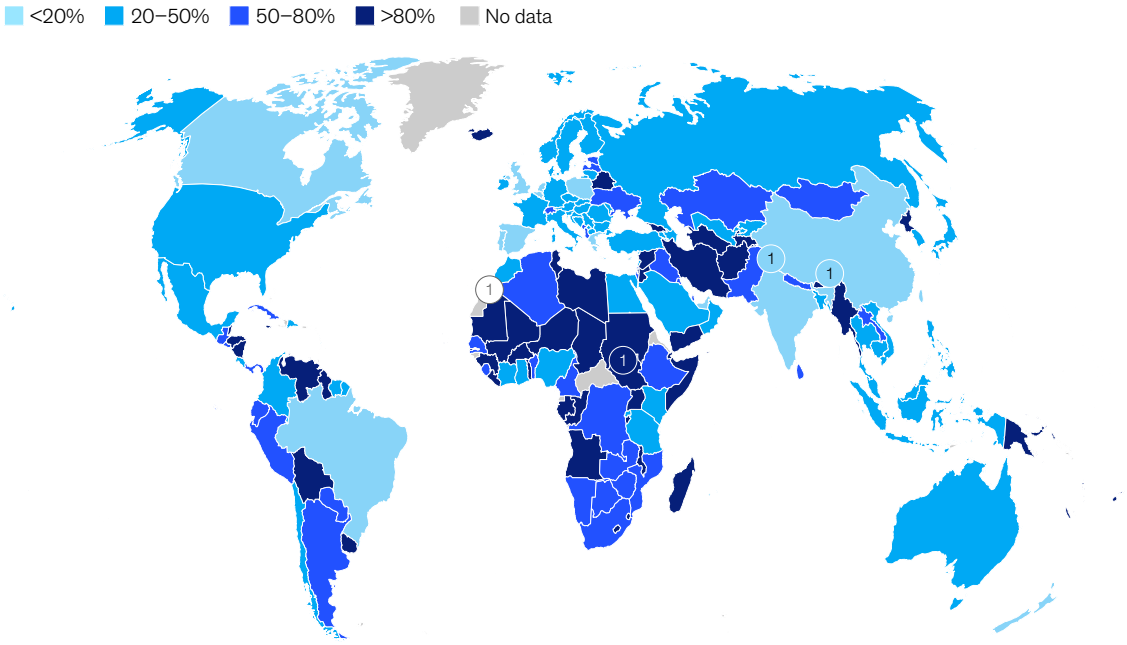
In other words, while just a few large greenfield FDI announcements may transform an economy when things are going well, growth could just as easily be hindered if the project runs into problems or if the MNC isn't fully committed to it.

Nor is this dynamic limited to small economies. Even in many large and midsize economies, three MNCs accounted for between 20 and 50 percent of the total annual value across FDI announcements since 2022. In the United States, for instance, TSMC and Samsung accounted for about 20 percent and 4 percent, respectively, of total announced investment. Similarly, France's two largest foreign investors, both focused on data centers, represented roughly 40 percent of the country's total announced greenfield FDI.

Exhibit 19

In about 100 mainly small economies, over half of investment came from three companies or fewer.

Largest 3 investing companies' share of total announced greenfield FDI inflows, 2022–May 2025, %



Note: The boundaries, names, and designations used on this map do not imply official endorsement or acceptance by McKinsey & Company.
[1]The United Nations reports that the status of borders in these areas has not been agreed upon by the parties.
Source: Using data provided by fDi Markets; United Nations; McKinsey Global Institute analysis

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CHAPTER 5

Navigating FDI signals and shifts in a high-stakes environment

The stakes have rarely been higher for decision-makers. Heightened geopolitical tensions, fast growth of a new set of future-shaping industries, and evolving industrial policies are fundamentally changing the environment for cross-border investment. Companies need to move fast enough to retain a stake in the industries of the future while maintaining flexibility, engage in ever-growing deal sizes without breaking the bank, and navigate a fresh set of incentives brought about by new "non-market" factors.[62]

In this rapidly shifting environment, announced FDI can offer strategic foresight, indicating how industries, trade routes, and national competitiveness factors may evolve. In weighing their next moves, executives and policymakers can take note of the clues that FDI yields—both cross-industry patterns and data at the granular deal level.

Anticipating and cultivating the ecosystem of new projects

As the aphorism goes, when others dig for gold, sell shovels. Greenfield FDI announcements spotlight the places where new capacity will come online, reshaping supply-and-demand dynamics across multiple industries.

