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Divergent and disorderly: Mapping global energy trends in an increasingly volatile world

75th edition — Insights from the 2026 Statistical Review of World Energy

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Introduction

Insights from the Statistical Review of World Energy 2026

Drawing on the Energy Institute's 2026 Statistical Review of World Energy, this report examines how global energy systems are evolving in an increasingly fragmented and uncertain geopolitical environment. A disorderly energy transition is underway, with energy leaders having to navigate divergent trends in different geographies.

Rising demand, geopolitical fragmentation, and intensifying competition for energy and industrial advantage are reshaping global energy outcomes at a pace that decarbonization ambitions alone have not been able to dictate. The result is greater diversification across energy sources, increasing divergence between regions, and uneven progress by fuel type and technology.

Energy trends are best understood through the lens of a fragmented and regionally driven transition, rather than a single, globally coordinated energy transition. Instead, geopolitics, energy security, and continued demand growth have become the primary anchors of the global energy narrative.

Across both OECD and emerging economies, policymakers are increasingly prioritizing growth, affordability, and security, reshaping investment decisions across all energy sources.

Against this backdrop, global energy demand rose by 1.7 percent in 2025, with all forms of energy growing simultaneously — a continued illustration of the scale of global energy appetite. The consequence is simultaneous growth across multiple energy technologies, clearer regional winners and losers, and emissions trends that are deviating significantly from the Paris-aligned pathways.

Note: *This report includes forward-looking statements, including our future projections and opinions, based on current assumptions, which are inherently uncertain and subject to change.*

The year in nine key themes:


Click on each theme to read more

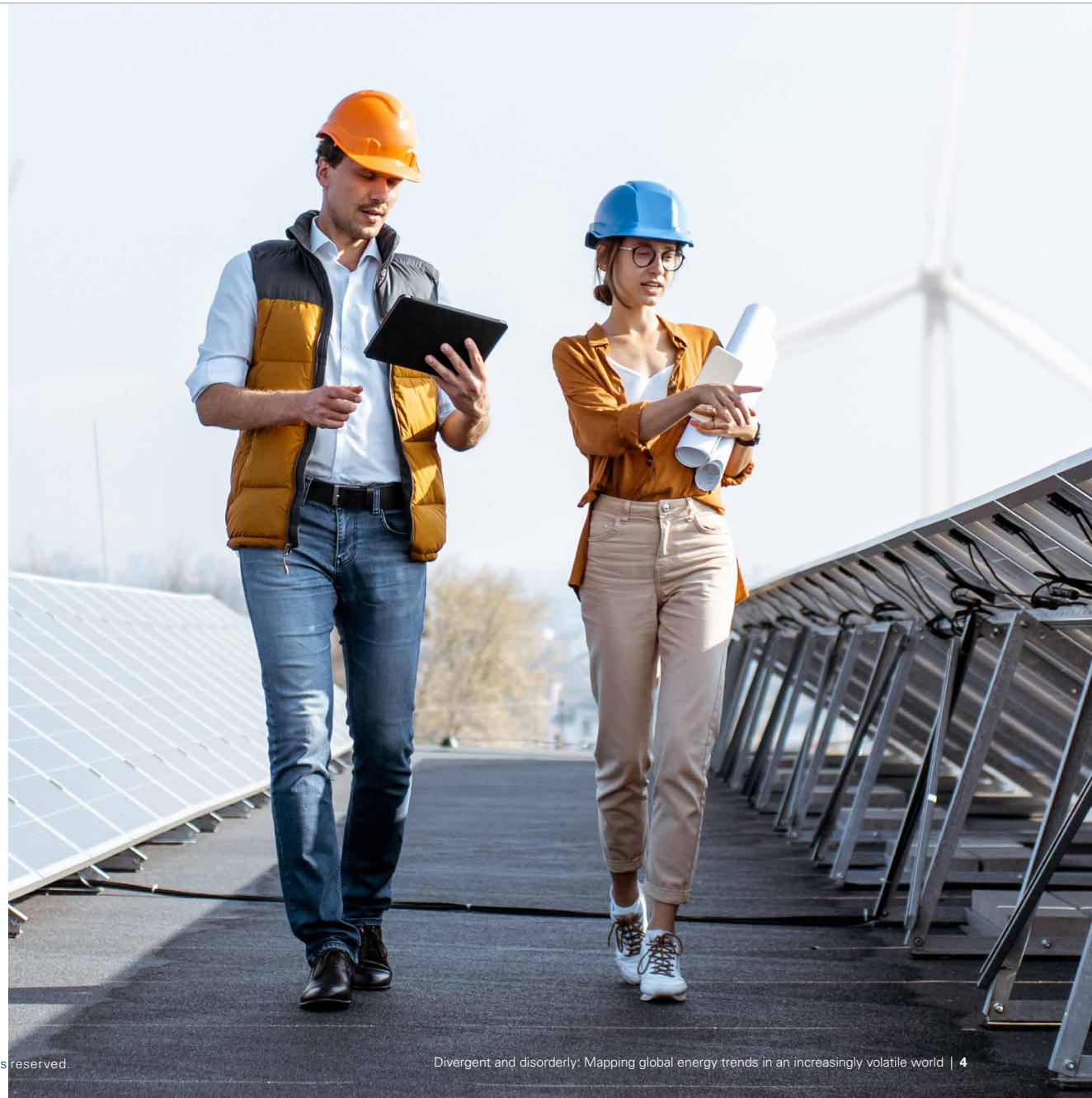
What does this mean for your business?

- Rebuild your energy strategy from the ground up and make it regional, not global
- Make energy resilience a financial priority, not just an operational one
- Map your supply chain beyond the first tier
- Invest in the technologies with commercial momentum
- Make your transition plan defensible and deliverable

Theme 01

A new era of volatility and divergence

Energy shocks are an increasingly regular feature of the global energy system. Compounding geopolitical, supply, and market disruptions over the past decade have introduced more frequent supply and price shocks, exposing the vulnerabilities of energy import-dependent economies. These challenges are not new. Previous crises have revealed similar structural weaknesses and the importance of energy security to ensuring national security. These examples offer critical context and lessons as policymakers once again confront the vulnerabilities and risks of their energy systems.



OPEC embargo (1973)

Arab Organization of the Petroleum Exporting Countries (OPEC) producers cut oil supply in response to the Yom Kippur War, triggering severe shortages and a sharp spike in oil prices that exposed import dependence.

Iranian revolution (1979)

Political upheaval in Iran disrupted oil production and exports, driving a second major oil price surge amid fears of wider Middle East instability.

Global financial crisis (2008)

Oil prices peaked in mid 2008 amid tight supply and strong demand, before collapsing as the global financial crisis triggered a sharp contraction in economic activity.

COVID-19 pandemic (2020)

Global lockdowns caused an unprecedented collapse in oil demand, briefly pushing prices to historic lows as storage filled and markets seized up.

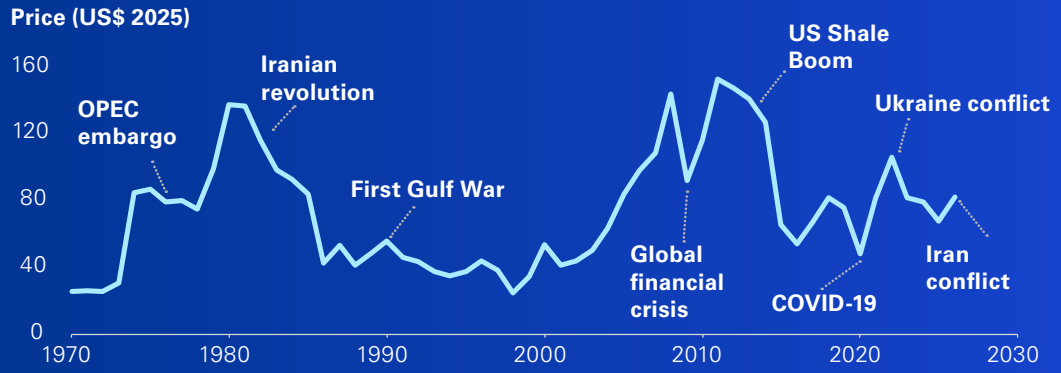
Russia invades Ukraine (2022)

Russia's invasion of Ukraine raised fears of major supply disruptions, driving a rapid spike in oil prices and heightened volatility amid sanctions and trade re-routing.

Iran conflict (2026)

Escalating military tensions, disruption to shipping in the Strait of Hormuz, and damage to several energy facilities triggered a sharp fall in available supply and a significant price spike.

Crude oil price, adjusted for inflation (US$ 2025)



Note:

- 1970–1983 Arabian Light posted at Ras Tanura.
- 1984–2025 Brent dated.
- 2026 annual estimate based on year-to-date average dated Brent and Bloomberg Fair Value Futures (as of June 2026). Converted to 2025 US$ using the Consumer Price Index for the US.

Source:
S&P Global Inc, ©2026
Bloomberg Fair Value: European Crude Brent Futures, Bloomberg L.P., 2026
Crude Oil Dated Brent FOB NWE, Bloomberg L.P., 2026

Historical precedents:

Previous crises have highlighted the importance of both demand- and supply-side measures to improving energy resilience. Short-term emergency measures to reduce immediate demand and protect consumers, coupled with durable and structural efficiency measures, have formed a key part in reducing countries' energy intensity and vulnerability to supply risks. Supply-side measures to diversify energy sources, suppliers and infrastructure have then provided longer-term solutions to improving resilience.

Approaches to implementing these measures have differed according to the resources and national priorities of different countries. The oil crises of the 1970s prompted distinct national responses. France expanded nuclear capacity to secure domestic supply, while Japan prioritized efficiency and diversification. The United States undertook a program of efficiency and demand-side measures, including price controls, rationing, speed limits, and fuel efficiency standards, alongside introducing a strategic oil reserve and unlocking domestic sources of energy. Each example on the next page demonstrates different pathways to achieve resilience.

Today's shocks are occurring in a different global context and energy system. Technology advances such as electric vehicles and the electrification of heat allow countries to electrify further and boost energy efficiency. Coupled with renewables and other domestic sources of power, these can significantly reduce reliance on international energy flows. Today's shocks are also unfolding in a more fragmented, geopolitically charged world. National responses will diverge according to local context and priorities, where energy security is increasingly a sovereign calculation, shaped by geography, industrial strategy and political priorities.

