KlimaDAO

Introducing KlimaDAO

The Problem

In our market economy, the invisible hand works to create prosperity and individual self-interest prevails. The freedom to produce and consume as we see fit generates value for the economy; value that allows the whole of society to prosper.

We generally consider that the market itself is rational, and assume that it values things in a perfect way. We ignore the paradoxes in front of us everyday. Water, a necessity for life is essentially free across (much of) the world; diamonds have no real utility for us, yet in the free market they are priced exorbitantly, excluding all but the world's richest.

According to the market, Amazon is the world's most valuable company. But the Amazon Rainforest has no *market value* until its vegetation is cleared for farming, and its trees are stripped of their greenery and extracted as logs.

In the past, the market price of a good was determined by the socially necessary labour inputs required to create it. In recent times we have moved to a system where subjectivity and speculation are key driving forces behind prices.

For many, the 'marketplace' is no longer a place where two people physically exchange goods or services. It is where we buy securities, that we will never touch, that we often do not understand, in order to grow personal wealth.

Value has become totally detached from the 'market'.

So much so, that when a good or service destroys value, sometimes immeasurably, there is no penalty imposed by the market.

Carbon dioxide is a greenhouse gas that inhibits our planet's ability to let heat escape when it gets too stuffy down here. Carbon dioxide's effect on our global climate is already leading to change in our planet's most vulnerable ecosystems: it is bleaching coral reefs; melting the permafrost beneath arctic tundra; leading to the desertification of the tropics. There's no punishment by the market for emitting carbon dioxide.

What we truly value, is not being valued by the market.

The solution

Climate change *is* the number one issue of our generation.

Carbon dioxide knows no borders, nor do the impacts of global warming. The only way to tackle global warming is by mobilising action at the global scale. The market is the best solution we have at our disposal

to achieve decarbonisation of our existing economic activity, and to retrospectively capture and store the carbon we have already emitted, at the scale required.

Markets are dynamic and more than a place of exchange, they are a manifestation of our culture and our time. So through organisation and co-ordination we have the power to modify them to reflect what we need and want. If we want the market price to be a fair price of what we value, then we need to move the goalposts and force it to work to the parameters we define. A *perfect* market should price in carbon.

To properly value carbon, we need to fully integrate the **carbon market** with *the market*, and we need to reward participation for those who participate in the carbon market with value or influence, or both.

Web3 is the perfect place to integrate these markets, it is a place where there is sufficient liquidity to have impact at scale, where smart contracts can securely and transparently govern transactions, and where contributions can be fairly incentivised.

Enter: KlimaDAO

Klima DAO gives Web3 builders and users the opportunity to participate in the carbon market through the KLIMA token. KLIMA tokens are:

- fungible: per the ERC20 token standard
- backed: by at least 1 tonne of tokenized verified carbon offsets locked in the KlimaDAO treasury*
- useful: holders of KLIMA will have the ability to vote on Klima DAO policy

Therefore, the DAO serves the role of "de-central" bank, governing the monetary policy of this new carbon-backed currency, just as a central bank governs the monetary policy of a fiat currency. Over time, we will build an economy around KLIMA by driving adoption and unlocking growth of the *crypto-carbon* economy.

By developing KlimaDAO on transparent and open-source infrastructure, participation from Web3 developers, carbon projects, and climate experts will be welcomed, to both build this new economy and be rewarded for their contributions.

Join our Discord and be an early contributor.

Blog reference.

Manifesto

KlimaDAO is a collective of environmentalists, developers and entrepreneurs who aim to pool their knowledge and expertise to drive change in the carbon markets, ***today***.

KlimaDAO is building an open-source, transparent community that will leverage the power of Web3 to deliver immediate and measurable climate-positive impact.

KlimaDAO is an evolving network coordinating the delivery of climate finance toward high-impact and validated sustainability projects which produce tangible environmental benefits.

Climate change is the ultimate issue

*The Earth is a fine place and **worth fighting for**.*

We are on the brink of missing the opportunity to limit global warming to 1.5°C above pre-industrial levels. If we rely on the existing policy commitments of governments, we should expect temperatures to rise 3.2°C this century. People are already losing their homes and lives to the changing climate, and the rate of destruction is accelerating. We cannot wait any longer. **Establishing the carbon economy is a key task**. The carbon economy will internalize the true cost of carbon in every transaction, facilitate market-based instruments for its trade, and incentivize decarbonization across the economy.

Many of the carbon mitigation technologies and solutions required to decarbonise are here and commercial today, but they require investment to scale-up. There are also innovative, emerging solutions which require funding to ensure they can commercialise, penetrate the market, and begin delivering emissions abatement and reductions at scale. There are also key interventions that require a philanthropic approach to investment that may not have direct return on capital, but will be instrumental in protecting our environment and rebuilding our ecosystems to both temper the impacts of climate change, and reduce the rate of change.

KlimaDAO will provide a direct route to drive funding to these avenues of action.

Climate change is a money problem and a coordination problem. Hundreds of billions of dollars are still poured into oil and gas each year, even when viable alternatives to generate energy and produce commodities are present. There is a collective sentiment around the globe that action is required, yet we are still in stasis. To get a grip on what needs to be done, we need to address financial and organisational barriers.

The power of the blockchain is unrivaled.

To deliver the change required, we need immediate and widespread mobilisation and coordination of those who can contribute, and those who want to participate. The change needs to be managed laterally and cooperatively, rather than top-down by unaccountable "leaders."

Web3 can enable this:

- DeFi delivers a step change in the way we collectively pool our capital to deliver impact.
- Smart contracts disintermediate, facilitate and automate, and enable novel reward systems.
- Web3 technologies enable coordination, collaboration and innovation, with transparency and accountability.
- Open source software and composability enable rapid scaling of this vision.

Blockchain technology can and will open up new ways for managing our resources and collaborating across networks in the coming years. It will be the foundation for us to efficiently coordinate resources, outpace stale bureaucratic and political processes, and remove the need to jump through hoops to get exposure to the low carbon economy.