Consider semiconductor manufacturing. Announcements of major projects in locations like Arizona or Leixlip, Ireland, signal opportunities for adjacent companies such as toolmakers and chemical suppliers. It doesn't stop there but continues through the value chain, for the suppliers to suppliers. Indeed, the success of such megaprojects hinges on a broad ecosystem.

The impact of new hubs extends beyond sectoral boundaries, influencing infrastructure, logistics, and business services. This can be seen, for example, in the knock-on economic and employment effects of new data centers in the United States, which have been found to spur growth in a host of other industries.[63] Companies can anticipate needs that include grid access, connections with shipping hubs, maintenance, and servicing support for the new facilities themselves and their suppliers. Redrawn industrial footprints also increase demand for housing, hospitality, and food services. Of course, some of this may be part of preplanning in original deals, but opportunities will remain.

While FDI expands the frontier of new industries, history teaches that growth needs nurturing and cultivation. Targeted policies can help. Areas of attention include accelerating complementary domestic investment, upgrading infrastructure, enhancing workforce skills, and strengthening local industry ecosystems.

Preparing for shifting trade corridors

The global flows of goods and services that connect countries may be shifting. McKinsey Global Institute's analysis suggests that more than 30 percent of global trade in 2035 could swing from one trade corridor to another, depending on the scenario.[64]

FDI announcements provide important early signals. Tracking investment-driven trends can help companies plan infrastructure and capacity ahead of shifts in trade volume, offering a valuable early advantage.

At a macro level, investment patterns point to the strengthening or weakening of economic relationships between specific regions or countries, helping companies and policymakers anticipate which scenarios are becoming more probable. For instance, recent increased FDI flows from advanced Asian economies to the United States, together with their concurrent retreat from investing in China, aligns with scenarios of fragmentation in which advanced economies and China reduce their mutual economic exposure.

At a more granular level, FDI announcements also highlight specific corridors that may experience accelerated growth, making them proportionately safer bets for stakeholders such as logistics providers and shipping companies or for firms providing payments and trade finance. For example, companies in Japan and South Korea have announced new, large projects in India's automotive sector for EV assembly and battery manufacturing. This could further integrate India into value chains in advanced Asia, increasing flows of goods such as components between India and its trading partners in Japan and South Korea.

Responding to the new map of competition

FDI announcements offer a detailed, strategic map of how and where different players plan to invest, allowing decision-makers to anticipate changes in the competitive landscape. FDI today can indicate where future capacity might outstrip future demand, depending on a company's beliefs about the latter. Even today, some industries such as steel manufacturing are grappling with overcapacity, and some observers are warning of future EV manufacturing overcapacity.[65]

Many companies already track their direct competitors. For example, think of incumbent automakers tracking manufacturing expansion plans of upstarts, or consider hyperscalers analyzing where competitors are expanding their data center footprint. But beyond gaining a competitive edge, this map is also important for potential partners. For instance, renewable energy developers in emerging markets can identify global firms actively seeking local collaborations, while European automakers may spot battery manufacturers that haven't yet entered their region, representing possible joint venture opportunities.

Tracking investment-driven trends can help companies plan infrastructure and capacity ahead of shifts in trade volume, offering a valuable early advantage.

For financial-sector players, mapping which companies are investing and where may reveal a range of opportunities. Examples include new assets needing project finance and derisking, fresh prospects for banks and insurers, new sources for commodities traders, and even broader asset-class, boom-and-slowdown dynamics for principal investors. Finally, policymakers can also leverage these maps to pinpoint companies that may be scouting for a new location in their region, potentially leading to economic partnerships.

Anticipating which economies will see new waves of growth

FDI announcements provide a powerful early signal about which economies may become more competitive directly from the investments themselves and indirectly via potential spillovers that stimulate upstream or downstream development. In the most pronounced examples, a handful of large FDI projects could shape the fortunes of smaller economies. For example, large energy deals in Guyana and Mauritania, if successfully realized, could fundamentally alter their economic prospects by serving as anchor projects for their economies. Of course, such success is not guaranteed, and FDI signals need to be calibrated with important preconditions to catalyze growth.

FDI can also signal change even in larger economies. For example, Saudi Arabia and Thailand have recently attracted projects across a diversified set of industries, from data centers to electronics and automotive. This inflow of FDI could spur significant new activity among local suppliers of components, tools, and materials. Similarly, economies drawing substantial power generation investments, such as Brazil or Morocco, could experience downstream competitiveness gains through cheaper and more reliable energy supplies.