Five case studies of market responses to energy shocks

US energy market transformation

- **Context:** The US shale boom of the 2000s and 2010s was shaped in part by the US response to the supply shocks of the 1970s, and was supported by the sustained high energy prices of the 2000s energy crisis, advances in drilling technologies, and the push for energy resilience.
- **Response:** In its response to the 1970s crises, the federal government focused support on demand and supply-side measures alongside R&D for alternative energy sources, including solar, nuclear, and unconventional domestic gas and oil production. This approach ultimately enabled the technological advances and drilling techniques that unlocked access to the oil- and gas-rich Shale formations in the US. Coupled with high energy prices of the 2000s, the US was able to rapidly scale production, with its output more than doubling between 2010 and 2020. After the vulnerabilities of the 1970s crises, the US has become the world's largest oil and gas producer and is increasingly insulated from international supply shocks.

Europe's gas reconfiguration

- **Context:** Europe entered 2022 with high dependence on Russian pipeline gas, leaving its energy system exposed to geopolitical disruption and supply risk.
- **Response:** Following Russia's invasion of Ukraine, Europe rapidly reconfigured its gas system, fast-tracking LNG import terminals, mandating higher gas storage levels and intervening directly in energy markets to secure industrial continuity and protect consumers. Pipeline imports from non-European countries fell from 232.7 bcm in 2021 to 96.4 bcm in 2025 (58.6 percent), while LNG imports rose by 61.9 percent over the same period, with the United States and Norway emerging as key alternative suppliers.[1]

China's hedging strategy including coal

- **Context:** In late 2021, China experienced widespread power shortages as demand rebounded sharply post-Covid. At the same time, rising import dependence had made China the world's largest LNG importer, increasing exposure to global gas markets.
- **Response:** Despite higher gas imports, gas remained marginal in China's power mix, allowing policymakers to respond to the shock by curbing LNG exposure and falling back on coal. The government rapidly increased domestic coal production, expanded coal stockpiles, and formally positioned coal as a "supporting and regulating" resource to stabilise the system and backstop renewables.

France's nuclear transition

- **Context:** France was highly exposed to imported oil in the early 1970s, with limited domestic energy resources and a power system vulnerable to supply disruption and price volatility.
- **Response:** In response to the 1973 oil shock, France pursued a rapid, state-led expansion of nuclear power, scaling domestic generation over three decades. Nuclear output increased more than thirtyfold, while oil consumption declined even as overall energy demand continued to grow.

Japan's fuel diversification

- **Context:** Japan entered the 1970s almost entirely dependent on imported oil, with around 80 percent of supplies sourced from the Middle East.
- **Response:** Following the oil crises, Japan pursued an aggressive strategy centered on energy efficiency and fuel diversification. Strategic oil reserves were established, targeting ninety days of national consumption, alongside policies to promote alternative energy sources such as natural gas, coal and nuclear power. In parallel, Japan reshaped its industrial base, shifting away from energy-intensive heavy industry towards higher-value sectors such as electronics, precision machinery and advanced manufacturing.

[1] Statistical Review of World Energy, Energy Institute, 2021–2026

Theme 02

Global reaction: A rebalancing of the trilemma

The current energy shock is revealing a clear divergence in how countries are building resilience. While the immediate objectives are broadly consistent in securing supply, containing price impacts and protecting strategic sectors, the pathways being taken differ markedly, depending on exposure to global markets, existing energy systems and institutional capacity. These differences reflect varying levels of exposure to global markets, domestic resource endowments and political priorities.

The divergence is already visible across parts of Southeast Asia and other emerging markets. Elevated LNG prices have contributed to reduced imports, increased resilience on alternative fuels and, in some cases, emergency demand-management measures including fuel conservation mandates and reduced operating hours for businesses. The result is an increasingly fragmented global response.

Key insights:

The current shock has forced a re-prioritization of the energy trilemma for many governments as they look to balance energy security, affordability and sustainability. The result is an increasingly fragmented energy landscape, with countries pursuing more distinct and locally driven strategies.

Three broad camps are emerging:

Accelerators:

Countries like the European Union members and the United Kingdom are using the shock to push harder and faster on clean transition, combining short-term consumer relief with long-term structural investment in renewables, grids and electrification.

Economic growth first:

Countries like the US and Canada are increasingly prioritizing meeting the surging demands. In the US, this approach is reinforced by its position as the world's largest LNG exporter, strengthening both energy security and global supply as demand accelerates.

Resilience-focused pragmatism:

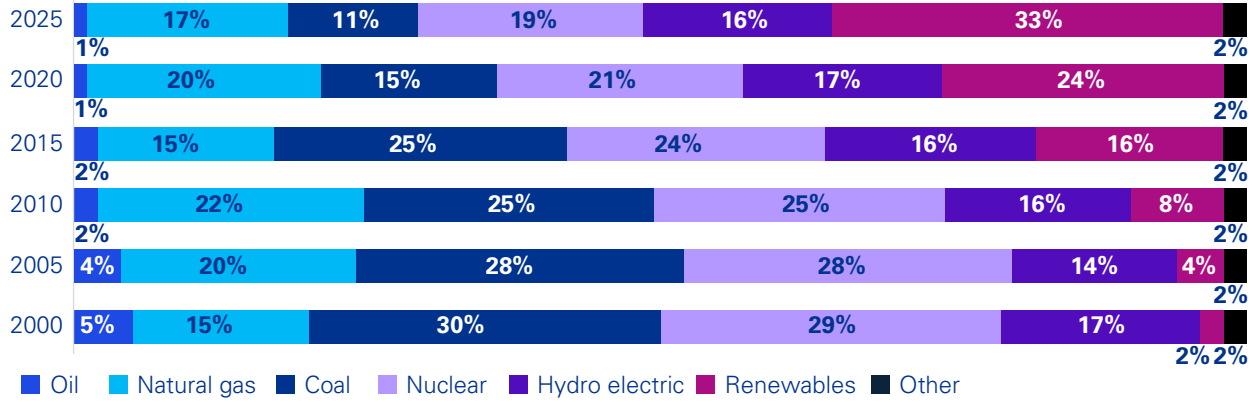
China and Brazil provide examples of countries navigating a diversified approach, expanding renewables where they can while reducing dependency on imported fossil fuels through increased domestic production and stockpiling of reserves.

Case study:

Europe's energy story is one of ambition and rapid adaptation

As Europe pushed toward renewables over the past decade, it leaned on gas as a cheap, flexible bridging fuel and lower-carbon alternative to coal. Gas consumption increased until 2021 and then slightly decreased. Coal, already in long-term structural decline, dropped below nuclear as an energy source for the first time. Renewables now supply close to 33 percent of European electricity.

Electricity generation in Europe



Source: Statistical Review of World Energy, Energy Institute, 2000–2026

However, gas has moved beyond a just bridging fuel to become a more permanent part of the energy system. When Russia invaded Ukraine, nearly a third of Europe's gas supply disappeared almost overnight. In response, Europe fast-tracked LNG infrastructure, diversified to US, Norwegian, and Middle East supply, and doubled down on renewables with renewed urgency.

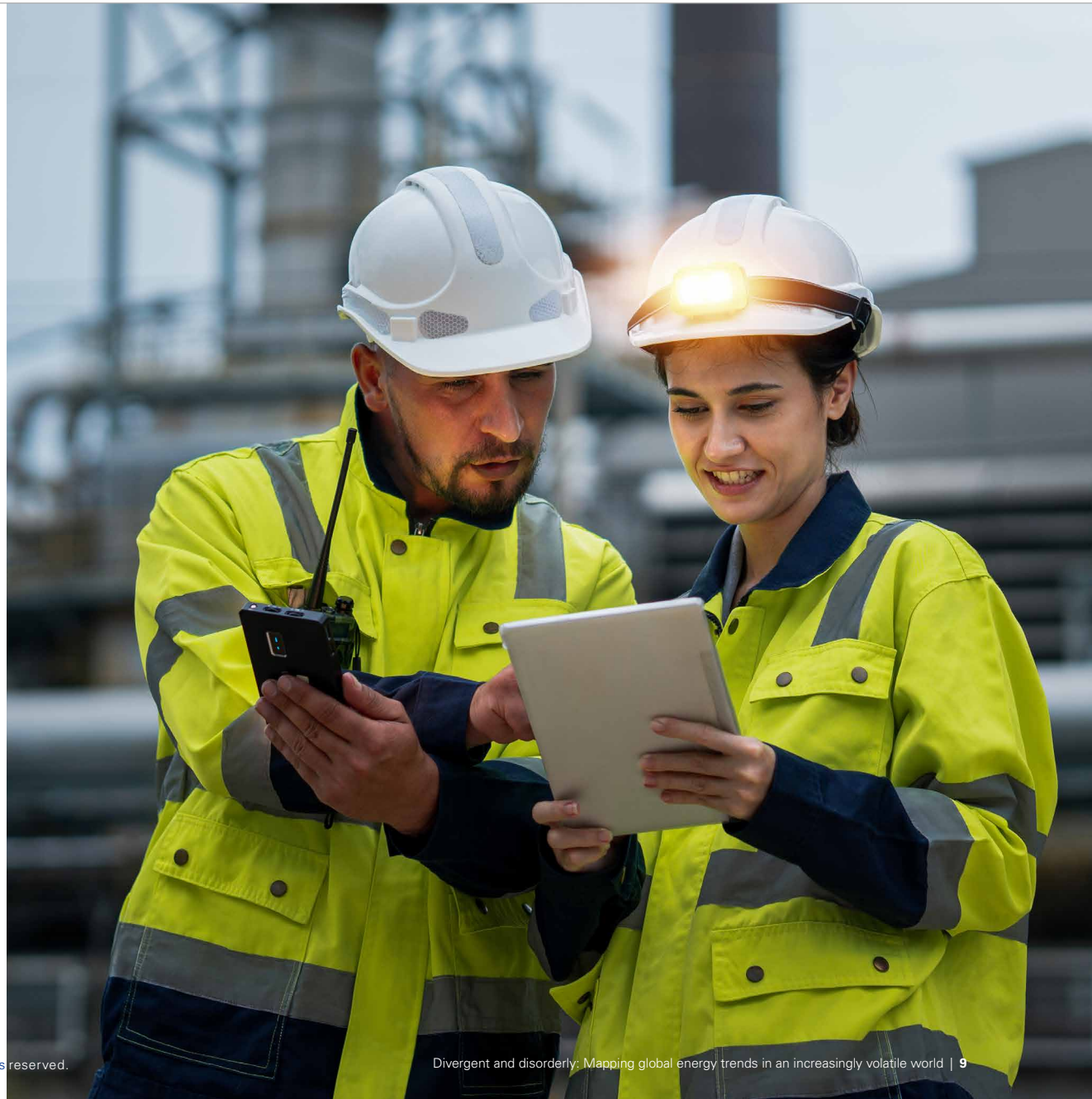
Europe remains dependent on gas supply chains. Russian pipeline gas has been replaced by LNG, predominantly from the US, creating a new geopolitical exposure at a time when the transatlantic relationship itself is under strain.