Vision

KlimaDAO will function as a bridge between Web3 and the traditional carbon offset markets, enabling flows of capital to be directed to high-impact carbon projects, that have a tangible impact on our global carbon budgets.

KlimaDAO's approach will enable us to build a climate innovation nexus that can quickly coordinate and execute high-impact sustainability initiatives, standardise best practices across the DeFi space, and grow a community of technical experts to accelerate action.

> Vision without action is merely a dream. Klima DAO will grow to catalyze climate impact and manifest our vision of a more sustainable future.

FAQ

What is KlimaDAO?

KlimaDAO is a Decentralized Autonomous Organization to drive climate action and fulfill our manifesto, via our carbon-backed, algorithmic currency- the KLIMA token.

As the protocol grows, KlimaDAO will solve the critical problems of the carbon markets:

- Illiquidity: Carbon Credits come in many different varieties; carbon brokers and middlemen are used by buyers and sellers, fragmenting the total liquidity of the market.
- Opacity: Trades occur often behind closed doors, allowing buyers to underbuy the market.
- Inefficiency: buying and retiring carbon credits comes with friction and barriers, by utilizing the polygon ecosystem, it removes this friction for all users.

In delivery of its objectives, KlimaDAO will become the single biggest disruptor of the carbon markets and set a precedent for a new monetary system backed by carbon. KlimaDAO will serve the web3 ecosystem by offering accountability for those that contribute, rewards for stakeholders, and a stake in governance for those that participate.

What is the point of Klima DAO?

1: Drive Climate Action

KlimaDAO incentivizes new supply of Tokenized Carbon Tonnes (TCT) on the blockchain through the KLIMA token. By driving demand into Tokenized Carbon, it incentivizes carbon offset producers to produce more carbon credits, assisting the adoption of new carbon mitigating or sequestering technology, and *disincentivizes* ***companies wanting to offset their carbon footprint with only C.Cs, and forces them to perform environmentally friendly actions.***

KLIMA is the first building block for unlocking the carbon economy — an economy where more economic activity leads to an acceleration in planetary regeneration rather than more damage to our planet. Before, monetary incentives and environmental incentives aren't typically aligned.

2: Become a Carbon-Based Reserve Currency.

The KLIMA ecosystem and monetary policy are managed by the KlimaDAO. This way we guarantee transparent decision making and long-term stability. In the long term, we can use this system to optimize stability, to transition to a global unit of account and medium of exchange. Currently, in the short term, we're focused on growth and wealth creation, to incentivize users to join the new wave of carbon currency.

3: Facilitate the Climate Markets.

The current carbon (and the climate in general) markets are illiquid, fragmented, inefficient, and opaque. Because of this, we feel that carbon tonnage is heavily undervalued, and is forced down because of these issues. By eliminating these issues, the true price can be achieved.

What can I do in the KLIMA ecosystem?

To buy KLIMA visit https://www.klimadao.finance/buy.

To stake your KLIMA, visit https://dapp.klimadao.finance/#/stake.

The following bonds are current available via https://dapp.klimadao.finance/#/bonds:

- KLIMA/USDC
- KLIMA/BCT
- KLIMA/MCO2
- MCO2
- BCT

To retire carbon assets visit https://dapp.klimadao.finance/#/offset.

How do I participate in KlimaDAO?

Klima DAO development: Join the Discord to become a Klimate and hear about Protocol developments. Those who wish to be involved in Protocol Governance should also join the Discord to be onboarded by a member of the team.

Participation in the carbon economy: At the time of writing BCTs and MCO2s are the main TCTs within the KlimaDAO treasury and their flow into the treasury underpins protocol growth. Both BCTs and MCO2s represent real-world Verified Carbon Units (VCUs) from a registry such as Verra - BCT can be created via the Toucan Protocol's public bridge while MCO2 is a centrally managed product of Moss; new MCO2 tonnes are brought on chain using Moss' private bridge. Bonders can purchase discounted KLIMA tokens over a 5-day vesting period using the bonds mentioned above. Once KLIMA tokens are held, stakers should stake their tokens in return for more KLIMA tokens based on the AKR at each epoch ~7.2 hour intervals.

Who created KlimaDAO?

Klima DAO was inspired by Olympus DAO. It was conceptualized and built by a distributed pseudo-anonymous team.

Who runs KlimaDAO?

KlimaDAO is currently working towards becoming fully decentralised - see our Governance Framework for more details. All decisions that affect the smart contract protocol are formed by community members on the forum and made by KLIMA holders through snapshot voting. The changes are then implemented by the Klima Core Team based on the result of the vote - see our Organization Structure for more details.

Ecosystem

KlimaDAO will maximize value creation for its community by creating a virtuous cycle of growth.

Economic activity within the ecosystem will increase the supply of KLIMA; a new KLIMA can only be minted by locking a BCT (Base Carbon Tonne) in the Klima DAO Treasury and removing it from the market.

Hence, when scale is achieved, the supply of (KLIMA backed by) BCTs in the treasury will be inversely proportional to the availability of carbon offsets on the traditional carbon markets.

Removing carbon supply in the market and locking it within the treasury will interfere with demand conditions in the traditional markets, increasing the cost of carbon offsets and increasing the intrinsic value of newly minted KLIMA.

Klima DAO will be deployed on Polygon, an energy efficient L2 solution; deploying on-chain will bridge carbon offset supply, with DeFi demand.

There are two key pieces of infrastructure underpinning the system:

1.Carbon Offset Tokenisation: Toucan Carbon Bridge

The BCT (Base Carbon Tonne) — KlimaDAO's reserve asset — is a carbon offset index token representing a basket of different tokenised carbon tonnes starting with `TCO2`.

Every `TCO2` represents a unique carbon offset brought on-chain using the Toucan Carbon Bridge. And each offset is equivalent to 1 tonne of carbon dioxide emissions mitigated or removed from the atmosphere from verified projects across the globe.

