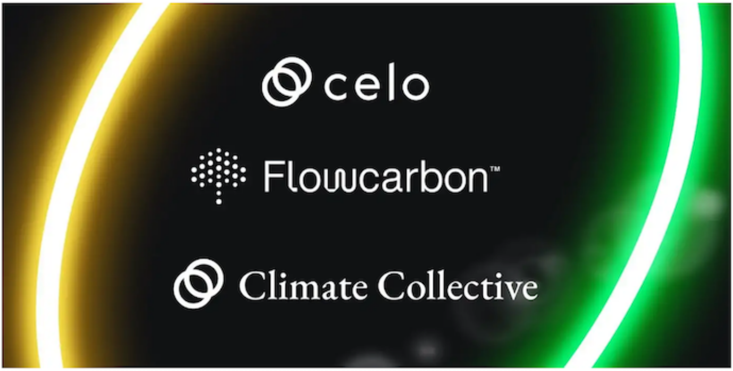
Celo Foundation
May 9, 2022 · 2 min read

An Open Letter to the Office of Science & Technology Policy



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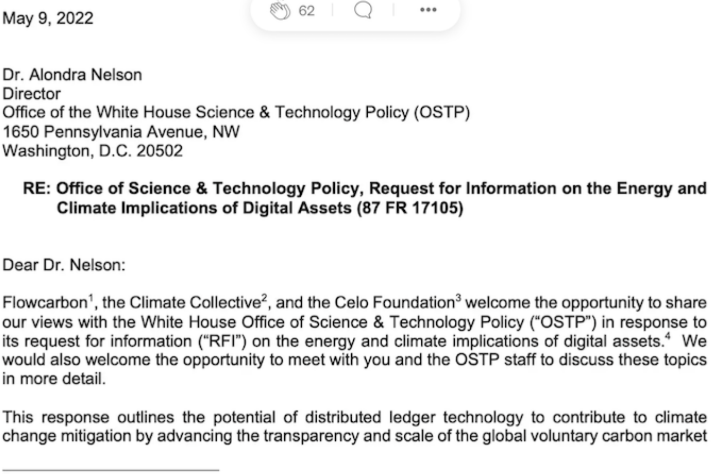
May 9, 2022

Dr. Alondra Nelson
Director
Office of the White House Science & Technology Policy (OSTP)
1650 Pennsylvania Avenue, NW
Washington, D.C. 20502

RE: Office of Science & Technology Policy, Request for Information on the Energy and Climate Implications of Digital Assets (87 FR 17105)

Dear Dr. Nelson:

Flowcarbon[1], the Climate Collective[2], and the Celo Foundation[3] welcome the opportunity to share our views with the White House Office of Science & Technology Policy ("OSTP") in response to its request for information ("RFI") on the energy and climate implications of digital assets.[4] We would also welcome the opportunity to meet with you and the OSTP staff to discuss these topics in more detail.

This response outlines the potential of distributed ledger technology to contribute to climate change mitigation by advancing the transparency and scale of the global voluntary carbon market

[1] Flowcarbon is a pioneering climate technology company that brings carbon offsets onto the blockchain. Its mission is to make carbon markets accessible and transparent, enabling billions of dollars to be invested directly into projects that combat climate change. Flowcarbon is committed to driving real impact for people, biodiversity, and the planet.www.flowcarbon.com.

[2] The Climate Collective is a coalition of companies collaboratively building on the Celo blockchain at the intersection of Web3 and climate action. These companies include: Astral Protocol, Byterocket, Celo Foundation, cLabs, Curve Labs, Flowcarbon, Green World, Kolektivo, Kolektivo Labs, Loam, Moss, Plastiks, ReFi DAO, Regen Network, Toucan Protocol, and Wren. For more information about the Climate Collective, please visit: https://climatecollective.org/about.

[3] The Celo Foundation ("Foundation") is a nonstock corporation that serves developers on the use of the open-source Celo blockchain by providing grants, education and support. The Celo blockchain is a carbon-negative, layer-1 protocol with a rich ecosystem of global partners building innovative Web3 applications within the DeFi, ReFi, and NFT sectors in support of the Celo community's mission to create a more inclusive global financial system. Accessible to anyone with a mobile phone, the Celo ecosystem consists of a decentralized, proof-of-stake blockchain technology stack (the Celo Protocol), the CELO token, and several native stablecoins (cUSD, cEUR, and cREAL) that make it easy for anyone to use crypto like cash—every day. Launched on Earth Day in 2020, the open-source Celo network now supports 1000+ projects created by developers and creators located around the world. For more information, please visit: www.celo.org.

