

Ms. Vanessa Countryman
Secretary
Securities and Exchange Commission
100 F Street NE
Washington, DC 20549

June 17, 2022

**Re: The Enhancement and Standardization of Climate-Related Disclosure for Investors
Attention: 87 FR 21334; Docket ID: SEC-2022-06342; File No. S7-10-22**

Dear Ms. Countryman,

Americans for Financial Reform Education Fund and Public Citizen appreciate the opportunity to comment on the above referenced Proposed Rule (the “Proposal”) by the Securities and Exchange Commission (the “SEC” or the “Commission”) to require mandatory, standardized climate-related disclosures from public companies. In conjunction with other comments submitted by our organizations, we write separately to address the importance of requiring disclosure for the transition risks that registrants face from exposure to digital assets. The response is intended to address Questions 19, 20, 97, 98, and 101.

Digital assets pose serious, poorly understood transition risks to registrants and markets.

Over the last decade, the market for digital assets has exploded, with a total market capitalization of nearly \$3 trillion at its height in Fall 2021, before recently falling by almost two-thirds to under \$1 trillion.¹ These volatile, poorly regulated assets pose a range of risks to investors and markets. Along with the well-documented volatility and fraud that pervades many of these assets is the risk created by the energy-intensive protocols and activities that support many of them. As the White House Office of Science and Technology Policy explained in a recent request for information on the climate impacts of digital assets (“OSTP Request”):

The explosive growth of the digital asset ecosystem may contribute to greater energy use and negatively impact the climate. Many digital assets, including cryptocurrencies, use decentralized consensus mechanisms as opposed to a central authority to verify transactions. While different digital asset systems use different consensus mechanisms, many use “proof of work” based systems that require significant amounts of computing power and electricity, often derived from carbon-intensive sources. Some researchers estimate that cryptocurrencies use more electricity each year than many individual countries in the world, including some industrialized nations.²

Because of their energy intensive nature, these assets are subject to what the Commission describes in the Proposal as transition risk: “the actual or potential negative impacts on a registrant’s consolidated financial statements, business operations, or value chains attributable to regulatory, technological, and

¹ CoinMarketCap, “Total Cryptocurrency Market Cap” (last accessed June 13, 2022).

² *Request for Information on the Energy and Climate Implications of Digital Assets*, 87 Fed. Reg. 17105, 17106 (Mar. 25, 2022).

market changes to address the mitigation of, or adaptation to, climate-related risks.”³ Digital assets are heavily exposed to transition risks. For instance, the OSTP Request mentions that many digital assets are looking into less energy-intensive consensus mechanisms than proof of work.⁴ If investors come to prefer these other mechanisms, then registrants with significant financial investment in mining or owning proof-of-work based cryptocurrencies may see unexpected losses or need to shift their business strategy.

Investors in registrants with exposure to digital assets lack standardized, comparable information about their climate impacts and transition risks. To the extent that ownership of digital assets becomes widespread and the industry becomes embedded in public markets in new and complex ways, it exposes investors and market participants to a largely unmonitored source of transition risk. The Proposal, if adopted with the recommendations below, could provide a comprehensive, verified view of the emissions generated by digital assets and trading, especially if the rule requires registrants to disclose the emissions released in their value chain, also known as Scope 3 emissions. Along with the immediate benefits to investors of understanding the emissions and other climate risks generated as a direct result of cryptocurrency mining and which firms are exposed to those risks, the Proposal could also illuminate the transition risks from the e-waste generated by mining operations, as well as the need for disclosure to help investors understand attempts to use digital assets to trade carbon offsets.

To adequately monitor the climate risks posed by digital assets, the Commission should adopt robust emissions disclosure requirements, including of Scope 3 emissions.

The decentralized and semi-anonymized characteristics of blockchain-based applications are factors that make it difficult to develop a systematic understanding of the overall energy usage or climate risks of any given digital assets, much less the entire ecosystem. What information exists today is often based on academic modeling that employs a wide range of estimates and simplifying assumptions regarding the energy mix used to power the consensus mechanism.⁵ Some estimates of energy mix come from surveys of participants, which are not subject to rigorous external verification.⁶ Indeed, there is a clear incentive for stakeholders to withhold this information or underestimate emissions and risks and overestimate climate benefits. Purposeful obfuscation is the present norm.⁷

The transition risks posed by cryptocurrency are becoming increasingly concrete. Recently, the New York State legislature passed.⁸ If this trend continues, it could abruptly threaten the value and utility of digital assets that still use that protocol. The mining space is also full of bold claims about climate friendliness, even from miners powering their operations with coal refuse or flared natural gas.⁹ This

³ Proposal at 21350.