Key characteristics of the carbon offsets are brought on-chain when it is transformed into a `TCO2`, including:

- Project Name

- Serial Number
- Project type (renewable energy, forest carbon project, blue carbon, etc.)
- Vintage Year
- Verification Standard

Different `TCO2` tokens can represent carbon offsets from different projects, e.g. a forestry project in Brasil or a soil carbon project from the US. However, creating a liquid on-chain market for carbon requires standardisation. This is the role of the Base Carbon Pool — each `TCO2` can be locked into the Base Carbon Pool in return for a `BCT` token. `BCT` is thus a carbon index token, backed by various offsets from multiple projects.

2. Klima DAO Ecosystem

The core principle of the KlimaDAO ecosystem is that a KLIMA token can only be minted by the treasury if at least 1 BCT is deposited and locked away.

Because every BCT is backed by a carbon credit that guarantees the mitigation or removal of 1 tonne of carbon, this system is built on, and internalises, the cost of carbon.Thus, KLIMA has an intrinsic value attached to the price of carbon locked in the treasury.

KLIMA will be traded on the open market (and exposed to speculation). KLIMA price will be underpinned by the price of BCT locked in the KlimaDAO treasury -- we anticipate the price of BCTs to increase over time, in line with the wider carbon market.

Longer-term participation in the Klima ecosystem will be incentivised by three key mechanisms:

1. Bonding

Bonding is the process of trading an LP share to the protocol for KLIMA. The protocol will quote an amount of KLIMA, a discount, and a vesting period for the trade. Creating a bond will require participants to give up their LP share, but in return, the protocol compensates them with discounted KLIMA relative to the price on the open market. This enables the treasury to collateralise with more than just BCTs and increase its purchasing power (for BCTs), thereby increasing supply.

2. Staking

Staking is the reward distribution mechanism of KLIMA. Staking is designed to incentivise longer-term holding of KLIMA, and to give market participants exposure to the climbing price of carbon. The longer participants hodl and stake, the more they compound and the more KLIMA tokens they will have when they unstake.

When KLIMA is staked via the staking contract, they receive sKLIMA on a 1:1 basis. sKLIMA automatically compounds via rebase operations, but it is illiquid and not officially listed on any DEX. sKLIMA can, however, be transferred between wallets - for example to move your sKLIMA from a hot wallet to a cold wallet.

When stakers unstake, they always receive KLIMA on a 1:1 basis for their sKLIMA holdings.

Understanding Carbon

FAQ Carbon Markets

What are carbon markets?

The objective of carbon markets is to reduce greenhouse gas (GHG, or “carbon”) emissions cost-effectively by setting limits on emissions and enabling the trading of emission units, which are financial instruments representing emission reductions. Trading enables entities that can reduce emissions at lower cost to be paid to do so by higher-cost emitters, thus lowering the economic cost of reducing emissions.

What’s the difference between carbon offsets and renewable energy?

Renewable energy sources generate little to no carbon as they produce energy from natural resources that don’t run out or use fossil fuels, like solar or wind energy. Carbon offsetting involves investing in projects that prevent or reduce emissions being released, including but not limited to renewable energy installations.

What is a carbon offset?

A carbon offset unit represents the removal of one tonne of carbon dioxide equivalent (t CO2-e) from the atmosphere, or the avoidance of one tonne of emissions. The term "carbon dioxide equivalent" refers to the summation of multiple greenhouse gasses based on each gasses global warming potential (GWP). The Global Warming Potential (GWP) was developed to allow comparisons of the global warming impacts of different gases. Specifically, it is a measure of how much energy the emissions of 1 tonne of a gas will absorb over a given period of time, relative to the emissions of 1 tonne of carbon dioxide (CO2). For instance, methane has a GWP about 28 times that of CO2.

What happens with the revenues generated by the sale of carbon credits?

Project developers cover their investment and operational costs by selling carbon credits. A portion of the revenues generated remains with the developers as profit. Entrepreneurs are thus incentivized to set up emission reduction projects that are not business-as-usual, and therefore enable climate action. The majority of emission reduction projects are located in developing countries or in economies in transition.

Is Carbon Offsetting just greenwashing?

To be certified, emission reduction projects must demonstrate that they are not business-as-usual. This is referred to as environmental integrity or additionality. This means that, without the additional revenues generated from selling carbon credits, these projects would not have been implemented. Supporting a certified emission reduction project ensures real benefits and maximum impact.

Only additional projects are recognized and can issue carbon credits. This mechanism, which is rooted in the Kyoto Protocol, has firmly established itself and has proven its worth over the past 20 years as a central component of voluntary, non-state regulated climate protection.

How does offsetting help in the fight against climate change?

Offsets are a valuable tool to cover hard-to-abate emissions, i.e. emissions which may be difficult to eliminate completely with current technology. Purchased offsets lead to measurable and accountable emissions reductions.

One of the most powerful economic levers we have in the fight against climate change is pricing carbon. In an indirect way, the voluntary carbon market helps price-in the negative externalities of emitting greenhouse gases into the atmosphere. As more actors decide to do this, the price of carbon will increase steadily, and eventually reach a point where economic and social costs are accurately accounted for by the price of offsets. This is the fundamental role of the infrastructure which Klima DAO is building.

Which are the relevant political foundations for international climate protection?

As early as 2005, binding targets for greenhouse gas emissions, which are the main drivers of global warming, were set for the first time in industrialized countries as part of the Kyoto Protocol. This was then replaced in 2015 by the Paris Agreement, which obliges industrialized, developing and emerging countries alike to fight against global warming. The Agreement includes an obligation to limit average global warming to well below 2°C by the end of the century compared to the pre-industrial period.

What are examples of carbon offsetting projects?

1. **Nature-based carbon sequestration**. Biological sequestration absorbs CO2 emissions through the growth of vegetation and the continued storage of some of the carbon in plant tissues and organic materials derived from plant tissues (e.g. stored in the soil). An example project is the restoration of degraded mangrove landscapes in Myanmar. Other examples include biochar (long term carbon storage from biological sources), and afforestation initiatives (e.g. tree planting on degraded landscapes).
2. **Renewable energy**. Renewable Energy projects include hydro, wind, and photovoltaic solar power, solar hot water and biomass power and heat production. Many renewable energy projects have high up-

front capital costs, although they may offer high rates of return, and their operating costs are often minimal once built. Carbon offsets help support these projects by providing an additional revenue stream to offset their high up-front capital costs. This wind energy power project in India is an example and helps reduce 182,016 tons of carbon dioxide equivalent a year by replacing polluting fossil fuel power plants.

