

The age of electricity is already upon us, but demand for fossil fuels will continue to grow until 2050

The International Energy Agency (IEA) confirms that advances in electrification point to a decline in the use of polluting fuels. However, under current policies, demand for oil and gas will continue to rise over the next 25 years.

Andrés Actis

In the midst of [COP 30](#), the International Energy Agency (IEA) published its annual [World Energy Outlook](#) report on Wednesday, which analyses and projects global trends in energy supply and demand. The document confirms that the planet has definitively entered the ‘age of electricity’, an indispensable foundation for decarbonisation. However, there are many warning signs. Firstly, it highlights that with current policies, demand for oil and coal will continue to grow until 2050. Secondly, the report points out that the vulnerability of critical mineral supply chains is increasing. Thirdly, it criticises the lack of investment in making electricity systems secure. Furthermore, it highlights the threat to energy security posed by global geopolitical tensions. Finally, it concludes that governments' ambition to mitigate the worst effects of climate change is weakening.



[David F. Sabadell](#) Aerogeneradores en las cercanías de la Sierra de la Demanda, Burgos.

The 2025 edition of the WEO covers three main scenarios: the Current Policies Scenario (CPS), the Stated Policies Scenario (STEPS) and the Net Zero Emissions by 2050 Scenario (NZE). Each scenario paints a different picture of the future of energy, allowing analysis of the implications of different policy, investment, and technology choices for energy security, affordability, and emissions.

'The new oil'

The first conclusion after reading the 518 pages of the report is that the energy transition is inevitable. In all scenarios, renewable energies are growing faster than any other energy source, and electricity demand is increasing much faster than total energy consumption: 40% by 2035 in the CPS and STEPS scenarios, and more than 50% in the NZE scenario. In 2025, electricity accounts for 21% of global final consumption and is the 'engine' of sectors that account for more than 40% of global GDP. It is estimated that by 2035, 80% of global electricity demand will come from renewable sources.

The World Energy Outlook analysis has been highlighting the increasingly important role of electricity in economies around the world for many years. Last year, we said that the world was rapidly entering the age of electricity, and today it is clear that it has already arrived,' celebrates Fatih Birol, director of the International Energy Agency.

Several concerns overshadow this positive data. The first relates to the rapid growth in electricity demand. According to the IEA, there is an urgent need to accelerate the expansion of networks, storage and system flexibility. This is a 'key challenge' that is progressing more slowly than expected. The following data is cited: although investment in electricity generation reaches one trillion dollars annually, spending on networks is less than half that amount, 'creating bottlenecks and increasing costs'.

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In a world where data centres will become the 'new oil' — global investment in data centres is expected to reach \$580 billion by 2025 — electricity systems need resilience and flexibility that, according to the IEA, they currently lack.

In this regard, the IEA study cites the power outage in Spain as an example. 'The incident demonstrates that electrical security in modern electrical systems depends not only on generation, but also on the quality of network operation and the behaviour of all connected assets,' the report states.

The problem is that, as risks multiply in an 'energy-hungry' world, geopolitical tensions raise many questions about the strength of international cooperation in addressing the uncertainties and instability ahead. "Policy makers face energy security challenges comparable to those of the 1973 oil crisis. Their decisions must balance security, affordability, access, competitiveness and climate," warns the IEA.

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Looking at the history of the energy sector over the last few decades, Birol argues that there has never been a time when energy security tensions have simultaneously affected so many fuels and technologies.' There are many uncertainties," the agency admits.

Fossil fuel demand

In all scenarios in the report, global oil and gas supply remains high in the short term. Under current policies, fossil fuel demand continues to grow until 2050, a death sentence for maintaining a stable climate on the planet.

In the Declared Policies (STEPS) scenario, which includes formally announced but not yet implemented policies and the reduction of barriers to new technologies, fossil fuel demand stabilises around 2030. Only in the zero-emissions scenario does demand for polluting fuels fall sharply.

In the first projection—current policies—oil demand rises to 113 million barrels per day by 2050—up from 105 million today—mainly due to its increased use in emerging economies for road transport, petrochemical feedstocks and aviation. Global demand for natural gas is also expected to increase to 5.6 trillion cubic metres by 2050 (compared to 4.1 trillion currently), driven by developing economies in Asia.

In this scenario, annual global energy-related CO₂ emissions increase slightly but steadily, which would raise the global average temperature by approximately 2°C by 2050 and 3°C by 2100.

