

THE REPORTS OF BITCOIN ENVIRONMENTAL DAMAGE ARE GARBAGE

I have a background in electricity, from when I was an investment banker. I worked in a Natural Resources & Power group for about 8 years and modelled electricity systems and assets in the UK and China in the context of acquisitions, capital raisings, restructurings, and regulatory submissions. One of the banks that I worked for was HSBC, in their emerging markets M&A team, and I know China well. The models, created in groups, were used to support perhaps \$4-5 billion equivalent of transactions, including public tender offers, acquisition finance, syndicated loans, and bond sales. The only time I went back to my old business school for course work was for modules offered by Decision Sciences, one of which was an in-depth power systems dynamics course. The financial models were built using @Risk statistical software to apply a distribution shape to inputs. When I left investment banking, I purchased (with partners) an electricity business in Italy that had eight run-of-river hydro plants and two CCGT facilities.

I'm also an environmentalist. I grew up mainly in rural Canada and I like the outdoors a little bit more than people. Now I live in Switzerland and do a lot of mountain climbing. I donate to two (moderate) environmental groups.

I believe that crypto is the best way to reduce inequality in the world and provide financial inclusion to low-income people. I think that most people get into crypto for reasons related to value and values.

I write this article because I'm sick of being confronted by people, even others in crypto, about crypto allegedly being an environmental disaster. It isn't. That is an egregious lie.

Patient Zero

Almost all news articles that repeat the lie that crypto is an environmental problem can be traced back to one source: Alex de Vries, a twenty-something year old who has zero knowledge of the electricity industry, power system modelling, China, or any related real-world experience. He blogs from home on digiconomist.net. His "reports" are about as unscientific and unethical as you can get.

While claiming to be unbiased and touting "peer reviewed" "academic articles" his site uses incendiary language to describe the bitcoin computers that maintain system security and administration as "consuming huge amounts of energy" which have now, apparently, reached "epic proportions". This "massive energy consumption" isn't the biggest problem, though, according to de Vries; it is that "the network is mostly fueled by coal-fired power plants in China", resulting in "an extreme carbon footprint for each unique Bitcoin transaction."¹

He goes on to write: "Additional research published in Nature Climate Change (October 2018) even suggested that Bitcoin mining alone could push global warming 'above 2 °C within less than three decades'."

He then compares the efficiency of bitcoin to the Visa system, writing "the current global payment system handles 6,800 times more digital transactions per day than Bitcoin does. Even on this flawed comparison, Bitcoin still requires 3,400 times more energy than an average non-cash transaction."

He also claims that there are "half a billion people who might be mining Bitcoin *without even knowing it*" and then, generously, says that he doesn't include these miners in his calculations. Yet, elsewhere on his blog, he says that the only way to mine bitcoin today is by using specialized mining equipment,

¹ All quotes from digiconomist.net.

like an Antminer S9. I don't have an Antminer S9 at home (at least, I don't think I do), but I understand that they are about the size of a small refrigerator and throw off a fair bit of heat. I think that half a billion people might notice. Anyway, regardless of where he gets this "information" the only proper response to it is to think *WTF that isn't very likely* and not to repeat it.²

Antidote

I address his assertions one by one, so we can get to an honest appraisal of the situation.

Economic assumptions

In respect of his Bitcoin Energy Consumption Index de Vries writes: "The index is built on the premise that miner income and costs are related."

That is wrong. The market price for a product made by a business and the prices for what it takes to create the product are (in almost all cases) completely separate. Want to sell mud pies and you set up an expensive factory to do so, hire lots of staff, spend a lot on marketing? Well, the price you sell the mud pies for has nothing to do with the input prices you have to pay. No one who has a basic understanding of economics or has run a business in the real world would make this error.

Based on his own assumptions, de Vries completely contradicts himself in his calculations: since the price of bitcoin has fallen significantly, based on the assumption on his site (which is a fixed cost to income ratio), the costs to miners must also have fallen equivalently. But, no. Now that the price has fallen, he simply changes his assumptions to fit his narrative. There is no commensurate decline in his index; his assumptions still conclude that bitcoin allegedly consumes more energy than [pick whatever small country you want].

