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BlockCarbon Exchange Roadmap and Lightpaper
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Timeline

From June 2022:Identify skills needed and risk mitigation in unfavorable DeFi environment to make project a success and leverage developer and governance capabilities for long-term strategy (DAO, community and standard/registry). Move project management to Jira for all BlockCarbon initatives.

From August 2022: Project management finalized with additional skills acquired and partnership with oracles and Cardano DeFi partners announced. Integration into BlockCarbon DeFi Standard projects.

From October 2022: Existing and newly created carbon liquidity pools can be priced on a daily settlement basis and transactions happen on a regular basis on the "trading venue". Exchange alpha launches on testnet. Developments in this quickly emerging business landscape can be responded to and adjustments made using collaborators or own projects in future Catalyst fund.

From December 2022: Research into decentralized features finalized and starting to be implemented into hybrid exchange.

From February 2023: Trading venue starts to look a lot like a real market place, with integration of TradFi players and custodial solutions. Legal incorporation and onboarding process of exchange up and running.

From May 2023: "trading venue" and "centralized exchange" give way to officially launched, hybrid exchange with central custodian supplying benchmark asset custody along decentralized market makers and hybrid order book. Frictionless, round-the-clock trading.

Problems to solve

Disadvantages of Off-Chain (Voluntary) Carbon Credit Market

- illiquid carbon markets, highly fragmented, non-fungible across standards, over-the-counter
- lack of benchmarks, price gaps and jumps, difficult to mark-to-market, not a financial asset
- currently very high admin and overhead costs, from low double digits to half of value
- negligible share of trading and investment of credits, mostly created, acquired and retired

Disadvantages of On-Chain Token Carbon Credits (mainly on ERC-20 Standard)

- rushing coins to market, desire to capture “first mover advantage”
- lack of integration between legacy registries and blockchain tokens
- unrealistically high yield, creating an inflationary asset
- lack of investor access, onboarding problems, no KYC/AML
- lack of price discovery mechanisms, purely speculative intrinsic value and high correlation to crypto prices
- no adequate market making to suit carbon, which behaves like an energy commodity and not like a currency or bond
- inadequate marketing, promising a get-rich-quick scheme that is “also green”

Known Issues and Suggested Solutions

too many credits availabe	-->	only recent vintages, no old CDM projects
risk of double counting	-->	on-chain registry, automatic adjustment, global search
mitigation not enough	-->	incentives for automatic cancellation and lock-ups
carbon not the only problem	-->	address biodiversity and SDGs
unintended outcomes	-->	broad targets and claw-backs

Structure of Exchange Whitepaper (TBC)

1. BlockCarbon
   History and profiles of team members and team formation, covering backgrounds in energy, engineering, environment and finance. Vision for the future shaped by experiences and roadmap. Interplay with web3, inequality, geopolitical shifts and societal challenges.
2. Why Put a Price on Carbon?
   Business as usual carbon concentration trajectories versus different regimes with increasing economic cost to demonstrate the monetary shortfall to stock (carbon bubble) and flow (Kaya equality). Potential of carbon economy and financial markets, regenerative finance and new asset classes around environment. Integration with capital market theory.
3. Carbon and Blockchain
   Shortcomings of Kyoto and Paris, and governance and society at large. Use cases of distributed ledger technology, proof of stake and ISPOs.
4. Global Carbon Markets
   Contrast existing ETS with VCO markets. Global map and price differences with critical analysis of market idiosyncracies and inefficiency.
5. Today’s Voluntary Carbon Offsets
   Continue from 4. on the expected growth and flawys of the VCO market, conflict of interest, agency problems and past perverse incentives created by CDM and VCO.
6. Monitoring, Reporting and Verification
   Discussion of status quo and how it can be improved, role an exchange has to play and technological solutions required to integrate into web3 infrastructure and oracles.
7. On-chain and Off-chain Registries
   Elaborate on registry part from 6.
8. Carbon and Decentralized Finance
   Elaborate on web3 part from 6.
9. Carbon Oracles
   Elaborate on oracle part from 6.
10. The Future is EUTxO
    Unique advantages of Cardano, Plutus and Marlowe compared to account-based blockchains, Ethereum, Hyperledger, Polygon, Solana solutions,
11. Use Cases
    Learning examples from Fund-7 projects and more ambitious case examples for future implementation.
12. Code Snippets
    Discussion of Fund-7 open source code and how cex, dex and dao will change the risk profile and instititutional adoption.
13. Exchange, Registry and DAO
    Recap from previous chapters in the form of a roadmap.
14. More Resources
    External links and references.

Skills required

• Networking skills reaching existing carbon market users (government ETS, electricity generation, industry, aviation, voluntary carbon offset providers and exchanges, carbon footprint startups and projects)

• Deep understanding of and ability to build on the blockchain: smart contracts, tokenization

• Deep understanding of DeFi ecosystem and value-chain, integrating oracles, protocols and DEXes with new carbon price indices, derivatives and tokens.

