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MAY 09 2022

Stacy Murphy, Operations Manager
Office of Science and Technology Policy
Executive Office of the President

RE: Request for Information on the Energy and Climate Implications of
Digital Assets (Questions 6 and 8)

Dear Ms. Murphy,

Thank you for the opportunity to comment on the Office of Science and Technology Policy's request for information.¹ For context, CarbonPlan is a nonprofit research organization focused on the transparency and scientific integrity of climate solutions. We have extensive experience analyzing carbon markets in the public and private sectors, and are carefully monitoring these markets' use of blockchain technologies and carbon-based digital assets.

We write today to provide information on how blockchain technologies are being used in the carbon offsets industry, as distinct from the use of carbon offsets to mitigate emissions associated with blockchain use. Our comments focus on a recent research project that examined the connection between Verra, the largest carbon offsets registry, and Toucan Protocol, the primary mechanism by which conventional offset credits have migrated "on chain" to date.²

Question 6. Potential energy or climate benefits

Although there are a number of approaches that directly credit novel climate projects using blockchain technologies, by far the most significant efforts — both in terms of financial value and the amount of CO₂ transacted — involve systems that transfer conventional carbon offset credits from legacy offset registries to the blockchain. That is, these systems create digital infrastructure for trading existing environmental claims made via non-digital assets. What counts as a quality asset is implicitly delegated to the non-blockchain offsets industry.

¹ Office of Science and Technology Policy, [Request for Information on the Energy and Climate Implications of Digital Assets](#), 87 Federal Register 17105 (March 25, 2022).

² Grayson Badgley and Danny Cullenward, [Zombies on the Blockchain](#), *CarbonPlan* (Apr. 7, 2022).

The largest blockchain migration effort is managed by Toucan Protocol, which developed rules to allow owners of carbon offset credits listed on Verra’s registry to retire those credits and earn an equivalent number of base carbon tonnes (BCTs). BCTs can be traded like other digital assets and are also intended to serve as a fundamental “layer” on top of which other carbon-backed blockchain efforts can be built. For example, most BCTs have been used to back a cryptocurrency organization called KlimaDAO, which issues KLIMA tokens that are capitalized by BCTs and other digital carbon assets.³

As of early April, almost 22 million carbon offset credits had been “bridged” from Verra’s registry via Toucan Protocol. We decided to analyze this flow of credits to understand what these claims represent and how the interaction between the legacy carbon market and novel blockchain standards is governed.

What we found was striking. Speculative demand from blockchain technologies has caused old carbon offset projects to issue new credits. About 28% of the credits that migrated on chain came from what we call “zombie projects” — projects that had previously been inactive for years, or those that retired 95% or more of their credits through Toucan Protocol. Despite surging demand in the voluntary carbon market,⁴ the conventional carbon offset credits underlying BCTs were previously unable to attract interest from buyers.

Perhaps more notable still: fully 99.9% of the conventional credits backing Toucan Protocol BCTs are ineligible for use under the international aviation industry’s CORSIA offsetting program. Because standardized futures contracts for carbon credits are increasingly designed around CORSIA eligibility,⁵ CORSIA-ineligible credits have effectively been screened out of key segments of the voluntary carbon market. It appears that essentially all of the credits underlying BCTs are consistent with a pattern of large-scale regulatory arbitrage, rather than innovation or improvements in transparency or liquidity.

These patterns strongly suggest that infrastructure connecting digital and non-digital carbon assets effectively created new supplies of — and markets for — the very lowest-quality and least credible offset credits.⁶

³ Dieter Holger, [Cryptocurrency Traders Move Into Carbon Markets](#), *Wall Street Journal* (Jan. 10, 2022).

⁴ Camilla Hodgson, [Surge of investment into carbon credits creates boom time for brokers](#), *Financial Times* (May 1, 2022).

⁵ For example, see CME Group’s [CBL Global Emissions Offset Futures](#).

⁶ Akshat Rathi and Natasha White, [The Biggest Crypto Effort to End Useless Carbon Offsets is Backfiring](#), *Bloomberg Green* (Apr. 7, 2022); Camilla Hodgson, [Carbon-linked crypto tokens alarm climate experts](#), *Financial Times* (Apr. 15, 2022); see also johnnx25bd and John Ellison, [Toucan and carbon market integrity](#), *Toucan Protocol* (Apr. 12, 2022) (responding to Bloomberg reporting); Natacha Rosseau, [KlimaDAO Responds to Bloomberg Story on Carbon Offsets](#), *Bloomberg* (Apr. 12, 2022) (responding to Bloomberg reporting).

Question 8. Implications for U.S. policy

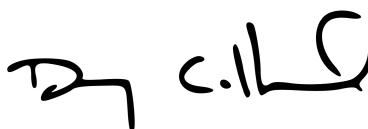
Our analysis of the initial connections between conventional carbon offset markets and blockchain technologies suggests that blockchain technologies have not contributed meaningfully to addressing well-documented concerns with carbon offsets, and appear, at least as of this writing, to be exacerbating existing carbon credit quality problems.

We believe that any claims about the use of blockchain-based carbon offsets should be scrutinized carefully. While we have no objection to efforts to upgrade the digital technologies of carbon markets or facilitate greater transparency, it is not clear to us how blockchain ledgers help address the fundamental quality problems of non-additionality,⁷ problematic baseline scenarios,⁸ emissions leakage,⁹ and carbon cycle permanence.¹⁰ We respectfully suggest that today's blockchain-based carbon offsets exhibit the same kinds of problems identified across conventional carbon markets.

Thank you for the opportunity to comment.



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⁷ See, e.g., Lambert Schneider (2009), [Assessing the additionality of CDM projects: practical experiences and lessons learned](#), *Climate Policy* 9: 242-54; Raphael Calel et al., [Do Carbon Offsets Offset Carbon?](#), CESifo Working Paper 9368 (Oct. 2021); Ben Elgin, [These Trees Are Not What They Seem](#), *Bloomberg Green* (Dec. 9, 2020); Lisa Song and James Temple, [A Nonprofit Promised to Preserve Wildlife. Then It Made Millions Claiming It Could Cut Down Trees.](#), *ProPublica* and *MIT Technology Review* (May 10, 2021); Nathanael Johnson and Ysabelle Kempe, [The US is about to go all-in on paying farmers and foresters to trap carbon](#), *Grist* (July 7, 2021); Ben Elgin, [This Timber Company Sold Millions of Dollars of Useless Carbon Offsets](#), *Bloomberg Green* (Mar. 17, 2022).

⁸ Thales A.P. West et al. (2020), [Overstated carbon emission reductions from voluntary REDD+ projects in the Brazilian Amazon](#), *PNAS* 117: 24188-94; Grayson Badgley et al. (2022), [Systematic over-crediting in California's forest carbon offset program](#), *Global Change Biology* 28: 1433-45.

⁹ James Temple, [Landowners are earning millions for carbon cuts that may not occur](#), *MIT Technology Review* (Apr. 18, 2019).

¹⁰ Grayson Badgley et al., [California's forest carbon offsets buffer pool is severely undercapitalized](#), *bioRxiv* (Apr. 29, 2022); Craig Welch, [Polluters are using forests as 'carbon offsets.' Climate change has other plans.](#), *National Geographic* (May 4, 2022); Emily Pontecorvo and Shannon Osaka, [California is banking on forests to reduce emissions. What happens when they go up in smoke?](#), *Grist* (Oct. 27, 2021).