

The Carbon Utility Token

Presented by:

CUT Carbon Distributed Technologies AG



An immutable ledger for tracking and retiring
certified Carbon Offsets

whitepaper

January 2021

Abstract

The Carbon Utility Token (CUT) leverages the trust and immutability of Blockchain Technology to offer a public ledger for certified Carbon Offsets.

The pool of Carbon Offsets used in the CUT project, created through the reduction of harmful greenhouse gas emissions entering the atmosphere, are available to be transferred peer-to-peer and can be used to retire the full or partial Carbon Footprint of any given activity on the blockchain.

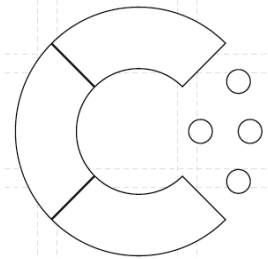
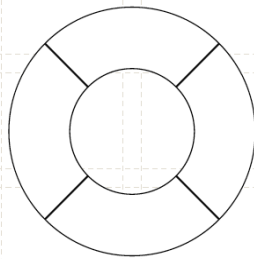
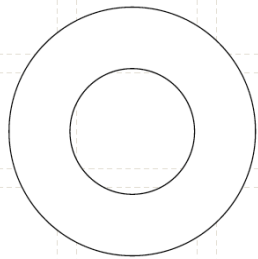


TABLE OF CONTENTS

VISION + MISSION	...	02
STRATEGY		
Real Utility for climate change	...	03
Ease of Access and Use	...	04
Transparency and Auditability	...	05
THE TOKEN		
Carbon Utility Token for Offsets	...	06
Applications for CUT	...	07
Launch Supply + Release	...	08
Management of supply minting	...	09
CARBON TERMINOLOGY	...	13

VISION + MISSION

Create more clean energy and greenhouse gas reducing projects with a commitment to ongoing positive environmental impact

The vision of our project is to offer technological tools and best practices that provide trust and transparency, bringing this greenhouse gas reducing opportunity to as many individuals, businesses, products, and services as possible.

By creating a transparent blockchain powered technology for producers and consumers of Carbon Offsets, CUT incentivizes growth in these activities which we believe can help to create meaningful and long lasting positive environmental impact.

What we want to achieve is measurable climate impact, offering participation in positive action for as many people as possible for a cleaner future that benefits the planet.

Increased opportunities for meaningful environmental impact for both large companies and individuals

We offer CUT in fractional amounts small enough to allow any user to make a certain activity, business, service, or product either fully or partially Carbon Neutral. At the same time we combine this carbon footprint reducing technology with positive green energy projects that reduce emissions and reliance on fossil fuels.

By opening this doorway to widespread environmental impact through carbon footprint reduction, we enable individuals and corporations to action tangible climate benefits, and make daily decisions that can effectuate meaningful changes for the environment.

Opportunity for the Development community to increase the project's reach

CUT is able to create integrations and additional use cases through the engagement of developers worldwide and engage other technologies, platforms, organizations and data projects where a Carbon Offset or carbon neutrality can offer value. The more partnerships and integrations we build and observe, the more we can increase tangible action against climate change.

STRATEGY

Real Utility for Climate Change

We create access to the utility of retiring Carbon Offsets through the Carbon Utility Token (CUT). The Offset's represented by CUT are verified by recognized international protocols such as: ISO, CDM, ETS, VCR, verified from accredited third party organizations.

Project examples include, but are not limited to, greenhouse gas capture and destruction, and wind, solar, and small hydro power generation.

What is the utility of the token?

Our Smart Contract acts as an ideal ledger for storing, distributing, tracking and retiring Carbon Offsets. It is in this unique contract function of retiring where we see the utility of CUT and close the cycle of impact.

To offer real visibility into Carbon Offset retirement, rather than just burning away any records of the tokens being retired, we offer tracking of both the living supply as well as the total historical supply of CUT created. Regardless of whether CUT have been retired or remain in active supply, their history and provenance can be traced to the exact green energy project that produced the Offsets, from inception to retirement.