Europe's energy system continues to evolve, with a view to reducing its exposure with a renewed focus on further renewables and nuclear deployment, electrification, and efficiency measures. However, affordability and grid constraints remain key barriers, shaping both the pace and scale of the transition.

Theme 03

Gas markets: Shifting from global optimization to security-driven

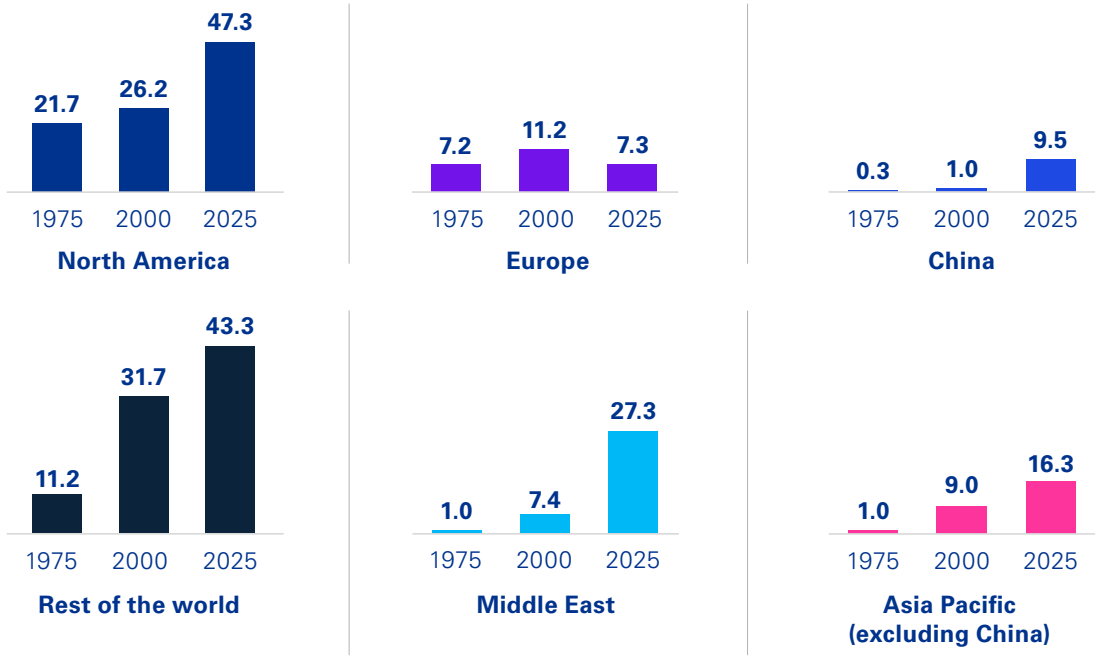
Global gas consumption again reached record levels in 2025 at 150.7 exajoules, seeing growth across nearly all regions. Asia remains the center of global gas and LNG demand, while Europe has reduced its reliance on pipeline gas in favor of LNG imports, with an overall increase in its consumption returning to 2022 levels. At the same time, the United States is strengthening its position as a leading LNG exporter with over 25 percent of globally traded volumes, supported by a significant expansion in liquefaction capacity alongside rising domestic demand. This has been accompanied by a marked shift in trade flows, with US LNG exports to China falling to near zero amid trade tensions, while volumes to Europe increased significantly.



In parallel, the Middle East has also increased production capacity in 2025 and strengthened its role in global LNG supply, with Qatar alone accounting for approximately 30 percent of China's total LNG imports. However, the recent conflict in the region is likely to constrain supply growth over the medium term and disrupt established trade flows over the duration of the crisis.

Gas is increasingly emerging as a stand-alone growth sector and a core pillar of the global energy system. While near term supply disruptions are expected, abundant resources and technological progress continue to support gas competitiveness in many regions.

Natural gas production by regions
(Exajoules)



Source: Statistical Review of World Energy, Energy Institute, 1975–2026

Key insights:

Gas has undergone a quiet revolution. Since the start of the century, it has accelerated from a regional, pipeline-dependent fuel into a globally traded commodity that is flexible, liquid and increasingly central to energy security strategies worldwide.

The globalization of LNG has expanded optionality for buyers but has also introduced a new form of vulnerability. When markets tighten, the pain is not shared equally. Wealthy, well-connected economies can absorb higher prices. Price-sensitive markets cannot – and when LNG becomes unaffordable, coal is their default. The same global market that promises energy security for some is actively driving emissions divergence for others.LNG continues to play a central role as a flexible mechanism for balancing global energy supply and demand.

Meanwhile, the center of gravity in global gas supply has shifted decisively. The US has emerged as the world's largest LNG exporter, creating new dependencies. OPEC-style supply management would be far harder when the world's largest producer can rapidly scale output in response to price signals. Gas is becoming more flexible, more globally traded, and more political.

Recent geopolitical tensions have reinforced this shift, with countries placing greater emphasis on securing a mix of domestic supply and diversified imports. At the same time, tighter gas markets in some regions are influencing fuel choices. In parts of Asia, competition for LNG cargoes and constraints on domestic supply are contributing to increased reliance on fuel alternatives, including coal, particularly in more price-sensitive markets. As a result, while gas markets are becoming more interconnected globally, regional differences in affordability and access are reinforcing divergence in energy pathways and emissions outcomes.

Theme 04

The center of gravity of global oil supply is shifting to the Americas

Over the course of the last century, the diversification of oil supply has been a defining factor for the industry. The US shale revolution, alongside the emergence of Brazil as a major producer has diluted OPEC's pricing power and delivered resilience against single-point disruptions.

At the time of the first OPEC oil shock, Middle Eastern producers accounted for more than one third of global oil supply at 37.4 percent of total production in 1974. Today, the Middle East's share has decreased to 30.9 percent of global oil supply as production growth from the United States and others has diversified the supply base. Combined oil production from North, Central, and South America is now 20.8 percent higher than the Middle East, driven by significant sustained growth from US, surging production from Brazil, and the ramping up of new production capacity in Guyana. The region is set to be a key driver of non-OPEC+ supply growth. The Iran conflict, alongside the UAE's withdrawal from OPEC, is increasing the strategic importance of the region and its ability to influence global pricing and trade flows.

Note: *All percentages are calculated using oil production volumes measured in thousand barrels per day.*

Oil by region (Production + /Consumption -)
(Thousand barrels daily)

Source: Statistical Review of World Energy, Energy Institute, 2000–2026

Key insights:

China's influence on global oil pricing and trade also remains significant. China remained the second largest consumer of oil in 2025 behind the US, and the largest single importer of crude and oil products. Analysis from EIA estimate that China added significant volumes to its crude inventory in 2025, reaching 1.4 billion barrels by the end of the year.[2] By drawing down on these stockpiles during the recent crisis instead of buying crude, China has had a significant dampening effect on recent prices. However, once China returns to the oil market, there will be some upward pressure on prices.

Acute effects of the recent crisis have also been felt downstream. The economic impact of disruption is increasingly concentrated in refined product markets, where tighter regional balances, limited refining flexibility and high import dependence is amplifying price and supply risk.

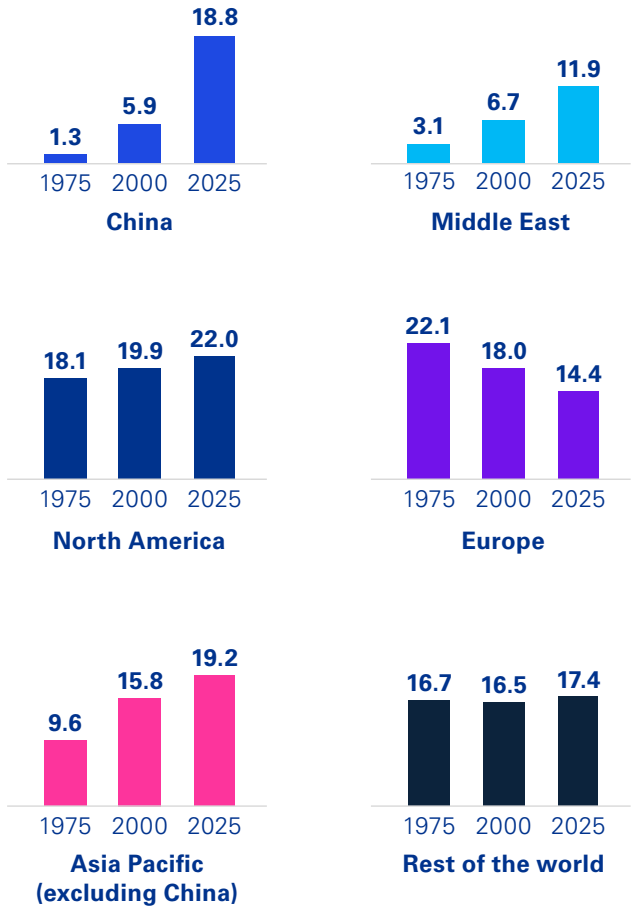
Refining capacity has steadily consolidated in the US and Asia over the past 50 years, both benefiting from scale and export optionality, while Europe has seen a continued structural decline in its domestic refining base.

For import-dependent economies, particularly in Europe, the nature of energy security risk is shifting. Exposure is moving beyond crude availability toward refined-product resilience, where limited domestic capacity and reliance on imports increase vulnerability to supply shocks and price volatility. In the UK, limited domestic refining capacity means higher oil prices feed rapidly into transport costs and inflation, even where crude supply can be diversified. In the Netherlands, exposure is amplified by its role as an industrial and trading hub, with tightened refined-product markets transmitting directly into industrial costs and competitiveness. The consequences are not confined to industry – refined product tightness is increasingly feeding into food prices through higher transport, power and processing costs.

