How AI could help the climate

ABSTRACT (ENGLISH)

AI is already helping improve the efficiency of electrical grids, cut fuel use in shipping and spot otherwise invisible leaks of methane, a potent greenhouse gas. [...]because a global carbon price remains a distant dream, it is more realistic to focus on three other measures. [...]tech firms should hold themselves to their own environmental promises.

FULL TEXT

Even if you don’ t worry that artificial intelligence (AI) will destroy the human race, you might fret that its fearsome appetite for electricity will destroy the environment. Asking ChatGPT a question means using ten times more energy than an old-fashioned search query. Google’ s greenhouse-gas emissions rose by nearly half between 2019 and 2023, as the AI boom took off; Microsoft’ s are up by almost 30% since 2020. With huge investments in new data centres planned, more rises seem baked in. But the doom-mongering is misplaced. In absolute terms, AI may be less energy-hungry than many people assume. Better still, AI can help decarbonise the industries that have proved hardest to clean up.

Consider AI’ s appetite for energy first. The International Energy Agency (IEA) reckons that electricity consumption by data centres could as much as treble in the next five years. Even if energy usage soars, though, the base is still low. Data centres today account for about 1.5% of the world’ s electricity consumption—and the vast majority of that is due to streaming, social media and online shopping, not ai.

Moreover, some of ai’ s electricity use will help with greening the economy. As we explain in this week’ s Science &technology section, AI excels at identifying complex patterns, crunching giant data sets and optimising systems, all of which can help slash emissions. AI is already helping improve the efficiency of electrical grids, cut fuel use in shipping and spot otherwise invisible leaks of methane, a potent greenhouse gas.

The task for policymakers and industry bosses is to maximise such benefits while minimising the climate impacts. The most elegant solution would be for governments to impose a proper price on carbon and leave the market to do its work. But because a global carbon price remains a distant dream, it is more realistic to focus on three other measures.

The first is greater transparency. Working out exactly how much power AI models use is frustratingly hard. From August 2026 the eu will require some ai developers to report their energy use in detail. That approach should be copied elsewhere.

A second is to rethink how data centres operate. The IEA notes that being able to shift workloads between different data centres at different times could reduce strain and help balance energy grids. More flexible data centres would also be a better match for the intermittent power produced by renewables such as wind and solar.

Third, tech firms should hold themselves to their own environmental promises. Microsoft, for instance, aims to become “carbon negative” by 2030. Some firms, such as Amazon, rely heavily on buying renewable-energy credits, which allow dirty electricity consumed in one place to be offset by paying for clean energy elsewhere. Such credits have their uses. But they are rife with creative accounting and conceptually fragile—much of the renewable energy might have been generated anyway, for instance.

A better approach would be for the tech firms to use the clout that their large demand for energy gives them to accelerate the decarbonisation of grids. They are already the largest buyers of clean electricity under long-term deals with independent generators in America. They could build and fund more capacity themselves, help unblock the

deployment of clean energy more widely by pushing for planning reform, and go further in supporting the development and expansion of alternative sources such as geothermal and nuclear power. Doubling down on such approaches would help transform AI from climate suspect to climate hero.
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