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Global Energy & Materials Practice

Tracking the energy transition: Where are we now?

Following our first stock take in 2024, we conducted a follow-up review of the energy transition in 2025 by evaluating the deployment of clean energy technologies in key regions against net-zero targets.

This article is a collaborative effort by Adam Barth, Diego Hernandez Diaz, Humayun Tai, and Thomas Hundertmark, with Michiel Nivard, representing views from McKinsey's Electric Power & Natural Gas Practice.

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With now over a decade since the landmark Paris Agreement, the global focus on decarbonization and sustainability has unlocked tangible gains in renewable energy build-out and energy efficiency. To date, 77 percent of global economies have a net-zero target, either proposed or legislated.[1] But with a key interim decarbonization milestone now under just five years away, the energy transition shows signs of slowing momentum—at precisely the time it needs to speed up if targets are to be met.

Recent announcements that major hydrogen projects are being paused or canceled only underscore this shift in focus and momentum, with reasons cited including weak customer demand or land being assigned to data center development instead.[2]

In 2024, we published "The energy transition: Where are we, really?" which explored the reality gap between the deployment of eight key decarbonization technologies and their 2030 targets in Europe and the United States.[3] Even then, the data suggested these regions were at risk of missing these critical targets. Today, less than 15 percent of the low-emissions technologies required to meet Paris-aligned targets by 2050 have been deployed, only a few percentage points higher than two years ago. This poses the question: How can we be so far off from these targets despite the consistent and encouraging acceleration in clean technology deployment—one of the key elements of a successful energy transition?

Recently, some countries and companies have scaled back or delayed their short-term decarbonization commitments, particularly in the context of growing pressures around energy security and affordability.[4] And despite all the progress and commitments to decarbonize over the past decade, global emissions have still risen 9 percent since 2015.

Not only is the priority landscape shifting, but the geopolitical environment is also now more unpredictable, which could impact the pace of the energy transition significantly. With increasing defense budgets and uncertainty from tariffs, fewer resources may be available for decarbonization on a national level, while tariffs could lead to inefficient global supply chains, potentially slowing efforts to transition to cleaner energy.[5]

It is within this context that we reexamine the question, "Is the world on track to reach its 2030 low-carbon technology build-out plan?" To answer it, we evaluate nine key decarbonization technologies across China, Europe (which in our analysis includes the European Union, Norway, Switzerland, and the United Kingdom), and the United States to see if these regions are currently on track to reach their 2030 clean technology targets (see sidebar "Our analysis").

While reaching net zero will require more than just these nine technologies to be scaled up, their current status serves as a clear indicator of whether these regions are on track to reach net zero by 2050.

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1 "Data explorer," Net Zero Tracker, accessed July 2025.
2 "The year in review: Amid all the high-profile cancellations, 59 clean hydrogen projects began construction in 2025," Hydrogen Insight, December 30, 2025.
3 "The energy transition: Where are we, really?," McKinsey, August 27, 2024.
4 *Global Energy Perspective 2025,* McKinsey, October 13, 2025.
5 David Chinn, Jonathan Dimson, Josie Lambert, and Timothy Chapman, "A different lens on Europe's defense budgets," McKinsey, February 12, 2025; Christian Therkelsen, Diego Hernandez Diaz, Humayun Tai, and Inés Ures, "How might tariffs affect the energy transition?," McKinsey, July 22, 2025.

Our analysis

This article builds on research from our 2024 article, "The energy transition: Where are we, really?".[1] This year, we expanded our analysis in two ways: We added battery energy storage systems (BESS) and nuclear energy to the list of technologies analyzed (and removed heat pumps),[2] and included China in the country analysis, given its significance in the overall energy landscape.

To provide a rigorous, data-based assessment of the state of the transition, we conducted two complementary analyses. First, we examined the actual deployment of all nine technologies across regions. Second, we assessed likely future deployment based on the current project pipelines and those that have reached the final investment decision (FID) stage. Together, these shed light on the current status of the energy transition and where it is heading.

Scope: We identified the key technologies that together account for the bulk of decarbonization potential: onshore and offshore wind; solar photovoltaic (PV); clean hydrogen; sustainable fuels; carbon capture, utilization, and storage (CCUS); nuclear; BESS; and electric vehicles (EVs). In this article, we provide snapshots of the three technologies that have evolved significantly since our 2024 analysis—offshore wind, solar, and BESS. While we highlight these technologies, our belief remains steadfast that a successful net-zero transition will require a whole-system approach that incorporates all nine technologies (and many more, some of which still exist below technology readiness level six).[3]

Data collection: We gathered comprehensive data from various sources, including proprietary and commercial project-tracking databases, to obtain up-to-date information on the status of numerous projects across different decarbonization technologies.

Policy and historical capacity review: We reviewed existing policies, historical capacity deployments, and growth trends to understand the broader context and trajectory of different technologies. We reevaluated countries' 2030 technology deployment targets, as some of these have changed since 2024. Where official targets for specific technologies do not exist, we calculated the point at which the 2030 installed capacity would likely need to be to set each country on a strong decarbonization trajectory to 2050 and used this as a target. These official and estimated targets do not conform to a singular emissions pathway (for example, 1.5°C or 2°C); however, they are indicative of the trajectory that is required to catalyze the energy transition. China deserves a separate note as it has already reached its 2030 renewables target, yet, according to our analysis, this milestone does not necessarily mean that China will meet its net-zero goals, given its continued industrialization, increasing GDP per capita, and projected energy needs.

Comparative analysis: We compared stated targets with expected capacity deployments, including project status and historical sales levels for technologies such as EVs that depend on customer adoption. This enabled us to assess the alignment between ambitious climate targets and actual progress.

Gap assessment: By examining project status, including those projects that have reached the FID stage, we were able to assess the gap between target volumes, expected volumes (based on current trends), and volumes that have already reached FID. This analysis highlighted discrepancies between announced projects and those that are likely to materialize.

In this article, we are neither modeling nor forecasting future outcomes but rather bringing to light the available data to assess the size of the reality gap and what needs to be done to close it.

