BIZCOMMUNITY

Is Bitcoin prepared to march to the beat of the global sustainability agenda?

By Joe Baguley

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The narrative around sustainability is pervasive, clear, and urgent. We must reduce emissions if we are to stand any chance of not breaching a potentially catastrophic global temperature rise. And while almost all sectors - even the traditionally high polluting ones - are actively changing how they operate, there will always be an anomaly not quite behaving as it ought to. In this instance, look no further than Bitcoin.

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Arguably the poster child for recent digital innovation, Bitcoin is at the apex of the crypto revolution which has evolved to demonstrate its potential to drive financial inclusion and revolutionise the way we transact with each other. But Bitcoin has been disruptive to such a degree that it didn't get the memo regarding climate change. The amount of energy it consumes is vast and if the world is serious about addressing climate change without suppressing our newfound appetite for digital currencies, something must change.

A fundamentally pointless way of using energy

Sir Tim Berners-Lee, a chap who knows a thing or two about digital innovation has gone so far as to describe “Bitcoin mining” as “one of the most fundamentally pointless ways of using energy.” Looking at the figures, it’s hard to argue with that. The Cambridge Bitcoin Electricity Consumption Index estimates that Bitcoin, the most widely-mined cryptocurrency network, uses around 136.38 Terawatt-hours of electricity every year — more than the Netherlands, Argentina, or the United Arab Emirates. Another estimate by Digiconomist, a cryptocurrency analytics site, places the figure at 204.5 Terawatt-hours. This computes to around 2,145 kilowatt-hours of electricity per transaction, the same amount of power consumed by the average American household over 73.52 days.

Bitcoin is not alone in its wanton lack of environmental consideration. Ethereum, the second-largest cryptocurrency network, is estimated to use 112.6 Terawatt-hours of electricity per year — more power than is required by the Philippines or Belgium. There are many more cryptocurrencies, which means the amount of energy consumed by cryptocurrency mining is likely to increase over time, assuming that prices and user adoption continue to increase.

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Environmental impact is not prioritised

There is no escaping the environmentally detrimental impact of Bitcoin’s growth. The founders of Bitcoin made a naive mistake in building the cryptocurrency on a proof of work blockchain - a process that is predicated on ‘mining’ and requires huge amounts of processing power. What's more, this process requires a reliable, cheap, and continuous stream of power to operate, which is, unfortunately, best supplied by always-on energy resources, such as those provided by

fossil fuels.

The system has been designed to make it prohibitively expensive (although not impossible) for a well-funded actor to take control of an entire crypto network. So, in mitigating one problem, the founders of Bitcoin created another altogether bigger one. Its staggering energy consumption is evidence that when we innovate or implement shiny new technologies, their environmental impact is not always prioritised or even considered at inception. And the current energy and environmental crisis show that this mentality urgently needs to change. So, what can be done?

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More sustainable sources

Bitcoin and other currencies based on proof of work blockchains must move to more sustainable sources. It's something that won't happen overnight - or ever in its entirety - but we are starting to see some positive movement here. Paraguay, for example, has an energy supply based almost 100% on hydroelectric sources. This means Bitcoins mined in Paraguay, which also has the highest per capita percentage of renewable energy, will have a lower carbon footprint than Bitcoin mined in nations dependent on fossil fuels. For this reason, Paraguay believes it can become the crypto hub of Latin America.

Looking ahead, the desire to mainstream Bitcoin is likely to accelerate research into reducing the cost of storing renewable energy, as well. Additionally, the tentative steps being taken by governments to turn Bitcoin into legal tender could potentially lead to well-considered policies for mining cryptocurrencies and penalising breaches of environmental norms.

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Green by design

Not all cryptocurrencies have the same detrimental environmental impact as Bitcoin. What we need is a cryptocurrency that is green by design. That's why it is critical that we prioritise building a more sustainable blockchain ecosystem, which is both environmentally and financially stable. This is where proof of stake blockchains come to the table.

In this system, mining is replaced by staking - a network of "validators" contribute - or "stake" - their own crypto in exchange for a chance of getting to validate new transactions, update the blockchain, and earn a reward. Because it eradicates mining and is not a duplicative process (with several sources competing to solve the same puzzle), this method does not consume unnecessary amounts of power. We've seen huge strides with the likes of Etherium looking to migrate its entire proof of work ecosystem to Etherium 2.0, a proof of stake system. Indeed, the Ethereum Foundation, the organisation behind the Ethereum cryptocurrency, says that the energy cost of each transaction could be cut by 99.95%.

Many players in the industry want to ensure that any energy consumed by the industry is entirely carbon-free. In April 2021, three important organisations (the Energy Web Foundation, Rocky Mountain Institute, and the Alliance for Innovative Regulations), formed the Crypto Climate Accord, which is supported by organisations spanning the climate, finance, NGO, and energy sectors. The aim of the Accord is to "decarbonise the industry in record time" and achieve net-zero emissions in the global crypto industry by 2030.

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The environmental burden of Bitcoin

The environmental burden of Bitcoin and other proof of work blockchains shows why we can never look at innovation in the short term. We're now left with trying to address a major man-made sustainability challenge that could have been avoided completely with a bit of forethought.

But just as technology has helped create a problem, it can help solve it. Renewable energy, proof of stake blockchains and other emerging tools are all on hand. The question is whether Bitcoin is prepared to march to the beat of the global sustainability agenda.

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