[4] White House Office of Science & Technology Policy, *Notice of Request for Information on the Energy and Climate Implications of Digital Assets,* 87 Fed. Reg. 17105 (March 25, 2022).

("VCM"). We address how certain structural limitations of the VCM can be overcome by leveraging blockchain infrastructure, thereby unlocking considerable growth and value for projects that protect and restore the Earth's natural ecosystems and carbon sinks. Carbon credits (and other related emissions reduction units or other units representing environmental attributes) issued and traded via immutable blockchain technology offer new economic opportunities by enabling the transfer of value to carbon reduction and removal projects, and other projects with environmental benefits, in a frictionless, transparent manner. We further comment on our approach to mitigate climate harm and reduce energy use associated with digital assets, and the opportunities to use tokenization for corporate carbon offsetting. Overall, tokenized carbon credits represent one of the most beneficial use cases for digital assets, and any regulatory approach taken regarding digital assets should be both nuanced and nimble enough to facilitate these benefits. Our main policy recommendations are to (1) differentiate between digital asset use cases and features, (2) support the development of clear accounting standards for VCM along with an explicit tax policy for corporations that allocate capital towards carbon offsets, and (3) clarify and/or create appropriate safe harbor provisions in any future regulatory action to ensure the continued use of digital assets in the VCM context.

I. The Voluntary Carbon Market: Opportunities & Challenges

Addressing climate change is one of the most pressing issues of our time. It is estimated that if policy mechanisms fail to preserve carbon sinks and biodiversity, at least USD $10 trillion of global GDP will be lost by 2050 due to climate change and biodiversity loss.

Recent reports by the Intergovernmental Panel on Climate Change and the World Economic Forum outlined that the Paris Agreement target—as well as U.N. Sustainable Development Goals—cannot be achieved without protecting and regenerating natural ecosystems. These nature-based solutions (NBS), such as forest conservation, reforestation, and the restoration of grasslands, peatlands, and mangroves, act as carbon sinks and carbon capture free of charge to humanity. Estimates suggest that NBS can provide around 30% of required mitigation activities to proceed on the "Below 2°C pathway" by 2050, with a minimal cost component of approximately $10-100/mt. However, based on UN estimates, to meet climate change targets we need to close a USD $4.1 trillion financing gap, requiring 3x investment in NBS over the next 10 years.

Carbon markets—especially the voluntary carbon market (VCM)—serve as tools to scale these cost-effective natural climate mitigation measures by providing a direct bridge between these projects and financial markets. The fundamental structure of the VCM is based on a mechanism whereby credits are issued to projects corresponding to the amount of carbon reduced or removed by the project and sold for carbon offsetting to corporate and individual buyers as a revenue stream for the project. Currently, around 50% of the total voluntary carbon market volume is represented by carbon credits originating from NBS.[5] A fundamental tenet of the VCM is "additionality," which means that projects financed via the VCM must prove that they would not be financially viable without the revenue stream created by the sale of carbon credits. In this way, the VCM is the primary financial construct creating economic incentives to preserve and restore Earth's natural carbon sinks, counteracting the considerable economic incentives for destroying and degrading nature. Notably, projects in the VCM can also have a strong impact beyond the reduction of greenhouse gas emissions, especially on biodiversity, wildlife, and local communities.

The VCM has the potential to be a meaningful driver of decarbonization but is currently limited by highly inefficient market mechanisms for the sale and purchase of voluntary carbon credits. As more corporate commitments related to decarbonization lead to increasing demand for offsets, the VCM is seeing considerable growth. However, the Taskforce on Scaling Voluntary Carbon Markets (TSVCM), a private-sector initiative working to scale an effective and efficient VCM, estimated that to meaningfully support climate targets, the VCM needs to grow by more than 15 times by 2030.[6] Improving voluntary carbon market efficiency to accelerate investment requires transparent, scalable solutions, such as digital assets and blockchain technology, which can address many of the underlying challenges around transparency, integrity, efficiency, and scalability by reducing entry barriers, democratizing access, and enabling efficient and low-cost point-to-point transactions.