Ease of Access and Use

For the person who wants to offset the Carbon Footprint of individual activities, to the business that wants to make Carbon Neutral certain processes or products, this token allows for units of any size. In a Carbon market that has traditionally been operated as a brokerage model in many tonnes per transaction, CUT offers access to CO₂E retirement previously unavailable directly to consumers in increments that are fractionalized.

The Carbon Utility Token uses blockchain technology to fractionalize a quantity of tonnes into small amounts of grams to be distributed on-demand to offset a much wider range of products and activities from the very small to the very large. This enables CUT to offset greenhouse gas pollution in a much more accurate metric that can still scale to larger projects while allowing smaller projects, businesses and even individuals to participate in meaningful environmental impact.

What am I supporting?

Many new services are emerging that offer a promise of climate change through various types of projects in conservation and tree planting. These initiatives may have value in helping the health of the environment, but can be difficult to quantify in terms of impact and oftentimes are at risk of fraud and the credits can be double counted.

Buying an offset of Carbon from a future benefit of planting a forest has many variables that makes it difficult to forecast the amount of carbon that will be offset during the variable life cycle of that forest. Forests can be destroyed by fire, flooding and other natural disasters and it is for these reasons CUT is tied only to projects where Co₂E has already been explicitly captured, destroyed, and offset to a specific and certified protocol of measurement.

We also do not include projects in conservation and protection such as REDD+ credits. These types of projects are showing historically to have many cases of exploitation of land owners, illegal logging and similar, indigenous peoples being displaced, and an overall lack of connection between the Carbon Offsets being sold and any tangible form of quantifiable impact being performed.

The key features of ease of access to Carbon Offsets, and confidence in their quality, impact and history are key deliverables of the CUT project.

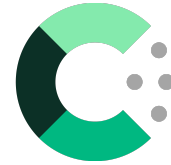
Transparency + Auditability

The fact that CUT can partner with emission reducing projects in supporting their growth and operations allows the ledger to offer a full audit trail from their creation to their place of retirement on the blockchain. This immutable audit trail on the blockchain can inform the token users of: the type of project that created their offset, the location of the project, the certification protocol followed in creating this offset, and the third party certifier that was used.

This level of transparency allows users to have the flexibility to choose the desired amount of carbon they wish to offset for a given service, activity or product, at scale, or for something as small as an individual cup of coffee. This transparency and flexibility regarding certified carbon offsets is unique and we believe it will benefit the environment while providing a transparent provenance for the Carbon Offsets being used to accomplish this.

When compared against existing offerings that ask you to tick a box or add additional payment for a Carbon Offset, you have to wonder where the audit trail and form of direct connection to impact can be verified. If you can not connect the dots on a confusing amount of financial mechanics, the reason may be that the tangible impact you seek can not be traced or verified and in fact may not be real in any form.

THE TOKEN



(Carbon Utility Token - CUT)

Launched on the Ethereum Blockchain, CUT is a dApp with an ERC-20 compatible interface. Building on a foundation created by OpenZeppelin, CUT combines standard, tested code which has been reviewed by the broader Ethereum community, in addition to our own Smart Contract architecture enabling the verification and tracking of the Carbon workflow which has undergone private reviews, security audits from global exchanges, as well as automated security analysis and threat modeling from trusted ecosystem partners.

Utility, Defined: Upon minting Carbon Utility Tokens, the CUT Contract internally creates a tracked OFFSET which aggregates in the project pool recording the real world offsets. The project pool is a set of Carbon Projects created by the CUT operator which are directly linked to a real-world certified Carbon Offset purchase. Every CUT minted is directly linked to one of these projects and has an explicit legal and certified paper trail associating the offsets generated with the fractionalized tonnage within the CUT dApp. Upon using your CUT to retire an OFFSET, your token is paired with the exact offset project you are retiring Carbon from for immutable record keeping.

CUT was developed to interact with any Ethereum wallet or application that is compatible with ERC-20 tokens for the basic functionality of the token. Running on Public Ethereum makes this token simple to onboard, and basic to send and store.

