SUMMARY OF PUBLIC COMMENTS: VERRA'S APPROACH TO THIRD-PARTY CRYPTO INSTRUMENTS AND TOKENS

1 INTRODUCTION

This document summarizes the main points of feedback received during the 3 August – 1 November 2022 consultation on Verra's approach to third-party crypto instruments and tokens. Verra received input from 71 stakeholders, including industry groups, project proponents, professional developers, corporate buyers, environmental organizations, and the general public. Verra would like to extend its sincere thanks to all who submitted comments.

During the consultation, Verra sought input on the following topics and their related questions:

1. MEASURES TO ASSOCIATE VCUS WITH CRYPTO INSTRUMENTS OR TOKENS
   - 1.1. Regarding the creation, transfer, and use of VCU-backed crypto instruments and tokens, what safeguards should be implemented by Verra to ensure environmental integrity, particularly to prevent double-issuance and double-use?
   - 1.2. What infrastructure and processes do entities participating in the immobilization approach need from Verra?
   - 1.3. Is there a market need to provide for the reactivation of immobilized VCUs, as long as any related crypto instruments or tokens were not used for any other purpose and are destroyed as part of this reactivation?
   - 1.4. What are the legal and operational implications of a crypto instrument or token being fractionalized?

2. KNOW YOUR CLIENT (KYC) REQUIREMENTS
   - 2.1. What KYC checks (and in relation to which jurisdictions) should Verra apply to platforms before authorizing them to issue, market, and/or transact in crypto instruments or tokens that are backed by VCUs?
   - 2.2. Should platforms be required to apply KYC checks on all entities that hold crypto instruments or tokens, or just on the entities that receive, use, or are the beneficiaries of such instruments?
   - 2.3. What, if any, information on crypto instrument or token holders should be made publicly available?

3. AMENDMENTS TO THE REGISTRY TERMS OF USE RELATING TO ANTIFRAUD

3.1. What textual amendments are advisable to address anti-fraud considerations related to the association of third-party crypto instruments and tokens with VCUs?

Verra analyzed consultation comments concerning each of the questions asked and general comments received. The feedback received provided a range of perspectives. This document summarizes the comments and provides the comment submissions received.

2 SUMMARY OF COMMENTS

The summary of comments below highlights some of the main inputs received as part of the consultation.

Consultation TOPIC/Question	Summary of Comments
1. MEASURES TO ASSOCIATE VCUS WITH CRYPTO INSTRUMENTS OR TOKENS	
1.1. Regarding the creation, transfer, and use of VCU-backed crypto instruments and tokens, what safeguards should be implemented by Verra to ensure environmental integrity, particularly to prevent double-issuance and double-use?	<u>Abstraction:</u> Tokenizing platforms undergo rigorous security and accounting audits to ensure compliance with agreed procedures and to safeguard the platform against cyberattacks. Embed metadata into carbon tokens to provide the holder of the Carbon Token with information about the underlying VCU and project. Use digital measurement, reporting, and verification ("DMRV") tools to link the carbon tokens and the underlying VCUs to the actual performance of a project. This would allow purchasers of the carbon tokens to continuously monitor the performance of the project which generated the environmental benefit. <u>Double-issuance</u> Embedding metadata about the underlying VCU into each Carbon Token and depositing metadata / hashes of each carbon token into the Verra Registry Verra participates directly in the issuance of Carbon Tokens or links its registry with that of the approved carbon token issuer through an application programming interface ("API"), a two-way blockchain bridge, or a smart contract. Moving the entire Verra Registry onto the blockchain. Strict controls over the token issuer.

	<u>Double-use:</u> Immobilization of VCUs used to generate Carbon Tokens in the Verra registry (either in an account managed by Verra or in an account managed by the approved token issuer), with simultaneous 'burning' of the Carbon Tokens upon retirement of the underlying VCU. Use of a trust structure whereby Verra maintains control over the Carbon Tokens and holds them on trust for the beneficial owner. Creation of a digital public ledger, built on blockchain technology, to record all transactions of Carbon Tokens. Creation of a tracking system to monitor and record offsetting claims by buyers of VCUs and not just retirements. <u>Energy footprint:</u> Require that tokenizing platform use a proof of stake blockchain such as Ethereum, which has a lower energy consumption than proof of work blockchains. Require tokenizing platforms to use blockchains that are carbon neutral.
1.2. What infrastructure and processes do entities participating in the immobilization approach need from Verra?	*There were a variety of responses to this question. Some respondents were not keen on immobilization at all.* A form of linkage between the Verra Registry and the blockchain on which the Carbon Tokens are issued. A blockchain platform, set up by Verra, for issuance and transfers of Carbon Tokens, play a controlling role in such issuance and transfers on the blockchain, and/or move the Verra Registry onto the blockchain. Have the blockchain platform and the Verra Registry run separately but with tools to enable two-way data flow. The purpose of such data flows is to create safeguards against double issuance and double use, as well as to provide transparency into the underlying VCU. Smart contracts, APIs or other technical linkages could be used to enable simultaneous retirement or reactivation of VCUs and burning of Carbon Tokens, thereby reducing the risk of double use. While a data linkage could be done manually, there would be a significant risk of human error in the process of cross-checking the Verra Registry against the blockchain. Such manual linkages could also impose high transaction costs on Verra and the token issuers. Another

	use for such linkages would be for Verra and other parties to make known their positions on the blockchain itself. There should be a specialized account set up in the Verra Registry to hold immobilized VCUs. Technological / automated solutions to link the Verra Registry with the platform. Such solutions included either (i) Verra setting up or managing the platform itself or (ii) establishing APIs or smart contracts to link the Verra Registry with the platform. A manual system may be simpler and easier to set up, though it may have greater difficulties with scaling up. A function for Verra to make a public statement on the blockchain in respect of each Carbon Token issued.
1.3. Is there a market need to provide for the reactivation of immobilized VCUs, as long as any related crypto instruments or tokens were not used for any other purpose and are destroyed as part of this reactivation?	<u>Opposing reactivation</u> Opposing respondents took the view that reactivation was not required by the market and could be difficult for Verra to carry out. There were also the following additional concerns which were raised about reactivation: Adverse impacts on the perceived integrity (arising from double use or double issuance) of the Verra Registry or the Carbon Tokens if immobilized VCUs could be reactivated. This risk could be mitigated by targeted measures to deal specifically with double use or double issuance. By promoting convergence between the VCU and Carbon Token markets, reactivation could potentially import the volatility of crypto instruments into the VCU markets. <u>Supporting reactivation</u> On the other hand, the supporting respondents, who formed the majority, were of the view that there may be a market need for a token seller or issuer to reactivate the underlying VCU in certain circumstances. These circumstances include: • A situation where the seller or issuer encounters a lack of demand for the Carbon Tokens and therefore wishes to reactivate the underlying VCUs for sale or conversion into different Carbon Tokens i.e. switching from one approved blockchain to another. The possibility of reactivation in this case also promotes liquidity in the market for Carbon Tokens and encourages the prices of Carbon Tokens to approximate those of VCUs.

	• A situation where the buyer of the Carbon Token on an exchange wants to transfer the underlying VCU into his Verra Registry account for the purpose of retirement and making claims associated with retirement of the VCU. • A situation where there are technical failures, attacks on the blockchain network, insolvency of the holder of the private key (which is needed to access a wallet containing the Carbon Tokens), or loss of the private key. In such a situation, the ability to reactivate VCUs could serve to mitigate the risk of participating in the blockchain network. Additional considerations In the event of loss or theft of the private key, reactivation should not be permitted since the Carbon Tokens may remain in circulation, creating possibilities for double use. Support reactivation of VCUs except for VCUs that no longer meet current VCS or other relevant Verra standards, in order to discourage trading in VCUs that are, or are perceived to be, outdated and of lower quality.
1.4. What are the legal and operational implications of a crypto instrument or token being fractionalized?	The potential benefits of fractionalization would be greater liquidity and possibly to allow buyers to support higher cost projects. Fractionalization may increase a whole range of risks related to KYC / compliance issues, regulatory risks, speculative activity and cybersecurity risks. Although some solutions were proposed for these risks, the proposed solutions do not completely address all the increased risks, particularly the compliance and regulatory risks, and are also likely to require frequent reconciliation between the platform's accounts and the Verra Registry. We also note the attendant changes to the VCS Standard/Verra Registry Terms of Use which would be needed if Verra were to permit fractionalization, including (i) allowing for natural person individual/ownership and (ii) retirement concepts. Verra would have to weigh the potential benefits of fractionalization against the likely costs. Benefits of fractionalization Several respondents suggested that the key practical benefit from the fractionalization of Carbon Tokens is the increase in liquidity through sales (i) to retail buyers with more limited resources,33 (ii) to buyers who want to offset a narrowly defined activity involving a small amount of emissions e.g. taking a flight or attending a conference, offsetting a day's worth of data center operations, offsetting emissions of a discrete good or service etc,34 or (iii) of fractionalized Carbon Tokens derived from a high-cost underlying project such as carbon capture and storage or direct air capture.35 Some respondents noted

that this market segment is already being served by intermediaries such as Patch.io and Cloverly which aggregate the individual offsets for retirement purposes. However, some respondents questioned the need for greater liquidity when the price of VCUs on a per-tonne basis remains modest.

Issues with fractionalization

The respondents also raised numerous concerns about fractionalization, including the following risks / difficulties:

1. Greater difficulties in performing know-your-client ("KYC") and other compliance checks on the owners of fractionalized Carbon Tokens.
2. Higher risks of double use or discrepancies between the status of a fractionalized Carbon Token and the underlying VCU when the VCU is retired or reactivated
3. Fractionalized Carbon Tokens may be regarded as securities, commodities or currencies, which could bring Verra and the token issuers within the scope of securities laws in the various jurisdictions where they operate.
4. The likelihood of regulation under securities laws may be higher if the fractionated Carbon Tokens are pooled and securitized though this may ultimately depend on the construct of the Carbon Token.
5. Fractionalization may invite speculators who have no interest in the underlying environmental attributes represented by the Carbon Tokens.
6. This is essentially the flip side of the liquidity benefit mentioned above.
7. Fractionalization reduces the cost for malicious actors to acquire Carbon Tokens in order to launch denial of service attacks on the Carbon Token platform i.e. placing so many orders that the platform is not able to process its customers' orders.
8. Fractionalization may make the Carbon Tokens and/or the underlying VCUs unsuitable for use in national or international compliance markets, where the relevant unit is typically one metric tonne of CO2.
9. There may be further difficulties in satisfying the requirements of compliance markets if the fractionated Carbon Tokens are pooled and securitized.

Respondents generally agreed on the need to have the Carbon Token platform implement robust KYC requirements for the sale of fractionalized Carbon Tokens.

	Possible solutions for fractionalization issues To deal with the risks of double use or discrepancies, several respondents suggested the following solutions: 1. Fractionalization of VCUs to allow for retirement and/or reactivation of fractions of a VCU.44 This was by far the most popular solution. However, it may also require Verra to reach agreement with the Carbon Token platforms on what is the smallest fractional unit which Verra will accept. 2. Constant updates of Verra Registry records, embedding of metadata or other technical solutions to allow owners of fractionalized Carbon Tokens to easily trace their fraction to a particular VCU or project. 3. Requirements that the VCU can only be retired or reactivated when all of the fractionated Carbon Tokens derived from it have been burnt. 4. Restricting the retirement of fractionated Carbon Tokens to the first buyer, to ensure that only one entity can retire the underlying VCUs. 5. Not permitting fractionalization at all.
2. KNOW YOUR CLIENT (KYC) REQUIREMENTS	
2.1. What KYC checks (and in relation to which jurisdictions) should Verra apply to platforms before authorizing them to issue, market, and/or transact in crypto instruments or tokens that are backed by VCUs?	Respondents' suggested KYC checks for platforms fell into two broad categories. The first category consisted of corporate KYC checks to ascertain the financial standing of the platform, as well as to check for the involvement of sanctioned entities and to run general anti-money laundering checks. The second category of KYC checks related specifically to the processes and technical operations of the platforms, including cybersecurity audits, information about the processes and carbon footprint of the blockchain and the platform, licenses from local authorities to operate a platform, and the platform's own KYC policies. Corporate KYC checks Some respondents advised Verra not to deal with platforms that are structured as decentralized autonomous organizations ("DAO") since the identity of DAO stakeholders can be opaque. Several respondents took the position that Verra's existing KYC requirements for account holders of the Verra Registry were sufficient and should be applied to the Carbon Token platforms.55 Specifically,

various respondents were of the view that the following general information should be obtained by Verra from the Carbon Token platforms as part of the KYC onboarding process:

1. Identity of management and ultimate beneficial owners ("UBOs"), which should be checked against various sanctions lists, particularly US sanctions lists such as the Office of Foreign Assets Control ("OFAC") sanctions lists. Verra should avoid dealing with entities registered in jurisdictions where the identity of management and UBOs is not publicly available or transparent.
2. Other AML / CFT information prescribed by the Financial Action Task Force ("FATF") Standards and the KYC standards imposed by the US Bank Secrecy Act. However, one respondent took the view that Verra is not subject to the KYC standards of the US Bank Secrecy Act and therefore does not need to follow those standards.
3. Organizational documents and information
4. Financial statements to show solvency and good standing
5. References from entities that have had dealings with the platform
6. Source of funds
7. Expected use of Verra programs

Process / technical KYC checks

In addition to the general information described above, a substantial number of respondents were of the view that Verra should request the following specific information or documents relating to the blockchain, the Carbon Tokens and the operation of the platform:

1. information about the functions, processes, and operations of the blockchain and platform
2. information about any smart contracts used, including independent audits
3. information (preferably verified) about the ESG attributes of the blockchain and the platform, to avoid being associated with a blockchain or platform with a large carbon footprint or other non-sustainable characteristics
4. a license to operate a trading platform for Carbon Tokens from the relevant local authorities
5. evidence of robust cybersecurity protocols, including security audits

	6. information about the platform's own KYC processes
2.2. Should platforms be required to apply KYC checks on all entities that hold crypto instruments or tokens, or just on the entities that receive, use, or are the beneficiaries of such instruments?	Almost all respondents agreed that KYC checks should be applied to entities that receive newly issued Carbon Tokens and entities requesting for reactivation of VCUs. A significant minority of respondents wanted platforms to apply KYC checks to all entities holding Carbon Tokens, including intermediate holders. Others opposed such KYC checks. In practice, KYC checks on intermediate holders are likely to be feasible only if the blockchain restricts transactions to registered account holders of the platform. Whether such KYC checks are feasible would therefore depend on the type of blockchain which Verra requires the platform to use. As for the entities that ultimately use (which most respondents understood to mean retire) the Carbon Tokens, it was assumed that such entities would need to have accounts with the Verra Registry and would therefore need to go through Verra's usual KYC checks. A number of respondents questioned the need to do KYC on the beneficiaries, noting that the Verra Registry does not conduct KYC checks on beneficiaries. We note however that the Verra Registry TOUs do provide that a User represents that it is not performing transactions on behalf of a customer who is a target of sanctions. From a risk management perspective, Verra may consider whether it would be satisfied with such a warranty from the Verra Registry User or whether it would require KYC on the beneficiary. KYC on all holders There was a broad spectrum of responses to this question. At one end of the spectrum, there were respondents who suggested that platforms apply KYC checks to all entities that hold Carbon Tokens.60 A substantial number of respondents were in favour of this approach, as they believed it could improve transparency and reduce the risk of fraud. The respondents who favoured this approach contemplated the use of a blockchain whereby transactions are limited to registered account holders of the platform.61 One respondent also cited a regulatory trend towards requiring platforms to conduct KYC checks on parties participating in crypto asset transfers KYC on first holders and holders requesting for reactivation As for the entities that receive newly issued Carbon Tokens and entities requesting for reactivation of VCUs, all but one respondent agreed that KYC checks should apply to these entities. There seems to be no difficulty with this approach since the platform could insist that anyone wishing to receive newly

issued Carbon Tokens register as an account holder and submit to KYC checks. Similarly, an entity requesting for reactivation of VCUs could be required to submit to KYC checks.

Intermediate holders

As for intermediate holders (i.e. entities which hold the Carbon Tokens but are not the first holder or the party that retires the Carbon Tokens), a number of respondents did not think that such holders should be subject to KYC checks.

1. One reason given is that, although KYC on platform account holders is quite feasible, it would be difficult to conduct KYC on buyers who purchase the Carbon Tokens outside the platform. This argument appears to be premised on an assumption that the blockchain is decentralised and allows for transactions to persons who are not registered with the platform. Additionally, fractionalization of Carbon Tokens could complicate the KYC process for such intermediate holders.

2. A second reason for not regulating intermediate holders has to do with parity of treatment - Verra does not presently impose KYC requirements on transactions of VCUs outside of the registry, such as sales by brokers of existing VCUs. Thus, there should be no such requirements for transactions in Carbon Tokens that occur outside the platform. However, this does not seem to be a very strong argument since a buyer who does not obtain a transfer in the Verra Registry does not obtain any interest in the VCU under the Verra Registry Terms of Use while a buyer of a Carbon Token who obtains a transfer on the blockchain probably does receive an interest in the Carbon Token.

3. A third reason is that there is no legal requirement for Verra or the platform to conduct such KYC checks.66 We query whether Verra is bound practically impeded however by its other contractual obligations, e.g. banks for bank accounts, payment services providers etc.

Users of the Carbon Tokens

As for the parties which use the Carbon Tokens by requesting retirement of the VCU and burning of the Carbon Tokens, most respondents seem to accept there will be KYC on such parties since they would need to open accounts with the Verra Registry in order to request for retirement. One respondent suggested KYC checks be conducted on such entities to reduce the risk of the entities engaging in Value-Added Tax ("VAT") fraud and/or carousel fraud. This risk would seem to be present only if there is a cross-border transfer of Carbon Tokens and the relevant jurisdictions apply VAT to Carbon Tokens. In any event the taxation of virtual assets (which a VCV already is) is a matter to be dealt with by sovereigns.

	<u>Beneficiaries</u> In respect of the beneficiaries in whose name the Carbon Tokens are burnt and the VCUs are retired, some respondents took the view that these holders should not be subject to KYC checks. • One basis for this opinion is that the beneficiary has no rights in respect of the Carbon Tokens or the VCUs and only has the ability to claim the environmental benefit of the retirement. The retirement of a Carbon Token therefore does not create monetary value and does not carry associated fraud or money-laundering risks. • Another basis of this opinion relates to parity of treatment. Since Verra presently allows account holders to retire VCUs in the name of third parties and does not conduct KYC checks on such third parties, there is no reason to require KYC on beneficiaries because the VCU has been tokenized.
2.3. What, if any, information on crypto instrument or token holders should be made publicly available?	Respondents suggested making the following information publicly available: • <u>Carbon Token information</u> The projects that have been tokenized • The number of Carbon Tokens created • The amount of Carbon Tokens burned • Whether there are additional verification processes / certifications and/or audits on the tokenization process • How the burning is done • The serial number of the underlying VCU with which a Carbon Token is associated • Addresses of crypto wallets used to store Carbon Tokens • Information about immobilized VCUs and the platform which issued the associated Carbon Tokens • Token hash (own inalterable code once created) for every ton of CO2 abatement to ensure that the seller of the Carbon Token is actually its owner.

	• Project type of the underlying VCU • Project proponent of the underlying VCU (entities involved in project development & project owner) • Project commencement date • Any co-benefits associated with the Project • Retirement status • Carbon Token creation date • Transaction dates, prices and quantities • Vintage of underlying VCU Holder/beneficiary information Respondents suggested that the following information be provided upon burning of a Carbon Token and retirement of the corresponding VCU: • Web3 account addresses that are linked to accounts in the Verra Registry upon retirement of a token; • Beneficiary; • Beneficiary's web3 account address; and • Reason for retirement • Holdings of Carbon Tokens and quantities of corresponding immobilized VCUs, for auditing purposes Other respondents questioned the need for identification of a beneficiary, given that the Verra Registry permits retirements without identifying the beneficiary. A respondent questioned the need for Verra to police offsetting claims by holders of Carbon Tokens and opined that such claims should be left to company auditors, reporting standards such as the SBTi or GHG Protocol, and regulators such as the SEC

	<u>Token holders</u> Respondents suggested making the following information publicly available (if applicable): • Business entity names • Websites • Contact information • Holder's public key (which is used to encrypt data on the platform) • Registered address • Corporate officers or registered agents • Publicly available emissions data • If available to Verra, publicly announced climate targets and sustainability claims and commitments; ESG ratings history; related litigation, securities and environmental regulatory filings, and submissions to entities such as SBTi and CDP; and carbon-credit transaction (buy/sell dates, quantities, unit and total price, etc.) and/or deployment information (offset usage claims, third-party auditing data, etc.) There were concerns amongst a majority of respondents that making personal information such as names or home addresses publicly available could possibly run afoul of applicable privacy or data protection laws. Although the wallet addresses of token holders should be visible to the public on the blockchain, their names should not be. Some respondents also highlighted the need to implement security systems to protect personal data, which systems should comply with international standards such as ISO 27001.77 Such personal information should only be disclosed to regulators or proper authorities. Some respondents want Verra to create an option for a token holder to make selected personal information such as his / her name publicly available. In other words, publication of such information would not be mandatory but optional.
3. AMENDMENTS TO THE REGISTRY TERMS OF USE RELATING TO ANTIFRAUD	

3.1. What textual amendments are advisable to address anti-fraud considerations related to the association of third-party crypto instruments and tokens with VCUs?	Most respondents either did not respond or did not propose any text, instead making general comments on what should be included in the TOU.
	
	Respondents proposed the following amendments to the TOU:
	
	• For section 1 titled "General Terms of Use"
	  ○ "Subject to the Terms of Use, Verra consents to Users marketing and transacting Related Instruments that are issued by an Authorized Tokenization Platform." (the reason for this is that the existing definition of “Related Instruments” is broad enough to encompass Verra authorized tokens. Clause 1.9 suggests that a User may not market or transact a Related Instrument without Verra’s consent. In order to clarify that Verra need not consent to each and every token-related transaction, this amendment establishes that Verra consents to Related Instrument transactions on an Authorized Tokenization Platform)
	  ○ "Verra will only approve a cryptocurrency or tokenization entity as an Authorized Tokenization Platform if that entity:
	  (a) is not an individual (being a natural person);
	  (b) has indicated its acceptance of these Terms of Use;
	  (c) has provided sufficient identification information including satisfying any relevant Know-Your-Client (KYC) or other background check requirements in accordance with the procedures set out by Verra including the Program Rules and Requirements; and
	  (d) has the ability to monitor transactions on the platform".
	  ○ “Verra may, in its absolute discretion, refuse to approve a crypto currency or tokenization entity as an Authorized Tokenization Platform." (the basis for this amendment is to establish the requirements for Verra to approve a platform)
	
	• For section 3 of the TOU titled "Services"
	  ○ “Verra, through the Verra Registry, provides an electronic platform to list Project Activities that follow the applicable protocols and standards for the relevant Verra

Program and record the issuance, transfer, retirement, immobilization or tokenization, and cancellation of Instruments within the Verra Registry."

- For section 5 of the TOU titled "Listing a Project or Activity",
    - The project proponent should expressly state that it is willing to issue Carbon Tokens and that it is willing to allow a link between the platform and the Verra Registry to transact in Carbon Tokens. The project proponent should also undertake not to issue any Carbon Tokens other than through the approved platform linked to the Verra Registry.
    - Project proponents should promise to accept a public ID allocated by Verra, and use that in communications and blockchain interactions so that people can look up whether that token is approved by Verra.
- For section 8 of the TOU titled "Cancellation and Retirement of Instruments"
    - an overview of the immobilized VCU-to-tokenization functionality along with illustrations or diagrams of the process, including KYC and AML checks, audits, burning of tokens, guidelines and the specific platforms which will carry out the burning of tokens in the retirement process
    - "once tokens are transacted project proponent shall ensure that emission reductions can no longer be transacted and become property of the buyer, leaving a register of transaction data (seller – buyer – token code - date) in Verra registry"
    - A declaration that (i) only Carbon Tokens that have real VCUs as collateralized assets be deemed valid for trading purposes on the approved platform, and that (ii) immobilized VCUs cannot be used to exercise or claim the underlying environmental attributes
    - A clause stating that Verra's registry shall take priority over the approved platform in cases of conflict. (the purpose of this clause is to resolve situations of erroneous or fraudulent dealings)
    - A clause stating that Verra is the sole authority capable of reactivating VCUs

3 COMMENTS

1. MEASURES TO ASSOCIATE VCUS WITH CRYPTO INSTRUMENTS OR TOKENS

1.1. Regarding the creation, transfer, and use of VCU-backed crypto instruments and tokens, what safeguards should be implemented by Verra to ensure environmental integrity, particularly to prevent double-issuance and double-use?

#	COMMENT
1	You may consider a Token / Crypto built on one of the greener BlockChain technologies that consume less energy. For preventing double-issuance and double-use, its partly depends on the Tokenomics drawn up in the tokenisation effort and partly on the platform design effort in how the data is used or called for each transaction. It is important that you access the data rather than store the data, by doing so you will make the whole application much lighter and also greener and also the very same effort will make it easy to track and alert any duplication.
2	Basically go back to the Toucan model, but now with KYC requirements of the company tokenizing.
3	By making information public, double-use and double-issuance can be prevented.
4	Verra could may demand VCU-backed crypto instruments and tokens to employ individual-level metadata to ensure better integration with VCUs, with the metadata potentially holding prescribed information like ownership, retirement, transaction details etc. This enables Verra to update its registry system to watch over on-chain transactions of VCU-backed crypto using decentralized means, for example, Etherscan (https://etherscan.io/), making it possible for other entities to see if a given VCU was used to issue crypto assets on its registry within Verra's registry.
5	Allow only issuers of VCUs to create tokens/certificates for them ● Allow only issuers to execute changes of ownership of tokens in order to ensure compliance with issuer buyer policies ● Allow only redemption for offsetting and value-chain insetting

	● Ensure 1:1 tokenization of atomic (indivisible) certificates/ VCUs ● Allow crypto/tokens/derivatives/alternative investment funds, etc. to be created on top of a holding of certificates but keep clear distinction and require full ownership and availability of the underlying, primary credit tokens.
6	The retirement of the VCU should only happen when the customer order, linked the same time as the retirement with the token burning. The Ambify's creation only occurs with active and valid carbon credits and it is in a Ambify's sub-account in Verra Registry sistem. These VCUs, when tokenized, can no longer be traded in any other way, so, in the allocation of the Ambify sub-account, the Serial Number cannot be retired except through the Ambify plataform, avoiding double counting or remission of utilities tokens, it's basic to clear how the process work. We suggest that other tokens follow a similar process.
7	On the one hand, the technology is secondary in relation to the policies and protocols of the systems, on the other hand, the internal properties of modern technologies largely determine the design, scope, and functionality of the digital platform built on its basis. Therefore, recommendations for specific technologies are given below. **The concept and governance include:** - the creation of an open and democratic voluntary carbon market, operating on the principles of DAO (Decentralized autonomous organization[1]), in which nodes of DAO are owned by trustee organizations with a high level of reputation; - Verra coordinates and supports the development of the principles, policies, governance model, and protocols for the VCM DAO (Voluntary carbon market DAO); - the Verra registry is the source and point of trust in the decentralized ecosystem of VCM DAO; - the Verra sub-register is a subgraph of the Verra registry and an agent in the VCM DAO, with which integrated other blockchain platforms, where are VCUs crypto instruments can be tokenized stored; **Technology:** - Hyperledger Fabric[2] technology is used to create VCM DAO and Verra subgraph; - Verra subgraph on Hyperledger Fabric is used for cross-chain communication and data replication to ensure unity, integrity, and validity of data in both off-chain and on-chain voluntary carbon markets. Some advantages of Hyperledger Fabric[3] frame (a technology developed under the Hyperledger Foundation): - Hyperledger Fabric is an open-source enterprise-grade DLT (Blockchain) framework for building economic platforms based on verifiable asset management process with zero transaction costs; - the Hyperledger Foundation is a member-driven, not-for-profit organization. Industry-leading organizations join Hyperledger to help build and shape the ecosystem for blockchain technologies, use cases, and applications;

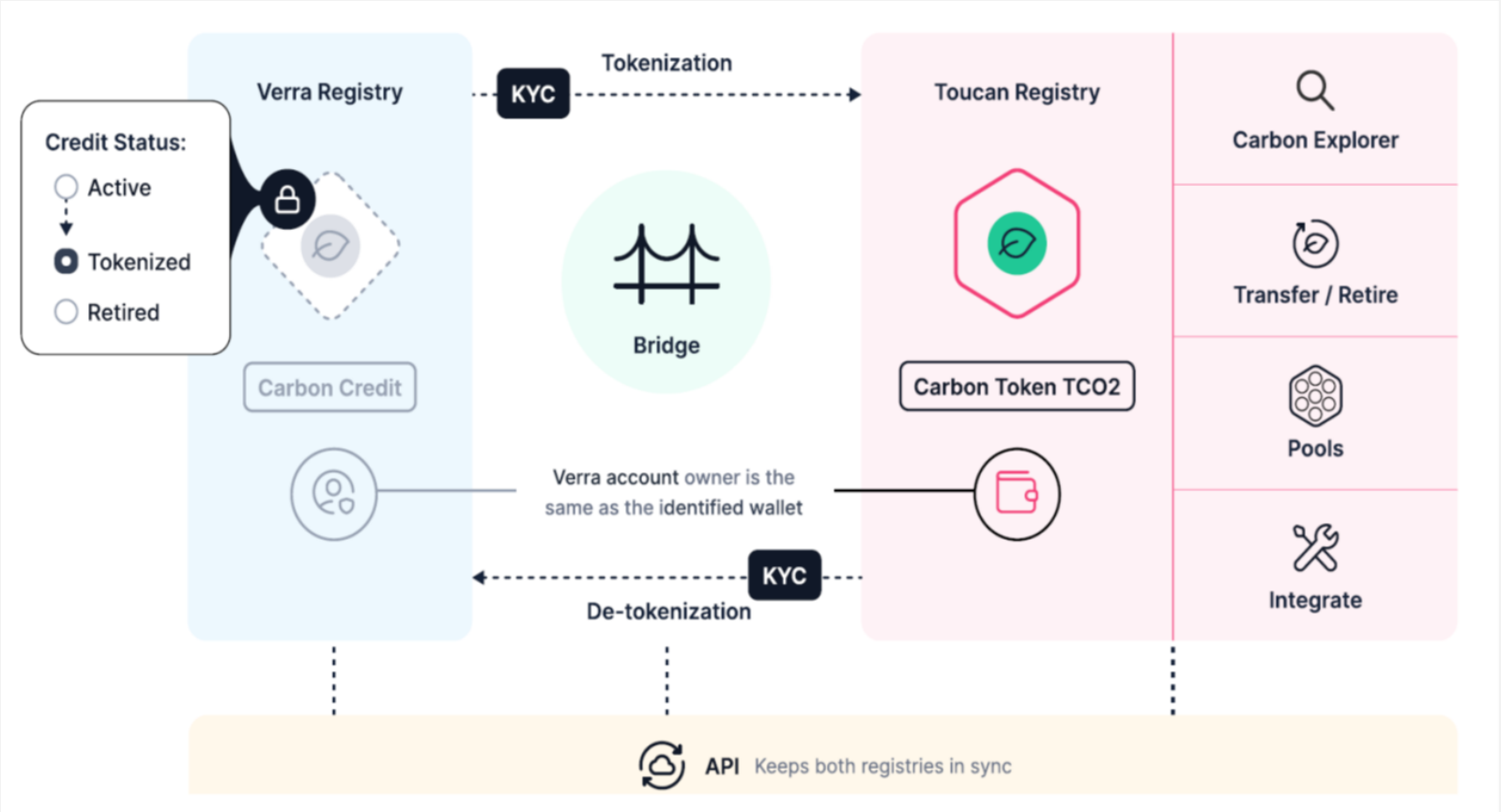
	- the governance and development of the Hyperledger Fabric are transparent, and managed by an independent professional community as part of a non-profit initiative (Hyperledger); - Hyperledger is a part of the broad Linux Foundation ecosystem; - Hyperledger Foundation takes an active part in the climate agenda: Climate Action and Accounting Special Interest Group[4] ; - high energy efficiency through the use of efficient consensus models and transaction processing; - compliance with security requirements for corporate systems (see Security Assessment Management Report[5], Security Assessment Technical Report[6]); - the ability to organize a secure and anonymous exchange of confidential information that will be available only to authorized participants through the mechanism of private channels; - Hyperledger Fabric based networks are used by some of the largest corporations around the world, including more than half of the companies on the Forbes Blockchain 50, a list of companies with revenue or a valuation of at least $1 billion that lead in employing distributed ledger technology. Public companies play a key role in solving the problems of transition to a net zero economy. **Asset management and tokenization:** As a standard of VCUs asset management and tokenization, it is advisable to use the Voluntary Ecological Market Framework[7] (section Carbon Reduction/Removal Unit (CRU) Token, page 24) from InterWork Alliance (IWA) and Global Blockchain Business Council. VCUs asset management mechanism based on the UTXO (Unspent transaction output[8]) model, which provides a powerful guarantee for privacy, scalability, and performance properties: - that asset is unique and can only be transferred by its owner; - that asset cannot be double spent. Each transaction needs to have a specific set of outputs and inputs; - scalability - since it is possible to process multiple UTXOs at the same time, it enables parallel transactions and encourages scalability innovation with multi-party swaps; - privacy - UTXO provides a higher level of privacy, as long as the users use new addresses for each transaction. If there is a need for enhanced privacy, more complex schemes, such as ring signatures, can be considered; - supported by The Fabric Token SDK[9].
8	One of the advantages in using blockchain technology is that - once tokenized - the technology itself makes double accounting impossible. However, this only works if the tokenized carbon credit is directly linked to the registry's record of the credit (i.e. a "two-way bridge"); otherwise, tokenization could actually compound the problem of double accounting. There are four primary elements of the safeguards Verra should consider to ensure integrity: **Two-Way Bridge:** A two-way blockchain bridge—that is: a bridge that is deployed with the full knowledge and consent of the registries, and ensures the on-chain credit and the registry ledger remain perfectly synced in the case of tokenization and retirement—is a key safeguard to ensure the integrity of on-chain carbon credits. Not only does it enable market participants to choose to reverse the bridge and take carbon credits back off-chain in their original form, it also ensures the on-chain and off-chain markets remain linked without any market fragmentation.

	Double-Issuance Safeguards: Further safeguards are needed to ensure that, once tokenized, there is no double-issuance of the carbon credits on, for instance, multiple chains at once. Thallo's financial design, for example, protects against double-spend, giving sole custodial rights to Thallo, but retaining the beneficial owner's asset proprietorship through a financial-market grade trust structure. Verra should consider a similar model, where any tokenized asset is then moved into a custodial account managed by the owner. **Regulated Derivatives:** Safeguards and rules are also required to ensure that, once tokenized, the tokenized credits can be transformed into complex products (e.g through further tokenization and derivatives) in a safe and regulated manner that doesn't undermine confidence in the market itself. These products, like derivatives, play a major role in enhancing transparency by providing forward information on carbon, which contributes to long-term sustainability objectives and provides helpful signals to policy-makers on the regulation of carbon prices. Regulatory bodies such as the CFTC (and in the UK, the FCA) are experts on how to ensure consumer protections with a battle-tested framework. Derivatives and complex financial Instruments can be additive to the existing markets by redirecting financial market capital to regenerative, rather than extractive ecosystems. But it is vital that we follow existing guidelines to give Project Developers, Registries, and Consumers alike, comfort in the end products. Separately, we also believe that any tokenized carbon must retain a direct link to the underlying asset on the registry, with credit-specific identifiers (e.g. serial number, project ID, vintage) clearly displayed. In order to better harmonize the market, we also advocate for the use of token standards such those developed by IWA or Filecoin. **Low-Carbon Blockchains:** The process for trading tokenized carbon credits cannot represent—in and of itself—a significant negative climate impact. This defeats the purpose of the underlying credit, which is to provide climate financing to projects mitigating the effects of climate change. It is therefore key for the underlying blockchain technology to have as low of a carbon profile as possible by, for example, only adopting Proof-of-Stake consensus mechanisms (or similar mechanisms with similarly negligible carbon impact). The benchmark for such a standard could be, for instance, a hypothetical tokenized carbon credit being traded X times on said blockchain does not exceed X% of the underlying metric ton represented by the carbon credit. Importantly, such a calculation must also include the carbon profile of 'rolling-up' from a Layer 2 (Polygon) to a Layer 1 mechanism (e.g Ethereum).
9	We believe exchanges and marketplaces should be incentivized and allowed to build APIs that integrate directly into the Verra Registry to alert Verra in the event of a trade or retirement of a VCU This alert-system can notify Verra instantaneously and will allow the Verra Registry to keep up to the minute records related to VCU ownership Any Crypto instrument either individually representing or bundling VCUs should be able to disclose the exact credits backing the token and ensure they are exclusively represented by that token and have not been burned The idea of creating a template is a very good one in our mind, and will help allow for the standardization of information flow between Verra and market makers in VCUs o There should be regular reporting requirements from platforms who transact / create cyrpto instruments or tokens backed by VCUs to Verra regarding immobilized VCUs, their current status, and other relevant information
10	VCU-backed crypto instruments or tokens should act as digital certificates for blockchain-enabled VCUs where tokens must be burnt, and the underlying unit retired if the owner wishes to exercise the rights. The importance of a climate-first mindset must override all other considerations, such as financial or political ambitions. Nevertheless, immobilized blockchain-enabled VCUs for primary offerings and secondary trading can work

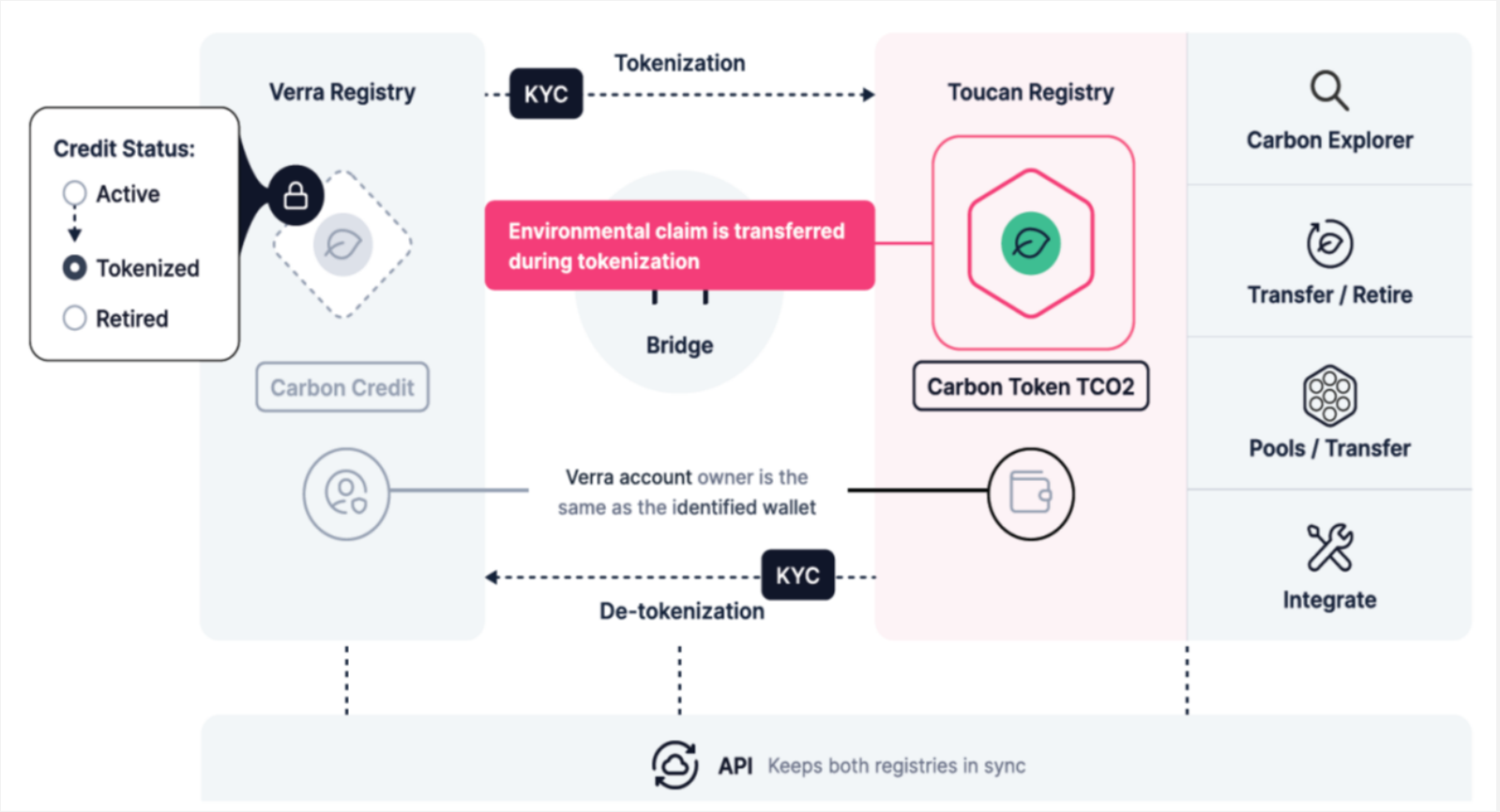
	similarly to a Nominee account relationship found between a Transfer Agent and Broker-Dealers in today's traditional financial ecosystem. For example, broker-dealers hold securities for customers in street-name and are listed as the legal owner, but all dividends, rights, etc., are passed to the beneficial owner or end customer. Using the Nominee account method may allow Verra to manage immobilized VCUs at digital transfer agents such as Securitize while allowing many different execution venues to transact and maintain control over the tokens and execution venues in parallel. Moreover, and in the traditional sense, the customer usually shields their identity from the issuer via the street-name process mentioned above, but for the purpose and proliferation of tokenized VCU offsets, it should be standard practice that every investor, purchaser, or holder of VCU tokens are non-objective beneficial owners, meaning they must make their identities public or at least disclose them to Verra and Securitize. In this model, the transfer agent should also provide services such as tax reporting, escheatment, and distributions, if applicable. This approach will also use immutable blockchain technologies which can be faster, cheaper, and more accurate than the current infrastructure. Nevertheless, the nominee account model is not meant to be a panacea and is just one way to approach the double-issuance or double-use problem. Other solutions may include entity creation, such as SPVs or a master-feeder structure. However, more collaboration, research, and whiteboarding are needed amongst different industry participants and parties to fully scope out a sustainable resolution.
11	The incorporation of blockchain and crypto tokens in the carbon credit space should serve to enhance the integrity and quality of carbon credits to drive greater positive climate change and not take away from its fundamental purpose which is to mobilise capital more efficiently to project owners and accelerate the efforts to reach net zero. Tokenisation presents itself as a solution, bringing buyers directly to the source, instead of through brokers, ensuring that carbon projects can get their fair share of the profits. This also provides greater visibility and verification, preventing potential misuse, as it can be traced back to the original project developers. We see an opportunity to balance both by leveraging on blockchain technology to maintain a digital ledger of all carbon credit transactions. This ensures transparency and traceability of all carbon credits and transactions that happen on the blockchain, ultimately preventing double counting. At the same time, blockchain increases the accessibility of carbon credits to a broader market that, otherwise, would have no access to such credits, creating a more inclusive market that allows more to partake in the fight against climate change. However, VCU-backed crypto instruments risk becoming another bitcoin, traded at high frequency to generate profits from price volatility. As such, it is important for Verra to consider implementing rules to discourage speculative trading, especially regarding the retirement of credits where we can tap on blockchain technology to ensure retirement once the token is transferred or spent. Increasing prices should ultimately flow back to project owners and drive positive climate change. That said, blockchain technology alone cannot ensure the environmental integrity of carbon credits. We believe that there is an opportunity for Verra to have greater involvement with digital measurement, reporting, and verification (DMRV) players to tap on advancements in technology to play a greater role in the certification and ongoing monitoring of projects. STACS is actively engaged with DMRV players that specialize in measuring emission in forestry land, cities to ingest quality ongoing data so as to provide buyers of the credits end-to-end traceability of the projects. We are also deeply involved with a global brand in increasing accessibility of carbon credits to end consumers, where we record fractional carbon offset transactions on a digital ledger. We are happy to share with Verra our experiences in deploying the infrastructure and operational capabilities needed in such implementation for fractionalization of credits.

12	In order to maintain environmental integrity and allay any environmental concerns, in the allowed use of VCU backed crypto instruments, VERRA should only allow the use of certain blockchains. For instance, the use of Algorand (who are carbon neutral) or Hedara or Cardano, chains would help to ensure the environmental integrity of any VCU backed crypto tokens. VERRA could enforce this through revised terms. In order to ensure the integrity of the VCU's and prevent double-issuance or double use, Verra need enforce robust controls so that all VCU's used to back the Crypto-instruments are clearly ringfenced/immobilized and then registered against the relevant crypto-instruments. Issuers of the instruments should then embed the VCU's numbering into the instruments to ensure an audit rail. Issuers will then be able to inform VERRA of the retirement of those VCU's. VERRA (or external third-party) would be able to audit the relevant blockchain and confirm the destruction of that Crypto instrument alongside the VCU
13	Token shall be created with corresponding hash to be inalterable and emitted only if a tCO2 was effectively abated, calculated through online platform, and associated to project documents. Each token and thus every CO2 ton is unique and associated to a token. To avoid double counting each one shall be reflected in Verra registry with the corresponding ID (hash). Double-issuance is automatically avoided once the hash is created and inalterable thanks to blockchain technology. Every abated CO2 ton has information from the previous emission reduction, making it very difficult to modify its ID. Once token is created, transfer should be registered in Verra registry, with hashes associated to that transfer and name or code of the buying entity. This way, once the VCUs are cancelled, there is no option for double use.

14 Toucan urges Verra to consider the following types of safeguards:



A - Safeguards to preserve environmental attributes;



In the first instance, it is important to ensure that any VCU-based token issued by a Verra-authorized tokenization platform reflects the core work of Verra in verifying the environmental integrity of the VCU in terms of additionality, permanence, and other environmental attributes.

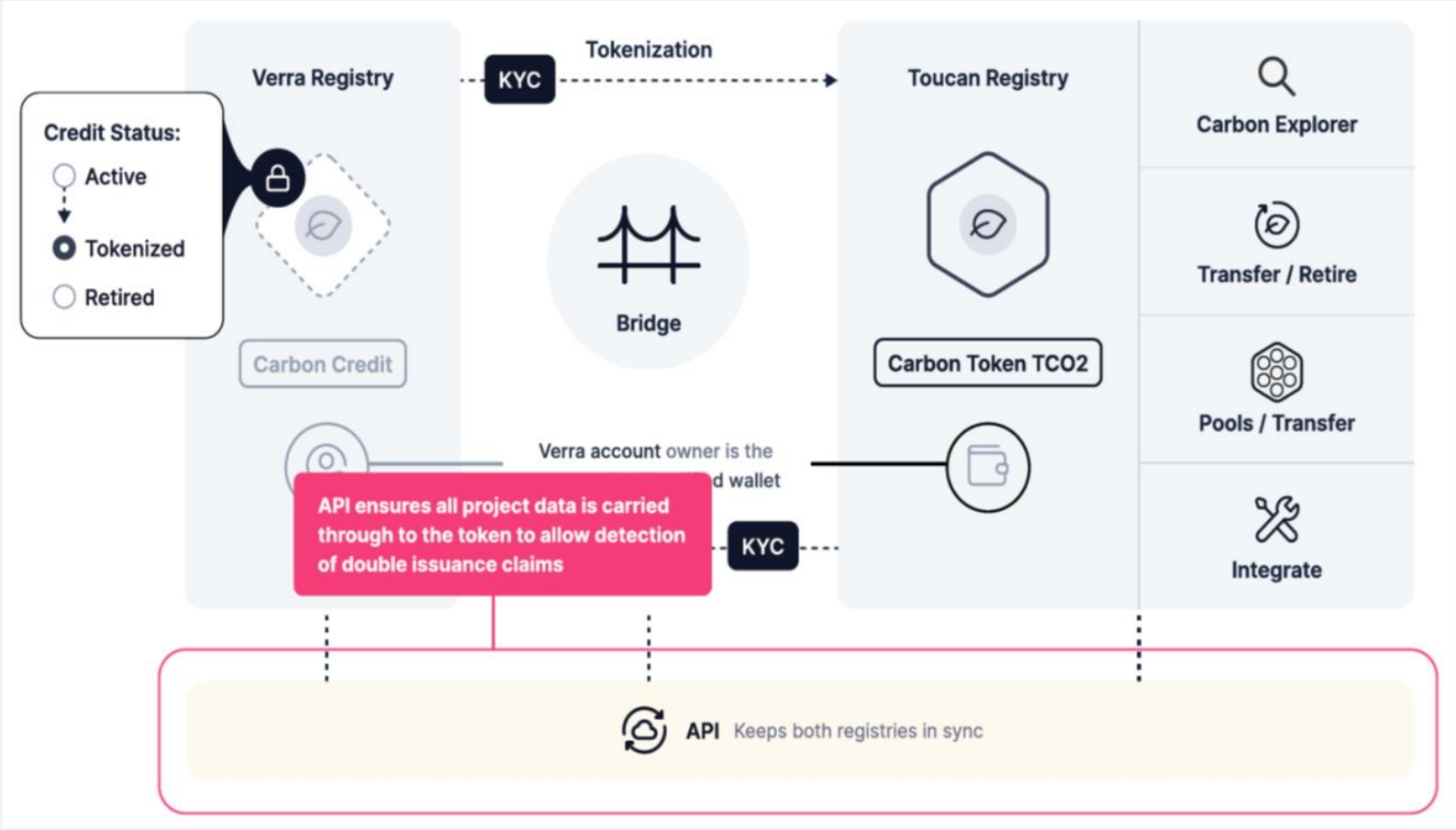
To ensure this fundamental environmental integrity, Verra should require that any authorized tokenization platform immutably connects all of this environmental attribute data to the token, including but not limited to the project name, vintage, and country of origin.

Toucan's tokenization approach already meets this requirement. Our approach turns a VCU into a TCO2, which is a full representation of the underlying VCU. All environmental attributes of the VCU are accessible in a digital format and remain linked with the TCO2 through any and all subsequent transfers. Toucan has been using a process that links the serial number with an NFT representing a batch of VCUs, which under current assumptions will also be used in the version 2 architecture that is to be co-designed with the standards. The environmental attributes of carbon

tokens on Toucan can be changed, albeit with an immutable, transparent, and verifiable audit trail. Because of its public blockchain architecture, this link can be verified by any party. Toucan will implement further features to support this verification possibility in a user-friendly interface.

Toucan recommends that Verra requires the establishment of an API-based communication and synchronization system between any Verra-authorized tokenization platform and the Verra registry. This system could link tokens to VCU batches through unique serial numbers. Toucan is prepared to work with Verra and its registry software provider on the development of such an API system, to ensure that there is an immutability of off-chain data history, like the immutability of on-chain history. With access to the existing software and documentation Toucan would happily support the development of such an API materially and with its own resources.

B - Safeguards to prevent double-issuance;



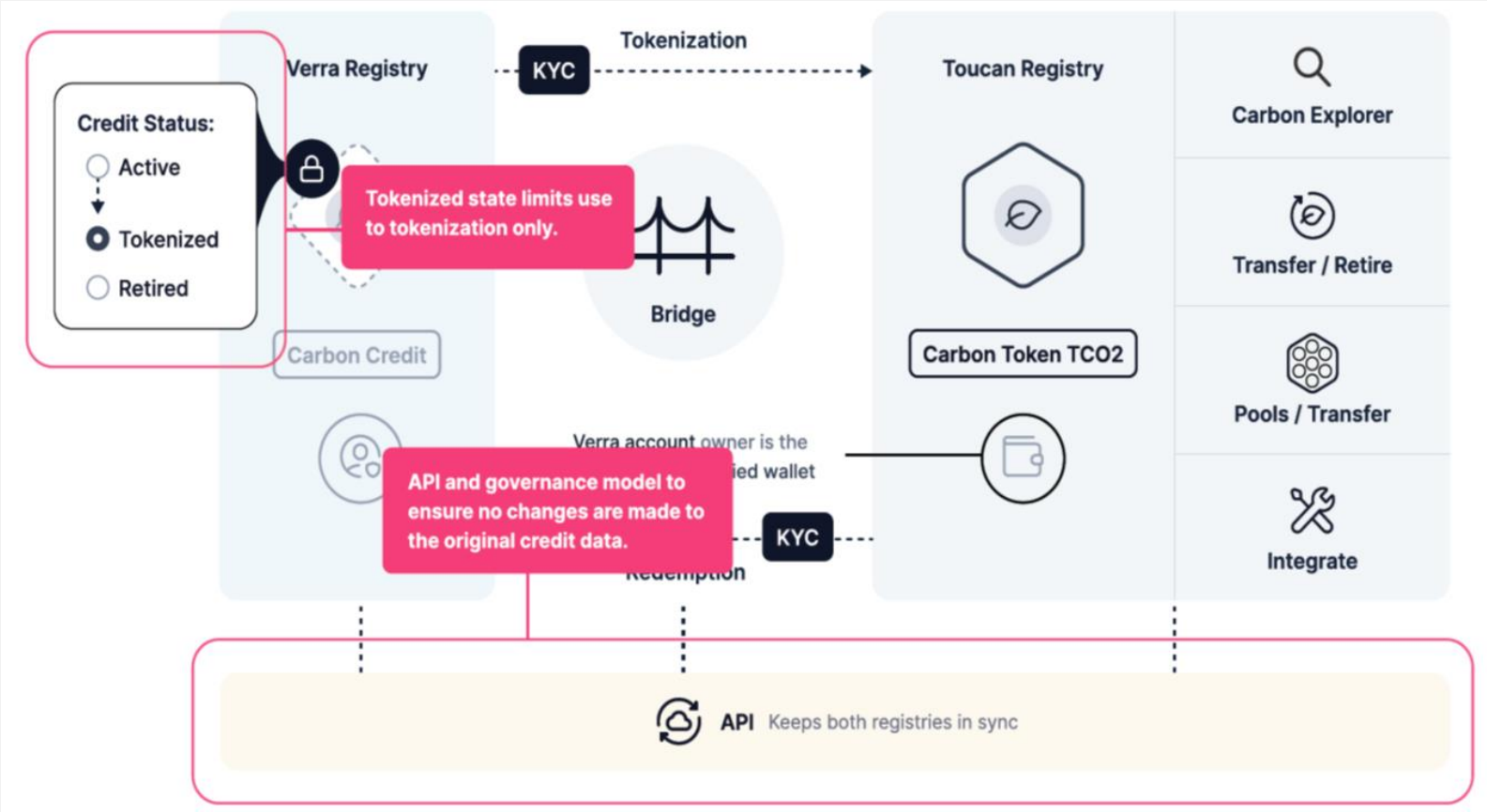
We understand “double-issuance” to refer to a scenario in which two standards organizations—e.g. both Verra and another organization—issue carbon credits for the same tonne of CO2eq that has been reduced, avoided or removed from the atmosphere by a carbon project.