Methodology

The empirical way to test hypotheses since the Scientific Revolution is to collect input data, perform some operation, and then observe the output. You might have heard about this at school.

So, this is what de Vries does, right? Well, no. It is a lot of hard work to collect input data and he doesn't do this at all. He has a better idea. He asserts that this method produces errors and the data isn't available, so he "therefore proposes to turn the problem around, and approach energy consumption from an economic perspective."

Does that sound valid to you? Do you want to know what he really means by this? I've read everything in his reports, so I'll make it simple for you to understand.

He means that his power consumption index starts with the *financial output* (i.e. the income and costs for the miners who maintain the Bitcoin architecture) and then backs out the *technical inputs* to these financial statements (i.e. the amount of electricity consumed). So, he has these financial outputs, right, and makes them available? Well, no again. He doesn't have this information either. So, his methodology, if you can call it that, is to make assumptions for financial information that he doesn't have, to then derive the technical volume. The derivation method is also completely based on his assumptions. Which he just makes up out of thin air; they are not at all based on any empirical data whatsoever. Given that everything is basically his own assumption, does he bring any biases to the

² One source for this estimate alleges that these half a billion people unknowingly mining bitcoin might be a result of malware embedded in computers/websites. Conveniently, this source sells anti-malware protection. However, this mining process is dismissed by de Vries himself, so the real source of his assertion is not clear.

“analysis” that we should know about? Well, on his site he writes that the index is designed to “raise awareness on the unsustainability of [bitcoin’s architecture].”

Here is what a real scientist thinks about his approach.

Enter Jonathan Koomey, special advisor to the Chief Scientist of the Rocky Mountain Institute. He was a lecturer in Earth Systems at the School of Earth, Energy, & Environmental Sciences at Stanford University and a Research Fellow at the Steyer-Taylor Center for Energy Policy and Finance at Stanford University. He worked as a researcher and scientist at Lawrence Berkeley National Laboratory for more than two decades and he serves on the editorial board of the journal Contemporary Economic Policy.

Koomey says that de Vries’ work is “fundamentally flawed” because it backs into bitcoin's power consumption by estimating miners' revenues and expenses. "Any time you do that, you introduce multiple layers of error and uncertainty. It's a completely unreliable way to do the analysis, and no credible energy analyst would ever do that."³

The assertion by de Vries that “the network is mostly fueled by coal-fired power plants in China”

He provides absolutely zero evidence for this statement, like almost everything else on his site. I guess that, if you knew nothing about the electricity industry, you might have a general idea that China has a lot of coal plants and you might superficially come to this conclusion.

However, it is completely incorrect. Most of those who administer the Bitcoin network and provide security (called miners) are located close to cheap, and underutilized, hydro power facilities. I recently spoke several times and at length to former power industry colleagues in Hong Kong and their estimate is that more than 80% of all Chinese miners are located in Sichuan province. The vast majority of power produced in Sichuan is from hydro power. I was in China late last year and visited Sichuan and some of the locals told me that officials are extremely keen on crypto because it leads to more jobs and taxes. There was a policy to curtail renewables development, as there was so much overcapacity, until crypto arrived.

A recent report into crypto energy use, done by Coinshares, which is the only honest, data-driven report ever to be undertaken⁴, concludes that almost half of global bitcoin mining takes place in Sichuan. Overall, they estimate that 77.6% of global bitcoin mining is powered by renewable energy. My former colleagues in Hong Kong and I think that the real amount is closer to 85% and rising. This is mainly concentrated in cooler climates with abundant, and underutilized, hydro power, including: Quebec, Iceland, and the Pacific North-West.⁵

My former colleagues in Hong Kong characterized the assertion that the Bitcoin network is fueled by coal-fired power plants in China as “laughable,” “amateurish” and “obviously made up by someone who doesn’t know [the power industry in] China at all.”

Bitcoin is going to cause us to miss global warming targets ...

