

## Crypto's Enviro Costs Present Challenges For Companies

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Cryptocurrencies and other digital assets are growing massively in popularity, and they can no longer be dismissed as ephemeral playthings for the digital elite. They have entered the mainstream marketplace. Ready or not, companies will now have to grapple with digital assets — and their environmental consequences.

Cryptocurrencies are merely database entries that cannot be changed unless specific conditions are fulfilled.[1]

These currencies, such as Bitcoin and Ethereum, are created through a process known as "mining," where "miners" use powerful computers to solve cryptographic problems. Once a problem is solved, the miner adds a block to a database called a "blockchain" and is then rewarded with the cryptocurrency.

Unlike currencies issued by governments, there is no centralized mechanism of control — instead, the blockchain is maintained on a decentralized peer-to-peer network. However, as with traditional commodities like gold, there is a limited amount of a given cryptocurrency.[2]

Popular cryptocurrencies are surging in popularity and value and are being adopted as mainstream forms of currency and methods of payment.

Recently, there has also been a lot of hype around nonfungible tokens. NFTs are a form of digital asset representing ownership of anything unique — such as artwork, articles, videos, GIFs, songs or even tweets — as an Ethereum-based smart contract. The NFT itself is not the associated image; rather, the NFT contains a link to the image file.

As with Bitcoin and Ethereum, NFTs are virtual commodities. And as the value of cryptocurrency has grown, its attractiveness as an investment opportunity has risen commensurately.

### Scrutiny on Hidden Environmental Costs



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While it is natural to think that a currency that essentially exists only in the cloud would have fewer environmental impacts than the "hard" traditional fiat currency we still use today — dollars and coins that have to be printed, minted and stored (even if transacted digitally) — the truth is far more complicated.

The New York Times reported in April that the artist Joanie Lemercier has announced that he has stopped using NFTs, claiming that six crypto-artworks he released consumed more energy in 10 seconds than his studio did in two years.[3]

And legislation introduced earlier this month in the New York state Senate, S.B. 6486, would place a moratorium on crypto mining. As the preamble to the bill states, a "single cryptocurrency transaction uses the same amount of energy that an average American household uses in one month, with an estimated level of global energy usage equivalent to that of the country of Sweden." [4]

Many consumers who are new to the digital asset world might question, "How does a single electronic transaction result in such high energy use?"

The answer is complex, and driven by the rising scale and economies of cryptocurrency.

Mining cryptocurrency is an inherently energy-inefficient process. Because it is decentralized, numerous computers in the blockchain network simultaneously work to validate the same transaction.[5] Further, as more computers are connected to the network, the algorithm becomes more difficult to solve, and more computing power — and hence electrical power — must be dedicated to authenticating transactions.

As the value of cryptocurrencies rises, so do incentives for new entrants to the field of crypto mining — and so too does cryptocurrency-related energy consumption.

It is difficult to ascertain exactly how much energy cryptocurrency consumes, due to the vast, global span of the cryptocurrency network. The University of Cambridge Center for Alternative Finance, one of the most widely cited sources for bitcoin energy consumption, estimates that the cryptocurrency industry consumes approximately 130 terawatt-hours annually.[6] If the cryptocurrency industry were a country, this would translate to an annual consumption that rivals that of Argentina.

Although there is ongoing debate over the best methodology for calculating energy use estimations, the consensus is that crypto mining consumes huge amounts of energy.

Like all energy-consuming activities, crypto mining can draw from both renewable and nonrenewable sources.[7] To maximize profits, many miners migrate to wherever energy is cheapest, and that often involves coal- or natural gas-derived energy.

A 2020 report by the University of Cambridge's Center for Alternative Finance estimated that 39% of crypto mining's total energy consumption is derived from renewable sources. The fact that roughly 60% of crypto mining is powered by fossil fuels, however, has led environmentalists to believe that mining is problematic.

On the other side of the debate, cryptocurrency supporters argue that the field is primed to accelerate the world's transition to clean energy.[8] Cryptocurrency miners are a unique class of energy consumers because they are tied to neither a particular geographic location nor a set schedule.

In addition, miners have an easily interruptible load, meaning their energy consumption can be quickly switched on and off without significant impact to their operations. This flexibility makes miners the best class of consumers for renewable energy, for which generation and transmission is inherently unpredictable.

The crux of the argument is that mining can be scheduled for times when wind or sunshine is high, but energy demand is low. This would not only make renewable energy consumption more efficient, but it would also lower the price of renewable energy for all consumers.

Despite the debate on cryptocurrency's energy consumption and its power sources, it is undeniable that crypto mining is growing, and as a result, consuming more energy.

Without a system in place to ensure energy consumption accountability, cryptocurrency's carbon footprint could continue to grow unfettered, resulting in significant environmental externalities.

### **Balancing ESG Metrics With the Drive to Digitize**

Companies understandably do not want to be seen as falling behind in any respect, be it technological, environmental or social. However, it remains to be seen whether companies can be "progressive" in all of these areas at once.

Given the surprisingly large physical footprint of digital asset transactions, companies interested in making use of this technology for purposes such as payment processing or creating and marketing NFTs must also be aware of how this affects their carbon footprint, particularly in a world where increasing attention is paid to environmental, social and governance considerations.

For example, consider the Form 10-K disclosures a public company must file with the U.S. Securities and Exchange Commission. These disclosures often refer to laudatory aspirations for sustainability.

If the company makes such statements but starts accepting or using cryptocurrency as a substantial part of its payments, or begins marketing NFTs as a way to monetize intellectual — or even physical — property, then third parties may question whether the company has actually advanced sustainability in any meaningful manner.

Companies that make "green" claims and highlight ESG bona fides in their voluntary and mandatory disclosures may not be considering the impact of their forays into digital assets — but they should be. Environmentalists and activists are certain to focus increasing attention on the hidden environmental costs of digital assets as part of the financial supply chain.

Thus, companies that engage in digital asset transactions should evaluate the impacts of these activities — positive and negative — as compared with the status quo in order to determine whether such actions will advance their publicly reported sustainability goals.

It should come as no surprise that well-intentioned public statements and advertising campaigns can have unintended consequences. Recently, that has played out in climate change-related litigation brought by local governmental bodies, activist shareholders and citizens emboldened by robust consumer protection laws.

A perceived disconnect between a company's professed environmental beliefs and its embrace of cryptocurrency and other digital assets could be the next target.

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