3. **Methane capture**. Methane's global warming potential is about 28 times greater than that of CO2, and thus preventing methane emissions can have significant environmental benefits. Methane is emitted by landfills, during wastewater treatment, in natural gas and petroleum systems, from agricultural activities (livestock and rice cultivation), and during coal mining. Methane is basically 'natural gas' and can therefore be captured and used as a source of energy. Such projects include those that capture and purify methane in wastewater treatment plants or landfills and use it for electricity production or the production of another form of energy. The West Star North Dairy project in California, USA is an example project that captures methane from a dairy farm and uses it for energy.

About Carbon Offsets

The Responsible Use of Offsets

There has been much criticism of carbon offsets in the past, as well as examples of greenwashing by companies and projects that violate best practices. This needs to change if carbon offsets are to play a major role in helping us decarbonise. In short, companies and individuals need to be educated on the responsible use of carbon offsets. **Offsets should not be treated as an alternative to reducing emissions, but rather as a means to offset unavoidable emissions.** They should only be used temporarily, to avoid delaying society's transition to a low- or zero-carbon economy (UNEP, 2020). The Science-Based Targets Initiative (SBTi) released its guidance for using offsets as part of a robust corporate emission-reduction program, contributing to a growing debate over what "carbon neutrality" is and is not. There have been efforts to strengthen the carbon offsetting methodologies in recent years under the International Carbon Reductions & Offsetting Alliance (ICROA). For more information on ICROA see Appendix 3. Nevertheless, there is still scope for further transparency and standardization.

Importantly, in the DeFi space, it should be known that thus far the supply side of carbon offsets has been quite decentralized, both from a financing, technology and geographic standpoint. Looking ahead, there is a unique opportunity to directly fund these projects via DeFi mechanisms - thus enhancing the decentralized nature of both capital formation and capital deployment to sustainability projects.

Specific Concerns Addressed

Concern 1: Carbon offsets aren't trustworthy

This is an important one, so let's take a step back. The concept of carbon offsets has been around for a while, but it really got a boost in 2005 when the Kyoto Protocol took effect. Back then, this was still a relatively novel concept, with its fair share of teething problems, and some cowboys took advantage of poor oversight.

Today, it has matured into a set of robust global frameworks developed by experts over the last 15 years. At its core are internationally recognized certification bodies, that make sure every ton of CO2 offsets they certify is rigorously measured, monitored and verified.

Take the Verified Carbon Standard, and the Gold Standard. They're widely considered the two highest standards for quality carbon offsetting in the world, and certify all of our projects. They guarantee that every ton of CO2 offset is:

Additional: Wouldn't have happened without your support

Contained: Won't cause emissions to go up elsewhere

Permanent: Is protected against destruction by human or natural causes

Sustainable: Has a positive impact on local communities and environment

Verified: Is inspected and verified by an independent third party

Unique: Has a unique ID on a public ledger and can only be counted once

So, while you'll always be able to find someone online selling uncertified or questionable offsets, going with these standards will make sure your offsets are trustworthy and effective.

Concern 2: Carbon offsets are a license to pollute.

Do people use carbon offsets as an excuse to pollute even more? That would certainly defeat their purpose! So is it true? Researchers from Germany looked into this and found out that it's quite the opposite: People who offset their emissions also take more climate-positive actions in other areas of their lives.

"Offsets are an effective contribution to climate protection," explains Prof. Andreas Ziegler. "The frequently expressed reservation that it is a matter of selling indulgences to justify additional CO2 emissions does not apply."

It's also common sense: if you're personally invested in a cause, you want to act to make it succeed. Offsetting and reducing go hand-in-hand.

Furthermore, to even begin the process of offsetting, one must first measure their emissions. Without robust data on the emissions of an organization (or an individual), it's quite difficult to take any action to reduce them. Thus, the process of preparing to offset also opens up a world of possibilities for understanding emissions sources and finding ways to reduce them.

Concern 3: Carbon offsets are a license to pollute. [Part 2]

We hear this one all the time, but our research indicates a completely different conclusion: namely, that those companies that do buy offsets are doing so as part of an overall carbon-management strategy, and they're mostly using offsets to either tackle emissions they can't eliminate internally or to create an internal "price on carbon" that focuses attention on emissions and accelerates reductions. Among businesses tracked in Ecosystem Marketplace's (EM) 2016 buyers' report, 88% of voluntary offset buyers and 92% of

compliance buyers have formally adopted emissions reduction targets. In 2014, the 314 businesses that engage in offsetting invested more than US$42 billion in emissions reduction activities, surpassing the combined investment of the 1,522 companies who did not engage in offsetting (US$41 billion). In fact, companies that included offsetting in their carbon management strategy typically spend about 10 times more than the typical company that didn't offset. Contrary to the "greenwashing" narrative, it appears that using offsets is increasingly the hallmark of a company that's leading on climate action, rather than bringing up the rear. Source

Concern 4: Offsetting does not directly address emissions.

Unlike the allowances used in cap-and-trade markets, offsets always represent real removals of carbon dioxide from the atmosphere or avoided emissions somewhere in the world, and carbon standards require that developers demonstrate "additionality," which means they have to show that the emission reduction wouldn't have happened without the project and its associated financing. What's more, EM's latest report found that 79 companies are generating offsets within their own operations or supply chains by reducing emissions above and beyond regulatory requirements and economic incentives. L'Oreal, for example, distributes efficient, cleaner-burning stoves to women in Burkina Faso who boil the shea nuts used in its cosmetics products. These stoves reduce emissions by reducing the need to chop down trees, thereby saving forests, and they also reduce the health hazards of indoor smoke. Source

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Additional Resources

What are carbon offsets?