⁴ See *Request for Information on the Energy and Climate Implications of Digital Assets*, 87 Fed. Reg. at 17106.

⁵ Cambridge Centre for Alternative Finance, Cambridge Bitcoin Electricity Consumption Index, available at <https://www.dnb.nl/media/1ftd2xjl/the-carbon-footprint-of-bitcoin.pdf>; Juan Pablo Trespalacios and Justin Dijk, *The carbon footprint of bitcoin*, DeNederlandscheBank at 12 (2021) available at <https://www.dnb.nl/media/1ftd2xjl/the-carbon-footprint-of-bitcoin.pdf>.

⁶ See Blandin et al., *3rd global cryptoasset benchmarking study*, Cambridge Centre for Alternative Finance at 29 available at <https://www.jbs.cam.ac.uk/wp-content/uploads/2021/01/2021-ccaf-3rd-global-cryptoasset-benchmarking-study.pdf>

⁷ Simon Spichak, “How Crypto Is Failing Spectacularly to Greenwash Itself,” *The Daily Beast* (Apr. 22, 2022), available at <https://www.thedailybeast.com/how-cryptocurrencies-are-failing-spectacularly-to-greenwash-themselves>; Grayson Badgley and Danny Cullenward, *Zombies on the blockchain*, CarbonPlan (Apr. 7, 2022).

⁸ “New York Legislature Passes Moratorium on Crypto Mining Operations,” *jdSupra* (Jun. 17, 2022) available at <https://www.jdsupra.com/legalnews/new-york-legislature-passes-moratorium-4510741/>

⁹ Casey Wagner, “Crypto Mining Company Welcomes SEC Environmental Reporting Proposal,” *Blockworks* (Apr 5, 2022) available at <https://blockworks.co/crypto-mining-company-welcomes-sec-environmental-reporting->

mismatch between words and deeds could result in additional transition risks as the public learns more about the sector's climate and environmental impacts.

Unfortunately, registrants who own or use digital assets are not required to account for these sorts of transition risks. The rapid growth of digital assets makes this a particularly dangerous blind spot. Many mainstream Wall Street firms are increasingly trading and lending digital assets,¹⁰ and large miners like Stronghold Digital Mining and exchanges like Coinbase have been publicly listed on US stock exchanges. Investors and other market participants lack the information to fully assess the climate risks posed by these assets.¹¹ Retail and institutional investors who purchase digital assets, sometimes with the assistance of registrants like Coinbase, are not being properly appraised of these risks, which threatens the orderly and efficient functioning of the capital markets.

The Proposal provides an important avenue for giving investors and other market participants, including regulators, the information they need to assess this risk. Digital asset miners, exchanges, and owners that are publicly traded would all need to assess their business and publicly disclose the way their business could be affected by the energy transition. Of particular importance is the Proposal's requirement for registrants to disclose GHG emissions from their activities (Scope 1 and 2 emissions), and, in some cases, from the activities in their value chain and investments (Scope 3).

Disclosure of Scope 1 and 2 emissions would provide information about the emissions of publicly traded miners and other direct participants in proof of work protocols. This would provide investors and other market participants with a picture of the heterogeneity of energy use and emissions by different miners and protocols, and help substantiate or debunk claims about the emissions generated by their activities. Investors could choose how to allocate their capital with full information about the potential transition risks faced by a set of miners involved in each protocol. These emissions disclosures would be subject to outside assurance requirements and attestation by management.

Perhaps even more important for assessing the emissions of digital asset protocols would be the Scope 3 disclosures. Major exchanges hold a near oligopoly on the trading of some cryptocurrencies.¹² Coinbase, one of the largest, is publicly traded, and others may follow suit as regulation of digital assets continues to develop. As part of their business, these exchanges own some of the digital assets they offer for trade.¹³ Requiring disclosure of the emissions from their investments would make those exchanges assess and report the emissions impacts of each protocol they trade in.

Requiring disclosure of Scope 3 emissions would also require publicly traded financial institutions, which have been adding digital assets to their portfolios, to conduct the same assessment. This is particularly important because many of these large financial institutions have made pledges to align

proposal/; MacKenzie Sigalo, "Exxon is mining bitcoin in North Dakota as part of its plan to slash emissions," CNBC, Mar. 26, 2022) available at <https://www.cnbc.com/2022/03/26/exxon-mining-bitcoin-with-crusoe-energy-in-north-dakota-bakken-region.html>.