Foreign direct investment has a long history of identifying, nurturing, and propelling leading-edge industries. The global firms of today are already responding to geopolitical changes and technological advancements, potentially shifting future trade patterns. Greenfield FDI announcements serve as a bellwether of where global economic ties may form or fray and how the geometry of global trade may evolve. Business leaders and policymakers can incorporate such insight to better navigate an uncertain time.

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Endnotes

Introduction

1 Daniel Yergin, *The Prize: The Epic Quest for Oil, Money and Power*, Simon & Schuster, 1990.

2 Antonio Spilimbergo, *Copper and the Chilean economy, 1960–98*, IMF working paper, April 1999.

3 Edward M. Graham, "Foreign direct investment in the world economy," chapter 7 of *Staff Studies for the World Economic Outlook*, IMF, September 1995.

4 Chris Miller, *Chip War: The Fight for the World's Most Critical Technology*, Scribner, 2022.

5 Yan Liu, *Does foreign direct investment catalyze local structural transformation and human capital accumulation? Evidence from China*, World Bank policy research working paper 9952, March 2022.

6 Previous MGI research developed a measure of geopolitical alignment based on economies' UN General Assembly voting records between 2005 and 2022. For details and limitations, see sidebar "Defining geopolitical distance."

7 In this report, "China" is used as an economic term that refers to the collective economies of Mainland China, Hong Kong, and Macao, unless otherwise noted.

Chapter 1

8 All figures in this report are adjusted for inflation and expressed in 2024 US dollars.

9 Based on an analysis of the largest 60 announced investments in future-shaping industries since 2022, 20 in each of three segments: data centers, semiconductors, and electric vehicles and batteries. This is further detailed in chapter 2.

10 Includes some investment in software services, not all of which may be linked to physical data centers.

11 Investments in the semiconductor value chain also included some equipment investments, which are limited to less than 5 percent of the total.

12 Low-emissions hydrogen can be produced in several ways. Two of the most common are using electricity to electrolyze water and capturing carbon. Hydrogen produced by the first method is sometimes called "green" when electricity is produced from low-emissions source. Hydrogen produced by carbon capture is sometimes called "blue." The first of these pathways accounts for over 95 percent of hydrogen greenfield FDI announcements in our data set and is included in our taxonomy as part of "energy," while carbon capture is not.

13 All estimates of incremental capacity are based on an analysis of the 20 largest megadeals, extrapolated to total.

14 "Will Elon Musk scrap his plan to invest in a gigafactory in Mexico?" *The Economist*, January 16, 2025; "Honda Canada postpones multibillion EV investment project in Ontario," Associated Press (AP), May 13, 2025. Additionally, a $6 billion project in Saudi Arabia involved a company that filed for bankruptcy. "China's Changan in talks to take over struggling EV maker Human Horizons, report says," Reuters, February 28, 2024; "Chinese EV maker HiPhi enters bankruptcy process in death knell," Bloomberg, August 9, 2024.

15 Primary steel is made using iron ore as a source of iron, rather than recycled scrap. Today, the vast majority of primary steel is made using coking coal, generating about two tons of CO_2 emissions per ton of steel created. See Mekala Krishnan et al., *The hard stuff: Navigating the physical realities of the energy transition*, McKinsey Global Institute, August 2024.

16 Outside of the top 20 projects, a few announced greenfield FDI electrolytic hydrogen projects have begun construction, including a project to produce low-emissions ammonia in Egypt and export it to Germany. Carbon-capture-based hydrogen projects are not included in this tally.

Chapter 2

17 Ondrej Burkacky, Marc de Jong, and Julia Dragon, "Strategies to lead in the semiconductor world," McKinsey, April 15, 2022.

18 Brian Ungles et al., *Data center development cost guide 2025*, Cushman & Wakefield, December 10, 2024; McKinsey Battery Insights.

19 Hyperscalers are technology platform companies, such as major cloud service providers, that operate data centers at the largest scales.

20 "AI power: Expanding data center capacity to meet growing demand," McKinsey, October 29, 2024.

21 Christine Chen and Curtis Williams, "Woodside approves $17.5 billion US LNG project, 2029 start," Reuters, April 29, 2025.

22 Joshua Crawford, "Incentives-backed FDI reaches record high in 2023," *fDi Intelligence*, updated October 1, 2024.

23 Figures refer to three-year rolling averages in the geopolitical distance of FDI announcements.

24 This analysis includes a subset of 30 economies, including all EU member states, and the three non-EU economies in the region: the United Kingdom, Norway, and Switzerland.