The challenge is not solely one of refining capacity, but of product flexibility. Much of Europe's refining fleet was constructed decades ago and is configured around hydrocracking units, making it structurally oriented towards middle distillates, particularly diesel. As demand patterns evolve, these structural differences in configuration are increasingly influencing regional product balances and trade flows. While both European and international refineries produce jet fuel, newer and more complex refining systems in the Middle East are particularly well positioned to supply this segment at scale. This increases Europe's exposure to external supply shocks for key transport fuels, including aviation, and requires a shift in how it sources and diversifies its supply.

[2] China, the United States, and Japan hold most strategic oil inventories in 2025, EIA, 2026

Refining capacity
(Million barrels daily)



Source: Statistical Review of World Energy, Energy Institute, 1975–2026

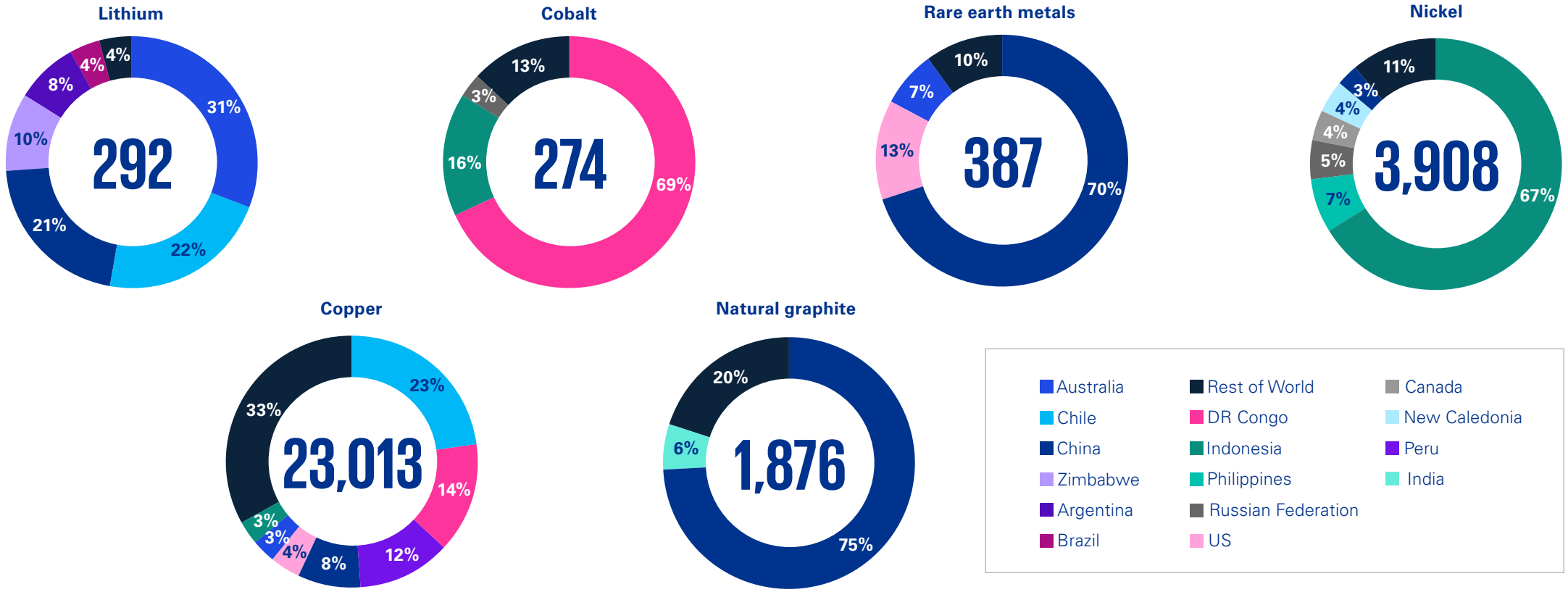
Theme 05

Critical minerals emerge as a strategic chokepoint

The secure supply of critical minerals such as lithium, cobalt, nickel, graphite, copper, rare earths is becoming strategic priority for governments worldwide due to its importance for driving the energy transition, advanced manufacturing, and defence. The supply chain is highly concentrated in a handful of mineral-producing and processing countries, becoming an increasingly strategic chokepoint as geopolitical tensions rise. Diversification of this supply chain through strategic partnerships, domestic production, and regional collaboration will be essential to ensuring a secure future supply.

Minerals production in 2025

(% of production by mineral in main countries, thousand tonnes)



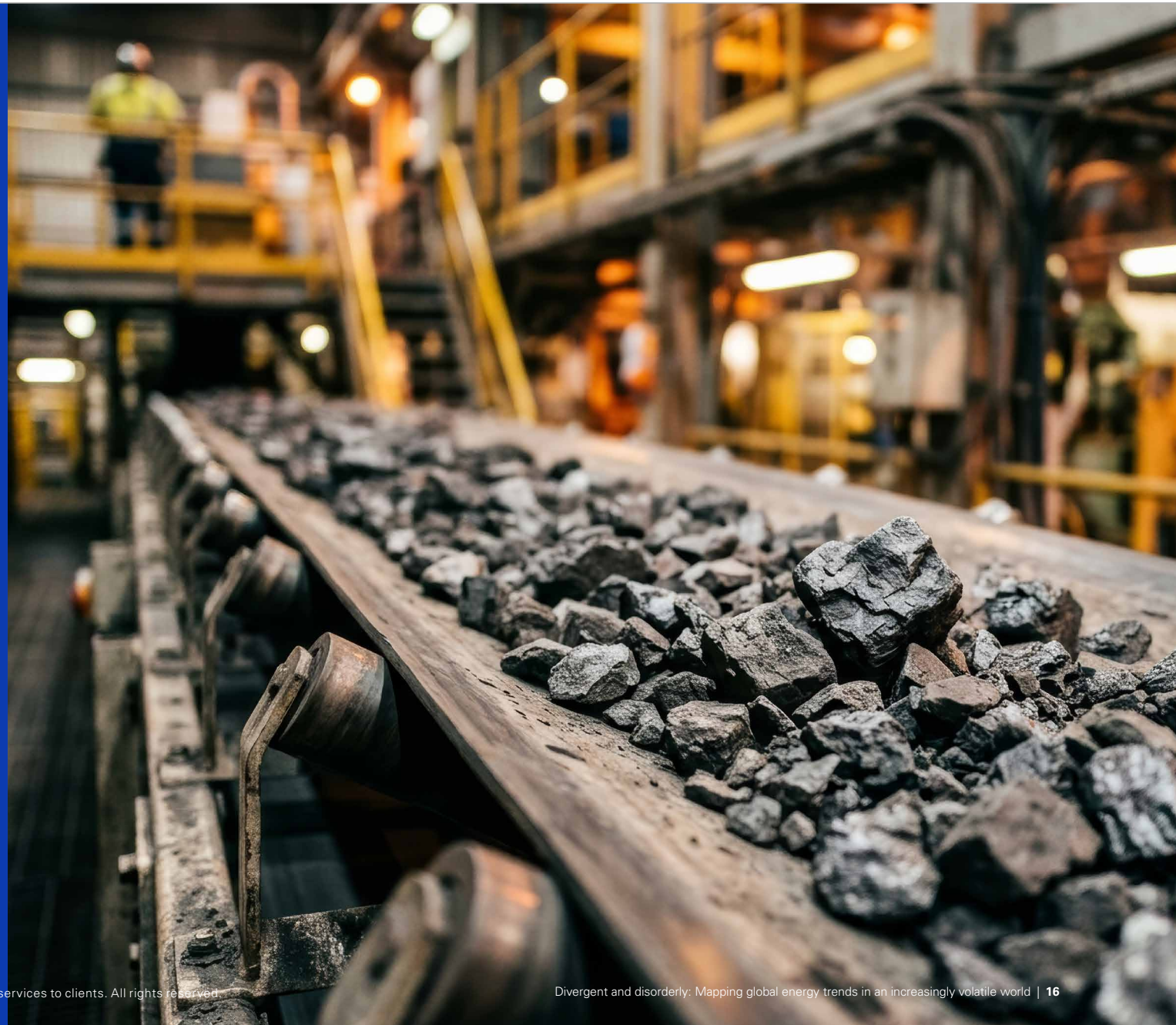
Source: Statistical Review of World Energy, Energy Institute, 2026

Key insights:

Raw material production, while concentrated, is spread across multiple continents: Chile, Australia, Indonesia, the DRC and others all hold significant reserves. Asia Pacific accounts for a significant proportion of critical mineral production with Indonesia producing for over 66.5 percent of nickel output, and China 69.7 percent of rare-earth elements and 74.6 percent of natural graphite in 2025. Lithium production remains largely dominated by Chile, Australia, and China. Cobalt also has a highly concentrated supply chain, with the DRC accounting for 68.5 percent of material output in 2025.

Mineral refining and processing, however, remains heavily concentrated in China. China acts as the primary refiner for around 70 percent of the most strategically important critical minerals with control of approximately 44 percent of copper refining, 78 percent of cobalt refining, and 91 percent of rare-earth element processing.[3] Advanced economies are responding by seeking to diversify and de-risk supply chains through domestic investment and partnerships with mineral-rich countries.

However, these efforts face structural limits. China's scale, integrated supply chains and established infrastructure mean its position will be difficult to displace in the near to medium term. As a result, the critical minerals supply chain is emerging as a strategic chokepoint, where resilience is increasingly determined by access to processing capability rather than raw material availability alone.



