



DeFi Resilience and Blockchain Energy Usage

May 2021

With the outsized moves in digital asset prices over the month of May, we have taken the opportunity in this month's research report to further explore a number of the issues that have been cited by media outlets as contributing to recent market volatility. We also highlight the resilience of the technology that underpins DeFi to withstand such extreme market moves.

The first of these is the topic of energy consumption used by blockchains. We explore what drives the high consumption of electricity by blockchain networks and what the industry is doing to consume electricity in an environmentally efficient way. The second topic is increased regulation of digital assets. What is becoming very clear is that governments and regulators have recognised the benefits of blockchain technology, particularly as it relates to the financial services sector. Media soundbites from regulatory bodies now have a positive bias and are focused on consumer protection and ensuring compliance with global KYC/AML rules. Thirdly we highlight the robustness of DeFi technology and its stellar performance during recent market volatility.

Blockchain Energy Usage

Our aim of this article is to not enter the debate of digital asset electricity consumption, but to educate readers on the key drivers of electricity consumption of any given cryptocurrency. It is worth keeping in mind that this is new technology, it has a long way to go in terms of global implementation and will certainly pivot multiple times before it reaches mainstream adoption. The issue of excessive energy consumption will certainly be one of the key issues needed to be addressed and resolved as blockchain technology scales to greater use and adoption.



Consensus Mechanisms

Proof of Work

this is the original and most widely used technique for a network of decentralised computers to validate transactions on a network. It is a technique for the network of computers to reach consensus and maintain security of the data stored by the network. POW has been flagged as being very energy intensive as more computers have been added to the network in an effort to secure the rewards on offer for contributing computer power to the network. Currently all blockchains operate off the POW consensus model with varying degrees of energy usage. The amount of energy used during the POW process directly relates to the hashrate of the network. The hashrate is the number of attempts a network can attempt the cryptographic puzzle required to validate transactions within a second. The higher the hashrate the more secure the network is.

Proof of Stake

this is a consensus mechanism that randomly assigns the computer node that will mine or validate block transactions according to how many coins or capital that the node holds. The more tokens held in a wallet, the more mining power is effectively granted to it. The system utilises a lot less energy as there is less competition amongst the nodes. The system has been criticised for allowing those with more coins (i.e. capital) to dominate a network, thereby reducing the overall security of the network. The Ethereum blockchain is currently in the process of transitioning to a POS consensus mechanism and it is due to be formally rolled out over the next 12 months.

The below YouTube video undertakes a deep dive on the topic and is worth watching:

https://www.youtube.com/watch?v=M3EFi_POhps

Attached are a number of recent articles discussing the energy consumption of Bitcoin and other networks.

<https://www.visualcapitalist.com/visualizing-the-power-consumption-of-bitcoin-mining/>

<https://www.ft.com/content/1aecb2db-8f61-427c-a413-3b929291c8ac>

<https://medium.com/tqtezos/proof-of-work-vs-proof-of-stake-the-ecological-footprint-c58029faee44>

<https://link.springer.com/article/10.1007/s12599-020-00656-x>

Our View

Addressing energy usage is imperative from an environmental perspective and equally from an efficiency perspective. The existing POW structure is not scalable if the vision and potential of the blockchain is to be realized. The move to POS goes a long way to addressing this shortcoming that has been recognized by developers of higher volume blockchains and those that host smart contracts. Like any nascent technology the initial version needs to be continually refined, initially with radical changes and then the focus turns to fine tuning and optimising. The move to POS is a radical change that opens up a lot more possibilities for the technology and decreases the environmental footprint to fractions of what it is now.

Regulation

A big month for positive announcements on the regulatory front for digital assets. As previously mentioned, FCAM actively encourages further education and discussion of the digital asset space by domestic and global regulators. It is our opinion that the quicker regulators understand the benefits of blockchain technology, the faster the adoption.

- Australian Financial Services Minister Jane Hume was on the wires this month "I would like to make something clear: cryptocurrency is not a fad. It is an asset class that will grow in importance,"
<https://www.afr.com/wealth/investing/government-won-t-step-in-to-counter-dogecoin-or-fintok-influencers-20210519-p57te5>

- US Federal Reserve Chair Jerome Powell noted that the US Federal Reserve would release a discussion paper on the benefits and risks associated with establishing a central bank digital currency (CBDC) sometime during the US summer.
<https://www.marketwatch.com/story/fed-will-launch-a-broad-discussion-of-a-digital-dollar-this-summer-powell-says-11621534045>
- Periodically western media outlets publish articles on Chinese regulators desire to ban digital assets. It is worth understanding the context of these articles, as China becomes the first country to release a Central Bank Digital Currency later this year. We have seen Chinese authorities act decisively to secure internal payment rails by launching a sovereign digital currency to combat private sector developments (Alipay, WeChat Pay) in the payments sector. It is therefore not surprising that similar efforts are being made at a Government level to ensure that established crypto currencies do not circumvent the tight capital controls that currently exist within China.

DeFi Protocol Resilience

After the extreme market volatility experienced this week, we are very pleased to report that the underlying protocols and technology that we invest through continued to function as normal with zero outages reported. With certain coin prices dropping by as much as 20% in an hour, and 50% in a 24hr period, it is reassuring that the technology could withstand such a significant stress test.

This is the first major stress test for a number of the protocols and demonstrated that they can withstand extreme market volatility. Decentralised exchanges (DEX's) like Uniswap and Sushiswap did not experience any downtime and were able to process record transactional volumes. There was US\$700million of positions liquidated within DeFi financing protocols over a two-day period. The smart contract technology functioned as programmed, albeit with a very congested network and associated high gas fees. These are very reassuring signs that the world of DeFi can continue its rapid acceleration to become the cornerstone of the global financial system.