On his main page, de Vries writes: “Additional research published in Nature Climate Change (October 2018) even suggested that Bitcoin mining alone could push global warning ‘above 2 °C within less than

³ CNBC interview, 21 December 2017.

⁴ <https://coinshares.co.uk/wp-content/uploads/2018/11/Mining-Whitepaper-Final.pdf>. This report isn’t perfect. It doesn’t pretend to have all of the necessary input data, but at least it starts with actual inputs and is based on tangible research, not some ass-backward, unscientific, biased guesstimate.

⁵ Negative externalities are covered in some jurisdictions e.g. Quebec has a cap-and-trade system, China is a signatory to the Paris Agreement within the UNFCCC framework, Iceland is part of the European Union Emissions Trading Scheme, etc.

three decades’.” So, I read the article, which was written by Camilo Mora, an associate professor of geography at the University of Hawaii at Manoa and published (and included it in a press release) on 29 October 2018. It was the subject of a lead article on Bloomberg, in which Mora says of bitcoin, “If this takes off it will be something that we will not be able to control.” According to Bloomberg, “Mora’s research often uses large data sets to tackle far-off problems.” Great, I thought; finally some data. However, on reading the Hawaii paper it is curious that ... there is no data. The core “data” for the paper comes from ... guess who? That is right, our blogger friend de Vries.⁶

So, for corroborating support on his website, de Vries references an “academic” article whose main source is ... de Vries. It is unbelievably disingenuous.

The allegation that the Bitcoin network displaces energy consumption

Again, completely incorrect. It shows a shocking lack of knowledge of the electricity industry. Electricity systems are quite complicated, mainly because electricity cannot be stored, except in small quantities. So, you have the concept of pools, grid operator dispatch functions, etc. Hydro power is mainly located in mountains, a long way from population centers. The transmission line losses often make it unfeasible to transport the electricity supply to where it is demanded; consequently, a lot of hydro power is underutilized.

Miners are highly mobile; they can move to where the cheapest power is, in a way that hospitals, schools, etc. cannot. Hydro power is cheaper than coal and the vast majority of miners have, naturally, set up close to cheap and underutilized hydro facilities. The ones who have not are economically incentivized to move there and they are clearly doing so.

In my conversations with former industry colleagues and from what I heard in Sichuan, it seems that, today, there is an enormous amount of unused hydro power capacity. Because of transmission constraints, they just cannot use all of the power that they have. Some people commented that every deal that they do with a miner is “pure profit”; the electricity revenues would otherwise be lost. The same appears to be the case in a neighboring province. A few local industry experts told me that they estimated that at least 200-225 TWh per year of *surplus* hydro power exists, just in Sichuan. For reference, the Bitcoin network uses maybe between 25-35 TWh per year.⁷

Of course, hydro power is not completely carbon zero and it does have an environmental impact. But, for anyone to state that most of the Bitcoin network is powered mainly by coal or that renewables used for the network displace other users or have an electricity price impact are just blatant lies.

Energy consumption compared to country size

On his site, de Vries has a comparison of (his complete guesstimate of) bitcoin energy consumption compared to energy consumption by certain countries (Hong Kong, Singapore, Portugal, etc.). He has a reference for this data: www.bitcoinenergyconsumption.com. It must be another authoritative third-party source for these conclusions, right? If you type in www.bitcoinenergyconsumption.com guess what happens? Well, you are directed to <http://digieconomist.net>. There is no such site as www.bitcoinenergyconsumption.com, despite it being prominently displayed as the source. It doesn’t exist.⁸ There is no third-party verification, as the reader is led to assume. It is just de Vries again. It

⁶ There is also a reference to a graph called “Technology Adoption by Households in the United States” sourced from an internet site called “Our World in Data,” which appears to be overlaid onto de Vries’ “data”. This then forms the basis of a kind of “scenario analysis” for their “academic” work. I’m not joking.

⁷ At his most wild, de Vries’ estimated that it consumed 75 TWh per year.