The Current VCM Market Has Significant Challenges

A multitude of stakeholders participates in the VCM, including private project and program developers, non-government organizations (NGOs), sovereign governments, private investors, and corporate buyers. The many stakeholders combined with the numerous certification methodologies and project types underlying the market give rise to many market inefficiencies.

Some key inefficiencies in the VCM are:

1. **Excessive transaction friction and cost:** Brokers and other trading intermediaries conduct the vast majority of trades in the VCM over the counter (OTC) and often charge fees up to 20%, greatly reducing economics for developers working to create new projects.
2. **Limited price discovery:** With most trading volumes conducted through the OTC market in bilaterally negotiated transactions, price signals are hidden from most market participants. Emerging exchange-traded products, such as Chicago Mercantile Exchange (CME) N-GEO and GEO contracts, provide incremental transparency, but most pricing/volume data remains hidden behind expensive subscriptions, and is, therefore, not easily accessible. This lack of transparency limits price discovery efforts and the ability of developers and buyers to ascertain accurate pricing of carbon offsets.
3. **Slow and inefficient procurement process:** The use of standardized contracts in this market is still relatively limited for most buyers, and the buying process can often take weeks or months. Sourcing these credits requires carbon expertise, extensive due diligence, and legal resources. This creates significant barriers to entry for those who wish to purchase offsets.

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[5] Ecosystem Marketplace's State of the Voluntary Carbon Markets 2021 URL: https://www.forest-trends.org/publications/state-of-the-voluntary-carbon-markets-2021/

4. **Limited access for most:** To purchase and hold carbon credits, buyers need accounts with the main registries,[7] which are extremely limited. This lack of basic transaction infrastructure limits direct access to carbon credits for most market participants. In addition to the exclusivity of registry access, many participants also have difficulties onboarding to carbon exchanges due to high costs and onerous processes.
5. **Over-reliance on specialist financing:** Due to the lack of price signals and data, the financing of carbon projects is limited to a few specialist funds with unique access to information and relationships. This greatly limits broad participation by institutional capital, severely limiting the suite of financing tools available to project developers
6. **Lack of liquid forward markets:** Forward financing markets for project development remain limited and/or nascent. This limitation restricts developers' ability to overcome early project development cost barriers, such as funding conceptual and feasibility studies, and hinders the implementation of high-impact climate mitigation projects.
7. **Inconsistent measurement, reporting, and verification measures:** Currently, accounting capacities and consolidated functional and operational measurement, reporting, and verification (MRV) systems are not sufficient and consistent with GHG inventories and meet robust accounting requirements.

II. Blockchain Technology Can Improve the VCM

Digitization of the VCM can greatly improve efficiency and utility for stakeholders, thereby aiding climate action and sustainable development. The World Bank has identified blockchain technology as an essential tool to support expanding and improving carbon market mechanisms[8]. Specifically, tokenized carbon credits on blockchain can advance market and environmental integrity, transparency and inclusiveness, cost efficiency, liquidity, and scalability. Using blockchain technology is an opportunity to rapidly scale the VCM by standardizing transactions, overcoming many of the underlying structural limitations in the VCM. Moreover, the digitization of carbon credits can unlock more private capital to expand the reach and impact of the VCM.

Blockchain as the Carbon Market Infrastructure Layer Can Solve Key Challenges: There is a remarkable overlap between existing structural limitations of the VCM, and the structural efficiencies facilitated by blockchain technology. Hence, blockchain technology can play a key role in boosting climate action by solving many of the underlying challenges of the VCM. Two especially useful features are smart contracts (self-executing processes), as they can facilitate emissions measurement, reporting, and verification (MRV), and tokenized trading of VCUs to streamline the fractured broker-driven OTC market

Tokenizing VCM credits to enable them to trade on crypto exchanges provides numerous benefits. Tokens that are backed by carbon offsets, built using smart contracts, and exchangeable across devices and other financial systems, can support the growth and environmental integrity of the VCM in the following ways, driving action on climate change that is not currently possible:

1. Blockchain can improve the low liquidity in the carbon market by reducing entry barriers: Instead of the lengthy and expensive process required to buy a carbon credit from a registry or via a broker, millions of people already using blockchain systems can participate more easily and quickly in purchasing VCM credits. This will facilitate robust growth in market segments that have experienced prohibitive barriers to entry, such as retail, and small and mid-market businesses, greatly expanding overall liquidity.

