

Energy Demand Growth Will Limit More-Ambitious Climate Goals, S&P Global Energy Study Finds

Holding global temperature rise to 2 degrees Celsius by end of century remains possible – though increasingly challenged – while more ambitious targets increasingly out of reach, new country-specific analysis shows

NEW YORK, Sept. 17, 2026 /PRNewswire/ -- The global economy is on the cusp of a major shift where most of future global energy demand growth will come from emerging markets and developing economies (EMDEs). The new realities of meeting this demand alongside the need for energy security, resilience and affordability render more-ambitious climate goals infeasible, even with exponential growth of renewables and rapid electrification, according to a new S&P Global Energy study.

S&P Global Energy

The study, [Multidimensional Global Energy Pathways](#) finds energy demand from EMDEs could rise by over 60% by 2060, adding the equivalent of another China (155 EJ) to global primary energy demand. By contrast, demand from advanced economies and China is expected to be broadly flat over the longer term (despite the rise of AI and data centers) as final energy consumption rises only slowly with more electrification and improvements in energy efficiency, the study finds.

As a result, most advanced economies will focus on transforming existing energy systems while EMDEs will be driven to greatly expand their systems to meet increasing demand. A large share of new low-carbon supply will be deployed in addition to – rather than in place of – existing fossil fuel sources.

"The thinking and policies that have sought to shape the energy transition over the last decade have collided with the realities of economic development, growing energy demand, geopolitics and the pace of technological progress," said Daniel Yergin, Vice Chairman, S&P Global. "The fundamental fact is that the largest source of long-term energy demand growth will come from emerging markets and developing economies where energy needs are driven by economic development, industrialization, urbanization and rising incomes. We hope that this study will contribute to a deeper dialogue about the realities and challenges of the energy transition."

[Multidimensional Global Energy Pathways](#) provides a realistic, nationally differentiated approach to long-term energy and emissions projections, with a specific focus on the EMDEs. The analysis takes a bottom-up, country level view of demand that considers factors such as differences in levels of economic development, resource endowments, institutional capacity and development priorities, as well as finance, infrastructure, supply chains, land availability and the pace of technology adoption.

Paris climate targets are increasingly out of reach

The study finds that the most ambitious climate targets, such as limiting global temperature rise to 1.5°C, are not reachable under any plausible trajectory; and globally reaching net-zero emissions before the end of the century is unlikely. While some advanced economies may achieve or come close to carbon neutrality by 2060, most EMDEs will not achieve the goal until late century at the earliest, the study says.

Limiting global temperature rise to 2°C by the end of this century remains possible, but only under the study's most aggressive decarbonization pathway. In this *Emissions Reduction Pathway*, installed solar and wind generation capacity would rise eight-fold globally (eighteen-fold in EMDEs) and supply 73% of global electricity by 2060. Grid battery capacity increases 25-fold over the same period. Total greenhouse gas emissions decline 65% by 2060, assuming commensurate actions on non-energy emissions.

By comparison, the study's *Current Realities Pathway* – a more likely pathway in the current policy environment – shows total greenhouse gas emissions declining by only 17% over that period, with global warming reaching 2.8°C by the end of the century. A third, *Diverging Priorities Pathway* envisages a hybrid trajectory where advanced economies prioritize emissions reduction while EMDEs prioritize GDP growth, energy affordability, security and economic competitiveness, with intermediate global emissions and warming outcomes (2.5°C by end of century).

Holding temperature rise to 2 degrees Celsius by end of century possible but increasingly challenged

While the 2°C *Emissions Reduction Pathway* remains possible, it is increasingly challenged by technical and commercial realities, the study says.

"Electrification based on renewable energy sources is key to emissions reduction, and the rate of growth will be substantial," said Atul Arya, Senior Vice President and Chief Energy Strategist, S&P Global Energy. "Nevertheless, there are practical limits to how much power systems can expand, decarbonize and remain reliable at the required pace, at affordable cost and within the limits of available finance."

In part because integration costs rise rapidly once variable solar and wind share exceeds around 50-60% of generation, global capital investment of \$50 trillion – more than the combined market capitalization of all companies listed on the Nasdaq – would be required through 2060 for power generation, storage, transmission and distribution.

While electricity demand would double to over 60,000 TWh by 2060, practical limits to total electrification become apparent, the study says. Sectors such as heavy industry, air and marine transport will remain difficult to electrify. The most challenging sector to electrify, transportation and in particular medium and heavy-duty transportation, sees electricity provide less than 30% of its total energy by 2060 in all pathways.

A transition defined by expansion as much as substitution

Across all plausible pathways the result is a prolonged period of coexistence in which multiple energy sources operate in parallel. Fossil fuels remain structurally embedded in the energy system even as their overall share of demand declines. Under the study's 2°C pathway, more than \$11 trillion in upstream capital investment will be required to meet oil and gas demand through 2060, even though oil demand declines over 40% to close to 60 million barrels per day. The *Current Realities Pathway*, where oil demand declines by a modest 7% and gas demand rises by 35%, envisages nearly \$14 trillion of upstream investment over the same period.

Each country's energy sources and emissions trajectory will be shaped by geography, infrastructure and resource endowment rather than a single optimal path, the study says.

The study shows a wide range of energy-related CO₂ emissions outcomes at the country level—from a decline of close to 100% to an increase of over 90% by 2060—reflecting the complex, country-specific realities inherent to national energy systems. Energy security and affordability may mean faster electrification and renewables for fossil fuel importers; for resource-rich countries, it may mean greater domestic fossil fuel production.

A more sophisticated and flexible approach may therefore be required when developing location-relevant decarbonization pathways for industrial sectors, one that accounts for where emissions occur and where energy is ultimately used, the study says.

"The energy transition will be increasingly defined by how the world meets large volumes of new demand while also reducing emissions, strengthening security and preserving affordability," said Nick Lowes, Vice President, Consulting, S&P Global Energy. "It will be multidimensional, regionally differentiated and multi-speed. This will require objective and inclusive discussion about the very different perspectives between advanced and developing economies on their respective energy and climate priorities."

About the Study:

Multidimensional Global Energy Pathways is available at: <https://www.spglobal.com/en/research-insights/special-reports/multidimensional-global-energy-pathways>

Leveraging S&P Global's cross-divisional expertise and proprietary data across the company's Energy and Market Intelligence divisions, the study evaluates three alternative global pathways for energy and emissions out to 2060. Particular focus is placed on the emerging and developing economies which will drive future energy demand growth. Using a detailed country-specific approach and introducing a new Energy Prosperity Indicator (EPI), the study examines the trade-offs individual countries will face in providing reliable and affordable energy to support socio-economic development while seeking to reduce global greenhouse gas emissions. In-depth power system modelling is used to assess the pace and scale at which national energy systems can electrify using renewable power sources, and the challenges and limitations to this. The study evaluates the resulting emissions trajectories and global warming outcomes using realistic assumptions.

Instead of normative outlooks that start from predetermined outcomes and develop scenarios through "back casting," this study

starts from current realities and reflects the actual choices policy makers and investors face and provides actionable basis for their decisions. Furthermore, the study focuses on energy demand first, not energy supply as is the case with many existing outlooks. This realistic approach is necessary to account for strong energy demand growth in EMDEs.

This report does not make policy recommendations. It is intended to inform and support dialogue on the challenges and opportunities facing policymakers and investors as countries seek to develop secure and affordable sources of energy while pursuing climate goals. The analysis and metrics developed during the course of this research represent the independent analysis and views of S&P Global.

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