The current policy scenario points to continued dependence on fossil fuels, persistent market volatility and structurally high energy prices. This may suit a few producing countries, but for economies that account for around 90% of global GDP, it means reduced competitiveness and welfare increasingly exposed to the political will of oil-producing states," warns Maria Pastukhova, director of the energy transition programme at the E3G think tank.

Therefore, if countries want to grow their economies and protect their citizens from the ups and downs of energy prices, they must focus relentlessly on energy efficiency and the decarbonisation of energy demand. These are not just climate measures, but economic imperatives,' explains the expert.

Laurence Tubiana, executive director of the European Climate Foundation, prefers to focus on the most encouraging finding in the report: the progress made in the electrification of demand. "Some may wish to turn back the clock, but the direction of the energy system is clear. The era of electricity is underway. Now we have to choose between accelerating or paying more later to repair the damage: every tonne of carbon we avoid today will save us much higher costs tomorrow," she says, analysing the IEA's projections.

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Minerals, another focus of concern

The vulnerability of the critical minerals supply chain due to high market concentration is another threat to the consolidation of the energy transition, according to the report. A single country—China—is the main refiner of 19 of the 20 strategic energy-related minerals, with an average market share of around 70%.

'These minerals are vital for power grids, batteries and electric vehicles, but they also play a crucial role in artificial intelligence chips, jet engines, defence systems and other strategic industries,' the document explains.

Geographic concentration in refining has increased for almost all key energy minerals since 2020, when the IEA warned of this fragility. Nickel and cobalt are the two minerals that are likely to cause the most tension in the future. The report suggests that reversing this trend will be slow, 'requiring more forceful action by governments.'

As of November 2025, more than half of these strategic minerals are subject to some form of export control. China, for example, has imposed new export controls on rare earth elements and battery components.

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In all future scenarios, the IEA foresees problems with critical minerals. Both under current policies and with increased climate ambition, supply remains highly concentrated. If the world moves towards zero emissions — the ideal scenario — global demand for critical minerals will increase three- to four-fold from current levels, 'further intensifying pressure on supply chains'.

Trump and his knock-on effect

As many energy sector analysts acknowledge, since Donald Trump's return to the presidency of the United States, the IEA has been under 'strong pressure' from his administration to paint a more promising future for fossil fuels. This lobbying—unprecedented since this report was first compiled—reveals that, ten years after the signing of the Paris Agreement, countries' formal political commitment to moving towards a decarbonised world has weakened.

'The United States has withdrawn from the Paris Agreement, and the new round of Nationally Determined Contributions (NDCs) announced through 2025 barely changes the outlook projected in the Stated Policies Scenario (STEPS),' the report laments. Some countries, notably China, have made ambitious commitments, but overall, 'the new commitments are not enough to change the global trajectory of emissions.'

The IEA also warns that without a much more intensive international effort to increase investment in the energy transition, especially in emerging and developing economies, it will be impossible to reduce emissions sufficiently or to ensure tangible economic and social benefits in the short term.

Ending obscene investment in fossil fuels

For Olivier Bois von Kursk, policy advisor at the International Institute for Sustainable Development (IISD), the new IEA report confirms that betting on fossil fuels today is 'betting against progress'.

The truth is that since the signing of the Paris Agreement, the fossil fuel industry has been undermining the climate by investing £20 million per day in oil and gas exploration and production. The figure is based on cross-referencing IEA statistics, a task carried out by Zero Carbon Analytics. This international research group provides analysis and

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insights on climate change and the energy transition. This amount explains why climate progress since the Paris Agreement has been so slow over the last ten years. Total fossil fuel investment has exceeded €7.5 billion over the last decade. For every dollar this industry invested

in clean energy, it spent £46 on oil and gas production. 'To achieve the Paris Agreement targets, it is necessary to both increase investment in clean energy and phase out investment in fossil fuels,' explain the organisation's experts.

Of that €7.5 billion, almost two-thirds, or €5 billion, has been allocated to oil and gas exploration and production, despite numerous studies showing that discoveries would push the world above the Paris Agreement's 1.5 °C target. 'It might be worth presenting these figures to the Oil and Gas Climate Initiative at COP30,' climate journalist Ed King suggested from Belém upon learning of these figures.

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True Democracy and Capitalism

The Oil and Gas Climate Initiative (OGCI) is a group led by chief executives and comprising 12 of the world's leading energy companies, which produce around a third of the world's oil and gas. They have participated in recent COPs to defend the fossil fuel industry's key role in clean energy investment, a crude and false rhetoric that has no empirical justification.

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