

Daily Comment

Why Bitcoin Is Bad for the Environment

Cryptocurrency mining uses huge amounts of power—and can be as destructive as the real thing.



By Elizabeth Kolbert



According to one source, a single bitcoin transaction uses the same amount of power that the average American household consumes in a month.

Photograph by Akos Stiller / Bloomberg / Getty

Money, it's often said, is a shared fiction. I give you a slip of paper or, more likely these days, a piece of plastic. You hand me eggs or butter or a White Chocolate Mocha Frappuccino, and we both walk away satisfied. With cryptocurrency, the arrangement is more like a shared metafiction, and the instability of the genre is, presumably, part of the thrill. Dogecoin, a cryptocurrency that was created as a spoof, has risen in value by eight thousand per cent since January, owing to a combination of GameStop-style pumping and boosterish tweets from Elon Musk. On Tuesday, which backers proclaimed DogeDay, the cryptocurrency was valued at more than fifty billion dollars, which is more than the market cap of Ford. Coinbase, a cryptocurrency exchange, went public last Wednesday; almost immediately, it became worth more than G.M.

The mainstreaming of cryptocurrency, as it's been called, is obviously a big deal for the world of finance. It's also a big deal for the world of, well, the world. This is particularly true in the case of the ur-cryptocurrency, Bitcoin. Like Dogecoin, bitcoin has recently surged in value. In April, 2020, a coin was worth about seven thousand dollars; today, it's worth more than fifty-five thousand. (It hit a record high of \$64,895.22 on April 14th, but has since fallen off.) As the cost of investing in bitcoin has soared, so, too, has the potential profit in "mining" it. Bitcoin mining is, of course, purely metaphorical, but the results can be every bit as destructive as with the real thing.

According to the Cambridge Bitcoin Electricity Consumption Index, bitcoin-mining operations worldwide now use energy at the rate of nearly a hundred and twenty terawatt-hours per year. This is about the annual domestic electricity consumption of the entire nation of Sweden. According to the Web site Digiconomist, a single bitcoin transaction uses the same amount of power that the average American household consumes in a month, and is responsible for roughly a million times more carbon emissions than a single Visa transaction. At a time when



the world desperately needs to cut carbon emissions, does it make sense to be devoting a Sweden's worth of electricity to a virtual currency? The answer would seem, pretty clearly, to be no. And, yet, here we are.

The Greenidge Generating Station in Dresden, New York, sits on the shores of Seneca Lake, about an hour southeast of Rochester. It was originally built in the nineteen-thirties to run on coal; over the decades, new units were added and older ones shuttered. The power station ceased operations in 2011, and it sat idle until it was purchased by a private-equity firm and converted to run on natural gas. In 2017, under the ownership of Greenidge Generation Holdings, the plant reportedly began operating as a “peaker plant,” to provide power to the grid during times of high demand. (A spokesperson noted that the plant “is permitted to run 24/7.”) Then, in 2019, it was announced that the plant would power bitcoin mining.

Mining is the process by which bitcoin is both created and accounted for. Instead of being cleared by, say, a bank, bitcoin transactions are recorded by a decentralized network—a blockchain. Miners compete to register the latest “block” of transactions by solving cryptographic puzzles. The first one to the solution is rewarded with freshly minted bitcoin. Miners today receive 6.25 bitcoins per block, which, at current values, are worth more than three hundred thousand dollars.

It's unclear exactly who dreamt up bitcoin, so no one knows what this person (or persons) was thinking when the mining protocols were first established. But, as Ari Juels, a computer scientist at Cornell Tech, recently explained to me, the arrangement seems to have been designed with equity in mind. Anyone devoting a processor to the enterprise would have just as much stake in the outcome as anyone else. As is so often the case, though, the ideal was soon subverted.



“What was quickly discovered is that specialized computing devices—so-called mining rigs—are much, much more effective at solving these puzzles,” Juels said. “And, in addition, there are economies of scale in the operation of these mining groups. So the process of mining, which was originally conducted by a loose federation of presumably individual participants with ordinary computing devices, has now become heavily consolidated.”

Because rig “farms,” which are essentially like server farms, consume a lot of energy, bitcoin-mining operations tend to chase cheap electricity. Roughly seventy per cent of bitcoin mining today takes place in China. (A recent study found that the associated electricity consumption could “potentially undermine” China’s efforts to curb its carbon emissions.) Russia is also a bitcoin-mining center—there are big operations in Siberia, where cold temperatures help keep rig farms from overheating—as is Iran, where electricity is subsidized.

In the United States, home to about seven per cent of the world’s bitcoin mining, finding cheap power can be complicated. A few years ago, miners “descended upon” the city of Plattsburgh, New York, about a hundred and fifty miles north of Albany, which gets much of its electricity from hydroelectric dams on the St. Lawrence River. The power is relatively inexpensive, but, once Plattsburgh uses up its allotment, it has to purchase more at higher rates. Bitcoin mining drove up the cost of electricity in the city so dramatically that, in 2018, Plattsburgh enacted a moratorium on new mining operations.

Buying a generating station, as Greenidge Generation Holdings has done, is a way around the problem. Let others pay retail; Greenidge now gets its power “behind the meter.” The firm recently announced that it was going public, via a merger with a Nasdaq-listed company called Support.com, and boasted that it “expects to be the first publicly traded bitcoin mining company with a wholly-owned power plant.” In the announcement, Greenidge said that it was planning to more than double



its bitcoin-mining operations in Dresden by the fall of 2021, and to double them again by the end of 2022. It further declared that it intends to “replicate its vertically integrated mining model at other power sites.”

To expand its operations in Dresden, Greenidge will have to burn more and more natural gas, thus producing correspondingly more greenhouse-gas emissions. The firm’s plans have sparked demonstrations in the Finger Lakes region. On Saturday, a hundred protesters marched to the gates of the plant.

“This is a test case,” Joseph Campbell, the president of Seneca Lake Guardian, the group that organized the march, told WRFI, an Ithaca radio station. Two days later, the local planning board approved Greenidge’s application to build four new structures at the site, to house more mining rigs. Members of the planning board said that for, legal reasons, they were barred from considering the broader implications of their decision. “We know that bitcoin is a big waste of energy,” the chairman of the planning board, David Granzin, said. “But we’re bound by law.”

Whether this is, in fact, the case is debatable. What’s beyond debate—or should be, at least—is that this is a matter that shouldn’t be left to a local planning board to decide. There’s no way for New York, or the U.S. as a whole, to meet its emissions-reductions goals if old generating stations, rather than being closed, are converted into bitcoin-mining operations. Greenidge may become the first mining firm with a “wholly-owned power plant,” but, unless the state or federal government steps in, it won’t be the last: another cryptocurrency firm, Digihost International, has already applied to New York State’s Public Service Commission for permission to purchase a natural-gas-burning station near Buffalo. As representatives of Earthjustice and the Sierra Club recently put it, in a letter to officials of New York’s Department of Environmental Conservation, “additional scrutiny . . . is essential to prevent the floodgates opening for other retiring power plants.”

Andrew Yang, the former Presidential candidate who's now running for mayor of New York City, has said that he wants to turn the city into a cryptocurrency-mining hub. It's hard to imagine a worse idea. The city is already looking at spending billions of dollars to protect itself from sea-level rise; increased emissions are pretty much the last thing it needs. Forward-looking politicians should be thinking about ways not to buoy bitcoin mining but to bury it.



Elizabeth Kolbert, a staff writer at The New Yorker since 1999, won the 2015 Pulitzer Prize for "The Sixth Extinction." Her latest book is "Under a White Sky: The Nature of the Future."