¹⁰ Justin Baer, "Wall Street Reluctantly Embraces Crypto," Wall Street Journal (May 1, 2022) available at <https://www.wsj.com/articles/wall-street-reluctantly-embraces-crypto-11651347654>

¹¹ Shane Shifflett, "Crypto Miners Struggle to Cut Carbon Emissions," Wall Street Journal (Oct 21, 2021) available at https://www.wsj.com/articles/crypto-miners-struggle-to-cut-carbon-emissions-11634808781?mod=article_inline

¹² Olga Kharif, "Crypto Oligopoly Imminent as Top Exchanges Grab 96% Market Share," Bloomberg (Apr. 11, 2022) available at <https://www.bloomberg.com/news/articles/2022-04-11/crypto-oligopoly-imminent-as-top-exchanges-grab-96-market-share>

¹³ Ari Levy, "Coinbase's crypto holdings jumped ninefold last year to over \$300 million as bitcoin surged," CNBC (Feb. 25, 2021) available at <https://www.cnbc.com/2021/02/25/coinbases-crypto-holdings-jumped-ninefold-last-year-as-bitcoin-surged.html>

their investments with science-based emissions targets, in part to manage the transition risks they face. Disclosure of the emissions attributable to cryptocurrency investments will help investors in these institutions and other market participants assess the credibility of these net zero claims.

To appropriately capture this information, exchanges and financial institutions would need to establish processes for assessing the emissions from the main miners and protocols, regardless of their location or ownership status. Such processes would illuminate the level of transition risk embedded in digital assets, providing both investors and regulators with the picture they need to choose whether to invest in specific digital assets or in the firms that own or trade them.

To realize these benefits, it's important that the SEC clarify the reach of its proposed Scope 3 reporting requirement. The current Proposal only requires disclosure if those emissions are "material" and does not provide additional clarity on what such an assessment entails. The SEC should recognize the importance of Scope 3 emissions disclosure for all companies and require all registrants to disclose their emissions, rather than adopting a "materiality" threshold. For large firms who own or trade significant quantities of cryptocurrency, their Scope 3 emissions would undoubtedly be important to investors and subject to disclosure for the reasons discussed above. Yet adopting a materiality standard would create opportunities for large holders of crypto to avoid such disclosures by claiming they are immaterial. The SEC should avoid this possibility by requiring disclosure of Scope 3 emissions for all registrants. Because of the importance of these disclosures the Commission should also require them to receive the same level of reasonable assurance required for Scope 1 and 2 emissions, and require their disclosure on a similar timeline for all but the smallest registrants.

Along with illuminating the emissions attributable to energy use by cryptocurrency protocols, the Proposal, if it adopts the recommendations above, could also help shine light on other sources of transition risk to investors and other market participants. Two examples, discussed below, are the emissions embedded in the waste produced by digital assets, and the forays by cryptocurrency firms into carbon offset markets.

The Proposal should help investors understand how the impacts of digital assets extend past the direct emissions generated by their operations, including to the waste they produce.

Requiring disclosure of Scope 3 emissions could help investors understand the emissions resulting from mining operations' dependence on the manufacturing and supply of electronic equipment. Crypto mining and proof of work verification methods generate disproportionately high volumes of electronic waste (or "e-waste") for the type of 'meaningful' economic activity that crypto mining purports to represent. The emissions resulting from the manufacture of this equipment may match or even exceed the emissions directly attributable to mining. One study has estimated the annual e-waste generated globally by mining for Bitcoin alone as roughly 30.7 metric kilotons in 2018, roughly equivalent to the amount of small IT equipment e-waste generated by the Netherlands.¹⁴ One average Bitcoin generates 272 grams of e-waste per transaction, the equivalent of throwing away an iPad for every two Bitcoin transactions.¹⁵ At peak price levels, Bitcoin mining could produce up to 64.4 metric kilotons of e-waste annually.