Applications for CUT

There will be an available dApp frontend to manually retire CUT, that will allow flexibility regarding the timing of holding and retiring chosen volumes of Carbon Offsets.

The development Roadmap will continue with the launch of the custom frontend application for CUT, which allows users to fund their MetaMask wallet with CUT and signal an intent to retire a quantity of CUT. Along with a data hub for enabling the hydration of the blockchain stored data to help explore the retired offsets, living supply, as well as help to inform users of energy usage of blockchain and real-world related activities to enable users to make more intelligent carbon retirement decisions that align with corporate or personal goals.

Once CUT has been retired, users can see the connection to the actual CO₂E project the CUT corresponds to. This information includes the type of activity that created the offset being retired, the location of the project, the type of certification used to verify the impact, and other information relating to the project and certification process.

Minting + Retirement

We mint tokens to the Living Supply of CUT, with every tonne of Carbon Offsets added to the pool equating to 1,000.00 CUT created. There is secondary tracking done by Smart Contract, where tokens created in the OFFSET pool are programmed with information on the attributes of emission reduction projects that produced the Offsets. The minted CUT are available to be dispersed via exchange sales or strategic reserve volumes.

Along with the Living Supply is the Historical Supply. This includes all values of CUT retired from supply over time plus the current Living Supply of tokens.
(Total retired + Living Supply = Historical Supply)

When a CUT holder retires a token volume from the Living Supply it closes the loop of impact for all of the directly related Carbon Offsets being retired. In addition it forces the CUT team to go out to the real world to source the next round of Carbon Offsets from producers to mint more CUT into the Living Supply.

A user can choose any timing or volume for retirement of any CUT they hold. By sending a balance of tokens to a wallet such as MetaMask, or using the published ABI, holders can signal their intent to retire CUT which locks an allowance for retirement in the contract. Locked allowances of CUT cannot be transferred to other wallets, as they are held within a holder's available balance until retirement and matching are complete.

The CUT team operates a pool of workers that watch for locked allowances to be retired, pairs them with a unique matching entry of Carbon Offsets and creates the blockchain record for this specific retirement transaction information. Each retirement transaction is logged as a "Contribution" log on the chain that links the account, project, and number of CUT retired. These contributions can be verified externally from any CUT frontend, and further metadata about the transaction can be obtained from the CUT APIs.

Launch Supply + Release

There was a small Private sale prior to launch in which CUT supporters were given the opportunity to participate in the first transactions and balances of a project with real climate impact.

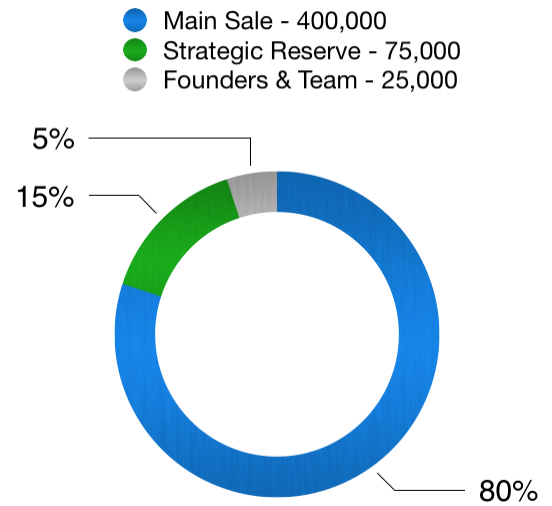
This saw 45,822 tonnes of Carbon Offsets being minted on the CUT ledger, as 45,822,000 CUT. Funds raised contributed to more Carbon Offsets being added to the project supply, and technology development.

The main launch supply of CUT created during our first major minting event in Q1 of 2021 was: 500 Thousand Tonnes of Offsets, equating to 500 Million CUT.

Proceeds of the CUT Sale will contribute to:

- Carbon Offset Purchases
- Technology Advancement
- Marketing CUT

Add in the presale minting of the token releases to the pool of Carbon Offsets, and the launch total supply of the Carbon Utility Token is 545,822,000 Million CUT, available for whatever plans users have for them.