As a threshold matter, Verra itself provides the first defence against double-issuance through the verification phase of (D)MRV. Double-issuance cases that have a root cause prior to the certification process—e.g., a scenario in which a project is certified twice and generates credits in two different registries—cannot be directly prevented via a tokenization solution that starts after certification.

However, a properly-designed tokenization platform can help detect such cases. Provided that the API between Verra and the Verra-authorized tokenization platform ensures that the token carries all of the project characteristics of the VCU, then users of the platform will be able to detect a tokenization claim for the same project by a non-Verra standard. For example, Toucan’s existing platform creates an auditable, bi-directional link between the standard’s registry and the platform. A core feature of Toucan’s platform is that users can identify any mismatches between tokens in the on-chain registry and credit data in the corresponding standard’s registry.

And, indeed, there has been no recorded case of use of double-issued credits attributable to the Toucan platform. In this way, an automated and auditable system such as Toucan’s can improve on the ratings, reviews, and verification services that currently undergird the Voluntary Carbon Market.

C - Safeguards to prevent double-use;



We understand ‘double-use’ to refer to a scenario in which an entity sells, transfers, retires, or otherwise uses both a VCU and a token based on that VCU.

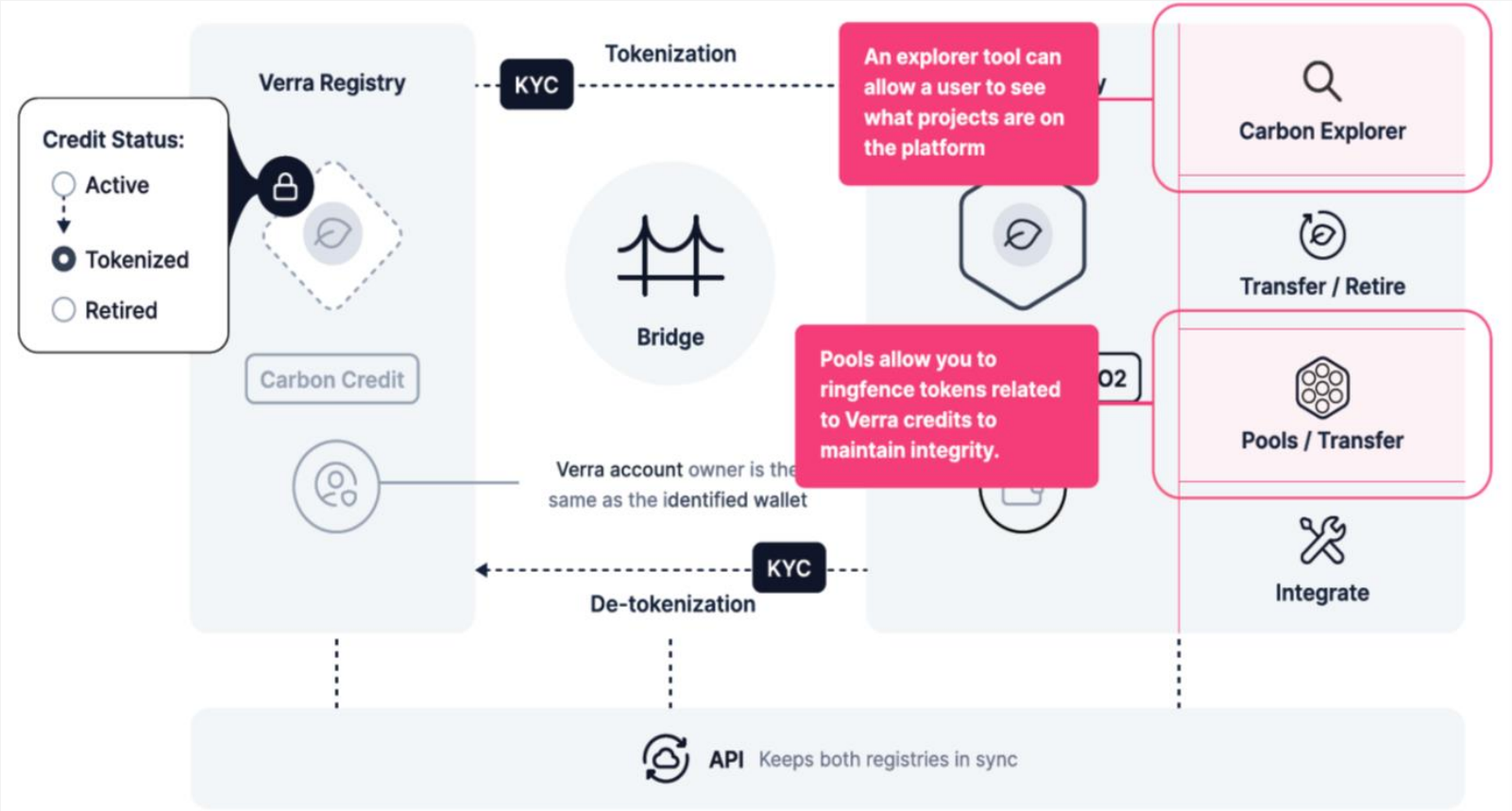
To safeguard against double-use, Toucan recommends that Verra establish within its registry a global ‘tokenized’ account, that can hold tokens without ownership attribution and into which an account holder may transfer a VCU that it wants to tokenize. This is necessary rather than keeping it locked as ‘tokenized’ in the user’s account so that the tokenized version can be transferred between users without that ownership needing to be updated in the registry.

Toucan further recommends that Verra prohibits an account holder from transferring already retired VCUs into the 'Immobilization accounts' or Tokenized Accounts for tokenization purposes (see glossary for further explanation of these terms). VCUs in the Tokenized Account would be available only for tokenization and not for any other use, including transfers or retirements.

Under this approach, the underlying environmental claim is transferred into the token on the Verra-authorized tokenization platform. The token now represents the credit, pointing back to the original VCU which exists in a 'tokenized state' in the registry. The credit in the registry is the 'pointer' to the actual credit on-chain, that now exists in the form of a token with immutably linked attributes.

To make this system work for all users, it is also important that Verra ensure that tokenized VCUs in the Tokenized Account cannot be modified in any way by the original VCU holder or by Verra itself.3 In a new, integrated approach, Verra and the Verra-authorized platform would share a joint responsibility in ensuring that tokenized VCUs in the Tokenized Account remain unmodified. This shared management would be implemented through a well-functioning API solution and an appropriate operating and governance model. We suggest defining the best operating model in a next stage, with the focus on security and efficiency, with matching of capacity and responsibility. In any case, all involved parties need full monitoring options so transparency is ensured. Toucan can lead this process if a sufficient mandate, access and control is given and take end-to-end operational responsibility. We would expect this to be specified in a service level agreement between involved parties as part of entering an implementation phase.

D - Safeguards around the transfer of VCU-based tokens on the tokenization platform;



Verra necessarily has significant interests in the tokenization of VCUs and the redemption of tokens back into the Verra registry. By contrast, as discussed in our answer to Q6 below, transfers of VCU-based tokens entirely within a tokenization platform do not affect Verra's legal interests as they do not present risks of environmental integrity.

Nonetheless, Toucan recommends that Verra only approves tokenization platforms that have certain minimum protections for their users. For example, the platform should be required to demonstrate that it has a system in place to notify users that they use the platform at their own risk and need to be familiar with standard crypto principles and procedures.

With respect to transferring tokens into pools or other applications on the tokenization platform, Toucan recognizes that Verra may have reputational interests that it wants to safeguard. For example, Verra might prefer that pools that use tokens based on VCUs not commingle those VCU-based

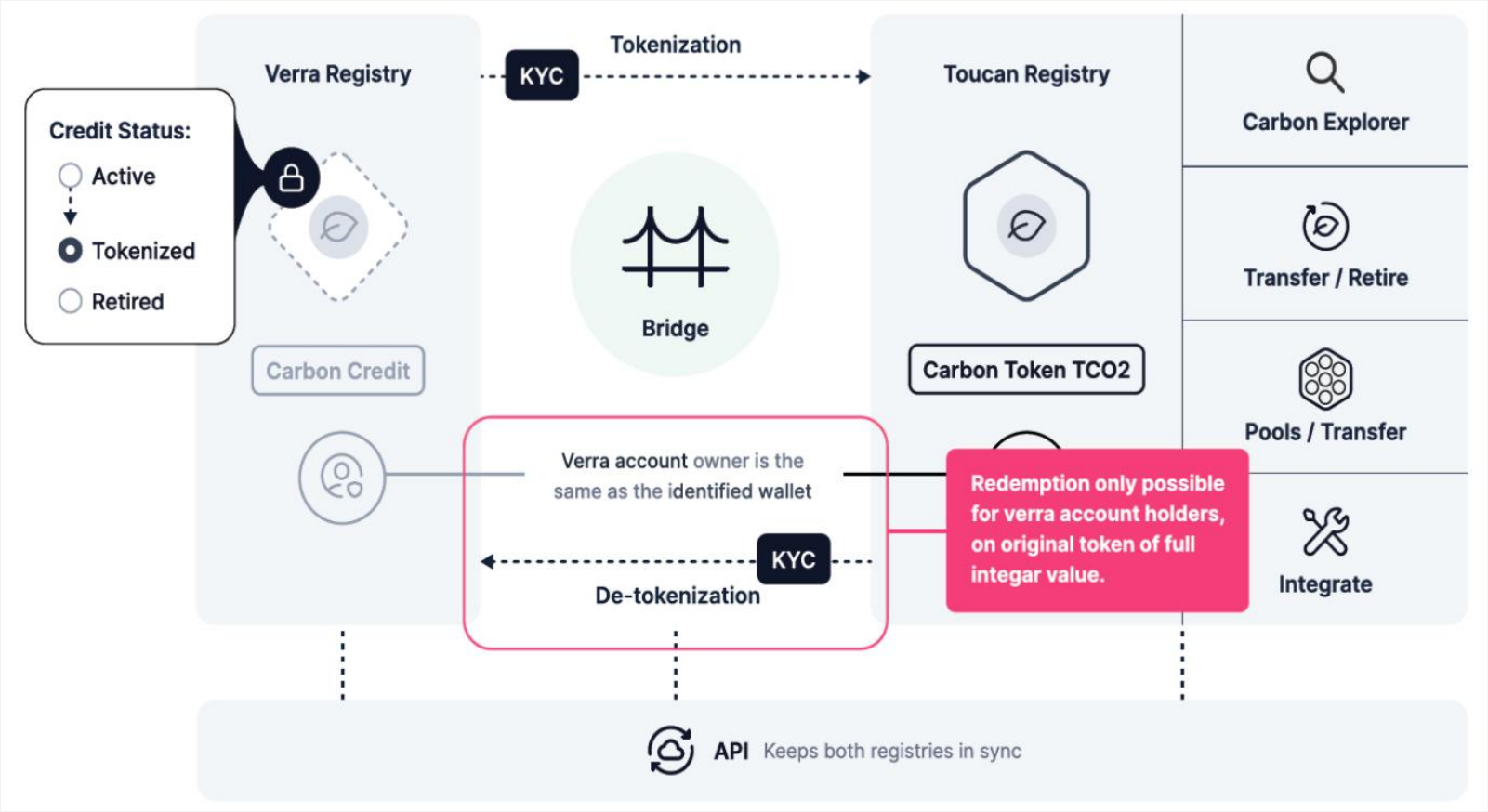
tokens with tokens created by programs that do not have commensurate environmental integrity principles. If Verra has such a concern, it could be resolved by publishing guidelines that restrict pooling of VCU-based tokens with tokens backed by credits issued by certain other identified standards programs. It can also be controlled through hard requirements that are coded into the pool smart contract, only allowing comingling of tokens from specified standards. Pool-launching entities and their associated web3 accounts determined to be violating such terms could be blocked from redeeming their VCU-based tokens back into the Verra registry.

We share the sense of responsibility to protect retail investors. Therefore we suggest any platform should implement an explorer-type solution that allows each user to easily see which credits are on the platform (projects, vintages) and especially which credits are in which pools.

In any event, the requirements applied to the use of VCU-based tokens should be comparable, not stricter, than today's use of credits and associated trading solutions and products. Hence demanded practice of KYC/AML should be in line with the relevant asset classification and comparable to current market practices. The carbon assets today are unregulated assets. They are not securities in either the legacy market or the on-chain market. It therefore makes no sense to apply securities-related requirements if these make any business operations a lot more complex and possibly uneconomical.

The current carbon market knows financialized products, like spot-exchange products. The deeper the liquidity and the more transaction a market or pool is able to handle without large trades leading big price swings (slippage) the more robust and valuable such an offering is for its users. Users that engage with these products and solutions are doing it on a voluntary basis and with the decision that the potential obtained value is worth the risk. In our view this does not require further safeguards, then what has been put in place by existing market players of non-crypto exchanges and tokenization platforms in operation today.

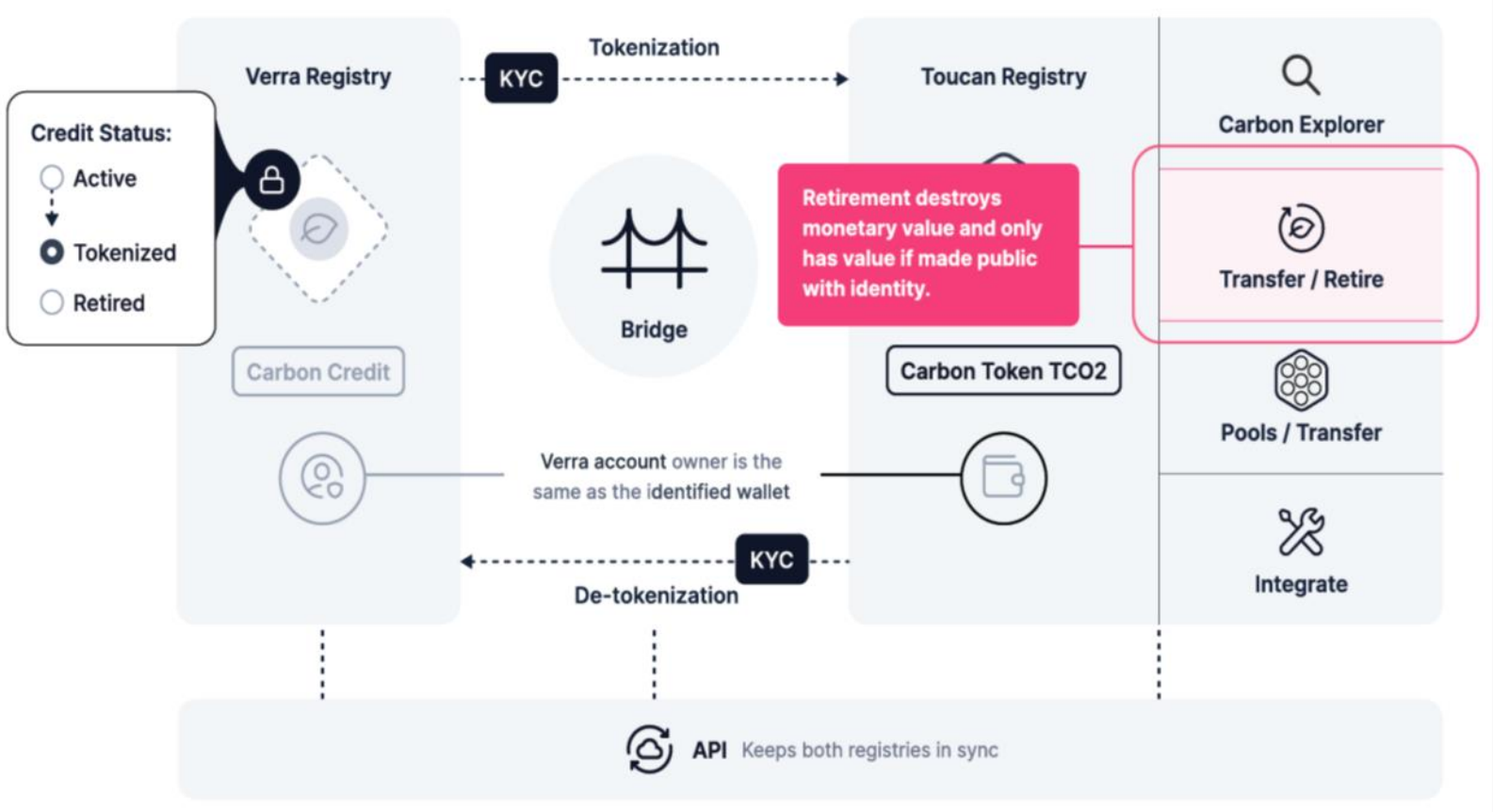
E - Safeguards around the transfer of VCU-based tokens back into the Verra Registry “Redemption”); and



Consistent with the proposed IETA Principles, Toucan strongly urges Verra to establish a system by which a holder of a VCU-based token can reverse the tokenization process—“burning” the token on the authorized tokenization platform and reactivating the underlying VCU. The IETA Code of Best Practice refers to this process as “redemption.”

Allowing for redemption of a VCU-based token has a number of benefits, including expanding the range of transactions available in the Voluntary Carbon Market and minimizing inefficient arbitrage between on-chain submarkets and off-chain submarkets. Any arbitrage between Verra and tokenized platforms should not be based on unwarranted obstacles of going from one platform to the other but rather on the relative benefits of one over the other to the asset holder.

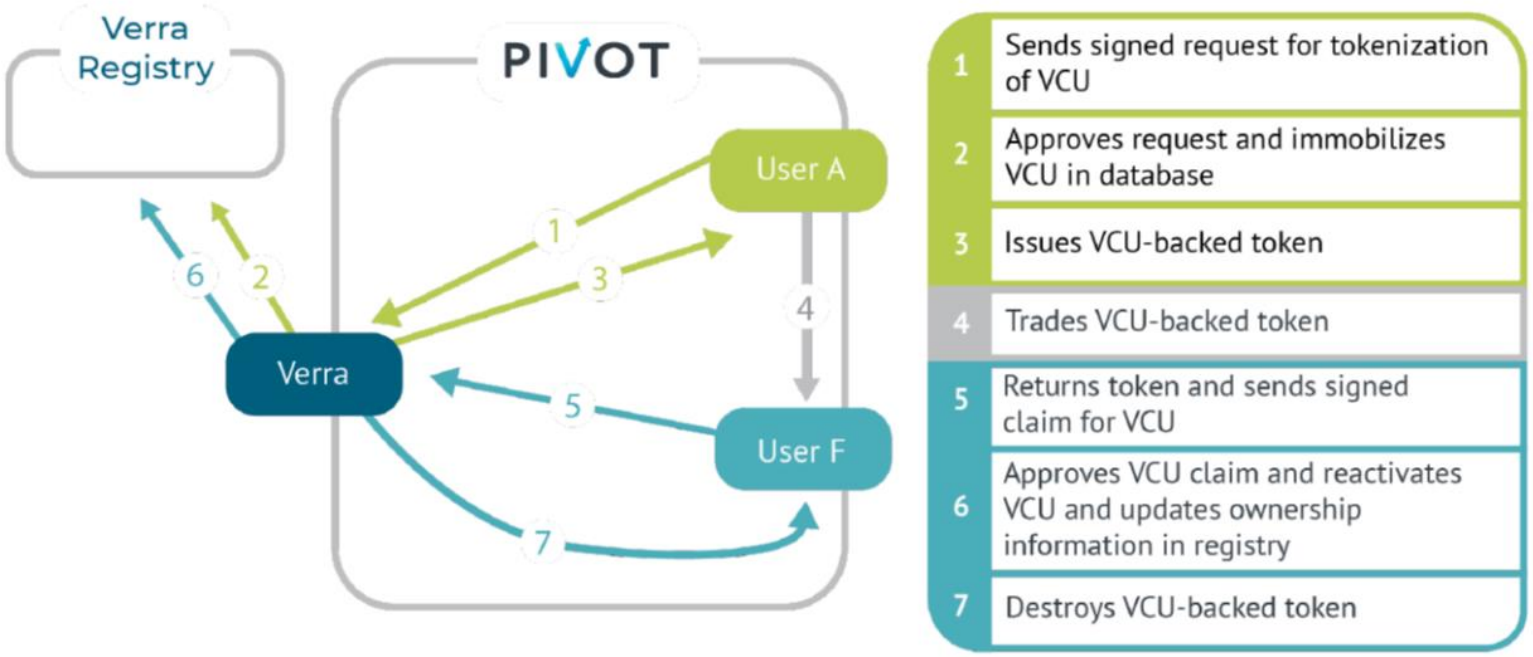
	Toucan recommends that the redemption process involve the following elements: First, redemption should only be possible for users that hold a Verra account. The identification for tokenization and redemption has already been established as part of its registration or activation for tokenization. Second, Verra should authorize redemption only on the basis of an original VCU-based token (e.g. TCO2). No user should be able to redeem an original VCU from a pool token like NCT without first unbundling it into the project and vintage-specific TCO2. Third, redemptions should only be possible for full-integer values of tonnes. As long as individuals do not hold accounts with Verra, we don't see it feasible to enable redemption for individuals/retail investors that have no means to sell on credits in the legacy market. (See the more detailed discussion regarding identification requirements in response to Q6) F - Safeguards around retirement of VCU-based tokens on the tokenization platform.



One of the most significant benefits for users participating on Toucan's platform is the ability to retire tokens. In fact, Toucan will measure its impact partly on the basis of how much retirement occurs across the ecosystem it powers, and all application builders are heavily encouraged, and at certain stages rewarded, to establish on-chain carbon sinks—mechanisms to retire these carbon tokens. In such cases, an authorized tokenization platform should be required to "burn" the VCU-based token (permanently removing the tokens from circulation) and notify Verra through the API interface. Given that in the direct approach, the environmental claim is embedded in the token, Toucan's position is that the burning/retiring of the token should allow the token holder to make the retirement claim. Hence an on-chain generated retirement certificate should be valid, as long as the state is updated on the Verra registry from 'tokenized' to 'retired' immediately. This can be reliably automated with an API integration. In a secured model, with the retiring of the VCU-based token only being finalized once the source registry state is updated to 'retired' in a second step, it would not allow for the environmental claim to be consumed on the basis of burning the token.

	Environmental integrity is not an issue with such activities provided that the tokenization platform conforms to the requirements described above with respect to: (1) immutably linking data on environmental attributes with the token and (2) having appropriate safeguards against double-issuance and double-use. In addition, as discussed below, the act of retirement has built-in safeguards against money laundering and similar risks. By its nature, retirement destroys the monetary value of the token, removing any money laundering risk associated with the task. Further, retirement only has value for an entity if the entity makes public both the retirement and its own identity. In any event, Toucan's platform makes it visible that only tokens directly representing a VCU (TCO2) can be and have been retired, not pool tokens. We suggest that it should be a general requirement, to only allow retirements and claim-making on the basis of retired VCU-reference tokens. The retirement process through a tokenization platform should also enable users to state retirement reason, beneficiary etc. and get a retirement certificate in the form of an NFT, storing this data forever. Any further safeguards and policy around claimmaking would go beyond current market practices and therefore should not be part of near-term tokenization requirements but may be a topic for future implementation.
15	AirCarbon has already established robust internal processes to prevent the possibility of double-issuance or double-use of VCU-backed tokens, including: AirCarbon only tokenizes issued, unretired carbon credits which have been received in its carbon registry trust accounts. Each AirCarbon Token represents a specific underlying carbon credit that is held in AirCarbon's trust accounts; AirCarbon's processes ensure that it is not possible for more than one AirCarbon Token to be created for each carbon credit received. This is further evidenced via regular reconciliation of the number of AirCarbon Tokens against the number of carbon credits held in AirCarbon's carbon registry trust accounts. We would suggest direct API connectivity between AirCarbon and Verra to enable automation of such reconciliation; and AirCarbon's processes ensure that upon a retirement of the underlying VCU, the corresponding AirCarbon Token is burned (destroyed). We would suggest that Verra requires other token issuers to have similarly robust processes / safeguards in place.
16	To fully ensure environmental integrity and prevent issues such as double-issuance and double-use, CO2Network recommends using a method that enables Verra's database to serve as the 'single source of truth', while giving Verra the sole authority to approve the issuing of VCU-backed tokens (and their reconversion into VCUs when requested). We believe that this proposed method (see below) will be more effective at reaching Verra's desired goals compared to the alternative presented by Verra in its consultation proposal. In fact, the latter would not completely prevent issues related to using different databases and sharing information separately, as well as related to fraud and attempts to fraud, even in the case that participating entities signed Verra's agreement governing participation. Below is a more detailed explanation of how VCUs' environmental integrity would be preserved on PIVOT, the identity-based carbon credit trading platform developed by CO2Network.

Figure 1. Overview of the creation, trade, and destruction process of VCU-backed tokens on PIVOT



As illustrated, Verra would not be involved in the trading of VCU-backed tokens on PIVOT, but just control the tokenization process (creation and destruction of tokens) of its VCUs on the PIVOT platform. The VCUs in Verra's registry will serve as the collateralized assets behind the tokenized VCUs, created only for the purpose of ownership transfer. Concretely, in the method described above, the issues of double-issuance and double-use are prevented by the facts that Verra only approves the tokenization of VCUs that have not yet been immobilized, and that all tokenized VCUs are destroyed before the reactivation of the corresponding VCUs, respectively.

The approval process of user requests will be done through MetaMUI blockchain's 'decentralized digital signature scheme', a digital signing and verification process enabled by using the public key information of all users stored in the 'decentralized public key infrastructure' (DPKI) on the blockchain. This signature mechanism mimics the offline signing process of legal contracts.

CO2Network's Representative Director and Chief Technology Officer, Phantom Seokgu Yun, holds more than 20 related patents to the technology that enables the processes described above, including the key following patents:

1. 'Operation method of blockchain currency remittance service system and electronic wallet for currency remittance'

	2. ‘E-wallet, server performing the e-wallet, and atomic swapping method of different blockchain tokens using the server’ 3. ‘Blockchain system that includes bank nodes each having separate ledgers for identity, digital currency and other functions, and operation method thereof’ 4. ‘Method of operating package application including self-defense security module and computer readable medium’
17	The following measures/recommendations are proposed: ● Any credits being tokenized must be encumbered on the registry preventing the user from trading them elsewhere or retiring the credits on behalf of themselves or others, while the tokens are active. ● All tokens must be unwrappable to reveal the underlying credit (make it available on the registry again)- where the token is then removed from the circulating supply. This will add a level of transparency and be of benefit to end-users who might want to later pursue traditional channels to sell or retire their credits. ● When VCU tokens are retired on-chain they must be removed from token supply. Also, the underlying credits on the respective Verra registry account must move to a retired status - this conveys that the credit has been used on a tokenization protocol, preventing a user from claiming its benefits twice. ● Every VCU that is tokenized must be visible in a publically accessible ledger along with the following information: • Serial number • Vintage • Project type • Project commencement date (date at which the project went live) • Additional or Co-Benefits1 • Retirement status (active or retired) The type of blockchain use can also have far-reaching consequences on VCU tokenization holistically. Hence, there is an onus on Verrs to ensure that tokenization protocols use the best possible configurations for security, energy efficiency and scalability. Co-benefits are additional social or environmental benefits that can be realised from carbon offset projects such a support for local employment and preservation of native vegetation This is why at Powerledger we have built a blockchain that consumes less energy. The Powerledger Energy Blockchain is a customised permissioned Solana blockchain. The Solana design is both faster and less energy intensive than the existing proof-of-work blockchains, as it utilises Proof-of-History and Proof-of-Stake (PoS) consensus mechanisms.
18	Verra issues credits on verification. To prevent double-issuance and double-use, credits should be tracked from issuance to retirement, in an immutable, uniquely identifiable manner. The lifecycle of each VCU serial ID should be recorded, including full ownership history, transaction history, and irreversible retirement. A VCU should never leave the Verra registry, and retirement of a VCU should be authorised by Verra alone.

	For reference, e ach ownership token in a Carbonplace wallet directly corresponds to a single VCU in Carbonplace's Verra omni bus account. Complete ownership and transaction histories are recorded for each ownership token. During settlement, ownership tokens are transferred between Carbonplace wallets, but the associated carbon credit remains in the Carbonplace omnibus account at Verra. This one-to-one mapping in the Carbonplace platform ensures that credits have a single, identifiable, KYC'd owner. When a Carbonplace wallet-holder requests to retire a token, Carbonplace requests retirement on the corresponding credit in the omnibus account. When Verra approves a retirement of the credit, the associated ownership token is irreversibly retired in a wallet-holder's wallet. This ensures that credits can only be retired once, by a single, identifiable, KYC'd owner.
19	The creation of digital instruments in the Voluntary Carbon Market (and other environmental assets), provides the platform to scale the market and achieve the aggressive goals required. Done properly, the technology will reduce risk and enhance transparency. It will impro ve access to capital for project developers, reduce timelines and certainty of fund distribution. (We would encourage Verra to avoid use of terms like Crypto and Tokens, with their strong retail associations and focus more on the power of digital assets and blockchain technology.) A key requirement in digitizing these assets is to ensure the data, processes and ultimately assets themselves are interopera ble. Without oracle network connectivity, there is a real danger the industry builds in layer one blockchain silos, with participan ts struggling to communicate on chain. Cross chain interoperability and Web 2 systems connectivity are the two biggest technical challenges to be managed to ensure success. Transferring digital assets through a cross chain interoperability protocol (CCIP) ensures all the asset characteristics, tracking etc are maintained. Two way bridges, with cross chain interoperability are the backbone of future digital asset registries. Siloed registry and token iss uance across Blockchain platforms without data & asset interoperability will stall growth in the market. We encourage greater use of dynamic digitalMRV as part of the tokenization process, to enable better performance transparency, smart environmental assets and the subsequent innovation. Chainlink Labs also welcomes Verra's participation in the Climate Warehouse data layer and encourages on chain access through an Oracle Network to reduce risk of double counting. Similarly Chainlink Labs encourages use of on chain cryptographically secured audits - "Proof of Reserve" to provide investors and other actors with more certainty the tokens are backed by a real asset.
20	One of the key innovations of blockchain technology is its ability to solve the 'double spending' problem, via the use of pri vate keys tied to ownership of value backed tokens, including a consensus mechanism to establish which single key owns any single token (or fraction of a token) at a single snapshot in time. This solves the traditional double spending problem. of being able to digitally copy a token and get two versions of the toke n with equal validity, destroying the token's ability to hold value. However it does not solve the problem of multiple uncorrelated tokens attempting to repres ent the same thing. Some suggestions to mitigate double issuance are :

- **Strong custodial services** for private keys (potentially via enterprise custodian services) – to prevent unauthorised transfer of value by copying private keys and appearing to own their associated tokens (e.g. emissions reductions or sequestration credits). This service essentially performs the same function as a bank looking after fiat currency for a client.
- **Token control** – As the body approving a carbon project, Verra should retain control of declaring whether they believe a particular token to be associated with one of their projects or not, and whether they believe the project to have ongoing physical effect. If I discover a crypto token in the wild claiming to represent one tonne-year of carbon capture by a particular tree in a particular location, I should be able to look up on a blockchain whether Verra consider that token to be part of an audited project, and whether Verra or the project owner consider the tree still to be standing (and if not, potentially how much carbon some other token issuer believes it re-emitted post harvest). Verra's requirement for each project is to select and back only one token per real physical world effect (mitigation, sequestration etc) - amongst potentially mainly claiming to represent the project - and when Verra no longer have evidence that the physical carbon effect is persistent, stop backing that token. This does not necessarily have to be by token destruction, it could be by Verra declaring in a public register that Verra no longer believe the token to be representing any real world effect (at which point its exchangeable value ought to decline to zero).
- Crucially, there needs to be a **deconfliction process** to prevent a bad actor registering their mitigation on two assessment systems (verra and A.N.other), and getting double credit. While blockchain can prevent double spending of Verra backed tokens as below, it doesn't inherently protect against double independent tokens both claiming one physical effect (this is a problem regardless of whether blockchain is used, if we wish to have a competitive and innovative market in token issuance rather than a global register). This is all about making sure there is a one to one mapping between a physical effect and the token that represents it. Ideas are:
    A. bring the digital signature as close to the physical effect as possible. For instance a project provider mitigating methane emissions has to install a Verra sponsored IoT sensor next to a potential leak, which applies a blockchain friendly digital signature to sensor measurements and regularly reports on whether the mitigation goal is still achieved, including location, project ID and any other identifiers that help deconflict. That dataset can be used by Verra and others to establish quality and value of the associated token, but can also be used in a deconfliction process that looks for other scheme devices reporting from the same location or claiming to be associated with the same project. A harsh but reliable mechanism would be to enforce that Verra declare no backed token to have value unless it can be associated with a blockchain capable digital sensing device approved by Verra. Where a conflict is found either standards body or even a third party service/auditor can mark the offset as tainted or no longer valid, and both tokens value in the market will reduce. There would need to be families of approved sensing devices or processes for different project types (forest is still there, cookstove is still regularly used, electricity source is still off grid, wetland is still restored, …)
    B. Introduce an installation audit service that acts as a buffer between schemes – that is to get your project approved by anyone, an inspector accredited by all schemes comes and attests that the project physical effects have commenced and declares which scheme is operating the project and therefore who to consult on which tokens are valid for the project. All schemes have access to centralised inspection results to implement their own barriers on double registration, maintaining quality of their own projects.
    C. Other tactics as identified by CORSIA : strong demarcation between different schemes addressing upstream/downstream lifetime (e.g. forestry scheme allows credit value to drop to zero on harvesting, and new credit is issued by harvested wood tracking scheme), asking project owners to legally declare they are not using multiple schemes, coordinated communication with other scheme operators during project setup

	• Double Use of issued tokens is easier to solve using core blockchain technology – that is, any holder of a token can destroy it at any time by declaring it 'used' (on its blockchain) to meet their offset goals. Annual offset declarations by entities are mapped back against sufficient destruction of tokens to enforce that tokens get used, and the token value becomes zero on use, because no-one else can use it in future as compliance evidence in their own declarations (the audit system is able to see that it is a previously used token, and not let it count towards compliance). Note it may be valid and useful to declare the token used in multiple places/on multiple chains – for instance on one representing a nationally defined contribution, another representing a company global offset target, a third representing corsia… This helps with deconfliction of those global accounting systems after the event (e.g. while assigning value within retrospective calendar year accounting periods)
21	It is likely that projects tokenizing carbon credits will purchase and hold them through a "special purpose vehicle" (SPV), so there will be one entry on the Verra registry holding many carbon credits. These entities would then become "black-boxes" to Verra and even if you request details of transactions it seems outside Verra's purview to ensure the information provided is correct. It would therefore be very difficult for Verra to ensure tokens are not double-issued or double-used without significant auditing or monitoring. The problem here is that VERRA's access to tokenized data lies beyond its control if a SPV is used. There are other alternative ways to code the tokenization that would avoid these serious issues (see below). With the credits mobilized via an SPV, the SPV's credits would still be live on the Verra register. So the tokenizing project gains from the reputation credibility of Verra and it is unlikely that some customers of the tokenizing project will realize that the project is not fully endorsed or audited by Verra due to the fact that VERRA would not have access to or control over the tokenized information this SPV presented to its customers. An extreme unintended consequence of widespread use of such SPVs would be as follows: if the tokenization of projects become very successful then the majority of the Verra register may comprise immobilized tokens owned by these SPVs which undermines the whole registry as it no longer displays useful ownership information. The carbon credits held represent an asset, which could be used as collateral to raise debt, which could then be used to buy further carbon credits etc in a very fragile over-leveraged daisy chain. As the SPVs will be opaque to Verra, it is hard for Verra to anticipate and control this or other potential scenarios where the tokenizing projects are bad actors (of which there have unfortunately been many in the cryptocurrency space). This classic over leveraged daisy capital chain has been prevalent in other major financial market crashes so this is not a trivial concern. One solution to these problems would be if Verra placed a ring-fenced portion of its registry on the blockchain. To enter this ring-fenced portion of the registry, VERRA would need to secure permission from project credit owners to place their VCUs in this domain. (we note that such permissions seemed to be missing from Verra's outline). Tokenising projects from within the ring-fenced sub-registry could be mandated to link their own blockchain transactions directly to Verra's chain through a smart contract. In this situation, if smart contracts are used rather than SPVs, the tokenising project would effectively become an intermediary between the customer and the registry. (See figure 1 below). So the customer might buy a token representing a carbon credit, the smart contract would contact the tokenized Verra registry and move the carbon credit into the customers name directly. As a result, the tokenizing project could confirm that the customer had bought the credit. This schema can also take into account fractionalized credits. In all such circumstances here, the crux difference is that the VERRA registry automatically receives updates on the tokenized credits' status and the real time information in the VERRA registry is not lost. This vastly reduces the possibility of double counting since the VERRA registry is still essential in fact (even though it is coded in blockchain for this portion of the registry). As a result, the reputational risks to VERA from introducing tokens is reduced and the mainstream carbon credit market's viability better secured than would otherwise have been the case. Furthermore, the SPV approach gives traders carte blanche to wrap their tokenized credits in ways that are invisible to VERRA's Registry and where the market-scale risks lie even beyond their knowledge. There are precedents in financial markets where such wraps were complex and ended up destroying

the market itself – and markets beyond itself. The mortgage backed securities (MBS) market is one such shining example. In that situation, rating agencies (unlike VERRA in this situation) were still engaged to rate strips of the combined MBS wrap products (rating strips with supposedly different risk profiles). The results are well known: market failures. What is particularly agonizing in VERRA's case is that a SPV would eliminate even VERRA's access to the data regarding the new wraps being created and its ability to even monitoring the risks that would then arise. No-one with mainstream financial market expertise would likely recommend such a pathway be pursued.

Bad actors will test any system VERRA constructs to the point of destruction. That is how the CC/token domain works … it gets more secure because hackers destroy systems that are lacking. In the CC world, however, there are thousands of actors who can step in to provide stronger, more viable CC token services. In the carbon world, there are only a handful of credible third party independent carbon credit certifiers and standard setters. Can any of us afford – let alone the VCM or the planet – VERRA putting itself into a position where it will be tested to the point of destruction? This is one of the many existential questions which we reach as conclusions in our input to this public consultation. There are in this situation just too many existential risks to VERRA and the traditional VCM to make tokenizing VCUs a prudent let alone conservative choice for VERRA, consistent with the principles upon which its certification rests.

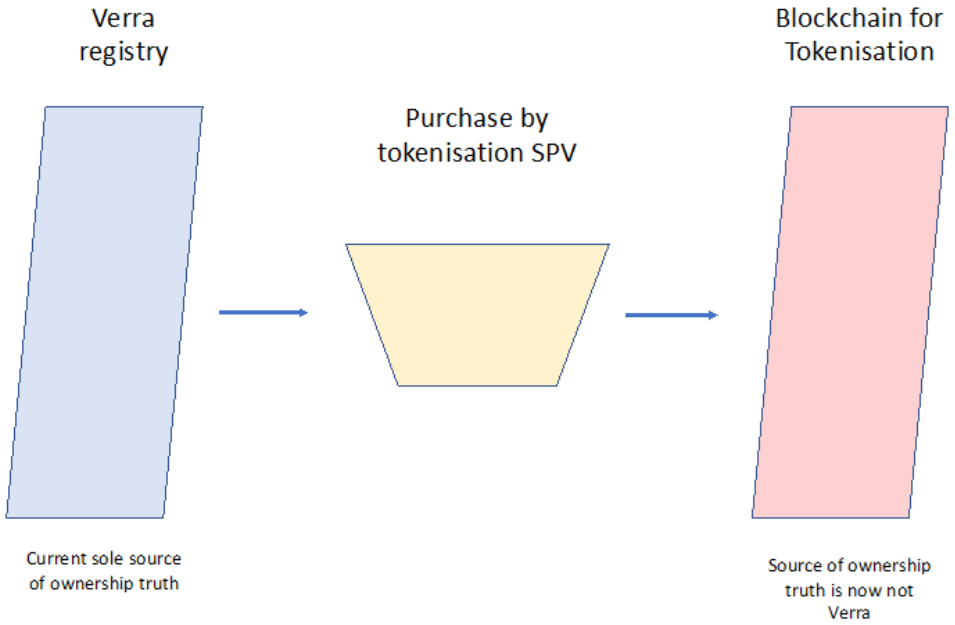
We again would like to highlight this key question as opaque but essential to incorporate:

- Would PPs have any input regarding whether their project VCUs can be immobilized and converted into tokens? Some might not wish to permit this out of concern for a) blow back on fraud b) price volatility impacts c) concerns regarding tokenization impact on the traditional VCM

VERRA should require a PP to authorize tokenization absent which immobilization would not be permitted

Figure 1:

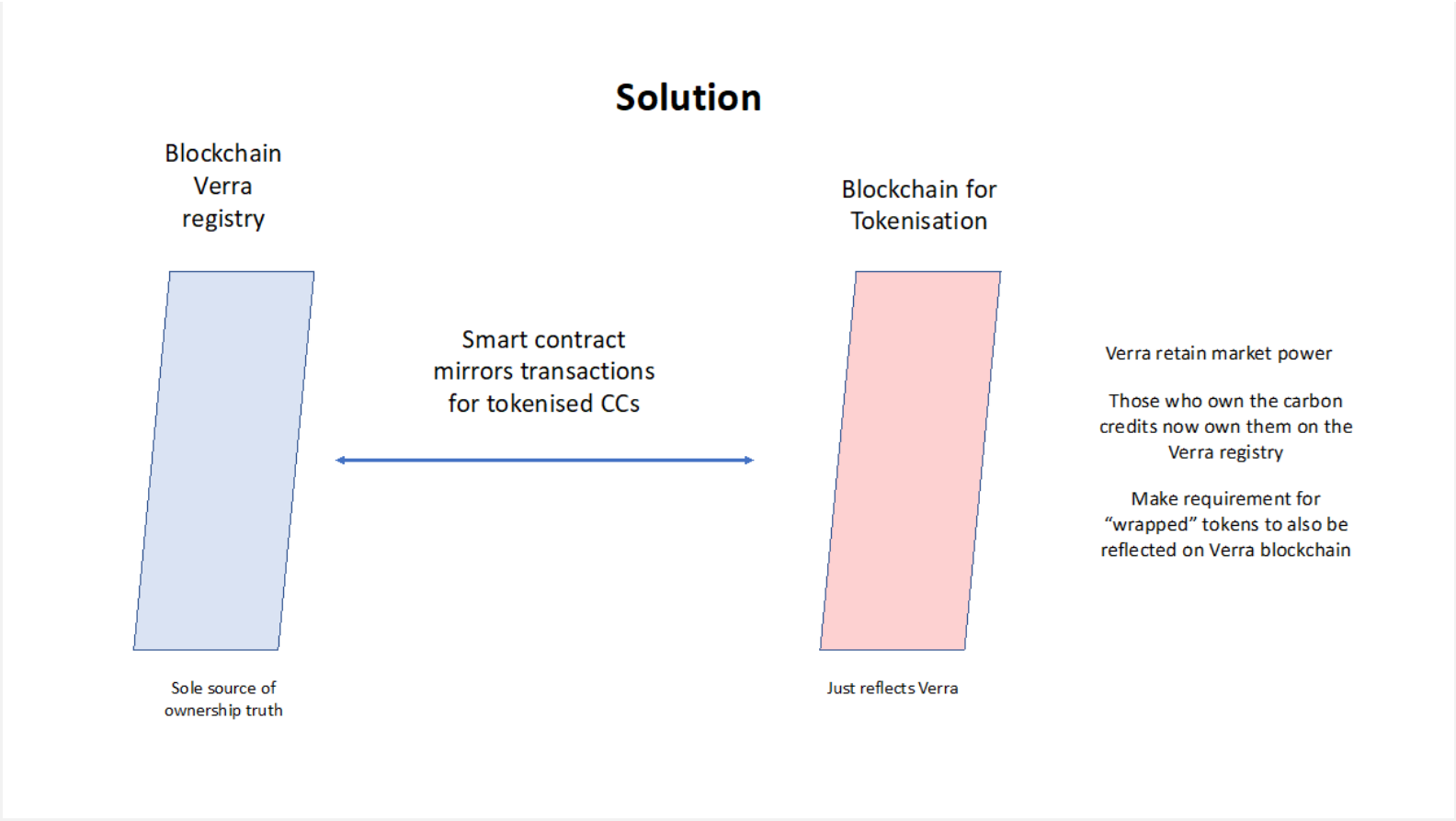
Problem



Once another party is the source of truth, they have gained market power, people rely on their data not the underlying data – e.g. as a trusted source could issue different class on non-Verra carbon credits

Also those who own the tokens do not actually own the carbon credits, then SPV does – so their representation as carbon credit tokens is misleading

Potentially worse situation with “wrapped” tokens which may be off-chain or not identifiable



22 **Q1.1 Need for technologically-agnostic double counting prevention**

The current state of how Verra operates provides different paths through which double-counting could occur. These risks all come down to Verra's retirement function requiring very limited information when retirement events occur. This makes sense within the context of Verra not being the immediate point of contact for many organizations that offset their carbon footprint - a significant volume of retirements go through registry-operating third parties such as trading houses, environmental consultants, or digital services such as Patch or Cloverly. This has resulted in some retirements being done anonymously, with multiple named groups or in cases such as Patch - on behalf of a large number of beneficiaries. If such double-counting presents a potential problem large enough for Verra to pass restrictions, there seems to be a need for not a blockchain-specific solution, but a

technologically agnostic one. An option might be to create a service where offsetting claims could be directly tied to retirements in an auditable fashion - ie a "global retirement tracker". This would then allow beneficiaries to connect their on-chain/third-party off-chain retirement activities back into Verra's registry with confidence while maintaining the option for smaller offsetters, who have no need for independent auditability, to have a simplified user experience. We feel this could be grown into an additional source of revenue while raising the integrity of offsetting claims.

Q1.2 Maintaining auditable representational integrity

Representational integrity for on-chain Assets is a significant and very important topic. If a Tokenizer were ever to issue tokens in excess of the units "immobilized" on the Tokenizer's system - this would represent a crisis situation where the offsetting value of the units is set under question. This is an undesirable outcome. It is important to maintain mechanisms through which representational integrity could be verified. We would suggest requiring real-time ongoing transparency into the on-chain representational integrity of Assets in the Tokenizer's custody. This could be done with mechanisms such as Chainlink's "Proof of Reserve". We sternly believe that when/if possible, the common blockchain motto of "Don't trust, verify" should be applied in practice.
Continuing on this theme, the contents of a Tokenizer's "immobilization" account should be publicly available through Verra. This would enable completely independent third parties to voluntarily audit the representational integrity of the Assets in the Tokenizer's custody. This lowers the need to trust the Tokenizer at face value for the users.

Q1.3 Security requirements

Solid World would go so far as to suggest that Verra impose a strict policy that no Tokenizer operates Verra's assets without first attaining a public security audit from a reputable blockchain security company. Any updates to the code should also be audited prior to their production release. Almost all high-profile hacks have happened as a result of developers releasing and then encouraging the adoption of code that had not been audited at all. This is a significant structural risk that Verra should not accept. This requirement should be enforced by the legal contract between Verra and the Tokenizer. Additionally, cross-chain bridges (the protocols which manage the transference of tokens across different blockchains) represent over half of all DeFi exploits. These have historically been a large source of security failures and these have spilled over into the assets that are being bridged. Tokenizers should be mindful of only working with well-audited bridges that have public audits and follow best practices in terms of assuring security. In order to prevent any representational policy loss from happening, Tokenizers should be at least advised to adopt a public bug bounty policy through something like Immunefi. Often even if an attack could be significant, running away with exploited funds is incredibly difficult and legally risky. This often means that even maliciously minded individuals (in addition to white-hat hackers) would be willing to report a bug instead of exploiting it in return for a sizable (if smaller) legal payout. Operational security should be ensured. If the Tokenizer is required to collect KYC data, this must be handled with care. Data breaches should result in a review and Verra potentially re-consider their consent for tokenization if the Tokenizer can not demonstrate that they followed acceptable protocols in good faith. In the process of setting up IT security requirements, we would heavily suggest doing this in collaboration with an industry-leading blockchain security auditing company that also provides general consultation services such as Conensys Diligence, Halborn, or Dedaub. Blockchain projects present very unique security challenges and we believe these organizations are well-suited to provide Verra with expert context on these subjects.

Q1.4 Mechanisms for exerting control

Verra should define an appropriate level of control that it is able to exercise on the Tokenizer's systems. We present the levels of being "permissioned" a Tokenizer could employ depending on its requirements. The options are ordered from least permissive to most permissive. If at all

possible within the constraints Verra is operating
under, permissiveness should be maximized to the largest degree possible.
Option 1: Permissioned (private) blockchain

Option 2: Permissioned service within a public blockchain

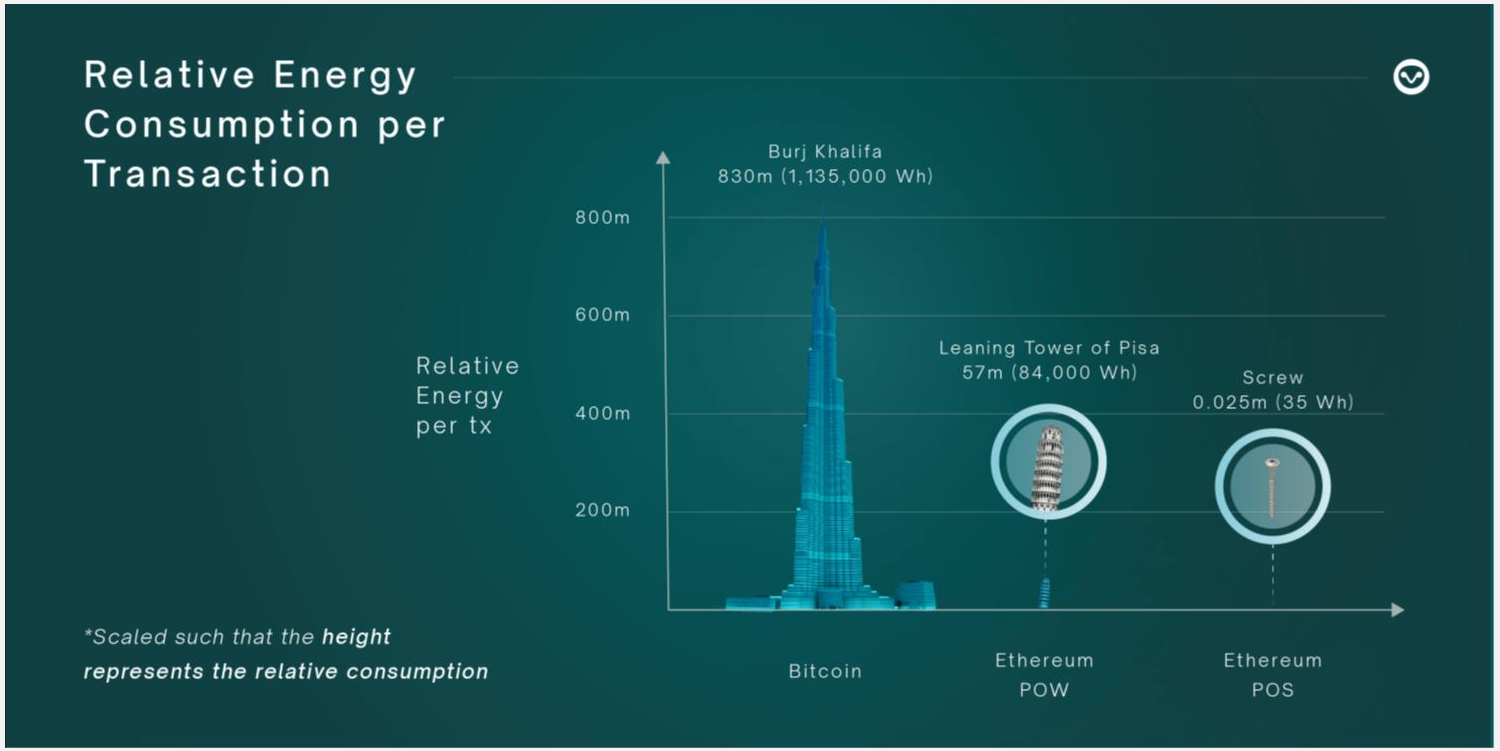
Option 3: Permissionless service with blocklist functionality

Q1.5 State of energy use

As for the remarks regarding energy use - after the transition of Ethereum to Proof of Stake (PoS) - there is now functionally no Proof of Work (PoW) blockchains that are capable of facilitating Smart Contracts and also have significant Total Value Locked (TVL)*. An illustrative infographic by IndexCoop has been included to demonstrate the difference in energy use between PoS and PoW.

