Reducing carbon emissions in blockchain technologies

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The environmental impact of blockchain technologies like Bitcoin and non-fungible tokens (NFTs) has come under increased scrutiny in recent years. Now, researchers from Qatar University have analyzed policy tools and interventions aimed at reducing carbon emissions from the blockchain industry and published these in a paper in *Energy Research & Social Science*.

The Qatar team, led by Jon Truby, link damage caused by blockchain activity to the Paris Agreement goals and human mortality; they report

that emissions attributed to Bitcoin in 2021 will be "responsible for around 19,000 future deaths."

The researchers use NFTs as the focus of their study. NFTs are digital assets—like images, memes and music—that are stored and traded on a blockchain, a type of distributed ledger. The volume and value of NFT transactions exploded in recent years, reaching US$ 10.7 billion in Q3 2021,

This growth comes with an associated rise in carbon emissions due to energy-intensive "proof-of-work" (PoW) NFT blockchains; PoW is a method of adding new blocks of transactions to the blockchain. Social awareness of environmental costs has provoked a shift away from these PoW consensus protocols and they need to be phased out, the researchers say.

Policy interventions will be required if the blockchain industry does not respond to social pressure. The team observe that currently available tools can be poorly coordinated or under-used and put forward alternatives for a sustainable blockchain.

As blockchain technologies are a private enterprise with a social cost, these proposed measures are aimed at developers, miners, and traders, who should be more willing to work with local communities to minimize their environmental impact. They might, for example, include charging a premium for miners' electricity consumption, encouraging more efficient hardware, requiring dependence on clean energy and mandating carbon offsets and/or a carbon trading scheme for mining operators and transacting parties.

The blockchain industry has the potential to bring many societal and business benefits, "Switching to more sustainable alternatives ahead of time would prevent the need for taxes, standards, and regulations,"

conclude Truby and his team.

More information: Jon Truby et al, Blockchain, climate damage, and death: Policy interventions to reduce the carbon emissions, mortality, and net-zero implications of non-fungible tokens and Bitcoin, *Energy Research & Social Science* (2022). DOI: 10.1016/j.erss.2022.102499

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