Emitting carbon into the atmosphere is what economists call a **'negative externality'**: it is a by-product of economic or other activity that creates damage now and in the future. Companies and consumers do not pay (enough) for these negative externalities, and are therefore emitting too much carbon. This is a **market failure** – the market by itself does not internalize the costs of these emissions and so collective action is needed to obtain the socially desired result. In economic theory, explicit pricing is the solution for such an externality. This can be done by either introducing a tax on carbon or introducing a marketplace for allowances to emit carbon.[1]

We can distinguish between **compliance** and **voluntary markets**. Carbon markets can trade either quotas or credits. Allowances are units of quota issued by the government, or tradable, bankable entitlements to emit pollutants. An example is the European Emission Trading System (EU ETS).

Source

What is additionality and why does it matter?

To achieve additionality, the carbon crediting program needs to provide incentives for implementing activities to avoid or sequester emissions which would not have happened without the crediting program. These credits are created voluntarily outside the scope of compulsory carbon pricing initiatives (i.e. in different companies, sectors or countries), which is a fundamental difference to allowances or credits in

compulsory carbon markets. The voluntary carbon credits can be used as ‘offsets’, to compensate for

Source

ICROA Code of Best Practice for Offsets

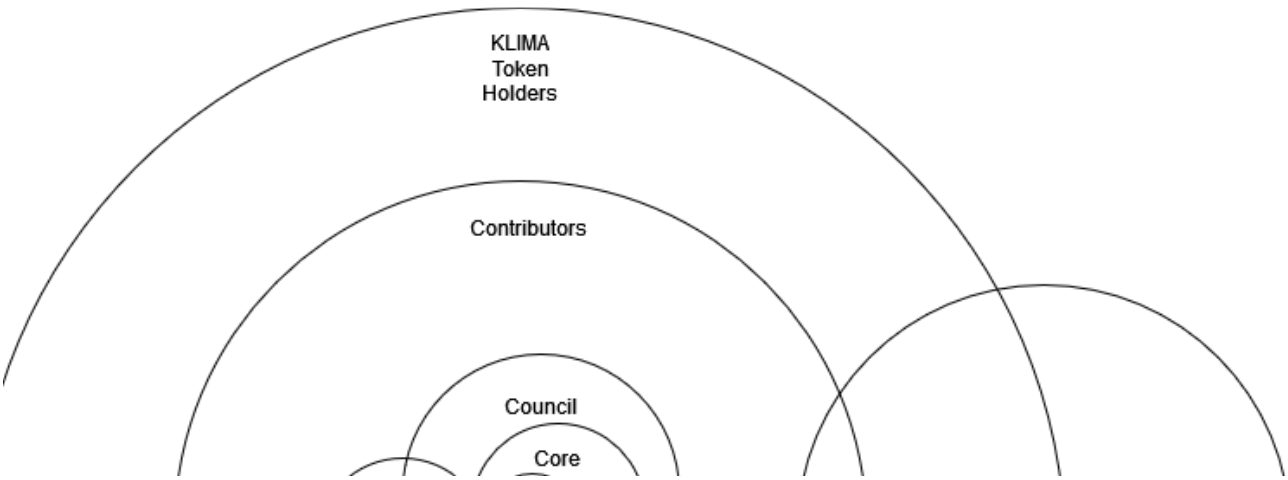
ICROA: The International Carbon Reduction and Offsetting Alliance

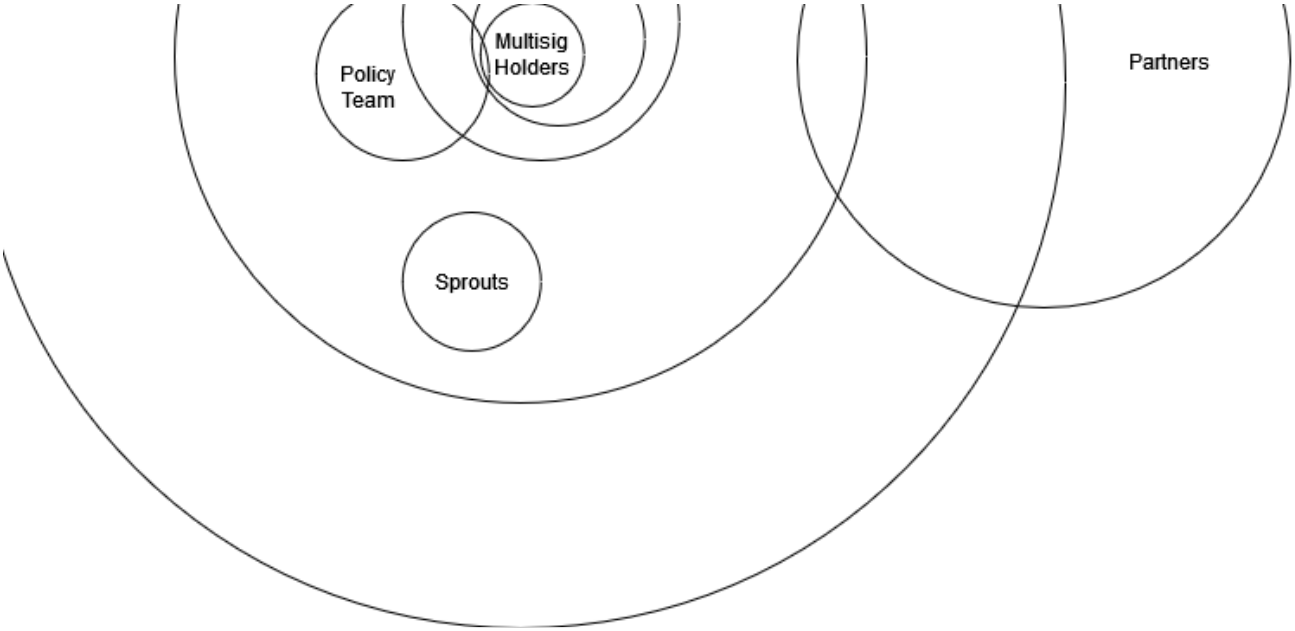
- **Real**: All emission reductions and removals – and the project activities that generate them – shall be proven to have genuinely taken place.
- **Measurable**: All emission reductions and removals shall be quantifiable, using recognized measurement tools (including adjustments for uncertainty and leakage), against a credible emissions baseline.
- **Permanent**: Carbon credits shall represent permanent emission reductions and removals. Where projects carry a risk of reversibility, at minimum, adequate safeguards shall be in place to ensure that the risk is minimized and that, should any reversal occur, a mechanism is in place that guarantees the reduction or removals shall be replaced or compensated. The internationally accepted norm for permanence is 100 years.
- **Additional**: Additionally is a fundamental criterion for any offset project. Project-based emissions reductions and removals shall be additional to what would have occurred if the project had not been carried out.
- **Independently verified**: All emission reductions and removals shall be verified to a reasonable level of assurance by an independent and qualified third-party.
- **Unique**: No more than one carbon credit can be associated with a single emission reduction or removal as one metric ton of carbon dioxide equivalent (CO2e). Carbon credits shall be stored and retired in an independent registry.