[3] Global Critical Minerals Outlook 2025, IEA, 2025

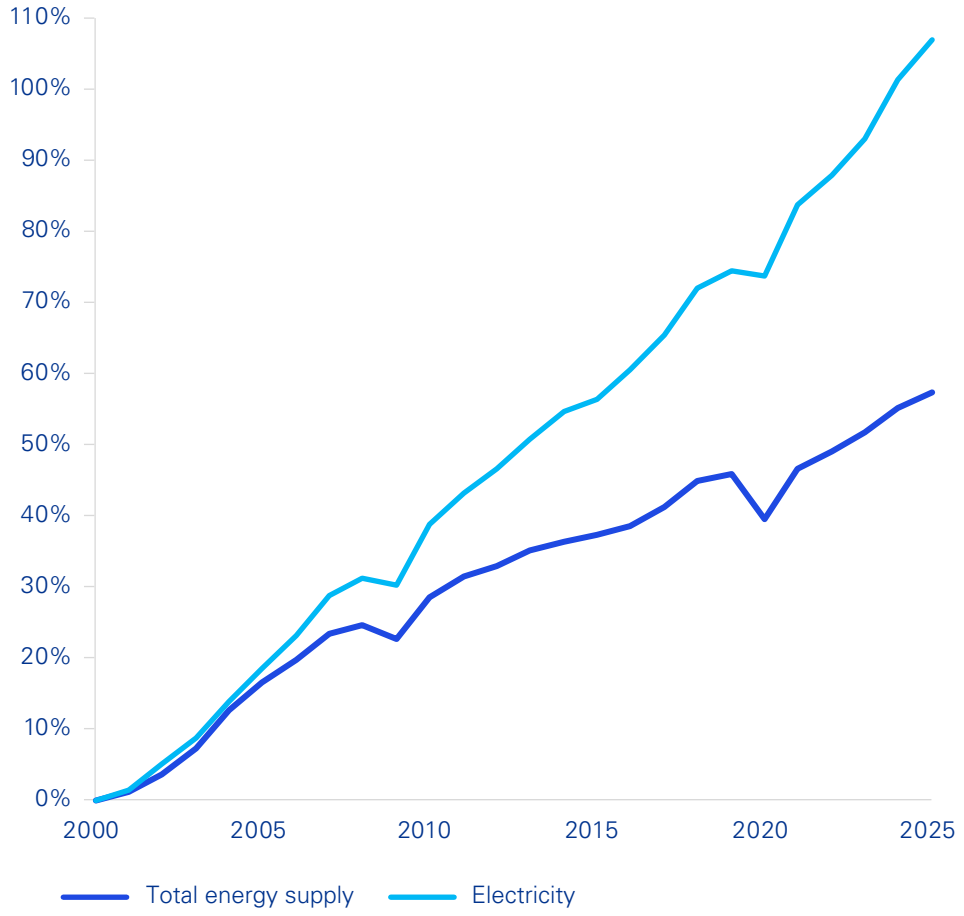
Theme 06

Electricity growth supercharges ahead

Total global energy demand continued to expand in 2025, reaching record levels of 600 exajoules with an increase of 1.7 percent from 2024. Electricity remains the key driver of this demand, growing by 3.0 percent in 2025 — almost twice the rate of total energy supply.

Developing economies continue to account for the majority of electricity demand, driven by industrial growth, transport electrification, and the growing need and availability of air conditioning. New sources of demand are also emerging, including AI, data centers and advanced manufacturing, prompting a rise in electricity demand in some advanced economies.

Electricity generation vs total energy supply
(% change relative to 2000)



Source: Statistical Review of World Energy, Energy Institute, 2000–2026

Key insights:

Electricity demand is rising across both emerging and most advanced economies, with China, India, and the wider Asia Pacific region continue to anchor global growth as electrification accelerates across industry, transport and urban systems. China remains the stand-alone largest consumer of electricity, with its generation growth of 488.4 TWh in 2025 adding more power than the rest of the world combined, and currently accounts for a third of global energy generation in 2025. China's focus on transport and industrial electrification continues to underpin China's energy security and industrial competitiveness, reinforcing its position as an emerging "electro-state".

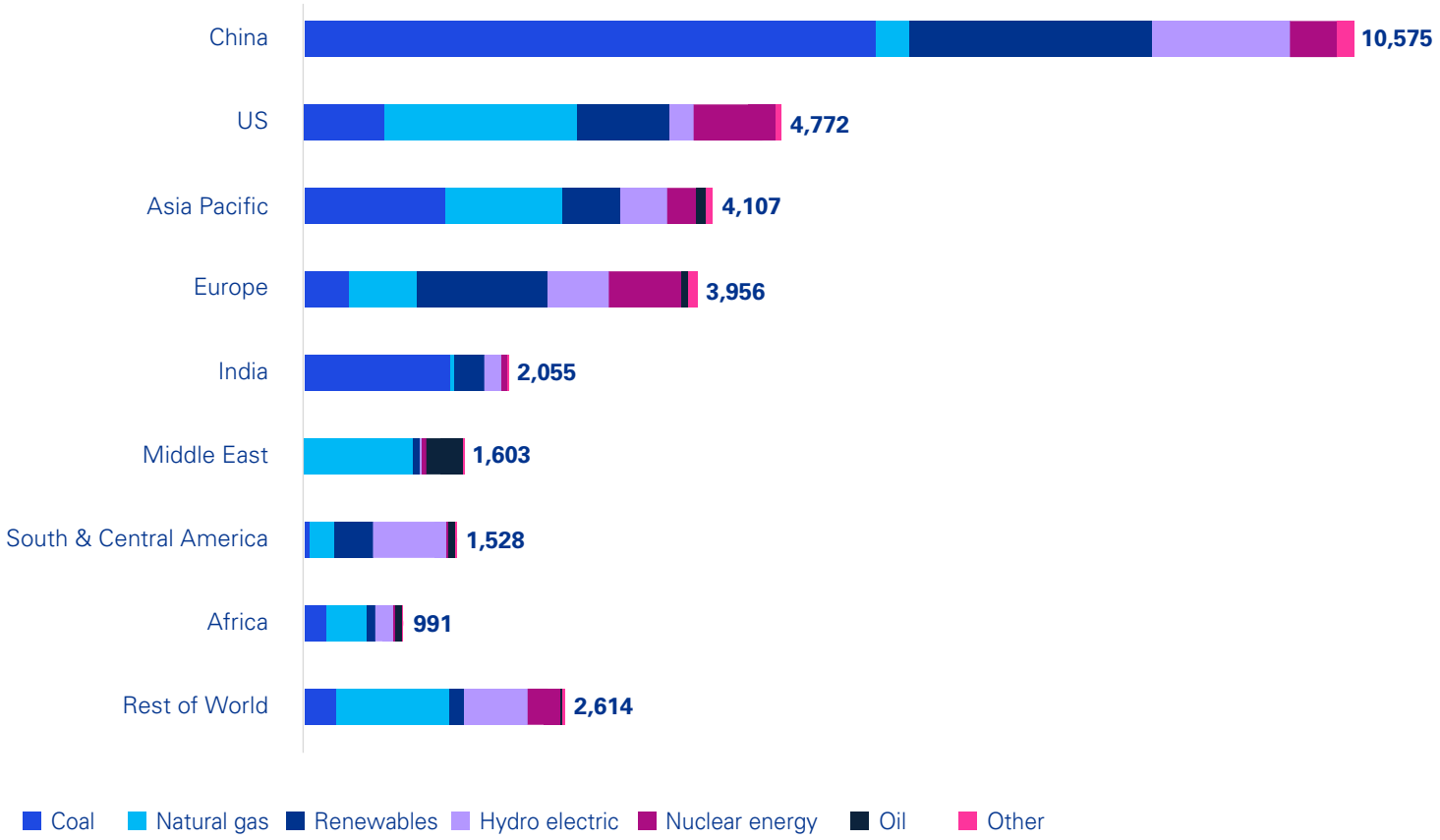
In Europe and North America, electricity demand has been broadly flat for over a decade, as efficiency gains and deindustrialisation offset new sources of consumption. That is now changing. AI, data centers and advanced manufacturing are emerging as significant new demand drivers which are expected to create significant electricity demand in the US especially.

Space cooling is expected to grow as a significant demand driver, especially in developing economies such as India and Southeast Asia as global temperatures rise extreme weather events become more frequent. Africa is also expected to become a center of rising demand as the continent seeks to expand access to electricity to the 563 million people in Sub-Saharan Africa currently without access, and to drive industrialization and economic growth.[4]

Renewables are rapidly expanding to meet this growing global demand. Renewable generation grew by over 9 percent in 2025 (including hydro), led by China's continuing large-scale deployment which accounted for 35.6 percent of 2025's total renewable supply and over 58 percent of new generation — more than the rest of the world combined. This is increasingly reshaping power systems in key markets, with low-carbon sources (nuclear, hydroelectricity and renewables) now accounting for over 40 percent of China's total electricity generation. Renewable generation also grew strongly in the US, seeing an 7.9 percent increase in total renewable generation in 2025. However, fossil fuel generation remains the dominant source of power globally, with coal and gas meeting 54.5 percent of the global electricity demand. While this is driven largely by India and China and the emerging economies in Southeast Asia, electricity generation from coal fell by 1.2 percent across the region in 2025 and reduced by 0.3 percent globally. Further expansion of renewables and generation sources to meet demand are facing grid constraints. In some regions, particularly Europe, transmission bottlenecks, permitting delays and limited network capacity are slowing both the rollout of new supply and the connection of new demand.

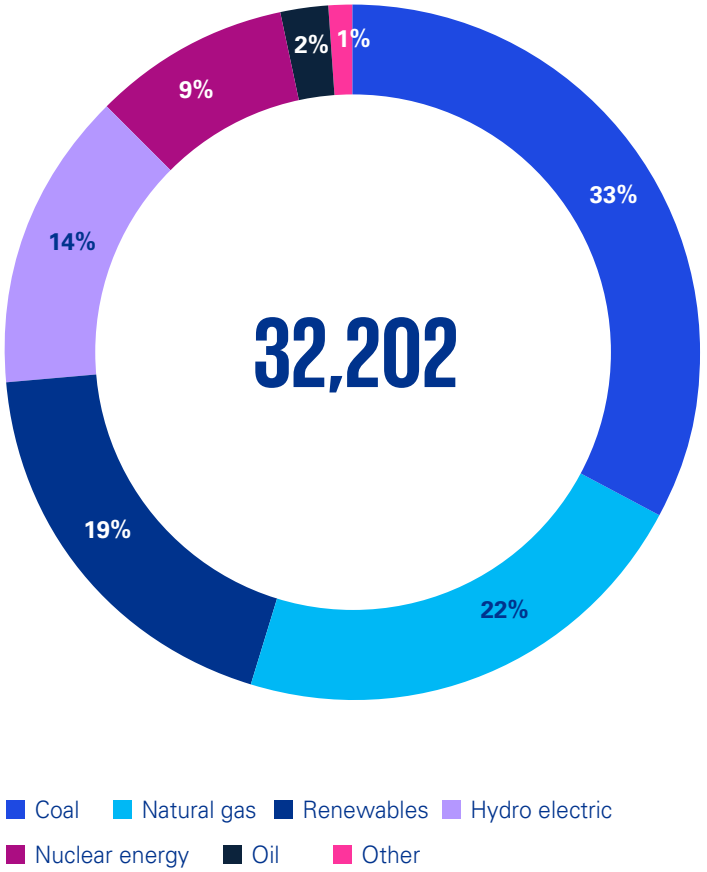
[4] Tracking SDG 7: The Energy Progress Report 2025, World Bank Group, June 2025

2025 Global electricity generation
(By fuel type and region, TWh)



Source: Statistical Review of World Energy, Energy Institute, 2026

2025 Global electricity generation
(% by fuel type)



Theme 07

The pace of a disorderly energy transition: Winners, slow movers, the solar and storage surge

The pace of energy transition has rapidly moved from the broad experimentation of different technologies to reveal clearer winners and losers. Cost competitiveness, scalability, speed of deployment and system integration, rather than ambition alone, are increasingly determining where capital flows and which technologies advance.