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[6] Taskforce on Scaling Voluntary Carbon Markets, Final Report, 2021 URL: https://www.iif.com/Portals/1/Files/TSVCM_Phase_2_Report.pdf

[7] American Carbon Registry (ACR), Climate Action Reserve (CAR), Verified Carbon Standard (Verra VCS), Gold Standard

[8] Blockchain and Emerging Digital Technologies for Enhancing Post-2020 Climate Markets (2018), World Bank.

2. Blockchain can bypass the intermediary structure and enable efficient and low-cost transactions between suppliers and buyers via a peer-to-peer transaction model. By shifting the market away from a fractured, broker-driven model, the existing price opacity of the market is addressed, price discovery is enabled, and efficient pricing becomes possible.
3. Blockchain democratizes access to carbon credits. Blockchain technology allows for a decentralized, peer-to-peer network where no single entity can monopolize the market and exclude others from participating, resulting in improved accessibility. Tokenization reduces market friction as it democratizes market access, and intermediary fees are minimized or eliminated so that anyone can purchase live credits and retire them on-demand as offsets, without third-party interference.
4. Smart contracts can enhance transparency and integrate robust governance and accountability across an array of standards and programs required by government authorities and the investment community.
5. As blockchain is an open-source technology, it enables innovative applications to emerge rapidly, and more directly engages and empowers diverse stakeholders to participate. Blockchain technology can scale VCM through more compatibility among multiple applications.

The Energy Intensiveness of Blockchain is Limited: While advocating for blockchain as an essential technology to underpin the global VCM, it is necessary to mitigate its potential energy intensiveness. Since the emergence of the first blockchain, widely known as the Bitcoin blockchain, there has been substantial innovation towards that end. While the Bitcoin network and its Proof-of-Work (PoW) consensus mechanism tend to be inherently energy-intensive, the Proof-of-Stake (PoS) consensus mechanism used by many applications in the blockchain space does not require large consumption of energy. In PoW, network transactions are secured and validated by specially designed hardware (miners) competing to solve complex calculations. In PoS, on the other hand, transactions are validated, and the integrity of the network is secured by network participants staking collateral and running more standard servers to do similar calculations that require far less energy. The current trend indicates a move away from PoW towards the more environmentally-friendly PoS consensus mechanism. This is evidenced by looking at some of the most popular blockchains, including Ethereum (which is undergoing a shift from PoW to PoS,) Polygon, and Celo. By using a PoS consensus mechanism to authenticate the network, these chains have reduced the ratio of carbon avoided per carbon emitted to 100 million to one[9]. In addition, some blockchains, such as Celo, also purchase carbon offsets in the VCM to offset their emissions, which means there is effectively no negative climate impact of transactions.

III. Current Market Example—Flowcarbon's Tokenization of VCM Credits to Create a Liquid Transparent Spot Market

Flowcarbon's blockchain-based structural innovation in the VCM consists of enabling entities that own qualifying carbon credits, primarily project developers, to receive a tokenized representation of each credit unit they own, to then be sold freely via crypto exchanges. These tokenized VCM credits can also be bundled together with credits from other project developers if they have certain common characteristics (i.e. the type of project they came from and the year of issuance), creating grades of fungible carbon tokens that trade freely, thus bypassing the highly inefficient broker-driven OTC model. Flowcarbon's blockchain technology makes carbon markets more accessible and transparent while enabling further investments directly into projects that help scale VCM.

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[9] Ethereum Foundation (2021) via https://blog.ethereum.org/2021/05/18/country-power-no-more/

Tokenizing carbon credits can thus solve the underlying structural inefficiencies in the VCM, but a high level of integrity, transparency, and accountability is needed for digital innovation to improve the performance of carbon markets across the value chain. As one of the first companies undertaking the tokenization of carbon credits from the VCM, Flowcarbon has developed a set of tenets to ensure the environmental, structural, and financial integrity of carbon-backed tokens. Flowcarbon's tokenizing mechanism is closely aligned with the principles developed by the International Emissions Trading Association's (IETA) initial set of recommendations for the application of digital innovation to the carbon market.[10] According to IETA, tokens have the potential to reduce market friction, increase market access, reduce intermediary fees, and scale capital flows.