*Total Value Locked (TVL) is a measurement of all value stored within a smart-contract blockchain's ecosystem.

Analytics about operating blockchains as well as their TVL can be viewed on the data provider DefiLlama.



If Verra has continued concerns about energy consumption, we would urge the development of a framework for all market facilitators to measure and disclose the environmental impact of their operations around facilitating Verra's Assets. For Blockchain-based solutions - the impacts can be often easily estimated and critiqued. For closed systems - this is not the case, removing the ability to make fair comparisons.

Banning proof-of-work blockchains from being viable platforms for tokenization, If Verra wishes to do so, would be more than enough, as it is the most egregiously inefficient use of energy by a blockchain.

If Verra opted to only allow tokenization on climate-neutral or climate-positive blockchains it would be a good way to advance the decarbonization of blockchains and the general adoption of the VCM. Blockchains would likely accommodate this if they haven't done so already.

23 To issue and burn tokens, the BSP must implement (in the Smart Contract) a two-factor procedure. More specifically, when issuing:

● Users registered in Verra require tokenisation for a batch of carbon credit, using one of the BSP (users must indicate the wallet where the token must be accredited);

	● The BSP then create the representation of the request in Blockchain (for example, token mint) and forward the transaction to Verra; ● If Verra confirms the BSP transfer unlock the token. ● Tokenised VCUs must be blocked in a frozen sub-accounts owned by the BSP. When burning: ● Users require Offset through a function in Smart Contract; ● The BSP send the request to Verra; ● If Verra confirms the BSP burn the token and receive the retirement certification and send it to Users. If a User that uses the services of the BSP wants to burn a token and receive back carbon credit, the user that made the request must have an account on Verra and provide BSP information on that.
24	The entities which are creating crypto tokens should deposit the public hash keys for the crypto tokens with the corresponding VCU serial numbers in the Verra registry. This will enhance transparency and traceability in the crypto token market. The relationship between the tokens and the VCUs could be one to one or many to one, depending on the fractionalization of the tokens. If a fractionalization approach is taken, the fraction needs to be determined at the time of token generation. This may be influenced by the market price of VCU at the time of token creation, the number of tokens created and the market price of the tokens at that time.
25	Verra should publish clear guidelines for appropriate tokenization of VCUs, ideally in line with the tokenization framework being developed by IETA. Under the IETA framework, guidelines for both “Direct” (a.k.a. one-way) and “Secured” (a.k.a. two-way) tokenization should be published. Direct tokenization is much simpler to implement and technically represents a lower risk of failure than Secured tokenization. Direct Tokenization should permanently immobilize the credit, and all structured attributes of the credit available in the Verra public registry’s serial number (methodology, vintage, location, CCBs, etc.) should be recorded onto the blockchain and associated with the tokenized credit during the tokenization process. Secured tokenization holds an inventory of credits in a dedicated Verra registry account, with credits immobilized during tokenization and remobilized upon detokenization, based on Customer activity. This requires more complex infrastructure than Direct Tokenization, but also offers the opportunity for credits to flow both into and out of public blockchain ecosystems. Allowing for “remobilization” of credits avoids lock-in of credits within a given system. Regardless of which tokenization scheme is utilized, as the tokenized credit represents an immobilized VCU on-chain, with metadata tying it the tokenized representation to the token for that specific project/vintage in the Verra database, such retirements must require that the underlying token is destroyed (preventing double-counting of the tokenized credit). For Secured Tokenization, when a retirement is issued on-chain, Verra should require that the underlying immobilized credit is retired in the Verra registry within a reasonable period of time.

26	As the process of using blockchain technology is being presented presently, any tokenized carbon credit will always begin first and foremost as a “real” carbon credit. The registries, such as Verra, are one of the filters in the process that confirm the number of credits per project. In this part of the process, the registries must ensure that there is already an implemented mechanism for the traceability of the credit, that is with the serial number. This to ensure the proper functionality of the primary market, at least from the source where the carbon credit will be coming from. As for the secondary market, the topic of double issuance already exists in the current VCM. Registries, particularly VERRA and Gold Standard, have been able to build trust amongst the stakeholders where they can ensure a rigorous process when a credit is transferred within the VERRA registry to other accounts until it is retired. This will still be the case with tokenized credits if the registry can offer a clear mechanism to either synchronize the off-chain registry with the on-chain registry or allow other bridging services to hold a special custody of the credit and if retired, the off-chain registry will also retire it. This is technology that blockchain and the tokenization can currently offer if the registries and their platforms are properly modified to do so.
27	We agree with Verra’s stated position that all on-chain tokens should be backed by live VCUs held in the Verra registry. These must be clearly identified as being ‘related’ to the specific on-chain instruments. This provides an audit chain back to the original ER. We have concerns the practice of retiring VCUs and ‘transitioning’ those retired VCUs into on-chain instruments. In our view, the environmental benefit of the VCU is ‘cashed in’ at retirement in the Verra registry. On-chain transitioned tokens run the risk of losing some of the attributes/relationship to the original ER and project (for example, if the token is minted as a generic/standard ‘forest protection’ token) and in our view increase the risk of double-counting and claiming.
28	Ideally, VERRA VCU-backed tokens should exist only on a blockchain that is carbon-neutral (e.g. Algorand). In cases where a blockchain is proof-of-stake but not carbon-neutral, at least one independent, peer-reviewed analysis should demonstrate that the blockchain is 100% offsetting their emissions footprint. Double issuance or double use is not a problem if the technical implementation of the so-called “burning” of carbon tokens is done properly. Such an implementation would have to be verified by independent blockchain code verifiers. VERRA would only have to ensure that credits are not used off-chain (on paper) and again on-chain. The easiest way to ensure this is to move the entire VERRA registry on chain and perform a “native tokenization”.
29	The safeguards that Verra should implement are decisively determined by the extent to which Verra provides technical and organizational infrastructure for the creation, transfer, and use of VCU-backed crypto instruments and tokens (here-inafter referred to as “VCU Tokens”). The reason for this is that environmental integrity can only be reliably ensured if exclusive or conjoint system sovereignty exists. Based on this we see safeguards on legal and technological dimensions whereas legal compliance and enforcement can be ensured by technological means. For this discussion we assume that Verra provides the Verra Registry as source of VCUs and goodcarbon as cooperation partner provides a platform for creation, transfer, and use of VCU Tokens. Given this distinction, Verra has exclusive system sovereignty of the Registry whereas goodcarbon has exclusive system sovereignty of its token-based system. As we will describe in detail in 3.2, the synchronization of the Verra Registry account-based system and goodcarbon’s to-ken-based system poses a great challenge with respect to avoiding double-issuance and double-use, although these challenges can be tackled if appropriate processes and infrastructure are in place. Obviously, safeguards on both sides, Verra and cooperation partner, are required for the division of responsibility and synchronization of systems to work. In general, one crucial safeguard is that it must be ensured that VCUs stay immobi-lized in the Registry while their corresponding VCU Tokens live outside the Verra Registry and that after retirement or reactivation of tokens there are reliable processes in place that ensure an orderly reconciliation with the Verra Registry (see 3.2 for details). For this to happen in an orderly way and given the assumption above, we consider as necessary a

	combination of legal obligations between Verra, cooperation partners, Verra Registry users and clients of cooperation partners as well as technological means for enforcing these obligations. Verra only has direct influence on persons who enter into a contractual relationship with Verra. If Verra contracts with a cooperation partner such as goodcarbon who serves as intermediary between issuers of VCU Tokens and investors, Verra will need to obligate the cooperation partner to ensure the implementation of proper safeguards designed to protect environmental integrity. We anticipate that, depending on the respective regulatory requirements applicable in jurisdictions, many issuers of future VCU Tokens will simultaneously be the project proponents themselves in order to avoid adverse regulatory implications. This is because the project proponent can claim that its business is operated outside the financial sector, while this may not be the case for other participants. goodcarbon envisages to act as mere intermediary and not as project proponent issuing VCU Tokens. We wish to grant access to tokenized products through our platform. We will provide the technical means for tokenization and help project proponents issue VCU Tokens based on our standard contract templates. Only products that comply with our standard can be issued and listed on our platform. The following safeguards could be implemented to help mitigate the risk for environmental integrity resulting from double-issuance: ▪ An administrator should be appointed to manage Verra (sub-)accounts and, before issuing VCU Tokens, ensure that VCUs are held in escrow. ▪ VCU Tokens issued should be designed such that the relevant VCU reference data is integrated into the VCU Token so that the reference data is publicly accessible. The public accountability itself will create an obstacle for participants looking to engage in double-issuance. ▪ Further, the data available on the relevant VCUs in the Verra Registry should be supplemented to reflect their tokenization. If both VCUs are linked to certain VCU Tokens and VCU Tokens contain VCU reference data (see above), their connection becomes publicly traceable and verifiable for the public. ▪ Issuers of VCU Tokens should guarantee vis-à-vis purchases of VCU Tokens not to engage in double-issuance. The following safeguards could be implemented to help mitigate the risk for environmental integrity resulting from double-use: ▪ VCU Tokens consumed to offset emissions should be burned, thereby making the retirement of VCU Tokens publicly verifiable. ▪ Platforms designed to facilitate the retirement of VCU Tokens should not allow clients to retire VCU Tokens which were already retired. The VCU Token contract should be designed accordingly. ▪ Most importantly the synchronization of the systems must be coordinated.
30	**Authorize only platforms using best-in-class dMRV**. Emerging tools, such as the open-source Guardian on the Hedera network, now enable Web3 platforms to bring carbon credits on-chain supported by robust dMRV. We can tokenize an immobilized VCU such that its entire lifecycle is auditable and traceable, with reproducible providence-chain records and on-going project-specific emissions, which reduces the risk of fraud and double attribution. Third-party Web3 platforms seeking to bridge Verra credits on a public distributed ledger network should be required, via contract, specified in Verra's Terms of Use, to utilize best-in-class dMRV tooling. Insist that authorized DLT platforms first be sustainable themselves. The distributed ledger tech used to bridge VCUs on chain as well as the networks on which those tokenized VCUs are traded and ultimately burned must themselves be sustainable, defined by energy consumption and GHG emissions.

	Leverage dMRV to detect reversals and cancel corresponding VCUs. VCUs are only issued for emission reductions or removals when a project owner has demonstrated an environmental benefit (e.g., that trees have been planted) backed by data (e.g., on-site sensors) audited by an independent third-party against a baseline. Should the environmental benefit be diminished or lost post-issuance, that reversal undermines the validity of the credit. Verra addresses reversals in the aggregate with its buffer credit system. We recommend that Verra explore and leverage dMRV, supporting tokenized VCUs to cancel specific credits on-chain contemporaneous with or shortly following reversals in the underlying projects – either presale/retirement, or even retrospectively. This could enable Verra to shrink the global buffer pool and further incentivize local project oversight and compliance assurance. By requiring the use of emerging dMRV innovations, tools, and processes, Verra can enable tracing, discovery, and continuous auditing of the environmental attributes underlying projects on which issued VCUs are based. This will increase the accuracy, efficiency, and impact of carbon projects –e.g., by allowing higher quality projects, such as those for which the project-specific risk of reversal is verifiably lower, to command higher prices.
31	The environmental and scientific integrity of VCUs is paramount to ensuring that the integrity and reputation of the VCM continues to be the driving force for positive climate action. This requires thoughtful safeguards. We believe that a public meta registry that associates each VCU with its latest blockchain address(es) is important. This registry may help mitigate against duplication of VCUs that are double counted on- and off-chain, by tracking the VCUs and their locations. Blockchain technology allows for transparency and immutability, which will provide VCUs on-chain to be more easily verified and audited by Verra. We also recommend that Verra collaborate with Layer-1 blockchains that meet certain standards - prioritizing those that meet certain environmental standards (i.e. proof of stake, carbon offsetting, lower energy consumption) on use cases to further innovation in the VCM. We also believe it is important for Verra to require third-party token issuers to verify against duplication of carbon credits that may occur when technology is used to permit tokens to be bought and sold on the blockchain. In addition, if Verra can help bring off-chain credits that it have already been issued and were verified by third party audits, on chain, that would help ensure that Verra's existing data can be accessible to any participant with visibility on the blockchain and in the long term, interoperably between blockchains and among market participants. This could help ensure accountability not only from issuers or those engaging in positive climate action, but prevent double counting. A robust and rigorous process by Verra and other similar registries using DLT will increase market integrity and market participation achieving more climate positive impact.
32	Double-issuance : Tokenizing only issued credits Double-use : Tokenization of unretired credits, immobilized on a subaccount No secondary market
33	Since it was first developed in 2008, blockchain technology has steadily evolved and environmental integrity is now a central feature of the majority of blockchain networks and web3 platforms. 2 The key to understanding the environmental evolution of blockchains — as well as assessing the environmental integrity of any future web3 VCU market product or platform — lies in a technological methodology known as the "consensus mechanism." Equally important, a fundamental characteristic of blockchain technology is to prevent double-issuance and double-use — and it does this effectively. The purpose of this section is to provide Verra with background on consensus mechanisms and their different environmental outcomes, as well as how blockchain technology safeguards against double-spending.

First, what is a consensus mechanism? To understand consensus mechanisms, it is important to appreciate that lockchains are globally accessible and decentralized ledgers that rely on their network participants, rather than centralized entities, to verify transactions on their networks. To verify transactions on the blockchain, the network participants need a clear set of rules for how to agree that a given transaction is valid. The consensus mechanism is that tool governing *how* network participants agree on the transactions to verify and add to the network.

There are two main types of consensus mechanisms: Proof-of-Work ("PoW") and Proof-of-Stake ("PoS"). 3

1. The PoW Consensus Mechanism

The original consensus mechanism, and the one that underlies the Bitcoin blockchain network, is the highly energy intensive PoW mechanism. PoW is highly energy intensive because it requires that network participants (known as "miners") solve computationally intensive mathematical puzzles using hardware that consumes energy in order to reach consensus on network transactions. 4 Only one miner can ultimately solve the computational problem and verify a transaction on the blockchain — but all of the miners expend energy in *attempting* to solve the puzzles, which contributes to high energy consumption. The miner that solves the puzzle first receives a Bitcoin token "reward." The other miners receive nothing.

What prevents miners from adding fraudulent transactions, based on double-issuance or double-use of tokens, to the blockchain network? The answer to that question lies, once again, in both an appreciation of the distributed and transparent nature of the blockchain ledger, and the incentive structure of the network.

Once a miner verifies a transaction, the verification is subject to the confirmation of all network participants — each of whom has visibility into *every* transaction on the transparent ledger. Because of the blockchain's transparency, double-issuance or double-use is readily apparent on the ledger, and network participants will refuse to confirm transactions with

fraudulent underpinnings. Importantly as well, embedded in the network are economic incentives that create sunk costs for miners that verify fraudulent transactions. More specifically, miners pay significant energy costs to participate in the network verification process, in exchange for the potential opportunity to receive a Bitcoin token reward, which would allow them to recoup energy expenses. But the network penalizes miners that verify fraudulent transactions by blocking them from receiving a reward, thereby disincentivizing inappropriate behavior.

2. The PoS Consensus Mechanism

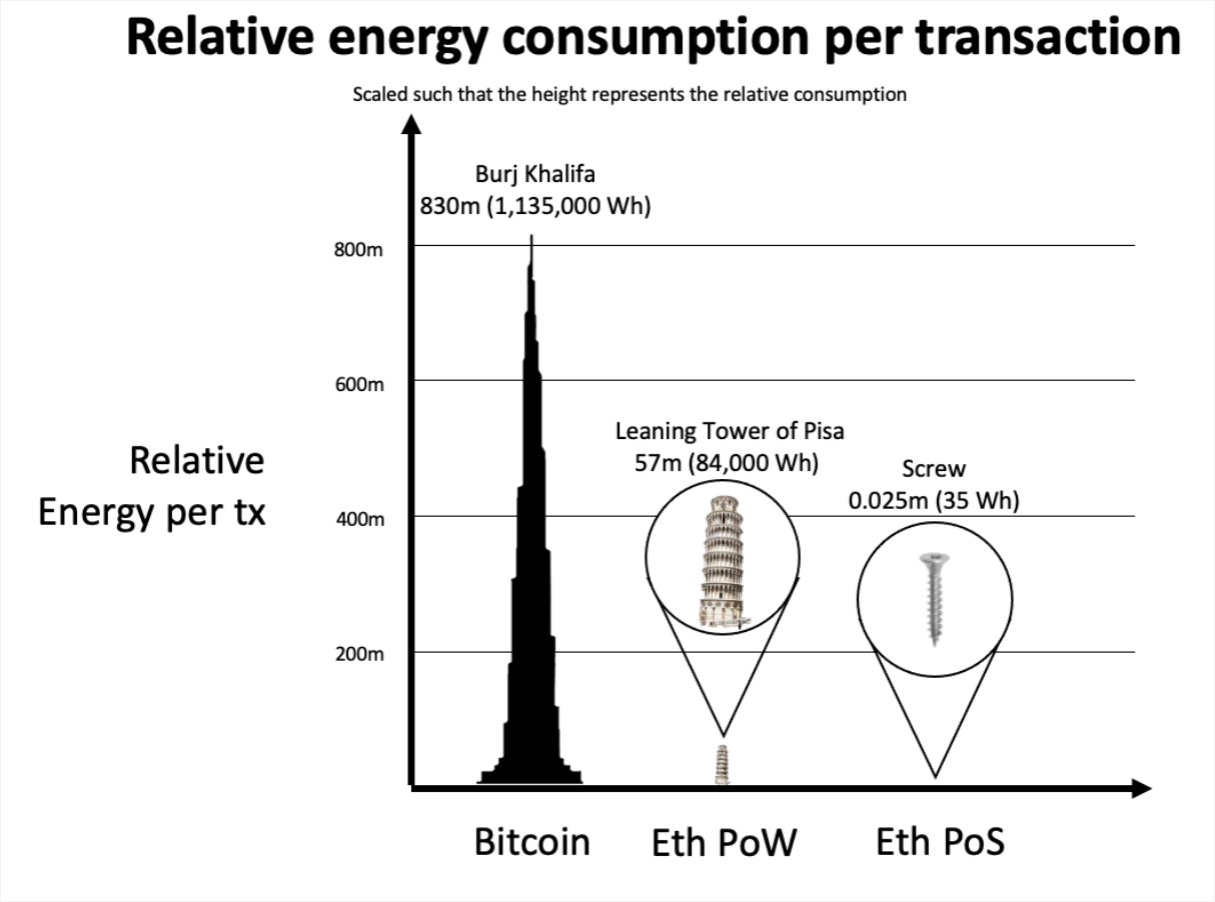
Alternatively, PoS is a newer and more common consensus mechanism, with significantly lower energy costs than PoW. PoS has significantly lower energy costs because PoS network participants (known as "validators"), unlike miners, do not constantly expend energy as a cost to participate in the network verification process. Instead, validators "stake" (i.e., pledge) a certain number of tokens to the network, in exchange for a right to participate in a network lottery, during which the network randomly chooses a validator to verify a transaction. 5 A validator that stakes more tokens has a correspondingly higher chance of being selected. Importantly, only the validator chosen by the network expends energy to verify a transaction, while the other validators expend no energy until the network selects them. ***It is precisely this fundamental difference that explains why PoS uses approximately 99% less energy than PoW blockchains.*** 6 The validator that verifies a transaction receives an award of the network's token (akin to miners receiving a Bitcoin award).

Like PoW blockchains, PoS blockchains also resolve double-issuance and double-use issues, but in a slightly different manner. Similarly to PoW transactions, transactions verified by validators are subject to the network confirmation process, during which other network participants review the transparent blockchain ledger and confirm or reject transactions. However, the difference between PoW and PoS lies in the incentives embedded in the

network that push network participants to verify only legitimate transactions. While the incentive for miners to verify only legitimate transactions is based on the potential sunk cost of energy expenditure, the incentive for validators stems from their staked tokens, which a validator loses if it does not follow the network rules.

Importantly for the broader digital asset markets, Ethereum, the second-largest blockchain network, transitioned to PoS on September 15, 2022. 7 Using available estimates, with PoS, Ethereum will use .01 TWh (Terawatt-Hour) annually with 395 million transactions (trailing 12-month transaction data), and each transaction will consume approximately .0253 kWh (Kilowatt-Hour) or 25 Wh (Watt-Hour). For comparison, a Google search uses roughly 3-4 Wh, and an average American household consumes between 25,000-100,000 Wh in one day. At .852 pounds of CO2 per kWh, 8 1 Ethereum transaction will generate roughly .02 lbs of CO2 . So, a single tokenized VCU would need to trade over 100,000 times for the energy it takes to verify a transaction on the blockchain to exceed one ton of CO2 . Hypothetically, even if a tokenized

VCU traded 10 times prior to retirement, its total carbon footprint would be .2 lbs of CO2 .



For these reasons, web3 VCU market products and platforms built on Ethereum, as well as other PoS blockchains, will use comparatively little energy to facilitate transactions, considering both the carbon costs of traditional markets, and other common daily activities. And it is possible that industry will develop other consensus mechanisms in the future that use even less energy than PoS, which could further increase the energy efficiency of web3 VCU market products and platforms. While we recognize that an ideal market would not use any carbon output in producing or exchanging VCUs, based on the available data, the positive externalities of creating a more accessible, open, and transparent tokenized VCU market far outweigh the minimal negative effects of building the market itself.

Key Takeaway: Mandating the public disclosure of important information about tokens and the underlying VCUs, and regular audits attesting to that information, provides assurance against the possibility of double-issuance or double-use.

It must be emphasized that it is in Flowcarbon's interest to implement measures against double-issuance and double-use to ensure that tokenized VCUs are viewed as credible and usable in the market.

The "immobilization" approach explored in the next section is one manner of ensuring that there is no double-use of VCUs that are tokenized. However, while that is one effective method, it is not the only one, and the existence of an "immobilization" status built into the Verra Registry is not necessary for Verra to safely authorize third party tokenization.

Instead, Flowcarbon believes that a combination of the following—which do not require any technical changes by Verra—are sufficient to ensure that there is no ability to double-use VCUs.

We elaborate on each one of these in turn:

1. **Pre-tokenization Requirements and Law Firm Attestation:** A clear set of requirements that Tokenizing Parties must agree to meet prior to receiving approval from Verra to commence tokenization. This must be attested to in writing by a reputable law firm and presented to Verra.

2. **Ongoing Disclosure Requirements:** Information disclosure requirements about the specific VCUs being used to back tokens and token bundles, and token retirements.

3. **Regular VCU Audit Reports:** Regular audits by an auditing firm attesting that the current number and project/vintage of VCUs in the dedicated "warehouse" account equals the number of live Direct Reference Tokens for each project/vintage, and that for

any point in time since the last audit, these two numbers have remained equal1.

If these 3 steps described above are implemented, then Verra should be assured that there is no opportunity for double-issuance and double-use.

1. Pre-Tokenization Requirements and Law Firm Attestation

Any Tokenizing Party should be required to agree to Verra's enhanced Terms of Use, which should include the below requirements. We fully outline all proposed updates to the Terms of Use in the response to question #8.

As an additional measure to provide Verra with the greatest degree of assurance without significant incremental bandwidth requirements on Verra's part, we suggest that Verra require all prospective Tokenizing Parties to engage a reputable law firm to provide an attestation that the Tokenizing Party has met Verra's requirements as outlined in an enhanced Terms of Use.

The list of requirements should include that:

● There is a documented process for Direct Reference Token issuance including, (1) Tokenizing Parties must only create one Direct Reference Token from each underlying VCU2, which must be created on a one-to-one basis with respect to the underlying VCU in an account exclusively held for the tokenization of VCUs and (2) a requirement for "multi-signature authorization" such that multiple approvals are required for the issuance of new Direct Reference Tokens3.

● There is a documented process for token redemption and retirement that ensures a timely synchronization of underlying VCUs with tokens (we suggest T+2)4.

● A successful Smart Contract security audit has already been conducted by a reputable blockchain security auditing firm demonstrating that any smart contracts and code directly used to issue, trade, retire, or redeem tokens: (1) meet data integrity and information security best practices, and (2) will function in a manner consistent with the protocol's description.

● There is a signed engagement letter from a qualified auditor, such as a reputable accounting firm, that it has been formally engaged to conduct required regular audits on the Tokenization Party's warehouse account to ensure consistency with the information about VCUs backing the tokens (per Step 3 below).

● The "Ongoing Disclosure Requirements" as outlined in Step 2 below are in place.

● There is a documented KYC process in place.

● The Tokenizing Party holds an active Verra account and has formally agreed to Verra's enhanced Terms of Use.

Upon Verra's acceptance of this report, the Tokenizing Party would be provided with approval to tokenize VCUs in accordance with the approved guidelines.

2. Ongoing Disclosure Requirements

We suggest that:

● The Tokenizing Party should have a publicly available, independent, secure, well-documented data resource that any individual can access to confirm that the underlying VCUs held by the Tokenizing Party in the warehouse account matches the number of active tokens on a near-real time basis5.

● The Tokenizing Party should make publicly available, and easily accessible, project data associated with all VCUs that are in the warehouse account.

3. Regular VCU Audit Reports

We suggest that Verra require:

● A reputable third-party auditor, such as an accounting firm, must be engaged by the Tokenizing Party on an established basis (we suggest quarterly), to verify that the current number and project/vintage of VCUs in the dedicated "warehouse" account equals the

	number of live Direct Reference Tokens for each project/vintage, and that the exact number of Direct Reference Tokens claimed to have been retired equals the number of retirements of underlying VCUs in the dedicated “warehouse” account, and that for any point in time since the last audit, these two numbers have remained equal.6,7 All documents and reports should be made publicly available. 1 Note that this audit would take into account any potential Verra requirements relating to the time limit for manually retiring an underlying VCU in the Verra Registry after the “burning” of the token on the blockchain. 2 Note that when a Direct Reference Token is deposited into a “bundle” Smart Contract, the Direct Reference Token will not be accessible to the public as it is “locked” in the smart contract. Instead, the “bundle” token (in Flowcarbon’s case, the GNT token) will be publicly available. 3 Note that any “bundle” tokens will be automatically issued once the conditions of the relevant Smart Contract are met. Requirements relating to Smart Contract security audits and a restriction on modifying Smart Contracts without an enhanced audit are recommended separately. 4 The details of Flowcarbon’s retirement process can be found in Appendix A. 5 This will be enabled through the use of technology tools. We are happy to provide further information upon request. 6 One of the primary advantages of Flowcarbon’s approach—utilizing one “warehouse account” for the storage of all underlying VCUs—is the ease and efficiency of which this audit can be conducted. This means the auditor has only one account to check—in effect a single source of truth—to determine the tokenization and retirement history. This account information can quickly be compared to the on-chain events of the tokenization protocol to confirm that the two match. 7 Note that this audit would take into account Verra’s requirements relating to the time limit for manually retiring an underlying VCU in the Verra Registry after the “burning” of the token on the blockchain.

1.2. What infrastructure and processes do entities participating in the immobilization approach need from Verra?

#	COMMENT
1	Here it's best that Verra builds a BlockChain platform and allows all the participating entities to use the same while retaining their data on their infrastructure but allowing access to their data to the platform. This way, the participating players have control of their data and process control remains with Verra.

2	I would stay away from immobilization altogether
3	Having a sub-account in Verra that could act as a trust account for all tokenized VCU credits can ensure that these credits are placed in a repository and can be tracked by Verra.
4	The way VCUs and tokens infrastructure are designed today, forces different life cycles, namely, and the need to retire VCUs before crypto instruments and tokens are created. To address the issue, the dedicated immobilization of sub-accounts in the Verra Registry must be integrated with a scan solution, for example, the already mentioned Etherscan, to ensure a "2-way bridge" system using solutions like token metadata, allowing both ways information exchange and life cycle integration.
5	● Immobilisation in issuer account ● Ability to retire VCUs concurrently with retirement of certificate/token.
6	Clear knowledge of the blockchain's descentralized and smart contract public this code, for example: how it works, how it the burn tokens, how mint is create, and how the operation about the smart contracts owner is a differentiator in addition to being a query with valid tokens, burned and retired tokens, all data to know the traceability since carbon credit project until them offset. Smart Contract in public blokchain is fundamental for the clarity of information from creation to retirement of carbon credits, as well as how are their functions and who are the smart contract auditors. Smart contracts are autonomous functions that operate within blockchain systems where the rules for their use are written, how they operate, what their functionality is, audits and responsible for both the creation and administration of these systems once the smart contract is registered in the blockhain for operation, there is no longer the possibility of human intervention for its alteration, the smart contract will fulfill its designations regardless of the will of the developers.
7	Response combined with Question 1.
8	Entities participating in immobilization would greatly benefit from two- way APIs. Ideally, these APIs would include: Third party access and control mechanisms for Custody providers, including both traditional financial custodians (e.g. BNYM, State Street, J.P Morgan) and Web3 custodians (e.g. Fireblocks), ideally including multisig for extra protection. Read only access for proof of reserve infrastructure, such as currently provided by Chainlink, and traditional established auditors like PWC. Technical look-through to Verra-specific events, such as retirement of credits and the ability to 'unbridge' back into legacy markets.
9	A clear ability for our customers to claim / retire VCUs Our marketplace is targeting institutional buyers and sellers of VCUs, many of which are publicly traded corporate entities who wish to purchase VCUs in order to offset their Scope I emissions footprint

	A very straightforward process to reactivate and then retire these credits will be very important for parties that are both Verra Registry accountholders and those that are not (potentially smaller enterprises or individuals) A standardized reactivation form is integral in our mind, to allow for multiple transactions related to a single active VCU with parties that wish to exercise rights over the underlying VCU
10	In the Nominee model discussed in Q1 above, if the "entities" are carbon exchanges or alternative trading system (ATS), they will need to open a nominee account at Verra's transfer agent such as Securitize. When transactions are completed at various exchanges and ATSs, such as Securitize Market's ATS digital platform, the transfer of the token can only be initiated by the transfer agent, which centralizes all transactions into one location that Verra maintains, audits, and manages. Purchasers of tokenized VCUs will need to, for example, create an account at Securitize, which includes the required regulatory KYC/AML checks, and may also need to create an account at an ATS, exchange, or execution venue. Only then can purchasers transfer tokens to wallets of their choice, such as MetaMask or Exodus. Moreover, when holders decide to exercise the VCU rights or the VCU expires because it is determined that the project no longer provides environmental benefits, the token will be burnt on the blockchain, the transfer agent will close down the position, and Verra will retire the unit. Legal provisions in the purchase agreement should also allow Verra to burn tokens in the event that classes of VCUs are deemed obsolete or they have stopped positively impacting the fight against climate change. It may also be possible to add time limits into smart contacts for the usefulness or timeline of the VCU, such as expiration dates or auto-exercise functionality. Additionally, the Verra Registry Terms of Use should apply to all VCU tokens. The immobilized VCU and tokenized VCU are not mutually exclusive and cannot be separated from each other in an active state.
11	Entities participating, would require ongoing, verifiable data that would ensure the quality or retirement status of their underlying carbon credit. It can be done through API connections with the Verra registry with information updated in real-time.
12	Verra would need to ensure that their register is able to hold details of the relevant crypto instruments that have been created for each VCU. Being able to check and input or make updates to that register in order to highlight that the VCU's are now immobilized, is Important. Potentially having parts of the register available to all participants, so that immobilization/retirement status of certain VCU's is transparent would be helpful too. Possibly, depending on what blockchains are allowed for the creation of the instruments, VERRA may want to directly participate on those blockchains too so that VERRA can independently check on the instruments.
13	Verra should give access or make platform available to capture information from project proponent database, for a pre-established period. For example, once the emission reductions for the crediting period were verified by a third party, if project proponent wants to emit the carbon credits equivalent corresponding to one or two years of emission reductions, project proponent shall send or share information to Verra through cloud, or Verra shall access project blockchain and take information from the start to end date of the corresponding crediting period, then accounting carbon credits (VCUs) for that specific time-lapse.
14	As discussed above, Toucan strongly supports Verra's proposal to implement the Reference Tokenization approach and advocates for the Direct tokenization design. Even if Verra considers Native Tokenization, we recommend to start with Reference Tokenization on a faster timeline, which also gives the option for learning in a more ring-fenced setup as one explores Native Tokenization going forward. To implement the approach, the existing Verra registry data schema needs to be extended to model the following new data fields:

	• New and distinct states for VCUs - 'tokenized' for the 'direct tokenization' approach and 'immobilized' for the 'secured/custodian' model; • Clearly documented and sufficiently scoped API to interact programmatically with the Verra registry, to search for and read VCU data, and to tokenize, untokenize, and retire VCUs; • Access to project data and market-relevant unit labels to provide correct metadata for tokens; • The beneficiary of the tokenization, i.e., which authorized tokenization platform, blockchain, and web3 account receives the VCU-based token after the VCU is immobilized and tokenized/bridged to the platform (unless the existing retirement field can be re-used for this action); and • Extension of the Verra registry UI to allow for tokenization; In addition, as discussed in the answer to Q5 below, we recommend that Verra extend KYC procedures when opening an account or activating an account for tokenization—including integration of waivers and disclaimers into mandatory fields for linking web3 accounts for tokenization with the respective Verra accounts. In order to replicate on-chain retirements in the source registry, the API system needs to be able to update data fields (e.g. status) related to VCUs, including being able to partially update the status of a serial number – for example to make a retirement for less VCUs than the full batch serial number – and be returned two serial numbers – the first serial number for the retired VCUs and the second serial number for the batch of leftover unretired VCUs. This requirement is identical to what happens in the registry during retirement today. Such an event will also need to be reflected publicly in the registry to show the retirement including retirement details, and the remaining tokenized VCUs.
15	In order to fully respond to this question, we will need more information on the functionality / operation of the immobilization sub-account, including how it will be different from a normal account. As a basic requirement, we will need to be able to transfer VCUs from the immobilization sub-account to a token holder's own carbon registry account (what we refer to as 'physical delivery' – in which case the corresponding AirCarbon Token is burned (destroyed)). Again, we would generally suggest direct API connectivity between AirCarbon and Verra to streamline processes.
16	Based on the approach described in the previous question, all infrastructure necessary for the immobilization process is intrinsically included on the PIVOT platform, and users participating indirectly in the immobilization process would only require a simple approval or rejection from Verra on PIVOT. More concretely, to make the decisions that will guide the immobilization or reactivation of VCUs, Verra would simply need to sign up to PIVOT. Upon registration, Verra would be provided with a unique signature that it can use to approve user's requests to either create VCU-backed tokens and claims to the original VCU. Recognizing Verra's signature, the blockchain would create or destroy the VCU-backed tokens accordingly.

	To reiterate, CO2Network does not recommend the approach suggested by Verra in the consultation proposal because of the risks involved in having users send their VCUs to a sub-ledger when immobilizing their VCUs and in sharing information separately with tokenization platforms. We deem that this approach will not effectively eliminate the risk of fraud, nor guarantee environmental integrity. In contrast, the solution proposed by CO2Network would not only be efficient, but also very quick to implement as it does not require one-to-one integration with Verra's registry. (Note: Integration by digitizing Verra's registry using MetaMUI blockchain could be discussed separately if desired.)
17	The immobilization approach would include but not be limited to the following: ● An open API specification that allows tokenization projects to integrate with the Verra registry and pull VCUs from Verra accounts while automatically immobilizing/encumbering them on the registry. ● To ensure that Verra account owners are the ones approving of this import and tokenization, we propose and invite a model for its facilitation: Users are assigned a unique Verra account ID This ID must be entered onto the tokenization protocol's dashboard that the user holds An invite now appears on the user's Vera dashboard that can be accepted or rejected If accepted, the user is now able to use their tokenization protocol's dashboard to tokenize the credits they hold in their registry account ● When a user wants to unwrap the tokenized credits, the following user journey can be adopted: Users are presented with a dashboard on the exchange they purchased credits from that allow them to unwrap their tokens Once unwrapped the tokens are permanently destroyed and this instance is also recorded on the public ledger proposed in Q1 Unwrapping tokens automatically moves the underlying credits from the immobilization account into an active account that allows for trading/retirement on the Verra registry
18	Each ownership token in a Carbonplace wallet directly corresponds to a single VCU in Carbonplace's Verra omnibus account (i.e. a 1-to-1 mapping). To be issued with an ownership token, an owner of a VCU must transfer the VCU into the omnibus account (i.e. "on-ramping" of credits). At all times, a credit remains in the Carbonplace omnibus account at Verra while represented by an ownership token. These credits could be said to be 'immobilised' in the Carbonplace omnibus account at Verra. Carbonplace is open to Verra immobilisation functionality, to ensure that under no circumstances can a credit leave the omnibus account at Verra, while represented by an ownership token on Carbonplace. We would be happy to enter into a conversation regarding how this could be operationalised.
19	The more ongoing transparency beyond simply immobilized status is encouraged. Most of the VCM market is in public blockchains, openly accessible.

20	Custody/Keyholders – including processes to deal with key compromise, key loss, change of custodian, change of corporate staff Corporate Blockchain Identity management – ability to digitally sign on behalf of the company or project using a role based approach Blockchain explorer (or open database access to digitally signed statements) to be able to easily establish Verra's view of the status of a particular registry entity Verra might wish to stipulate or recommend requirements for token issuers that want to represent VCUs in order to meet future consolidation/audit requirements – for instance requiring that their chain allows for digitally signed statements from multiple parties about the same VCU identity ('Verra think this is retired', 'CORSIA think this is a corsia approved credit', 'peru intend to consider this an NDC', 'project owner has declared a forest fire', 'sensing device declares methane leak', 'this lab declares this carbon content in this biochar', 'sensing device declares this chemical process ran at this temperature')
21	I don't think the immobilization approach works well for the reasons given above as I don't believe Verra has the resources or capabilities to do the monitoring that would be required to ensure it was free of reputational risk. Indeed even Toucan's approach, where credits leave the Verra ecosystem entirely by retiring them and enter the tokenizing projects ecosystem independently, is preferable. In this case, it is at least clear that the tokens would exist in a completely different sphere. With a SPV, there is still the illusion that VCS has links and is managing double counting and other reputational risks – when this would be impossible due to the blending that the SPV introduces. At least with Toucan's approach, there is no confusion over the role Verra plays (because it's no longer involved) so that this process better protects Verra's reputation.
22	Q2.1 Plea for an iterative approach to infrastructure We would urge Verra not to let finding the "perfect solution" be the enemy of the good. An effort to build out a fully automated framework from the start would risk unclear, potentially unpredictable, and long timelines. We propose adopting, at minimum, a two-stage approach. The first stage would involve leaning heavily on existing infrastructure and manual processes. The second stage would involve building out more automated functionality to replace the manual processes over time. Q2.2 Minimum viable infrastructure: Retirement-adjacent immobilization The second option would be to provide a mechanism almost identical to retirement, as piloted by existing Tokenizers like Toucan. Initially, the only major difference could easily be the status of "immobilized" taking the place of "retired" with limited other changes. These "immobilized" Assets could then be provided The Tokenizer would then be required to provide a publicly accessible way to query all on-chain Assets, which could then be compared with the public Verra accounts to verify the integrity of the on-chain Assets. Immobilization can then be provided as an additional action, which would then involve a Verra representative approving an 'immobilization' action based on some standardized evidence provided by Tokenizer. Pros: • Wouldn't require Tokenizer to operate a Verra account, removing one potential source of error that could be caused by manual operations which could happen in a "custodial" approach.

	• Easily adaptable by existing Tokenizers. • Provides a pathway for existing tokenized Assets to be turned into immobilized Assets. Cons: • Doesn't perfectly guarantee synchronous representation between Tokenizer and Verra, but would still, in general, serve as a reasonable middle-of-the-road solution. For example, both Toucan and Moss have maintained provable integrity to this day, which does not exceed retirement amounts as observable in Verra's retirement data. • Risk of some incorrectly entered data in immobilization events potentially not resulting in tokens being created by Tokenizer even though the "immobilization" event happens. This would require a three-party (Client, Verra, Tokenizer) dispute resolution process to solve. Reversing *Immobilization events without the involvement of the Tokenizer could cause integrity issues, which is an undesired outcome. • Compared to the custodial approach (which would require no additional developments by Verra to enable), this likely will extend the timeline at which tokenized Assets could realistically be deployed to the market by an unknown amount. • If development is required, steps should be taken to make sure that the developer of such a solution would not have conflicts of interest that might negatively impact development outcomes. Q2.3 Automated process When it comes to automating the process long-term - we believe that the process as pioneered by Toucan's tokenization process can serve as a basis for the immobilization mechanism as well, just with an additional layer of "handshakes" between Tokenizer and Verra in order to better guarantee synchronous representation. This would include adding a "pending" state to immobilization and reactivation operations, which would better guarantee transactional finality. Essentially the Tokenizer would be able to reject Immobilization events, which could allow for checks to be implemented to guarantee the Client will reliably receive the tokenized representation of their Assets. Similarly, this would allow on-chain Asset representations to be locked in an in-between state pending Verra's approval and Tokenizer's acknowledgment of the approval.
23	We suggest a process to verify BSP and then implement procedures, in the registry, for freeze carbon credit and mint tokens. The mint process will be made by the BSP (as aforementioned) but verified by VERRA. Using Verra Registry, we can suppose that the best way is to implement another Account type (Frozen or something similar); this Account can be used according to the aforementioned procedures.
24	The following would be needed: The serial number and attributes of the VCUs which are being immobilized should be required. Two sub-accounts for mobilized and immobilized VCUs should be enabled to manage the VCUs with least amount of friction. Ability to provide as input the public hash for the crypto tokens being created with respect to the corresponding VCUs serial number.

25	The implementation of an immobilized state for carbon credits that have been bridged onto the blockchain will enable data flow between on-chain and off-chain systems, increasing understanding of the rate of retirements on-chain, and delivering clarity to the market in terms of at what point the environmental benefit of tokenized carbon credits are claimed. KlimaDAO proposes a phased approach to implementing infrastructure that immobilizes carbon credits that have been tokenized. This approach can enable continued development of the blockchain-based carbon credit ecosystem without introducing risks to the integrity of the market while more sophisticated solutions are being implemented. Phase 1 The implementation of an immobilized state that allows tokenization to continue using existing Direct bridges such as Toucan, C3, and Moss. In this initial phase, credits can be immobilized but cannot be “remobilized”. This would be achieved by introducing a new Boolean (true/false) field into the Verra Registry which dictates whether a credit is immobilized, and a text input field for “immobilization message” or “immobilization hash”. This field is referenced by the Tokenizers as cryptographic proof of ownership, and for associating the immobilized Verra assets with their tokenized counterparts. Per IETA’s guidance on Tokenization, this first phase would only support Direct Tokenization, wherein the environmental attributes of the credit are irreversibly transferred to the tokenized carbon credit. Phase 2 Tokenizers will provide a system to ‘detokenize’ already tokenized carbon credits, that avoids risk of double-counting and/or fraud. To enable this, Verra would provide a mechanism for approved Tokenizers (i.e. those that hold a Verra account) to “remobilize” credits in their Verra accounts (including credits they did not originally immobilize by bringing on chain. The responsibility will be on the Tokenizer to ensure integrity by e.g. batching retirements, providing a publicly auditable inventory of immobilized credits, and undergoing necessary KYC checks from the Verra Registry. While Direct Tokenization results in a verifiable trace from the Verra registry to the resulting on-chain credit, auditing a Secured Tokenizer requires knowing the holdings of the corresponding Verra registry account; to facilitate this, Verra should provide a simple, standardized mechanism for Secured Tokenizers to publish their inventory of immobilized credits. Phase 3 Finally, to add greater robustness and security, we propose the introduction of an event-driven architecture where a listener process is deployed in the Verra Registry system that responds to blockchain events involving tokenized credits. A detailed guide for implementation of this final phase: ● The “detokenization” process should take the form of an open-source Smart Contract that allows a user to permanently destroy their unretired tokenized carbon credits.

	● Whenever a token is destroyed in this manner, the blockchain would record this event as an immutable and public record. ● These events would contain all relevant data such as the target registry, target registry account, offset vintage, project data, token origin, token quantity and more. ● These events would be emitted in real-time and would signal to the Verra registry system that compliant assets can safely be remobilized in the Verra system, without risk of double-counting or tampering. ● This solution would ensure that Verra can apply its own respective Terms of Service to the process. For example, Verra would retain the power to implement restrictions on wallets and recipient accounts, offset credit criteria, quantities, fees, and more. This same smart contract could also serve as a trusted and transparent way to transfer qualified credits from other registries directly into the Verra system. In addition to the approach outlined above, a grandfather mechanism should be introduced for tokenized credits associated with good-faith Tokenizers created prior to Verra's prohibition to become properly immobilized credits (permanently immobilized in the case of Direct tokenization like Toucan or C3).
26	The main element registries can offer to guarantee the immobilization approach is the ability to retire the off-chain credit from the registry as soon as it is retired on-chain. As of today, the registries are the most immediate and public registry that hold the inventory of carbon credits. The platforms should be made easily accessible and user-friendly for anyone and not only companies, as the goal of the VCM is to eventually reach individuals interested in the offset of their emissions. Blockchain technology for VCM is expected to support the scaling-up of the verified carbon credits and the VCM. This will result in an important increase in demand and the addition of new stakeholders that are new to the market and do not know how to these platforms usually work. There can be workshops or webinars on how to use the platform and how can an individual confirm where his tokenized carbon credit is coming from. This can be done in collaboration with the on-chain market. Also, in these platforms, it should be clear for the user the state of the carbon credit: that is if it is active, tokenized, retired... with a clear definition of each state.
27	We believe that the proposed approach of immobilizing VCUs during the life-time of a token is only the second-best approach. If the VERRA registry were fully native on-chain, creation and destruction of tokens could be done via a smart contract. Technically the creation of crypto carbon tokens by market third parties would be a staking process. The third party would stake their native VERRA VCU tokens in order to create carbon tokens. In principle, this process is reversible (see next question), allowing for a reactivation of native VERRA VCU tokens. The comparison to stablecoins in the consultation document (bottom of page 2) is a good example of the problems that arise at the boundaries of the blockchain. If native Central Bank Digital Currencies (CDBC) were available, the costly and fraud-prone immobilization approach would not be needed.

28 In the following we lay out different approaches for immobilizing and tokenizing of VCUs for use outside of the Verra Registry and describe the required infrastructure and processes for this.

3.2.1. Immobilization in goodcarbon Sub-Account

(a) Description

This approach is based on dedicated immobilization sub-accounts in the Verra Registry as outlined in Annex 1.1. of the public consultation document. When goodcarbon project partners, who must already be Verra Registry user, wish to issue VCU Tokens on the goodcarbon platform they need to transfer their VCUs for immobilization to the goodcarbon immobilization sub-account. This goodcarbon immobilization sub-account is used to pool immobilized VCUs of all iden-tified goodcarbon project partners whereas project partners can be project proponents or resellers. Drawing an analogy from stablecoins, goodcarbon acts as trustworthy central institution that takes deposits from holders of VCUs, escrows them in a pooling or omnibus account, therefore immobilizing them, and credits depositors in form of project propo-nents and resellers VCU Tokens for on-chain use. Decisive here is that a project partner enters a legally binding escrow agreement with goodcarbon prior to transferring VCUs to goodcarbon's immobilization sub-account. After transfer, goodcarbon holds the project partner's VCUs in escrow on behalf of the project partner whereas they remain legal owners of the VCUs.

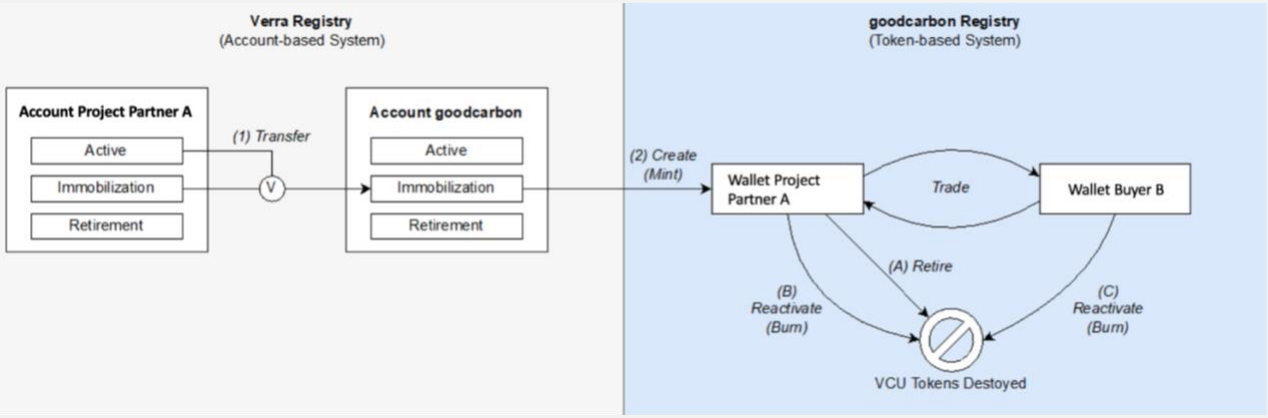


Figure 1: Immobilization in goodcarbon Sub-Account

(b) Infrastructure and Processes Requirements

With respect to immobilization, apart from the introduction of the "immobilization" account type we do not anticipate that Verra is required to establish additional infrastructure and processes. The immobilization and tokenization of VCUs would entirely be coordinated by goodcarbon in collaboration with a project partner. This would include set-up of legal agreements as well as orderly issuance of VCU Tokens after immobilization on the goodcarbon platform. The only minor process requirement that could be discussed is whether the project partner should send VCUs from his active sub-account or from his immobilization sub-account to the goodcarbon immobilization sub-account (see Figure 1).

Immobilization and tokenization of VCUs as just described is possible by solely relying on the introduction of the “im-mobilization” account type to mark immobilized VCUs. The technological integration of the Verra Registry and good-carbon is therefore very loose. As outlined above, however, the coordination with the project partner involves manual process steps to synchronize systems and therefore is error prone. Infrastructure in form of APIs would substantially simplify this process. E.g., providing a list or queue of transfers to the goodcarbon immobilization account including sender, amount, and associated project metadata via API would allow processes in the goodcarbon system to be auto-matically initiated. This way we can also check if a transfer was valid based on prior agreements, in which case it would be accepted, or if it was an uncoordinated or inadvertent transfer, in which case it would be rejected. This could be implemented either by API polling from goodcarbon’ side or a push mechanism from Verra’s side. The consequence is a higher degree of integration of the Verra Registry with goodcarbon.

A general infrastructure requirement that is not directly related with the immobilization of VCUs but that is highly an-ticipated is the API provision for querying project-specific data. goodcarbon intends to make project-specific data that is associated with VCU Tokens available on the goodcarbon platform as well as associate project-specific metadata with VCU Tokens on-chain that is publicly available to increase transparency and traceability. Having the ability to utilize an API for this would substantially reduce the effort of manual transcription of data between systems and therefore would reduce data inconsistencies.

(c) VCU Token Life Cycle (Retirement, Reactivation)

In the following, the life cycle and the environment of a VCU Token is portrayed to demonstrate that goodcarbon intends to create a closed system, comparable to the Verra Registry, that can potentially be opened to partners in a controlled manner. The measures taken for creating this environment also address many risks mentioned in 2. Context of the public consultation document. The closed system will allow project partners to issue VCU Tokens and trade them to buyers on the goodcarbon platform whereas buyers are companies that are looking to offset their own emissions.

After immobilization, VCU Tokens are so-called “minted” by crediting a goodcarbon project partner a token amount equivalent to the amount of VCUs immobilized in the Verra Registry (see Figure 1). The prerequisite for this is that a goodcarbon project partner has been onboarded by collecting know-your-client (KYC) data as well as carrying out checks with respect to anti-money laundering, anti-bribery and corruption, anti-terrorist financing, and sanctions compliance. goodcarbon deliberately chose to issue VCU Tokens fully regulated under German financial laws which necessitates thorough identification and background checks of project partners and buyers on the platform. Additionally, the eligi-bility of projects from which VCUs are derived is evaluated and project partners enter different contractual agreements with goodcarbon.

With respect to blockchain technology, we provide our project partners and buyers custodial wallets, which are held by a fully regulated digital asset custodian licensed by the German financial regulatory authority (BaFin). In Germany a digital asset custodian is a fully regulated financial institution under German law that is, in the same way as goodcarbon as tied agent of a liability umbrella, obliged to establish the identity and perform background checks of wallet owners.

The VCU Tokens registry is implemented by a smart contract, computer instructions that are executed on the blockchain, and after project partners and buyers are fully onboarded on the goodcarbon platform the corresponding wallet ad-dresses, comparable to a bank account number, are so-called “whitelisted”. A whitelist is a list of wallet addresses whose owners are unambiguously identified.