1 "The energy transition: Where are we, really?," McKinsey, August 27, 2024.
2 The analysis on heat pumps is excluded this year due to limited data availability. However, our analysis continues to reveal that the conversion from fossil fuel heat to alternative heat pumps remains largely subject to the business case, which is dependent on the price of gas versus the price of power and methods to reduce initial capital expenditure.
3 "Technology readiness levels," Government of Canada, June 20, 2025.

Global emissions are still on the rise

Despite global efforts, emissions have risen 9 percent between 2015 and 2024, an increase of 3.3 gigatons (see sidebar “Key fuels and sectors behind rising emissions”).[6] This growth is largely driven by increasing global energy demand fueled by population growth, rising industrialization, growing income levels, and emerging demand sources, such as data centers.[7]

However, from an intensity perspective, there is progress: The amount of CO_2 emitted per unit of GDP is declining, indicating that the world is becoming more efficient and producing more value with less carbon.[8]

Among the three regions analyzed, emissions in China are still increasing, rising by 21 percent between 2015 and 2024 (Exhibit 1). This has been largely driven by increasing GDP per capita and ongoing industrialization. That said, China has recently begun to decarbonize at a rapid pace, which is critical, given that China is expected to still have the largest total energy demand out of all countries by 2050—31 percent of total demand.[9]

In contrast, emissions in Europe and the United States have decreased by 18 percent and 8 percent, respectively, between 2015 and 2024, in part due to policy. In the United States, for example, the Mercury and Air Toxics Standards (MATS) and the Clean Power Plan have historically allowed coal plants to be replaced with cost-effective gas power generation and renewables—leading to an overall lower carbon footprint.[10] Over the past decade, more than a third of US coal plant capacity was retired, largely replaced by cost-effective renewable projects and gas plants, aided by abundant, affordable shale gas.[11] However, since 2024, rising electricity demand has required additional supply, which has largely been met with gas and coal generation. As a result, despite growth in renewables, power sector emissions remained relatively flat in 2024.[12]

European policies, particularly those in the power sector (such as the EU Emissions Trading System), have also led to substantial emissions reductions.[13] However, part of Europe’s emissions decline, particularly in 2021 and 2022, is due to lower industrial output in the region, effectively reallocating these emissions rather than eliminating them.[14]

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6 *Statistical review of world energy,* Energy Institute, 2025.
7 “How data centers and the energy sector can sate AI’s hunger for power,” McKinsey, September 17, 2024.
8 *Global Energy Review 2025,* International Energy Agency, March 24, 2025.
9 Lauri Myllyvirta, “Analysis: Clean energy just put China’s CO_2 emissions into reverse for the first time,” Carbon Brief, May 15, 2025; *Global Energy Perspective 2025,* McKinsey, October 13, 2025.
10 “Mercury and Air Toxics Standards,” United States Environmental Protection Agency, July 30, 2025; “EPA’s new standards for power plants,” Rhodium Group, June 27, 2024.
11 Dennis Wamsted, “Nowhere to go but down for US coal capacity, generation,” Institute for Energy Economics and Financial Analysis.
12 “US power generators pump the brakes on coal plant retirements,” S&P Global, November 5, 2024; “US energy-related carbon dioxide emissions, 2024,” EIA, May 29, 2025.
13 “Greenhouse gas emissions under the EU Emissions Trading System,” European Environment Agency, October 31, 2024.
14 *Trends and projections in Europe 2024,* European Environment Agency, November 2024.

Key fuels and sectors behind rising emissions

By fuel type, emissions related to natural gas consumption increased by approximately 2.5 percent (mainly driven by the power sector) from 2023 to 2024 as consumption grew globally, making it the largest net contributor to emissions growth.[1] Coal-related emissions also rose, although more modestly, by approximately 0.9 percent, as growth in Asia was partly offset by declines in Europe and the United States.

From a sectoral perspective, the power sector saw the largest absolute increase in emissions in 2024, reaching an all-time high as thermal generation increased, despite significant growth in renewables. Aviation also saw a sharp rise of about 5.5 percent, although its overall share of emissions remains relatively small.[2]

1 *Global Energy Review 2025,* International Energy Agency, March 24, 2025.
2 *Global Energy Review 2025,* International Energy Agency, March 24, 2025.

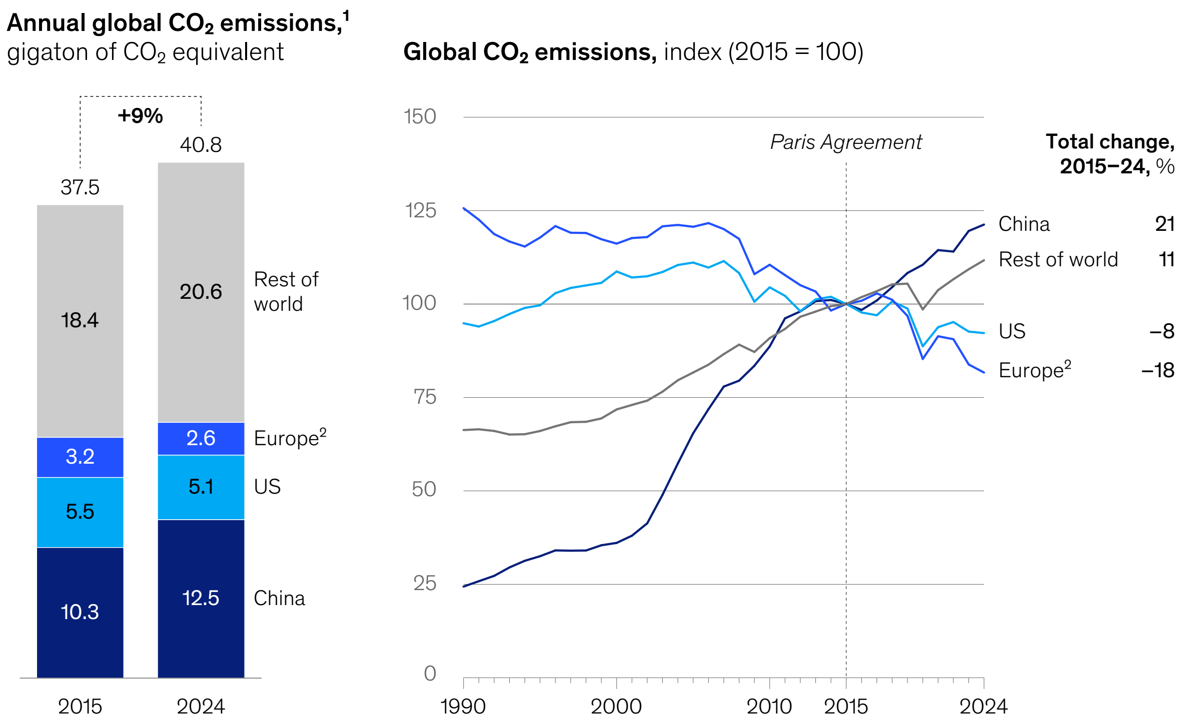
Now, in 2025, some policy-enabled emissions reduction initiatives are shifting, with evidence suggesting that some countries and companies are amending their commitments. In January 2025, the United States withdrew from the Paris Agreement and any related United Nations Framework Convention on Climate Change (UNFCCC) commitments.[15] Other countries are scaling back or pushing out their targets. For example, the Dutch government recently announced a reduction in its offshore wind commitments, lowering its 2040 target from 50 gigawatts (GW) to between 30 and 40 GW because of rising costs and lower-than-expected electricity demand from industry.[16]

