# AI energy consumption set to exceed Bitcoin mining by early 2026, raising sustainability concerns



Recent research has brought to light the staggering energy consumption projected for artificial intelligence (AI), suggesting it will surpass that of Bitcoin mining by early 2026. A peer-reviewed paper published in the scientific journal *Joule* predicts that AI's energy demand could account for up to 49% of global electricity use among data centres, with estimates indicating a peak of 23 gigawatts by the year's end. This represents an increase in annual consumption to approximately 201 terawatt-hours, eclipsing Bitcoin's current usage of around 176 TWh.

The author of the study, Alex de Vries-Gao, a PhD candidate at Vrije Universiteit Amsterdam and known critic of Bitcoin's energy footprint, pointed out that the opaque nature of AI's energy consumption stands in stark contrast to the transparent metrics available for Bitcoin mining. While Bitcoin’s energy usage can be directly inferred from its network hash rate, big tech companies like Google and Microsoft often aggregate their data centre consumption without isolating AI-specific figures. This lack of transparency raises concerns about the true scale of AI's environmental impact, especially as these companies report increased emissions attributed primarily to their AI operations.

De Vries-Gao’s analysis was driven by the significant market share of Nvidia, which has reportedly consumed between 44% and 48% of Taiwan Semiconductor Manufacturing Company's (TSMC) advanced chip packaging capacity in recent years. The chip manufacturer has acknowledged challenges in meeting the growing demands, with projections indicating that no immediate slow down in production will occur. TSMC's plans to double its capacity further underscore the mounting energy requirements associated with AI advancements, which have gained momentum since systems like ChatGPT surged into public consciousness.

The urgency of the situation is echoed in additional analyses, highlighting that data centre energy usage, largely propelled by AI, is forecasted to more than double from 2022 to 2026. A recent article emphasises that individual AI tasks can be exponentially more energy-intensive than traditional computing queries, with operations like those of ChatGPT requiring ten times the energy of a standard Google search. This raises alarm bells regarding the sustainability of AI technologies as the industry matures.

As governments and corporations grapple with these increasing demands, tensions are mounting over energy resources. The competition for electricity is becoming a critical concern as tech giants aggressively secure energy assets, a situation complicated by the ongoing struggles of Bitcoin miners facing operational hurdles due to similar energy needs. Many in the industry are now advocating for enhanced regulation and transparency to address this burgeoning crisis, as the global push towards energy efficiency and climate responsibility becomes ever more pressing.

Some industry leaders are attempting to pivot strategies in response to these challenges. Notably, major Bitcoin mining companies have begun transitioning their operations towards AI, setting aside mining rigs in exchange for equipment more suited to machine learning tasks. This trend could potentially lead to increased competition for energy resources as both sectors vie for limited electricity supplies.

In this landscape, the environmental implications of unchecked energy consumption from both AI and cryptocurrency mining remain a critical concern, highlighting the urgent need for systemic solutions and coordinated responses by governments and utility companies alike. The future of both industries will likely depend not only on technological innovation but also on the commitment to sustainable practices and regulatory measures necessary to mitigate their collective carbon footprints.

### 📌 Reference Map:

* Paragraph 1 – [[1]](https://decrypt.co/323320/ai-power-consumption-dwarf-bitcoin-study), [[3]](https://www.axios.com/2024/02/26/ai-crypto-power-carbon-emissions)
* Paragraph 2 – [[1]](https://decrypt.co/323320/ai-power-consumption-dwarf-bitcoin-study), [[2]](https://time.com/6987773/ai-data-centers-energy-usage-climate-change/), [[5]](https://www.ft.com/content/d38ebd3e-84a2-4c22-b84c-6528a1e2dd3b)
* Paragraph 3 – [[4]](https://www.reuters.com/technology/artificial-intelligence/ais-race-us-energy-butts-up-against-bitcoin-mining-2024-08-28/), [[6]](https://www.axios.com/newsletters/axios-crypto-5ed9d350-0dff-11ef-85c8-2b9747061fa2)
* Paragraph 4 – [[2]](https://time.com/6987773/ai-data-centers-energy-usage-climate-change/), [[7]](https://time.com/6993603/ai-bitcoin-mining-artificial-intelligence-energy-use/)

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## Bibliography

1. <https://decrypt.co/323320/ai-power-consumption-dwarf-bitcoin-study> - Please view link - unable to able to access data
2. <https://time.com/6987773/ai-data-centers-energy-usage-climate-change/> - This article discusses the significant increase in energy consumption due to AI, highlighting that data centers' electricity demand is projected to more than double from 2022 to 2026, largely driven by AI activities. It also notes that AI model training is particularly energy-intensive, with a ChatGPT query requiring ten times more energy than a Google query. The piece emphasizes the environmental impact and the need for transparency and regulation to manage AI's energy consumption effectively.
3. <https://www.axios.com/2024/02/26/ai-crypto-power-carbon-emissions> - The article highlights the growing conflicts over the substantial energy demands of AI and cryptocurrency mining amid global efforts to reduce emissions. It mentions a federal judge's temporary order halting the U.S. Department of Energy's collection of power usage data from the crypto sector and notes that data centers, crypto, and AI accounted for 2% of global power demand in 2022, potentially doubling by 2026.
4. <https://www.reuters.com/technology/artificial-intelligence/ais-race-us-energy-butts-up-against-bitcoin-mining-2024-08-28/> - This article discusses the competition between U.S. technology companies expanding AI and cloud computing data centers and Bitcoin miners for limited electricity resources. It notes that data centers are anticipated to use up to 9% of U.S. electricity by the end of the decade, leading tech giants like Amazon and Microsoft to aggressively secure energy assets, while Bitcoin miners face operational challenges due to this demand.
5. <https://www.ft.com/content/d38ebd3e-84a2-4c22-b84c-6528a1e2dd3b> - The piece addresses the immense pressure utility companies face due to increased electricity demand from technologies like crypto mining and AI. It highlights that data centers are set to double their electricity consumption between 2021 and 2026, leading to environmental and infrastructure challenges. The article calls for enhanced global standards for reporting and coordination among governments to manage this escalating crisis effectively.
6. <https://www.axios.com/newsletters/axios-crypto-5ed9d350-0dff-11ef-85c8-2b9747061fa2> - This newsletter discusses the increasing electricity consumption of AI operations, drawing parallels with Bitcoin mining’s energy strategies. It emphasizes the need for AI operators to consider geographical flexibility and innovative cooling technologies to manage power usage efficiently. The newsletter also reports a decline in Bitcoin network power demand following a recent halving event and discusses the fluctuating value of creditor claims in the FTX bankruptcy recovery.
7. <https://time.com/6993603/ai-bitcoin-mining-artificial-intelligence-energy-use/> - The article explores how rising energy demand from AI companies is prompting Bitcoin mining firms to pivot towards AI operations. It notes that major Bitcoin mining companies have started trading some of their mining equipment for rigs used in AI training, seeking more consistent revenue. The piece also raises concerns about increased energy use, largely driven by fossil fuels, and its climate impact, highlighting the need for sustainable energy solutions.