After VCU Tokens have been credited on a project partner's wallet address, a project partner can trade tokens with any other identified buyers on the goodcarbon platform (see Figure 1). This encompasses primary and secondary market transactions. In contrast to trades in the Decentralized Finance (DeFi) space, corresponding transactions are supervised by goodcarbon as part of regulatory compliance resulting from issuing VCU Tokens fully regulated. As the previously mentioned a whitelist, implemented on-chain in a smart contract, forms a confined circle of token holders. It is therefore not possible to send VCU Tokens to addresses outside of this circle. Derivatives of VCU Tokens issued on the goodcarbon platform as well as abstraction from the underlying VCUs by pooling VCU Tokens is therefore technologically impossible. As alluded to above, goodcarbon associates metadata to VCU Tokens so that not only on the goodcarbon platform token specifics are viewable but this on-chain data can also be verified independent of the goodcarbon platform by e.g., utilizing so-called blockexplorers, to establish transparency and traceability and to verify correctness. In this way, a clear mapping of VCUs and VCU Tokens is achieved.

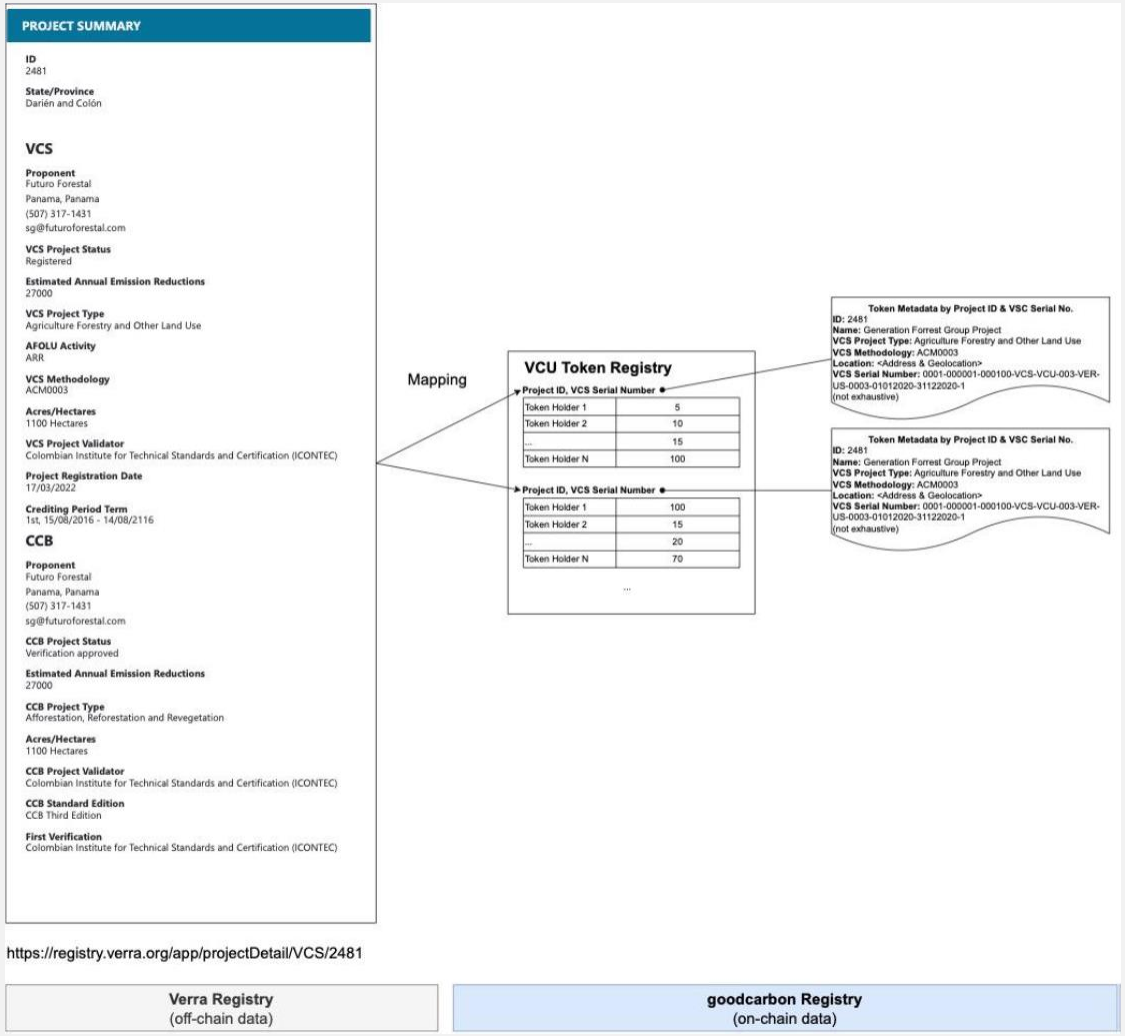


Figure 2: Mapping of VCU Token and underlying VCU including metadata

Besides trading, a goodcarbon project partner or buyer can retire and so-called “burn” VCU Tokens which marks the end of the life cycle on the goodcarbon platform. Technologically, retiring and burning is the same operation on the blockchain. Particularly, VCU Tokens are destroyed and

removed from the circulating supply in the on-chain registry with the consequence that these tokens cannot be used anymore. Semantically, however, retiring and burning trigger different processes for reconciliation with the Verra Registry.

In the goodcarbon platform we regard retiring more as a retiring request as the on-chain VCU Tokens have been retired but the underlying VCUs still exist in the goodcarbon immobilization account in the Verra Registry. This way there is no alienation of purpose of the “retired” state of VCUs. For final retirement of the underlying VCUs the VCUs are transferred from the goodcarbon immobilization account to the goodcarbon retirement sub-account (see Figure 3Figure 3).

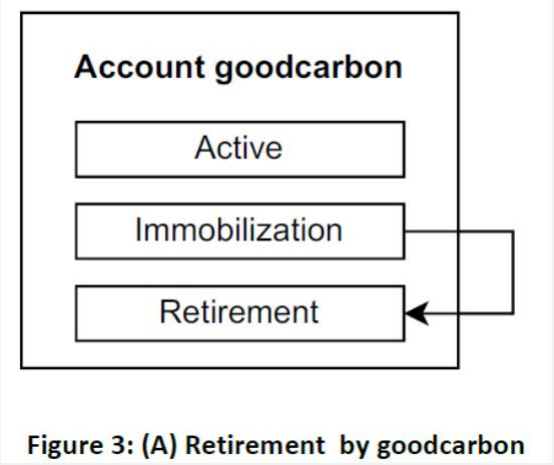


Figure 3: (A) Retirement by goodcarbon

The retirement process outlined above is initiated on-chain. By listening to so-called “on-chain events” the goodcarbon platform is aware of every retirement that happened. These events trigger manual administrative processes effecting the sub-account transfers just described. As with the tokenization of immobilized VCUs, process efficiency would greatly benefit if APIs for triggering sub-account transfers were available by the Verra Registry to automate processes and re-duce transcription errors caused by manual use of the Verra Registry user interface.

In the goodcarbon platform we regard burning of VCU Tokens as a project partner’s or buyer’s will to reactivate VCUs in the Verra Registry. In this case there is only one possible option to proceed. Depending on the original source account a Verra user used to transfer VCUs to the goodcarbon immobilization sub-account, goodcarbon sends VCUs from the immobilization sub-account back to a user’s active or immobilization sub-account (see Figure 4) fFehler! Verweisquelle konnte nicht gefunden werden.rom this point on the previously immobilized VCUs are not subject of a contractual obligation anymore so that the VCU account owner can freely use his VCUs in the Verra Registry. As the corresponding VCU Tokens have been destroyed, there is no double-issuance or double-use.

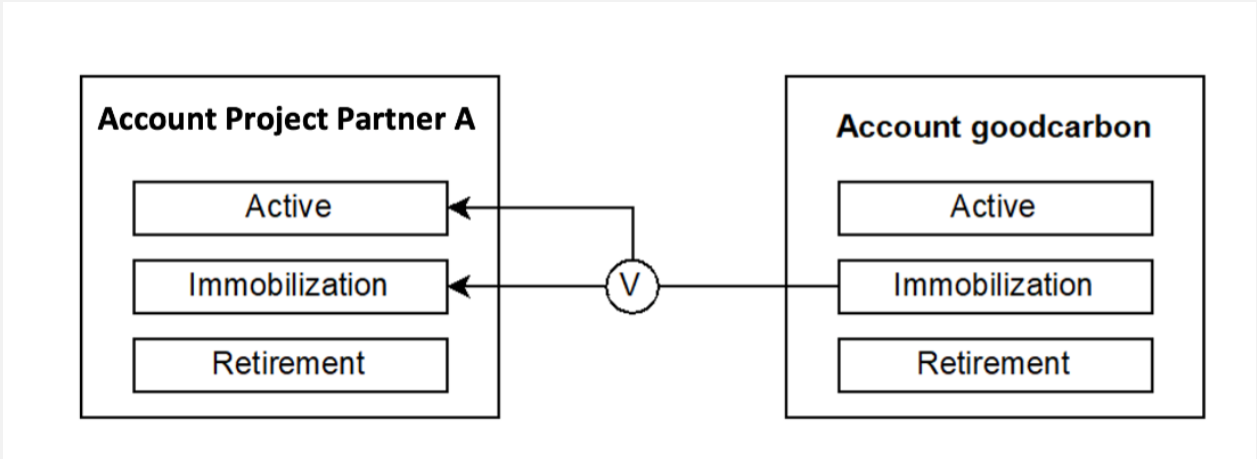


Figure 4: (B) Reactivation – Project Partner A Has Verra Account

Regarding reactivation there is an additional case to be considered. In this approach only project partners who have a Verra account issue VCU Tokens on the goodcarbon platform. The goodcarbon platform allows buyers without a Verra account to acquire and use VCU Tokens. If a buyer without a Verra account, however, seeks to reactivate VCU Tokens this cannot be implemented in a straightforward manner without a Verra account (see Figure 5Fehler! Verweisquelle konnte nicht gefunden werden.). This requires additional processes and coordination whereas one part of this is that the buyer registers to the Verra Registry.

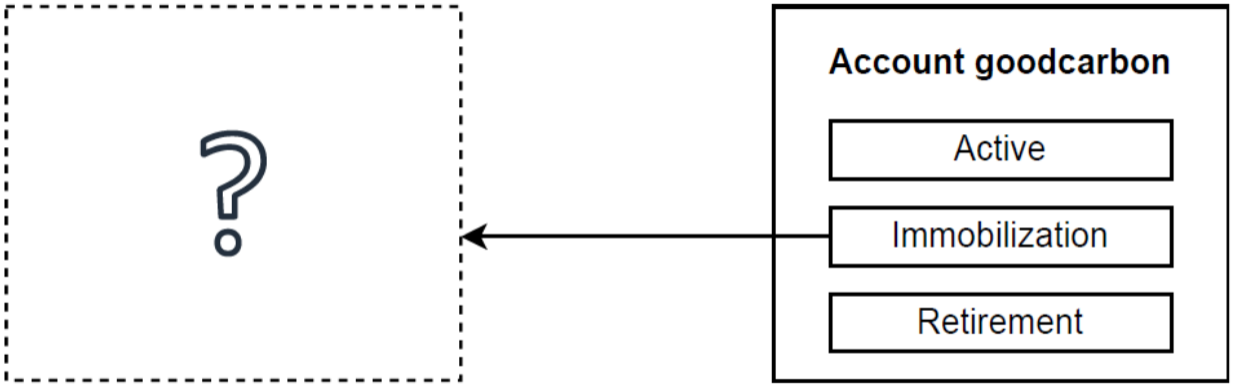


Figure 5: (C) Reactivation – Buyer A Has No Verra Account

As with retirement, burning of VCU Tokens triggers administrative processes on the goodcarbon side that would also benefit greatly from the introduction of an API to automatically execute transfers.

An open question that affects retirement as well as reactivation or burning is where a project partner or buyer can trigger these events. We vouch for initiating these processes from the goodcarbon platform as an orderly execution of the process including recording of an audit trail of process steps can easily be implemented. Initiation of these processes from the Verra Registry would require additional implementation effort in terms of software development as well as processes and would result in not being able to record a seamless audit trail of process steps. Closely related to this is the question what event (retirement, reactivation) has precedence from a legal viewpoint. Is it an event in a partner platform or in the Verra Registry?

(d) Market Need and Evaluation

A crucial advantage of the approach of immobilization in the goodcarbon sub-account is that double-issuance and double-use is entirely prevented as goodcarbon as trustworthy instance is in full control of the escrowed VCUs due to the rights and permissions control in the Verra Registry. This forecloses unallowed transfers or retirements of VCUs within the Verra Registry by clients without knowledge of goodcarbon while they are immobilized. This might otherwise lead to discrepancies in balances between the Verra Registry and the token-based system. Comprehensive measures at smart contract level ensure that VCU Tokens remain under the ultimate control of goodcarbon while project partners and buyers benefit from the advantages of blockchain technology.

We anticipate that most of our buyers, our offer exclusively targets businesses and institutional investors, can be covered by the described approach as they will not have an own Verra Registry account. As goodcarbon escrows VCUs and therefore acts as an intermediary, buyers without a Verry Registry account will nevertheless be able to buy, trade and retire VCU Tokens. goodcarbon takes care of both comprehensive onboarding of buyers as

described above and recon-ciliation with the Verra Registry. The only case not covered is when buyers without a Verra Registry account request reactivation of VCUs. For this a dedicated process might have to be set up if market need arises. Registration of

goodcarbon buyers to the Verra Registry could be simplified by sharing KYC data, provided there is a standard that Verra and tokenization partners have agreed upon.

A legal issue that should be discussed is the case of either a VCU Token holder or goodcarbon filing for insolvency. As VCUs are held in escrow by goodcarbon in either case legal and technological releasing procedures should be in place to transfer VCUs to the rightful owner.

3.2.2. Immobilization in Sub-Account of Verra Registry User

This approach is similar to the previous one. We therefore focus here on the crucial differences between the approaches for better understanding.

(a) Description

This approach also utilizes the immobilization sub-account as proposed in Annex 1.1 of the public consultation document. This approach, in contrast to the previous one, pursues that immobilized VCUs remain in the immobilization sub-account of a Verra Registry user, not in the goodcarbon immobilization sub-account.

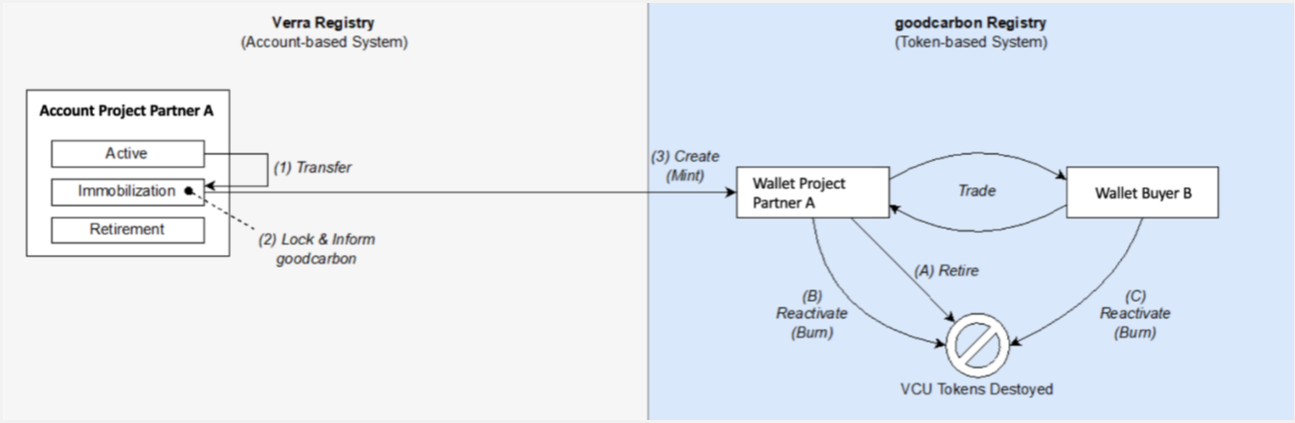


Figure 6: Immobilization in Sub-Account of Verra Registry User

This has crucial implications given the current functionalities of the Verra Registry. As goodcarbon does not escrow VCUs, illicit or accidental double-issuance and double-use by VCU holders can only be avoided based on contractual agreements. Drawing an analogy from stablecoins, goodcarbon

cannot fully take over the role of a trustworthy central institution as from technological viewpoint we are not in control of the immobilized VCUs. Based on our understanding it is currently not possible to give goodcarbon privileged access to pre-empt transfers of immobilized VCUs for which VCU Tokens have been issued. If VCU holders do not adhere to contractual agreements, there is currently no techno-logical way of preventing misuse which consequently would result in discrepancies between the token-based and Verra Registry-based system and ultimately in re-issuance and re-use of VCUs.

(b) Infrastructure and Processes Requirements

With respect to immobilization, introduction of the immobilization account type is only the mere basis. We foresee that Verra is required to provide additional infrastructure and processes as we think it is unlikely that relying solely on contractual agreements to prevent VCU transfer is sufficient.

As goodcarbon can only monitor transfers to its own accounts, it is not possible to monitor clients' accounts if they intend to immobilize VCUs. Therefore, processes are required to tell goodcarbon that a client intends to issue VCU Tokens. This can be implemented by direct communication between a project partner and goodcarbon whereas a pro-ject partner must accurately specify the amount of VCUs and the project they are derived from to associate metadata with VCU Tokens. We anticipate this process step to be highly manual and therefore error prone. Additionally, as the transfer to the project partner's sub-account is hidden from goodcarbon, the project partner must provide some proof of transfer which entails additional effort for him. A possible proof of transfer must be conceptualized in collaboration with Verra.

To make this process step more efficient we therefore prefer that the Verra Registry provides functionality so that, based on a transfer to a project partner's immobilization account, goodcarbon as tokenization partner can be informed. As described in the previous approach, sending a tokenization request to goodcarbon via an API would substantially automate this process step. However, we anticipate high development effort for this functionality for Verra. Whereas in the first approach the transfer to the goodcarbon immobilization sub-account clearly selects goodcarbon as tokenization partner (see Figure 1), this selection is not straightforward in this second approach (see Figure 6Fehler! Verweis-quelle konnte nicht gefunden werden.).

Selection of goodcarbon as tokenization partner can be implemented as a selection menu in the user interface of the Verra Registry. The prerequisites for this functionality, however, are that a project partner is registered with the Verra Registry as well as goodcarbon and the Verra Registry aware of the relationship between this project partner and good-carbon. For this functionality additional business logic must be implemented by Verra.

As briefly described above, we do not opine that relying solely on contractual agreements is sufficient to prevent illicit or unintentional transfers of VCUs within the Verra Registry while corresponding VCU Tokens exist on-chain. Therefore, functionality is required so that goodcarbon or a tokenization partner can lock the amount of immobilized and tokenized VCUs in a project partners's immobilization sub-account in the Verra Registry. Only if a functionality like this is imple-mented, double-issuance and double-use can effectively be prevented. For the subsequent discussion, implementation of a locking functionality is assumed.

(c) VCU Token Life Cycle (Retirement, Reactivation)

Regarding the VCU Token life cycle all aspects of the previous approach are also true for this approach. We therefore draw attention to the following crucial distinctions.

Token balances as well as balances in the Verra Registry must be reconciled for every VCU Token transfer or trade. This is the result of every project partner and buyer having VCUs immobilized in his immobilization sub-account. Conse-quently, this requires that all goodcarbon project partners and buyers must also have a Verra Registry account. This was not required with the previous approach. Additionally, as every on-chain transfer must also be reflected in the Verra Registry, goodcarbon must be able to send immobilized VCUs between project partners' and buyers' sub-accounts (see Figure 7Fehler! Verweisquelle konnte nicht gefunden werden.). Alternatively, this could be performed by a project partner or buyer by transferring VCU Tokens on-chain as well as in the Verra Registry. However, we do not consider this to be realistic in terms of user experience and practicability. This can only be realistically realized if Verra provides in-frastructure for goodcarbon as tokenization partner that facilitates VCU transfers by unlocking VCUs in a project part-ner's immobilization sub-account and transferring these to another buyer's immobilization sub-account and locking these again. Only this way it is possible to keep balances on-chain and in the Verra Registry synchronized without taking the risk of double-issuance and double-use. goodcarbon would again utilize on-chain events that signal token transfers to initiate Verra Registry-internal transfers.

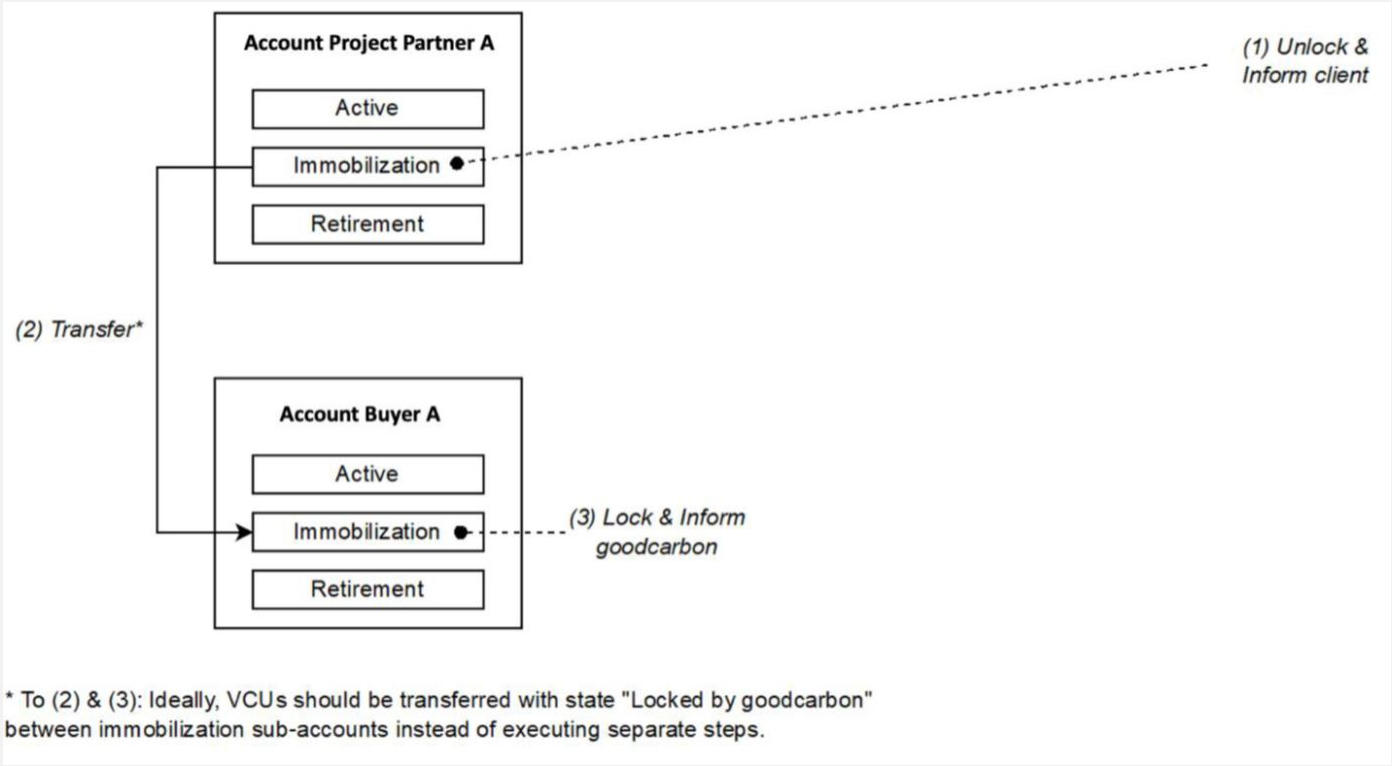


Figure 7: (D) Trade – Project Partner A & Buyer A Have Verra Account

Another major difference is that after retirement (see Figure Figure) or burning (see Figure 9Figure 9) of VCU Tokens, more specifically when the on-chain life cycle ends, the lock on the corresponding immobilized VCUs in the Verra Reg-istry must be released by goodcarbon. In the same fashion as with the previous approach, goodcarbon listens to on-chain events and in case of a retirement or burning VCUs in the corresponding project partner's or buyer's immobiliza-tion sub-account are released either manually by an administrator or Verra provides an API for this. As the immobilized VCUs already exist in a project partner's or buyer's immobilization sub-account no transfer of VCUs between good-carbon's and a project partner's or buyer's sub-account is necessary. At this point, as with an alternative in the previous approach, the buyer is contractually obliged and therefore fully responsible to retire VCUs by transferring these from immobilization to retirement sub-account. If he decides differently at this point, this will result in an inconsistency be-tween token-based and Verra Registry-based system.

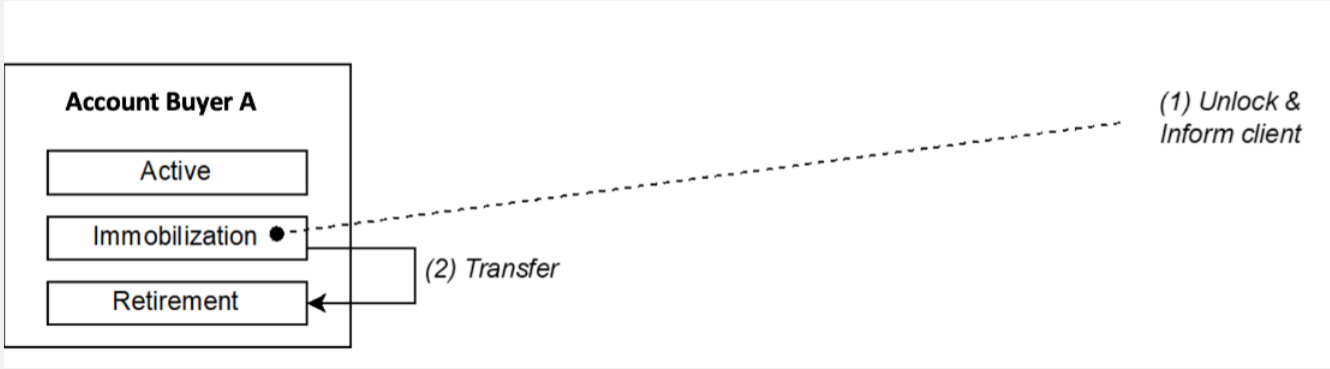


Figure 8: (A) Retirement

In case of burning or reactivation the project partner or buyer can handle the released VCUs as he pleases as there is no risk of double-issuance or double-use.

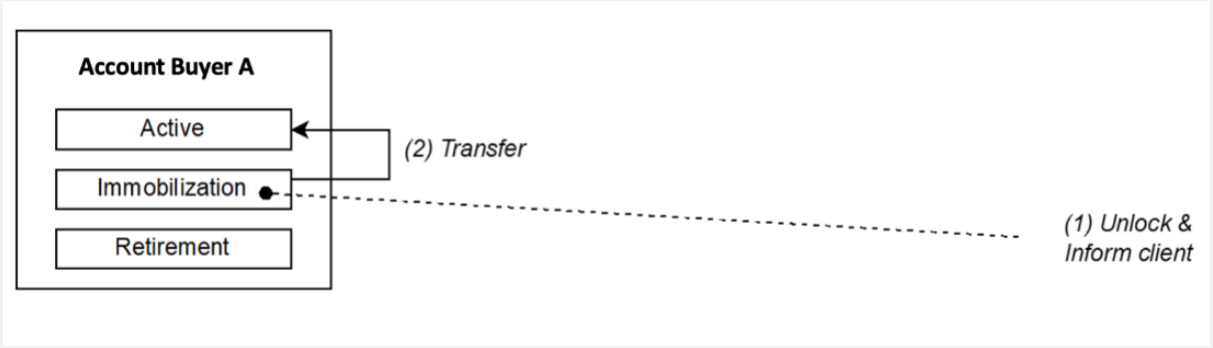


Figure 9: (B) & (C) Reactivation

(d) Market Need and Evaluation

We foresee that this approach caters particularly big companies that already possess a Verry Registry account and that want their VCUs to remain in their immobilization sub-account while tokenized equivalents exist on-chain. As generally retirement happens from a buyers's sub-account with this approach, proof of retirement always exists in the Verra Registry and on-chain. For certain companies having both proofs might be important. In general, we do not foresee that this approach is relevant for the majority of our buyers.

A considerable disadvantage of this approach is, as already discussed above, that all goodcarbon buyers require a Verra Registry account. The reason for this is that if a buyer who has no Verra Registry account acquires VCU Tokens on the goodcarbon platform these must be transferred to some immobilization sub-account in the Verra Registry. A good-carbon sub-account could be used for this but this would result in a combination of this and the previous approach depending on whether a buyer possesses a Verra Registry account. Consequently, even more processes and infrastructure are required that Verra and goodcarbon as tokenization partner have to agree upon and establish.

As especially this approach showed, it requires considerable effort to keep a token-based and an account-based system synchronized. Operationally, this is only realistic if additional functionality and business logic is implemented in the Verra Registry, most notably by providing an API. To render the synchronization of two different systems redundant we propose the following approach.

3.2.3. Native Tokenization from Verra Registry

(a) Description

This approach pursues the goal of entirely avoid synchronization of goodcarbon's token-based system and the Verra Registry. Both systems fit to certain purposes and should be used accordingly. If users deem the Verra Registry the best fit for their needs, they should use it. If users deem a token-based system the best fit for their needs, they should be able to use it.

Whereas the Verra Registry provides an established venue for carbon certificates, goodcarbon's token-based platform provides a new venue for carbon certificates while building on the reputation of Verra as certifier. Specifically, we intent to provide Verra privileged administration access to a token-based standardized infrastructure in which Verra either directly or indirectly via e.g., project proponents issues VCU Tokens. By privileged access we understand that in coordination with goodcarbon Verra is given permissions to act as an on-chain registry manager or administrator to the VCU Token smart contracts and therefore has a say about on-chain transactions of token holders.

(b) Infrastructure and Processes Requirements

In this context we conceive Verra's role as trustworthy issuer of certified VCU Tokens, either directly or indirectly, and as regulating instance of on-chain transactions. Also crucial in this context is that the single point of truth in terms of VCU Token balances is the on-chain data. Project-specific data should still be provided by the existing Verra Registry. Basically, we anticipate that the existing Verra Registry user interface can be used as is but that the Verra Registry should be adjusted in a way that it reads balances from the blockchain, more specifically, from the smart contracts. To what extend Verra Registry users should be able to initiate on-chain transactions is up to discussion as we anticipate that a tight integration of the Verra Registry and our tokenization infrastructure by means of APIs is required for this. However, this would replicate the functionality in the Verra Registry that is already available in the goodcarbon platform.

For the native tokenization we therefore conceive two possible options. The first option is that Verra and goodcarbon and possibly further tokenization partners agree upon a standardized infrastructure for VCU Tokens (see Figure 10Figure 10). Major components of this infrastru cture are on-chain business logic in form of smart contracts including rights and permission management for smart contract administrators, a common app roach to custodial and non-custodial wallets and a common KYC approach.

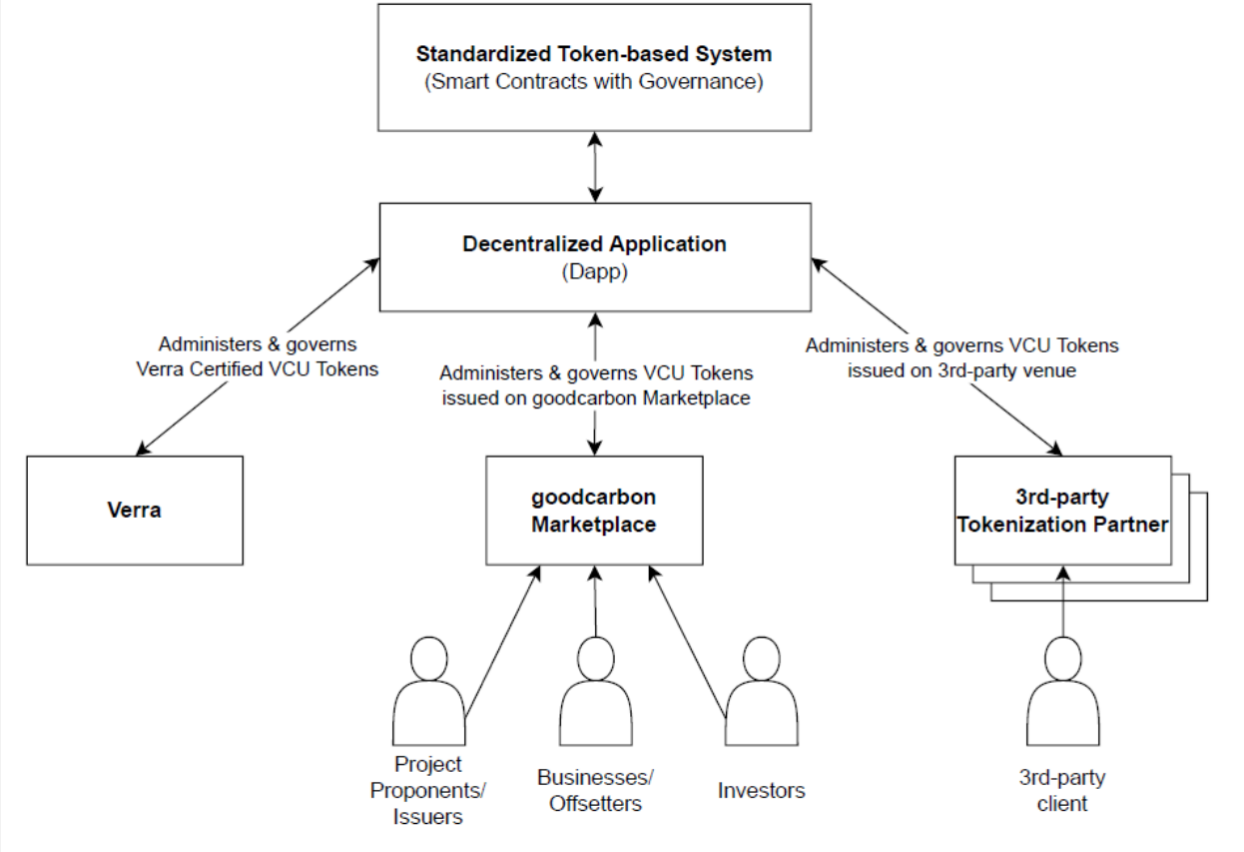


Figure 10: Standardized Token-based Infrastructure

In this context we regard Verra as trustworthy certifier of carbon credits in form of VCUs that provides a proof of origin when VCU Tokens are initially issued. As originator of VCU Tokens Verra should be given privileged administrative access to the on-chain registry implemented as smart contracts. By doing this, Verra can overrule token transfers if e.g., misbehaviour of token holders is detected.

Generally, a so-called decentralized application (dapp) is used to interact with a blockchain-based system. This dapp can be implemented in collaboration with goodcarbon and further tokenization partners adhering to an agreed-upon standard. Part of this application could be a content management system for storing project-specific reference data that can be used by commercial partners.

Responsibility of the commercial design of platforms that utilize VCU Tokens for their respective business cases would remain with tokenization partners like goodcarbon. Also, the primary contact for buyers to deal with VCU Tokens would be goodcarbon as tokenization partner and commercial partner. On the one hand this requires that Verra and goodcarbon agree upon common policies for identification and background checks of buyers. On the other hand, this separation of work would relieve Verra of these duties which allows to exclusively focus on the certification aspect instead. To sum up, Verra acts here as an originating certifier and “watchdog” for on-chain transactions that contributes to and utilizes a common infrastructure. goodcarbon as tokenization partner caters the commercial needs of buyers by contributing to and utilizing the same common infrastructure.

Another possible option is that Verra not only acts as originating certifier but also provides the entire token-based infrastructure that was described above. goodcarbon as tokenization provider and commercial partner would then rely on this infrastructure to cater the business needs of their buyers. Here we foresee that Verra is the primary contact for onboarding new project partners and buyers as Verra, as is the case with the Verra Registry, provides most of the infra-structure. As requirements for project partners’ and buyers’ onboarding differs considerably from jurisdiction to jurisdiction, this might not be a viable approach for all commercial partners such as goodcarbon.

(c) VCU Token Life Cycle (Retirement, Reactivation)

The entire token life cycle happens on-chain (see Figure 1 and Fehler! Verweisquelle konnte nicht gefunden wer-den.Fehler! Verweisquelle konnte nicht gefunden werden.) so that no reconciliation with the Verra Registry is required.

(d) Market Need and Evaluation

Climate change is a global phenomenon that requires a global transaction system for carbon certificates and derived products. Blockchain technology and its application tokenization allows building a modern infrastructure for these global value transfers. There is definitely a market need for the outlined decentralized infrastructure, but such a token-based infrastructure is not viable by sidestepping established players in the voluntary market for carbon credits. The proposed infrastructure should and must embrace established players and provide a modern infrastructure for global value transfers that are transparent, traceable and immutable. As it naturally makes sense in this context, we are com-mitted to utilize a public blockchain network with small energy footprint. While this has been a problem in the past, there exist enough networks today with minimal energy consumption (Ethereum, Polygon, Celo, Chia, etc.) to build proposed standardized infrastructure for creating and transacting VCU Tokens. Besides fostering this paradigm shift one of the crucial practical advantages is that instead of building parallel silos that need to be synchronized, we propose an infrastructure which avoids error-prone reconciliation altogether.

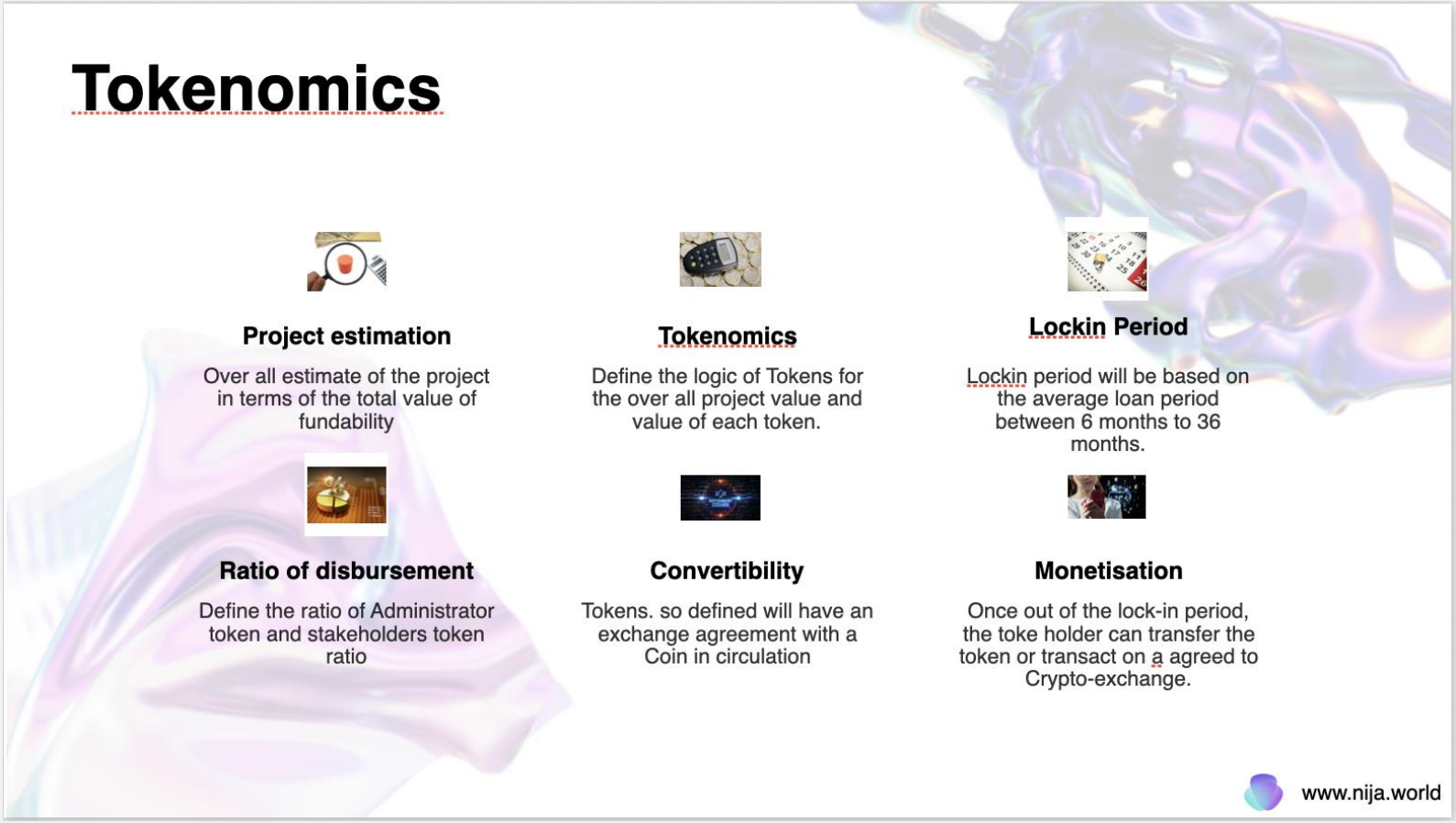
29	We generally support Verra's immobilization approach; however, questions about how it will be operationalized remain, and these uncertainties affect what infrastructure requirements may be necessary to ensure successful implementation. We acknowledge the risk of public confusion Verra believes arose from certain Web3 platforms' retirement of VCUs prior to tokenization. Ironically, that confusion was the unintended consequence of efforts by those platforms to address perceived deficiencies of transparency and operational speed in the existing registry system. Public ledgers, by their nature, are more transparent. They are capable of recording transactions instantly, immutably, and with far greater levels of security. Retiring purchased VCUs prior to tokenization was a stop-gap measure intended to leverage these advantages of DLT by taking the credits entirely on-chain. If, however, retirement of subsequently tokenized VCUs on Verra's registry is not feasible because it signals consumption of their environmental benefits prematurely (i.e., before their corresponding tokens are burned), Verra has no choice – short of moving its registry entirely to a public ledger – but to maintain sub-accounts of VCUs that have been tokenized. The challenge is keeping the status of the VCUs immobilized in these accounts synced with their on-chain counterparts. Verra proposes to require authorized tokenization platforms to provide it with transaction information, including both "creation" and "use" of on-chain VCU-backed credits. Of course, Verra would always be notified when VCU-backed credits are minted. Putting aside increasingly likely scenarios in which third-party platforms faithfully apply Verra methodologies in conjunction with powerful dMRV tools in order issue tokenized credits directly to low energy, low carbon, public distributed ledger networks where trading can occur -- which may require a separate dialogue with Verra -- right now web3 platforms seeking to mint VCU-backed tokens must first acquire VCUs, and in large numbers. Very soon thereafter, these platforms must ask Verra to transfer specifically identified VCUs to their immobilization accounts. All of this provides Verra with adequate notice without imposing undue burden. However, we respectfully submit that any on-going duty to transmit disposition information to Verra would indeed cross that line. Fighting climate change means encouraging innovators such as the undersigned to enter this market, and introducing unnecessary costs will have the opposite effect. Fortunately, however, in a distributed ledger environment Verra itself -- no less than any member of the public -- is best positioned to discover this information.
30	We believe that a transparent and reliable infrastructure is needed for participants in the VCM. It is important to use the information and experience Verra and other registries have to identify ways that blockchain technology can help leverage and enhance transparency and accountability in this space. As a threshold matter, having clear standards and definitions of what immobilization, retirement, and burning mean may provide a deeper and more granular understanding of what information is being tracked. This will also help differentiate whether a participant is engaging in a positive climate action, redeeming an underlying carbon credit, or engaging in financial like activity on the secondary market. Market participants, whether issuers or beneficiaries, will benefit from a publicly accessible dashboard or public ledger, which by its nature provides the needed transparency and auditability. This public ledger would also allow visibility into the VCM for individuals and companies that may not have already established Verra accounts or who may be new to this space.
31	Access to Verra's API and requirements related to tokenization (methodology, minting and retirement process, data schemes and all the information needed).
32	Key Takeaway: Immobilization is not required to create a robust framework for tokenization, and Verra should enable third party tokenization via "legal immobilization." In the long-run, a technology-based immobilization and reactivation approach is a compelling solution. Flowcarbon stands ready to help.

	Flowcarbon believes that the measures outlined in our response to Question #1 above, combined with contractual obligations that a Tokenizing Party has to Supply Partners (i.e. those who transfer VCUs for tokenization to a dedicated Verra warehouse account), creates a sufficient framework for tokenization without the need for an immobilization "feature" technically built into the Verra Registry. This could be considered a "legal immobilization" approach rather than a "technology-based immobilization" approach. Additionally, we suggest that, should Verra decide to incorporate technology-based immobilization and reactivation features into the Verra Registry, Verra should have an initial phase during which it allows tokenization by third parties that agree to the updated Terms of Use outlined in our response to Section 8 and therefore have processes and disclosures in place to prevent double-issuance and double-use even without an immobilization state. This initial phase could begin even before the technology solution is fully implemented, as it may take considerable time. As an example, this is similar to the phased approach to tokenization being explored by Gold Standard, in which the initial phase is to allow tokenization by third parties while they consider implementing a native tokenization solution. Should Verra begin to make technology changes to facilitate tokenization, Flowcarbon believes that an API is required in order to enable the seamless bridge between the on- and off-chain markets to have an efficient, connected market with effective price discovery. Note that, should it be of service to Verra, we stand ready to partner with Verra and any technology support providers to build an API to enable a well-functioning marketplace. This API should: ● Implement an open authentication protocol that can delegate rights from any Verra account holder to an approved Tokenizing Party. ● Expose functionality for the Tokenizing Party to: immobilize, reactivate and retire credits on behalf of the Verra account holder. ● Make the inventory of a Verra account easily readable. ● Ideally, enable the direct transfer of VCUs between Verra accounts. In addition, Verra would be required to update its infrastructure to enable the immobilization and reactivation states that do not currently exist.

1.3. Is there a market need to provide for the reactivation of immobilized VCUs, as long as any related crypto instruments or tokens were not used for any other purpose and are destroyed as part of this reactivation?

#	COMMENT

1	This is again arrived at based on the Tokenomics exercise. You may please refer to the attached PNG file titled 'Tokenomics'

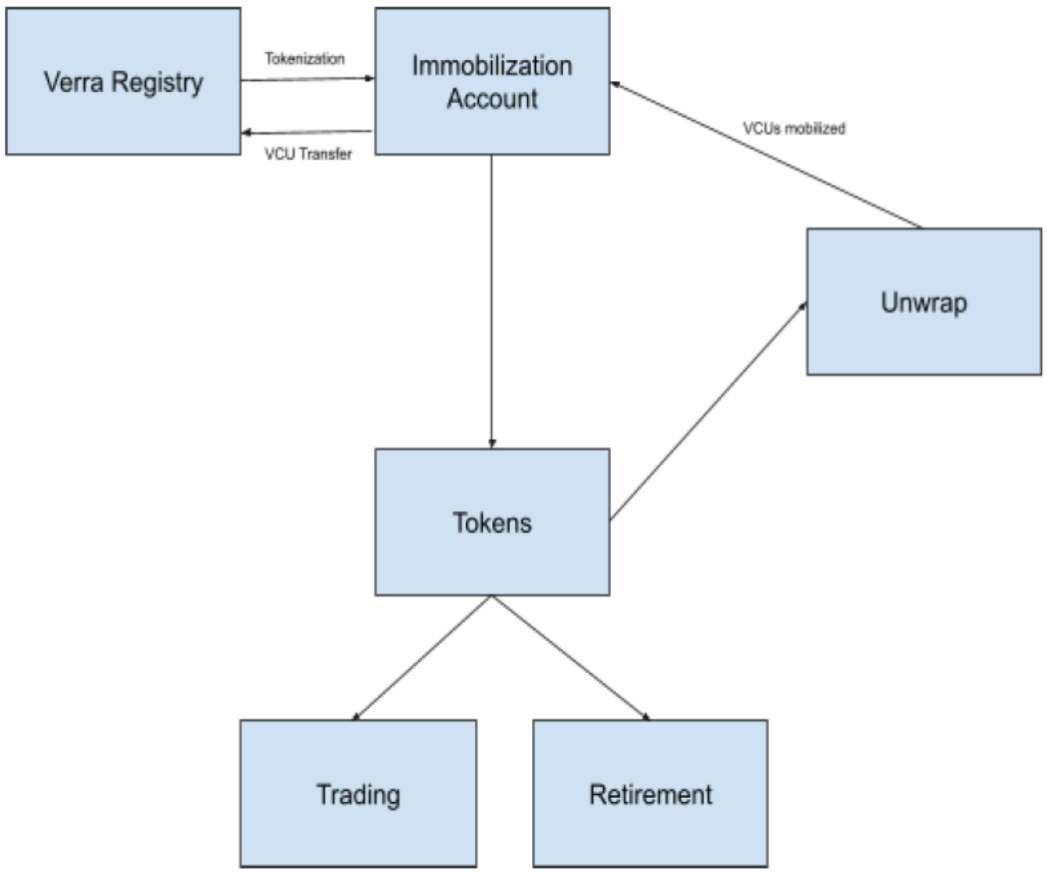


2	This would be very difficult, and another reason to not go down this path
3	VCUs are meant for environmental protection and the prevention of global warming at their core. We do not see a need for the reactivation of immobilized VCUs as this would create wide ranging complexity and given the nature of blockchains, the tracking of tokens to determine whether they have been used or not will be extremely difficult for Verra.
4	Yes, the use of crypto-based solutions doesn't imply that those VCU-backed crypto instruments will be widely used or bought, so the issuer could want to reactivate immobilized VCUs for strategic purposes.

5	The need is not evident at this point, but may well emerge as experience with tokenization increases.
6	Once the carbon credit is tokenized, it is an integral part of a utility token, that is, it is no longer a simple VCU and becomes a cryptoasset in a system, therefore, if it will use for any purpose other than compensation through the token system, maybe can generate procedure integrity doubts. We would not recommend this approach.
7	The mechanism of reactivation of immobilized VCUs is necessary and will also provide the ability to revoke tokenized obligations (crypto instruments and tokens) in case of possible technical failures or attacks on the blockchain network in which the tokenized asset is stored. Thus, it is a third-party risk protection mechanism for VCUs market participants.
8	Yes. We should see web3 as an extension of existing liquidity rather than something entirely separate, and so existing functionality for issued credits should extend to tokenized credits as well. This will ensure the on-chain and off-chain carbon markets function as a single connected market, rather than two separate markets. Both on- and off-chain carbon players would benefit from a standardised API design that all registries could conform to. This would enable the ability to ensure credits have been immobilised or custodied by a bridging protocol and align the block serial numbers. We suggest that the capacity to 'un-bridge' or re-mobilise the credits will avoid fragmenting liquidity in the market. All events should return responses (success, failure, error) that ensure the tokenising entity and the registry are fully in sync to prevent double counting or misalignment errors.
9	• If there were a way to bypass the reactivation process and allow the owner of a token to exercise rights of the VCUs within that token, that would, in our minds, create a straight forward process for token holders to interact with the Verra Registry • This would require reporting from platforms to Verra pertaining as to which specific tokens relate to which specific VCUs within the Verra Registry. This approach is straightforward within NFM's current blockchain technology where individual VCUs will be tokenized and transacted. • In our minds this approach is untenable for parties that wish to bundle, securitize, or create a synthetic currency via VCUs, which is steadfastly antithetical to NFM's approach.
10	It is assumed that an immobilized VCU will be trading in various exchanges and ATS platforms, and with the heuristics and empirical data available, which is limited in scope, we do not see a reason to reactive an already immobilized VCU unless the owner wants to burn the token and exercise rights. However, there may be a case if market participants have legitimate reasons for reactivation without burning a token. For example, suppose a VCU token holder is looking to sell, but the buyer does not want to take delivery in tokenized form. In that case, the token should be burnt, and the VCU should be remobilized, but that remobilization can only be made if, for example, Verra, Securitize, and the buyers approve. Moreover, and to protect the integrity of a tokenized VCU, only regulated exchanges and ATSs that are members of a Self Regulatory Organization (SRO) and governmental bodies such as FINRA, CFTC, and the SEC should be allowed to resell tokenized VCUs. For instance, DeFi platforms that do not KYC their customers or who are not registered with an SRO or standardized rule-making body should not be allowed to trade tokenized VCUs, unless a case is made, and they can demonstrate their platforms have the proper controls in place to prevent fraud and bad actors.
11	With the option of reactivation, platforms may disregard the true quality of credits and propagate the circulation of outdated credits. Consumers would be less concerned about the quality of credits they are buying given that there would be an option to reactivate it if the carbon credit is left undesirable eventually. This runs contrary to carbon credit's true purpose of driving positive climate change.