¹⁴ Alex de Vries and Christian Stoll, "Bitcoin's growing e-waste problem" 175 Resources, Conservation and Recycling, 1050901 (Dec. 2021)

¹⁵ Tim McDonnell, "E-waste from every two bitcoin transactions is the equivalent of throwing away an iPad," Quartz (Sept. 19, 2021) available at <https://qz.com/2061275/bitcoin-mining-creates-mountains-of-e-waste/>

The main driver of this e-waste is that the typical ASIC processor used for Bitcoin mining can operate at an intensity sufficient to be profitable for only 1.29 years. This planned obsolescence on steroids will, barring both fundamental changes in mining technology and an incentive structure to change this approach, virtually guarantee a steady stream of electronic waste so long as crypto currencies exist and use processing intensive verification methods such as proof-of-work.

Noted digital technology developer and digital historian David Rosenthal has estimated that the carbon footprint of bitcoin mining, when taking into account released carbon emissions from the manufacture and use of these electronics, could be two times or even ten times larger than estimates that focus primarily on mining's energy use alone.¹⁶

For broader context, the creation, collection, disposal of electronic waste is a decades long global resource and environmental health concern that poses risks to investors and market participants that are akin to transition risks. The US generates a significant amount of e-waste – 6918 kilotons in 2019 alone, which works out to approximately 21 kilograms of e-waste generated per capita annually. Of that, only 15% is recycled.¹⁷ Given this high volume of waste and the challenges that come with managing it, the economic and operational costs of collecting e-waste have historically put undue strain on local waste management facilities. Improper disposal, handling, disassembly, or incineration of e-waste can also release toxic metals and chemicals into the local environment, which can have significant negative health impacts on waste management workers and local communities, as well as local air and water quality.

Roughly half of US states have some sort of e-waste recovery laws to establish producer responsibility for the end of life of their products, but these laws vary widely in scope, coverage, and incentivization.¹⁸

Although the volume of e-waste generated by crypto mining to date is likely modest in comparison to the overall volume generated in the US, this may change should crypto assets achieve mainstream use, either as a tool for investment or speculation. The volume of waste would no doubt achieve new levels of magnitude. Local and state waste recovery and recycling programs would face significant operational and financial strain managing such waste. State laws could be amended to ensure crypto mining operations fall under the scope resource recovery laws that deal with e-waste – or, in states where no such rules exist, entirely new requirements might be created to deal with this new waste stream. Such changes would impose significant costs throughout the crypto value chain, in ways that will likely affect the financial condition of firms that are embedded within it. Investors need information about emissions, as well as qualitative disclosures of climate risk, to assess how prepared registrants are for this risk.

Blockchain based carbon offset credits cannot address the issues with carbon credits and indeed create new challenges.

¹⁶ David Rosenthal, "Cryptocurrency's Carbon Footprint Underestimated," DSHR's Blog (Oct. 5, 2021) available at <https://blog.dshr.org/2021/10/cryptocurrencys-carbon-footprint.html>

¹⁷ Forti V., Baldé C.P., Kuehr R., Bel G. The Global E-waste Monitor 2020: Quantities, flows and the circular economy potential. United Nations University (UNU)/United Nations Institute for Training and Research (UNITAR) – co-hosted SCYCLE Programme, International Telecommunication Union (ITU) & International Solid Waste Association (ISWA), Bonn/Geneva/Rotterdam., available at https://ewastemonitor.info/wp-content/uploads/2020/11/GEM_2020_def_july1_low.pdf

¹⁸ *Id.*

One strategy that some registrants intend to rely on to manage transition risk is the use of carbon offsets. As the Proposal acknowledges, offsets pose their own set of risks to registrants who would rely on them, and require separate disclosures so investors can evaluate a registrant's strategy.¹⁹ Recent developments seeking to combine offsets and digital assets reinforce the wisdom of this approach.

In recent months, Decentralized Finance (DeFi) projects have launched, claiming to employ the blockchain to create a forum for trading carbon offset credits and to improve transparency and liquidity in those markets.²⁰ The largest project, known as Toucan, claims it has put more than 17 million tons of CO₂-equivalent avoided emissions "on chain." But recent research by the climate solutions watchdog Carbon Plan shows that while this project has apparently been lucrative for its backers and partners, there is little evidence that it has effectively reduced emissions.²¹ The offsets it puts on chain are subject to well-documented problems, which mean that the verified credits are unlikely to actually reduce emissions. And because the protocol denies responsibility for further verifying credits, it actually revives projects that have previously been unable to find buyers or that are no longer eligible for trading on off-chain markets.

The stated goal of Toucan is to create liquidity and increase price discovery through transparency in voluntary carbon markets, which would raise prices for credits from voluntary emissions reductions. If successful, proponents claim it would incentivize greater emissions reductions in the physical world. The protocols operate by allowing anyone who currently holds emissions credits with the Verra offsets registry to move those credits onto the blockchain.