There are some examples of priorities shifting in industry, too. In the automotive sector, for example, Mercedes-Benz and Toyota, which previously set ambitious targets for electric vehicle (EV) sales by 2030, now plan to continue offering internal combustion engine (ICE) and hybrid vehicles well into the 2030s, if demand persists.[17]

15 “Putting America first in international environmental agreements,” The White House, January 20, 2025.
16 “Netherlands scales down offshore wind target for 2040,” Offshore Engineer, July 17, 2025.
17 João da Silva, “Toyota delays US electric car plans as sales slow,” BBC, October 3, 2024; Wilfried Eckl-Dorna, “Mercedes backpedals on 2030 electrification target as EV sales slow,” Fortune, May 8, 2024.

Exhibit 1

Global emissions have increased by 9 percent since 2015, but there are stark differences across regions.



Note: Figures may not sum to 100%, because of rounding.
[1]Includes energy and process, methane, and flaring emissions.
[2]EU-27, Norway, Switzerland, and UK.
Source: *Statistical review of world energy 2024,* Energy Institute

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So, where are low-carbon technologies against 2030 targets?

With intermediate 2030 decarbonization targets fast approaching, understanding progress is critical. What needs to be operational by 2030 likely needs to have reached final investment decision (FID) today. Our assessment of global progress toward 2050 net-zero goals is based on the uptake of key decarbonization technologies across China, Europe, and the United States, in conjunction with the stated (or calculated) 2030 targets for each region.

Combining the operational, FID, and under-construction capacity for each technology in these three regions suggests that 2030 targets may not be met. Even when planned capacity is factored in (which will likely not be operational within the next four-and-a-half years), the 2030 technology targets may still fall short (Exhibit 2).

In the past year, some technologies have advanced. In 2024, global renewable capacity increased by 15 percent compared to the previous year, rising by 585 GW, and EV sales increased by 25 percent to around 17 million units sold worldwide.[18]

[18] *Renewable capacity statistics 2025,* International Renewable Energy Agency, March 2025; IEA; *Global EV outlook 2025,* International Renewable Energy Agency, May 14, 2025.

Solar photovoltaic (PV) build-out has accelerated due to low costs, and nuclear already meets 2030 targets in Europe and the United States.[19]

China has made significant progress in deploying low-carbon technologies and continues to expand its pipeline of under-construction capacity. Notably for renewable power, China has achieved its 2030 target for combined wind and solar installations ahead of schedule, approximately 1.2 terawatts (TW).[20] However, this 2030 target is not fully aligned with what would be required to meet its 2060 net-zero ambition. Based on our calculated net-zero pathway for the country, we estimate that China would require 3.4 TW by 2030 and more than 7.0 TW by 2040. This means that the entire planned pipeline needs to be realized for China to be on track to fully decarbonize.