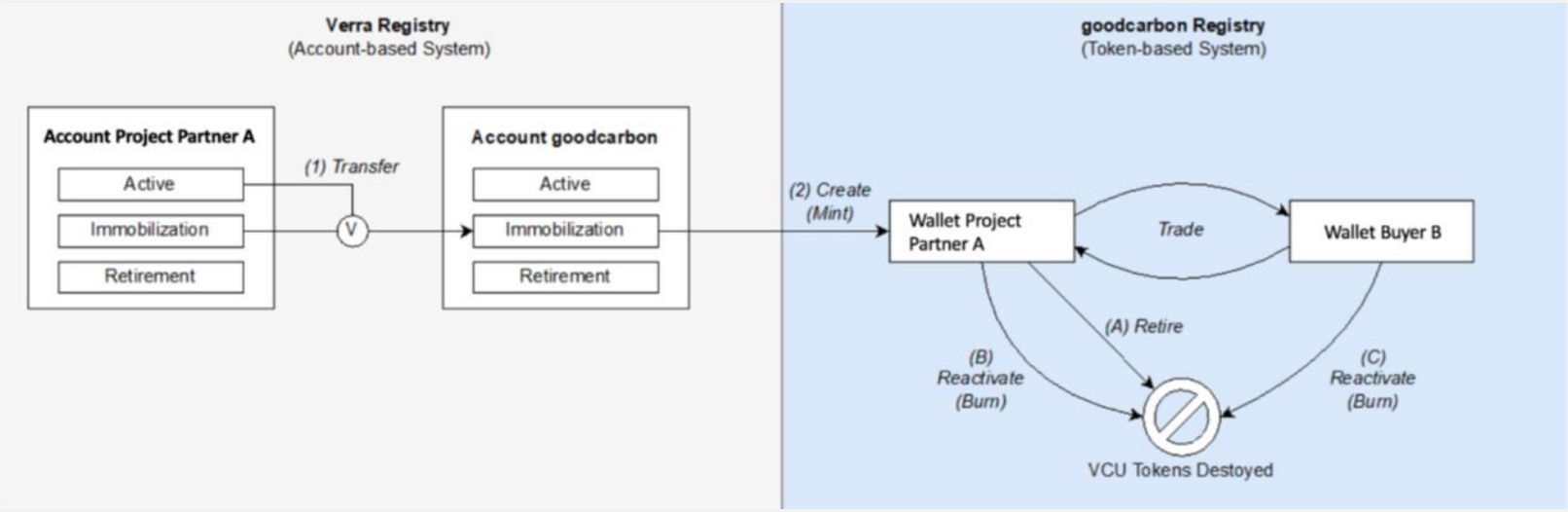
	As such, guidelines should be in place, where previously immobilized carbon credits that no longer meet current standards are discouraged from reactivation, since they no longer bring about positive climate change, being undesirable to corporates and individuals. Reactivation should also be transparent for its purposes, which may be for bona fide reasons like reversal of errors etc
12	Potentially there could be a requirement for this. A participant buying a crypto-instrument on an exchange for instance, may want to put the VCU into their VERRA account, in which case the crypto-instrument needs to be burnt, the VERRA record updated to show the crypto-instrument's destruction and then the actual VCU's reactivation, so that the participant could move into the account at VERRA.
13	If tokens are associated authomatically once the emission reduction is calculated, Vemo does not see the need to provide for further reactivation of immobilized VCUs. With access and availability to project proponent database, Verra can visualize all tokens (VCUs) created and might delete them from Verra registry if needed. Using this methodology, there is no reactivation process required and Verra ensures that tokens are not associated to another VCU.
14	There is a compelling market need to provide for reactivation of tokenized VCUs—which we refer to as redemption. Since Toucan's launch in October 2021, we have been advocating for a clear procedure for such a process to enable a 'Bi-Directional Bridge' and always wanted it be in line with our deterministic principles and approach. Therefore we are excited that Verra is exploring this option. A two-way bridge will eliminate the 'lock-in' risk in an on-chain market and enables token holders to respond to price differences both in the off-chain and the on-chain market. Traders performing arbitrage trades will bring prices on-chain and off-chain closer together. This will increase the likelihood of high-quality credits being tokenized. With off-chain-on-chain arbitrage being less of a reason to bring carbon on-chain, the focus will move more towards the value of liquidity around pools and other tokenization benefits that drive the demand, e.g. greater utility and integration of carbon into on-chain protocols, treasuries, and on-chain climate action claims and labels. When Verra fully integrates with authorized tokenization platforms, we expect a higher number of institutional players embracing tokenized carbon. This will bring traditional demand on-chain, thereby reducing the need for redemption and reactivation. However, we assume these systems run in parallel for the time being because some organizations will need to implement internal processes and clearances to handle tokenized credits. For these reasons, we urge Verra to maximize flexibility for users and credit owners while using safeguarded infrastructure by allowing the reactivation of tokenized VCUs.
15	Yes – there is certainly a need for this as token holders need to have the ability to take 'physical delivery' of the underlying VCUs (i.e. to have the underlying VCUs transferred to their own carbon registry accounts), in which case the corresponding AirCarbon Token is burned (destroyed).
16	CO2Network considers that there is a clear need for the reactivation of the VCU at the end of the trading process, specifically to allow the new owner of a VCU to claim its environmental benefit. In that sense, the tokenization of VCUs is only necessary for easy, rapid, international, and transparent trade (i.e. the change of ownership) of VCUs. Accordingly, we believe that exercising the environmental benefit should be possible only in possession of a VCU, for legal purposes. If that is not yet the case, creating the relevant regulatory amendments for this purpose would be necessary.

	On the PIVOT platform, once trade has been completed, the tokenized VCUs should be converted back to VCUs (and the VCU reactivated in Verra's registry) before the environmental benefits can be exercised, in this process the new owner of the VCU receives a VCU that clearly states this new ownership. Indeed, CO2Network assumes that we should distinguish between reactivation and use of environmental benefit, where: • Reactivation means that a VCU-backed token is destroyed and that the VCU is now available and can be used only in VCU-format. • A reactivated VCU whose environmental benefit has not yet been exercised and whose expiry date has not yet passed could technically be immobilized again if the new owner of the reactivated VCU wishes to tokenize it for trading on a blockchain-based platform. • To exercise a VCU's environmental benefit the new owner of the VCU would have to actively do so and inform Verra of this, for Verra to mark this as 'retired' in its database.
17	Immobilized VCUs should always have the option to be unwrapped. Every tokenization protocol must have a method to unwrap credits to offset any negative impacts of commodification. Furthermore, users who want to move their tokens from one protocol to another will be able to unwrap and wrap them again. While tokenization does improve the VCU supply chain credibility, the actual use of the carbon credit for the purpose of retirement should not be overlooked. Too much attention towards tokenized credits becoming commodities that can be arbitraged in a speculative market will result in the verification scheme not driving the intended outcomes of retirement. Corporate buyers will still want to unwrap tokenized credits (if purchased), for retirement. Those corporate buyers may not be currently procuring Carbon credits due to the gaps present in traditional credit verification methods that a tokenized solution would address.

	Please refer to the diagram below: 
18	A Carbonplace wallet-holder may wish to take direct ownership of a credit in their Verra account. In this 'offramping' process, an ownership token would be marked as 'off-ramped', and the corresponding VCU would be transferred from the Carbonplace omnibus account into a specified customer Verra count. For the avoidance of doubt, this would not be possible after a token (and the corresponding credit) had irreversibly retired.
19	Two way bridges are encouraged. Different market participants require on chain or off chain assets, on different blockchains, to which Verra should be interoperable and chain agnostic.
20	We imagine the entry might have a lifecycle of :

	Issued and not represented by a token Issued and immobilised and currently represented by token A issues and immobilised and now represented by token B If token B has zero market value, that already implies someone has registered it as 'used as an offset' (or verra have declared the project physical effects to be over), but it would presumably be a good cross check for Verra to mark it as 'used' in a lookup available to third parties, if Verra can gather that information. Possibly there are arguments for remobilising in the case where a company that owns tokens goes out of business and the administrator isn't able to find the private key to sell the tokens, or where a private key is compromised and a company wishes to regain control of their stolen credits (potentially marking the credits worthless).
21	Yes, I think this is a valuable option for tokenizing projects. But this again requires effective two way detailed docking between the VERRA Registry and the tokenized credits. However, there are also some major risks which VCS must eliminate: • VCS has no control over the status of tokens after immobilization/tokenization has taken place. However, if it is to reintroduce tokens as mainstream credits, VERRA and the traditional VCM would inherit all such operational risks as impacted the VCUs whilst tokenized. What would these risks comprise (particularly if the tokens could have participated and been impacted by creative wrap instruments)? How would VERRA assess and manage such risks? • How could such risks then impact the mainstream non tokenized VCM if we have such a two way street? • For example, reconversion from tokens to VCUs might increase volatility risk in mainstream VCM from the token market – and we all know how different crypto markets are relative to pricing volatility! • Could VERRA therefore be placing its mainstream VCUs at risk from engaging in this tokenizing system? Not just reputationally (in terms of risks to its own organization) but structurally if the two markets are to have two way fungibility?
22	Reactivation is absolutely necessary to provide the market with arbitrage mechanisms, allowing the flow of assets to the systems with the most demand for them. Removing the ability to re-activate VCUs reduces the number of potential end-users for these services, as it can't be used as an intermediate step within a procurement process for end-users who are not interested in on-chain retirement. The lack of arbitrage mechanisms would make any single isolated system prone to higher volatility while also limiting the benefit to the carbon markets as a whole. As an additional note, the wording "used for any other purpose" is vague and can cause problematic interpretations. If a ton of carbon is used as collateral in a lending platform, would this qualify as "used for any purpose"? Environmental Assets may accrue new forms of utility not currently seen in the market (for example unlocking features in some other protocol, ownership being incorporated in rewards programs, functioning as an intermediate step within some other form of value transaction).

	Reactivation should be possible for any asset as long as its Environmental Benefit has not been claimed ie retired. It should be noted that Verra should be mindful of the process to allow immobilization to be reversed, as it can place a significant administrative burden on the organization.
23	Yes, both the project proponents as well as intermediaries and users of VCUs may require reactivation of immobilized VCUs to meet their market needs for trading purposes and company policy needs for retirement purposes.
24	Reactivation for unretired tokenized credits provides an avenue for the movement of VCUs both on and off the blockchain, allowing for migration between different Tokenizers and mobility between different market arenas. This minimizes lock-in associated with Direct Tokenization, though as outlined above. Secured Tokenizers should have more sophisticated compliance and technical guidelines than Direct Tokenizers because of the risks associated with reversible tokenization which we outline and address above. We align with IETA guidance that redemption of immobilized VCUs should only be possible for a minimum unit of one tonne.
25	In our view, no
26	We believe this is not the case. Again, in the case of a fully native on-chain VERRA registry such a reactivation would easily be possible via a smart contract.
27	We believe the main reason to provide the market the possibility of reactivation of immobilized VCUs is to give the project partner and issuer of VCU Token full flexibility on their sales channels. The project partner could decide to sell a VCU Token in form of a VCU again to a buyer that is only interested in purchasing the VCU in form of a VCU and not in form of a VCU Token. In case a project partner requests to “de-tokenize” their VCU Token, the VCU Token needs to be burned and the underlying VCU in the immobilized account is moved again to the active account (see for example Fig 1 in submission document).



28 We generally support development of reactivation, sometimes referred to as two-way bridging. If the voluntary carbon markets evolve as we predict, moving steadily and irrevocably toward public distributed ledgers supported by robust dMRV solutions, legacy web2-based registries will eventually be discontinued. In transition, however, making provision for tokenized credits to revert to their source registries is prudent. It ensures that, should any given web3 platform be disrupted, a means exists to return tokenized VCUs to Verra custody, either permanently or temporarily, to allow for those credits to be safely transferred to another public distributed ledger. Ultimately, enabling this functionality will help to ensure that all voluntary carbon credits can gain the benefits of tokenization, from immediate global settlement, to double spend protection, to enhanced market access and connections to DeFi applications.

However, to operationalize reactivation effectively, Verra should also be attentive to and address three scenario risks: (1) that tokenized carbon credits become inaccessible (e.g., keys are lost); (2) that web3 platforms with whom Verra is directly partnered are hacked and tokenized carbon credits are stolen; and (3) that reactivation is requested by individual or corporate end-users of tokenized VCUs (i.e., the entities seeking to bank their environmental benefits), or by web3 platforms further down the value chain with whom Verra does no enjoy contractual privity.

We recommend that reactivation be disallowed in the first scenario. Verra's maintenance of parallel records should not operate as insurance against loss. Rather, if a tokenized VCU can no longer be accessed, or if it remains inactive -- i.e., held without consumption of its environmental benefit and subsequent burning of the token -- beyond a fixed period of time, Verra should transfer the underlying immobilized VCU to a separate public sub-account for "presumptively canceled" credits. Similarly, we recommend that reactivation be denied in cases of theft. Verra's focus should remain on market integrity assurance, and its priority climate change. Where a tokenized credit is stolen, it remains in circulation, and to allow reactivation would be to sanction double counting in the name of consumer protection. Finally, we recommend that only first-order contractual partners of Verra, not consumers directly, be eligible to request reactivation. Among other concerns, administrability would be unreasonably burdened without such a limitation.

29	We believe that reactivation of immobilized VCUs is important but complicated at this time. There have been different solutions proposed to harmonize on and off chain data and we are closely following the various efforts across policy institutions to increase interoperability of data systems, the Climate Warehouse of the World Bank for example. We believe that carbon markets will be hybrid for a period of time because of the complexity of integrating the carbon market value chain and the need to transition to a fully digital system, including interoperability across registries, will require some time. We think two-way bridging is a meaningful way to allow the market to digitize in different phases. The ability to arbitrage the market between those credits available on chain and those remaining off chain is therefore critical to ensure that the prices for the same carbon credits available on and off chain are as close as possible. Fundamentally, the ability to move these credits between hybrid markets is critical to ensure true price accuracy for purchasers so long as both markets exist.
30	Yes, tokenized credits should be intelligent commodities traded, claimed, burned but also cancelled. Therefore, blockchain should represent a new distribution channel, not a complex and irreversible process.
31	The critical issue for VCU market products and platforms built on blockchain technology and web3 is what significant advantages they provide to market participants when compared with centralized markets, principal among them the reactivation of immobilized VCUs. Among other things, web3 VCU market products and platforms allow market participants to engage in dis-intermediated peer-to-peer carbon credit purchases, hold carbon units independently, and retire carbon units with full transparency on the distributed ledger, such that any viewer of the blockchain ledger can see all purchases of carbon credits, what entities purchased them and from whom, and the exact time of retirement. Centralized markets have none of these features. The future holds significant promise that web3 VCU market products and platforms will give rise to additional benefits as well. For one, we anticipate that they will improve the verification of carbon credit authenticity through embedded metadata, such as unique grid coordinates from project locations that can be stored directly on the blockchain network. Improved verification of carbon credit authenticity will increase transparency in the VCU markets. In addition, we believe that blockchain technology and web3 will facilitate larger VCU markets for the following reasons. First, web3 markets have no limitations on the times when or places where market participants can transact. The web3 market runs 24/7/365, regardless of global location, creating enormous convenience for market participants. Indeed, web3 markets already facilitate trillions of dollars in transactions, 10 and tokenized VCUs could plug directly into this existing and highly dynamic market. Second, web3 VCU markets can also integrate with traditional VCU markets. The mechanism to do so is known as a bi-directional or “two-way” bridge, which allows market participants to freely convert assets to and from blockchains. 11 Such bridges are features of pending web3 VCU markets, like Flowcarbon’s, 12 so market participants will be able to de-tokenize, retire, or use VCUs freely in the traditional marketplace. The ease of moving from decentralized to centralized ledgers enables liquidity between web3 and centralized markets, which further incentivizes growth of the total VCU market. These are the tangible benefits of web3 VCU market products and platforms that we know of now or what we anticipate market participants will build in the future. However, the market is still in its infancy, and we are confident that additional advantages of web3 VCU market products and platforms will become clearer as the requisite infrastructure develops.
32	Key Takeaway: Reactivation (a.k.a redemption) of tokens for VCUs is a necessary function for a healthy and efficient market. Flowcarbon’s redemption process is simple and would not require any technology updates on the part of Verra.

The ability to redeem a tokenized VCU is a critical function for any system or protocol of tokenization. This function helps to create an efficient market by allowing protocol users to take VCUs back off chain. This reactivation, or "redemption" as we call it at Flowcarbon, is a necessary aspect of our "two-way bridge" (i.e. the ability to redeem a token for a VCU) that ensures the off-chain and on-chain carbon markets remain connected.

There are, broadly speaking, two major benefits to a two-way bridge:

1. Ensuring price stability; and
2. Enabling a thriving, growing VCM

Price Stability

The ability to reactivate immobilized VCUs facilitates stable pricing for tokenized VCUs because it enables arbitrage that would naturally drive any price difference between the on- and off-chain markets to zero.

How does "redemption" facilitate price stability? If the price of on-chain carbon tokens suddenly were to spike above the off-chain price of the underlying VCUs that underpin those tokens, we would expect to see more VCUs brought on-chain as tokens, increasing the supply of tokenized VCUs and driving down the on-chain price. The same would be true in the reverse situation in which the price of tokenized VCU falls below that of the off-chain underlying VCU. On-chain credits would be quickly bought up, redeemed, and then sold off-chain for the higher price. Without redemption, the tokenized VCU market and non-tokenized VCU market would be disconnected, leaving the market unable to reign in excessive speculation.

A thriving, growing VCM

A two-way bridge between the on- and off-chain world is necessary to enable market growth. The ability to reactivate tokenized credits provides web3 market participants, especially Supply Partners who are project developers, with the confidence necessary to trust that they can secure the best value for their VCUs, which includes the ability to reactivate their GCO2s if the opportunity to sell off-chain in the traditional market surfaces.

Flowcarbon's Solution

In Flowcarbon's tokenization protocol, the process for redemption (i.e. reactivation) is simple and straightforward:

1. A Flowcarbon token holder can make a request to "redeem" their tokens for VCUs via a web interface on the Flowcarbon website. To do so, they must be a Verra account holder.
2. The token holder is presented with a list of VCUs then present in the tokenization account.
3. The token holder selects the VCUs they would like to receive.
4. The token holder sends a number of tokens to Flowcarbon's wallet.
5. The tokens are immediately removed from circulation by Flowcarbon.
6. Flowcarbon transfers the selected VCUs to the requestor's Verra account.

	This process happens within one business day.

1.4. What are the legal and operational implications of a crypto instrument or token being fractionalized?

#	COMMENT
1	This depends on the Countries of operations. One key aspect here is to keep a distinct differentiation of Tokens which are securitised from Crypto currencies (which are primarily non-securitised and value is notional). Tokens that are fractionalised essentially offer security to smaller investors. The relationship between Tokens and Crypto currencies can be established independently and in the countries where there may be a restriction, the (transactional) association can be handled outside of those geographies. Most important aspect of the whole thing is to remember, is that Tokenisation is in its early stages and there are no compliances in place in most parts of the world. Compliance always follows the business. Since, Tokenisation is the way to reward all the stakeholders, its most likely that every countries compliances will be more favourable to tokenisation and also fractionalised tokens on securitisation.
2	Another reason to not go down this path. Verra would probably have to fractionalize VCUs
3	The fractionalization of tokens makes them difficult to track and the KYC would become more complex to identify all partial owners of tokens. We do not fractionalize tokens and all tokens are transacted in full as one unit.
4	A crypto instrument or token being fractionalized makes it more demanding to integrate the resulting fractionalized life cycle with its VCU origin, like it being just “partially” retired or even reactivated.
5	Fractionalisation should only be allowed for secondary instruments. Tokens representing certificates/ VCUs should be atomic.
6	We saw that fractionation is possible, as long as the integrity of the VCU is respected, so, while the Serial Number is being used by the tokenized system, it can be considered like a lock of this Serial Number is being used for fractionation until it completes the totality of the VCU (1 ton), additionally there may be a maximum time that this VCU needs to be offset/retired once it has been fractionated. Ambify does this way and believes it is sufficient to maintain the environmental integrity of the credit.
7	It is important to ensure a transparent and fair mechanism for fractionalization and securitization, guaranteeing the proof/origin of liquidity using the UTXO mechanism (see above).
8	No significant inputs here. (their quote)
9	• Operationally, it is a fairly straightforward process for a blockchain

	• The largest operational hurdle in our mind occurs when a fractional owner of a credit wishes to exercise their rights over the underlying VCU. • One solution is to allow for fractionalization of tokens, but with a minimum fraction of 1 VCU if the holder of that token wishes to exercise their rights over the underlying VCU. • So long as the credits remain live, and active, and no one party claims the underlying rights to the VCU, we see no issue with fractionalization below the 1 VCU level.
10	The fractionalization of asset backed VCU tokens and native crypto instruments may be classified as securities. If whole or fractionalized VCUs are deemed securities, they must either be registered with the SEC or remain unregistered using an exemption such as Reg D, S, CF, or A. Furthermore, once unregistered fractionalized security tokens are held for at least 6-12 months, they have the potential to be resold to third parties on various ATS platforms, such Securitize Markets, and exchanges, provided they conform to federal and state securities laws. If fractionalized VCUs are deemed securities and trade on unregulated ATS platforms or exchanges, the SEC or other regulatory bodies may sanction, fine, require registration, or order the VCUs to be divested or wound down. Additionally, and as mentioned in Q3, the parties that facilitate the trading of tokenized VCUs should be regulated by an SRO, governmental body, or a standard rule-making authority. If the tokenized VCU is deemed a security under the Howey test or the VCU operator is under SEC scrutiny for being classified as a security, having the tokens trade in a regulatory compliant manner from the start will not only reduce conflict, but will protect the VCU operator and holders of their offsets. FINRA, the SEC, and CFTC have designed reasonable and fair rules to protect market participants, and these rules should also apply to any type of value traded in tokenized form that are classified as securities, including VCUs. In addition to being an SEC-approved digital transfer agent, Securitize Markets operates an ATS under a separate broker-dealer entity, which is both a member of FINRA and the SEC and has the ability to list and trade tokenized VCUs.
11	Previous KYC checks done by Verra for the instrument should also be imposed on those fractionalising it. To continue upholding end to end traceability and transparency of credits, it is equally important for disclosures to be made transparent on the Verra Registry even on a tokenised or fractionalized basis. This is especially crucial in consumer engagement when carbon credits are fractionalized to increase accessibility to retail consumers. Transparency allows for differentiability between tokens with buyers able to access project information backing them more easily, supporting projects which they are passionate about. Currently, Verra's minimum retirement unit is 1 carbon credit. Blockchain technology could come in to make it technologically feasible to record retirement of fractionalised credits (< 1), while ensuring a streamlined and digital record of retirement activity. In such circumstances, Verra could possibly look to facilitating the seamless record of individual fractionalised transactions through providing APIs for platforms to push data to Verra seamlessly. This helps to promote full transparency amongst individuals and further engage the masses in the net zero movement. Given the increased demand for carbon credit activity within APAC, especially with fractionalisation of carbon credits expected to drive retail demand, it also would be helpful for Verra to set up a chapter within APAC to cater to increased volume.
12	Fractionalisation, should only be considered in certain circumstances and certain types of high value underlyings, given the likely operational impact that a participant could not use a fraction of a VCU backed crypto instrument. If fractionalisation is to be pursued VERRA needs to ensure fractionalised retirement of VCUs is enabled.

13	Emission reductions shall not be fractionalized to be acquired by many interested parties. If that would be the case, there is currently no legal regulation that apply to fractionalization of NFTs. Each fraction owner might have a cancellation certificate for each fraction owned and once fraction-associated token is acquired, it can no longer be transacted or reselled. Must be cancelled and final property belongs to the entity that acquired fraction in the first place without possibility of using it to execute another action.
14	We assume that the term “fractionalized” in this question refers to a condition in which a token represents less than one tonne rather than the process of disaggregating a batch of tokens into individualized one-tonne tokens. Toucan Protocol sees significant value in providing the market with the utility of dealing in sub-tonne denominations. Many promising retail use cases, such as Point-of-Sale compensations, event-based compensation (like taking a flight or attending a conference) or real-time compensation (i.e. compensating for a days’ worth of datacenter operation) are already being requested by the demand-side and will likely become cornerstones of a universal scaling of carbon markets. Today, these use cases are being served already, but in highly inefficient and intransparent manner via manual aggregation of tonnages by cost-intensive intermediary business, which keeps this market segment from scaling more rapidly. Additionally, programmatic demand introduced by a rising number of web3 projects (e.g. building in compensation into micro transactions) can provide significant additional capital to flow towards climate action. Toucan Protocol firmly believes that these use cases should be supported with adequate accounting utility that enables transparent, auditable records of sub-tonne retirements. Since in the direct approach the environmental claim is embedded in the token, sub-tonne retirements should be possible. Toucan is able to address the challenge of synchronization back with the source registry in a design and implementation phase together with Verra, while tokenization, synchronization and de-tokenization will continue to be only possible in whole numbers of credits. Provided that all of the safeguards identified in our response to Q1 are in place, we do not see any additional legal implications associated with fractionalized tokens.
15	The main issue with fractionalization stems from the impossibility of reconstituting the original credit once it trades for retirement. The only way to address this is with native tokenization. If VERRA issues credits in token form it would enable fractional retirement. AirCarbon can provide functionality for this activity if native tokenization is chosen.
16	For the fractionalization and trade of fractionalized VCU-backed tokens to be possible on the PIVOT platform, a few key principles need to remain valid and be guaranteed by Verra. Legally, fractionalized tokens must have the same legal character as full (i.e. non-fractionalized) tokens. In other words, fractionalized tokens must be legally compliant, valid, and enable the exercise of VCUs' environmental benefits. Similarly, fractionalized tokens must also be able to function like full tokens operationally, and remain valid when issued, traded and claimed. But most importantly, for the trading of fractionalized VCUs to be feasible, Verra would have to guarantee re-convertibility of VCU-backed tokens into VCUs. In other words, Verra must be able to provide the final buyer of a fractionalized VCU-backed token with a valid VCU when the user claims it at the end of trade.

	As a result, limitations to token fractionalization might arise from limitations to Verra's registry, as the database entries will need to reflect not only the fractionalization of a VCU, but also the immobilization and reactivation of a VCU. To prevent this issue and enable the efficient trading of fractionalized tokens on the PIVOT platform, CO2Network recommends that Verra decide on a minimum divisible unit by which tokens can be fractionalized.
17	The possible legal and operational implications could include but are not limited to the following: • Fractional credits are not compatible with existing greenhouse gas emissions standards & annual reporting requirements where the carbon credits needed to be purchased are rounded off w.r.t emissions. Furthermore, fractional credits would be inconsequential to large consumers of carbon from an economic perspective. • Increase in liquidity from fractionalization will allow end-users to own portions of carbon credits that can allow them to offset carbon contained in their purchased products through microtransactions but also increases the likelihood of such fractionalized credits contributing to speculator trading as fractional tokens would be of a lower value and be purchasable by a larger section of the society that might not have interest in the underlying credit. • KYC should be mandated to ensure that the identity is verified for all beneficiaries trading and retiring tokenized VCUs. This needs to be in place to be able to track ownership to offline or off-exchange wallets however there is a risk that these channels may not have a KYC standard in place. • Fractionalization will be beneficial only when the fractional credits contain all the data that a full credit would contain along with the information pertaining to the fractionalization event
18	In this response, 'fractionalisation' of a token representing a single VCU means subdividing a single token into multiple tokens which in total equal one tonne of carbon removal / avoidance (i.e. one VCU). We would be keen to enter into a dialog in relation to the most appropriate means of fractionalising credits, to ensure the robust tracking of ownership and retirements of a fraction of a given issued VCU.
19	Fractionalization (and pooling) occur in other financial markets (e.g. Securitization tranches), but used in conjunction with ratings and due diligence approaches. As such we encourage and expect to see similar evolution in this market.
20	As long as the underlying physical effect can also be fractionalized (for instance it is a measurement of CO2e removal) we don't see a technical issue here and recognise the benefit of microtransactions. Where the token is being used to represent something like overall ownership of a project and its liabilities there may be a benefit to marking the token non fungible to be sure that one entity always remains responsible. On the topic of the instrument itself – from modelling we have carried out at the 'product' level for some large scale products, we do believe that a wide variety of sequestration opportunities open up if tonne-year pricing can be used, removing the need for sequestration to be >50 year, >100 year or 'forever' and allowing a large set of shorter term (5 year,10 year) technologies and processes to become viable, covering the important gap in the coming decades before larger scale emission and sequestration changes come into effect.
21	Given the pricing for carbon credits (which are modest per ton) the need for fractionalization seems low.

	This would also add complexity. Lastly fractionalizing could undermine carbon token security. Security in CC markets is essential. One way to attack a CC market is to launch trades which are so frequent that denial of service results. If you have a very low value fractionalization entry price, the fractional tokens can be used more easily to mount attacks on carbon token security. For example, if an attack needs 1m tokens, it would cost $10m at $10/token; but if fractional tokens were available for 0.0001 tons, it'd cost $1k. The barriers to assailing securing are clearly very different in each case.
22	Fractionalization opens up use cases that would otherwise be more difficult or unfeasible. This would be something like voluntary per-transaction offsetting, embedding climate action within the success of a protocol. Within the past year, we have already seen these themes emerge, such as in the KlimaDAO collaboration with SushiSwap. Fractionalization also makes it more accessible for retail use, especially where it concerns high-end Assets that demand a significant price. There existing digital services that already provide fractional retirements for Verra credits like Patch.io and Cloverly. From the perspective of Verra, these could operationally show up as aggregate retirements once they have accumulated to a sufficient enough amount to execute a retirement As Verra allows for bulk retirements, this seems unproblematic. **Patch's retirement beneficiary field simply reads "On behalf of Patch's customers and their end-users". Cloverly's retirement beneficiary field simply reads "Cloverly for carbon offset plug-in on retail websites."** If there are market operators who have been providing fractional VCU retirement to retail for already an extended period of time, there doesn't seem to be a clear reason why implementing this sort of solution for tokenized Assets would be problematic. If it is problematic, it's unclear why Verra has not enforced some sort of limitations on existing market participants or issued a clear statement on the matter as this has become the norm for such approaches. The re-activation of fractionalized units should not be possible, however. This would require system-level updates on Verra's part which don't seem to have significant advantages considering the solutions discussed in the previous paragraph. Additionally, this would likely have an undesirable impact on Verra's administrative capacity.

23	One of the most exciting parts of Blockchain Technologies is the possibility of mixing different protocols and smart contracts to create something new. Fractionalizing a Ton of Carbon Credits in fully fungible ERC20 tokens is one of these disruptions. In our humble opinion, Verra must check and consider the integrity of three functionalities that need the implication of the registry:
	
	• Issuance (From Carbon Credits to Token):
	  ○ Users registered on VERRA must have Carbon Credits in an Active Account (Primary or Sub-Accounts);
	  ○ Users in VERRA must use the registry to start the tokenisation process with one of the Authorized BSPs;
	  ○ Users then use the BSPs service to redeem the token;
	  ○ When Verra confirms the operation the tokens are transferred from the BSP to the User's wallet.
	• De-Tokenisation (From Token to Carbon Credits):
	  ○ User that have token and want to receive Carbon Credit must be registered on VERRA and have an Active Account;
	  ○ User through the BSP platform ask to start a de-tokenisation process. Tokens (at least one VCUs) are transferred from the user's wallet to the Smart-Contract;
	  ○ BSP forwards the request to VERRA through an API;
	  ○ When Verra confirms the BSP burn token and Verra give the frozen Carbon Credit to the User.
	• Retirement (From Token to Carbon Credits Offset):

	○ User through the BSP platform ask to start the Offset process. Tokens (at least one VCUs) are transferred from the user's wallet to the Smart-Contract; ○ The BSP forwards the request to Verra; ○ When Verra confirms the BSPs burn the token and transfer the Offset Certification (or number) to the User that made the original request. ○ If the BSP respects these functionalities and those are coordinated with the registry correctly, new business models on crypto may leave the registry's authority.
24	We do not see any major operational and or legal implication for fractionalized crypto instruments or tokens. Such a move will allow for wider market participation from individuals. By stimulating demand the move will lead to better liquidity in the carbon markets. Fractionalization of tokens may particularly be required for high priced credits such as those for direct air carbon capture and geological storage of carbon. One of the hurdles that can arise out of fractionalization is that the VCU will need to be active (immobilzed or otherwise) until all tokens are burnt that map to the VCU. E.g. if 1 VCU is split into 1000 tokens, then there will be a situation where 500 tokens are burnt after the end user consumes it. But the VCU cannot be retired until the remaining 500 tokens whose hashes are tied to this VCU get burnt. This can be solved by making tokens fungible, which adds to the complexity if token hashes are tied to VCU serial numbers.
25	KlimaDAO welcomes collaboration with key stakeholders in the VCM, including Verra to continue exploring regulatory questions in regard to tokenized carbon. Since February, KlimaDAO representatives have met with state governors and Members of Congress from both political parties on the Senate and House side to educate them on KlimaDAO's offerings and policy priorities. In addition to a number of productive meetings, KlimaDAO has played a direct role in providing feedback and expertise on Senator Cynthia Lummis' (R-WY) and Senator Kirsten Gillibrand's (D-NY) groundbreaking Responsible Financial Innovation Act to ensure that the crypto-focused bill encourages the growth and maturation of the industry while protecting consumers; this will provide new clear regulations that can make the market more accessible to newcomers. KlimaDAO has developed meaningful relationships with members of key committees including the House Financial Services Committee, Congressional Blockchain Caucus, Senate Commerce Committee, Senate Financial Services Committee, and Senate Agriculture Committee. In addition to federal legislators, KlimaDAO has met with state governors and other officials to advocate for smart regulatory frameworks for the ReFi industry at every level of government. Some general legal considerations associated with tokenized carbon credits: • AML regulation of tokenized VCUs should be proportional and in line with FATF's Standards on VAs and VASPs, due to new techniques in blockchain; • Vlinder Austria GmbH, a partner of KlimaDAO, has a legal opinion from law firm in Liechtenstein that 2-way tokenized VCUs and PCUs are utility tokens (not securities) in EU/MiFID II • KlimaDAO's legal team engaged a big 4 US law firm that confirmed that "In the case of the Token, assuming arguendo that it entailed a contract, it is clear that its underlying asset (be it the tokenized carbon credit, or the carbon credit itself) is not a security." for United States laws; • The legal team at C3 has a legal opinion from different law firms that confirms that 1 and 2 way tokenized VCUs are utility tokens under EU/MiFID II, British Virgin Islands and Cayman Island law;

	KlimaDAO is specifically concerned about the status of over 20 million VCUs tokenized via 1-way bridges; we have a strong opinion that the burning of Directly Tokenized carbon credits via the Contract's "retire" function is a correct claim of the respective environmental benefit - regardless of whether the retirement is fractional or whole-tonne. To support this claim, independent auditing can be conducted on public digital records, tying back from the retirement transaction that burns the tokenized credit, to the fractionalization transaction, to the original bridging event, and finally to the corresponding Verra registry serial number. Tokenized carbon markets should be open by design and permissionless by default, regulated at the edges. We do not believe fractionalization specifically introduces unique legal considerations, though operationally fractionalized retirement of credits tokenized by a Secured Tokenizer may require a mechanism for "batching" fractional retirements of a given project/vintage combination given the technical constraints of Verra's whole-tonne registry system.
26	As a credit is being tokenized, in some countries, Colombia included, there is still no clarity on how to tax the gains from the selling of the different transactions and how/who/where to charge. This also applies when the token fractionalized. Standards such as VERRA should support through general legal frameworks how will they ensure traceability in order to properly tax the tokens. A fractionalized carbon credit will implicate a higher level of complexity towards its traceability. As a result, it will be important to build a mechanism to ensure that the fractionalized token has a proper mechanism of traceability, whether it is with a sub-serial number related to the serial number for the actual carbon credit related to a ton of credit, or a new instrument.
27	We cannot comment on the legal implications, but operationally there would have to be an efficient system for quickly retiring VCUs associated with burned 'fractionalised' tokens. On the one hand, we believe there should be a prompt retirement in the Verra registry, following their retirement on a third-party platform (< 1 week). We also recognise how onerous this could be. Our suggestion is to set up an API or interface to link the two systems.
28	We believe there are no special legal or operational implications. However, such a fractionalization (which can anyway not be prevented by VERRA) would open the path to a wealth of new business models, e.g. carbon offsets directly tied to (small) consumer goods.
29	The legal implications of a fractionalization of a VCU Token vary depending on the jurisdiction under which laws the tokens are issued. From a regulatory perspective, the fractionalization can result in the relevant token qualifying as a security. This is be-cause the fractionalization may enhance the negotiability of the relevant instrument, which is a typical requirement for securities. However, in the EU, the classification as security also depends on the rights enshrined in the token. We would suspect that EU regulators will not qualify tokens which represent underlying VCUs as securities. In fact, we have received such feedback from the German Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistung-saufsicht, BaFin). The fractionalization also leads to civil law or governance challenges. If one (1) VCU is represented by a fractionalized VCU Token (i.e., a VCU Token split in fractional parts), the fractionalization of such VCU Token may raise issues regarding the effective exercise of rights granted under the VCU Token, namely the right of retirement. Assuming the VCU or the rights in relation thereto are indivisible, one issue concerns the question if the relevant jurisdiction acknowledges the co-ownership with regard to such indivisible rights among all holders of the fractionalized VCU Token. Furthermore, assuming this is the case, it will be crucial to understand if and how holders of the fractionalized VCU Token (i.e., the creditors) will be able to exercise the rights in relation to the VCU.

	goodcarbon contemplates to follow the 1:1 representation approach, i.e., that one (1) VCU is represented by one (1) VCU Token.
30	Here, we would offer certain high-altitude observations: First, Verra should distinguish fractionalization from pooling. The latter raises more worrisome legal and policy questions than the former. Pooling can be separately addressed at a subsequent date but is beyond the scope of this response. Second, Verra should be mindful of jurisdictional differences in the legal nature and policy approach to voluntary carbon credits. The compliance implications of fractionalization (or pooling) may vary across national and subnational environmental and crypto regulatory frameworks. A VCU-backed tokenized carbon credit might be understood as intangible property in one jurisdiction, or as a collection of rights enforced in contract in another. It may be created, traded, or retired/burned in the absence of existing climate policy infrastructure, or within the statutory context of a mandatory emissions trading system (ETS), which itself may be open or closed—i.e., surrender of voluntary carbon credits purchased outside a particular ETS' allowance allocation framework might be permitted to show compliance subject to quantitative and qualitative restrictions, or not. Third, Verra should be alert to the difference between the legal status of fractionalized (or pooled) credits themselves, and regulatory constraints that may be placed on or be necessary/appropriate to govern transactions in those assets. In the U.S., fractionalizing credits is unlikely, without more, to earn regulatory treatment as a derivative. With respect to pooling, securities treatment is more likely. The better analogy for fractionalization might be issuance of fractional shares of stock by publicly listed corporations, which is generally permissible. Finally, we acknowledge certain policy advantages of fractionalizing VCUs. Chief among these is environmental justice and accessibility, especially in the Global South. The cost per mtCO2e is projected to rise sharply in the coming decades. Whatsmore, it is essential for this to occur. But it is equally essential for the developing world to have access to climate finance and invest in decarbonization locally. Similarly, higher-cost removal projects, such as direct air capture, are currently so expensive that demand is low and uptake slow. Again, it is essential for this to change. While no single technology, policy strategy, legal reform will be sufficient to avoid the worst consequences of climate change, emissions reductions are occurring too slowly, and the world currently lacks enough arable land to rely on forestry projects alone. By fractionalizing VCU-backed credits on public ledgers, the customer base for direct air capture broadens dramatically, helping ventures such as Climeworks to scale. However, we also urge Verra to consider the countervailing policy advantages of integrating voluntary carbon markets with the >60 mandatory emissions trading systems worldwide. Without safeguards, fractionalizing credits at scale may decelerate progress toward this goal. Most national and subnational governments structure their ETS compliance obligations around allowances representing one mtCO2e each, which to our knowledge are rarely if ever fractionalized. In addition, eligibility criteria are frequently employed that may be impossible to satisfy if fractionalized credits with different attributes were later bundled into one mt units.
31	We believe that fractionalization may increase the composability (bundling) of like-assets and permit additional end-users to participate in the VCM. Operationally this may permit smaller purchasers, including retail purchasers (in this case meaning grocery vendors or the like), who wish to offset their carbon emissions, to participate in the VCM without sufficient resources to purchase tokens. There is also an argument to be made around the future opportunity of creating bundles of different types of localized environmental, ecosystem services and social credits - X% carbon credit, Y% biodiversity credit, Z% education credit, etc. tied to a specific community. Fractionalization has certain benefits to the market - in particular, the ability to seamlessly and quickly unlock the use of carbon credits to offset consumer purchases. For example, an e-commerce website could allow retail customers at the point of sale the opportunity to offset the environmental impact of a particular purchase, which is unlikely to be as much as one ton of carbon emissions represented by one carbon credit. While it may be

possible to structure such a transfer through the use of an institutional platform, as opposed to retail consumers purchasing and holding the carbon credit, there may be regulatory implications to this approach, discussed further below. Fractionalization may also open up potentially interesting opportunities in the nascent and growing decentralized finance (DeFi) market, which may increase the amount of capital flowing to carbon projects across the world.

We are also cognizant that Verra will need to consider the potential legal and regulatory issues in the jurisdictions in which it operates. In examining the potential landscape in the United States, we believe, first, transfers of carbon credits and transfers of functionalized carbon credits, under certain circumstances could be seen as value that substitutes for currency, which would mean that the Department of the Treasury's Financial Crimes Enforcement Network (FinCEN) may have regulatory jurisdiction.3 In certain contexts, an issuer of a carbon credit, the entity transferring the carbon credit or the transfer or use of fractionalized carbon credits, may be subject to Bank Secrecy Act (BSA)4 obligations. In the U.S., fractionalized credits, depending on their use or intended use, may also be evaluated or regulated as commodities or securities. If a carbon credit or fractionalized carbon credit is traded, pooled, or used for profit on a secondary market, the higher chance it may be considered a security in the United States. Each use case will require Verra to assess what legal or regulatory frameworks may apply, and what risk mitigation may be needed. Finally, and importantly, consumer protection is critical to a sound and transparent VCM market. Consumers must be aware that there are market conditions whereby the value of the carbon credits that are retired could depreciate in value.

However, we believe that there are also important potential positive considerations Verra should consider when evaluating fractionalization and pooling of carbon credits. It is possible to pool credits together based on vintage threshold or common methodologies. As described in more detail in "Scaling Voluntary Carbon Markets Through Open Blockchain Platforms"5, the ability to make both non-interchangeable credits more liquid and comparable could deepen liquidity markets, and allow for more diverse market participants. An increase in market participants could also mean more projects working on positive climate impact.

32 Legal uncertainty about MiCA opinions and rules related to utility tokens.

33 Key Takeaway: Fractionalization is necessary to unlock the substantial growth potential enabled by tokenization. Operationally, fractionalization can be easily handled and all interactions with the Verra Registry would occur in whole numbers. While the lack of comprehensive regulation comes with some level of risk, Verra would be insulated from this risk through the use of credible third parties for tokenization.

Fractionalization is a critically important feature to help scale the VCM. Fractionalization helps improve liquidity by allowing for smaller transactions and also supports the development of new use cases. For example, an NFT marketplace, a decentralized exchange, or any web3 protocol could make it so that the emissions from every transaction on the exchange are automatically offset. The emissions per transaction would be relatively small when operating on a proof-of-stake blockchain, so the accompanying offset would need to be in a denomination below one ton. In addition, core web3 protocols would only be compatible with tokens that can be fractionalized. Enabling meaningful innovation on the blockchain requires fractionalization.

Operational Implications

The introduction of fractionalization functionality for on-chain VCUs does not necessitate additional technical requirements or changes for the Verra Registry. All interactions between the Tokenizing Party and the Verra Registry would happen in whole numbers.

There are three actions that would connect the Verra Registry to the on-chain environment: tokenization, redemption, and retirement.

1. Tokenization:

Fractionalization has no impact on tokenization, as VCUs are coming on to the blockchain directly from the Verra Registry, which currently does not issue fractional VCUs. If someone has 100 VCUs and requests to tokenize them, she will receive 100 tokens in return.

2. Redemption:

   The implications of fractionalization on redemption are also relatively straightforward. In Flowcarbon's architecture, all redemption requests must be made in whole numbers. So if someone owns 100.5 tokens, she could only request to redeem 100 of them, and would receive 100 VCUs. The extra 0.5 token would remain in her crypto wallet, where she could either hold it or sell it.

3. Retirement:

   Fractional retirements can also be handled easily through Flowcarbon's retirement accumulation approach. As discussed in Appendix A, off-chain retirement in the Verra Registry of tokens that have been retired on-chain happens once daily.

Between the previous off-chain retirement event and the next off-chain retirement event, a balance of retired tokens builds up in the token smart contract.

Flowcarbon's Retirement Process for Fractionalized Credits

For example, say that off-chain retirement happens every day at noon. A user retires 400 tokens at 2PM, and then 100 tokens at 10am the next day. When noon comes, the operations team that performs the retirement sees that there is a balance of 500 waiting to be retired and goes into the Verra Registry and retires the appropriate 500 VCUs.

If we introduce fractionalization, this process remains the same, but a daily rollover balance is introduced. Consider an example where a user retires 400.5 tokens at 2PM and then 100.75 tokens at 10am the next day. At noon, the operations team sees there is a balance of 501.25 tokens waiting to be retired. The team retires 501 VCUs, and the .25 remaining is carried over to the next day.

Handling Fractional Retirement

Legal Implications

The Commodity Exchange Act, as amended ("CEA"), and the regulations promulgated by the U.S. Commodity Futures Trading Commission ("CFTC") thereunder ("CFTC Rules") employ an incredibly broad definition of a "commodity" that includes "all services, rights, and interests . . . in which contracts for future delivery are presently or in the future dealt in."9 It is now generally accepted that environmental credits, carbon offsets, and similar instruments constitute "commodities" for CFTC regulatory purposes. Indeed, the CFTC has issued interpretive guidance to the effect that renewable energy credits, emissions allowances, and VCUs and offsets are "nonfinancial commodities"for CFTC regulatory purposes.10 The question for purposes of this response is whether fractionalizing VCUs causes those fractional interests to be subject to securities laws.

Under U.S. securities laws, the fractionalization of VCUs could be considered an investment contract, which is a security under the Securities Act of 1933.11 The U.S. Supreme Court, in SEC v. W.J. Howey Co.,12 determined that an investment contract requires "a contract, transaction or scheme whereby a person invests his money in a common enterprise and is led to expect profits solely from the efforts of the promoter or a third party."13 Howey progeny further developed this test in many respects, including with respect to the fractionalization of assets and instruments.

Notwithstanding case law and SEC guidance difficult to apply to crypto assets, when it comes to tokenized representations of VCUs – whether whole or fractionalized – the lack of comprehensive legislation and specific regulatory guidance, coupled with the necessity to evaluate the facts and circumstances of each tokenization project, including what the token purports to represent and how it is marketed and sold, makes it challenging to make categorical, "one size fits all" statements regarding legal implications of fractionalization. In addition, different jurisdictions will have different regulatory frameworks that must be considered.

Flowcarbon has spent a significant amount of time and resources engaging specialized legal experts to gain comfort in its approach to tokenization, including fractionalization. Our approach includes the following safeguards in recognition of existing guidance with respect to fractionalization of assets and policy considerations behind applicable laws:

1. Flowcarbon does not sell a fractional interest in tokens directly to buyers.

2. Flowcarbon states publicly that our tokens are intended to be used for their environmental benefit, not for investment purposes.

3. Flowcarbon does not allow redemptions to be done in fractional amounts; on the contrary, Flowcarbon's web interface for token holders requires that redemptions must be done in whole numbers.

Rather than being intended to enable investment, fractionalization of Flowcarbon's tokens stems from its utilization of commonly used fungible ERC-20 token contracts, which have built-in fractionalization as a feature, so as to enable the tokens to be "composable," or compatible with the universe of other web3 protocols. This is important for unlocking key use cases, such as automatic offsetting of consumer purchases.

No approach to tokenization is without risk for the Tokenizing Party, given the aforementioned lack of regulatory clarity. As a general principle, given the significant benefits to the scaling of the VCM, coupled with the advantages of Verra being the organization to establish a high-integrity tokenization framework, Flowcarbon believes it is prudent for Verra to enable third-party tokenization (including the ability to fractionalize within certain operational restrictions related to redemption and retirement) and transfer any potential legal or regulatory risk that Verra may otherwise face to credible third-parties. By leading the charge and setting up a thoughtful framework that does not exclude fractionalization, Verra will ensure that the momentum and potential at the intersection of blockchain technology and carbon markets is harnessed toward stimulating high-integrity innovation, while minimizing risk to Verra.

Further, given the clear and compelling public purpose of the VCM, we believe that the regulatory and reputational risk to the VCM is low, whereas the necessity for urgently scaling a high-integrity VCM is high.

2. KNOW YOUR CLIENT (KYC) REQUIREMENTS

2.1. What KYC checks (and in relation to which jurisdictions) should Verra apply to platforms before authorizing them to issue, market, and/or transact in crypto instruments or tokens that are backed by VCUs?

#	COMMENT

1	KYC checks are primarily to keep track of the transactions and basic norms as per the country of operations can be employed. This is very important to stay within the compliance framework and even in places where compliances are not in place, its better to follow the traditional compliance measures so that the future compliance will not hurt the process.
2	Should be a registered company rather than a DAO. With a DAO you will have no idea where the employees are based or who they are. You may also choose to exclude Russian companies.
3	Verra's current KYC process to grant account access is already very rigorous so we are not sure what other information could be obtained from platforms and their owners. Marli undertakes KYC checks for all its customers but due to privacy laws and regulation, we are not sure if we would be able to share customer information. Perhaps one approach Verra could take would be to approve a number of recognized KYC providers in the industry and require platforms to use them for their KYC. In this way Verra would be assured that high quality data has been used for customer assessment before granting access to use platforms.
4	Verra should require at least proof of identity, proof of holdings, and transaction registry from addresses related to a given actor, enabling tracking if a given actor is trying to manipulate prices on a given type of VCU or even use protocols with ill intentions.
5	Standard KYC documentation similar to that required for onboarding to banks (i.e. identification of management, main owners and ultimate beneficiaries, source of funding, expected use of the Verra programme).
6	We suggest that Verra requests the following information before authorizing an entity to use cryptographic or credit tokenization instruments: 1. Check tokenizer source 2. Understand the function, process, and operation of the decentralized and public blockchain used 3. Activate smartcontract and code of conduct certifications and audits 4. Understand how the audit is done and the process from creation to burning the token in the retirement request.
7	It is essential to provide an end-to-end KYC mechanism across the VCUs value chain, based on a unified DID standard, and receive from entities a list of addresses of trusted crypto wallets.
8	Many blockchain initiatives operating in the carbon space aspire to be decentralised. Web3 protocols that are more decentralised give the users more control over how they use the protocol and to what decision-making power they have over its functionality. Whilst parts of Web3 remain mostly decentralised, it is not cost-effective for say, the SEC, to litigate against individual entities or wallets. They will likely follow the chain of issuance, and litigate against the first issuing entity that is not anonymous. The problem is that it isn't possible to litigate against an anonymous DAO that operates without a legal entity. Therefore the next in the chain naturally becomes the operating registry, such as Verra. We can only conclude that it is the responsibility of decentralised entities to provide requisite guarantees to protect Verra's hard-earned reputation, or worse, to ensure Verra do not become a litigative proxy for Web3 entities.

	This is where greater centralization can be useful. For instance, Thallo operates time-proven centralised guarantees, such as trust structures to protect the beneficial owners and consumers operating the marketplace, even in the unlikely event of insolvency. It can provide guarantees that pertain to AML/ATF/KYC laws in the nations it operates within, and the buck stops at Thallo as an operating legal entity in the United Kingdom. We allow our users to be beneficial owners of the tokens through our custody structure, whilst retaining full operational control in the event of regulatory breaches by our users, or laundering concerns, or investigations around adherence to terms of use from the registry. Our stance is to start with guarantees and structures that have provided comfort to regulators and purchasers for tens of years, and then decentralise over time only when we have both proved the benefits of doing so, and also work closely with our registry partners to install infrastructure that doesn't take away such guarantees from aforementioned regulators and purchasers. This is likely a much longer process, but change that happens overnight without proper insight often leads to the type of negative press that we have been seeing recently.
9	• Proof of identification and/or address for both major individuals and institutions looking to issue / market / transact in cyrpto instruments or tokens related to VCUs • Proof of bank account information • Proof of equity ownership in the underlying platform • Organizational documents related to the operating entity • Designation of an Account Manager ○ Identification card related to the Account Manager • 1-2 reference checks from entities doing business with the onboarded platform • A 30-min reference call with a Verra representative and the Account Manager from the platform • Detailed information on the creation of crypto / instruments tokens; i.e. clear flow diagram to ensure that live, active VCUs are being transacted on rather than retired credits • As a United States-based company, ensuring compliance with the Foreign Corrupt Practices Act, along with other recently announced sanctions related to certain geographies, is incredibly important, and should be contemplated when allowing interaction within the Verra Registry with regards to cyrpto instruments or tokens
10	All individuals or entities looking to transact in tokenized VCUs should be KYC verified before they are allowed to buy or sell any tokenized VCU. The KYC checks should include a) liveness checks, b) ID Verification, c) SSN and Address verification, d) geolocation, e) adverse media and background checks, and f) OFAC lists. Different jurisdictions have different KYC standards, and each holder is subject to their respective jurisdictional rules. Securitize offers KYC standards in over 50 countries around the globe.
11	Verra should apply KYC checks that have an ESG/Sustainability component, such that companies are required to have such initiatives in place if they wish to create or transact tokens. This acts as a reputational safeguard by being on a platform that goes against its ethos, it could call its carbon credits into question. Additionally, it would drive positive demand if credits were instead backed by a company with strong sustainable and social responsibility standards.