DAO

Organizational Structure

Even decentralized autonomous organizations need an org chart





Layers of KlimaDAO Participation

Organs of the DAO

- Core Team: full-time contributors, most of whom have been working on KlimaDAO since before launch. Established initial vision and provide expert input on carbon markets and DeFi.
- Multi-Sig wallet key holders: subset of the Core Team which have a signing key for the multisigs that control the DAO wallet, treasury, and policy parameters.
- Council: department leads for each DAO department, plus Core team. Guides the DAO structure and ensures departments are aligned on priorities, collaborate productively, and deliver on their objectives.
- Policy Team: responsible for economic modeling and formulating monetary policy. Includes members from Core and Council, as well as Policy department contributors.
- Contributors: member of a DAO department who has applied and been tapped in by a department lead.
- Sprouts: all applicants to be a DAO contributor automatically become sprouts for the departments they applied to. Sprouts have limited access to the DAO working server but are welcome to contribute to small projects until a department taps them in to be a full contributor.
- Token Holder: core stakeholders of KlimaDAO, our Klimate community plays a critical role supporting the protocol's growth and engaging in the governance process via discussion and voting.
- Partners: organizations who have established a relationship with KlimaDAO. Some Partners hold KLIMA on their balance sheets; some also contribute to joint initiatives.

Internal DAO Departments

- Engineering
- Operations
- Policy & Treasury
- Partnerships
- Marketing
-

- Creative
- Community

Governance Framework

Processes and tooling used to govern the Klima protocol

Promises and Perils of Decentralized Governance

It's in the name, Klima is a *DAO*, so it's fully decentralized, right?

Well, while full decentralization is the long-term goal that KlimaDAO will strive towards, launching a new protocol and immediately decentralizing everything is a recipe for disaster. At launch, complex protocols like ours must be able to react swiftly and decisively to changing market conditions in order to ensure long term success, and as such are vulnerable to poor management, fumbled execution and delayed decision-making.

In mid-2021, a small team of carbon market professionals and blockchain entrepreneurs conceived of the KlimaDAO protocol as a mechanism to create transparent, liquid carbon markets, while making it more expensive to pollute and enabling new methods of carbon capture to become economically viable.

When laying the foundations of the protocol, the core team made informed decisions based on their professional experience and expert knowledge of both the Olympus protocol, which inspired KlimaDAO, as well as the legacy carbon markets that we aim to bring on-chain. The shared mental model they developed is encapsulated in the KlimaDAO manifesto, and they shepherded the protocol to launch.

As the protocol began to take shape, the core team brought in early contributors to advise on policy decisions, help manage the community, and set up the DAO's structure and organization. At this early stage, KIPs were formulated by the core team and posted directly on Snapshot since there was not yet a forum for discussion (only Discord).

By December of 2021, the DAO formally opened up and began accepting outside applications for contribution across all departments. At the time of writing, there are approximately 100 contributors, with more being onboarded regularly. It has expanded the KIP process to further emphasize community input by adding a Request for Comment period on the KlimaDAO forum where everyone can question, criticize, or recommend proposals that are less time-sensitive.

As any new protocol with ambitions of decentralization gets off the ground, the community must take on more responsibility. Gradually the vision of the founding team and the shared mental model of the protocol are internalized by the community, which diminishes the risk of uninformed token votes or a poorly worded proposal throwing the protocol off the rails.

Initial State

Since the protocol launched, the core team has retained access to contracts and wallets behind 3-of-5

Gnosis Safe multisig wallets - meaning at least 3 core members must agree to approve a transaction out of 5 total signers.

