



A large-scale data center in the Netherlands (Shutterstock)

# Are AI and big tech climate targets in conflict?

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**Tech companies have been strengthening their data storage and cloud processing capacity at a breakneck pace to meet AI demand, posing new challenges on energy intensity and electricity emissions. But we think AI and sustainability goals are more complementary than you might think.**

**[UBS Trending video: Sustainability perspectives on AI, data centers, and more](#)** (6:40)

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As mega-cap tech companies rapidly scale up their AI and cloud computing capacity, demand is rising for the advanced data centers that play host to these powerful networked systems. Data centers are by nature energy intensive, requiring continuous power supply and water-intensive cooling systems. The next generation machine learning and generative AI cloud computing systems appear even more demanding. The International Energy Agency (IEA) estimates a single ChatGPT search requires nearly 10x the energy of a traditional Google search query.

Leading AI data centers look set to grow even larger in scale, with Microsoft CTO Kevin Scott last month saying, “we are nowhere near the point of diminishing marginal returns on how powerful we can make AI models as we increase the scale of compute.”

While it may seem that the AI revolution is at odds with climate and decarbonization targets, we think the two themes may actually prove complementary in driving each other forward.

**Mega-cap tech AI demand will need much renewable power.** We expect the AI market to be dominated by an oligopoly of vertically integrated mega-cap tech companies with sufficient capital and cloud computing resources to compete. Meta, Google, Apple, Microsoft, and Amazon have all committed to sourcing 100% clean power, and together

accounted for more than two-thirds of global corporate power purchase agreements (PPAs) in March, according to data from BloombergNEF. Maintaining this 100% clean power pledge will mean their renewable power demand growth will likely continue to outstrip utility-scale supply growth over the mid-term, most notably in the US.

**Solar and battery infrastructure is ramping up too.** US renewable capacity is growing rapidly, with a record 11GW of solar panels added in 1Q, according to SEIA/Wood Mackenzie estimates. Battery storage is a key element of this, helping to store power and offset the intermittent nature of solar and wind generation. The US Energy Information Administration (EIA) estimates US battery capacity will nearly double this year above 40GW. For the first time, battery storage was the top power source provider in California for several days last month. While this additional energy demand strengthens the thesis for solar and batteries, gaps in storage capacity and a geographic mismatch in the energy mix near data centers means natural gas is also likely to be part of the solution set.

**Higher emissions from AI data center construction is a temporary phenomenon.** Building data centers with pollutive materials like steel and cement increases emissions in the short term, and is a meaningful concern. But the uptick in emissions from data center construction should be temporary, and may incentivize faster innovation and adoption of green solutions that can increase circularity in the sector. For example, Microsoft says it will reuse 90% of its servers and components within its regional data center network by 2025, cutting down its reliance on virgin raw materials.

**AI models will be critical in addressing intractable climate problems.** We anticipate advanced AI models and inference queries that come out of some of these data centers will be key enablers of environmental and social solutions that can track, measure, and reduce greenhouse gas emissions, increase energy system efficiency, and improve our climate adaptation and risk planning.

So, while explosive AI demand may drive rapid energy demand growth, we don't see this impeding progress on decarbonization or the energy transition. We are seeing increasing evidence that investor pressure via ESG engagement can be an effective tool in accelerating decarbonization, and we suggest investors factor in individual company greenhouse gas emissions when allocating capital to AI-related technologies or business models. With key greentech building blocks like solar, wind, and batteries increasingly mature, we believe the majority of our current power generation and transportation-related emissions can actually be eliminated with technologies already existing today. Investors who deploy capital to sustainable infrastructure in private markets may benefit from high barriers to entry, demand inelasticity, and consistent cash-flows. At a portfolio level, this can also offer differentiation and lower correlation with more cyclical public-market assets. The opportunities from AI and climate can also be captured through our broader investment themes, including "Clean air and carbon reduction," "Energy efficiency," "Water scarcity," and the "Circular economy."

You can read more on this in our latest [Sustainable Investing Perspectives publication for June](#).

Read the original report [Perspectives: Proxy season, AI and climate risk, and mandatory supply chain due diligence](#) 7 June 2024.

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