As CUT are retired over time, and the balance of supply reduces, the CUT team works in the real world securing more Carbon Offsets, developing more green project relationships, used to mint CUT. Keeping a balance of CUT in the circulating available supply is the goal, with flexibility in what size of minting and Offsets sourcing need to be carried out to meet the rate of CUT retirements. This is where climate impact is directly tied to the user decisions of those holding CUT, where clicking to retire triggers more certified offsets to be sourced and the reach of the project impact to grow.

Management of Token minting and sourcing of Carbon Offsets

Built into the supply management of the Carbon Utility Token is the ability for the token's utility to grow over time. This means that when adding new Carbon Offsets to the Smart Contract pool, the quantity of the tradable ERC-20 tokens (\$CUT) being minted is done so at a lesser amount.

This minting process can only take place after CUT are retired from supply.

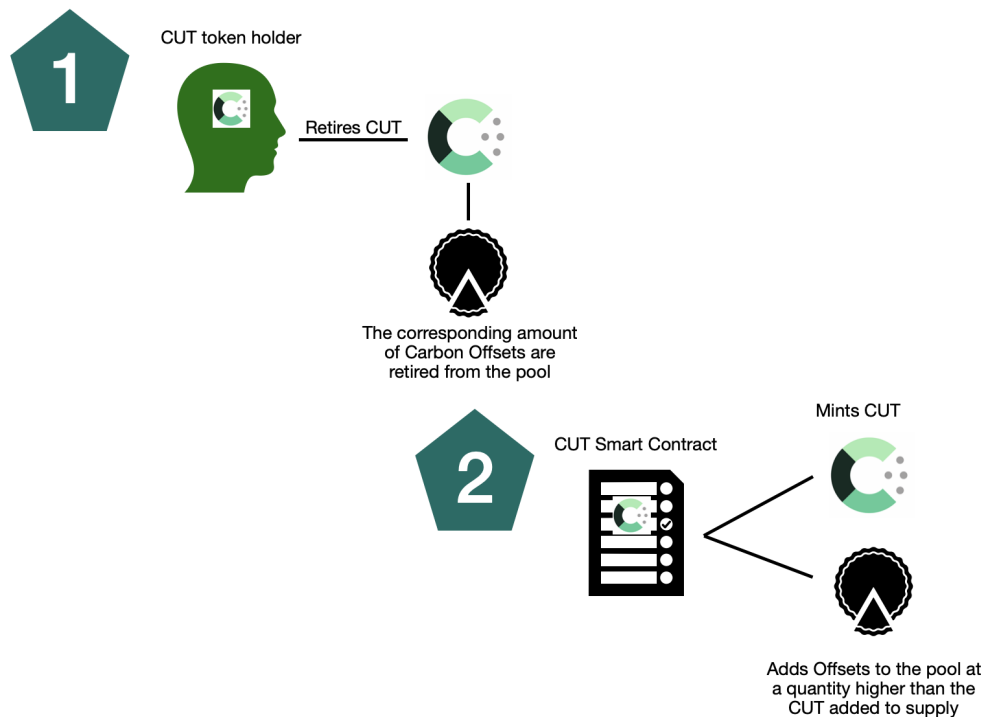
As this cycle advances, the *carbon neutral utility* of each CUT increases by correlating to larger quantities of Carbon Offsets in the pool. A higher rate of tokenholders retiring CUT from supply results in faster increases in the utility.

There is also a decrease in the amount of retired tokens which can be replaced via minting CUT, referred to as the decay rate of the supply. This creates a descending total market cap, along with growth in the pool of Carbon Offsets.

Set in motion by Carbon Offset retirement

A new ratio of CUT to Carbon Offsets can be achieved when tokens are consumed and retired from total supply, which allows for token minting to take place.

When tokenholders choose to offset a certain carbon footprint or retire a select volume of carbon offsets, their tokens are retired permanently and the supply is reduced.



This creates opportunities to source greater amounts of carbon offsets from the real world when minting, and increases the carbon token’s utility value over time. The minting increases are calculated over an exact period of blocks on Ethereum mainnet (579,600), which equates roughly to a 90-day period (based on 6,440 ETH blocks / day).