Solar has emerged the fastest growing source of energy in 2025 and a leading driver of the energy transition. Wind continues to develop rapidly, while grid-scale storage has experienced a surge in growth over the past five years. However, other key transition technologies such as hydrogen and carbon capture, utilization and storage (CCUS) continue to struggle to gain traction principally due to limited demand and concerns about costs. This trend will likely intensify as governments face the economic impact of the current energy crisis. Developing technologies that aren't yet fully commercialized and don't enhance system reliability, energy security and economic competitiveness may face an uncertain investment future.

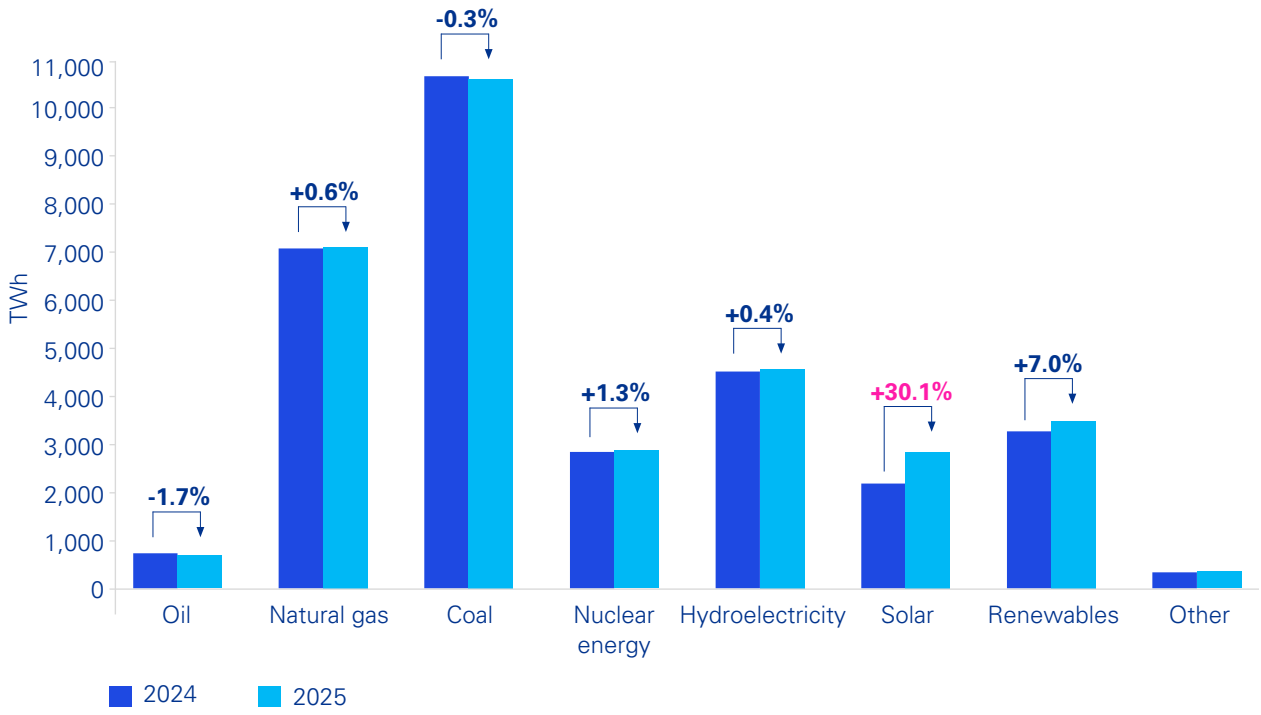
Key insights:

Solar saw record generation in 2025 with rapid growth across all regions. Global solar generation output increased by over 30 percent from 2024 and accounted for 75.3 percent of the total electricity demand growth. Behind-the-meter and off-grid solar capacity also saw large additions, growing by 27.0 percent. Falling costs, modular deployment and short build times have made it the fast-scaling and affordable source of power. Wind has followed a similar trajectory, albeit at a slower pace.

China continues to lead the way in solar and renewable deployments. China's solar and wind capacity additions in 2025 accounted for 61.6 percent and 75.2 percent of each respective new global capacity. Chinese manufacturers also account for the overwhelming majority of global solar panel production, extending across polysilicon, wafers, cells and modules. While the world is transitioning to solar, it is doing so by largely relying on Chinese supply chains.

Other regions also saw significant growth in solar generation and deployment. The Middle East saw a 46.0 percent increase in solar generation output, while countries in the Commonwealth of Independent States (CIS) increased by 41.9 percent. Europe also saw significant growth as the second largest region for capacity additions in 2025 and increased its solar output by 24.0 percent, but fell behind Middle East and China in relative growth as the region tackles grid connection constraints and a slowing residential market. The US increased solar generation by 28.4 percent in 2025, but only saw wind growth of 3.0 percent.

Global electricity generation
(% by fuel source, by TWh)



Source: Statistical Review of World Energy, Energy Institute, 2024–2026

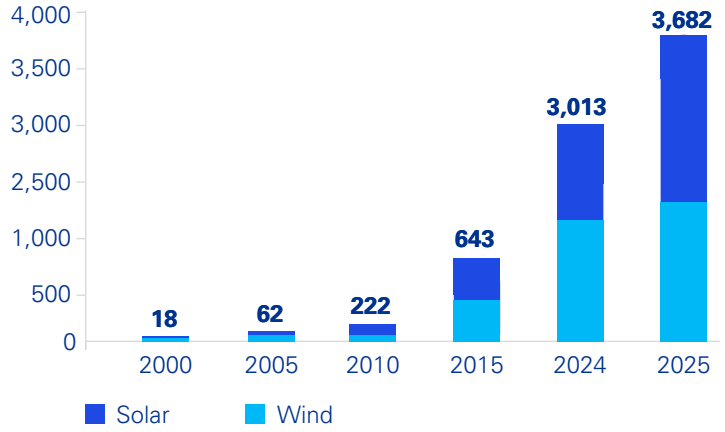
Tied to this increasing renewable deployment is the surge in battery storage. Battery storage capacity has surged since 2015 as costs have decreased and the need for system flexibility has grown. Battery storage saw record deployment in 2025, increasing by 65.8 percent through growth from both front-of and behind-the-meter capacity. Storage is now becoming critical system infrastructure, enabling renewable integration, managing peak demand and providing the system flexibility that grids increasingly need.

Low carbon hydrogen, however, is a technology that has not yet been able to successfully deploy on a scale. Clean hydrogen remains expensive, infrastructure-constrained and policy-dependent. The sector continues to struggle with low levels of demand, with only 6 percent of planned capacity having an identified offtaker.[5] This has resulted in low levels of deployment, with currently just over 1 million metric tons per annum (Mtpa) of operational clean hydrogen production available — just over 4 percent of combined national targets for 2030.[6] CCUS is facing similar challenges and lags behind expectations, with deployment slowed by high capital costs, complex value chains and uncertain revenue models that continue to depend on policy support.

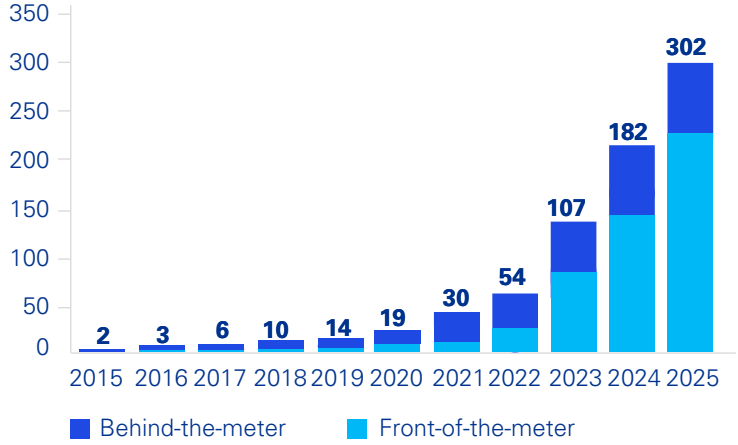
Overall, the deployment of different low carbon technologies is becoming increasingly uneven. Capital is concentrating around proven, low-cost technologies that enhance system reliability, energy security and economic competitiveness, while slower-moving solutions face structural, commercial and policy bottlenecks.