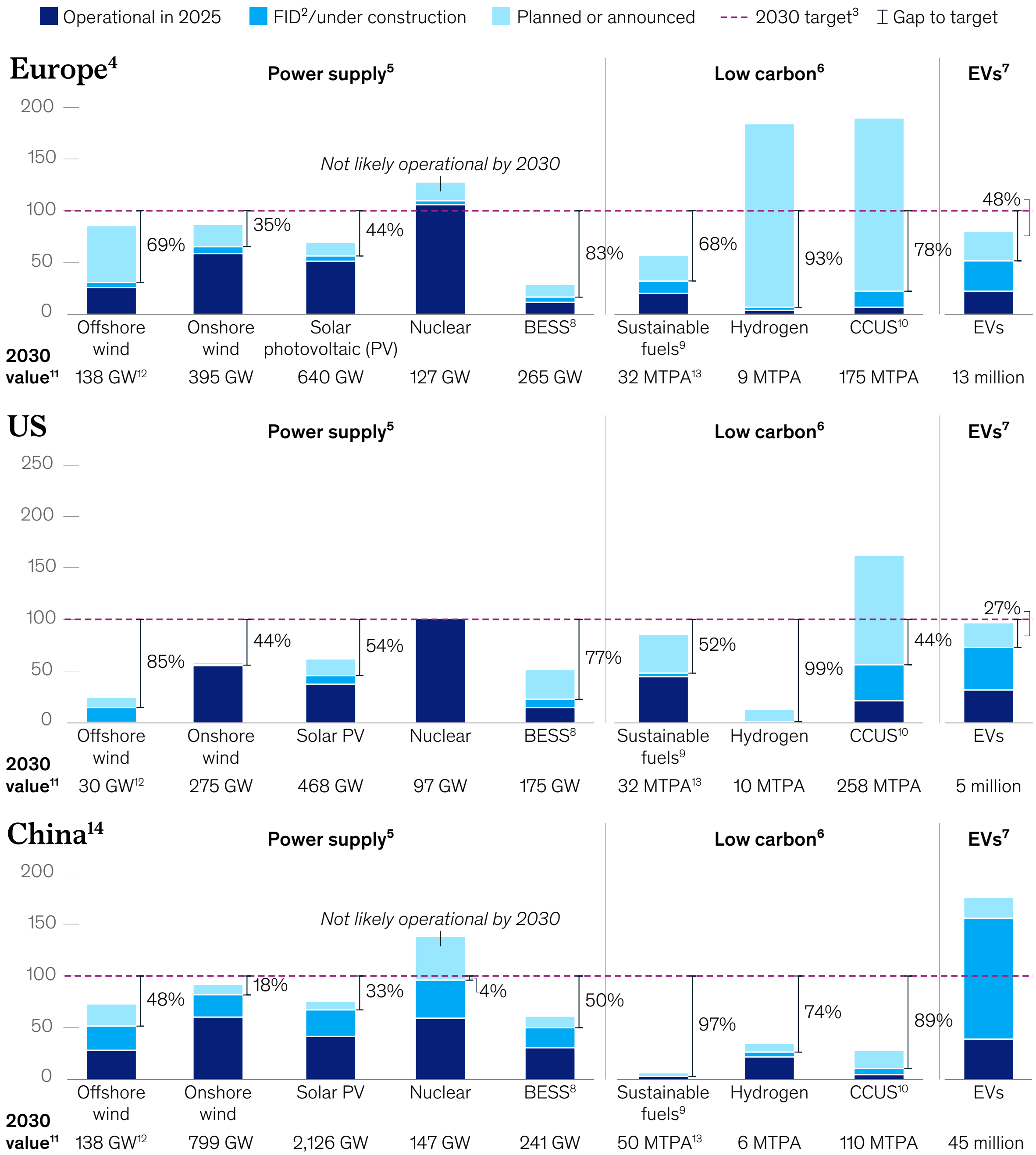
Two technologies—green hydrogen and offshore wind—consistently lag behind targets across regions, when looking at post-FID projects. For offshore wind, this is largely due to global build-out challenges, with many projects and tenders canceled due to severe cost inflation and the rising cost of capital.[21] A similar trend is observed for green hydrogen: Globally, development has slowed, with a significant number of large-scale projects in Asia, Australia, Europe, and the United States being canceled, postponed, or scaled back.[22] This is because of the interplay between elevated production costs, insufficient demand, slow industrial uptake, and constantly evolving regulations. With the construction time for both these technologies often exceeding five years, the 2030 targets are at risk—even if more planned or announced projects were launched today.

[19] Hannah Ritchie, "Solar panel prices have fallen by around 20% every time global capacity doubled," Our World in Data, June 13, 2024.
[20] "China surpasses 2030 renewable energy goals year ahead of schedule," Renewable Energy Institute.
[21] "No offshore bids in Denmark—disappointing but sadly not surprising," Wind Europe, December 6, 2024.
[22] "Cancelled and postponed green hydrogen projects," Reuters, July 23, 2025.

Exhibit 2

Investment in low-carbon technologies has been considerable, but key 2030 targets still might not be met across crucial regions.

Technology deployment pipelines vs targets, % of 2030 target (normalized)[1]



[1]Tech deployment measurement helps in understanding gap between actual and needed deployment. [2]Final investment decision. [3]Target for domestic decarbonization. [4]EU-27, Norway, Switzerland, and UK. [5]Actual build-out of power. [6]Production capacity for low-carbon fuels. [7]Electric vehicles sales. [8]Battery energy storage systems. [9]Includes hydroprocessed esters and fatty acids, hydrotreated vegetable oil, power to liquids, and other advanced biofuels. [10]Carbon capture, utilization, and storage. [11]Local 2030 target or expected level in 1.8° scenario if target is exceeded. [12]Gigawatts. [13]Million tons of CO_2 abated per annum. [14]As China has already reached its official renewable energy sources target (1,200 GW by 2030 combined solar and wind), we have used a higher range in line with our estimation of a 1.8° pathway.
Source: IRENA; Rystad Energy; Energy Solutions by McKinsey; McKinsey analysis

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Each region has a distinct path to net zero

Of course, there are nuanced differences across regions and technologies. Our analysis shows that regions are prioritizing different technologies based on their unique context and where they are in their net-zero journey.

China, for example, is focusing heavily on electrification and renewable energy build-out, but has low sustainable fuel and green hydrogen production targets. China's net-zero target is set for 2060, rather than 2050, which also influences its decarbonization strategy. This has led to some technologies, such as carbon capture, utilization, and storage (CCUS), not being prioritized—although several projects have been announced beyond current operational projects.[23]

In contrast, both Europe and the United States could significantly exceed their 2030 CCUS targets if all planned or announced projects are realized. However, these projects require a significant acceleration of FID and technical derisking, given their long construction timelines and relatively nascent infrastructure.

Battery energy storage systems (BESS) are another interesting contrast. While none of the regions in the analysis currently has enough planned or announced capacity to reach its 2030 BESS target, the rapid adoption of this technology could change that. The cost of batteries has lowered significantly in recent years, and the business case for operators (which includes balancing the grid through ancillary services and energy arbitrage strategies) has strengthened too, making this a fast-growing technology in the energy space.[24]

Here, we review three technologies that are most regularly associated with the power sector's transition: offshore wind, solar PV, and BESS.