Chapter 3

25 "Energy and AI", International Energy Agency, April 2025; McKinsey Data Center Supply and Demand Model.

26 For estimates of data center demand growth, see, for example, "The cost of compute: A $7 trillion race to scale data centers," *McKinsey Quarterly*, April 28, 2025; "Energy and AI," International Energy Agency, April 2025. Supply estimates are typically derived from a bottom-up assessment of announced projects.

27 Estimates vary because the pace of data center scale-up is uncertain, with some estimates over 5 percent. For some recent estimates, see, for example, Singer et al., "Generational growth—AI/data centers' global power surge and the sustainability impact," Goldman Sachs Research, April 30, 2024; "Energy and AI," International Energy Agency, April 2025.

28 This assumes a power usage effectiveness of 1.1 and a load factor of 51 percent, which are the base 2030 assumptions for a hyperscale data center in "Energy and AI," International Energy Agency, April 2025. Electricity consumption is for the Île-de-France region for 2024, as reported by RTE France.

29 While there is no globally agreed set of critical minerals, some economies—including, for example, China, the European Union, India, and the United States—maintain distinct lists of strategic or critical minerals. These often overlap to include aluminum, copper, and battery metals such as cobalt, lithium, and nickel, as well as rare earth elements. But lists differ too: China and India list potash as a critical or strategic mineral, for example, while at the time of writing, the European Union and United States do not.

30 Karel Eloot et al., "Global Materials Perspective 2024," McKinsey, September 2024.

31 This and following estimates in this section are generated by analyzing the 120 largest FDI announcements (covering all megadeals) in the metals and minerals category and identifying which of these are associated with critical minerals. We defined critical minerals as all the nonfuel critical minerals in either the US Geological Survey Critical Mineral List or the European Union's list of Critical Raw Materials. Smaller deals in the data set are treated as

critical minerals if they are classified, according to the fDi Markets' taxonomy, by a category that may contain at least some critical minerals (for example, "alumina and aluminum production and processing," "copper, nickel, lead, and zinc mining," or "nonferrous metal production and processing"). Note that this approach to smaller deals provides an upper-bound estimate, since some categories may also include noncritical mineral deals, such as projects to manufacture glass. In addition to critical minerals, iron, and steel, the remaining (roughly 10 percent) of greenfield FDI announcements in the metals and minerals category have been for projects including gold mining, quartz and gypsum quarrying and processing, and fertilizer manufacturing.

32 "Global Critical Minerals Outlook 2025," International Energy Agency, May 2025.

33 Greenfield FDI only gives a partial picture of Chinese firms' activities abroad. Chinese players have also used acquisitions and loans to develop projects and accompanying infrastructure. Examples include buying and financing lithium projects in Zimbabwe and infrastructure loans to support a copper and cobalt project in the Democratic Republic of Congo (DRC).

34 Based on a sample of the 20 largest deals in the sector.

35 Jon Emont, "Pentagon to take stake in rare-earth company, challenging China's control," *The Wall Street Journal*, July 10, 2025.

36 See, for example, "BHP to advance $2 billion concentrator optimization at Escondida Mine in Chile," Reuters, February 25, 2025; Leslie Hook, "Rio Tinto to invest $2.5bn in latest commitment to lithium," *Financial Times*, December 12, 2024.

37 Leading-edge semiconductors include logic chips with process nodes seven nanometers or smaller, as defined by industry-standard naming conventions. These chips first entered mass production in 2018.

38 Christiaan Hetzner, "Elon Musk's just fired up Colossus," *Fortune*, September 3, 2024.

39 The specific estimate for the value directed at leading-edge nodes is based on analysis of FDI announcements by manufacturers of leading-edge semiconductors.

40 Leading-edge semiconductor production capacities and forecasts are from the McKinsey Semiconductor Supply and Demand Model.

41 Christopher Clayton, Antonio Coppola, Matteo Maggiori, and Jesse Schreger, "Geoeconomic pressure," National Bureau of Economic Research (NBER) working paper 34020, July 2025.

42 Leading-edge semiconductor production capacities and forecasts are from the McKinsey Semiconductor Supply and Demand Model. Estimates for 2030 are based on public announcements regarding new and existing manufacturing facilities, and others have made similar estimates. For more, see "US to hold over 20% of advanced semiconductor capacity by 2030," TrendForce, March 5, 2025; "The CHIPS Program Office vision for success: Two years later," National Institute of Standards and Technology, January 10, 2025.