[5] Hydrogen Market Outlook 1H 2026: A two-track world emerges, Bloomberg NEF, May 2026
[6] Ibid

Global wind and solar
(Installed capacity in GW)

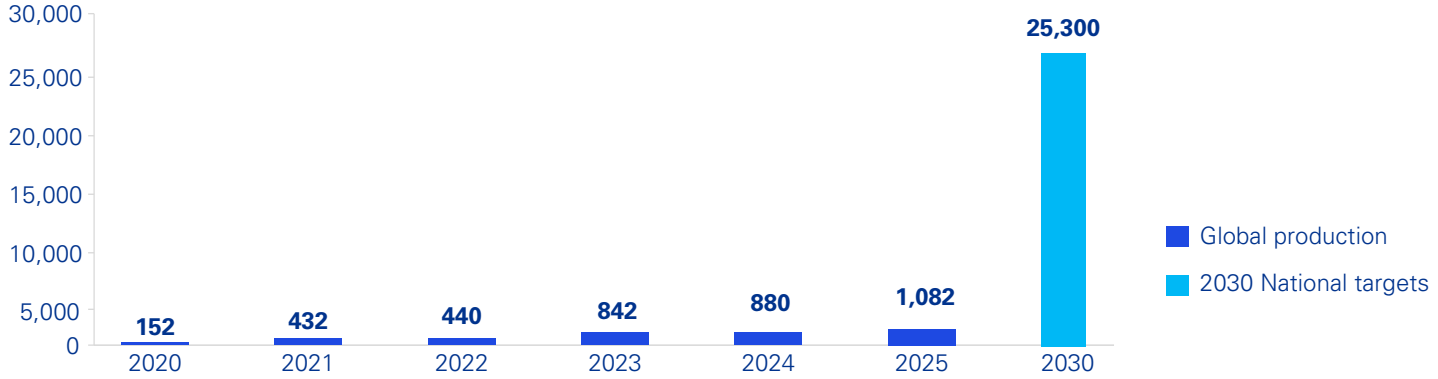


Grid-scale BESS
(Installed capacity in GW)



Source: Statistical Review of World Energy, Energy Institute, 2015–2026

Global hydrogen production
(Thousand tonnes per year)



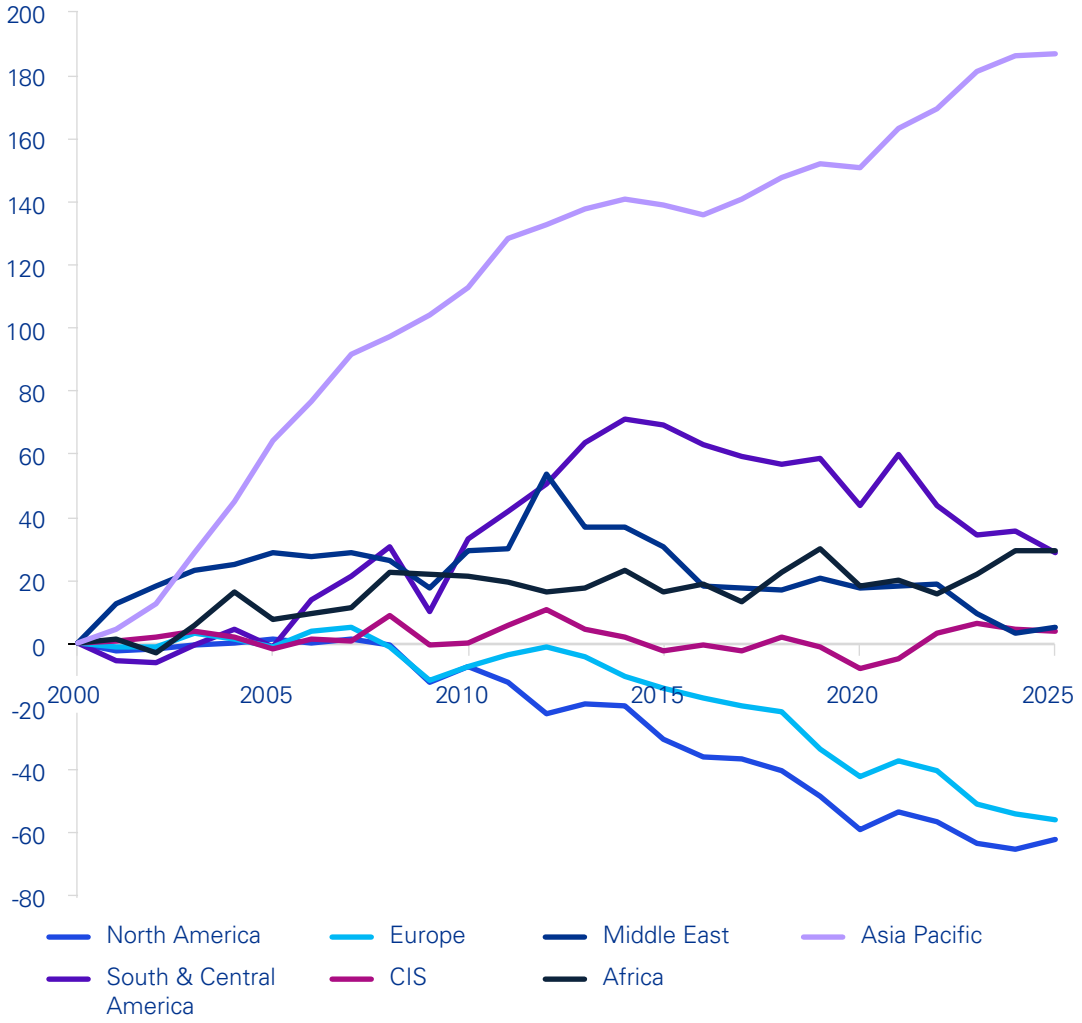
Source: S&P Global Inc, ©2026

Theme 08

Coal demand remains steady as energy security concerns increase

Global coal demand grew by 0.7 percent in 2025, continuing its growth trajectory and maintaining its global share of world energy around 28 percent. Demand patterns increasingly diverged across regions, with the US seeing a temporary reversal of its long-term decline, accounting for the largest share of demand growth in 2025. Asia Pacific saw a moderate growth of 0.5 percent in 2025 despite falling coal-fired generation, highlighting the impact of industrial consumption. Asia Pacific continues to account 83.2 percent of global demand, driven by industrial and power consumption in China and India as the dominant consumers. European demand continued to fall in 2025.

Coal consumption
(% change relative to 2000)



Source: Statistical Review of World Energy, Energy Institute, 2000–2026

Given its low cost and ready availability, coal continues to be a key source of energy security and reliability in many regions, especially in Asia Pacific, as energy security and affordability become key national and regional concerns. However, this role is increasingly differentiated across regions. Despite its continued importance, global coal-fired electricity generation declined between 2024 and 2025, with most regions experiencing reductions. Asia Pacific saw a modest decline of 1.2 percent, including decreases in both China and India, while the Middle East recorded a sharper contraction of 21.7 percent. In contrast, North America has seen a temporary divergence from this trend, with coal-fired generation increasing by 13.1 percent in the United States and almost 7 percent in Canada, driven by high gas prices, delayed power plant retirement, and increasing electricity demand.

Key insights:

Recent geopolitical events have further highlighted coal's role as source of energy security. During the 2026 Iran conflict, elevated liquefied natural gas (LNG) prices and concerns over fuel availability prompted some Asian economies to increase reliance on domestic coal generation and delay coal retirements. In parallel, the United States announced support measures aimed at extending the life of existing coal assets and maintaining dispatchable generation capacity, motivated in part by rising electricity demand and concerns over system reliability. However, this may prove a temporary reprieve, as coal continues to face structural challenges of competing with cheaper gas and renewable capacity, an aging coal fleet, and environmental and health concerns.

As long as concerns over energy security, affordability and system resilience remain elevated, governments are likely to favor keeping the full range of energy options available over accelerated phase-out timelines. In this, coal's future may therefore be defined less by a resurgence in demand than by its continued role as a strategic fallback.

Theme 09

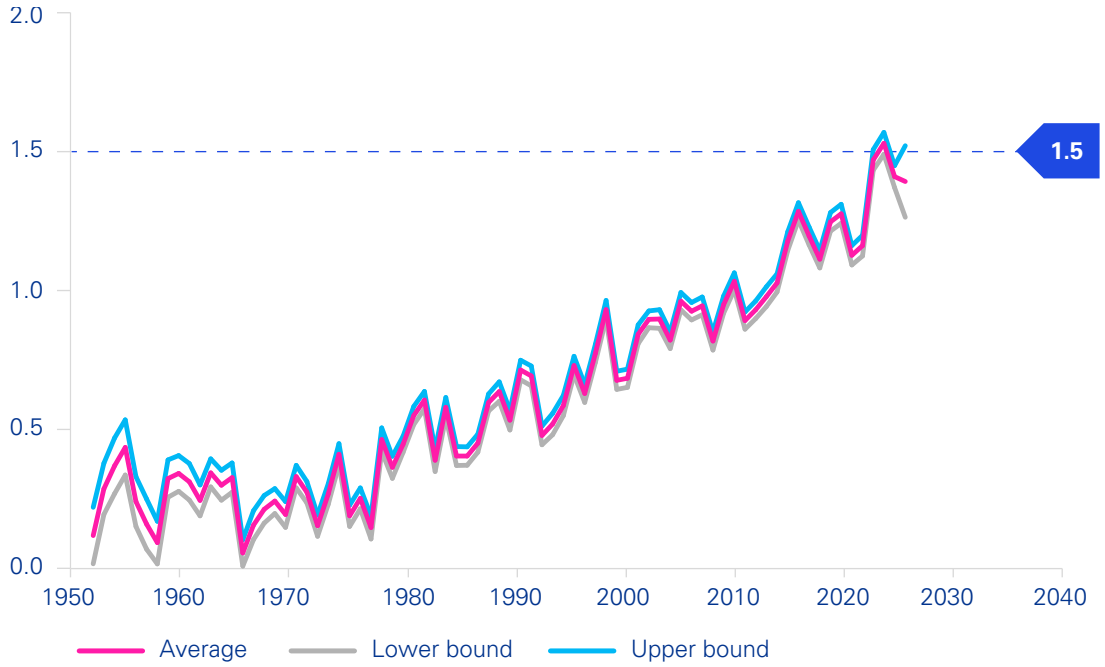
Global emissions continue to rise, with only limited progress on energy efficiency

Overall global emissions rose by 1.1 percent in 2025, continuing the rising trend of the post-COVID-19 period. Global temperature rises have now breached the 1.5 degree limit set out in the 2015 Paris Agreement.[7] While these breaches may be temporary, the long-term trends are clear — rising global emissions and rising temperatures. What remains unclear is how far we go beyond the 1.5°C threshold, for how long, and what that means for the businesses, economies and societies that will have to operate in that world.

[7] WMO confirms 2024 as warmest year on record at about 1.55°C above pre-industrial level, World Meteorological Organization, 2025

Global energy intensity improved by 2.0 percent in 2025 to 3.9 MJ/USD,[8] up from just 1.0 percent in 2024. However, current improvement rates remain off-track to meet the 4 percent annual target by 2030 agreed at COP28. Achieving this will require significant improvements in energy efficiency, with accelerated electrification and renewable deployment.