⁸ Go ahead and type it in for yourself to see what a complete fraud this is.

is unbelievably unethical. The graph, with this fake reference, appears in at least a dozen news articles that I could find before I got bored and stopped searching for new ones.

It gets more unethical. On the site he writes, “The entire Bitcoin network now consumes more energy than a number of countries, based on a report published by the International Energy Agency,” to which he provides a link. However, the link is to the IEA’s main page, not to an IEA report that finds that the Bitcoin network consumes more energy than a number of countries. So, I called the IEA in Paris. There is no such report. The IEA does publish reports on energy consumption by country, but they don’t assert that the Bitcoin network consumes more electricity than these countries. It is de Vries who asserts this, not the IEA. The only connection to the IEA is that de Vries uses their data for country energy use. He then compares IEA country data to his own made-up numbers for Bitcoin energy use. His article in the academic journal Joule also references the IEA. It is the same story: there is no IEA report asserting that the Bitcoin network consumes more energy than small countries. Just de Vries does this.

Peer-review

On de Vries’ site it is written, “the methodology underlying the Bitcoin Energy Consumption Index has been anchored in peer-reviewed academic literature since May 2018.” Sounds impressive, right?

Funny, though, it doesn’t seem to include the comments from Koomey, the Stanford and Lawrence Berkeley National Laboratory scientist who calls it “fundamentally flawed” and asserted that “no credible energy analyst” would use such an approach. Nor the MIT professor. Nor the environmental researcher. Etc.

On the site, de Vries, in support for his conclusion about Bitcoin causing environmental damage writes, “The best support ended up coming from the biggest manufacturer of Bitcoin mining machines itself.” By this, he means Bitmain, a large equipment producer. He states that Bitmain had filed for an IPO and he provides a link to the incriminating document, which is an Application Proof for the stock exchange and securities regulator in Hong Kong. A little voice inside me said that it is unlikely that the Bitmain legal document would actually corroborate de Vries’ assertions that the Bitcoin network was causing global warming and using up more electricity than Ireland, but you never know. So, I looked through the 300-page Application Proof. Guess what? Bitmain doesn’t say anything about electricity use. Do you know what they do admit, which is de Vries’ “best support” for his assertion that Bitcoin is an environmental disaster? They admit that ... they sell Bitcoin mining machines. No kidding.

The academic journal he is referring to is called Joule. The best peer review doesn’t come from inside this august publication, though; it comes from the one and only user comment on their website. I reproduce it in full below.



the4thv · 6 months ago

Hi Alex,

Thank you for the excellent article.

I have taken the contention that Bitcoin's power consumption doubles every 6months and that it is using the same as Ireland as of the middle of 2018 and that it is likely to be the same as the Czech Republic at the end of the year and carried on this doubling, until 5 years from now Bitcoin will be using more than the 2017 energy consumption by the world. Scary numbers:

Period,	Bitcoin TWh*,	Equivalent consumption (as of end 2017)**, Notes
Q4 2018,	67,	Czech Republic
Q2 2019,	134,	Sweden
Q4 2019,	268,	Mexico
Q2 2020,	536,	Germany

Q4 2020,	1072,	Japan, (more than the middle east)
Q2 2021,	2144,	Between Latin America and Europe
Q4 2021,	4288,	North America
Q2 2022,	8576,	BRICS
Q4 2022,	17152,	500TWh short of entire global annual consumption
Q2 2023,	34304,	12000TWh more than the world uses

* Doubling consumption as per your article

**Annual energy data from enerdata.net, <https://yearbook.enerdata.n...>

Firstly, have I understood this correctly? If so, and the main byproduct of all this processing power is heat, do you have any way of estimating the heat output of this energy consumption.

God, the internet is just so great. Besides me, someone, somewhere, has taken the time to read de Vries' article and has actually worked out the consequences of his absurd assumptions and made-up numbers. This guy, "the4thv", has done the work that the peer reviewers, the Hawaii researchers, and the news media obviously didn't do. He actually looked to see if it made any sense. He has used de Vries' own methodology, assumptions and numbers ("anchored in peer-reviewed academic literature") to work out the consequences. And, he discovered that de Vries' numbers lead to the conclusion that ... the Bitcoin network will use up all of the world's energy in Q2 2023. Then, he asks de Vries if this is correct and what the concomitant heat output will be. Pretty hot, I bet. That was 6 months ago. Surprisingly, de Vries has not yet responded.