Flowcarbon's Core Tenets for the Tokenization of Voluntary Carbon Credits

In consultation with a wide range of stakeholders in the VCM, including IETA, Flowcarbon's tokenization process includes adherence to the following tenets, which are intended to optimize the structural, environmental and financial integrity of tokenized carbon credits from the VCM. By tokenizing carbon credits in accordance with these tenets, Flowcarbon is creating a functional, liquid, transparent, and accessible spot market for VCM credits:

1. **There is a one-to-one correspondence between tokens and underlying credits:** Each token is backed by a unique corresponding carbon credit, which must already be held in a dedicated, secure SPV at the time of token minting. Each time a new batch of carbon credits is tokenized, the same number of ERC-20-compatible tokens are created. Each token created represents a verified removal or reduction of one tonne of carbon dioxide equivalent from a specific project and year (known as the "vintage"), as represented by the underlying credit. A unique token will be created for each project and vintage of a project. This means that carbon credits of vintages 2017, 2018, and 2019 from one reforestation project will generate three unique tokens, one for each vintage.
2. **Underlying credits must be certified by credible standards:** The carbon credits backing tokens must be certified by market-accepted standards. Carbon credits used by Flowcarbon to issue digital tokens come from projects that are validated, verified, and registered under standards endorsed by the International Carbon Reduction and Offset Alliance (ICROA), government-approved carbon crediting schemes, or other market-validated crediting mechanisms.
3. **All underlying credits are live and unretired:** All credits underlying Flowcarbon tokens are as-yet-unretired. Inherently, a credit in the VCM represents the right to claim the achievement of a GHG emission reduction or removal in an amount of one ton of CO_2e, and the right to the benefit of an offsetting claim when a credit is "retired." Flowcarbon's tokens confer those same rights–and the full value they represent–on token holders. Tokens will only be minted for issued, ex-post verified carbon credits, never for canceled or retired credits, thereby ensuring that token holders benefit from the real-world value of the underlying credits.

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[10] IETA Council Task Group on digital climate markets – Key findings and recommendations (2022) URL: https://carbon-pulse.com/153786/

4. **Tokens can be redeemed for underlying credits (the "two-way bridge"):** Any holder of a Flowcarbon token can redeem the token for an underlying carbon credit. This creates a "two-way bridge" that brings carbon credits onto blockchain in the form of tokens, and allows for them to be taken back off-chain via the redemption process in which a token holder can invalidate their token and take custody of an underlying carbon credit. This creates a stabilizing link between credits trading as tokens and those trading in traditional channels.

5. **Token holders can retire underlying credits on-demand:** As tokens represent issued carbon credits, claims relating to carbon neutrality, offsetting, and/or compensation of emissions will only be made after the token is retired. This occurs when the token holder elects to permanently change the state of the token to "retired" via a web interface maintained by Flowcarbon, which triggers a dedicated operations team to retire a carbon credit from the SPV at the issuing registry. No compensation claim may be made for simply holding, but not retiring, tokens. In the future, APIs may be developed in partnership with the carbon registries to automate this process.
6. **Robust processes ensure security and transparency:** Flowcarbon monitors the token creation process to minimize error and lower the technical burden of those looking to tokenize credits ("supply partners"). Supply partners are confirmed and diligent in accordance with existing industry standards. Supply partners deposit credits into a bankruptcy-remote special purpose vehicle (SPV), which is managed by a professional third party and structurally designed to maintain ironclad protection of the credits on behalf of token holders. The SPV is audited regularly by a recognized US accounting firm, with audit results posted on the blockchain.
7. **Similar credits may be bundled to facilitate liquidity and ease of purchasing:** Flowcarbon's token architecture includes the establishment of bundles, in which credits from different projects may be deposited, with a set of fungible tokens minted to represent participation in the bundle. The bundles track market segments. For example, any credits that qualify for the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) may be deposited into a corresponding smart contract representing that bundle and sold as fungible CORSIA-eligible tokens. This introduces a degree of market standardization where appropriate, thereby facilitating liquidity, price transparency, and reducing transaction costs.
8. **All Web3 operations are pursued in line with a commitment to sustainability:** Flowcarbon's technology is deployed in the most sustainable way possible, following principles based on inclusiveness, resiliency, and security, as well as by maintaining a low carbon footprint via a Proof of Stake (PoS) consensus mechanism and working with partners that are determined to achieve net-zero emissions. By tokenizing in accordance with these tenets, Flowcarbon is facilitating the most sustainable blockchain ecosystem approach.