	More operationally, Verra should audit the robustness of the platform's KYC, and understand the purpose of their engagement in carbon credit activity so as to ensure that that fundamental purpose of carbon credits is not lost through speculative trading when prices are volatile.
12	VERRA should ensure that each platform wishing to participate should have relevant local regulations, whether crypto related (such as AMLD5), or financial services related such as MiFID2 or FCA trading venue specific permissions or custody permissions. Each participant should pass VERRA's own KYC/AML DD checks as well. Having regulated permissions will help to ensure the integrity of the issuance and then operation of crypto-backed instruments.
13	To ensure anti-fraud operations Verra should know the kind of accesses that platform operators have and how transfers are made from the platform, including destination on tokens. All this should be registered in Verra Registry. Also, token (credits) transfer and cancelation certificate should be registered including source & destination of tokens. Verra shall ensure that client platform has security protocols so that information is not vulnerable from external hacking.
14	Toucan recommends that the KYC check consist of: (1) government-issued license to do business or articles of incorporation; (2) a copy of the passport of an individual authorized to sign documents that bind the platform; and (3) the identify of any individuals or entities with ownership or governance control above 25% or more of the platform
15	We are happy to comply with reasonable KYC checks Verra requires to be conducted on AirCarbon. In this regard, we responded to Verra's Related Instruments Due Diligence Questionnaire in March 2022.
16	Legally, VCU-backed tokens can be considered as derivative products, or financial asset-backed securities. Thus, it is safe to assume that the KYC checks needed for the trading of VCU-backed tokens correspond to the KYC checks needed in the trading of financial derivatives to be considered as fully legally compliant. These KYC checks vary from jurisdiction to jurisdiction but usually include customer identification and due diligence checks. While platforms that use public or enterprise blockchain lack key infrastructure and would have inherent limitations in conducting the necessary KYC checks, the identity-based MetaMUI blockchain is the perfect solution for KYC checks. Firstly, MetaMUI blockchain requires all users to conduct KYC and KYB (Know-Your-Business) checks upon first registration. Added to this, the KYC and KYB checks can be fully customized for different jurisdictions, meaning that users can have their KYC and KYB checks conducted ifferently in case there is a need to comply with different jurisdictions. Regarding the entities that conduct the KYC and KYB checks, these could either be one legal authority, or several legal authorities as per the relevant jurisdictions. Verra itself could also be set as the entity that conducts KYC and KYB checks if desired.
17	The following information can be captured as a part of a standardised KYC process that can be amended as necessary in different jurisdictions: 1. Details and ID proof of the controller of the organization[2] 2. Details and ID proofs of all beneficial owners[3] 3. Details of the company along with registration documents

	4. Financial statements to prove a good financial standing 5. Powerledger also recommends the creation of a standard questionnaire of intent that needs to be filled out by interested parties Further to this, Powerledger recommends that any tokenization platform be penetration tested by a reputable third party and the smart contract be independently audited as well. A controller is a person within the organization that holds significant responsibility and power (e.g. CEO, President etc.) An individual who owns 25% or more of, or otherwise controls the business of, an entity (such as a trust, an association or a company).
18	Verra must be assured of the robust KYC of all issuers and owners of VCUs. For reference, Carbonplace wallet-holders have KYC attested to by a sponsoring financial institution Carbonplace member. This ensures that every Carbonplace wallet-holder meets bank-grade KYC checks, and is subject to AML and sanctions screening in their jurisdiction. Ownership and settlement of VCUs facilitated by Carbonplace ensures that every ownership token is owned by a single, identifiable, KYC'd customer that meets bank-grade KYC requirements in their jurisdiction.
19	We support the proposed KYC approach and in general expect similar approaches to off chain assets. There is a growing ecosystem of blockchain KYC / AML services we expect to enter this market.
20	Verra could restrict issuance organisations to follow a set of processes, potentially requiring them to hold the risk that other issuance organisations double count a project (to make them try harder to avoid that happening) Verra could restrict by enforcing that certain measurement devices or processes are used that contain the ability to apply a Verra signature and/or an Issuer signature, straight into a carbon credit blockchain Market and Transact may be more for existing financial regulations to cover – noting that KYC for consumer crypto has already had to go well beyond what might be required for corporate here, because of its more anonymous nature (assumption here is that each statement about transfer of a carbon credit token can be digitally signed and made by a named corporate entity with a blockchain authorisation layer, rather than by an anonymous wallet address, as in cryptocurrencies)
21	KYC checks would be meaningless if they were just applicable to the SPV or entities in jurisdictions where shareholder transparency is not upheld (e.g. Cayman etc). However, given the risks outlines above in #5, if KYC is not applied to all holders of carbon tokens, (and mediated back to VERRA via smart contracts) then the depth of innovations in these tokens will create systemic risks where VERRA could face severe blow back and legal repercussions when the wrapped tokens become unraveled and VERRA is seen as linked and responsible for the integrity of the underlying instruments and markets. If VERRA were to attempt to KYC all entities in such complex derivatives token markets, the complexity would be mind boggling – and VERRA would still likely lack the knowledge of the wrapped token structures to even assess these risks. Even the MBS rating agencies miscalculated the risks associated with the strips of repackaged MBSs – and they were performing a new service to actually rate these strips! VERRA is somehow proposing to conduct KYCs without conducting any further risk assessment. So you can't manage what you don't measure – so without KYC through the whole system, the systemic risks are invisible to VERRA and risk undermining the traditional VCU market as VERRA becomes exposed. And if

	VERRA attempts to KYC and monitor the tokenized wrap/derivatives risks, the sheer complexity and lack of institutional capacity risks overwhelming VERRA's bandwidth. In both cases the systemic risks from tokenizing place VERRA's viability and the mainstream VCU market at existential risk.
22	Verra already has a market-definingly thorough KYC process, which seems appropriately applicable when it comes to collecting information about Tokenizers. From Solid World's anecdotal experiences, Verra's KYC process is on-par with (and in some cases more stringent than) institutional banks and exchanges.
23	From a technical point of view the Know Your Client requirements must apply for the BSPs and for the Users that require Tokenisation and De-Tokenisation process. As the European Parliament recognised in a recent motion for a resolution of 4 April 2022 (20121/2201 - INI), crypto-assets are becoming increasingly important in international finance, forcing tax administrations to adapt current tax practices to new challenges and needs. The EU Commission in July 2021 presented a package of legislative proposals to strengthen the EU rules on anti-money laundering and countering the financing of terrorism (AML/CFT). Furthermore, on 14 March 2022, the European Parliament's Committee on Economic and Monetary Affairs (ECON) adopted its negotiating position on the text of the proposed MiCA (Market in Crypto Assets) Regulation on crypto assets with the aim to provide a Europe-wide regulation of cryptocurrency activities. With reference to the first proposal, on anti-money laundering regulation, a provisional agreement was reached on 29 June 2022 between the Council and the Parliament, with the stated aim of extending the anti-money laundering rules to cryptocurrency transfers. Specifically, the aim is to ensure financial transparency on crypto-asset exchanges and to provide the EU with a framework in line with the highest international standards in the field. Although NFTs were excluded from the proposed regulation MiCA, the provisional agreement stipulated that within 18 months, the European Commission will be tasked with preparing a comprehensive assessment and, if it deems it necessary, a specific, proportionate and horizontal legislative proposal to create a regime for NFTs. Until a more specific regulation is adopted and even if NFTs are excluded from the MiCA Regulation, in the EU the trend is in the direction that BSP platforms adopt KYC procedures inspired by those provided by the Anti Money Laundering Directives. In this regard, the Fifth Anti-Money Laundering Directive - Directive (EU) 2018/843 of the European Parliament and of the Council of 30 May 2018 on the prevention of the use of the financial system for the purpose of money laundering and terrorist financing and amending Directives 2009/138/CU 2013/36/EU - extended the AML due diligence obligations on service providers relating to the use of virtual currency, also stipulating that member states must provide for a special registration procedure for exchange and e-wallet providers. In Italy, implementing EU Directive 843/2018 on Anti-Money Laundering and Know Your Customer measures, would have included in the definition of "virtual currency" also digital representations of value not used as means of exchange, but held for investment purposes, provided that they are transferred, stored and exchanged electronically, therefore, also NFTs. In light of the above, Verra should consider to carry out KYC checks as much possible in line with the above mentioned AML regulation on BSP platforms before authorising them to issue, market, and/or transact in crypto instruments or tokens that are backed by VCUs. Verra could also check whether the platforms have proportionately and consistently taken appropriate and adequate KYC measures to deal with the associated money laundering and terrorist financing risk of their customers that receive, use, or are the beneficiaries of such instruments that and also of those that hold crypto instruments or tokens. The checks mentioned above shall also be made in compliance with GDPR and privacy regulations.

24	The following undertakings may be taken as part of the KYC process: That no more crypto tokens than the underlying VCUs and that retired credits will not be tokenized, that the crypto token generating agency will be responsible for for immobilizing the underlying the VCUs, reactivating the VCUs and for retiring the VCUs. For this, an API based system will have to be developed that can be exposed to crypto operators, who can then carry out all the above operations according to the policies set by Verra.
25	Verra's existing KYC checks should be applied to Tokenizers of VCUs, since any entity directly interacting with the Verra Registry via a registry account must pass Verra's KYC checks. However, in line with the "monitor the edges" approach recommended above, such requirements should not necessarily apply to platforms which simply build on top of already-tokenized VCUs. Correspondingly, third-party issuers of tokens that are built on top of tokenized VCUs should not require KYC checks so long as they are only operating within the monitored boundaries of the tokenized credit ecosystem. Considerations around organizational structure should be more flexible as Web3 organizations may not be structured as a LLC or Limited Company, but rather as individuals who are able to KYC and are accountable to the organization as well as to Verra. In addition, the business models implemented by Web3 organizations may diverge from traditional retailer, brokerage, or investment fund activities. Due consideration of novel business models should be given – with the burden on the organization applying for the account to communicate the business model with Verra. In any case, rather than obliging an organization to incorporate in a state which can be far away (for instance, obliging an organization to incorporate in US while it's EU based, or vice-versa), it would be advisable for Verra to issue guidelines that can be inspired from a jurisdiction that has the KYC controls that Verra thinks are suitable for accessing the market, keeping in mind the characteristics of permissionless protocols.
27	The KYC checks should be the same as for any existing off chain entity
28	VERRA should focus on complying with the laws to be applied. VERRA will have to perform KYC checks on third parties that create carbon tokens from (digital or paper-based) VCUs. Overly restrictive KYC checks would limit the addressable market and consequentially harm funding of climate projects and the liquidity of the voluntary carbon market.
29	As a platform operator seeking to collaborate with Verra, we will gladly fulfil any KYC requirement Verra considers rea-sonable to prevent money laundering and/or combat terrorism financing. We expect that Verra applies market standard AML checks, which, in particular, include the identification of the contracting party and persons acting on its behalf, the establishment of the relevant ownership structure, the identification of beneficial owners (typically >25%), the identification of politically exposed persons (PEP) and the reasons for the collaboration with Verra. Verra should be able to run checks against PEP databases and sanctions list as well as request proper documentation to prove the reliability of the platform's managing directors to avoid fraudulent activities (e.g. criminal records). For further input, we kindly refer to the FATF recommendations.

30	We note recent and ongoing change in the global regulatory frameworks applicable to both crypto instruments and ESG compliance, with social pressure across multiple jurisdictions for governments to do more. We believe avoiding fragmented legal requirements that may hinder innovation where these domains intersect is critical to supporting accelerated growth of voluntary carbon (and other ecological) markets. Existing standards-setting bodies such as Verra—independent, credible, widely adopted—represent these markets' best chance for near-term regulatory certainty through robust industry consensus on governance, compliance, and market-integrity assurance. Accordingly, we recommend that Verra first carefully tailor any new KYC screening of web3 platforms to match the current and developing legal requirements of each jurisdiction within which Verra or its downstream partners now operate, or will do so in the future. This tailoring should be underpinned by and closely follow appropriate legal opinions by outside counsel authorized to practice in the relevant jurisdiction. Originally, KYC guidelines arose in connection with securities trading and banking, to combat fraud, money laundering, and other types of financial crime. Existing, off-chain carbon markets have been attacked for creating a potential for both errors and fraud between participants (due to the heterogeneous nature of credits) as well as money laundering risk (due to the lack of price transparency). We are aware of no evidence that either carbon credits as an asset class or their tokenization on web3 platforms drives these risks over rates of illicit finance seen in legacy markets. But nor can web3 platforms be held to lesser standards. Implementing AML and KYC best practices is necessary to ensure the credibility of and avoid reputational damage to voluntary carbon markets as they scale on-chain. For similar reasons, Verra may also wish to consider aligning its KYC checks with regulatory guidance mechanisms operating at the international level, such as FATF. Likewise, Verra may benefit from seeking clarity from international accounting bodies (e.g., IFRS and GAAP) on how tokenized carbon ought to be treated on the balance sheet, and requiring, via contract, in its Terms of Use, conforming treatment from its downstream platform-partners. However, even as we recommend that Verra conform in substance to existing national and international KYC requirements of jurisdictions in which it and its web3 platform partners operate, we would also observe that web3 technology is in the process of obsoleting many of these legacy requirements, which have been developed for traditional finance as it transitioned to a web2 world against the legal backdrop of governing statutes in some cases nearly a century old. Now, when a VCU is bridged on-chain, technologies such as the Hedera Token Service allow platforms to configure and enable KYC features directly on the resulting token. This can comprise typical identity and compliance features, like AML requirements, but also references to any type of off-ledger authentication mechanism Verra may wish to require. While prudence and the prevention of illicit finance may warrant all the usual KYC checks be performed on Web3 platforms, we do urge Verra to be mindful of this potential of DLT to be more secure, not less. We therefore recommend that Verra require – via contract, in its Terms of Use – any third-party Web3 platform seeking to bridge VCUs on chain to utilize technology capable of fully enabling whatever KYC attributes Verra selects.
31	As the carbon credit market grows there may be increased liquidity that will expand necessary due diligence practices across this industry. Any asset, whether fiat currency, commodities like gold or silver, digital assets like bitcoin or ethereum, or carbon credits, could be used by bad actors to engage in money laundering and sanctions evasion. Effective due diligence and anti-money laundering policies are critical issues for the integrity of the VCM, and are taken seriously by Climate Collective and Celo Foundation. Thinking critically about what stage in the VCM due diligence is performed is important, including whether it should only occur at the time of carbon credit issuance, purchase, trading, retirement or throughout the lifecycle of that credit.

	Blockchain technology may be able to provide an important, transparent method for conducting due diligence. For example, there may be an opportunity to use existing analytic tools used in the blockchain chain space for the VCM (tracing on-chain activity). There may also be methods to use wrappers (smart contracts) to interact using specific requirements on the blockchain (and may be implemented through the use of non-fungible tokens (NFTs)) to conduct KYC/AML screening of issued, live or retired carbon credits on blockchain. In the long- term, this technology and verification may be done interoperably among blockchains. At this time, the technology and resources necessary for tracing and verifying diligence at each stage of a credits' lifecycle can be expensive and requires subject matter expertise in both the carbon credit market as well as anti-money laundering, anti-bribery, and sanctions. As such, we believe it important for Verra to balance the needs for effective and thorough KYC practices with allowing for innovation in this space to continue.
32	• 3rd-party issuers should KYC their registry subaccount • Buyers
33	In the United States, the Bank Secrecy Act ("BSA") 13 requires certain financial institutions and other related entities to collect and retain information about their customers and share that information with the Financial Crimes Enforcement Network ("FinCEN"), the Office of Foreign Assets Control ("OFAC"), and law enforcement . 14 The purpose of these obligations is to assist government agencies with the identification, prevention, and prosecution of money laundering, terrorist financing, and fraud activity, as well as the identification and blocking of assets in the U.S. financial system belonging to sanctioned parties pursuant to national security and foreign policy goals. Specifically, the BSA imposes, as part of its risk-based anti-money laundering ("AML") regime, customer identification program and customer due diligence requirements (commonly referred to as "Know Your Customer" or "KYC" standards). KYC includes a set of standards to verify customer identities, their risk profiles, and financial profiles. 15 But, given the transparency of blockchain transactions, and the availability of blockchain analytics screening softw are, the ability to identify any illicit finance risk is great. Moreover, web3 VCU market participants can effectively perform KYC, if required by law. 16 It should be noted that given Verra's role solely as a certifier of carbon credits, the organization is unlikely to have any liability under the BSA. Verra should, however, consider sanctions screening programs. Sanctions screening obligations arise under regulations and guidance promulgated by OFAC, which is responsible for the U.S. financial sanctions regime. Notably, OFAC has a broad jurisdictional mandate to sanction any individual, entity, or country that poses a threat to national security, regardless of whether such entity must comply with the BSA. Moreover, OFAC's sanctions regime applies to all U.S. individuals and entities; thus, all web3 VCU market participants have this obligation. For that reason, in an abundance of caution, Verra could consider guidelines that require the web3 VCU market participant to war rant that it will perform sanctions screening on digital asset transactions as required by law. 11 For more information regarding bi-directional or "two-way" bridges, see Ivan Tomic, How Crypto-to-Fiat Bridges Provide a Viable Solution to On and Off-Ramp Problems , NASDAQ (Mar. 30, 2022), available here . 12 Flowcarbon, a company dedicated to developing tokens for reliable, voluntary carbon offsets, is an investment of an a16z managed fund. A list of investments made by funds managed by a16z is available here . 13 This letter uses only the U.S. regulatory example, but many jurisdictions' AML regulations mirror the U.S.'s. Moreover, the Financial Action Task Force standards implemented in most countries closely parallel that of the U.S. regime. 14 See 12 U.S.C. § 1953; 31 U.S.C. § 5311 et seq.

15 See, e.g. , 31 C.F.R. § 1022.210

[16] Whether or not a person or entity is BSA-obligated depends on the individual facts and circumstances of the person or entity's operational activities or business model

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Key Takeaway: Verra should subject the platforms to the same level of KYC as it does any other Registry Account Holder.

Verra's current know-your-customer ("KYC") procedures that are already in place should be adequate to mitigate the risk that nefarious actors will become tokenization partners and abuse the system, in line with an appropriate risk-based compliance program.

Additionally, Verra's current KYC procedures are sufficient insofar as this program will allow platforms to satisfy their own sanctions compliance obligations while recognizing that they are not financial institutions required to comply with anti-money laundering obligations.

Anti-Money Laundering

Platforms would only have an affirmative obligation to conduct KYC for anti-money laundering purposes to the extent that they are subject to the Bank Secrecy Act of 1970, as amended by the USA PATRIOT Act, and its implementing regulations (together, the " BSA").14 The applicability of the BSA turns on a number of factors, but in this case the key consideration is whether a platform is providing "money transmission services," which means "the acceptance of currency, funds, or other value that substitutes for currency from one person and the transmission of currency, funds, or other value that substitutes for currency to another location or person by any means."[15]

As applied in the digital assets space, the U.S. Department of the Treasury's Financial Crimes Enforcement Network ("FinCEN"), which is responsible for administering the BSA, has advised that virtual currencies with certain attributes—"convertible virtual currency" ("CVC")—do act "as value that substitutes for currency." CVC is "a type of virtual currency that either has an equivalent value as currency, or acts as a substitute for currency."16 "Currency," in this context, is defined as "[t]he coin and paper money of the United States or of any other country that is designated as legal tender and that circulates and is customarily used and accepted as a medium of exchange in the country of issuance."17 Certain parties that engage with CVC are thus subject to the BSA.

14 BSA-regulated entities also are required to implement a risk-based AML program, file suspicious activity reports and put in place other AML controls.

15 31 C.F.R. 1010.100(ff)(5)(i)(A).
16 FIN-2019-G001, "Application of FinCEN's Regulations to Certain Business Models Involving Convertible Virtual Currencies" (May 9, 2019).
17 31 C.F.R. 1010.100(m).

Our view, based on available FinCEN guidance, is that neither the GCO2 token (i.e. Flowcarbon's Direct Reference Token) nor the GNT token (i.e. a bundle token) is properly classified as CVC. Neither the GCO2 token nor the GNT token will have an equivalent value in currency and will not act as a substitute for currency, as it is unlikely to be used as a "medium of exchange."

Instead, the GCO2 token acts as a substitute for VCUs, which are not currency or used as a substitute therefore, but whose value is linked to the prior efforts of the Supply Partner (i.e. a carbon project developer) that created the VCU. Thus, Flowcarbon, by its provision of the services

contemplated hereunder, would not be a money transmitter subject to the BSA and could not have KYC requirements for anti-money laundering purposes with respect to its minting, burning, purchase, or sale of the GCO2 tokens. Similarly, GNT tokens are not intended to be a substitute for currency. They will also be a substitute for VCUs, which—as suggested above—are not currency or used as a substitute therefore. Although GNT tokens will be freely transferable, we do not expect any markets to exist for the exchange of GNT tokens for any currency or for GNT tokens to be accepted anywhere instead of a currency.

In the case of both GCO2 and GNT tokens, FinCEN's position with respect to virtual currencies such as bitcoin and ether, and stablecoins such as USDC, does not apply. Those virtual currencies are in fact equivalent value as a currency since they are accepted as currency either broadly or within the ecosystems in which they exist. The same is not true for GCO2 and GNT tokens, which serve the limited technological purpose of "improving the rails" on which VCUs are sold and retired.

Even if a market were to develop for the exchange of GNT tokens for a currency, and GNT tokens were to be deemed CVC, Flowcarbon would not be an administrator or exchanger, as FinCEN has defined those terms.18 An "exchanger is a person engaged as a business in the exchange of virtual currency for real currency, funds, or other virtual currency."19 An "administrator is a person engaged as a business in issuing (putting into circulation) a virtual currency, and who has the authority to redeem (to withdraw from circulation) such virtual currency."[20]

GNT tokens can be redeemed on Flowcarbon's platform, resulting in the retirement of VCUs or redemption for VCUs. In connection with the retirement of GNT tokens, nobody receives "real currency, funds, or other virtual currency" in exchange. The redemption will involve an exchange – the exchange of GNT tokens for VCUs – but VCUs are not CVCs. There again is no exchange of GNT tokens for real currency, funds, or other virtual currency. Thus, Flowcarbon is not an exchange under FinCEN's guidance.

18 Given the non-transferable nature of GCO2s other than to certain whitelisted addresses – not in exchange for currency – we do not engage in further analysis on GCO2s.
19 See page 13 of: FIN-2019-G001, "Application of FinCEN's Regulations to Certain Business Models Involving Convertible Virtual Currencies" (May 9, 2019)
20 Id.

Similarly, Flowcarbon is not an administrator. Flowcarbon does not put GNT tokens into circulation; they are put into circulation when a holder of GCO2 tokens transfers GCO2 tokens to a smart contract, which results in the automatic minting of GNT tokens. Even if Flowcarbon could be considered the issuer of GNT tokens, Flowcarbon has no right or ability to redeem or withdraw from circulation the GNT tokens. All GNT tokens that would be redeemed or withdrawn from circulation would be done by the holder of the GNT tokens. Thus, Flowcarbon also is not an administrator under FinCEN's guidance. Based on the foregoing, Flowcarbon, by its provision of the services contemplated hereunder, would not be a money transmitter subject to the BSA and would not have KYC requirements for anti-money laundering purposes with respect to its activity involving GCO2 tokens and GNT tokens.

Therefore, we do not believe that Verra should implement any additional KYC on platforms related to the platform's own KYC policies.

2.2. Should platforms be required to apply KYC checks on all entities that hold crypto instruments or tokens, or just on the entities that receive, use, or are the beneficiaries of such instruments?

#	COMMENT
1	Platforms should apply KYC on all entities that hold tokens and either ways, the exchanges partnered with to facilitate conversion of tokens to coins will also need to follow KYC and other exchanges(leading ones) to facilitate any transactions of coins will still be doing KYC.
2	Verra should take responsibility for KYC checks on the tokenizing companies. Whom those companies sell to will be impossible to track in the cryptoverse.
3	Every users should undergo KYC before being granted access to platforms.
4	Yes
5	Yes. Similar information to KYC information for platforms is stated above.
6	The same KYC operationalization for customers must be applied to tokenizing institutions and token functions, in addition to the purpose of token existence and usage compliance
7	It is essential to provide an end-to-end KYC mechanism across the VCUs value chain, based on a unified DID standard, and receive from entities a list of addresses of trusted crypto wallets.
8	We recommend a model that ensures market participants undertake proper KYC prior to entry into marketplaces or exchanges, in addition to on-chain reporting to continually monitor any non-marketplace activity that uses the tokenized credits. While KYC on centralised platforms, marketplaces or exchanges is entirely possible, this is only true of the initial purchase or bridging process, there is a locus of control that exists only until chain issuance, at which point the control is firmly within the wallet holder's remit. A user is then able to pool, commoditise, create derivatives or trade at will, and cannot be known beyond the wallet signature within the network. We are spearheading the market by ensuring all entities that trade on the marketplace undertake proper KYC prior to entry, and on-chain reporting (such as Chainalysis) will be continually observing any non-marketplace activity that utilise Thallo-bridged credits. This allows Thallo to match the entry barrier of non-web3 Verra partners, and also a comprehensive level of reporting and auditing for as long as the credit exists on-chain.
9	• Platforms should be required to apply KYC checks on all entities that hold crypto instruments and tokens (this would exclude retail investors whose tokens are burned immediately upon purchase) • At NFM, we take our compliance requirements very seriously, and have engaged Sidley Austin to help ensure regulatory compliance for our exchange

	• We plan to use a third-party KYC provider for all users of our exchange to ensure full compliance with Verra and legal regulatory requirements. A third-party KYC provider also allows for the standardization of an onboarding process across our target market of both institutional and retail clients.
10	KYC checks should be required on all entities and individuals that buy, sell, or hold tokenized VCU and other related crypto instruments used to purchase, hypothecate, or facilitate transactions in any VCU unit. For example, if a purchaser wants to use USDC or another stablecoin to purchase the tokenized VCU units, they must be KYC verified by at least Securitize. Verra should also have access to verify and audit the KYC process and spot-check individuals or entities involved in tokenized VCU transactions. For instance, if Verra has 10 different execution venues on their approved list of counterparties, each counterparty should make any relevant data available to Verra so they can perform KYC/AML audits.
11	KYC checks should be done on all entities before they are allowed to hold Verra carbon credits being backed financial instruments since they represent a risk to Verra. Should these holders turn out to be fraudulent, which is prevalent in the current crypto space, it could lead to operational challenges, especially as questions begin to arise about ownership of carbon credits that are currently immobilised with Verra.
12	Platforms should apply KYC checks to all entities, the operate on their platform. VERRA should ensure that platforms participating in the creation and issuance and VCU backed instruments do have minimum KYC/AML checks on all their clients.
13	Since transfers shall be made to any entity interested in acquiring carbon credits to reduce own emissions, Verra should apply checks on all entities holding and creating these instruments, ensuring that all operations are accessible publicly, worldwide, and are not related to any fraudulent activity or company. Company or entity names involved in token transactions should be available publicly.
14	As a preliminary matter, Toucan observes that Verra's Registry Terms of Use only require an Identification Process of an entity when that entity seeks to establish an account in the Registry. Verra has not mandated an Identification Process for the wide variety of transactions that occur outside its Registry. In particular, Verra has not required that retailers or brokers implement KYC checks or other identification procedures on the individuals or entities for whom they are managing VCUs—even though such arrangements account for a large portion of the current marketplace. There are good reasons to carry over this distinction between Registry-related transactions and non-Registry- related transactions to Verra's interactions with its authorized tokenization platforms. Verra may have a legally cognizable interest in robust identification procedures for transactions that directly "touch" its public Registry system, i.e., tokenization and de-tokenization / redemption. By contrast, **Verra does not have a legally cognizable interest in transactions of VCUs and VCU-based tokens** outside of the Registry Further, **Toucan has no legal requirements** in its relevant jurisdictions to perform KYC checks or implement AML procedures for the on-chain activities of the tokens it has issued to date. As discussed above, tokens issued by Toucan are neither securities, payment tokens nor stablecoins. In addition, it is important to recognize that such procedures **impose transaction costs** and complexity on the tokenization service provider. That is why such procedures generally have been reserved for securities transactions involving large entities and large volumes—for which the risks of fraudulent activity (or money-laundering) are greatest. There is no **justification to mandate** extensive identification procedures that are comparable to AML regulations on publicly-accessible, decentralized, fully transparent and permissionless blockchain platforms when such procedures are not mandated for other entities that transact in VCUs. Nevertheless, **Toucan appreciates that Verra is seeking some form of additional assurances** about activities involving VCU-based tokens. We are pleased to enter into a dialogue with Verra about riskbased approaches that can address Verra's concerns while allowing the ecosystem of carbon credits to

thrive and grow. We do have sufficient technical expertise and capacity to implement more restrictive mechanisms on a use-case / threshold basis but advise against a generalized approach that lifts requirements way above the current market practices.

With these considerations in mind, Toucan recommends the following approach, following the principle that **both tokenization and redemption should adhere to the same logic of identification**. Furthermore it is assumed that both tokenization and redemption is limited to professional parties and entities that hold an account with a standard like Verra, for which identification is common.

Identification Procuedures required:

Tokenization

As discussed above, Verra has a cognizable interest in establishing the identity of an entity seeking to tokenize VCUs for itself or for a beneficiary. Accordingly, we recommend that an identification process related to tokenization is added to account holders, either directly by Verra or through a 3rd party that manages obtained data and issues a verification of identification. On that basis, we recommend that any authorized tokenization platform requires a verification of identification before giving access to its tokenization and redemption processes. In the case of identification performed by Verra, the verification status can be submitted through a whitelist or API. If delegated to a 3rd party, Toucan can implement a check for proof of verified identity via specialized 3rd parties, which after having completed the identification process, will provide the relevant web3 account with a portable ID in the form of an NFT token.

Redemption

Verra also has a cognizable interest in actions that reactivate VCUs in the registry through the redemption process. Therefore, we recommend that an identification process is included in the redemption steps. As with tokenization, this process could build off of Verra's own procedures, as we assume that the redeeming entity already is an existing account holder. As such, web3 accounts would be either whitelabeled through an API or be provided with a NFT token upon having completed the identification process with specialized 3rd parties.

Identification Checks Not Required:

On-chain Transfers of Tokens

For the reasons discussed above, Toucan recommends that Verra does not mandate that authorized tokenization platforms implement identification procedures for token-related transactions occurring entirely on-chain—including transfers of tokens among web3 accounts and transfers of tokens into and out of pools. As noted, Toucan commits to entering into a dialogue with Verra about how to implement reasonable risk-based AML measures for on-chain activity.

On-Chain Retirements of Token

We do not see any rationale for requiring an authorized tokenization platform to impose an identification procedure on an entity that retires its on-chain tokens. The retirement of a token does not create monetary value and therefore does not have associated fraud or money-laundering risks. Instead, retirement of a token creates reputational value and therefore is, by its very nature, a very public act. It does not occur in the shadows. For these reasons, Verra should not require identification procedures on entities that retire tokens on-chain.

15	We believe that KYC checks should be performed on all entities that hold VCU backed instruments, which has been AirCarbon's practice from day one. We would however like to clarify who Verra views as the 'beneficiaries' of such instruments. Assuming a scenario where Company A holds a token and has requested to retire the underlying VCU in the name of Company B (who may be its affiliate, or a third party company for whom it is providing a service, or otherwise), does Verra view Company B as the 'beneficiary' of the token? If so, we do not believe it is necessary or feasible for KYC checks to be conducted on Company B as Company B has not had any ownership or other rights in respect of the token or the underlying VCUs other than the ability only to claim the environmental benefit of the retirement. We believe this aligns with current practice whereby Verra allows account holders to retire VCUs in the name of third parties and does not conduct KYC checks on such third parties.
16	In principle, CO2Network believes that to create a service that is fully legally compliant, including AML (anti-money laundering) and CFT (combating the financing of terrorism) regulations, KYC checks must be made on all entities on the blockchain. This is the main reason why other crypto platforms and services present serious limitations in this regard. Accordingly, we recommend that KYC checks be done on all entities involved in the trading of tokenized VCUs, including both holders of tokenized VCUs and entities that receive, use, or are the beneficiaries of tokenized VCUs. (Note: In the case of PIVOT, there will only be buyers, sellers, or prospective buyers and sellers on the platform.) Conducting KYC checks at the moment of registration before entering the platform ensures that the trading environment is fully secure, while failing to do so would increase the likelihood of fraud and fraudulent organizations' involvement trading of tokenized VCUs, through the mere presence of such entities on the trading platform. On top of KYC checks, CO2Network advises that Verra goes on step further to implement mandatory KYB (Know-Your-Business) checks for entities that are not individuals but public or private organizations. Technically, on PIVOT organizations (i.e. non-individuals) wishing to sign up will be asked to create a 'Public DID' instead of an 'Individual DID' for this purpose. On PIVOT, where KYC and KYB checks are mandatory, Verra will be able to retrieve KYT (Know-Your-Transaction) information on the VCU trade. KYT—the record of all transactions by KYC- or KYB-checked entities—acts like proof of legally compliant ownership transfers, identical to signed contracts in an offline context. With KYT information, Verra can ensure that its VCUs have been traded in ways that are legally compliant. The data also informs Verra of the identity of the new legal owner of the VCU, and by extension of the identity of the individual or entity that has the legal right to exercise a VCUs' environmental benefit. Furthermore, KYB and KYC checks will enable Verra to ensure that the entity that requests for the tokenization of a VCU is the same as the entity registered as the owner of the corresponding VCU, as well as allow buyers to know that they are purchasing VCUs from legitimate entities that are the legitimate owners of the VCUs behind the tokenized VCUs.
17	Even though off-exchange transfers should be allowed to support liquidity, first-hand purchases of VCUs and all retirements need to have appropriate KYC standards in place. The option to retire VCUs must be made available only to exchanges/platforms that have an agreeable KYC standard. This will be crucial in certain jurisdictions where VAT fraud4 and Carousel fraud within renewable energy/carbon credit markets already exists. VAT fraud can be an intractable problem as the taxing authority of a jurisdiction might not be aware of carbon credits tokens being imported to begin with while the exporter is refunded for all VAT paid to that point. The same credit can be sent back to the export country and cycled to siphon more funds, which is known as carousel fraud.

	Hence, KYC requirements must be in place for all primary exchanges (platforms that tokenize VCUs and sell them first hand) to ensure jurisdictional laws are not violated or circumvented through the issuance, trading and redemption of tokenized VCUs which might tarnish the standard's image. The aforementioned measures do not grant ultimate transparency and the option to go fully-public with all information pertaining to emissions and credit purchases will ultimately lie with the end user.
18	Verra must be assured of the KYC of all owners of VCUs, at all times and must ensure that all transactions are fully compliant with jurisdiction specific sanctions screening and AML requirements . This is to ensure, at all points in the ownership history (i.e. not solely at retirement), against potential fraud, money laundering, and jurisdictional sanctions, regulation, and tax conflicts.
19	We support the proposed KYC approach and in general expect similar approaches to off chain assets. There is a growing ecosystem of blockchain KYC / AML services we expect to enter this market.
20	For later consolidation of carbon accounting and declarations, the information required is 'does the blockchain say that this company controlled this token at the time they declared they used/transferred it'. Their choice of actual custodian or provider of key storage and signature services may be irrelevant to the outside world (not requiring KYC) as long as the company holds the risk of making sure their provider does as they request.
21	We interpret your question to mean: should KYC checks be performed on all individuals/entities recorded as holding the token on a blockchain … or just the ultimate entity/individual (aka "ultimate customer") which purchases the token for a purpose it has in mind. All the entities on a blockchain are intermediaries of some kind. VERRA does not know if such an entity is the "ultimate customer" or not. Conservatively, you must assume until the token is further traded that they are… so logically all individuals/entities recorded as holding the token on a blockchain need KYC. This is very impractical – even before the complexities associated with wrapping tokens and creative derivative products are considered. For example, carbon credit tokens will presumably be listed on cryptocurrency exchanges to be bought or sold as this is how the majority of the cryptocurrency market works. If a customer buys a carbon credit token, it is hard to see how KYC could be insisted upon when they sold it. The exchange will ask for KYC of transacting parties (for when the token was purchased/sold from the exchange) but the tokenizing project SPV will not have access to that information. If the blockchain is decentralized to any extent then the tokenizing project will be unable to compel the new holder to provide that KYC information. So KYC-ing all the entities seems impractical unless, as noted above, the carbon credit transaction is mirrored on a Verra owned blockchain registry using smart contracts -- and to complete that transaction the smart contract would need to require KYC details to be provided for each and every new holder on the registry. Even then, if smart contracts were to be applied to wrapped/derivative token structures, the jury is out as to whether smart contracts could accomplish KYC in such settings. The complexity would again be staggering: for example, one could consider fractionalizing a wrapped product into thousandths of all the underlying carbon tokens… and KYC would then be performed through smart contracts for every trade of the wrap instrument on the thousands of fractions of the original carbon tokens. Where even this process would fail is here: any new risks associated with the creation of the new derivative token product – since it has not been in any way reassessed (unlike even the stripped MBS instruments) – are not incorporated into the smart contract's KYC assessment.

	If even the mainstream financial markets failed when attempting this kind of financial derivatives market wraps in fairly simple products with decades of history (MBSs) how can VERRA contemplate attempting to properly assess and adjudicate the risks associated with the tokenization of carbon VCUs when the carbon market and CC markets have already a far shorter history and much more complexity before they are even combined … particularly when the CC market already has so many examples of market failures (e.g. exchanges collapsing, stable coins collapsing, bad actors committing fraud etc). We think the questions that VERRA should be asking here are far more fundamental and existential to its future and the future of the voluntary carbon market.
22	**Q6.1 KYC checks for entities seeking to tokenize or redeem Assets** - The authors of this response believe the Tokenizer should be required to run KYC checks on any entity seeking to use their services to either tokenize their credits or accept Assets for reactivation. When accepting Assets for reactivation, Tokenizers should be required to run additional AML checks based on on-chain data via a reputable vendor like Chainalysis. This constitutes the same level of involvement that major stablecoin operators and exchanges are currently subject to. Solid World DAO's response: Verra's Approach to Third-Party Crypto Instruments and Tokens 10 This appears to be in line with the FATF guidelines for interacting with unhosted wallets (295 to 297). We believe Verra should make sure to align its requirements with FATF guidelines in order to assure no conflicts will emerge in the future. **Q6.2 KYC checks for entities holding or transacting Assets on-chain** - When it comes to on-chain regulation, the authors would like to emphasize that these systems are best regulated on their boundaries - the entities that connect real-world value to the blockchains, as regulations can be applied to regulatable entities, like Tokenizers, Stablecoin providers, and cryptocurrency exchanges. Stablecoin providers like Circle are an example of this, as they allow for the tokenization of dollars and the redemption of dollars in exchange for tokens. They are expected to apply appropriate KYC and AML procedures to their customers who use their tokenization services. They have not been expected to keep track of the identity of every individual holding USDC once it is on-chain, however. This being said, they can block organizations from using their onchain services or freeze assets based on the requests of regulators. Where not legally necessary, on-chain entities that merely hold tokenized assets should not be required to submit to KYC, but a mechanism should be maintained which would allow specific Addresses to be barred from participating (as described in Q1.4 option 3). Verra would then set out general guidelines for the kinds of services that should require KYC of customers and enable this by the Tokenizer operating a mechanism for control. If Verra opts to exclude Q1.4 Option 3 due to whatever reasons, it should be noted that there are some very sticky, hard-to-answer questions that this would bring along with it. There are some open questions concerning KYC which will require guidance and collaboration with Verra to address. • **Autonomous Permissionless Smart Contracts may be the direct owners of tokenized Assets for an extended period of time**. These Smart Contracts may or may not exist prior to owning the Asset in question. There might be no clear legal entity to whom KYC would apply in this situation, as the original developers themselves might have limited or no control. Examples of this might be: ○ Automated Market Makers (AMMs), which manage trades between two or more tokens at a price internally determined by the balance of assets within the Contract. Examples of this would include Uniswap and Sushiswap

- Over-collateralized Loan Protocols, which accept an over-collateralized value of tokens in exchange for the ability to borrow some other token at an algorithmically determined interest rate based on the behavior of the free market of supply and demand. A major example of this would be Aave.
- Permissionless Inter-blockchain Bridges, which lock up tokens on one blockchain and emit a voucher token on another blockchain. While the asset is locked, the token in question sits within the bridge's treasury.
- Automated Auction Protocols which could feasibly hold tokenized Assets while participants bid for them. The specific Smart Contract in question might "come into existence" only at the initialization of the auction.
- Arbitrage Bot Smart Contracts which can move Assets across different liquidity pools to even out price disparities across different AMMs. These are the backbone of on-chain price discovery.

- **Decentralized Autonomous Organizations (DAOs)** which can be completely anonymous, widely distributed, independently organized, or potentially lack any real-world legal entity. Or a real-world association that doesn't have a traditional corporate legal body. Examples of this would be organizations like Mangrove DAO (which through the TREE Coin ICO helped save a successful WIF-operated Mangrove project back in 2017 which would have otherwise failed) or KlimaDAO.
- **Multisignature Wallets (Multisigs)** are asset-holding entities that require multiple participants to sign off on proposed transactions to execute them. These Multisigs may in turn have some of the participants be other Multisigs or (potentially autonomous) Smart Contracts. These Multisigs may also have changes in signees Solid World DAO's response: Verra's Approach to Third-Party Crypto Instruments and Tokens 11 over time, creating questions about how this would invalidate any previous KYC and if so, who should monitor these events.
- **Smart Contracts that directly control some or all functionality of another Smart Contract that owns Assets Smart Contracts that originate ie "bring to life" other Smart Contracts (with new addresses) that control tokenized Assets.** This is a standard practice within decentralized protocols due to various reasons including existing technical limitations and the change in stakeholders who should govern the new Smart Contract (if it should be able to be governed at all).
- **The blockchains hosting the Asset in the first place. Or the validators of said blockchain, who affirm and record transactions.**

Answering the questions above with clear guidelines can unlock a lot of value within the larger ecosystem and would greatly be appreciated if Verra opts for Option 2 as presented in Q1.4.

Q6.3 On the topic of recursive KYC enforcement

It should also be noted that the statement made within the commenting document regarding a sort of recursive requirement for KYC checks is problematic from a purely technical perspective.

"KYC checks would apply not only to holders of crypto instruments or tokens issued on the back of VCUs, but also any holders of crypto instruments or tokens that are issued on the back of those crypto instruments or tokens, and so forth."

Recursive KYC would currently be practically viable under closed, permissioned systems, in which only explicitly permitted actors may participate in the system in any form. This could take the form of the blockchain itself being permissioned (Q1.4 Option 1), or the system on top of it being closed and permissioned (Q1.4 Option 2). Both of these options, as previously discussed, create high amounts of friction for systems built on top of them to operate. This recursive nature is also hard to require purely on a code level, necessitating trust in third-party organizations to comply with these needs. It's unclear if this is truly desirable.

While there is a technical avenue on permissionless public blockchains to deliver on this requirement - it would require (likely manually) allow-listing participating entities (including Smart Contracts), which wish to interact with any Asset. This can create a large amount of friction and make existing, often battle-tested on-chain systems unable to directly integrate.

The problem mainly comes down to defining the edges of where KYC is and is not necessary. For example – are an on-chain DAO treasury's DAO token holders liable for KYC if the treasury holds any of Verra's Assets? Verra should investigate the recursive KYC requirements in light of the examples raised in Q6.2.

The authors feel that limiting access to assets only to explicitly allow-listed entities slows down innovation and creates roadblocks, which Verra has not provided justification for within the contents of the consultation document. It is clear, however, what such arguments might be - mostly arising from regulatory uncertainty around regulatory questions similar to the ones which have been raised here. Whatever the case, it significantly burdens publicly accessible, decentralized, permissionless blockchains while privileging the status quo of closed proprietary systems that exclude any public, participatory, permissionless interactions.

Q6.4 KYC checks for beneficiaries

In the case of requiring all beneficiaries to KYC, the authors would point out that currently any organization wishing to offset on Verra in collaboration with a third-party registry account holder may do so without explicit limitation. **In Verra's current system, the retirement beneficiary is a text field with no restrictions placed on it. Requiring KYC checks for beneficiaries, but only if they are on-chain is an unjustifiable requirement within the larger context of how the VCM operates.** A beneficiary may, for example, be a loosely organized group with no legal entity — or a series of random numbers and letters. This is the mechanism that Toucan used Solid World DAO's response: Verra's Approach to Third-Party Crypto Instruments and Tokens 12 to enable the decentralized tokenization of VCUs originally. The act of filling out random information in the Beneficiary field does not seem to be apparently in conflict with Verra's Terms of Use.

In terms of non-crypto players, **there are many existing organizations that provide ways for individuals to interact with Verra's assets, who are not subject to stringent KYC requirements or detailed disclosure of ultimate beneficiaries to Verra**. As stated in the previous discussion about fractionalization: Patch's retirement beneficiary field simply reads "On behalf of Patch's customers and their end-users". Cloverly's retirement beneficiary field simply reads "Cloverly for carbon offset plug-in on retail websites."

Examples of retail operators include:

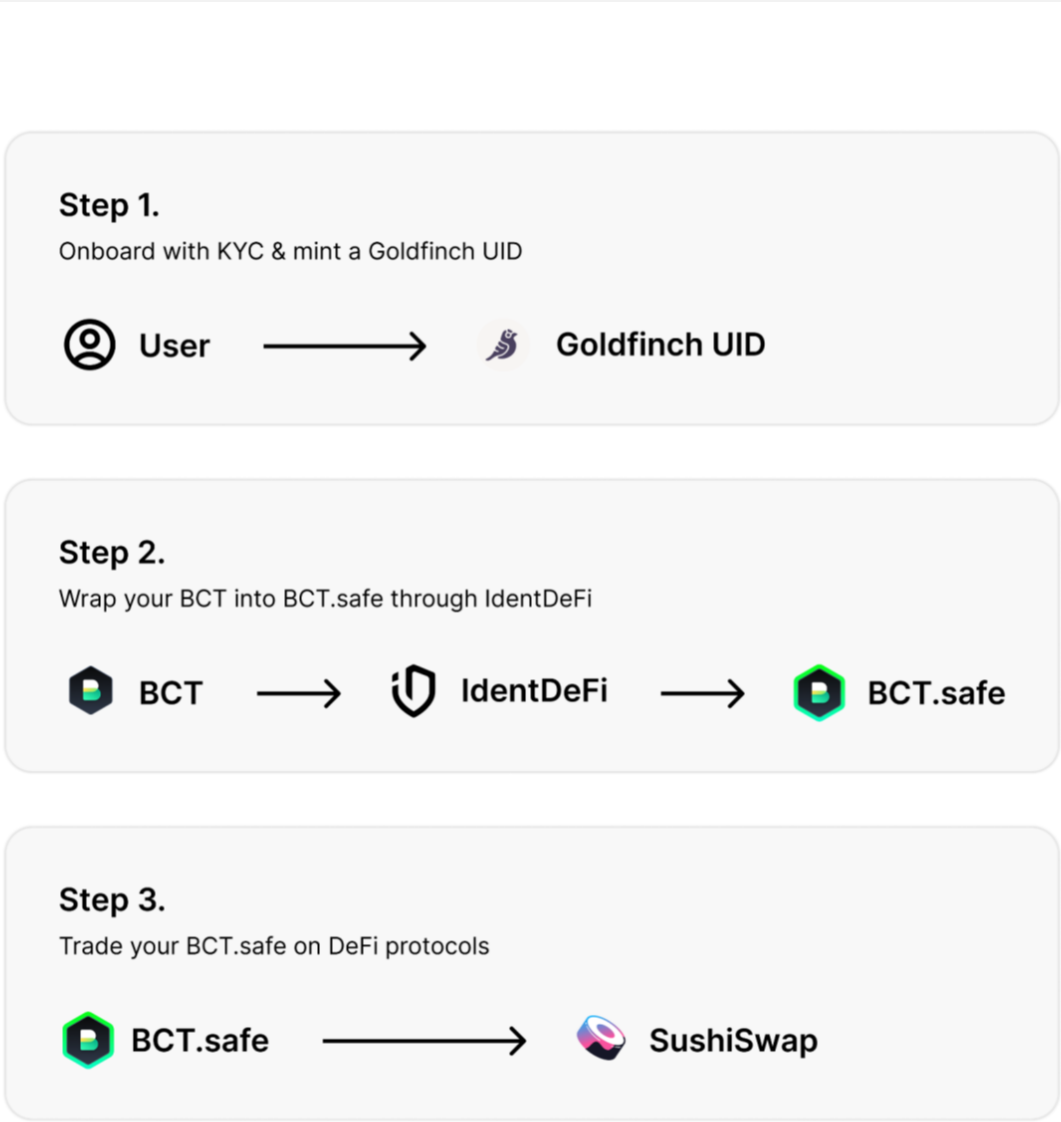
- Patch
- Cloverly
- Carbonfund
- Cool Effect
- Terrapass
- Carbonclick
- among many others

	The only requirement seems to be a working credit card and a working email address (and not potentially even that, if services are rendered to their customer's customers as can be the case with retirement API services). Even if a credit card and email address re collected, this does not seem to constitute significant KYC, traceability, or auditability. Chainalysis CTO & ex-FBI Assistant Director has gone on the record in a Reuters interview with the statement: *"**It's a common misconception that crypto is anonymous and untraceable. In fact, it's quite the opposite**: Cryptocurrencies operate on public, immutable ledgers known as blockchains, and anyone can look up the entire history of transactions of cryptocurrencies that use public blockchains like Bitcoin. Cryptocurrencies are more transparent than most traditional forms of value transfer."* The authors would ask if these requirements are intended to also be placed on current digital retailers of carbon offsets who provide this service to individual people, indirectly to unknown parties, or other non-KYC entities. Or whether these requirements are intended to exclude entities with no incorporated legal body from participation in voluntary offsetting entirely, even if done through a third-party registry account holder. Anonymous retirements should continue to be possible (as at least the authors could not identify a reason why it shouldn't be possible if desired), but should not be allowed within the context of large organizations making claims about their carbon footprint for ESG or compliance purposes. These sorts of situations continue to be practically possible within the status quo of Verra's current registry system, which doesn't function as a "source of truth" for beneficiary data. Optional KYC could be provided as an option for organizations wishing to claim these offsets for corporate reporting, who (wish to/need to) have a provable audit trail. This could possibly be done in conjunction with a sort of "global retirement tracker" as discussed in Q1.1. **Finally, it is not clear what sort of fraud would be enabled by retirement beneficiaries not being subject to KYC and why that wouldn't currently already be possible under the existing status quo.** If this is indeed a significant risk, the problem appears to be general and technology-agnostic in its underlying reasons. Benefits can be claimed by entities with no direct agreement with Verra. Beneficiary KYC and the resulting ability to create a provable audit trail with selective disclosure, even if the Beneficiary has used a third-party registry operator, is a service that seems to be a strong avenue for Verra to both further increases the integrity of its Assets as well as create an additional stream of revenue. Solid World DAO's response: Verra's Approach to Third-Party Crypto Instruments and Tokens 13 **Q6.5 Plea for equitable treatment in requirements** We ask that any new requirements Verra creates by issuing official guidelines be implemented in a technology agnostic way. When it comes to digital assets and the third-party provisioning of services on top of them - limitations being placed purely for the virtue of using distributed ledger technology seems like an undesirable outcome. Requirements should be proportionate to those applied to the rest of the market. Requiring beneficiaries to KYC, but only if the retirements are done on-chain, is not proportionate. We have provided many examples in which Verra currently has even less information than they would when it comes to on-chain retirements. When it comes to holders being subject to KYC - Verra should investigate the legal implications of either side as well as maintain a mechanism to exert control if regulatory landscapes shift.
23	From a technical point of view the Know Your Client requirements must apply for the BSPs and for the Users that require Tokenisation and De-Tokenisation process. As the European Parliament recognised in a recent motion for a resolution of 4 April 2022 (20121/2201 - INI), crypto-assets are becoming increasingly important in international finance, forcing tax administrations to adapt current tax practices to new challenges and needs.

	The EU Commission in July 2021 presented a package of legislative proposals to strengthen the EU rules on anti-money laundering and countering the financing of terrorism (AML/CFT). Furthermore, on 14 March 2022, the European Parliament's Committee on Economic and Monetary Affairs (ECON) adopted its negotiating position on the text of the proposed MiCA (Market in Crypto Assets) Regulation on crypto assets with the aim to provide a Europe-wide regulation of cryptocurrency activities. With reference to the first proposal, on anti-money laundering regulation, a provisional agreement was reached on 29 June 2022 between the Council and the Parliament, with the stated aim of extending the anti-money laundering rules to cryptocurrency transfers. Specifically, the aim is to ensure financial transparency on crypto-asset exchanges and to provide the EU with a framework in line with the highest international standards in the field. Although NFTs were excluded from the proposed regulation MiCA, the provisional agreement stipulated that within 18 months, the European Commission will be tasked with preparing a comprehensive assessment and, if it deems it necessary, a specific, proportionate and horizontal legislative proposal to create a regime for NFTs. Until a more specific regulation is adopted and even if NFTs are excluded from the MiCA Regulation, in the EU the trend is in the direction that BSP platforms adopt KYC procedures inspired by those provided by the Anti Money Laundering Directives. In this regard, the Fifth Anti-Money Laundering Directive - Directive (EU) 2018/843 of the European Parliament and of the Council of 30 May 2018 on the prevention of the use of the financial system for the purpose of money laundering and terrorist financing and amending Directives 2009/138/CU 2013/36/EU - extended the AML due diligence obligations on service providers relating to the use of virtual currency, also stipulating that member states must provide for a special registration procedure for exchange and e-wallet providers. In Italy, implementing EU Directive 843/2018 on Anti-Money Laundering and Know Your Customer measures, would have included in the definition of "virtual currency" also digital representations of value not used as means of exchange, but held for investment purposes, provided that they are transferred, stored and exchanged electronically, therefore, also NFTs. In light of the above, Verra should consider to carry out KYC checks as much possible in line with the above mentioned AML regulation on BSP platforms before authorising them to issue, market, and/or transact in crypto instruments or tokens that are backed by VCUs. Verra could also check whether the platforms have proportionately and consistently taken appropriate and adequate KYC measures to deal with the associated money laundering and terrorist financing risk of their customers that receive, use, or are the beneficiaries of such instruments that and also of those that hold crypto instruments or tokens. The checks mentioned above shall also be made in compliance with GDPR and privacy regulations.]
24	All entities with accounts on Verra registry should be required to undergo KYC.
25	In general, KlimaDAO advocates for a tiered and proportional KYC environment, in which KYC is optional for activities that do not represent substantial risk to the integrity of the ecosystem while it may be required for other activities. Some KYC processes can be implemented by the entities participating in the on-chain market, as opposed to Verra having to be responsible for actually doing the KYC. Tiered approach: 1. Tokenization (and de-tokenization) should always require KYC, and implicitly does even without explicit checks by the bridge provider because first-party bridging requires a registry account (which requires KYC to open). 2. For transactions, users should have the option of whether they are comfortable (or permitted) to transact with other parties who are not KYC'd via a permissionless pool. This is the approach taken by major lending protocols such as Aave to provide institutional-grade pools for trading.