I was, myself, thinking of doing this analysis, to see, based on his assumptions, when the Bitcoin network would consume more power than was produced by the sun⁹, so I laughed when I read this comment on the academic journal's site. There is the real peer review for you.

Less efficient than Visa

Using his impressive ability to make up numbers, de Vries compares the Bitcoin network to the Visa network. It is a spurious comparison for at least two reasons. First, the Bitcoin network is stand-alone; it is the entire system. Visa needs the banking system to run, in case you hadn't noticed. It isn't stand-alone. (You can see him thinking to himself: Darn it, I knew I forgot to include something. Like, the entire global banking system.¹⁰ Gosh, I wonder if it uses much electricity?). Second, he compares number of transactions but conveniently ignores the value of transactions. If you do the comparison based on value, not number, of transactions, his entire analysis falls to pieces.

The impact of Patient Zero

In most industries, low-quality speculative blogs written from home by completely biased people who know nothing about the industry they are talking about, like what de Vries has produced, would just be ignored.¹¹ Imagine blogging about, say, oil production in the United States using the same approach; do you think that Bloomberg would make it headline news or academic journals would give

⁹ It is coming up pretty soon, unfortunately. I expect that will be quite negative for the BTC price.

¹⁰ Go ahead and use his ass-backward methodology: open up the financial statements of every bank in the world to see how much they make in profit. Then, apply some thumb in the air assumptions and let's see if you can back out electricity consumption. Then, compare that to crypto. They will be a vastly bigger consumer of electricity than crypto. Then, compare crypto lending to, say, mining and oil & gas projects, (which = 0), versus bank lending to these industries globally and see if you can work out differential environmental impacts.

¹¹ It should be a rule of thumb that just because everyone can create a blog in minutes and just because everyone has access to social media, doesn't necessarily mean everyone should use it. I'm sure that it has nothing to do with being sensationalistic and making profits from his site. de Vries acknowledged to CNBC that he has "no previous experience in energy economics." (You can tell he is not an industry insider by the terms and spelling he uses on his blog). He also conceded to CNBC that, "... in the end there's no way to verify my numbers because it's like a black box. You don't know what's in there." Well, he may not know what is in there, but I do. You can read it in the title of this article. Separately, de Vries also says to CNBC, "I'm obviously confident in this number. I wouldn't be publishing it if I wasn't confident." Maybe I'm just old-fashioned, but if I had no experience in an industry and my model was a black box and I didn't know what was in there, I'm not sure I would be so confident in the results. There is a good chance that I wouldn't then publish them on the internet and market myself as an authority.

it any credence? In this case, what has happened? Well, it is headline news on Bloomberg and the “data” has been accepted (by some) in academia. Hmmm, I wonder if it has anything to do with biases against the crypto industry?

The Hawaii “researchers”, Forbes and Bloomberg

The researchers at the University of Hawaii obviously didn’t do any research. The lead author, Mora, has a degree in biology, works in the geography department, and his specialty is “how biodiversity patterns are generated and modified by human activities.” Sounds pretty relevant. There are six other authors; all of them have backgrounds ranging from “Tropical Plant and Soil Science” to “Botany”. None of them have any experience of power markets, cryptography or computer science. Their paper is supposedly peer-reviewed. Not one of these people seem to have questioned de Vries’ underlying data (if you can call it that). Not one seems to have done the work that “the4thv” did and applied common sense to the conclusions: that according to de Vries the Bitcoin network will consume more energy than currently produced on Earth by Q2 2023.

In a press release dated 29 October 2018 by the University of Hawaii at Manoa, it is stated that “A team of UH Manoa researchers analyzed information such as ... the geographic location of the miners who likely computed the Bitcoin, and the CO₂ emissions of producing electricity in those countries.”

