Blockchain technologies are increasingly leaving behind a bulky carbon footprint

Article

New analyses suggest Bitcoin-related carbon emissions in China will soon produce more annual emissions than some midsize European countries, per New Scientist. The new research

out of Tsinghua University predicts Bitcoin's Chinese carbon footprint will reach its peak in 2024 releasing around 130 million tons of carbon. By that same year, Bitcoin mining will reportedly require 297 terawatt-hours of energy and account for 5.4% of China's carbon emissions generated from electricity.

- These emissions are generated as mining computers solve difficult mathematical problems called "proof of work" that are required to verify Bitcoin transactions and record them in the blockchain ledger.

- Over time, rewards for Bitcoin mining are cut in half and the proof of work puzzles become more difficult, both of which require more computing power which then leads to more emissions.

The energy consumption required by global bitcoin mining rivals that of most major countries. A recent University of Cambridge study found global Bitcoin mining consumes more electricity annually than Argentina, per the BBC. If Bitcoin were a country, per that same report, it would rank amongst the top 30 energy users worldwide. Put another way, an analysis from Digiconomist determined one single Bitcoin transaction required 414.65 grams of CO_2, the equivalent of watching 69,109 hours of YouTube. Though some reports claim Bitcoin networks draw up to 74.1% of their energy from renewable sources, that figure is disputed, especially in regions like China where miners rely heavily on hydropower often backed up by fossil fuels.

Miners are increasingly searching for cheaper electricity sources as costs associated with mining cryptocurrencies rise. Somewhere between 60−80% of Bitcoin revenues reportedly go back into paying for electricity, which has led miners to seek out cheaper energy sources in remote regions of the world. And even though the computing hardware used to mine cryptocurrencies has become more efficient, those gains have been offset by the increase in the sheer amount of computing required to solve increasingly difficult proof of works.

Companies and individuals are starting to feel the blowback from critics wary of emissions associated with Bitcoin and NFTs. Online art marketplace ArtStation recently canceled plans to launch a platform for NFTs following backlash from artists and other critics over environmental concerns. For context, Space Cat, a popular GIF NFT, reportedly has a carbon footprint equivalent to an EU resident's electricity usage for two months. Earlier this year, Tesla CEO Elon Musk sent cryptocurrency prices soaring after he purchased $1.5 billion worth of Bitcoin and announced Tesla would start accepting the coin as payment for cars. This
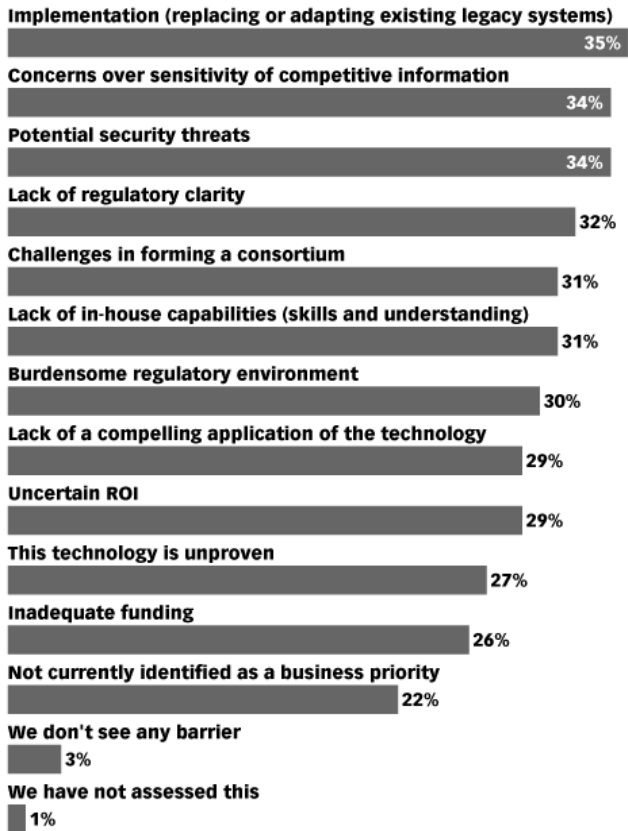
decision both complicates Tesla's claim of zero emissions and also risk creating even more emissions by driving up Bitcoin's value and increasing demand.

What Are the Barriers to Increasing Adoption and Scale in Blockchain Technology According to Companies Worldwide?
% of respondents, March 2020

Implementation (replacing or adapting existing legacy systems)
35%

Concerns over sensitivity of competitive information
34%

Potential security threats
34%

Lack of regulatory clarity
32%

Challenges in forming a consortium
31%

Lack of in-house capabilities (skills and understanding)
31%

Burdensome regulatory environment
30%

Lack of a compelling application of the technology
29%

Uncertain ROI
29%

This technology is unproven
27%

Inadequate funding
26%

Not currently identified as a business priority
22%

We don't see any barrier
3%

We have not assessed this
1%

Source: Deloitte, "2020 Global Blockchain Survey," June 16, 2020
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