Offshore wind

China, Europe, and the United States will all likely miss their 2030 offshore wind targets because of slowing installation rates and project announcements (Exhibit 3). Despite no official offshore wind targets for China and the United States, our analysis indicates that significant growth in installed capacity is needed. For the United States specifically, there is a limited number of offshore wind projects at present, and as such, this technology is not currently positioned to play a meaningful role in the US transition or future power mix.[25] In the European Union, while announcements still remain significant, recent trends have put into question whether the 2030 target will be met (for example, the Netherlands is lowering its 2040 offshore wind target, and there have been unsuccessful auction rounds in both Denmark and Germany).[26]

Solar PV

Solar PV continues to be the success story of the energy transition. Although Europe and the United States currently lack enough announced capacity to meet their 2030 targets, the ease of build-out suggests that these targets will still be met.[27] In fact, China has already more than doubled its 2030 target, with approximately 300 GW of additions added since 2023 (Exhibit 4). This is due to the continued decline in costs and relative ease of build-out, including short installation cycles, which have spurred the adoption of large-scale and rooftop solar and made it attractive for commercial and household use alike.[28]

Energy price hikes and inflation have further pushed the adoption of rooftop solar, both improving affordability and security of electricity supply.

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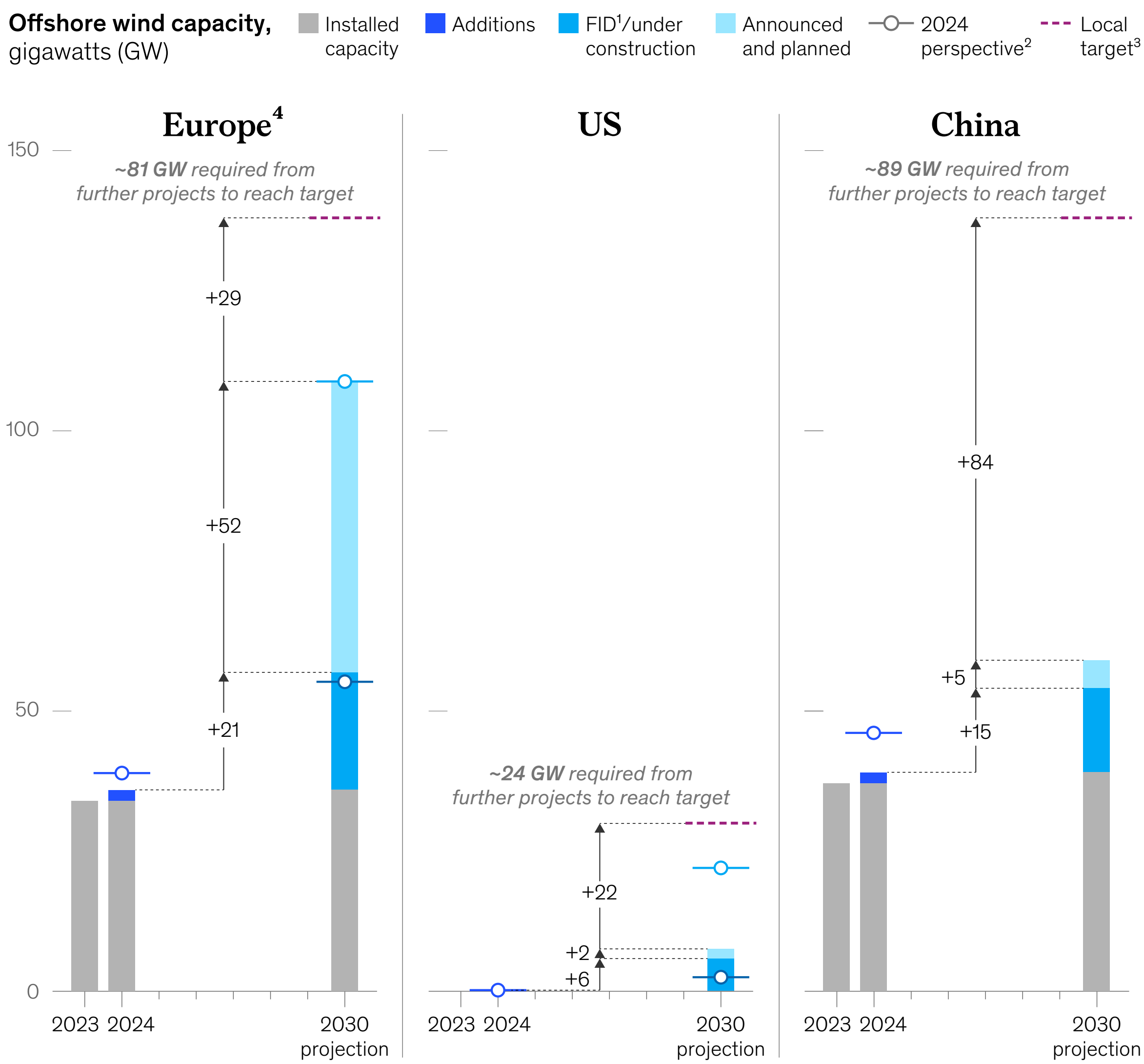
23 "Facilities database," Global CCS Institute, accessed November 2025.
24 "Evaluating the revenue potential of energy storage technologies," McKinsey, February 11, 2025.
25 "Renewable energy: Lease and grant information, what's new?," Bureau of Ocean Energy Management; "Fact sheet: President Donald J. Trump ends market distorting subsidies for unreliable, foreign-controlled energy sources," The White House, July 7, 2025; "Temporary withdrawal of all areas on the outer continental shelf from offshore wind leasing and review of the Federal Government's leasing and permitting practices for wind projects," The White House, January 20, 2025.
26 Edward Peters, "Dutch slash offshore wind target in 'reality check'," *4C Intelligence Platform,* July 17, 2025; "WindEurope statement on the second German offshore wind auction in 2025," WindEurope, August 6, 2025; "No offshore bids in Denmark—disappointing but sadly not surprising," December 6, 2024."
27 While it is easier to track project build-out for other clean energy technologies, data visibility for solar is more limited due to individual household use and ease of build-out. For example, a consumer can install household solar in two months. This means that the announced capacity may be underestimated in this analysis.
28 "Residential solar: Down, not out," McKinsey, February 3, 2025.

Exhibit 3

China, Europe, and the United States are likely to miss their offshore wind targets by 2030 as installation rates and announcements slow down.