3. For users who have requirements to only interact with known entities, a KYC-required permissioned pool along the lines outlined above for BCT.safe can be offered:

   - IdentDeFi solution: “A Proof of Concept will demonstrate the technical feasibility of the solution with a single KYC provider. A KYC-wrapped version of BCT (BCT.safe) will be created, which will automatically check for a valid KYC identifier in both the sender and receiver wallets prior to any transfer that is made with the BCT.safe token.
   - This means that users who wish to hold or trade the BCT.safe directly will need to undergo a KYC process with a supported KYC provider (see illustrative example in diagram within document)


Step 1.
Onboard with KYC & mint a Goldfinch UID
User
Goldfinch UID
Step 2.
Wrap your BCT into BCT.safe through IdentDeFi
BCT
IdentDeFi
BCT.safe
Step 3.
Trade your BCT.safe on DeFi protocols
BCT.safe
SushiSwap

	- Retirement should never require KYC, but functionality should be built into the tokenized credits to provide the option for retirements to be tied to a specific KYC'd entity rather than simply a wallet address
	  o Requiring KYC for all retirements would represent a double standard given the existing practice of off-chain retailers reselling Verra credits without requiring KYC (simply a credit card number).
	  o Thus, if Verra believes that KYC should be a requirement for retirements, at least provide for some reasonable maximum retirement size, below which entities are not required to KYC.
	  o KYC-optional retirements paired with KYC-required bridging (and transactions) would be analogous to the blank retirements already possible today in the Verra registry
	  o Example of SushiSwap integration and scale of latent demand (>1mn tCO2e that could be offset by small txns and web3-native retirements over the next few years).
	- Reactivation of credits always require KYC as the receiving party requires registry account

26	In our view, one of the key risks of on-chain tokenisation is the potential for misuse of them for ML or other unethical activities. The VCM has suffered significant reputational damage in the past as a result of boilerhouse activities and the mis-selling of credits to individuals as investments. The market cannot afford a repeat of this type of harm, as we seek to step up and play a much larger role in climate action. We do not have specific proposals of how Verra can mitigate these risks, but we would urge you to take these risks seriously.
27	No. In our opinion, KYC of buyers of tokenized carbon credits (i.e. the clients of the clients of VERRA) is beyond the scope of VERRA.
28	goodcarbon is dedicated to preventing money laundering and combatting terrorism financing. We have implemented comprehensive KYC checks that apply to project partners as issuers of VCU Tokens as well as all buyers who seek to invest in and/or trade with the products we offer on our platform (for further input, we kindly refer to the attached 'Verra – Related Instruments Due Diligence Questionnaire' completed by us). Thereby, we ensure to run KYC checks not only on entities which issue VCU Tokens, but also on entities that ultimately use these VCU Tokens (i.e., the buyers of our platform) and, lastly, through the identification of beneficial owners, the beneficiaries of such use. To maintain the same level of protection and to avoid reputational damage, we strongly recommend obliging platforms to implement corresponding KYC checks.
29	As a practical matter, web3 platforms may have limited authority to extend KYC or related vetting steps to "all entities that hold" tokenized VCUs. Platforms authorized by Verra to tokenize VCUs held in parallel in immobilization sub-accounts on the Verra registry should undergo and pass Verra's partner-vetting bar. At a minimum, this implies all KYC/AML checks required or recommended in the relevant jurisdiction. However, it could also reflect other diligence Verra may require to verify environmental integrity. Verra may and certainly should insist that platforms commit, via Verra's contractual Terms of Use, to perform all mandatory KYC/AML checks on their downstream customers. It may also be prudent to require platforms to follow, to the extent reasonably practicable, all sub-regulatory guidance issued with respect to KYC/AML. Yet, often, KYC/AML rules demand little more than basic identity. While we recognize the potential advantages of ensuring that purchasers of tokenized VCUs satisfy a higher bar, including minimum environmental standards – e.g., that such entities do not cause avoidable environmental harm or disproportionately burden vulnerable communities – we would caution Verra against requiring platforms to conduct that degree of additional vetting.

	Helping the voluntary carbon market scale ought to be Verra's first priority, which could easily be hindered if administrative burdens on platforms are increased and the demand pool contracts contracts, as would be expected.
30	Presently, a participant must open an account at Verra or an established registry, and provide certain KYC information. Corporate buyers of credits from Verra rely on the rigor of Verra's processes. We believe that issuers of carbon credits should conduct KYC or work with Verra to ensure that their processes include appropriate and effective KYC practices. At the same time, as the VCM grows, it is expected that more individuals, smaller companies or entities will participate. Some of these participants may come from different jurisdictions, where certain KYC or KYC tools may not be easily available or will be cost prohibitive. Given the complexity of this issue and the legal and regulatory landscape in each jurisdiction, we believe Verra should continue to engage with subject matter experts across jurisdictions to find the best solutions for effective KYC processes related to issuers, buyers/sellers, and beneficiaries of carbon credits.
31	• Users • Beneficiaries
32	Existing AML and sanctions regulations and authorities applicable to certain digital asset activities should effectively mitigate against illicit activity that could occur on web3 VCU market products and platforms. Moreover, any registered VCU market participants should be performing KYC checks where required by law.
33	Key Takeaway: Tokenization Platforms do not have a legal obligation to conduct any KYC on the recipients, users, or beneficiaries of the tokens who do not directly engage with the Tokenization Platform. Attempting to conduct KYC on all token holders would be nearly impossible from a practical standpoint and would inhibit the utility of the tokens. While Flowcarbon does not have a legal obligation to implement an AML program, we believe that Tokenization Platforms should nonetheless conduct KYC checks on the following parties: • Each Supply Partner (i.e. those who transfer VCUs into Flowcarbon's Verra "warehouse" account for tokenization and receives GCO2s); • Any party who receives a Direct Reference Token (i.e. a GCO2) from Flowcarbon or another party; • Any party who "redeems" a carbon token and thereby takes custody of a VCU; and • Any party "retiring" a carbon token and providing personal retirement details to be used on the Verra Registry as having been retired in that party's name.21 By contrast, Tokenization Platforms should not have obligations to engage in KYC checks on other parties not listed above. Neither Verra nor the Tokenization Parties (such as Flowcarbon) should be required to conduct KYC on persons who hold the carbon tokens between the initial Supply Partner who receives the newly-minted token, and the ultimate user who retires it. Neither Verra nor the platforms have any obligations in this regard because they are not entering into or facilitating transactions for those parties in a way that would require KYC checks. Similarly, as identified above, platforms are not financial institutions with anti-money laundering compliance obligations. It is possible that these "intermediary" token holders may have been subject to KYC by third-party exchanges through which they purchased the carbon token, but the Tokenization Parties have neither the legal obligation nor practical opportunity to conduct KYC on successive holders given that the platforms would not ordinarily interact with holders other than at the on/off-ramps of the Tokenization protocol.

	21 If the party retiring a carbon token remains anonymous, such person should not be subject to KYC checks. We do not believe there is any significant risk or harm associated with anonymous people or entities retiring VCUs. For a more robust discussion on this topic, see our answer to Question #7.

2.3. What, if any, information on crypto instrument or token holders should be made publicly available?

#	COMMENT
1	In the larger interest and to ensure alignment to compliances across leading countries this will be a necessity. Having said that, 'make it available Public' will not be an expectation of any government / administration. Also, doing so could lead to violation data privacy laws that could potentially lead to misuse. This is where, the technology for BlockChain can be picked based on its ability to support private chain rather than public chain. Herein Verra Platform can make the information available to the government / administration the data they specifically seek and not all the data are made public.
2	If Verra does decide to go down the immobilization path, I guess it would help if Verra publicly claimed which tokens are 'legitimate' crypto-VCUs. This could help avoid double-counting/derivative crypto-VCUs. However, this increases Verra's liability, and I just don't see the upside vs going back to the Toucan method + KYC
3	We don't believe it is feasible to make information about token holders public. Marli publishes information at offsetting (retirement). We publish serial numbers, token IDs and business entity names.
4	Every address in the crypto space has a transaction history regarding transactions made on-chain, Verra could determine that a holder must provide information regarding their activities with VCUs offchain.
5	Name, website and basic contact information.
6	We understand that the highest level of information should be publicly available, including: 1. The number of Tokens created 2. The amount of tokens burned 3. Which kind of projects were tokenized 4. Whether there are additional certifications and auditing in addition to an independent party conference on the tokenization process 5. How the burning is done 6. Structural potential to query the serial number publicly
7	It is essential to provide an end-to-end KYC mechanism across the VCUs value chain, based on a unified DID standard, and receive from entities a list of addresses of trusted crypto wallets.

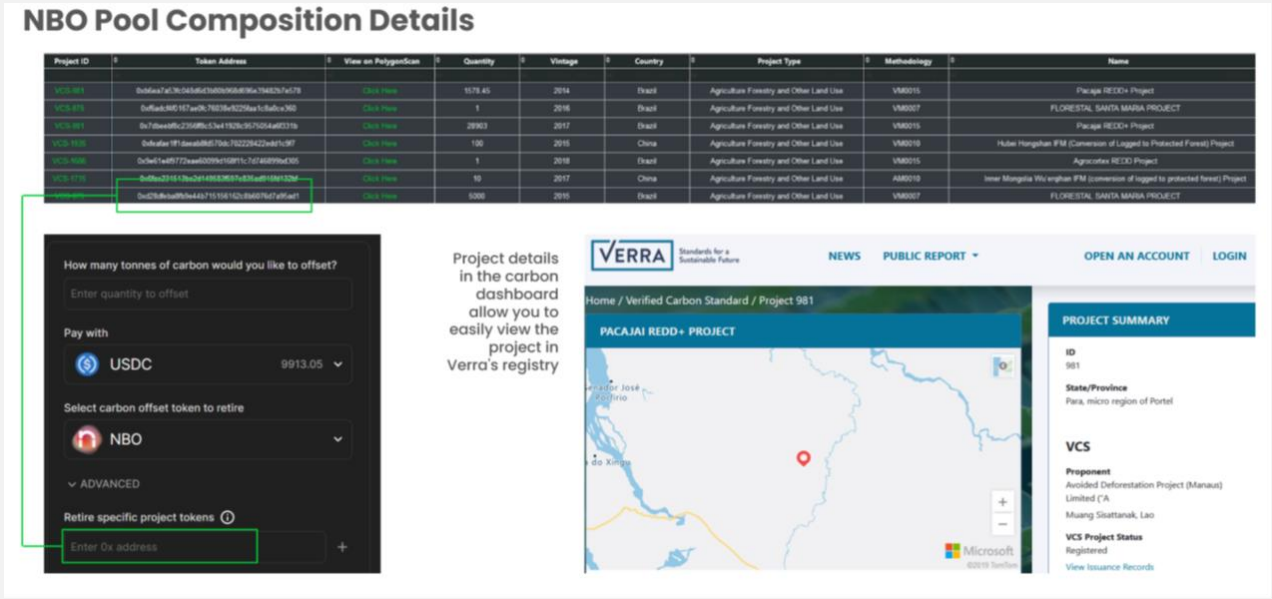
8	We should expose user data only to regulators, Verra (as a controlling party) or the administrator of the KYC structure. Any KYC data should be protected as to internationally agreed information security standards, such as ISO 27001. The transparent nature of blockchain combined with the regulatory needs of KYC can make for a dangerous cocktail in some decentralised structures. Organisations holding sensitive KYC data has a duty to protect the user. If a user were to KYC through a platform, the platform then holds the identities of these people and the link of personal information to wallets. If there were a breach of this data (which is true of any centralised or decentralised entity) then the user is identified. Generally, if we see a breach of user data in the legacy system, that system doesn't also identify their personal wealth. On-chain, this is unavoidable. The wallet itself is a direct representation (in many cases) of the user's wealth, and now their home address and personal information is also known. This is a major concern for user safety. For the avoidance of doubt, there should be a clear delineation around where data is held: • Off-chain (traditional database): PII; KYC documents. • On-chain: User-nominated retirement identification; wallet addresses; balances
9	• We believe there should be an option to make a name of a crypto instrument or token holder publicly available, but that it should not be a requirement. Similar to other instruments (i.e. stocks, bonds, etc.), there is no required public disclosure of ownership. • However, once immobilized, we believe it is appropriate to designate the entity that is overseeing / monitoring the tokens (i.e. the marketplace where the VCUs were tokenized) that correspond with the relevant VCUs
10	The blockchain that facilitates the tokenized VCUs should be a public blockchain where anyone can view the general ledger, but the holders' names are not made public; only a wallet address is disclosed. However, Verra should have access to view and audit the names, addresses, and geolocation of every tokenized VCU holder at their transfer agent or execution counterparties.
11	At the forefront of any decisions should be a focus on transparency. When tokens are retired, retirees should be encouraged to disclose their information as opposed to the current practice where disclosures are optional. Disclosure information should include purchase and retirement timeline, retirement activity, and retirement reason.
12	Having a register which highlights immobilized VCUs and the corresponding crypto instruments publicly available would help stop double use etc.
13	As with standard VCUs, available information might include: • Token hash (own inalterable code once created) for every CO2 abated ton. • Project proponent (entities involved in project development & project owner). • Carbon credit owner. • Credit generation date. • Transaction dates. • Vintage of carbon credit (emission reduction creation date).

	• Reason for carbon credit holding, acquiring or cancellation. This technology should bring transparency to any interested party that want to know information about the project, emission reductions carried out and involved companies activities.
14	Toucan recommends that Verra require any authorized tokenization platform to make the following information publicly available: Web3 account addresses that are linked to accounts in the Verra Registry Upon retirement of a token: Beneficiary; Beneficiary's web3 account address; and Reason for retirement[4] Toucan already makes this information available [4]It is our understanding that Verra's Registry Terms of Use do not currently require public identification of the beneficiary of a retired VCU.
15	We have no objection to Verra publicly identifying the specific VCUs that have been tokenized. However, we do not believe publicizing information on the identity of token holders or of transactions in the tokens is: • necessary – noting Verra does not currently publicize the identity of holders of VCUs or their transactions in VCUs; or • feasible – given confidentiality and operational issues, for example.
16	At CO2Network, we believe that in the protection of user data privacy and that no information on tokens or token holders should be made public, unless there is clear reason for providing this information (e.g. a request from a legitimate institution). On the identity-based MetaMUI blockchain, no information on users or transactions would be made public. The only public information that MetaMUI blockchain provides is the one of users' public keys, stored in the decentralized public key infrastructure (DPKI), key to verifying the identity of the signing parties in a 'decentralized digital signature scheme' (see question 1). Users (both individual and organizational) however will have access to their own transaction records, i.e. their KYT (Know-Your-Transaction) information, and will be able to use this to fulfill any legal obligations needed in the relevant jurisdictions (e.g. tax declarations). As the sole authority in charge of VCU immobilization and reactivation, Verra will also have access to KYT information allowing it to verify the ownership transfer records of a VCU-backed token before reactivating the corresponding VCU, and perform the exact ownership transfer of its VCUs. Finally, although not publicly shared, KYT information could also be revealed to countries or other relevant institutions that need data on carbon removals and reductions, and nationally determined contributions (NDCs).

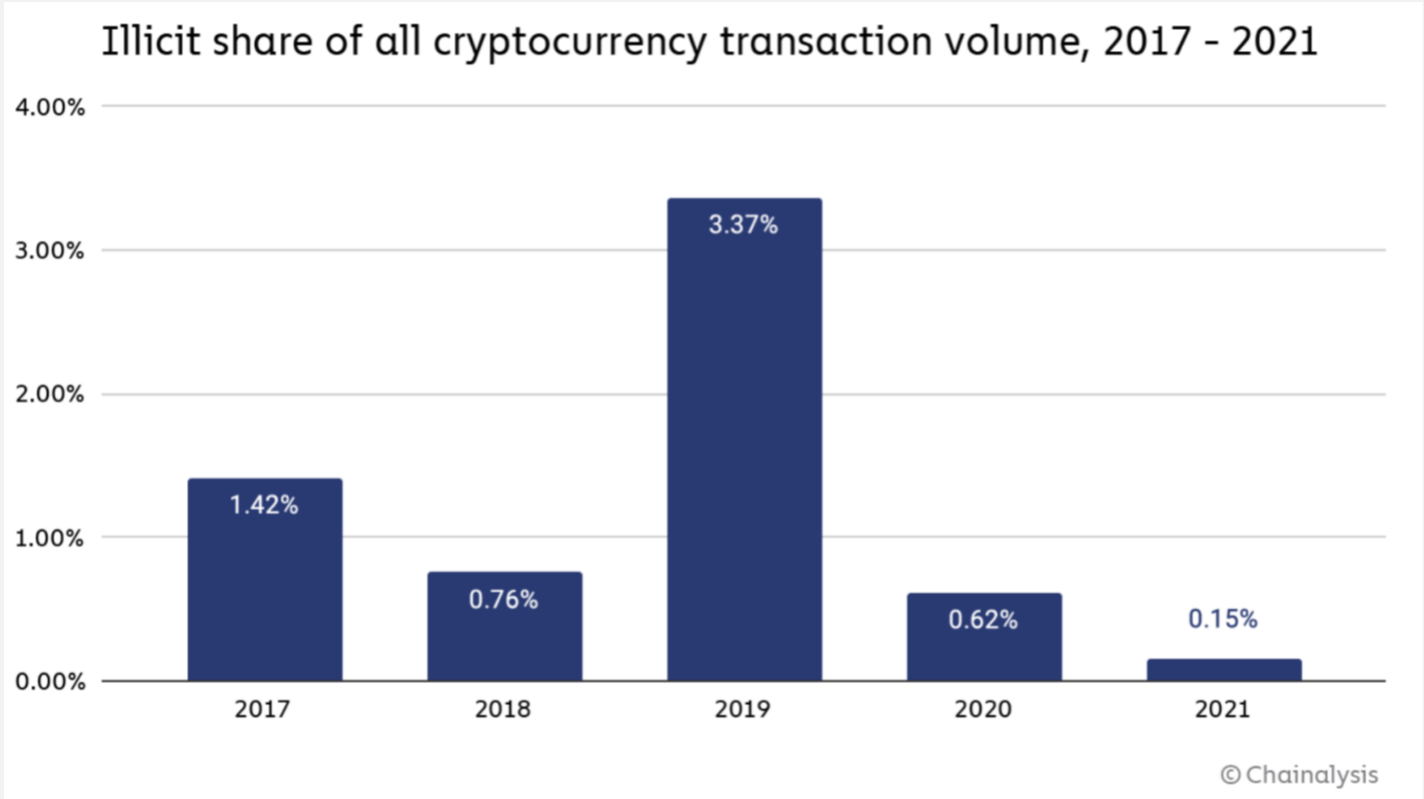
17	With regards to token attributes Powerledger recommends the attributes mentioned above in Q1 to be made publicly available for every tokenized credit, to reiterate, they are as follows: • Serial number • Vintage • Project type • Project commencement date (date at which the project went live) • Additional or Co-benefits • Retirement status (active or retired) Any transparency of trading data provided must finally lead to more proceedings reaching the project developers through the disintermediation of the market. This can be achieved through two methods: 1. Making organizational data of tokenized credit holders publicly accessible if the organization chooses to do so. This can allow consumer-centric organizations to show their customers and relevant stakeholders the purchases and retirements they have conducted while giving insight into the quality of the projects that the credits were sourced from. 2. Standard bodies can have a central dashboard that allows them to monitor carbon markets with full data transparency. These standard bodies can then certify/rate organizations based on the quality of credits retired and their co-benefits. For the public to understand that they have agency over the type of credits that organizations buy and retire, they must first be educated about the technology and its use. Stakeholders must be enlightened on the benefits provided by blockchain, the role of carbon markets in global emissions offset and methods to differentiate between carbon projects based on their quality and co-benefits.
18	We believe that key information such as transaction price and quantity should be made publicly available. The publishing of counterparty information would be at the discretion of the parties involved in the transaction. For reference, a Carbonplace ownership token will capture the characteristics of associated VCU and the blockchain will record full ownership and transaction history of the token. Initially, Carbonplace will operate a private, permissioned blockchain, and tokens on-chain will be visible to Carbonplace wallet-holders (and permissioned observers, e.g. Verra). Carbonplace is investigating the benefit of operating with a public blockchain, on which all tokens will be publicly visible (with customer information anonymised).
19	We support the proposed KYC approach and in general expect similar approaches to off chain assets. There is a growing ecosystem of blockchain KYC / AML services we expect to enter this market.
20	At the least enough for global consolidation/settlement/accounting/audit services to establish who retired a scheme-approved credit they definitely owned, and when – whether that service is trying to account for NDCs, a global company's offsets, corsia, measure a projects performance, deconflict multiple registries… the more the better in terms of confidence in the system, accountability, traceability, audit but there will be confidentiality concerns as well – some upcoming web3 techniques on data ownership and sharing may be relevant here.

21	As noted above, it is unlikely to be possible to gather this information unless you mirror the transactions on a ringfenced Verra blockchain using smart contracts rather than SPVs. In the CC world participants are only known as an address for a wallet on a block chain. The identity of the person beyond this is often kept private. So although the blockchain itself is very much public, the public/private boundaries in the CC world are VERY different to conventional VCU markets. See points above.
22	Tokenizers should be required to maintain a set of instructions for independently confirming the integrity of their system compared to the public immobilized inventory provided by Verra. This should be possible without the Tokenizer's direct involvement or consent. This would allow third parties to easily verify the integrity of the Tokenizer's claims. It's unclear what information Verra feels should be publicly available about token holders if Verra provides the ability to hide ownership information from the public on the main registry system and does not require the actual beneficiaries to be disclosed to Verra (for example batch retirements on behalf of clients or blank retirements). On public ledgers, limited information concerning any particular token holder may be derived within the context of their transaction history. This is how sophisticated on-chain forensics companies such as Chainalysis are able to independently trace the origin and destination of funds entering or leaving the crypto ecosystem. If Verra feels such information should remain public for these purposes, it could propose not enabling Tokenizers to operate on privacy-preserving blockchains where every account's transaction are not publicly viewable.
23	From a technical point of view the Know Your Client requirements must apply for the BSPs and for the Users that require Tokenisation and De-Tokenisation process. As the European Parliament recognised in a recent motion for a resolution of 4 April 2022 (20121/2201 - INI), crypto-assets are becoming increasingly important in international finance, forcing tax administrations to adapt current tax practices to new challenges and needs. The EU Commission in July 2021 presented a package of legislative proposals to strengthen the EU rules on anti-money laundering and countering the financing of terrorism (AML/CFT). Furthermore, on 14 March 2022, the European Parliament's Committee on Economic and Monetary Affairs (ECON) adopted its negotiating position on the text of the proposed MiCA (Market in Crypto Assets) Regulation on crypto assets with the aim to provide a Europe-wide regulation of cryptocurrency activities. With reference to the first proposal, on anti-money laundering regulation, a provisional agreement was reached on 29 June 2022 between the Council and the Parliament, with the stated aim of extending the anti-money laundering rules to cryptocurrency transfers. Specifically, the aim is to ensure financial transparency on crypto-asset exchanges and to provide the EU with a framework in line with the highest international standards in the field. Although NFTs were excluded from the proposed regulation MiCA, the provisional agreement stipulated that within 18 months, the European Commission will be tasked with preparing a comprehensive assessment and, if it deems it necessary, a specific, proportionate and horizontal legislative proposal to create a regime for NFTs. Until a more specific regulation is adopted and even if NFTs are excluded from the MiCA Regulation, in the EU the trend is in the direction that BSP platforms adopt KYC procedures inspired by those provided by the Anti Money Laundering Directives. In this regard, the Fifth Anti-Money Laundering Directive - Directive (EU) 2018/843 of the European Parliament and of the Council of 30 May 2018 on the prevention of the use of the financial system for the purpose of money laundering and terrorist financing and amending Directives 2009/138/CU 2013/36/EU - extended the AML due diligence obligations on service providers relating to the use of virtual currency, also stipulating that member states must provide for a special registration procedure for exchange and e-wallet providers. In Italy, implementing EU Directive 843/2018 on Anti-

	Money Laundering and Know Your Customer measures, would have included in the definition of "virtual currency" also digital representations of value not used as means of exchange, but held for investment purposes, provided that they are transferred, stored and exchanged electronically, therefore, also NFTs. In light of the above, Verra should consider to carry out KYC checks as much possible in line with the above mentioned AML regulation on BSP platforms before authorising them to issue, market, and/or transact in crypto instruments or tokens that are backed by VCUs. Verra could also check whether the platforms have proportionately and consistently taken appropriate and adequate KYC measures to deal with the associated money laundering and terrorist financing risk of their customers that receive, use, or are the beneficiaries of such instruments that and also of those that hold crypto instruments or tokens. The checks mentioned above shall also be made in compliance with GDPR and privacy regulations.]
24	The public hash of the crypto token needs to be in the public domain. This will help ensure that the entity selling the token is the eligible owner of the crypto and its underlying VCUs. In addition to that, there should be an independent public search mechanism exposed by Verra, where users can check the validity of the token hash and the underlying VCU. This will ensure that fraudulent hashes are not being claimed as legitimate tokens.
25	All data for crypto instruments and token holders on public blockchains is made publicly available by virtue of it being a publicly held database (that is, the blockchain itself). The level of detail and tracking of interactions with on-chain carbon are far superior using public blockchains thanks to solutions such as KlimaDAO's Carbon Dashboard (see below) which currently tracks all tokenized carbon credit activity on Polygon and Chainalysis (see below) which allows analysis beyond what is currently possible in the traditional VCM, which is typified by opaque OTC trading.



KlimaDAO's carbon dashboard provides real-time information about the state of the on-chain carbon market. You can view the NBO pool details here: https://carbon.klimadao.finance/NBO



Chainalysis tracks blockchain activity and can determine if illicit transactions have taken place using a variety of factors, including linkages to darknet markets and money laundering. According to the UN, it is estimated that between 2% and 5% of global GDP ($1.6 to $4 trillion) annually is connected with money laundering and illicit activity. This means that criminal activity using cryptocurrency transactions represents a far lower ratio of transactions as compared to fiat currency. Furthermore, the percentage of illicit transactions utilizing cryptocurrencies continues to fall.

Data for who is tokenizing on the Verra Registry should be treated as the rest of the market is. I.e. that account holder information can be made private subject to Verra's agreement.

Holding of Secured Tokenizer's dedicated accounts should be required to be public, and Verra should provide a standard view for accessing a Tokenizer's immobilized inventory to ensure auditability of tokenization / detokenization activities by that Tokenizer.

28	As DLT technology is public, but pseudonymous, a lot of information will anyway be publicly available. VERRA should not publish the identity of token holders, but it should provide technology so that token holders can reveal their identity (e.g. for marketing purposes), should they choose to do so.

29	Please be advised that information related to holders of VCU Tokens is provided for purposes of opening and maintain-ing project partner and buyer accounts and not to publish confidential data without prior consent. We fear that pub-lishing personal data will be illegitimate and excessive in terms of achieving a compliant and effective Verra ecosystem for related instruments. Only the public key and meta data associated with the specific natural climate project will and should be available to the public as such data is written on the blockchain. The respective platforms will be able to identify the relevant holders based on the KYC information available at any time. On the goodcarbon platform, only whitelisted users may participate in investing and/or trading.
30	As discussed in response to Q6, Verra likely is limited in its ability, both in terms of legal authority and practical leverage, to require all or even most ultimate purchasers of tokenized VCUs issued by third-party platforms to supply any information to Verra directly. Yes, Verra can insist that platforms authorized to mint VCU-backed tokens collect (downstream) and share (upstream) some customer data beyond KYC/AML, where and to the extent legally permissible. Where and to the extent permissible, Verra might then publicize some or all of that data. That might include: business name and registered address; corporate officers or registered agents; publicly available emissions data; publicly announced climate targets and sustainability claims and commitments; ESG ratings history; related litigation, securities and environmental regulatory filings, and submissions to entities such as SBTi and CDP; and carbon-credit transaction (buy/sell dates, quantities, unit and total price, etc.) and/or deployment information (offset usage claims, third-party auditing data, etc.). However, rather than risk chilling the market by attempting to impose burdensome sub-regulatory ESG disclosure requirements on participants in on-chain carbon markets not present in off-chain markets, we recommend that Verra rely instead on the inherent transparency capabilities of public distributed ledger networks themselves, especially where supported by advanced dMRV tools such as the Guardian.
31	The question of publicly available information can be challenging in traditional industries, where businesses must balance confidential and private information, in some cases belonging to customers, with regulatory or legal requirements (for recordkeeping, anti-money laundering as described above). Additionally, as the increase of digital assets across the world grows, there is also nuanced debate about privacy. We believe that the VCM faces the same challenges and safeguarding issuer and beneficiary information must be done in a thoughtful way. For example, certain privacy laws may apply to carbon credit markets, if carbon credits are being transferred on secondary markets (i.e. the GDPR in EU or the privacy laws in California). Verra may need to consider the laws in the jurisdiction it and its external partners are operating when determining what information, if any, is publicly available. The Verra registry is relied upon by buyers and market participants for its rigor and scientific methodologies. One important value of using DLT is that it allows for a new level of integration of real-time, granular data and analytics. It is also designed to allow certain data to be publicly available. While this additional layer of transparency or scrutiny might initially feel concerning for Verra, given its public nature, we strongly believe this new level of integrity is critical to generate substantial and sustainable corporate demand. Paired with the right safeguards, digitizing the VCM can further enhance trust in the market. We invite Verra to work with mission-aligned blockchains to ensure that consumer protections are as important as the transparency around the issuers of carbon credits and those who retire their credits, without jeopardizing privacy. There may be challenges in collecting or maintaining aggregated or anonymized data so as discussed above, it may be worth exploring ways that analytic tools natively built for DLT can be leveraged. There is a growing community of dMRV companies working to build out precisely these capacities and we encourage Verra to engage with them early to better understand how to integrate their applications and data layers in a seamless way. Hyphen Global, MRV Studio and dClimate are three noteworthy examples.
32	All the information. Blockchain should bring more transparency.

34 **Key Takeaway:** Verra should require that robust information and documentation on the projects and VCUs underlying carbon tokens be easily accessible. It is not necessary that Verra closely monitor environmental claims associated with retirements, as other frameworks will play that role.

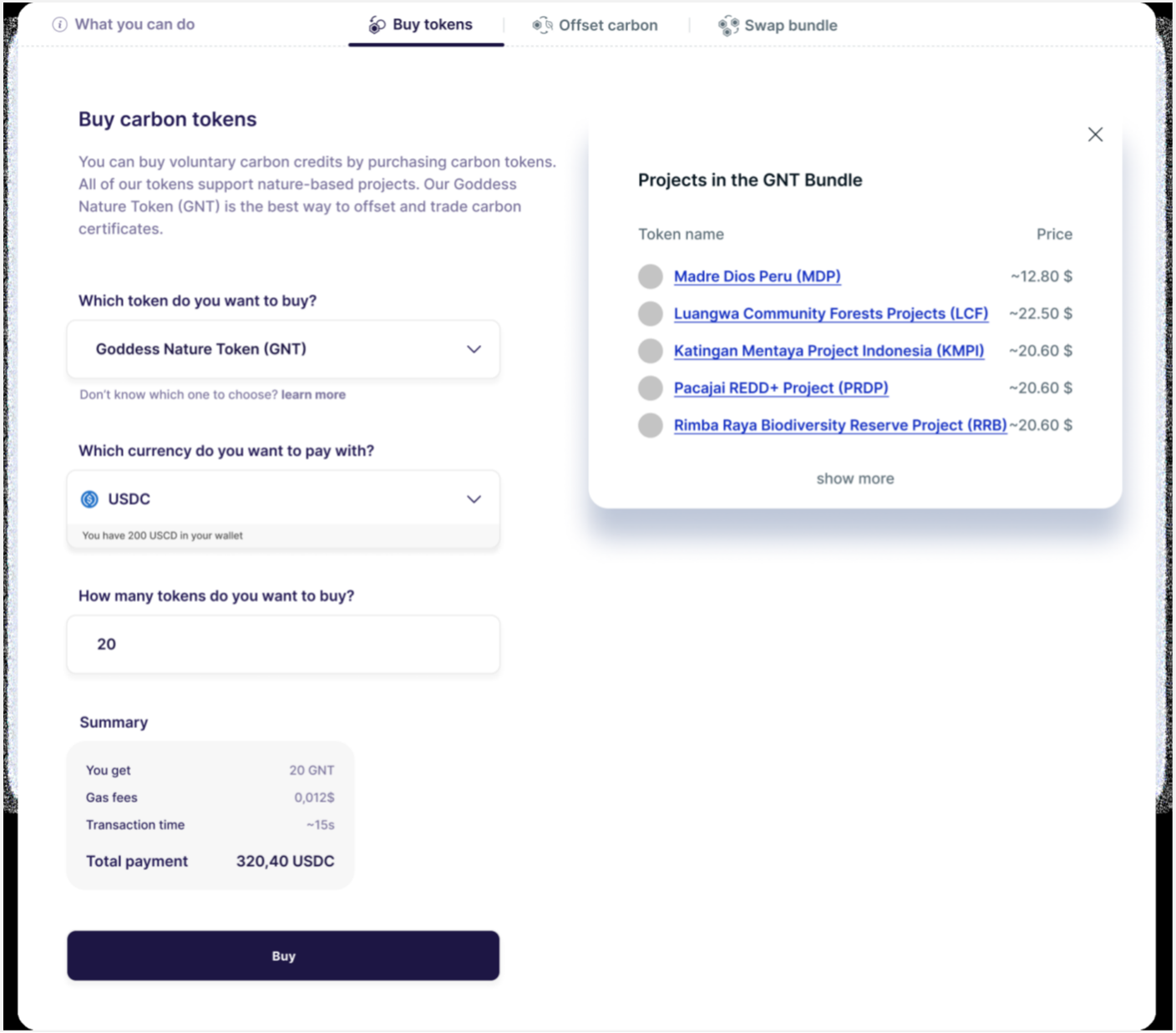
Maintaining environmental integrity does not require public disclosure of token holders or any third-party entity that ultimately claims an emissions reduction associated with retiring VCUs. Verra's core function of ensuring rigorous accounting of emissions reductions—to avoid double-use or double-issuance of any VCU—is not compromised by allowing registry account holders to retire VCUs anonymously on behalf of the account holders' clients or customers. In fact, Verra and other leading carbon standards already permit—and there is a market practice involving—registry account holders retiring VCUs anonymously.

Verra need not be responsible for publicizing and verifying the identity of parties claiming reductions in connection with the retirement of VCUs because there is an independent framework for auditing the integrity of emissions reductions claims. Within mandatory reporting regimes—such as the forthcoming final climate disclosure rule from the SEC—reporting entities will be required to obtain separate third-party audits (or "assurances") regarding the veracity and accuracy of their emissions reporting. With respect to voluntary reporting, the prevailing market practice is for companies to seek verification or assurance before issuing a sustainability report that is "compliant" with reporting frameworks such as the GHG Protocol or SBTi.

In other words, there is a separate and distinct framework for auditing third-party greenhouse gas ("GHG") reduction claims against specific targets in the context of GHG reporting; Verra does not need to play that role. Given the magnitude of GHG reductions required to address the threat of global climate change, Verra should be focused on scaling the VCM and ensuring the veracity and integrity of the emissions reductions themselves, while allowing these other entities to conduct any necessary verification for reporting emissions reductions.

Given the separate framework for verifying emissions reductions, maintaining environmental integrity requires only that the registries, including Verra, maintain their current disclosure requirements. Specifically, Verra should continue requiring disclosure of: (1) the projects that generate VCUs; (2) documentation submitted or produced as part of verifying and validating emissions reductions projects; and (3) the status of VCUs (registered, under development, under validation, retired, etc.).

It is important that the information on the carbon project behind the token should be publicly and easily accessible. Flowcarbon ensures that this information is only one click away in a manner that is as comprehensive and transparent, if not more so, than current best practice. Via Flowcarbon's interface, a potential bundle token purchaser can see all the projects inside the bundle. The user is then able to learn more about the projects by clicking on it. The image below (of a hypothetical bundle) shows the pop-up window of projects in a selected bundle.


What you can do
Buy tokens
Offset carbon
Swap bundle
Buy carbon tokens
You can buy voluntary carbon credits by purchasing carbon tokens. All of our tokens support nature-based projects. Our Goddess Nature Token (GNT) is the best way to offset and trade carbon certificates.
Which token do you want to buy?
Goddess Nature Token (GNT)
Don't know which one to choose? learn more
Which currency do you want to pay with?
USDC
You have 200 USCD in your wallet
How many tokens do you want to buy?
20
Summary
You get 20 GNT
Gas fees 0,012$
Transaction time ~15s
Total payment 320,40 USDC
Buy
Projects in the GNT Bundle
Token name
Price
Madre Dios Peru (MDP) ~12.80 $
Luangwa Community Forests Projects (LCF) ~22.50 $
Katingan Mentaya Project Indonesia (KMPI) ~20.60 $
Pacajai REDD+ Project (PRDP) ~20.60 $
Rimba Raya Biodiversity Reserve Project (RRB) ~20.60 $
show more

	Bundle Purchase Page The user is then able to click on a project bundle to pull up the information page shown below.

Zambia

Luangwa Community Forests Project

Registry	Additional Certification	Project Type
Verra	CCB Validation Approved	Agriculture Forestry and Other Land Use

About this project

The Luangwa Community Forests Project is a large-scale REDD+ project implemented in Eastern and Lusaka Province, Zambia, with an initial project area of 943,676 ha. A second project instance was added in 2021, comprising 92,990 ha, bringing the total project area to 1,036,666 ha.

The project is being implemented on communal land in 12 chiefdoms falling within Game Management Areas (GMA) and two private ranches. Implementation is in partnership with the traditional authorities and the government of the Republic of Zambia.

The project will generate emissions reductions through avoided deforestation, using the following mitigation activities: A combination of direct conservation support (forest monitoring and encroachment prevention) engagement and capacity building with key Government and community stakeholders, and conservation incentives for the area protected, including performance-based payments delivered to empowered community stakeholders through local institutions, and support to deforestation mitigation activities, including sustainable, improved livelihoods activities.

Date: **2019-10-30**
Area: **1,036,666 hectares**
Est. Annual Emmission Reductions: **2,985,650 in tonnes**

Co-Benefits & SDG

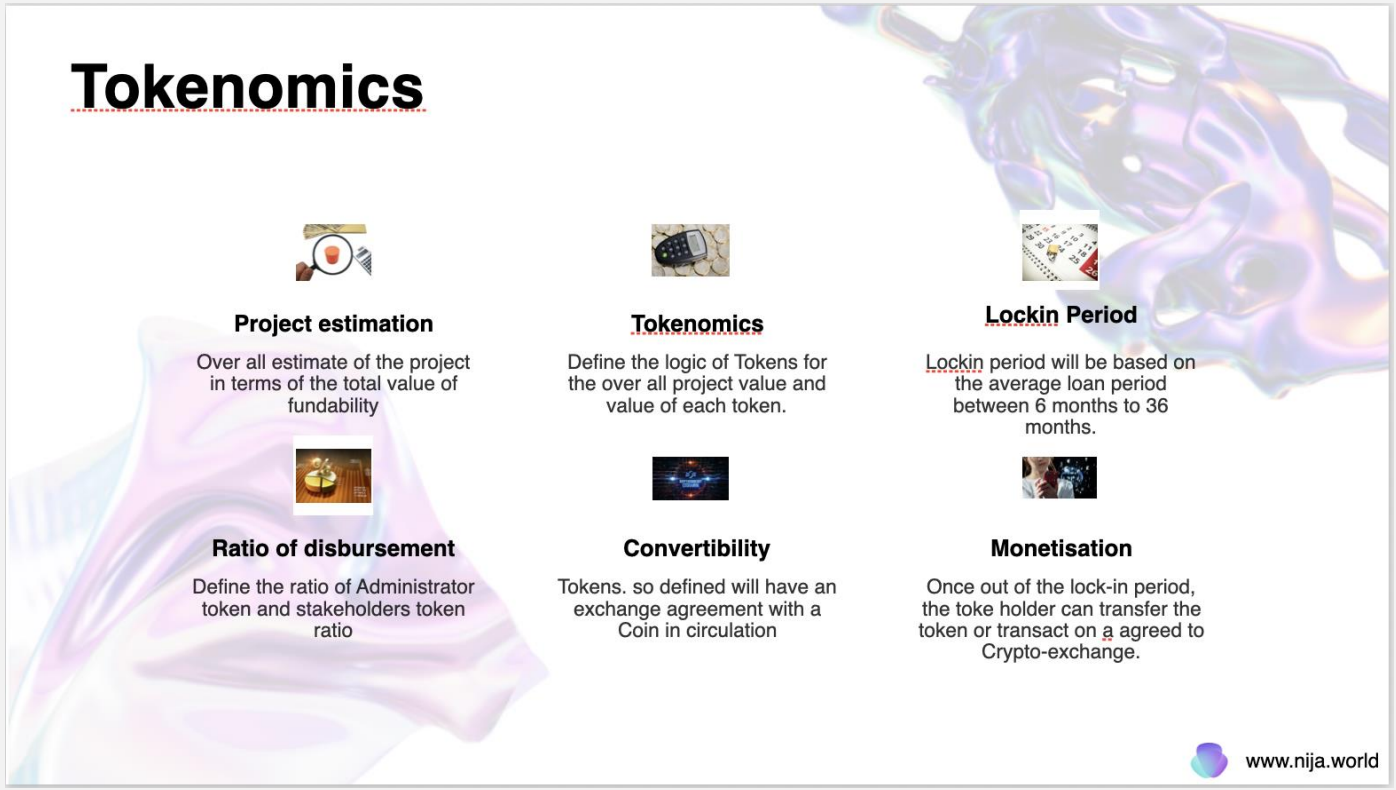
- Conservation of biodiversity in the Lusaka province
- Support of social development for communities living in the area

	Flowcarbon project information page

3. AMENDMENTS TO THE REGISTRY TERMS OF USE RELATING TO ANTIFRAUD

3.1.1. What textual amendments are advisable to address anti-fraud considerations related to the association of third-party crypto instruments and tokens with VCUs?

#	COMMENTS
1	This is again arrived at based on the Tokenomics exercise. You may please refer to the attached PNG file titled 'Tokenomics'. The whole textual amendments depends on the over-arching tokenomics based on which the Tokens are generated and the scope of allocation are made.

	
2	No textual amendments given. In summary, I recommend Verra refrains from the immobilization method, and rather goes back to the Toucan method with improved KYC checks and possibly a specific retirement option "Transfer to Blockchain" to help avoid any conclusion that an environmental claim is being made.
3	Making information public prevents fraud and false claims
4	Establish clear requirements and standards to issue crypto instruments or tokens, to communicate in real-time with Verra Registry and facilitate bridging and maneuvers from other third-party crypto instruments and tokens.
5	Compliance provides and makes clear the rules and the purpose of the tokens must follow a utility token, that is, a carbon credit token cannot make some different its representation and function, that of offsetting emissions, retiring the credits of carbon, thus avoiding doubts about the environmental project, the tokenization system or its representation and original purpose.

6	Including requirements for verification by an authorized third-party service provider e.g. Chainalysis which helps government agencies, cryptocurrency businesses, and financial institutions engage confidently with cryptocurrency.
7	Our comments below highlight existing sections in the current Terms of Use that may need to be updated to incorporate Verra's Proposal related to tokens • Section 1.9 – further elaboration related to the ability to create tokens related to VCUs • Section 1.10 – specify exact "evidence" required related to tokens • Section 6.3 – update guidelines around program sub-account as it relates to tokens • Section 8 – specific guidelines and the inclusion of platform that will tokenize VCUs in retirement process to prevent double counting / continued transacting of retired VCUs
8	Amendments should include an overview of the immobilized VCU-to-tokenization functionality along with illustrations or diagrams of the process. For example, if the Nominee account or transfer agent method is ideal, that entire process should be outlined, including KYC and AML checks, audits, burning of tokens, auto-exercise, etc.
9	Some key considerations would be in ensuring robust disclosures associated with retirement activity to discourage false claims of net zero. To go one step further and drive greater transparency, Verra could also consider putting in place mechanisms to facilitate a transparent record of transaction activity and holder history associated with each carbon credit.
10	CIC make the following recommendations to Verra on how to identify and implement anti-fraud measures relating to the association of VCUs with crypto instruments and tokens: 1. Verra must implement its own standard of gatekeeping groups who intend to use Verra Registry data for the creation of digital assets or digital representations of VCUs; 2. Verra implement its own KYC / AML standard on 1.; 3. Verra potentially charge an annual gatekeeping fee for the use of its Registry data in creating any product which associates VCUs with either digital exchange or crypto instruments and tokens; 4. Verra to partner with groups who are utilizing their data in digital markets to create new revenue streams.
11	Vemo considers that amendments shall be made in the following sections: • 5 – "Listing a project or activity": project proponent should clarify explicitly that is willing to emit blockchain (or other technology) token-associated carbon credits. In this step is also important that Project proponent permits Verra to access or link its database to VCS registry, to transact token-associated Carbon emission reductions. The transaction shall be ensured and registered in Verra Registry and no other platform, and token generated after emission reduction calculation and before VCU cancellation to avoid post-cancellation transactions through any platform. • 8. - "Cancellation and retirement of instruments": once tokens are transacted project proponent shall ensure that emission reductions can no longer be transacted and become property of the buyer, leaving a register of transaction data (seller – buyer – token code - date) in Verra registry.

12	Amendment A: 1.12 Subject to the Terms of Use, Verra consents to Users marketing and transacting Related Instruments that are issued by an Authorized Tokenization Platform. Explanation - The existing definition of "Related Instruments" is broad enough to encompass Verra authorized tokens. Clause 1.9 suggests that a User may not market or transact a Related Instrument without Verra's consent. In order to clarify that Verra need not consent to each and every token-related transaction, this amendment establishes that Verra consents to Related Instrument transactions on an Authorized Tokenization Platform Amendment B: 1.13 Verra will only approve a cryptocurrency or tokenization entity as an Authorized Tokenization Platform if that entity: (a) is not an individual (being a natural person); (b) has indicated its acceptance of these Terms of Use; (c) has provided sufficient identification information including satisfying any relevant Know-Your-Client (KYC) or other background check requirements in accordance with the procedures set out by Verra including the Program Rules and Requirements; (d) has the ability to monitor transactions on the platform; and 1.14 Verra may, in its absolute discretion, refuse to approve a crypto currency or tokenization entity as an Authorized Tokenization Platform. Explanation - This amendment establishes the requirements for an Authorized Tokenization Platform. The language draws from existing requirements in the Terms of Use for a "User." Amendment C: 3.1 Verra, through the Verra Registry, provides an electronic platform to list Project Activities that follow the applicable protocols and standards for the relevant Verra Program and record the issuance, transfer, retirement, immobilization or tokenization, and cancellation of Instruments within the Verra Registry.
13	We are happy to review amendments proposed by Verra to address anti-fraud considerations.

14	To efficiently address anti-fraud considerations, CO2Network recommends that Verra makes the textual amendments to its Registry Terms of Use explained below. Related to the tokenized VCUs, CO2Network recommends that Verra declares that 1. only tokens that have real VCUs as collateralized assets be deemed valid for trading purposes, and that 2. VCU-backed tokens cannot be used to exercise the environmental benefits of their corresponding VCUs. In addition, although the PIVOT tokenization process makes fraudulent actions like double-issuance or double-use extremely unlikely, CO2Network recommends adding a clause stating the legal priority of Verra's registry over the information on PIVOT in case of conflict. Secondly, given that the trading of VCU-backed tokens on PIVOT corresponds to legal ownership transfers (see question 6), Verra should mention that buyers of tokenized VCUs have the same legal obligations as if they had signed legal contracts offline. Finally, as the only entity able to verify the full ownership transfer on the blockchain, in the Terms of Use Verra should specify that it is the sole authority capable of reactivating VCUs after tokenized trade (for both full and partial VCUs in the case trading with fractionalized tokens).

15	Powerledger recommends the following points be considered for drafting anti-fraud provisions related to the association of third-party crypto instruments and tokens with VCUs:
	
	• Tokenized VCUs should only be listed on exchanges that have acceptable KYC standards and security measures appropriate for the instrument.
	  ○ Appropriate KYC information must be collected by the exchange which, at a minimum, allows the exchange to identify the person. Such information includes the end-user's full name, date of birth and relevant government identifiers (e.g. social security number).
	• All tokenization protocols must allow users to unwrap tokens to reveal the underlying credit, and automated un-encumbrance of the underlying credit should occur when the associated crypto instrument is burned.
	• Tokens should be locked when immobilised and remain unactionable to the user on the Verra registry account to prevent double-use.
	• All holders of tokenized VCUs should agree that the details of the tokens they own will be made available to the public with all attributes covered in Q1. Their personal details will not be visible.
	• Tokenization platforms must be vetted appropriately as described in Q5 and only after extensive vetting will they be able to start tokenizing VCUs.
	• Any proposal to tokenize VCUs will be reviewed by the Verra team to ensure quality outcomes will be achieved for the carbon market.
	• By purchasing or trading tokenized VCUs, the end-users agree that they will not use it for malicious or illegal purposes, in addition, end users must comply with all applicable AML and KYC legislation by which they are bound.
	  ○ This must be a separate term that needs to be agreed with by the user before purchasing tokenized VCUs and will need to be integrated into the end user license agreement/terms of use and specifically accepted in the UX of every exchange that is to list tokenized VCUs.
	• Tokenization protocols will host materials or education initiatives to educate end-users about the carbon market helping them make the right buying decisions.
	• Tokenized VCUs must be filterable by attributes present in the underlying credit in all exchanges they are listed in, enabling buyers to buy by a specific project, vintage, location, and/or co-benefits.

16	In order to ensure that the transaction of VCUs is not associated with fraudulent activity, Verra must be assured of the KYC of all owners of VCUs, at all times. For reference, all Carbonplace wallet-holders have KYC attested to by a sponsoring financial institution Carbonplace member. This ensures that every Carbonplace wallet-holder meets bank-grade KYC checks, and is subject to AML and sanctions screening in their jurisdiction. In order for a settlement to occur between two Carbonplace wallet-holders, the sponsoring financial institutions of the wallet holders must approve the trade. The movement of cash (and the transfer of the ownership token from the wallet of the seller to the wallet of the buyer), would occur only after the sponsoring financial institutions of the wallet holders approve the trade. Verra would delegate KYC for tokenized credits to Carbonplace, which would subdelegate that KYC to their customers who have previously onboarded on that entity. Members of Carbonplace, independently of their onboarding bank, should be able to freely trade inside the platform. Ownership and settlement of VCUs facilitated by Carbonplace ensures that every ownership token is, at all times, owned by a single, identifiable, KYC'd customer that meets bank-grade KYC requirements in their jurisdiction.
17	We are not aware of additional fraud requirements.
18	Approved token issuers should promise to accept a public ID allocated by Verra, and use that in communications and blockchain interactions – and make available a system (or work with blockchain explorers to mark tokens approved or not) so that people can look up whether that token is approved by Verra (also presumably associated marketing, so buyers know where to validate claims). Token marketplaces to be encouraged to carry out these checks on transactions (much as they now do on NFTs in order to maintain their own marketplace reputation)
19	Whatever Verra says in its rules, in the mind of customers of the tokenization projects those token projects will be associated with Verra and due to VERRA's reputation for integrity the levels of trust in those token projects will be increased. Sadly, this is represents a very high reputation risk for Verra, because if the token project fails or even worse if fraud occurs, the customers will be upset with all of the parties involved including Verra, no matter whose rules were or weren't breached. (That is, no-one will care if the fraud was against VERRA rules – it will be tarnished by this very bad, broad brush.). The cryptocurrency space has had many fraudulent projects, some of which were very sophisticated and misled very seasoned investors in the CC space. So it would be very difficult for VERRA to identify projects that were fraudulent before they collapsed without excessive levels of monitoring and auditing. This is hard enough in mainstream financial services markets where seasoned instruments can still – even under the watchful eye of expert regulators – give rise to fraud. VERRA with its candidly limited sets of skills and experience would be ripe to be set up in a carbon token market when even seasoned, experience CC leaders have been taken for a ride. However, the risk here is not just that fraud will arise in carbon tokens. It is that VERRA reputation – which is a guardian not only for the carbon tokens but for the mainstream VCU market – will be in tatters and confidence in the traditional VCM shattered. So, are there steps which can be taken to help mitigate these risks? And would they be sufficient?? For example, the schema by which the tokenization project intends to produce tokens and the nature of those tokens needs to be assessed by Verra together with cryptocurrency experts. Opening this process to public comment will considerably deepen insight into how mitigating security/fraud risks could best be achieved. For example, sometimes projects have collapsed just through errors or omissions in their smart contracts that lead to unintended consequences.