Let me tell you clearly: No, they didn’t. Almost all Chinese miners are in Sichuan province and it is just a fact that almost all of the power produced in Sichuan is from hydro. For sure, at least 90%. Globally, the vast majority of miners run on hydro power. The CO₂ emissions from hydro are negligible. It doesn’t at all support their ground-breaking “analysis”.

Alternatively, they may have only read de Vries’ blog and (unlike most real industry insiders) fell for his lie that “the network is mostly fueled by coal-fired power plants in China.” That is no excuse though: the CNBC article had been out for almost a year by that point, where de Vries’ data and methodology were challenged by real scientists at MIT and Stanford. There is no excuse for using his absurd numbers in their report, as cited, even if they don’t know anything about the power, cryptography or technology industries. In addition, it would only have taken the Hawaii researchers about a 10-minute search on the internet to discover that most miners were in Sichuan and most power in Sichuan was from hydro, totally disproving their absurd conclusions.

On the same day, on the back of their press release, Forbes magazine, with their ever-balanced reporting on bitcoin, then ran an article entitled “Bitcoin Predicted To Be The Nail In The Coffin Of Climate Change.” Bloomberg led with: “Bitcoin Could Theoretically Put Paris Climate Goals Out of Reach.” Maybe they don’t have access to the internet either, to do some basic fact-checking.¹²

Based on his comment to Forbes about bitcoin (“I thought it was a video game”), it is possible that Mora doesn’t have a deep understanding of the crypto industry. Nevertheless, Forbes reports that “what came from the analysis floored the research team” and “Mora calls the numbers mind-blowing.” To put myself in the shoes of this associate professor of geography from Hawaii and his team of botanists, if I discovered that something that I had thought was a video game was actually going to use up all of the Earth’s energy in just over 4 years or cause civilization to miss the Paris climate goals, well, yeah, that would blow my mind too. I would issue a press release immediately and get the media on the phone; forget about doing any common-sense check on the data or googling

¹² I’m sure that it has nothing to do with the fact that crypto is an existential threat to the banking industry and the main client for these two publications is ... the banking industry. I guess, to be fair, that they are in the business of selling newspapers, not the truth. Bitcoin destroying the planet is certainly a lot sexier than the real facts.

to find out some basic details. Who cares about any damage to the credibility of climate change science (or bitcoin) if I can make myself front page news world-wide?

Here is a great quote from their press release: “Currently, the emissions from transportation, housing and food are considered the main contributors to ongoing climate change. This research illustrates that Bitcoin should be added to this list,” said Katie Taladay, a UH Manoa master’s student and coauthor of the paper.”

Really, Katie? If you could add just one more to this list, you would add bitcoin? Not maybe, uhh, the global oil industry? Or maybe the chemicals industry? How about the banking industry? It is really hard to know what to say, faced with the malignant effects of Patient Zero. Let’s hope that this infected group in Hawaii gets better soon.

Newsweek

Speaking of those infected by Patient Zero, here is some reporting from Newsweek that makes the Hawaii academics seem downright prudent. Referring to de Vries’ digiconomist data, Newsweek wrote about Bitcoin that, “If such growth were to continue, this would see the network consume as much energy as the U.S. by 2019, and as much energy as the entire world by the end of 2020.” They then add “This is largely as a result of the bitcoin network being mostly fueled by coal-fired power plants in China.”¹³

Treehugger

On 11 December 2018, Treehugger published a widely-read article in the environmentalist community entitled “Good news: Bitcoin is becoming worthless.” They wrote, “Bitcoin is a colossal waste of energy that will soon be no more. Good riddance.” Apparently, the Bitcoin network “uses more energy than 159 countries.”

The main data for their story comes from CBS News. And, guess where that data comes from? That is right: de Vries.

The Guardian

On 17 January 2019, The Guardian ran a story called “Bitcoin as Big Oil: the next environmental fight?” It included this assertion, “... Bitcoin will become big oil, and all who dabble in it will be reborn as enemies of the environmental movement, seen as plunderers of the planet and the bad guys in the fight against climate change – just like oil.”