There are 3 tiers of ratios possible per period which are achieved as higher amounts of Carbon Tokens are retired from supply.

Sample: Retirement Period #1

We start with the 1:1 ratio of CUT / kg of Carbon Offsets at launch, and use the following tiers of increases per period (called retire bands):

Band	Retire level	Mint ratio
RBand1	1 - 5M	2.5
RBand2	5M - 20M	5.0
RBand3	20M+	10.0

- The first retire band (RBand1) covers all retirements from zero retired CUT up to 5 Million retired CUT within the period, with a minting ratio of 2.5 Carbon Offsets per CUT.
- The second retire band (RBand2) covers all retirements from 5 Million retired CUT up to 20 Million retired CUT within the period, and the minting ratio rises to 5.0 Carbon Offsets per CUT.
- The third retire band (RBand3) covers all retirements from 20 Million retired CUT and beyond, with a mint ratio of 10.0 Offsets per CUT.

With a decay rate of 95% on retired CUT being minted back into supply, we can see the following three scenarios for the first minting period and related ratios:

Period	Date	CUT	CO2 (kg)	Band	Retire level	Mint ratio	Carbon Factor (kg)
Launch		545,822,000	545,822,000			1.00	1.00
1a	Q4 2021	544,572,000	553,322,000	RBand1	1 - 5M	2.5	1.02
1b		540,822,000	628,322,000	RBand2	5M - 20M	5.0	1.16
1c		535,822,000	828,322,000	RBand3	20M+	10.0	1.55

Although the amount of CUT retirements and related factoring increases for each future period cannot be known in advance, the CUT equation is calculated based on the following equations:

$$\begin{aligned} \#CUT &= \#CUT \text{ (prior period)} - \text{retired CUT} + (\text{retired CUT} \times \text{decay rate}) \\ \#CO_2 &= \#CO_2 \text{ (prior period)} - \text{retired CO}_2 + (\text{retired CO}_2 \times \text{mint ratio}) \\ \text{Ratio} &= CO_2 / CUT \end{aligned}$$

The minting ratio of carbon per token will continue to increase, to the point where exponentially higher volumes of carbon offsets will need to be added to the pool in order to mint CUT. This will cause all existing CUT in circulation to increase in correlated carbon offset value, and therefore the carbon neutral utility attached to each token increases as well.

Carbon Ratio Oracle

All ratios can be reported from the CUT Ratio Oracle which can read the Ethereum Mainnet for information on both: the total Living.Supply of \$CUT, and also the value of Carbon Offsets added to the OFFSETS Smart Contract for immutable tracking.

Through dividing the total Offsets into the total Living.Supply of \$CUT, the current utility of the tokens can be calculated. The expanded CUT retirement application will include the ability to choose your retirement volume in either quantities of CUT or in kilograms to retire.

Commitment to Sustainability

With a focus on reducing the impact of our activities, CUT calculates our usage within the Ethereum Blockchain to make our data footprint for this project Carbon Neutral using the Carbon Utility Token.

Extending to neutralize any adverse climate effects of our activity on the Public Ethereum Blockchain, we monitor the hashrate of the network and the relative activity footprint of CUT on the Ethereum network. The hashrate translates to a footprint to be offset, against data on the most current and efficient mining method.

CARBON TERMINOLOGY

Emission Reduction - This term represents the amount of reduction of Carbon Dioxide or equivalent (CO₂E) from entering the atmosphere.

Verified Emission Reduction (VER) - Emission reductions verified by an independent third party utilizing internationally recognized protocols such as: ISO, CDM, VCR, ETS, or similar.

Carbon Offset - Is a VER which can be utilized to “offset” the carbon footprint of any activity.

CO₂E - Stands for Carbon Dioxide Equivalent, a common unit for various greenhouse gases to be expressed in terms of their CO₂ equivalent relative to global warming potential.

The CUT whitepaper, CUT website, and CUT token (\$CUT) are not available in the United States of America or any other prohibited jurisdictions.