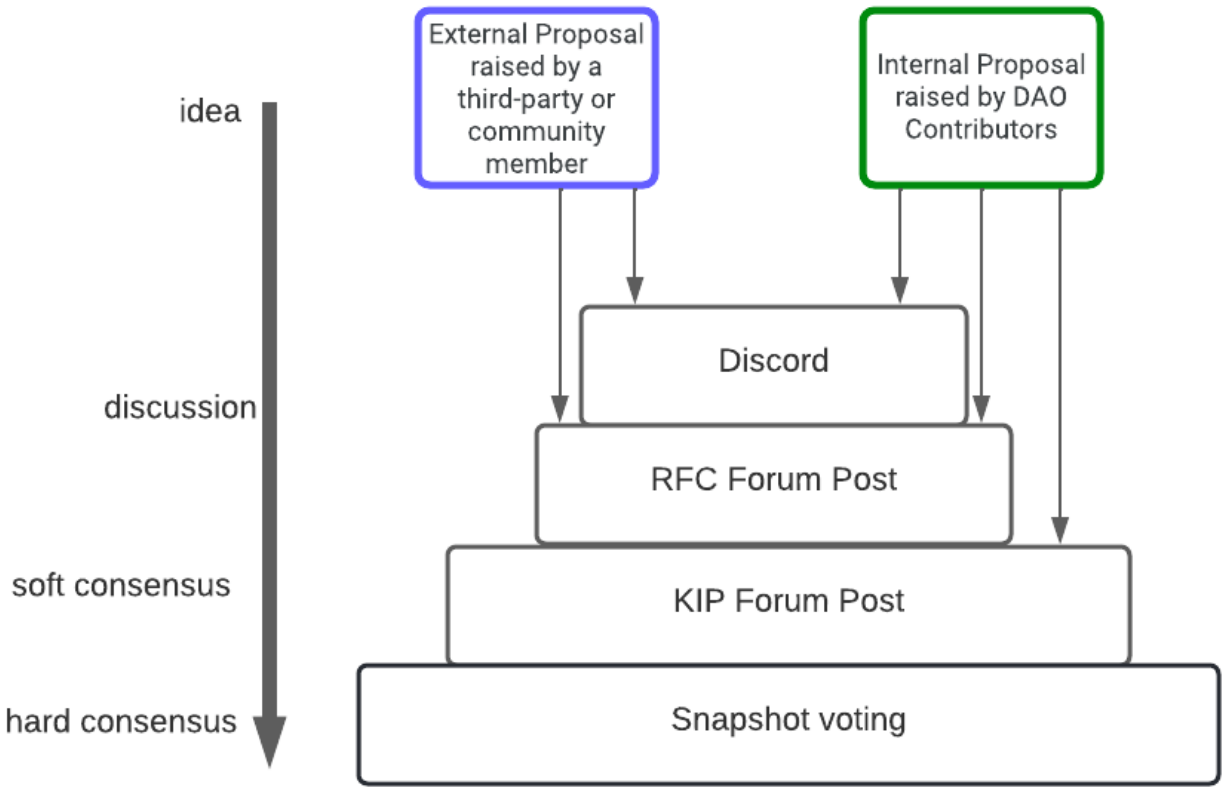
These multisig wallets are used to execute adjustments to policy variables such as bond capacities and reward rate, as well as to distribute funds from the DAO wallet to pay contributors and fund DAO initiatives.

This initial system requires a great deal of trust in the core team to shepherd the protocol to maturity. Thus it is important that we have a transparent governance process to guide the core team's decisions with ample community input, as well as prepare the community to eventually govern more aspects of the protocol as it is gradually decentralized.

Current Governance Process

KlimaDAO is maturing rapidly. Talent is being onboarded to contribute to, and influence the direction of the protocol's growth. The community is expanding, and bringing a range of perspectives, from DeFi natives and carbon market experts, to people who are getting involved with their first DAO. The markets that KlimaDAO operate in (DeFi, ReFi and the Voluntary Carbon Markets) are also evolving at breakneck speed.

To properly leverage the knowledge at the DAO's disposal, and build out the protocol for long-term success in the interest of all those who have a stake in its growth, KlimaDAO has established a more formal approach to governance decisions which is being used today, discussed below.



Flow of Governance Proposals from Idea to Hard Consensus

Discord Community

https://discord.com/invite/kx4pahaFw8

Discord serves as the primary informal medium for community discussion. There are a wide variety of standing text channels, covering everything from detailed technical discussion in #policy-forum to sharing beautiful #nature-photography or just shooting the breeze in the #klimate-clubhouse.

KlimaDAO's Discord server is regularly trafficked by core team members and DAO contributors, who relay messages from the community to the relevant departments or other core team members as necessary. There is even a dedicated channel for feedback and suggestions that is monitored by DAO contributors.

Hosted Events

KlimaDAO hosts regular office hours, policy chats, and AMA ("Ask Me Anything") sessions via voice chat in Discord.

During office hours (as of this writing, hosted weekly on Thursdays at 9 am Pacific time in #office-hours), the core team delivers high-level updates on the DAO's progress, and any server member is free to ask questions either via voice or in text chat for as long as time allows.

DAO Contributor Server

In addition to the public Discord community, we also have a more private "working server" where the operations of the DAO are coordinated, with appropriate workspaces (channels, threads, roles) for each department and their projects. Our global workforce of contributors (~100 as of January 2022) plays an essential role in the continued growth of the DAO, driving forward initiatives by bringing their personal skills and connections to bear.

Access to the contributor server is open to all - we welcome anyone who wants to work for the DAO to submit an application to the appropriate department(s). However, internal departmental communications are only visible to those with the appropriate roles.

See the pinned post in the "#□・contribute" channel in the main community Discord server for instructions on joining the contributor server.

Ideas and discussions for proposals can be developed in both the KlimaDAO Discord Server, and the contributor server.

Formal Discussion Forum

https://forum.klimadao.finance

The KlimaDAO Forum is the hub for more formal discussion and debate. Request for Comment (RFC) periods begin here, where people can make their thoughts heard on the latest Klima Improvement Proposals (KIPs). An RFC can originate internally, from a community member, or from third parties such as new carbon bridges who wish to integrate into the Klima ecosystem.

After the RFC, if the community is on-board with the proposal, a formal KIP will be drafted by the policy team, which will be posted on the forum with an informal poll - acting as a temperature check to suggest if the proposal may need alterations or further discussion.

Proposals can also originate directly from the DAO without an RFC, including for:

- major reward rate adjustments
- frameworks for DAO operations such as contributor compensation
- introduction of new bond types not associated with a partnership (for instance, KIP-8 adding KLIMA/USDC LP bonds)

Note: only the policy team can post KIP temperature check votes in the "Proposals" section of the forum, but anyone can open a general discussion topic or post an RFC in the "General" section.

Snapshot Voting

https://snapshot.org/#/klimadao.eth/

After passing the informal poll on the forum, official KIPs will be published on Snapshot by the core team for a formal, on-chain vote by KLIMA token holders.

At the time of writing, voting power on Snapshot is determined by the amount of KLIMA owned in a one-to-one ratio. All forms of KLIMA (such as staked and wrapped) are eligible to vote, except for leveraged KLIMA (fsKLIMA).

Note that not all actions are subject to a KIP vote. These include smaller-scale maintenance changes, such as Bond Control Variable (BCV) adjustments, as well as established protocol functions that require manual action, such as acting as "buyer of last resort" should KLIMA ever trade below 1 BCT.