	Tokenisation projects should also have a duty to report immediately they are aware of fraud, suspicious activity, sudden price movements or activity outside of the expected operation parameters of their project. Perhaps there could be an automatic freezing of all transactions with the registry in any of these instances? The crux here is to insulate VERRA from the fraud … however in practice this will be extremely difficult if not impossible to achieve. In the same way that all CCs have become tainted with the fraudulent practices in some corners of the CC market, any fraud in carbon tokens with which VERRA was even just initially associated would tarnish VERRA's reputation across all of its activities (tokens and traditional VCUs) The VCM is already considered by some stakeholders as lacking sufficient integrity to be reliable or credible. VERRA's association with token fraud would be a nail in the coffin for VERRA's continued leadership role as a certifier and standard setter in the VCM. As such it represents an existential risk.
20	We do not have direct input on the wording of the resulting amendments external to the general sentiment described within the rest of the document.
21	In our humble opinion, as aforementioned Verra should consider to carry out KYC checks as much possible in line with the above mentioned AML regulation on BSP platforms before authorising them to issue, market, and/or transact in crypto instruments or tokens that are backed by VCUs. Verra could also check whether the platforms have proportionately and consistently taken appropriate and adequate KYC measures to deal with the associated money laundering and terrorist financing risk of their customers that receive, use, or are the beneficiaries of such instruments that and also of those that hold crypto instruments or tokens. The checks mentioned above shall also be made in compliance with GDPR and privacy regulations.
22	Provisions need to be made to include text related to immobilization, reactivation of VCUs, making public the hash used for converting the VCU into tokens to maintain traceability of VCUs. Text needs to be included making it the responsibility of the token issuing agency to maintain records for differentiating between the retirement of the carbon credits and using the tokens or the underlying credits and to communicate the same to VCS.
23	In our view, one of the key risks of on-chain tokenisation is the potential for misuse of them for ML or other unethical activities. The VCM has suffered significant reputational damage in the past as a result of boilerhouse activities and the mis-selling of credits to individuals as investments. The market cannot afford a repeat of this type of harm, as we seek to step up and play a much larger role in climate action. We do not have specific proposals of how Verra can mitigate these risks, but we would urge you to take these risks seriously
24	Combating fraud is imperative to ensuring the integrity of the VCM. Blockchain technology can help solve this problem. DLT allows network participants to see transactions on-chain, and smart contracts can be used to prevent one participant from spending more carbon credits than they have or more than once (same as with preventing double counting). In addition, the immutability of the DLT and programming code to ensure that all participants can observe all actions may help prevent fraud.
25	We will provide more information in the next months.
26	Textual amendments relating to anti-fraud considerations are not advisable at this time because several U.S. regulators — including the Commodity Futures Trading Commission ("CFTC"), the Federal Trade Commission ("FTC"), and potentially other federal and state regulators — already have

significant anti-fraud regulatory enforcement authority in both the digital asset markets, and the markets for environmental credits, offsets, and similar instruments. Moreover, various international regulators have significant anti-fraud enforcement authority in the digital asset and energy markets as well. 17 Considering this depth of experienced anti-fraud enforcement authority in the U.S. and abroad, any additional textual amendments could be duplicative.

1. Commodity Futures Trading Commission

The CFTC regulates derivatives, e.g., futures, options, and swaps, including digital asset derivatives, such as Bitcoin futures, and energy derivatives. Importantly as well, the CFTC is statutorily authorized to exercise anti-fraud and anti-manipulation enforcement authority in the "spot" (i.e., cash) markets for "commodities," 18 the definition of which is broad and likely captures carbon credits 19 and most digital assets. 20

Neither Congress nor the CFTC have definitively legislated or held that tokenized VCUs are commodities, but precedent and the fundamental economic characteristics of tokenized VCUs suggest that they are. Current proposals for tokenized VCUs, like Flowcarbon's GCO2 tokens, are a 1:1 representation of their underlying carbon credits and fully redeemable for such credits. Because the CFTC considers both carbon credits, and most digital assets to be commodities, tokenized VCUs are also likely to meet the statutory definition, which would give the CFTC anti-fraud enforcement authority in the spot market for tokenized VCUs.

2. Federal Trade Commission

The FTC enforces consumer protection laws, which affect virtually every area of commerce and prohibit unfair or deceptive trade practices, including deceptive advertising. Given its expansive authority, the FTC has asserted its authority to regulate false advertising in both the carbon credit markets, as reflected in its "Green Guides" publication, 21 and the digital asset markets through enforcement actions. 22 Accordingly, the FTC is well positioned to

continue protecting consumers of tokenized VCUs.

3. Other Federal and State Regulators

Other federal and state agencies, including, but not limited to, the Securities and Exchange Commission, the Consumer Financial Protection Bureau, the California Department of Financial Protection and Innovation, and the New York Department of Financial Services, may also potentially assert anti-fraud enforcement authority in the web3 VCU market. This vast array of regulatory expertise suggests that additional anti-fraud textual amendments are not advisable at this time.

V. Conclusion

a16z greatly appreciates the opportunity to provide comments on these important matters. We believe it is critically important that industry leaders, like Verra, thoughtfully integrate blockchain technology, as it is rapidly becoming a key pillar of the financial system.

17 *See Legal Implications of Voluntary Carbon Credits* , ISDA (Dec. 2021), *available* here ; J. Dax Hansen et al., *Digital Currencies: International Actions and Regulations* , Perkins Coie, *available* here (last updated Jan. 2021).

18 7 U.S.C. § 1a(9) (defining "commodity" to mean, "wheat, cotton, rice, corn, oats, barley, rye, flaxseed, grain sorghums, mill feeds, butter, eggs, Solanum tuberosum (Irish potatoes), wool, wool tops, fats and oils (including lard, tallow, cottonseed oil, peanut oil, soybean oil, and all other fats

and oils), cottonseed meal, cottonseed, peanuts, soybeans, soybean meal, livestock, livestock products, and frozen concentrated orange juice, and all other goods and articles, except onions (as provided by section 13–1 of this title) and motion picture box office receipts (or any index, measure, value, or data related to such receipts), and all services, rights, and interests (except motion picture box office receipts, or any index, measure, value or data related to such receipts) in which contracts for future delivery are presently or in the future dealt in.").

19 *See Voluntary Carbon Markets: Analysis of Regulatory Oversight in the US* , ISDA (June 2022), *available* here . *See also Report on the Oversight of Existing and Prospective Carbon Markets* , Interagency Working Group for the Study on Oversight of Carbon Markets (Jan. 18, 2011), *available* here . In addition, carbon credit trading and instruments like Renewable Information Numbers (RINs) have never been subject to Securities and Exchange Commission regulation as securities products.

20 *See The CFTC's Role in Monitoring Virtual Currencies* , CFTC, *available* here . Pursuant to its statutory authority, the CFTC has brought enforcement actions in the digital asset markets for many years. *See Cryptocurrency Litigation and Regulation Tracker* , Morrison Cohen LLP, *available* here (last updated Oct. 4, 2022) [hereinafter: "Cryptocurrency Litigation and Regulation Tracker"].

21 The FTC's "Green Guides," first published in 1992 and most recently updated in 2012, provide marketers with guidance on how to avoid making unfair or deceptive environmental marketing claims. The Green Guides apply broadly to "claims about the environmental attributes of a product, package, or service in connection with the marketing, offering for sale, or sale of such item or service t to individuals," and they have long addressed carbon offsets. 16 C.F.R. §§ 260.1(c), 260.5.

22 *See* Cryptocurrency Litigation and Regulation Tracker.

27

Key Takeaway: Verra's Terms of Use should be updated to ensure that environmental integrity is maintained through tokenization and that Verra is protected from legal risk and reputational harm.

As a threshold matter, in light of existing anti-fraud enforcement authority from several U.S. regulators–including the CFTC and Federal Trade Commission–Flowcarbon does not believe additional anti-fraud considerations are necessary.

However, we appreciate that anti-fraud prevention is important to ensure that the reputation of Verra, and the VCM more broadly, remains intact. In service of this, we believe that there are certain additions to Verra's Terms of Use, which Tokenizing Parties would have to agree to, that would add an additional layer of confidence in tokenization.

Flowcarbon believes that, with clear and protective requirements for third-party tokenization coupled with enhancements to Verra's Terms of Use, a robust framework will exist to ensure the high-integrity tokenization of VCUs.

Verra may consider the following amendments to its Terms of Use in a new section dedicated to crypto instruments and tokens:

Suggested Updates to the Verra Terms of Use: Protecting Environmental Integrity

- Prior to commencing tokenization, the Tokenizing Party must receive written authorization from Verra.
- Tokenizing Parties must hold all VCUs to be tokenized in an account dedicated exclusively to the tokenization of VCUs.
- Tokenizing Parties must only create one Direct Reference Token from each underlying VCU22, which must be created on a one-to-one basis with respect to the underlying VCU. Only one token per VCU may be publicly available on the blockchain.
- Tokenizing Parties may not tokenize retired VCUs.

- Tokenizing Parties may not transfer, sell, retire or otherwise modify any VCU if there is an existent token corresponding to that VCU.
- Tokenizing Parties must have a documented process for token issuance, including multi-signature authorization.
- Tokenizing Parties must have a documented KYC process. Tokenizing Parties must not modify their smart contract or code directly used to issue, trade, retire or redeem tokens unless an updated security audit is secured.
- The time between the burning of a token and the manual retirement of the underlying VCU in the Verra Registry should be limited to as short as is reasonably practicable.
- Tokenizing Parties must link each transaction retiring a token on the blockchain with a Retirement Batch ID provided by Verra.
- Tokenizing Parties must meet Verra's requirements regarding ongoing disclosure and transparency regarding token issuance and retirement as well as the contents of "bundles" (see e.g. Flowcarbon's response to Question #1, "Ongoing Disclosure
- Requirements").
- Tokenizing Parties must meet Verra's requirements regarding regular audits (see e.g. Flowcarbon's response to Question #1, "VCU Audit Reports").

Suggested Updates to the Verra Terms of Use: Protecting Verra

- Tokenizing Parties engaged in the practice of tokenizing VCUs must indemnify Verra for any direct damages suffered or incurred by Verra that result from the User's tokenization, except to the extent of any negligence or wilful misconduct on the part of Verra.
- Tokenizing Parties must follow all applicable laws, including all laws related to marketing tokens as investment opportunities.
- Tokenizing Parties must warrant that they will make publicly available information regarding the unique characteristics of the carbon offset projects and VCUs backing tokens issued by the Tokenizing Parties.
- Tokenizing Parties must warrant that they will, in a timely fashion, come into compliance with future applicable legislation and regulation.

22 Note that when a Direct Reference Token is deposited into a "bundle" Smart Contract, the Direct Reference Token will not be accessible to the public as it is "locked" in the smart contract. Instead, the "bundle" token (in Flowcarbon's case, a GNT token) will be publicly available.

GENERAL COMMENTS

#	General Comments Not Directed to Specific Consultation Questions Folder of consultation responses' email attachments received (.zip)

1 I have been investigating the use of blockchains and tokenization in carbon markets for over a year. Having spoken to other researchers, voluntary carbon market project developers, crypto companies, and seasoned carbon markets professionals, here is my public comment on the following topics:

- Anonymity of Entities:
Some crypto companies will likely argue that KYC is only needed at the initial stage of tokenizing the credits. The problem with that viewpoint is that at a later stage, an anonymous individual or entity could utilize decentralized borrowing and lending platforms to create a short position on tokenized offsets, sabotage the project/s (i.e. burning down a forest) and then profit by closing the short position after that is reflected in the price of the token. A KYC solution should involve a means to verify the identity of all individuals that will utilize the tokens.

- Environmental Integrity:
The bundling of projects of differing quality under a single token represents a threat to the integrity of the voluntary carbon market, at a time when the market already has issues with trust in its integrity, from both climate experts and the public. Third party rating services have identified that even similar project types such as nature-based offsets that are verified under VCS often have differing risks and underlying quality characteristics relating to permanence, additionality, etc. Bundling projects of differing quality makes it much harder to evaluate the value and quality of a token, especially for unsophisticated retail buyers. Bundling projects simply by project type, existence in the Verra registry, or another standard carries hints of CDOs (Collateralized Debt Obligations) that played a role in the 2008 financial crisis. An analog in the voluntary carbon market from an environmental standpoint is unpleasant to consider.

In the long term, there may be use cases for tokenizing offsets, credits or removals. However, the majority of current tokenization schemes are ill-informed or have poor incentives in regards to improving the integrity of carbon markets and should be met with appropriate skepticism.

2 Thank you for engaging the public stakeholders on the topic of Crypto and tokens in carbon credits. We thought to add a few points of consideration that you can reflect in your policy document, while preparing:

A. Why crypto

To us it's another medium of catalysing finance towards impactful climate mitigation / adaptation projects. We need to rapidly scale climate solutions and thats where crypto/DeFi mechanisms could be an alternative source of finance. So a consideration to them is warranted.

B. Registry for tokenised credits

If credits / VCUs are tokenised then where would they lie? In the wallets of the buyers or ...? This is a very important consideration because safety/security of credits is important. What happens when tokenised credits are siphoned off or are stolen owing to some hack. Would Verra consider having a registry for such tokenised credits and maintain it?

C. Ex-ante credits

While we are talking about tokenising existing credits, some thought can also be given to tokenising ex-ante credits. This may fall in the ambit of more sophisticated financial instruments that enable forward finance or project finance to projects. I would love to know Verra's stand on this one though.

D. Cross-chain tokens

What is a token is minted on X blockchain and then transferred to another blockchain. How does the link to the original credit remain intact? Composability is one of the advantages touted in the crypto world and Verra needs to give that a consideration.

We will be happy to explain further and engage in this conversation. All the very best with your efforts in streamlining more finance/solutions towards combating climate change!

3 My name is Bo. I am a Business Development professional working in the Corporate Bank division of Deutsche Bank and I'm writing to you regarding your ongoing public consultation on tokenized carbon credit.

First of all, I fully agree with the confusion you pointed out on the use of retirement function to create tokens, because whoever retires the token should be the recognised as the one that performed the offset and be able to report so to the public. More importantly, retired carbon credit should not move further and instead should be treated as passing the end of its lifecycle, e.g. similar to expiry of a bond.

To address this, one potential solution is that you could create 2 different types of accounts for holders of VCU under your registry – corporates and dealers. Corporates can either offset their VCU or transfer it to other corporates or dealers with an account at Verra registry. Dealers VCU should be immobilised, when they initiate offset, they should be able to "write" into the VCU who is the party that performed the offset, using name, ISIN or LEI etc. You could also ask dealer to share with you their KYC policies and procedures so that you gain comfort that they are compliant. In exchange for the additional effort on your side, you could also ask dealer to pay an annual subscription fee for such account type. An implicit assumption is that the retire function is able to register who performed retire (i.e. corporates account holders themselves or others corporates who don't have Verra account but are represented by the dealer).

In the long run, I also see potential for Verra to issue its own token. Given you developed the VCS, you have the most knowledge about it and therefore are best placed to determine what goes into the token, e.g. you could easily put in details about project sector, registry ID / link, location, developer detail and other info into the token to create the much needed transparency on the underlying project that issued the carbon credit. I could also envisage a future where your entire registry moves to some kind of distributed ledger technology (DLT), as registry is one of the most relevant use case of DLT and hopefully you also gain efficiency. Plus many DLTs are not as power hungry as Bitcoin and there are Ethereum layer 2 networks that are not only energy efficient (99.99% less consumption of bitcoin) but have also offset carbon emission from their operations, hence are environmentally friendly. Ethereum itself is moving to Proof of Stake later this year and will also achieve a huge energy save by doing so.

We have a designated team at DB focusing on exploring possibilities of tokenisation. If you are interested in exploring this area together with us, we'd be more than happy to hear about it. Either way, good luck with your consultation. A well-recognised and well-functioning platform that supports modern technology is going to benefit the global economy and help with the progress towards a greener future.

4 As project developers, we support the exploration of how blockchain technology can be used to help reach our ultimate goal: scaling up the delivery of verified carbon credits and ultimately the voluntary carbon markets.

We believe that blockchain technology and the tokenization of carbon credits—if designed and implemented well—has significant potential to increase liquidity while also bolstering quality, trust and integrity of the carbon market.

Specifically, we recommend that any tokenization of carbon credits should:

- Have a clear mechanism to protect against double-issuance and double-use
- Be deployed on a blockchain that has a minimal environmental impact
- Include easy-to-use APIs for project developers to opt into tokenization of credits and track data around the credits that have been tokenized
- Be transparent and traceable with respect to all aspects of tokenization and all characteristics of a given carbon credit
- Ensure rigorous "know your client" (KYC) standards for the purchasers of carbon credits

Identifying the best models to tokenize carbon credits is a complex process that requires extensive stakeholder engagement and information collection. By building tokenization models that work for everyone, including project developers, entities like Verra can help the market come together - rather than being further fragmented. We welcome the open and collaborative approach taken by Verra thus far.

We encourage Verra to continue down this path towards greater innovation, and ultimately greater carbon avoidance or removal.

5	As project developers, we support the exploration of how blockchain technology can be used to help reach our ultimate goal: scaling up the delivery of verified carbon credits and ultimately the voluntary carbon markets. We believe that blockchain technology and the tokenization of carbon credits—if designed and implemented well—has significant potential to increase liquidity while also bolstering quality, trust and integrity of the carbon market. Specifically, we recommend that any tokenization of carbon credits should: - Have a clear mechanism to protect against double-issuance and double-use - Be deployed on a blockchain that has a minimal environmental impact - Include easy-to-use APIs for project developers to opt into tokenization of credits and track data around the credits that have been tokenized - Be transparent and traceable with respect to all aspects of tokenization and all characteristics of a given carbon credit - Ensure rigorous "know your client" (KYC) standards for the purchasers of carbon credits Identifying the best models to tokenize carbon credits is a complex process that requires extensive stakeholder engagement and information collection. By building tokenization models that work for everyone, including project developers, entities like Verra can help the market come together - rather than being further fractionalized. We welcome the open and collaborative approach taken by Verra thus far. We encourage Verra to continue down this path towards greater innovation, and ultimately greater carbon avoidance or removal.
6	As project developers, we support the exploration of how blockchain technology can be used to help reach our ultimate goal: scaling up the delivery of verified carbon credits and ultimately the voluntary carbon markets. We believe that blockchain technology and the tokenization of carbon credits—if designed and implemented well—has significant potential to increase liquidity while also bolstering quality, trust and integrity of the carbon market. Specifically, we recommend that any tokenization of carbon credits should: • Have a clear mechanism to protect against double-issuance and double-use • Be deployed on a blockchain that has a minimal environmental impact • Include easy-to-use APIs for project developers to opt into tokenization of credits and track data around the credits that have been tokenized • Be transparent and traceable with respect to all aspects of tokenization and all characteristics of a given carbon credit • Ensure rigorous "know your client" (KYC) standards for the purchasers of carbon credits Identifying the best models to tokenize carbon credits is a complex process that requires extensive stakeholder engagement and information collection. By building tokenization models that work for everyone, including project developers, entities like Verra can help the market come together - rather than being further fragmented. We welcome the open and collaborative approach taken by Verra thus far. We encourage Verra to continue down this path towards greater innovation, and ultimately greater carbon avoidance or removal.

7	Please see attached a comprehensive plan in response to your request for public consultation on third party crypto instruments and tokens. Inveniam and Tokeny are two fintech firms providing compliant blockchain based services including data credentialing and tokenization. Our proposal includes clear guidance (including a workflow diagram) on how Inveniam and Tokeny could help Verra expand into the carbon tokenization space while addressing fraud prevention, KYC/AML, and auditability. Both firms use energy efficient proof-of-stake blockchains and work with regulators to ensure full compliance. We look forward to further discussion upon review of the attached proposal.
8	Company 482.solutions has many years of experience in building industrial Web3 and blockchain platforms for the Energy and Green Finance sectors, shares Verra's concerns and vision about the potentially negative impact of the “anarchic” tokenization of VCUs on the voluntary carbon market (VCM) . On the other hand, the current situation related to crypto instruments or tokens backed by retired VCUs can also discredits the crypto industry and blockchain technology, which has a great positive potential for the democratization of ecological market institutions. In recent years, working closely with our clients and partners, we have seen a growing demand for blockchain-based digital solutions which can provide transparency and incentivize increased liquidity of market-based environmental instruments. Given this, we see the Verra’s initiative as important, and timely, thus we'll be ready to contribute to the development of policies, standards, and technological solutions for the open voluntary carbon market. Important to note that it is expedient not to separate the concepts of “centralized” (hereinafter referred to as off-chain) and “crypto” (hereinafter referred to as on-chain) registry and market, but to consider them as complementary elements for building a single, seamless and transparent voluntary carbon market using modern technological solutions, providing a trustful environment, reduction of transaction costs and increasing the level of security.

9	Agreena welcomes Verra's intention to implement rules and restrictions for the application of Distributed Ledger Technology (DLT), such as blockchain, to record crypto instruments and tokens for the representation of carbon credits based on Verified Carbon Units (VCUs). The Voluntary Carbon Market (VCM) has evolved significantly over recent years, resulting in a need for increased sophistication, standardisation and documentation of instruments representing one tonne of carbon dioxide equivalent (CO2e) from greenhouse gases (GHG) reduced or CO2 removed from the atmosphere. The VCM is presently unregulated, leaving it open to many of the fundamental risks and weaknesses addressed by the regulated financial markets over several decades. The traditional aim of the VCM is to convey the right to claim the CO2e reductions and removals achieved by one party to offset unavoidable emissions by another party. The purpose of this transfer is to enable and document a net-zero climate impact by the offsetting party while providing funds for further reduction initiatives. This process is under increasing public scrutiny and demand for auditing, driven by a strong push against greenwashing by authorities, organisations and individuals alike. In this market, the unquestionable integrity of the carbon credit is the foundation for all credibility and long-term acceptance. Concurrently, the maturation of DLT has enabled an unprecedented development speed for new instruments based on environmentally beneficial assets, such as said GHG reductions and removals. Radical transparency and transaction history are among the principal advantages of DLT, making this technology uniquely suited as the foundation for issuance of credits and other instruments dependent on perceived credibility. Application of DLT technology as an enabler of the VCM represents an opportunity, but also an obligation to increase market transparency and maturity for CO2-equivalent reduction and removal-based project assets. Currently, the VCM is characterised by low liquidity, low transparency (both pricing and buyer/seller identity) and a high degree of broker dependency. DLT offers means to address all these market weaknesses. For discussion of suitable DLT instruments for carbon credits, it is beneficial to distinguish between the primary asset (i.e. the actual credit) and secondary instruments built on the credits. The core of the credit is the validated quantum of the reduced or removed CO2e (the VCU), and the integrity of the credit is inseparable from that of the VCU. Hence, the primary goal for both issuers and standards is to ensure the full validation and documentation of the quantified impact as well as the use of the credit for offsetting emissions. Greenhouse gas reductions and carbon removals are created from specific originator projects and one of the main sources of carbon credit fidelity is the ability to access the relevant data for the underlying project. As stated in the VCS Program Guide, and in alignment with industry best practices and core principles of the VCM, it is a necessary requirement that the VCU must be unique. The issuance of primary carbon credits should only be allowed in the form of an instrument (i.e. a non-fungible instrument, such as an NFT). which retains this unique nature of the VCU. In addition, regardless of the type of ledger or instruments used for representation of the VCU, the issuer is the trust anchor for the validity of the VCU and should be the only entity allowed to issue primary instruments. For secondary instruments, the degree of freedom is higher. Secondary instruments could be in the shape of crypto currencies, alternative investment funds, bonds with credits as coupon, etc. and may increase the accessibility of the primary assets. However, all secondary instruments should be based on the full possession of the underlying, valid and unretired credits. We appreciate the opportunity to express our views on this important dialogue of DLT, crypto instruments and tokens for carbon credits. Below are our recommendations for consideration: ● Ensure the application of the credit in accordance with the original intention by only allowing retirement for offsetting emissions, either directly from the buyer or as a tool to reduce/eliminate impact from inputs into the buyer's value chain. This limitation will ensure continual tethering of the credit value to the market price of offsetting one tonne of CO2e ● Allow purchase, ownership and reselling of certificates by market participants without offsetting needs to increase market liquidity. However, force holders to sell to an offsetter to claim underlying CO2e asset ● Ensure one tonne of CO2e reduction or removal as the indivisible unit for the credits. Secondary instruments may represent smaller quantities due to indirect ownership of underlying pool of credits ● Ensure the unbreakable link between the credit and the unique, underlying CO2e removal represented in the issuer programme registry

● Allow hashing of the content of the registry entry to be hashed in the token to document if changes have been made ● Ensure identical validity/ maturity between token and underlying CO2e reduction/removal
● Tokens should serve as proof of ownership for certificates. The tokens may be further enriched by the addition of smart contract functionality (e.g. to ensure compliance with obligations related to the ownership and trading of certificates as specified at issuance)
● Restrict execution of any change of ownership for credits to the instrument issuer. DLT instruments offer the possibility to restrict who can carry out related actions. By limiting access to change of ownership, issuers can retain control of secondary transactions, allowing for refusal to execute transactions suspected as fraudulent

10 EarthXCG believes that the standards set by Verra or any other non-governmental authority involved in the connection of emissions mitigation activities to financial markets, and in this case connecting verified carbon units or “VCU”s to crypto currencies or tokens, should concurrently address integrity throughout the full value chain from emissions mitigation through market trading. Moreover, the value chain needs to be operated with integrity at scale, which implies reducing the reliance on human experts and deploying data driven solutions.

Further, when considering creating crypto assets based upon VCUs, EarthXCG recommends that the evaluation standards underpinning the Vera VCUs needs to be examined as to whether they are sufficiently robust to give the necessary quality assurances on which to base a crypto asset. The broader market’s current signaling of concern should cause Verra to reach out to new business model innovators in this space, such as EarthXCG, to understand how to enable a higher-integrity level through the entire value chain, from mitigation to verification to securitization and continuous compliance monitoring.

Blockchain and distributed ledger technologies have properties, characteristics, and features that are ideally suited to use cases in the daily operations of carbon credit programs that go far beyond just a means of exchange particularly in the area of transparency and proving provenance. There are already many examples of successful commercial implementation of blockchain technology that focus exactly on this problem. The recent implementation of the Tracr platform by the De Beers Group to trace the provenance of diamonds and guarantee that they are not conflict diamonds being a good recent example.

11 We believe in innovation, and we believe in free markets. We appreciate the desire to have money that the government cannot take or dilute and we firmly believe that privacy is a human right. It is a tough balancing act to achieve those worthy goals while also preventing illicit activities. The way current crypto markets are working the criminals are the ones gaining ground. There is more work for everyone to do on this matter.

In summary we believe that Verra should not permit the tokenization of their VCUs. The risks far outweigh the benefits. Focusing on interoperability between registries, exchanges and custodians is a far greater need and better benefit to the voluntary carbon markets. We welcome open conversations on these matters and are happy to make ourselves available to go further into detail regarding challenges and opportunities for our industry. Thank you once again for the opportunity to comment and share our views.

12 I love how you're approaching the integration of web3 technology into carbon markets, but there are few catches. I think you may be undermining the power of people.

While prioritizing companies and organizations is beneficial, closing the door for retail shouldn't be considered. Scaling won't be possible without everyone's influence, no matter the size. Much more weight should be put on how credits are created and verified.

We all want to bring more finance to green projects. I truly think the path towards scalability is liquidity and transparency opened for everyone.

13 As an artist and an educator, I am in favor of carbon credits being on the block chain. Transparency is very important, and this is way to enact this.

NFT Art is a fast evolving and dynamic space, but its current environmental impacts are a justifiable concern. One NFT lifecycle averages a carbon footprint of approximately 0.23 tons of CO2 - equivalent to 1,000 km driven on petrol. This fact has always been top of mind for me, and I have worked to ensure that my collections are not only carbon neutral, but carbon negative. I have done this by purchasing and retiring carbon credits. I have been fortunate enough to be able to afford to offset my work out of my own pocket, but many of my peers in the space, most of whom are equally if not more passionate about climate change and environmentalism than me, cannot.

It is important that artists have an accessible and programmable way to address the carbon impact of their NFT Artworks. I believe tokenized carbon credits are the best mechanism to do that. Tokenized carbon credits would enable artists to easily purchase offsets for their projects. More importantly, these tokenized carbon credits could be integrated into the transaction logic of the NFT itself. Not only could the artist pass along the cost of offsetting to the initial purchaser of the NFT, she could make it so that each subsequent purchaser of the NFT is required to offset the emissions resulting from that transaction. This functionality is not possible today but could be with tokenized carbon credits.

Access to carbon credits is a way for the digital art community to demonstrate a commitment to sustainability. It not only has the potential to dramatically change the environmental perception of NFT Art, but also could usher in new innovations and approaches to environmental stewardship.
Yours,
Dr. Haley Mellin

14 For context, I'm the founder of CO2ign Art, currently a Verra account holder (as SnekTech Inc.). CO2ign Art is a digital art marketplace where a portion of each sale funds carbon credits, which are retired on behalf of the buyer. While we associate credits with a digital asset in individual transactions, our approach isn't really "tokenization," since we don't use cryptocurrency or blockchain, and the digital art pieces cannot be resold or transferred to other parties. Currently we use exclusively VCUs, due to the Verra Registry's greater transparency vs other options.

I certainly believe that there are opportunities for innovative approaches and business models to expand the voluntary carbon market - CO2ign Art is one. However, I'm skeptical that third-party crypto instruments associated with VCUs is the best approach to opening up these opportunities, or even a particularly helpful one. Here are my major reasons:

1) The claimed benefits to the market assume relaxation of Verra's standards. The idea that tokens are easier to trade and therefore would increase market liquidity is based on the idea that any individual with a wallet on the blockchain would be able to acquire and trade the tokens - without having to be educated in the market, informed on the details of the underlying project, or having to go through KYC processes. Or, more generally, there's an assumption among blockchain proponents that the reason the market has been hard to access previously is purely technological rather than there being thoughtful policies in place. Whether Verra should relax standards for trading VCUs is an independent question. If these standards are relaxed, it could increase market volume even without third-party instruments - but of course, there's a risk of that increased volume being money laundering or ill-advised speculation.

2) There's an opportunity for new products and experiences, but that's enabled by programmatic interactions, not tokenization specifically. If Verra provided all account holders with APIs for accessing VCUs held in their account, transferring them to a different account, and retiring them, that would be sufficient to support many new products and experiences. (For example, that would be incredibly helpful for CO2ign Art - currently we have a manual process to retire credits for each individual transaction.)

From the perspective of user experience, tokenization is something of a workaround - it's basically moving the data to a third-party data store that can be accessed via existing APIs. Of course, if the data is being tracked by an entity external to Verra, that raises issues with fraud and KYC. If the Verra registry was easier to interact with directly, that would address the need without the extra layer of abstraction. That sort of functionality would be a prerequisite to allow third-party tokens to map data back to the registry anyway.

3) Fractionalization of credits is an opportunity, but that's made possible by a different data model, not tokenization specifically. Similar to the above, third-party tokens allow fractionalization because they are representing the data in a different way. If Verra allowed tokenization of fractional VCUs, presumably transaction data for these fractional tokens would still need to be reported back to Verra, since otherwise there's an opportunity for fraud (e.g. a third party could sell more fractions of an immobilized token than there actually are). To receive and validate that data Verra would need to be able to represent and track fractionalized VCUs - at which point Verra could just support fractionalized VCUs directly.

4) The benefits of "decentralization" are moot if the tokens are third parties to a centralized authoritative data source. I'm not entirely against using blockchain to track carbon emissions and reduction - I think it's one of the more compelling use cases for it, since carbon is by its nature decentralized. That is, emissions are global, and it's in everyone's interests to track all of them. Blockchain's trustless and transparent ledger could help avoid concerns of gaming the system or double counting. However, that's only if there's global agreement that a single blockchain ledger is the source of truth. This would be something closer to what the Climate Warehouse is doing. The proliferation of transactions across multiple

	blockchains in multiple formats by multiple third-parties while theoretically retaining Verra as their source of truth provides no real advantages while making things harder to reconcile. Overall, rather than crypto technology providing benefits, the supposed benefits come from replacing Verra's processes and accounting with different processes and accounting. So, the real question is: How much responsibility for processes and accounting is Verra willing to delegate to third parties? If Verra wants to maintain consistent KYC standards and verify transactions to avoid fraud, then third-party instruments add little value and a lot of complication and obfuscation. However, I do think there's a lot of opportunity for new user experiences and expanding the market by providing easier access to the Verra registry to allow real-time transactions, insight into project details, and potentially fractionalization. Those are certainly things I'm very interested in - I'd be happy to discuss technical architecture further.
15	Building and operating registry infrastructure to support the transition and growth of a market to scale exponentially is challenging. This represents a different business model to the traditional project fees on issuance, as well as a very different employee skill set to setting project standards. Verra are encouraged to consider their future structure, role and use of private capital to support this next phase of innovation and scale required in the market.

16 We think there are unsolved problems in matching each physical ‘asset’ (specific carbon mitigation/removal physical effect) to a digital representation of it in a secure way – until this coupling is made tighter, all of the upstream tokenisation and financial instruments are at risk of quality concerns.

As a methodology and standards body working directly with the projects, Verra is well placed to drive change in this area – for instance by selecting a project type where digital measurement is easy to achieve and deploying sensors straight into some pilot projects. The target would be to demonstrate feasibility and ideally show a connection between token price in the market and whether a sensor continues to declare (and digitally sign) the right thing about what is physically happening.

This sensing approach could then be rolled out to more project types in future including any that can sense or prove CO2 transition, prove low emissions (e.g. no leak), prove that a forest is still there or soil is healthy via imagery or other sensing.

There are some project types that would be much more expensive to provably ‘sense’ and will require an alternative approach. For instance proving that feedstock biomass used for a biochar process continues to be from a certified source, and would decay or be combusted in the absence of the project, might be via checking digital certificates (as opposed to trying to chemically dope the feedstock and measure and digitally sign chemical markers end to end throughout the process).

Other features of a project such as Verra’s view on its additionality might be collated with the things that can be digitally measured, to come up with overall set of information for the market to price.

4.1 Next Steps

A useful analysis step might be to review Verra’s project types and for each define what is practical and what is not practical to digitally ‘sense’ with an in-field device that can digitally sign the information in a blockchain friendly way, where “practical” is some measure of cost per unit/impact to project etc.

This would be a key step in establishing whether the ‘double scheme’ risk can be mitigated by bringing strong digital security closer to the physical effect, providing a secure digital trail that can be used in accounting processes as they evolve in future.

CC are happy to discuss how this work might be commissioned - we do operate a ‘tech for good’ programme which might be applicable (subject to internal competition!) – or if suitable links can be made to Verra customers wishing to offset and innovate at the same time for some excellent PR, that is another potential funding route.

We welcome Verra’s inclusive and consultative process for this complex area and look forward to helping ecosystem players design technical solutions that result in real, measurable sustainability benefits. We do think blockchain has a key role to play in enforcement given its ability to address double spending across large ecosystems, and that web3 techniques will be important for data ownership and confidentiality while keeping accounting transparent. However technical expertise is required to connect these technologies to the physical world via secure sensing.

In my personal view we are rapidly heading towards success of both emissions and sequestration pricing being the only remaining viable solution to the global challenge – as a company we are happy to engage in any discussions in this area as it becomes of increasing importance to our global clients.

17 A general scan through the current media coverage of the VCM as well as my statistics from personal interactions indicate that there is not a lot of trust in the quality of carbon credits (additionality, permanence…) and, in general, many people are skeptical if the VCM really does help to fight climate change at all. Greenwashing is a term widely associated with the topic and the main reason why the vast majority of corporates still remain on the sidelines when it comes to announcing and implementing net-zero emissions targets.

Thus, it is strange that Verra's main concern seems to revolve around maintaining trust when in my view the focus should be (1) on establishing trust in the first place, but at the same time (2) aggressively scaling the VCM. These two goals taken together demand for an attitude which is prudent but, much more importantly, innovation-driven. In my view, public blockchain with its inherent transparency and accessibility seems to be an ideal platform addressing both aspects.

Establishing trust in the credits themselves can only be achieved by the registry through their methodologies and auditing procedures. None of this trust creation should have to be postponed postissuance and offloaded to third parties such as professional brokers. In my view, the evidence is weak that a combination of mediocre credits and sophisticated investors leads to good results. Repeatedly have lowquality credits ended up on corporates' balance sheets in the past. In this respect one also has to wonder e.g. why there are still unretired credits from HFC-23 projects in the Verra registry. In contrast, on the blockchain, these credits were readily eliminated from the Toucan BCT carbon pool by a community effort of "unsophisticated" retail investors. If carbon credits are of high quality, there is no need to exclude unsophisticated investors from this market. Any type of gatekeeping by limiting access to carbon credit trading to "sophisticated" investors in my view looks like a way for Verra to conceal deficits in their own quality standards and creates distrust.

The other part of the trust issue is market transparency. Right now the market is undoubtedly opaque and illiquid, preventing efficient price discovery and allowing middlemen to squeeze money out of carbon credit "consumers". Blockchain is an obvious solution here. But what kind of blockchain? For answering this question, one should take into account the second goal which I deem necessary, which is scaling the market.

Scaling to the full potential can only be achieved by (1) convincing the general public of the trustworthiness of the VCM and (2) enabling open innovation. In my view, both aspects can only be achieved on a permissionless, decentralized, energy-efficient public blockchain that offers a large ecosystem based on primitives such as NFTs and DeFi money legos. The prime example is Ethereum (now with Proof of Stake) with its Layer 2 ecosystem including Polygon PoS chain.

I sincerely hope that Verra seizes the opportunities that public blockchain ecosystems offer and remains laser focussed on scaling the VCM instead of taking a conservative maximalist approach. The latter would only set Verra up for disruption by more innovative and transparent players. Now is the time for opening up the market and enabling experiments, not for closing it off. Especially for Verra as a nonprofit building public goods infrastructure, the credible path forward can only be based on open source and open innovation. Actually, thinking of it, Verra should consider converting into a community-owned and -governed decentralized autonomous organization themselves!
Regarding the general discussion of regulation in the context of the open, immutable financial layer provided by crypto and DeFi in particular, please also consider the following quote from Jake Chervinsky (link): "Contrary to widespread belief, traditional finance is not "safe" for consumers or investors. Sure, it's dressed up to look that way, but its neat and tidy image is a thin veil for institutionalized discrimination, exclusion, and exploitation. Crypto offers a different approach. Traditional finance is dominated by large institutions — trusted third-party intermediaries — who make a business of extracting value from the system at the expense of their customers and in service of their shareholders. They keep all the profits and socialize all the

losses. Traditional finance keeps its risks hidden in a black box, or buried in hundreds of pages of "disclosures" that nobody ever reads, but that somehow give cover when things blow up. Crypto, by contrast, wears its risks on its sleeve. It looks messy because you can actually see it. Does that mean all of crypto should be unregulated forever? No, of course not. It's already regulated in many ways, and by many agencies. But let's dispense with the falsehood that crypto is more dangerous than traditional finance just because it doesn't wear the same lipstick." Most of this is true 1:1 for the traditional vs. the on-chain VCM.

18 Conducting KYC/AML-related Processes - It is our belief that the KYC/AML-related processes should be conducted by Blockpass or a service provider like it. They're pretty widely adopted in the industry and this isn't worth building from scratch, from a budget perspective. From there, you can have a blacklist function in your smart contracts (see: Recommendation).

Addressing Fraud - This is where we think a decentralized oracle, like Tellor, would come into play

Retirement Status - Theoretically speaking, the plurality of fraud would arise from incongruity between an off-chain, authoritative database managed by Verra and an on-chain record; which could be as simple as a Boolean value assigned to a variable in a smart contract. Decentralized oracle networks are for this sort of problem.

A Note on Sub-components - Some of the items in Graph 1 are a little esoteric (e.g., Selenium WebDriver or Tellor Reporter), but any further discussion of them is outside the scope of this document. We're happy to discuss this in further depth, offline, but the generally idea is that the information about the retirement status of each credit is attested to on-chain by a number of independent validators; which is a bit of a term of art but refers to decentralized groups of computers working together in concert on a particular problem.

Context / Closing Thoughts
There are a few ways to go, but what we suggest is the value stream delineated in Graph 1. The daemon would spawn a runtime that leveraged Selenium WebDriver to programmatically check values in the Verra Registry via inputting a carbon credit's assigned globally unique identifier into an omnibox, which would feed an ETL pipeline powered by BeautifulSoup: stripping the HTML served by Verra. The resulting information would be reported, and possibly contested, within an oracle network. This would either lead to the assignment of a Boolean value to an ERC-721-compliant token or mint an
ERC-20-compliant token.

19 Anew Climate, LLC (Anew), formerly known as Element Markets and Bluesource, is one of the largest climate solutions providers in North America with a successful established track record in both voluntary and compliance carbon markets, as carbon offset project developer and retailer, as well as in the markets for renewable natural gas, low carbon fuels, electric vehicle credits, emissions credits, and renewable energy credits. We appreciate the opportunity to provide Verra with comment on the topic of Third-Party Crypto Instruments and Tokens presented in the Public Consultation document released August 3, 2022.

First and foremost, we applaud Verra for launching this public consultation and taking a thoughtful approach to exploring how best to allow for tokenization of Voluntary Carbon Units (VCUs). We support the proposal Verra has made to allow for tokenization of VCUs, and we generally support the recommendations made by the IETA Digital Climate Markets Task Force, most of which align with Verra's proposed approach. We also applaud Verra for keeping concerns related to fraud and environmental integrity top of mind. At this critical juncture of the carbon markets, while awaiting revised IC-VCM guidelines, we believe maintaining the highest levels of integrity in the voluntary carbon markets to be of the utmost importance. Below, we explain in more detail the reasons for supporting tokenization of VCUs, as well as some concerns we believe should be considered in this consultation.

Anew supports Verra's proposal to permit the tokenization of VCUs and support the tokenization of carbon credits from ICROA-endorsed standards more broadly. We believe doing so will further help build demand for voluntary carbon and will increase participation in the voluntary carbon markets by further expanding access to new market participants, large and small. We see the potential for tokenization to enable more individual, retail-scale purchases via fractionalization of credits (e.g., the "retirement" of units smaller than 1 tonne CO2e). We also see tokenization as an opportunity to provide greater transparency to an individual buyer into the details of the carbon project they are supporting, as well as extending Verra's serialized credit tracking (issuance and retirement) onto decentralized and public chain platforms. By establishing clear guardrails for bringing VCUs "on-chain", project developers and carbon market stakeholders can participate in innovative climate finance / digital asset projects while continuing to rely on the rigor and integrity of Verra's registry requirements.

Responding specifically to Verra's proposal for VCUs to be immobilized in sub-accounts when tokenized, as opposed to "retired," Anew is supportive. We believe Verra's concern that "retiring" carbon credits to issue tokens could create more confusion in the market is a valid one. Retiring a carbon credit has long been understood to be the action which claims the right to the emission reduction once and for all, and it is important that does not change. A credit should only be retired on the registry once the anewclimate.com organization claiming that emission reduction decides to do so. Where carbon credits are fractionalized and "retired" while in token form, we also believe it is important for tokenization platforms to regularly true-up with the Verra registry to ensure that the Verra registry is as up to date and accurate as possible. Careful consideration should be taken with regard to token burn mechanisms to ensure that the underlying reduction claims associated with any tokenized credits are retired in a transparent manner and with no undue delay. We believe Verra would be warranted to set a maximum time or volume threshold for requiring tokenization platforms to perform this true-up; At least once quarterly, as proposed by Gold Standard, would be a reasonable frequency as a starting point, but more frequent may be warranted in the future.

Finally, while Anew is very supportive of tokenization of VCUs and credits from ICROA-endorsed standards, we do believe it will be critical for the market to clearly distinguish between the tokenization of offsets from ICROA-endorsed standards like Verra and those emission reductions or removals that have been generated from off-registry projects and/or non-ICROA endorsed standards. In recent years, there has been a proliferation of such "credits" and tokens that support reduction claims based on deficient or inadequate registry requirements. We view the co-mingling of tokenized VCUs with other on-chain assets as potentially damaging to market integrity and ask for careful consideration in supporting on-chain credits. At a time when there is increased debate regarding integrity of the VCM, credits outside of the traditional carbon registries must be labeled as such whenever possible and kept in separate carbon pools on-chain. While Verra's proposal and program more generally do not speak to the tokenization of credits outside of the Verra program, we believe it is important for Verra and others in the market to continue to bear this concern in mind to ensure the highest levels of transparency and integrity within the VCM as a whole.

We welcome the opportunity for new and innovative mechanisms to expand the VCM and ask for Verra's careful consideration in maintaining a transparent and high-integrity solution for tokenization.

Many thanks for the opportunity to provide comment. Should you have any questions pertaining to Anew and our statements here, please do not hesitate to reach out.

20 I have not spoken with a single client or VCM colleague — including several from the crypto sector — who does not view VERRA's proposals with the greatest of consternation; none of them believe VERRA should proceed to tokenize VCUs so profound are the risks to the entire VCM and indeed to VERRA itself.

The reasons are explained in the enclosed submission.

21 In my opinion, KlimaDAO is currently the project with the strongest positive impact in driving the tokenized VCM. Many people may be put off by the anonymous public appearance of the team members, but this DAO is a great showcase of the fact that action matters more than identity. Their complete code and smart contracts are open source and audited. They provide constant communication that goes far beyond what traditional startups do and they show no signs of disintegrity that could perhaps be driven by VC interest, as it is the case for some projects on Celo. Verra, or a third-party organization, can use all this information to create to create proper information material for their customers.

My opinion is clear: Verra, the dominating standards body, and KlimaDAO, the currently best infrastructure provider, could enter an absolutely fruitful collaboration to put the VCM to the next level, by enabling full transparency and public accessibility with blockchain technology. It is my conviction that this move will bring the needed trust and scalability to the VCM in order to fight climate change. Undue hesitation, FUD or gate-keeping will ultimately result in a delay of trust and scale and consequently make this fight harder.

22 Elbow River Marketing Ltd. is a corporation that buys and sells carbon offsets and carbon credits. It has come to our attention that Verra has proposed a mission of expanding the voluntary carbon market by facilitating the tokenization of Voluntary carbon Units ("VCUs"). Below, we briefly explain our interest in exploring the possibility of associating VCUs with crypto instruments or tokens.

The creation of crypto tokens representing carbon offsets could enable market participation at a scale not previously seen by increasing liquidity, fungibility, transparency, and enabling retirement of smaller units of CO2e via fractionalization. Today, VCUs are typically exchanged between large, institutional corporate entities and credit creators for the institutions to meet their legislated requirements for carbon reduction. However, many smaller, individual retail purchasers may not readily access voluntary carbon markets. Expanding access to the voluntary carbon market could, in turn, reinforce market participants' compliance efforts with local and global decarbonization and sustainable project development globally. In theory, crypto instruments and tokens could become an important avenue for more market participants to take part in the voluntary carbon market.

Given the underlying blockchain to a token, we believe that crypto instruments and tokens could potentially enhance environmental integrity and reduce fraud, particularly if thoughtfully implemented for all regulators and should therefore be explored as an option.

We would like to be kept apprised of any progress that Verra makes in its endeavors to associate VCUs with crypto instruments or tokens and please do not hesitate to reach out to us in the future should there be any additional rounds of consultations on this topic.

23 Blockchain is an innovative technology that uniquely enables fast, cheap, and almost arbitrarily divisible transactions. It is the only technology that allows for public verification of issuance volumes and individual transactions. However, due to the fact that at the current moment carbon credit registries are working on centralized systems, all existing blockchain solutions are simply adding an additional layer of complexity. We therefore strongly advise the creation of a blockchain-native ("on-chain") carbon registry by VERRA in order to exploit the full benefits of blockchain technology. For buyers of carbon credits who require non-digital assets, tokenized carbon credits could still be securitized as an additional service.

The goal of any technology innovation in the voluntary carbon credit market should be to provide additional funding and liquidity for project development. So far the existing initiatives in the digitalization / tokenization of carbon credits combined with a lack of regulation) have led to market fragmentation and the entry of inexperienced players and hence an even less efficient carbon credit market. This has been associated with an increase in production costs of carbon credits ("crypto money chasing deals in the forest") resulting in a worsening of funding conditions for project developers. In addition, some activities of the early players in the crypto carbon space have spurred wide negative press coverage (e.g., "Wolf of Amazon", "WeCrash", "Hedge Fund of carbon Verra's public consultation on third-party crypto instruments and tokens Public Consultation On Third-Party Crypto Instruments And Tokens credits") harmful to the reputation of the whole voluntary carbon market.Therefore any exploring activities of VERRA with respect to endorsing and enabling third parties to create digital carbon credit tokens needs to evaluate the potential economic and reputational impact on the voluntary carbon market. A sound regulation of carbon credit token issuance by VERRA could mitigate these reputational risks while allowing to benefit from the advantages of distributed ledger technologies. A passive stance on the side of VERRA will not inhibit the issuance of carbon tokens, but will still expose VERRA to reputational risks beyond their control.

A further advantage of a native on-chain VERRA registry would be the better enforceability of terms and conditions by VERRA, again contributing to mitigating possible reputational risks.

The current consultation of VERRA on crypto instruments and tokens disregards the economics and microstructure of the voluntary carbon market, which have a direct impact on the prices, volume, and liquidity of carbon credits. Economic and market-design aspects of carbon credit tokenization are not sufficiently covered in the current debate. A tokenization approach based entirely on technical considerations and the needs of token issuers raises the risk of a sub-optimal market design and less-than-achievable funding available for climate projects.

24 Clear Sky Advisers, LLC is an SEC-registered investment adviser established to have no conflicts from fossil fuel mandates and to invest in companies that focus on decarbonization, electrification and resource sustainability, and carbon credits such as California Carbon Credits, RGGI credits and voluntary carbon credits, including Voluntary Carbon Units ("VCUs") issued by Verra. C3 Global Carbon Advisers, LLC (together with Clear Sky Advisers, LLC, "Clear Sky") is a consulting company founded to make carbon markets, carbon removal and decarbonization simple for companies, organizations and governments. Clear Sky believes that permitting the tokenization of VCUs will help expand the voluntary carbon market and can also be a vehicle for increasing transparency of VCUs.

Expanding access to the voluntary carbon market will, in turn, further reinforce to all market participants the importance of decarbonization and sustainable project development. This will likely lead to an increase in the price of VCUs, which will further drive investment into decarbonization efforts and sustainable energy development. Today, VCUs are typically exchanged between large, institutional corporate entities or market makers. Many smaller, individual retail purchasers may not readily access voluntary carbon markets. Creation of crypto tokens representing carbon offsets could enable market participation at a scale not previously seen by increasing liquidity and fungibility, and enabling retirement of smaller units of CO2 via fractionalization. Providing conscientious consumers with easier access to carbon markets could enable them to exchange VCUs in a manner that is already fully integrated with their digital lives. Thus, crypto instruments and tokens represent an important avenue for more market participants to participate in the voluntary carbon market.

The voluntary market also suffers from a dearth of transparency – many corporate purchasers tout their net zero commitments and claim to be reducing their emissions through various types of credits, but few actually substantiate these claims with detailed information on the type, vintage, issuing registry or methodology of these credits, or identify the particular credits retired in respect of these claims. For net zero claims and the use of VCUs and other voluntary credits to offset emissions to be credible, investors, regulators and the general public need to be able to identify the credits attached to a particular claim and access sufficient information to judge whether those credits actually represent real, additional, permanent, quantifiable and verifiable reductions or US-DOCS\134579777.2 removals of greenhouse gases. Distributed ledgers using blockchain technology are not the only method of making this information accessible, but they are one in which the market has shown a particular interest (both on the buying and selling side), and therefore their development should be encouraged in a manner that provides increased transparency.

Verra highlighted "potential risks of an ill-designed framework" for associating crypto instruments and tokens with VCU in its Public Consultation Document. These concerns are well-founded, but are not specific to or inherent to environmental credits associated with crypto instruments or tokens. Rather, they are issues with the framework itself. We agree with Verra that vibrant and robust carbon markets should be free from fraud and promise environmental integrity to market participants, and for that reason we encourage Verra to work collaboratively with key stakeholders, especially IETA and their forthcoming Code of Best Practices for Digital Climate Markets, to align on a standardized data schema for each token to enable maximum transparency and comparability. To the extent that crypto instruments increase the public's ability to access more information regarding the provenance and source of the credits, and confirm subsequent monitoring and verification of the reductions represented by the credits, crypto tokens would enhance the environmental integrity of VCUs and reduce the potential for fraud.

As active participants focused on the carbon credit space, and the carbon markets in general, we support the creation of crypto instruments or tokens that are associated with VCUs.

25	This is an additional comment on Verra's PUBLIC CONSULTATION: THIRD-PARTY CRYPTO INSTRUMENTS AND TOKENS from JustCarbon. Last week at COP27, one of our Founders, John Auckland spoke directly with CEO, David Antonioli who advised it wasn't too late for us to add a point for your consultation. He thought our point on micropayments was interesting and to submit it. JustCarbon sees that there is a massive opportunity in micropayments - One of the biggest opportunities is to bring offsetting to the consumer via micropayments at the point of sale. While the payment amounts may be small, the size of the micropayment market is huge and untapped. Through real-time automation and the ability to buy small fractions of tokens, offsetting can be integrated directly into consumer purchases