IETA

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TOKENISED CARBON 101

Tokenised carbon is a representation of a carbon credit that is stored on a blockchain. Tokenised credits retain the same information and characteristics of the carbon credit, including vintage, project type and all associated data.

Carbon credits can be tokenised, or brought "on-chain", via carbon bridges that are connected to traditional registries like Gold Standard or Puro.earth. Once brought on-chain, credits can be held, sold, transferred or retired just as they would on traditional digital registries.

As of September 2023, 25.4 million credits had been tokenised, representing about 2% of current market supply.

Benefits of tokenisation

Tokenised carbon can solve a number of critical challenges for the voluntary carbon market, enabling it to scale with the pace and integrity required to accelerate climate action.

Increased verifiability

Each tokenised credit's details are publicly available and accessible to anyone who wishes to view or scrutinise them. Credits are traced via a tamper-proof trail to verify their providence and use, preventing any issues of double counting better than existing solutions.

Buyers of tokenised carbon can confidently purchase and retire credits in a transparent, risk-free way. Tokenisation also enables the development of open source, publicly available project dashboards, which can be rated by external providers to re-confirm credit quality.

Improved liquidity

Hundreds of credits with specific characteristics can be aggregated into different pools within minutes, which has the ability to dramatically increase liquidity in the voluntary carbon markets.

The pooling of credits allows for greater price signalling along with more efficient discovery and vastly reduces the costs associated with legal fees and middlemen. Increased transparency of pricing enables project developers to better understand the value of their projects, ultimately incentivising higher quality methodologies and improved data collection.

Enhanced data reporting

With tokenised carbon, all data underlying the claim can be associated with the credit down to the sub-tonne level. This means that wherever the credit is utilised the end-user can easily and quickly assess the claim.

The integration of data from emerging digital monitoring, reporting and verification (dMRV) technologies enables the tokens to dynamically update as more monitoring information about the project becomes available.

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A note on the carbon footprint of blockchains

Like with the existing digital infrastructure for the carbon markets, electricity is required to operate the equipment a blockchain runs on. The electricity consumption associated with creating and transacting tokenised carbon is often wrongly associated with the large amounts of energy consumed by Bitcoin mining.

The Bitcoin blockchain uses a process called Proof of Work to add new blocks of data. This involves computers working in competition to solve a mathematical puzzle, known as mining. As more blocks are added, the puzzle becomes harder, which requires more computing power to solve over time.

Many other blockchain networks, including the networks that tokenised carbon utilise, instead use a Proof of Stake process to add new blocks of data. The Proof of Stake process consumes just 0.001% of the electricity that Bitcoin's Proof of Work mining does, making its carbon footprint significantly lower. This efficiency is achieved by the network randomly selecting one computer to forge the next block, as opposed to requiring each computer in the network to compete to solve a problem.

Additionally, the blockchain networks that most tokenised carbon is on continue to decarbonise their operations as a priority. An example is the Celo blockchain, which has embedded carbon offsetting into its day-to-day operation, enabling it to reduce carbon emissions by an additional 3,300 tonnes beyond its impact.

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