• Plutus, Haskell and Python Programming with understanding of Polygon and Ethereum (Solidity, JavaScript), Hyperledger (Go, Java, JavaScript, Python) and Tezos (Michelson, Python) a plus to integrate existing carbon-blockchain dApps.

• Video content creation and edutainment skills to educate carbon market users about DeFi and vice versa

• Treasury and finance skills to stretch budget, raise funding and donations and increase credibility among industry and legacy finance users skeptical of DeFi

KYC requirements

Ensure that the third party itself has the appropriate risk controls and governance in place. To do so, institutions are required to receive annual AML and customer identification program (CIP) certifications from third parties

Identify risk appetites of your project and confirm the third party solution service provider is able to meet your risk assessment needs.

Confirm the third party service provider is permitted in all major jurisdictions as regulations vary.

KYC and AML regulatory compliance. Users fill out the relevant details and are checked against the required lists and criteria to ensure they are not associated with criminal activity. By having these checks performed, companies using identity verification solutions do not have to worry about their personal liability in screening applicants.

Risks Specific To Holding Digital Assets
Digital assets, also referred to as cryptocurrency, are a digital representation of value that function as a medium of exchange, a unit of account, or a store of value. Cryptocurrencies are not legal tender, are not backed by the government or a central bank and, other than stablecoins, generally have no underlying assets, revenue stream, or other source of value tied to fiat currency or other assets. Their value is derived from market dynamics and has historically been more volatile relative to fiat currency and other assets. The same is true for stablecoins backed by other cryptocurrencies or commodities. The unpredictability of the price of cryptocurrency and certain commodities that substantiate stablecoins (e.g., carbon credits) relative to fiat currency may result in significant loss over a short period of time. The value of cryptocurrency may be derived from the continued willingness of market participants to exchange fiat currency for cryptocurrency, which may result in the potential for permanent and total loss of value of a particular cryptocurrency should the market for that cryptocurrency disappear. In certain cases, it may be difficult or impossible to liquidate a position quickly at a reasonable price due to various

market factors, including illiquidity or actions by trading facilities.

Some cryptocurrency transactions shall be deemed to be made when recorded on a public ledger, which is not necessarily the date or time that the customer initiates the transaction. Cryptocurrency ownership is often determined by a decentralized public ledger that associates an amount of cryptocurrency with a unique address defined by a public cryptographic key. A private cryptographic key is required to transfer cryptocurrency from one address to another. Anyone with access to the private key associated with the address can transfer the associated cryptocurrency. Cryptocurrency transfers generally cannot be cancelled or reversed and the identity of the holder of the private key associated with any address can be difficult, if not impossible, to ascertain. The nature of cryptocurrency may lead to an increased risk of fraud or cyber attack.

Snapshot of existing schemes

The EU-ETS
In operation since 2005, the European Union Emissions Trading System (EU ETS) has faced a number of challenges resulting from the creation of the largest market for an environmental commodity in history. Currently, the EU ETS operates in 31 countries – all 28 EU Member States as well as Iceland, Liechtenstein and Norway – and covers CO2 emissions from emitters in the power sector, combustion plants, oil refineries and iron and steel works, as well as installations producing cement, glass, lime, bricks, ceramics, pulp and paper. More than 10 000 covered entities account for around 2 gigatonnes or 40% of EU total greenhouse gas emissions.

The New Zealand Emissions Trading Scheme (NZ ETS) entered into force in 2008 and is the only ETS to include forestry as a covered sector.

The Regional Greenhouse Gas Initiative (RGGI) is a carbon market among states in the northeastern and mid-Atlantic US that entered into force on January 1, 2009. It covers only CO2 emissions from electricity generation.

The Western Climate Initiative (WCI) is an initiative of US states and Canadian provinces to jointly develop climate change policies. Currently only California and Quebec have implemented emission trading systems, which entered into force on January 1, 2013;

The Tokyo Metropolitan Government Emissions Trading System (TMG ETS) was established in 2010. The targets energy-related CO2 emissions from industrial facilities as well as public and commercial buildings;

The Korean ETS began in January 2015 and covers over 60% of the country’s emissions. Over 500 companies (thousands of individual facilities) are covered in the power and industry sectors, but also waste and domestic aviation.

The Kazakhstan Emissions Trading Scheme started with a pilot phase in 2013 covering CO2 emissions. Energy, mining and metallurgy, chemicals, cement and the power sector are included.

The Chinese pilot trading schemes
In 2011, the National Development and Reform Commission (NDRC) announced its plan to develop seven official ETS pilot programs in five cities (Beijing, Shanghai, Tianjin, Chongqing and Shenzhen) and two provinces (Guangdong and Hubei). Implementation of this plan began in 2013. In 2015 all programmes had entered into force – the Chinese national government’s plans to implement a national ETS will be informed by the experiences of these pilot programmes.