By enabling carbon-backed tokens in accordance with these tenets, blockchain technology is a tool that can improve data management, liquidity, and inclusivity amongst all VCM participants. Digital assets can improve market access for project developers by affording a transparent and liquid off-ramp for credits as soon as they are issued. Digital assets can further expand the market through improved price transparency and market participation, improving access for buyers. Spot and futures markets have the potential to increase investments into climate action through higher and more reliable pricing, bringing liquidity to project developers and returns to investors. Through blockchain integration in the VCM, a viable and more inclusive asset class is created, with predictable returns on investment and value protection for buyers and sellers.

IV. Beyond Tokenization: Further Benefits of Blockchain Technology in the Carbon Market Ecosystem

Tokenization of VCM credits in accordance with Flowcarbon's tenets will create a liquid, transparent spot market for credits, enabling further efficiencies and upstream synergies. In current carbon market dynamics, policymakers and off-takers are faced with countless pain points among all VCM participants, from disrupted information flow to limited interconnectivity and price opacity.

In addition to tokenizing carbon credits, blockchain technology is being used in several other innovative ways to enhance the overall functionality of the VCM:

1. **Blockchain-based Digital MRV:** The deployment of digital technologies in monitoring, reporting, and verification (MRV) can create efficiency, accuracy, and transparency in the VCM. The reduced transaction and administrative costs can enable project developers to develop more projects. Emerging technologies, such as the internet of things (IoT), artificial intelligence (AI), and new mobile and web applications can enhance MRV by automating data capture from a source (e.g., IoT sensors like smart meters) or remotely (e.g., remote sensing technologies, LIDAR, RADAR, or even drone capture), and from enhanced datasets (through AI or machine learning) for data verification to identify data errors or fraudulent behavior.
2. **Blockchain-based Meta-registries:** In the VCM, standards bodies and registries set the verification, validation, quantification, registration, and issuance criteria for carbon credits. They are often understaffed and use outdated, inefficient technology. Distributed ledger technology can improve data repositories such as the World Bank's Climate Warehouse, which is a blockchain-based platform intended to link all carbon crediting authorities and registries under one platform. Greater interoperability among the different kinds of carbon markets—VCM and the regulated markets—should be a long-term goal. Such innovations can provide much-needed carbon credit status and location transparency in a highly fragmented and dispersed market and help avoid double registration and double counting.
3. **Blockchain as a source of structured finance products for project developers:** The VCM is expected to grow exponentially over the next several years, with more than $1 billion worth of credits traded in 2021– already a three-fold increase over 2020. However, access to financing is still a key pain point as project proponents and developers face liquidity constraints and significant lags between receiving financing and credits issued. Buyers usually commit to credits through future purchase agreements (forward contracts) but payments are made upfront only partially and continue throughout the commitment period upon receiving the carbon offset units. Project proponents also sometimes give up project equity to receive financing. Blockchain technology can provide markets and investors with the infrastructure to fund new projects in a capital-efficient way by derisking forward carbon credits through structured finance products. This path to liquidity can provide clear and fair market prices to new carbon projects while making institutions more capital efficient. Flowcarbon, together with other blockchain partners, is facilitating the ability for projects to leverage future issuances as collateral to borrow against more favorable rates than those offered in the traditional financial markets.

V. Policy Recommendations

In light of the positive climate impact facilitated by blockchain technology highlighted above, we make the following policy recommendations to OSTP in regard to the RFI:

1. **Federal Regulation of Digital Assets Should be Tailored to the Use Case of the Digital Asset:** Digital assets should not be regulated in a simplistic, one-size-fits-all manner, and regulation should consider the economic, social, and environmental benefits of diverse applications. In the specific case of the VCM or other climate blockchain solutions, the regulatory approach to carbon offsets as tokens has to be distinguished from *utility* or *financial tokens*. One of the major challenges to driving institutional capital into the VCM and encouraging wider adoption of the technology is to provide more regulatory certainty, in particular by ensuring that regulation is thoughtful, and supports new innovation in the climate arena.