The main data for their story comes from the Canadian Broadcasting Corporation. And, guess where you can trace that data to? That is right: de Vries.

It is really sickening, since the crypto and environmental movements have similar goals: to reduce the power of the establishment and to try to create a better world. Without this egregious lie between them, they should be allies.

Anyway, the number of journalists and environmentalists infected by Patient Zero seems endless.

¹³ Newsweek article, “BITCOIN MINING ON TRACK TO CONSUME ALL OF THE WORLD’S ENERGY BY 2020”, published 11 December 2017. Here is how they describe themselves: “Newsweek is a premier news magazine and website that has been bringing high-quality journalism to readers around the globe for over 80 years.” I think that it is safe to say that their tradition of “high-quality journalism” ended on 11 December 2017, at which time they obviously converted into a competitor to The Onion.

Institutional investors

One of the best-known, smartest institutional investors in the United States, billionaire Stanley Druckenmiller, stated to CNBC, in reference to Bitcoin, that "By 2019 it'll take up half the energy in the United States to run the Bitcoin network." It is really unbelievable. In case you are wondering, that would be equivalent to several hundred nuclear reactors. According to CNBC, "the statistic comparing energy usage by U.S. homes and bitcoin mining ... comes from Digiconomist."

Are you sitting there hoping that institutional investors are going to come into crypto in 2019? Maybe it will end the bear market? Well, you need to get them over the risk/return issues and then you need to convince them that crypto isn't evil, that it isn't destroying the planet. You need to overcome the lies spread far and wide by de Vries.

Some signs that others see the disease for what it is

While you might be thinking that it will be impossible to undo all of this damage and are wondering who in their right mind would stick up for an unpopular topic, especially when news organizations just seem to want to bash crypto endlessly, there are some signs that honorable, truthful people still exist in the world.

Tom DiChristopher

One of these is Tom DiChristopher, a journalist at CNBC. Unlike journalists at almost all other media companies, who seem to focus only on sensationalistic stories about crypto, this guy called a spade a spade. Here are some comments from his article, referenced previously.

He notes that it has been "widely reported" that "bitcoin mining allegedly consumes more power than most countries." Then he writes "But here's another thing you might want to know: All of that analysis is based on a single estimate of bitcoin's power consumption that is highly questionable, according to some long-time energy and IT researchers. Despite their skepticism, this power-consumption estimate from the website Digiconomist has quickly been accepted as gospel by many journalists, research analysts and even billionaire investors."

"Doing these wild extrapolations can have real-world consequences," said Jonathan Koomey, a Stanford University lecturer who pioneered studies of electricity usage from IT equipment and helped debunk faulty forecasts in the 1990s."

"It turned out to be a bunch of nonsense, but it takes pages and pages of work to debunk an errant sentence," Koomey said. "According to Koomey, this kind of analysis makes a classic mistake: It projects high growth rates associated with a new technology into the future, resulting in an eye-popping demand forecast."

"Many of those calculations that you see today I think are based on very weak assumptions," said Christian Catalini, an assistant professor at the MIT Sloan School of Management who studies blockchain technology and cryptocurrencies."

Applying a rare bit of common-sense in his field, DiChristopher titled his article, "No, bitcoin isn't likely to consume all the world's electricity in 2020." Unlike Bloomberg, thank God that someone in journalism is still willing to do the hard background work and write something truthful, regardless of the popular culture impression of a topic.

Katrina Kelly-Pitou, PhD

Another shining example is Dr Katrina Kelly-Pitou, writing in *The Conversation*.¹⁴ She introduces herself like this, “I am a researcher who studies clean energy technology, specifically the transition toward decarbonized energy systems.”¹⁵ OK, so she is an environmentalist and a scientist. She references yet another misleading *Forbes* article, which “indicates that bitcoin dramatically increases global energy consumption—and that electricity is its ‘Achilles heel’.” So, does she bash crypto, like almost everyone else? No. Here is a selection of the article she writes.