43 See, for example, "Semiconductors have a big opportunity—but barriers to scale remain," McKinsey, April 21, 2025; Chris Musso, Guttorm Aase, and Mark Patel with Lige Sun, "Creating a thriving chemical semiconductor supply chain in America," McKinsey, March 25, 2025.

44 These five megadeals relate to TSMC's ongoing investments in Arizona, which are recorded as distinct projects.

45 "Semiconductors have a big opportunity—but barriers to scale remain," McKinsey, April 21, 2025.

46 McKinsey Battery Insights.

47 McKinsey Battery Insights; Teo Lombardo, Leonardo Paoli, Araceli Fernandez Pales, and Timur Gül, "The battery industry has entered a new phase," IEA, March 5, 2025.

48 McKinsey Battery Insights.

49 Mekala Krishnan et al., "An affordable, reliable, competitive path to net zero," McKinsey, November 30, 2023; Olivia White et al., "War in Ukraine: Twelve disruptions changing the world—update," McKinsey, July 28, 2023.

50 Eric Heymann and Lennart Zwingenberger, *Structural changes in global gas markets in 20 charts*, Deutsche Bank, July 3, 2024.

51 The total value of LNG announcements includes both liquefaction projects and combined extraction and liquefaction projects.

52 *World energy investment 2018*, International Energy Agency, 2018; Angel McCoy et al., *Offshore wind market report: 2024 edition*, National Renewable Energy Laboratory, August 2024.

53 Assuming two-thirds of wind projects are offshore, based on an analysis of the top 50 projects representing 60 percent of announced wind investment.

54 Hydrogen and its derivatives, including ammonia and methanol, are mature industries. However, today they rely on fossil-fuel-intensive processes of production. The discussion of this section refers to projects that aim to create hydrogen without resorting to fossil fuels, instead using water electrolysis, and then using that hydrogen for the production of ammonia, methanol, or other derivatives. This section does not cover other low-emissions processes of producing hydrogen, including those using carbon capture combined with existing steam methane reforming (SMR) facilities. See Mekala Krishnan et al., *The hard stuff: Navigating the physical realities of the energy transition*, McKinsey Global Institute, August 2024.

55 "The energy transition: Where are we, really?," McKinsey, August 27, 2024.

Chapter 4

56 James R. Markusen and Anthony J. Venables, "Foreign direct investment as a catalyst for industrial development," *European Economic Review*, February 1999, Volume 43, Number 2; Yan Liu, "Does foreign direct investment catalyze local structural transformation and human capital accumulation? Evidence from China," World Bank policy research working paper 9952, March 2022.

57 "The CHIPS and Science Act: Here's what's in it," McKinsey, October 4, 2022; "The Inflation Reduction Act: Here's what's in it," McKinsey, October 24, 2022.

58 About half of intra-European flows since 2022 were energy related. About 30 percent of total intra-European flows since 2022 corresponded to flows between the EU and the United Kingdom (in either direction). Note that for the United Kingdom alone, FDI attraction relative to the United States dropped to 18 percent since 2022, down from roughly 37 percent in the 2015 to 2019 period. For the European Union, corresponding numbers were 58 percent and 75 percent. The only major European economy for which these ratios went up was France, where the ratio grew to 14 percent from 9 percent, largely due to a significant data center FDI announcement.

59 Two-thirds of the remainder came from in-region semiconductor manufacturing projects, running from Taiwan to Japan and Singapore. Announced data center build-outs in South Korea and Japan also contributed.

60 Europe's figure excludes intra-European flows.

61 Basic manufacturing, the exception, remained flat.

Chapter 5

62 "Restricted: How export controls are reshaping markets," McKinsey, April 3, 2025; Christopher Clayton, Antonio Coppola, Matteo Maggiori, and Jesse Schreger, "Geoeconomic pressure," NBER working paper 34020, July 2025.

63 "The data center balance: How US states can navigate the opportunities and challenges," McKinsey, August 8, 2025.

64 "A new trade paradigm: How shifts in trade corridors could affect business," McKinsey, June 18, 2025.

65 "Surging excess capacity threatens steel market stability, employment, and decarbonisation plans," OECD press release, May 27, 2025; China says solar sector needs to curb overcapacity, Reuters, August 19, 2025; Colin McKerracher, "China already makes as many batteries as the entire world wants," Bloomberg, April 12, 2024; Anthony Potter, Jesse Tijerina, and Melissa Manning, *Top five petrochemical trends for 2024*, S&P Global Commodity Insights, 2023.

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