[1]Announced projects that have reached the final investment decision.
[2]Based on comparison with the pipeline projection from 2024. China 2024 perspective for 2023–24 based on 2018–23 average annual installations; China 2024–30 2024 perspective data not available as this was not included in the 2024 analysis.
[3]Based on 88 GW target in EU-27, 43–50 GW target in the UK, and for China, 1.2 terawatt total renewable energy source capacity target by 2030.
[4]EU-27, Norway, Switzerland, and UK.
Source: 4C Offshore; IRENA; McKinsey analysis

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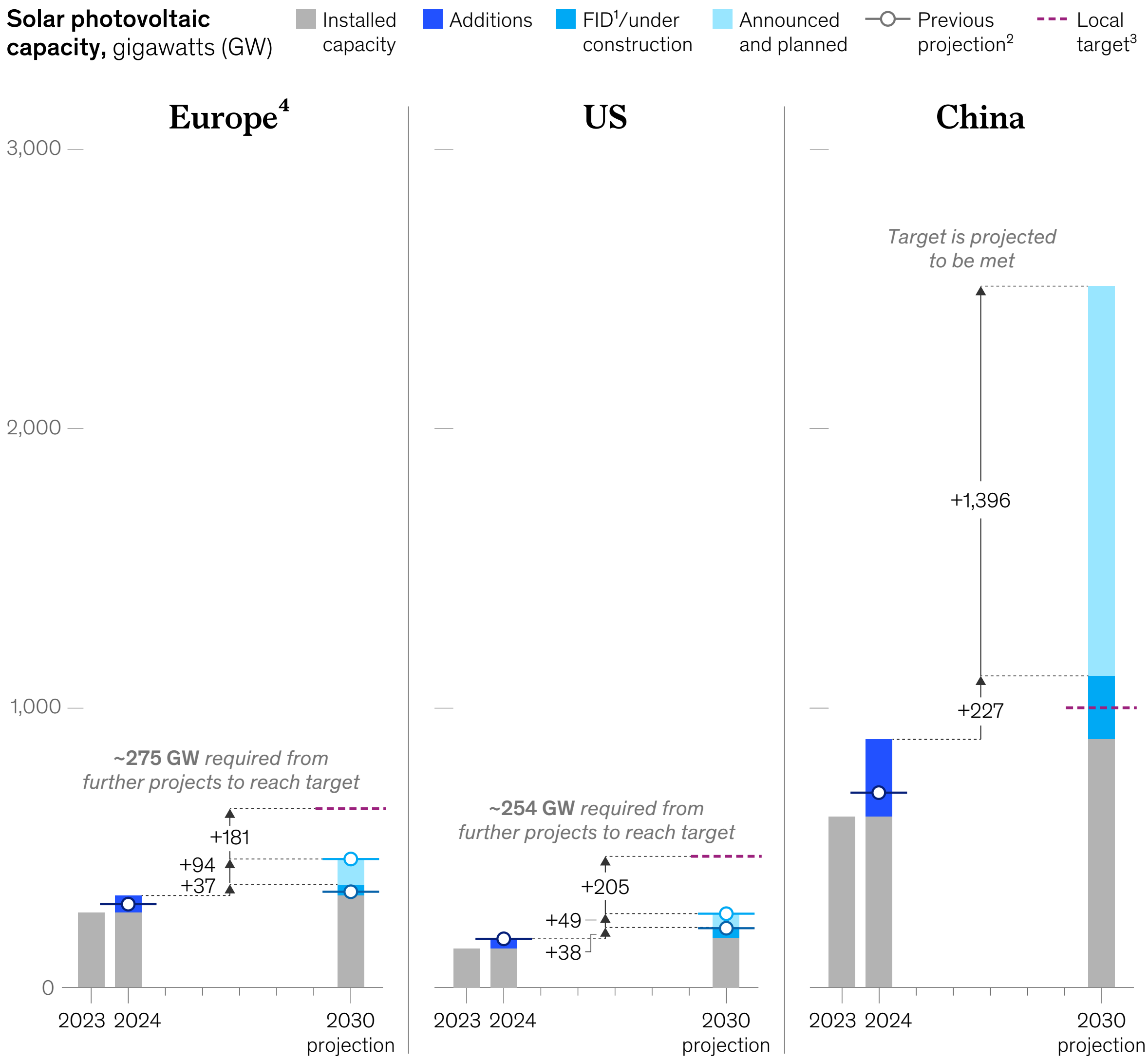
However, further acceleration in solar build-out, which could compensate for lagging deployments in other technologies, is not guaranteed. Supply chain risks, tariffs, and other geopolitical forces could slow progress, with examples of this already emerging—the United States has recently rolled back many subsidy policies for solar.[29]

[29] "The One Big Beautiful Bill," The White House, June 3, 2025; "US solar installation forecast slashed due to Trump policies, report says," Reuters, September 8, 2025.

Exhibit 4

Solar photovoltaic installations continue to accelerate, meaning that key regions could realistically reach their targets.



[1]Announced projects that have reached the final investment decision.
[2]Based on 2018–23 average annual installations.
[3]Based on 600 GW target in EU-27, 40 GW target in the UK, and for China 1.2 terawatt total renewable energy source capacity target by 2030.
[4]EU-27, Norway, Switzerland, and UK.
Source: IRENA; McKinsey analysis