Global temperature change relative to the pre-industrial period (1950-2026)



Source: HadCRUT5, Met Office Hadley Centre, 2026
Note: *Data processing by Our World in Data.*

[8] Calculated based on purchasing power parity rates (PPP) (USD 2015, real), Oxford Economics, 2026

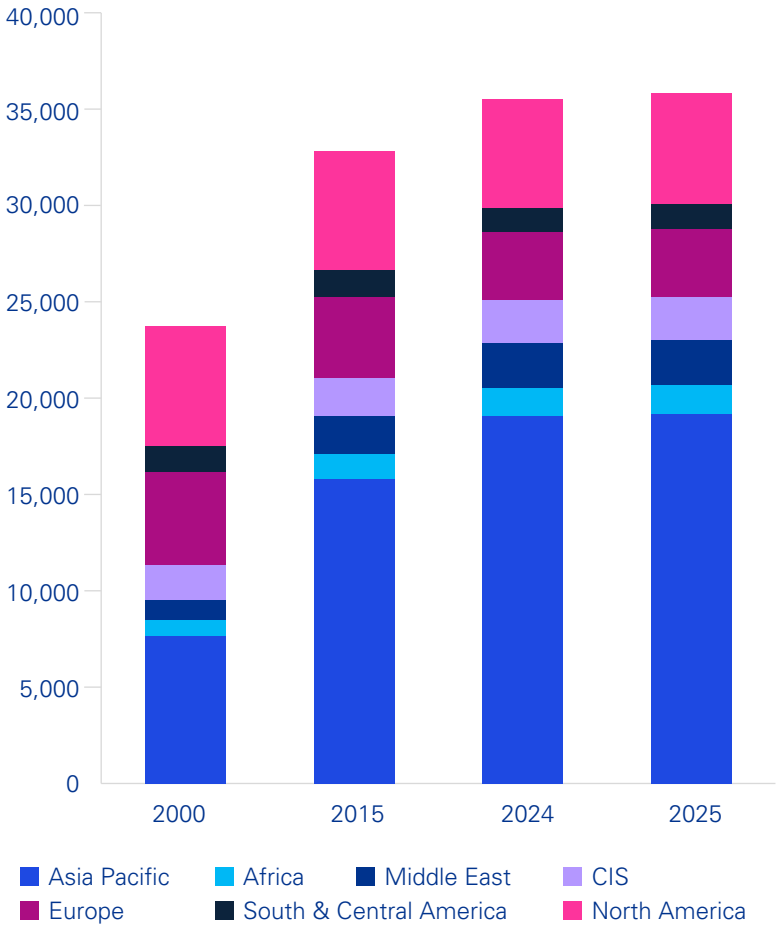
Key insights:

Emission trends are becoming increasingly regional-specific, reflecting growing differences in fuel mix, pace of electrification and the role of fossil fuels. The gap between the world's two largest economies illustrates the divergence most starkly. The US became the largest contributor to emissions growth in 2025, accounting for 44.3 percent of the annual growth largely due to an increase in energy, methane, and process emissions. This may indicate a new emerging trend as the US uses its energy abundance in oil, gas and coal production to manage energy demand growth. While China remains the largest single emitter, CO2 equivalent emissions growth fell to 0.3 percent in 2025, lower than European growth rates. This is reflected in China's flat coal demand and declining gasoline and diesel consumption, suggesting that structural changes in the energy system are beginning to have a measurable impact.

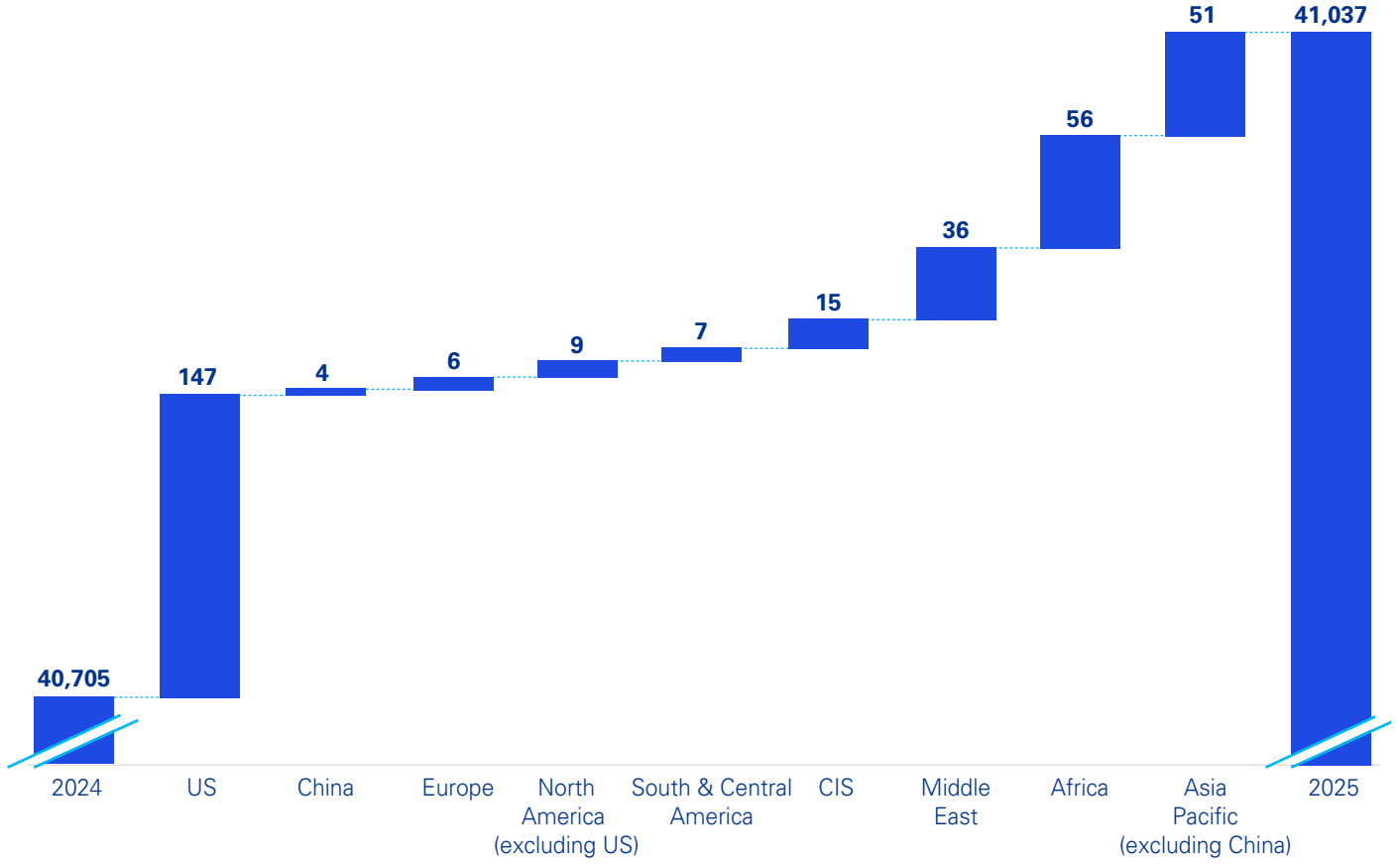
Asia Pacific continues to account for over half of global emissions, driven by rapid economic growth and continuing reliance on coal. Europe also saw a moderate increase in emissions, driven by increases from Türkiye, Spain, and Poland.

Geopolitical uncertainty and an increasing focus on energy security may have a long-term impact on global emissions growth. Economies in Asia are currently stockpiling and re-deploying heavily emitting coal-fired power plants in response to oil and gas shortages from the Strait of Hormuz. These and other energy importing countries may be reluctant to rapidly transition away from abundant coal supplies to mitigate further supply disruptions, and countries with domestic fossil fuel supply may refocus on local production. This could increase fossil fuel dependence in the long term, with the resulting impact on emissions.

Global emissions from energy
(Million tonnes of carbon dioxide equivalent, by region)



Global emissions change from energy in 2025 vs 2024
(Million tonnes of carbon dioxide equivalent)



Source: Statistical Review of World Energy, Energy Institute, 2000–2026

Conclusion: What this means for businesses

We are seeing divergent energy trends across different geographies, where global systems are no longer converging on a single transition pathway but fragmenting under the weight of geopolitics, security and demand pressures. What this means for your business:

Rebuild your energy strategy from the ground up and make it regional, not global:

The assumptions that underpinned energy strategies five years ago may no longer be applicable. The businesses that will navigate this decade successfully are those that treat energy strategy as a board-level priority, not an operational one. Energy costs, supply security, decarbonization trajectories and policy environments now diverge sharply by market. A single global approach to energy sourcing, procurement and investment is no longer viable. Every major market requires its own strategy.

Make energy resilience a financial priority, not just an operational one:

Diversified supply, flexible contracts and reduced dependence on single sources of crude, gas, refined products and critical minerals are no longer risk management, they are competitive advantages. The cost of resilience is now in many cases lower than the cost of disruption.

Map your supply chain beyond the first tier:

The vulnerabilities in critical minerals, refined products and solar components are not immediately apparent at the surface, they are concentrated deep in processing and refining, often in a small number of geographies. Businesses that understand their full exposure will be better placed to diversify before disruption forces them to.

Invest in the technologies with commercial momentum:

Solar and storage are scaling on cost curves that no longer require policy support in many geographies. Hydrogen and CCS remain heavily policy dependent. Capital allocated to technologies with genuine commercial momentum may deliver more reliable returns than capital chasing policy frameworks that may not survive the next election cycle.

Make your transition plan defensible and deliverable:

As the gap between climate commitments and emissions reality widens, scrutiny of companies climate transition plans will intensify from investors, regulators and customers. Ambition is no longer sufficient. What will differentiate companies is the credibility and deliverability of how they deliver enterprise resilience in the face of multiple risks.

How KPMG can help

KPMG supports organizations in navigating an increasingly complex and risk-exposed energy system by advising across the value chain — from resource development through to downstream processing, where value is increasingly concentrated. As geopolitical tensions drive higher insurance costs, constrained maritime flows and supply chain disruption, we help clients manage risk by applying advanced capabilities such as Dynamic Risk Assessment, providing a clearer view of interconnected exposures and enabling more informed decision-making.

KPMG also supports organizations to build resilience by designing and embedding enterprise-wide strategies, operating models and governance frameworks, leveraging leading propositions such as KPMG's global resilience solutions and data-driven tools to strengthen continuity and adaptability. We also help clients develop and execute robust transition plans by aligning strategy, operations and investment decisions to secure access to critical resources, respond to disruption and position for long-term value creation.

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