“New technologies—such as data centers, computers and before them trains, planes and automobiles—are often energy-intensive. Over time, all of these have become more efficient, a natural progression of any technology: Saving energy equates to saving costs.”

“By talking specifically about just the consumption of energy alone, I believe many fail to understand one of the most basic benefits of renewable energy systems. Electricity production can increase while still maintaining a minimal impact on the environment. Rather than focusing on how much energy bitcoin uses, the discussion should center around who indeed is producing it—and where their power comes from.”

In her article, she refers to the incorrect figures that come from de Vries as if they are fact. But, does she freak out and come to the same conclusions that he and most others do? No.

She writes, “If bitcoin technology were to mature by more than 100 times its current market size, it would still equal only 2% of all energy consumption.”

She repeats the widely-held but entirely false assumption (started by de Vries) that most bitcoin mining is done using coal power in China but takes a scientific view and writes, “However, bitcoin mining in Oregon? Not the same thing.”

That is a key environmental point. Nor is bitcoin mining in Sichuan, where the vast majority of it takes place in China.

She concludes, “Like many other aspects of the energy industry, bitcoin is not necessarily a ‘bad guy’. It’s simply a new, and vaguely understood, industry.”

She ends by mentioning the (missing) facts and data, “Although there has been extensive discussion in the media of bitcoin’s energy consumption, I’m not aware of any studies that actually calculate the comparative carbon footprint of the bitcoin process.”

That is right. And, you certainly are not going to get it from the garbage and lies produced by Alex de Vries. Thank God for Dr Kelly-Pitou’s voice in the discussion.

Of course, the views of these real scientists and professors from top universities need to be balanced against de Vries’ own pedigree, best understood in that most illustrious of titles that he has given to himself: “Blockchain Expert”.

¹⁴ <https://theconversation.com/stop-worrying-about-how-much-energy-bitcoin-uses-97591>

¹⁵ Unlike the front-page news team from Hawaii, however, she does not appear to have a background in geography, botany or tropical plants.

Corrections

Here is some corrective action that should be taken by various parties.

1. Alex de Vries should take down his totally misleading blog and apologize for the disservice that he has done to the crypto and environmental communities. The methodology is completely discredited as are his conclusions. The facts seem to be intentionally incorrect and are presented in an unethical manner in an attempt to deceive unobservant readers. I'm surprised that someone has not sued him already for what is an obvious misrepresentation, and from which he profits personally.
2. Joule should withdraw de Vries' article as it contains factually incorrect and misleading information that should never have been accepted by a serious academic journal.
3. Camilo Mora should withdraw his article in Nature Climate Change. It is based on a data source that contains fundamental errors, the conclusions of which are questioned by relevant industry experts at real universities. He should call every single media outlet that was duped by his ridiculous "study" and make sure that they run a retraction alongside his apology. Then, he and his team should go back to their core competence: studying flora and fauna in Hawaii.
4. Somebody should call Stan Druckenmiller and tell him that bitcoin isn't likely to use up half of the US power supply this year. That someone of his stature should be misled is a sign of how far the virus has spread.

Conclusion

To our friends in the environmental movement, know this: crypto is not your enemy. You know well what it is like to have mis-information used against you. Crypto is in its infancy. It does use up a lot of electricity, but nothing near what has been reported. Like all new technologies it will get better. I know both sides and I can say that, like you, the vast majority of people in the crypto community aspire to make the world a better place.

Crypto's carbon footprint is extremely moderate for being the world's largest computer network. Its energy efficiency gets better every day. It isn't perfect, but its goals are noble: greater wealth equality for all, the reduced impact of a deceitful banking system, and an opportunity for financial inclusion for the poorest amongst us. It doesn't displace other users of renewable resources; it mainly draws from unutilized hydro capacity and it contributes to local communities. At its heart it is honest money and a force for good in the world. To those of you in the community, hold your head high when questioned about crypto's environmental impact. Your work is important. There is no reason not to be proud of the system that Satoshi created.

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