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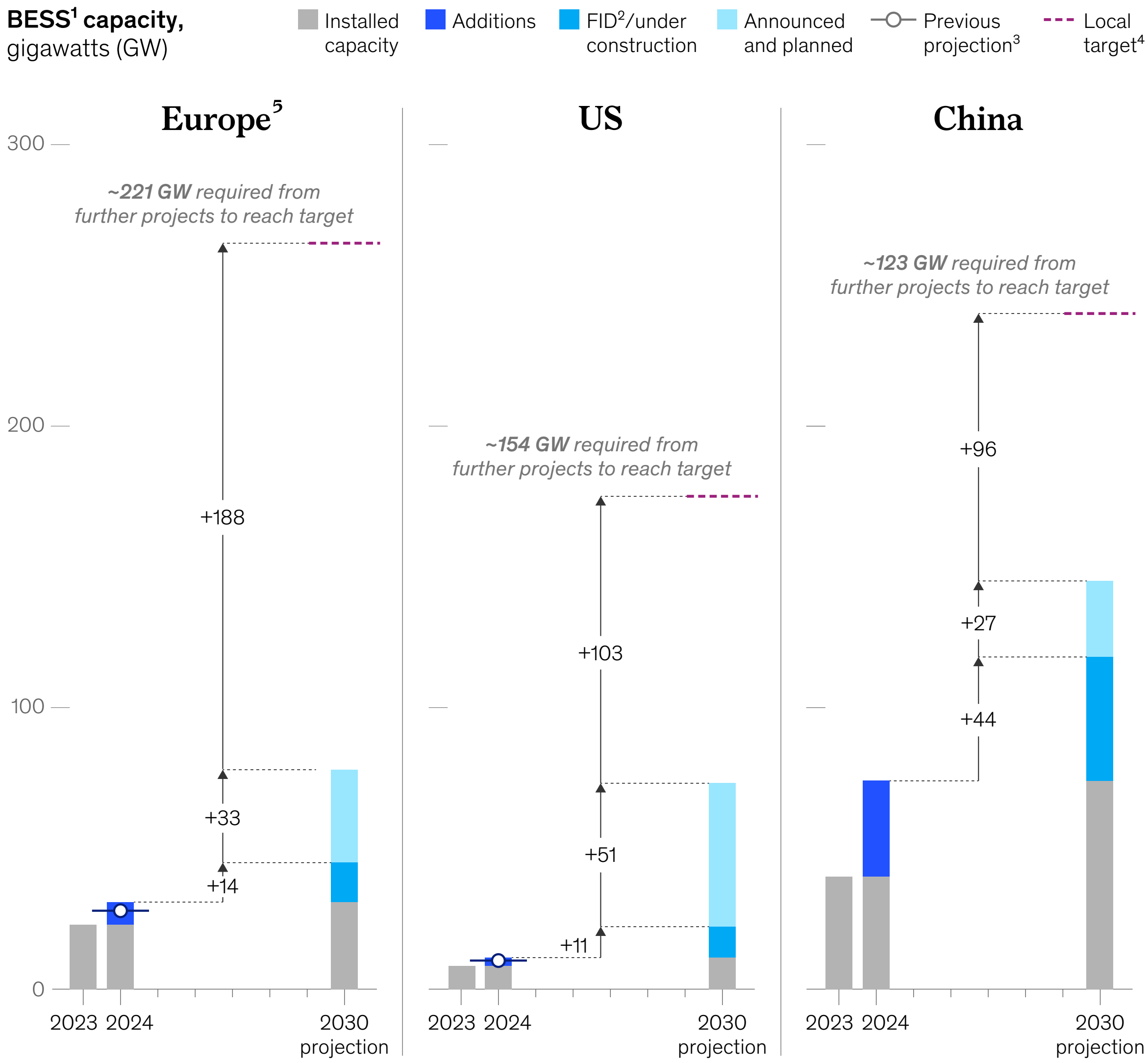
Battery energy storage systems

BESS remains the dominant question mark in 2025. While the current pipeline is not sufficient to meet targets across the regions analyzed, deployment over the past few years has grown rapidly. Our analysis shows that regarding time to site, permit, construct, and interconnect, a BESS project is materially faster than many other grid technologies, such as nuclear or gas combined with CCUS (Exhibit 5).

Exhibit 5

The pipeline capacity for battery energy storage systems is growing rapidly but remains behind what is needed to reach 2030 targets.



[1]Battery energy storage systems. [2]Announced projects that have reached the final investment decision. [3]Based on comparison with the pipeline projection from 2024. [4]Based on 163 GW target in Europe by 2030. [5]EU-27, Norway, Switzerland, and UK.
Source: IRENA; McKinsey analysis

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[30] Audrey Lee and Daniel McCormack, "Battery storage: Strategies for revenue stacking and investment success," Macquarie, October 3, 2025.
[31] Amit Mathrani, "Battery energy storage systems: The foundations of a resilient energy future in the US," Rabobank, March 18, 2025.

The rapid acceleration of installations in the past five years is primarily because the business case for BESS has proven positive for large-scale operators and households alike when paired with rooftop solar.[30] Load balancing is also becoming a popular source of revenue for battery operators.[31] Planning and integrating BESS with renewable rollout (combining the business case) is critical if 2030 net-zero targets are to be met.

The challenges affecting low-carbon technology build-out

Three main reasons help explain the shortfall of key technologies against 2030 decarbonization targets.

Shifting policy focus

After a surge in sustainability policies during the 2010s, there is evidence that proposed and adopted policies have stagnated since 2020, particularly in OECD countries. Not only have decarbonization policies begun to stagnate, but governments are also increasingly shifting their policy priorities, with a refocus on defense spending—with some countries adopting a mandate to spend between 3.5 percent and 5.0 percent of GDP on defense.[32] Additionally, energy price volatility has reminded policymakers of the need for secure and affordable energy supply in the face of rapidly rising demand, creating a very challenging environment for stakeholders to navigate while they aim to balance these goals with sustainability goals.[33]