2. **Encourage the Development of Clear Accounting Standards for Carbon Credits:** In order for the VCM to achieve its potential for positive environmental and climate impact, clear accounting standards for carbon credits must be established. Entities possessing carbon credits currently have no accounting guidance to follow. As a result, they use different accounting methods, hindering information transparency in the market.[11] The SEC and Public Company Accounting Oversight Board ("PCAOB") are currently developing climate-related disclosure rules that can support the further development and international harmonization of accounting standards for carbon credits. We encourage fulsome coordination and participation from the federal government in international efforts like the International Sustainability Standards Board, and private sector and civil society efforts like the Integrity Council for the Voluntary Carbon Market.

3. **Encourage Favorable Tax Treatment of Carbon Assets**: The Biden Administration should encourage the adoption of new tax policies to encourage companies to allocate capital towards carbon offsets on their balance sheet. If the price of carbon credits increases, companies should not have to pay the appreciation (gain) on the asset, even if the amount of carbon credits exceeds the offset for the current taxation period. If the price of carbon decreases, companies should be able to write off the loss. Adopting these policies will help to foster growth in the VCM, and to address climate change through market approaches.

4. **Harmonize Regulations on Digital Asset Use in VCM:** With limited guidance from accounting standard-setting bodies or financial regulators, the treatment and accounting of crypto-related economic activities have been challenging for many companies. Consequently, there is a lack of consensus as to how emissions reductions in the form of digital assets should be accounted for on the balance sheet and the income statement.

   Given that creating commodity derivatives in carbon markets through tokenized forward purchase agreements is a way to manage transition risks and hedge the market, regulatory certainty should be provided.

5. **Encourage Blockchain Use in Compliance Carbon Markets:** The convergence of compliance carbon markets with the VCM is likely to accelerate over the next several years, especially as negotiations implementing Article 6 of the Paris Agreement conclude. These markets already exist in Europe. The federal government can foster transparency and integrity between both markets by placing blockchain solutions on the same plane as traditional compliance carbon market solutions and encouraging wider adoption of tokenized carbon credits in existing regulatory frameworks at the local or regional level.

6. **Direct the U.S. Department of Energy to Consider Blockchain Solutions for Direct Air Capture & Carbon Management:** The recent Bipartisan Infrastructure Legislation[12] allocates more than $62 billion for the U.S. Department of Energy ("DOE") to deliver a more equitable clean energy future out of which approximately $6.5 billion will be allocated to new carbon management funding, largely for direct air capture and carbon dioxide storage. Direct air capture ("DAC") technology is set to generate a large number of carbon credits which require a data infrastructure link into the VCM. The Administration should direct the DOE to consider allocating federal grant funding to develop blockchain data infrastructure to manage the carbon credit generation in regional DAC hubs to foster a seamless data transmission of those credits into the VCM.

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[11] Haller, T., Thoumi, G. - Financial Accounting for Carbon Offsets URL: https://www.ecosystemmarketplace.com/wp-content/uploads/archive/documents/Doc_65.pdf

7. **Collaborate on Responsible Web3 Innovation at the State Level to Address Climate Change:** California recently became the first state in the nation to start creating a comprehensive and harmonized framework for responsible web3 technology while enhancing regulatory clarity for businesses and protecting consumers. Two of the seven priorities laid out in California's executive[13] order are: (1) creating a transparent and consistent business environment for companies operating in blockchain; and (2) exploring opportunities to deploy blockchain technologies to address public-serving and emerging needs. In the context of the climate change emergency, the latter is especially relevant, as blockchain can address the emerging need to scale a transparent VCM. California serves as a leading example of how the federal government can work together with California and other states to encourage technological advancements.

Conclusion

Thank you for this opportunity to describe how digital assets can help reverse climate change and valuable tools in the broad sustainable development trajectory of the United States. We welcome the opportunity to meet with the OSTP team to discuss these issues in more detail in the coming weeks.

Sincerely,

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Celo Foundation
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[12] *The Infrastructure Investment and Jobs Act*: Opportunities to Accelerate Deployment in Fossil Energy and Carbon Management Activities, Public Law 117-58 (2021).

[13] *Governor Newsom Signs Blockchain Executive Order to Spur Responsible Web3 Innovation, Grow Jobs, and Protect Consumers*, Press Release (May 4, 2022) *available at:* https://www.gov.ca.gov/2022/05/04/governor-newsom-signs-blockchain-executive-order-to-spur-responsible-web3-innovation-grow-jobs-and-protect-consumers/