But using blockchain for carbon offset trading is a solution in search of a problem: neither liquidity nor price discovery are current problems in the functioning of the carbon markets; the overarching problem is poor offset quality.²² Most voluntary emissions reduction projects struggle to demonstrate that they actually reduce emissions. Instead, they often pay managers of forests or other carbon sinks to continue doing what they were already doing.²³ At best, this approach means a project has no effect on carbon emissions. Worse, in some cases it actually justifies increased emissions. This is because when business-as-usual management of a carbon sink is treated as an "offset," it increases the pool of allowable emissions without any corresponding real-world offset or reduction. A recent effort by global financial leaders to improve the integrity of these markets has become bogged down in these challenges.²⁴

The garbage in - garbage out problem that this state of affairs creates is only exacerbated by Toucan's expansive eligibility criteria. Carbon Plan has documented that, rather than incentivizing production of new, high quality offsets, the Toucan protocol largely gives new life to "zombie projects" that have

¹⁹ Proposal at 21355.

²⁰ Dieter Holger, "Cryptocurrency Traders Move Into Carbon Markets," Wall Street Journal (Jan. 10, 2022) available at <https://www.wsj.com/articles/cryptocurrency-traders-move-into-carbon-markets-11641826402>

²¹ *Zombies on the Blockchain*, supra note 7.

²² Public Citizen, *Comment on Office of the Comptroller of the Currency's Principles for Climate-Related Risk Management for Large Banks*, pp 10-13 available at https://www.citizen.org/wp-content/uploads/OCC-2021-0023-0115_attachment_1.pdf

²³ Dr. Charles D. Canham, "Rethinking forest carbon offsets," Cary Institute of Ecosystem Studies, (May 19, 2021) available at <https://www.caryinstitute.org/news-insights/feature/rethinking-forest-carbon-offsets>; Ben Elgin, "JPMorgan, Disney, Blackrock Buy Nature Conservancy's Useless Carbon Offsets," Bloomberg, (Dec 9, 2020) available at <https://www.bloomberg.com/features/2020-nature-conservancy-carbon-offsets-trees/>.

²⁴ Jess Shankleman and Natasha White, "Mark Carney's Bid to Boost Carbon Market Scaled Back Amid Controversy," Bloomberg (Mar. 16, 2022) available at <https://www.bloomberg.com/news/articles/2022-03-16/carney-s-bid-to-boost-carbon-market-scaled-back-amid-controversy>

been unable to sell credits for years, likely due to their low quality standards. 99.9 percent of credits on Toucan reflect projects that were credited before 2016, making them ineligible for trading in most conventional markets. Rather than taking responsibility for these negative consequences, Toucan has insisted they are not responsible for judging the quality of carbon credits on their blockchain.²⁵ Naturally, Verra has disclaimed any responsibility for any trading that happens on Toucan. The result is that buyers of credits get to claim non-existent emissions reductions, while sellers make a quick profit on previously worthless carbon credits.

The blockchain may yet prove to have benefits for tracking emissions and reductions. But registrants who rely on offsets purchased on such an exchange may find that the quality does not reflect their or their investors' expectations. This risk is why it is critical for disclosure about the use of offsets to include information about whether credits were purchased from a blockchain based registry and the diligence done to assess the quality of the credit. Without this information, investors and other market participants will not have what they need to assess the risks registrants face from purchasing offsets of dubious quality.

Conclusion

The Proposal is an important step forward for protecting investors and other market participants from the transition risks posed by digital assets. The Commission could build on this protection by moving quickly to finalize the Proposal, including a requirement for all registrants to disclose their Scope 3 emissions, subject to reasonable assurance.

Thank you for your time and attention to these important issues. To discuss them further, please contact Yevgeny Shrago, Policy Director at Public Citizen's Climate Program (yshrago@citizen.org) and Mark Hays, Senior Policy Analyst at Americans for Financial Reform Education Fund (markhays@ourfinancialsecurity.org).

Sincerely,

Public Citizen and Americans for Financial Reform Education Fund

²⁵ Akshat Rathi and Natasha White, "Toucan's Huge Crypto Effort to End Useless Carbon Offsets Is Backfiring," Bloomberg (Apr. 7, 2022), available at <https://www.bloomberg.com/news/articles/2022-04-07/the-biggest-crypto-effort-to-end-useless-carbon-offsets-is-backfiring>