



Hashdex

HASHDEX RESEARCH

Is Bitcoin bad for the environment?



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Bitcoin allows users to securely send and receive payments across the world, without needing a centralized authority to guarantee the transactions. This unique combination of immutability, security, and scarcity is revolutionizing modern-day finance and access to financial services.

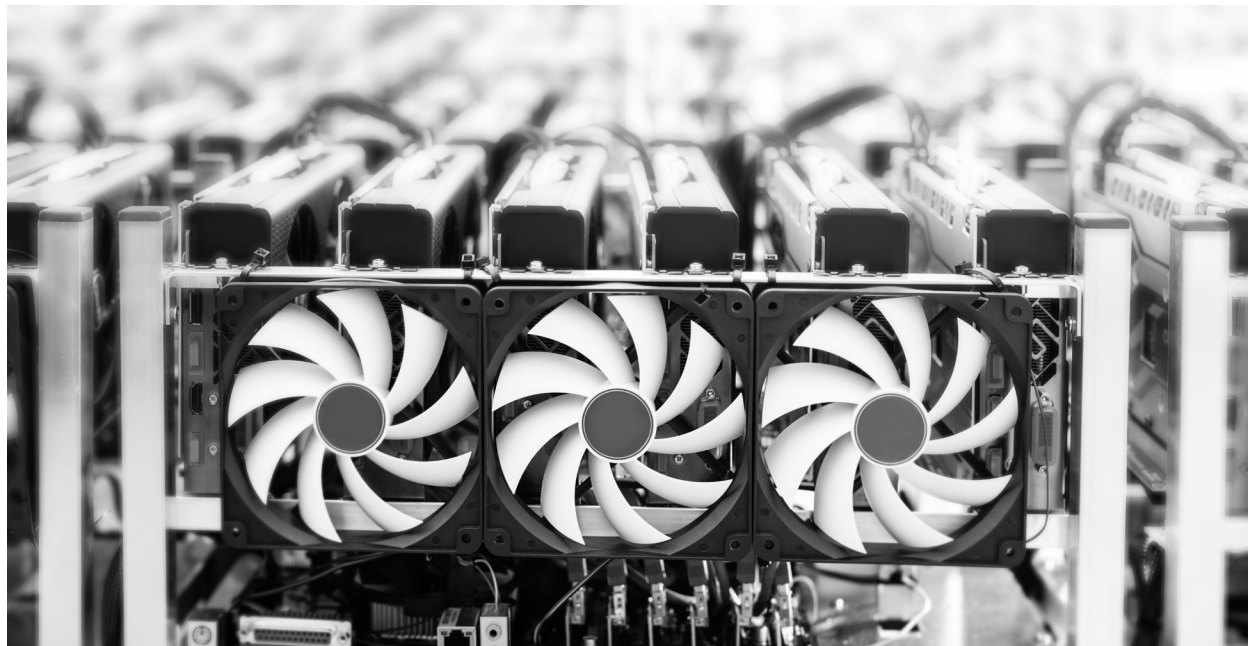
There are many misconceptions about Bitcoin, however, including about how it is used and who benefits from the network. One of the most common misperceptions is that Bitcoin and other Proof-of-Work networks are more harmful to the environment than traditional payment systems.

This view has led some policymakers to consider banning the Proof-of-Work consensus mechanism. Unfortunately, this perspective ignores some well-documented facts about how the Bitcoin network works and how energy is used in our everyday lives.

With a Proof-of-Work network, miners run computers to cryptographically secure and validate a transaction before it is added to the blockchain. The energy usage from this process is what is driving the opinion that bitcoin is disproportionately contributing to climate change.

However, a research paper released on April 20, 2022 found that Bitcoin consumes far less energy than the traditional payment system—56 times less energy.¹ The research also concluded that a single Proof-of-Work transaction is 1 to 5 times more energy efficient than traditional payment transactions.

It's important to remember that Bitcoin's energy consumption does not come from transactions, but from the process of mining blocks on the blockchain. It is true that mining bitcoin is energy intensive. However, miners have an economic incentive to seek out the cheapest possible energy sources, which most often means excess supply or sustainable energy sources. The vast majority (75%) of miners currently utilize renewable energy.²



¹ Khazzaka, Michel; "Bitcoin: Cryptopayments Energy Efficiency," April 20, 2022.

² University of Cambridge Judge Business School. 3rd Cryptoasset Benchmarking Study. September 2020.

A recent letter from the Bitcoin Mining Council to the US Environmental Protection Agency made several important points about how mining should be viewed by policymakers and why context is important. For example:

- *Broadcasting a transaction requires no more energy than a tweet or a Google search.*
- *Datacenters which contain “miners” are no different than datacenters owned and operated by Amazon, Apple, Google, Meta, and Microsoft. All datacenters utilize electricity generated externally. Emissions are created at the power generation source upstream from the datacenters.*
- *Bitcoin miners surveyed (in Q1:22) use 64.6% sustainable energy (defined as wind, solar, hydro, or nuclear). If you extend the analysis globally using conservative assumptions regarding energy mix, Bitcoin mining in the aggregate employs an estimated 58.4% sustainable energy. This is markedly more sustainable than the default US energy mix at 21% sustainable.*

Additionally, when China issued bans on crypto mining in September 2021, hashing power was redistributed around the world. Much of China’s coal-powered mining ended up in the US, where clean energy is a priority.³

Energy consumption is part of everything in our lives and there will always be a tradeoff between consumption and economic value. Bitcoin currently consumes half the energy of the gold mining industry and a fraction of bank branches and ATMs.⁴ This does not suggest the crypto industry should ignore energy usage. To that end, there are several initiatives to improve sustainability for crypto assets. This includes the Bitcoin Mining Council, but also the Bitcoin Clean Energy Investment Initiative and the Crypto Climate Accord.⁵

Beyond just the efforts by the crypto community to ensure sustainable energy practices, we believe that Bitcoin’s long-term transformation of the global financial system will far offset its shorter-term energy costs.

Have more questions about Bitcoin? See our crypto assets primer here.



³ “US officially the top destination for Bitcoin miners, beating out China for the first time.” CNBC, October 13, 2021.

⁴ Galaxy Digital. On Bitcoin’s Energy Consumption. May 2021.

⁵ The Coinbase Blog. Fact Check: Is Bitcoin mining environmentally unfriendly? May 24, 2021.



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