Increasing costs

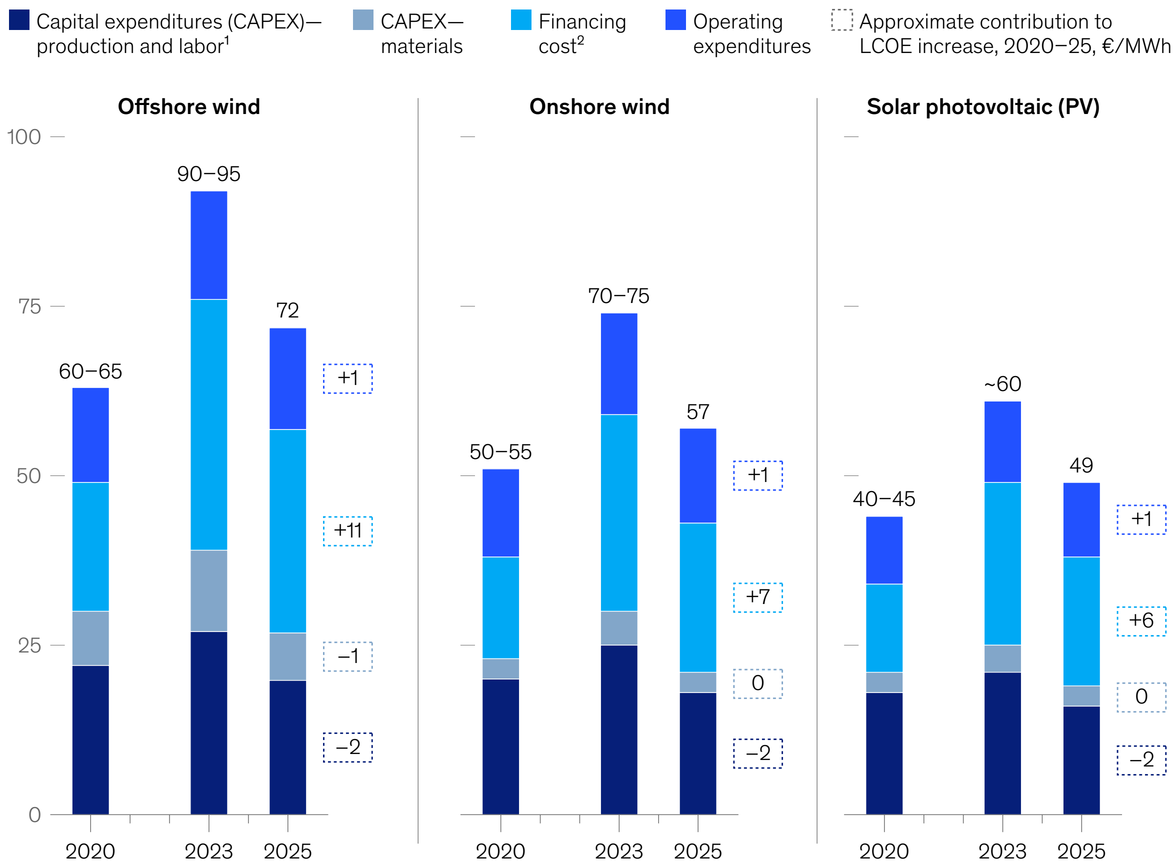
After years of declining costs for renewable energy sources (RES) and EV batteries, driven by continued technology improvements and efficiency gains, 2023 marked the first increase in low-carbon technology costs (Exhibit 6). This uptick is attributed to higher interest rates, which have increased financing costs by between 10 percent and 20 percent since 2020, as well as rising raw material prices, higher labor costs, and grid connection costs. As a result, some of the latest offshore wind tenders in Europe have been canceled or delayed.[34] Offshore wind, in particular, is impacted because of the material intensity and high network costs required for construction. However, since 2024, these costs have begun to reduce, making the business case more attractive again.[35]

[32] David Chinn and Jonathan Dimson, with Josie Lambert and Timothy Chapman, “A different lens on Europe’s defense budgets,” McKinsey, February 12, 2025.
[33] *Global Energy Perspective 2025,* McKinsey, October 13, 2025.
[34] “Norway postpones 1.5 GW floating offshore wind tender to 2025,” Power Technology, March 26, 2024; Alex Blackburne and James Burgess, “Denmark scraps 3-GW offshore wind auction for redesign, accelerates hydrogen exports,” S&P Global, January 31, 2025.
[35] McKinsey analysis.

Exhibit 6

Since the price hikes of 2022 and 2023, the cost for renewable energy source capacity has reduced, especially driven by capital expenditures.

Renewable energy source levelized cost of energy (LCOE), € per megawatt-hour (€/MWh)



[1]Includes land cost for onshore wind and solar PV and development expenditures for all technologies.
[2]Includes nominal weighted average cost of capital (4.5% in 2020, and 9.0% in 2023, and 6.0% in 2025) as well as 150 basis points internal rate of return hurdle.
[3]Referring to latest German seabed lease auction (won by BP and Total Energies) with payment of ~€1.8 million per megawatt, of which 10% paid upfront and the remaining 90% spread over 20-year period (including financing cost of seabed lease). Assuming final investment decisions in 2020 had little or no seabed lease cost, excluding potential revenue connected operating seabed fees.
Source: IEA; IRENA; Wood Mackenzie; McKinsey Offshore Wind LCOE modeling

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Growing geopolitical uncertainty
Over the past few years, the global geopolitical landscape has changed significantly, prompting some governments to reevaluate their defense budgets and prioritize energy security and affordability, which may reduce the resources available for decarbonization efforts.[36] Additionally, high business case risks from market redesign, including capacity markets, subsidy reversals, and offtaker uncertainty, are dampening investment appetite for clean energy technologies. Tariffs and trade tensions are further exacerbating this uncertainty, making it even more challenging to commit to long-term, high-cost projects.[37] Collectively, these factors are posing substantial obstacles to the energy transition.

[36] *Global Energy Perspective 2025,* McKinsey, October 13, 2025.
[37] Christian Therkelsen, Diego Hernandez Diaz, Humayun Tai, and Inés Ures, "How might tariffs affect the energy transition?," McKinsey, July 22, 2025.

Despite progress in certain technologies, several regions may not be on track to meet their 2030 decarbonization goals. However, there is time for regions and companies to make significant changes to ensure decarbonization by 2050.

While there is currently a gap in the required investments across various low-carbon technologies and regions to meet stated net-zero targets, a reversal in policy or an acceleration of capital deployment could be possible. Historically, rapid course corrections have occurred—the COVID-19 response, for example, and the financial bailouts in 2008. Although the contexts were different, these examples demonstrate the potential for swift action.

With only five years until 2030, the urgency is growing. Stakeholders across the value chain can revisit their decarbonization plans to ensure they are still sufficient to achieve their net-zero goals.

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