For comparison, larger and less urgent changes, such as significant reward rate adjustments, or adding new assets to the treasury, will require KIP votes.

In the event that the policy team or core team wishes to reserve a new power, such that a KIP vote is not required for a specific action, this change will itself be subject to a vote.

Future Vision for Decentralized Governance

Decentralization is a spectrum rather than a binary. Few, if any, DAOs begin fully decentralized, and KlimaDAO is no exception. Decentralization is a journey, an ideal that DAOs must strive toward. KlimaDAO has made great progress on this journey, but it is still early days.

One potential issue with limiting KIP publication to the Core team and DAO departments is that the voting process can turn into a "rubber stamp" of changes planned centrally. Over time, our goal is to decentralize as many governance functions as possible, to minimize any dictatorial power exerted by the DAO contributors or core team and ensure that votes are meaningful.

However, not all governance functions are amenable to the same systems - for instance, one-to-one token voting can be gamed via bribes or exploited by whales to benefit themselves at the expense of the protocol. Likewise, opening up publication of KIPs on Snapshot to any holder of KLIMA could turn Snapshot into a sprawling mess of poorly structured proposals.

As we work to decentralize more aspects of the protocol, we will research best practices and seek community input on the optimal governance system for each function.

A potential solution to responsibly decentralize KIP publication rights is a "stewardship" model, where

representatives are elected by token holders to a committee that has publication rights to Snapshot, controlled by a dedicated multisig that requires some level of consensus among the elected representatives before the proposal is published.

One example of a governance function that we already plan to decentralize (eventually) is the reward rate parameter that contributes to setting the staking AKR. At this time, the Policy team actively manages the reward rate and proposes individual changes via KIPs within a framework laid out in KIP-3. Once the protocol matures and the AKR stabilizes at a more sustainable level, we can turn control over the reward rate over to an on-chain “gauge” that the community votes to change, with changes automatically implemented via a smart contract.

Further Reading

- Vitalik's blog post on governance beyond token voting
- a16z blog post on the history and principles of DAO governance
- Vitalik's blog post on bulldozer vs. vetocracy

Tokenomics and Mechanisms

Primer on KLIMA

Klima aims to become a decentralized, Algorithmic based, reserve currency. On a high level, the token has 4 axioms:

1. **Every KLIMA token has a Intrinsic Value (IV) backing the token.** While there can be more assets backing the token, there is a minimum value associated with the token. Hence, there is a price floor, but no price ceiling of the protocol. As of today, the Intrinsic value is 1 carbon tonne. In other words, **every KLIMA token is backed by 1 Carbon Tonne.**
2. **The KLIMA token can only be minted or burned by the protocol.** The protocol serves as the "decentralized, central bank" of the token, with the ability to expand and contract supply.
3. **When KLIMA is trading above the IV, the protocol expands supply, and sells KLIMA to the market.** Because the protocol can create more supply, as long there is the IV backing the token, it generates excess reserves from the spread between IV and market price.
4. **When KLIMA is trading below IV, the protocol buys and burns KLIMA, contracting supply.** Because it buys the token under the intrinsic value, the protocol bolsters reserves per KLIMA from the spread.

From these market operations, we can see that the protocol gives the user certainty that KLIMA will not trade under the intrinsic value in the long term. This provides a sense of security and confidence for the users that the protocol will step in as the last buyer of resort, because the protocol can and will buy KLIMA below the

IV, even if the supply is reduced to 0. In fact, an event like this would be very advantageous for those who didn't sell, as their % supply grows and grows.

Whenever the protocol generates excess reserves, the protocol can utilize this in many ways. Today, the protocol distributes excess reserves to stakers via rebase rewards, and to the DAO from fees on bonding. All the rewards are paid in KLIMA, backed by carbon assets. This incentivizes users to keep their KLIMA staked, reducing selling pressure placed on the token. This greatly reduces the pressure for price appreciation for the users, and shifts the emphasis to supply accumulation in order to generate a return.

While the end goal for KLIMA is to have a stable value dictated by the market, independent of the actual price of carbon tonnes, the focus right now is on growth and treasury accumulation. A great currency requires a large and robust treasury from which to derive value. It also needs a large supply in order to facilitate great volume and develop an unit of account. This simply cannot be done on day one. Additionally, a great currency is nothing without adoption; if no one uses KLIMA, it's not a good currency. However, the greatest currency is not typically a growth asset, as the very stability that makes for a great currency limits the growth of its value. By distributing tokens via staking, it allows for this value creation for early users while also promoting adoption and supply expansion.

Initial Network State

Our initial goal is not to find a stable carbon price. It is to provide an intuitive way for Web3 users to engage with the carbon markets, vote on what the 'crypto-carbon' market should look like, and be rewarded for participation. Through policy and voting, the protocol will be tuned to optimize for different carbon market trends over time.

In the near-term, the main tradeoff is volatility versus stability and consistency. With volatility comes growth; this is what we want early on. Towards the middle of the century, we anticipate more stability as KLIMA approaches equilibrium with supply and demand in the carbon markets.

With tight policy, KlimaDAO should deliver on the near-term goals of reducing carbon, incentivizing participation in carbon markets, and building the infrastructure to increase liquidity and transparency in the carbon markets.

With scale, we will create a new, regenerative monetary system.

Alpha State

The initial network features the following:

- **A one-way treasury:** money goes in, and is directed immediately to carbon projects.
- **The bonding contract:** through which reserves of BCT, LP and KLIMA tokens are increased.
- **The staking contract:** where KLIMA rewards are distributed.

On Epoch 0, the initial supply was ~251k KLIMA. ~57k came from the IDO, 133k came from the LBP, and ~81k came from the alchemist reward program.

Initial Supply

Size and distribution of initial KLIMA supply

IDO

On August 17, 2021, KlimaDAO began its fair launch by distributing the initial supply of Klima using an Initial Discord Offering (IDO). Any Discord members who helped beta test KlimaDAO before launch and received the appropriate role, were able to participate in the IDO by buying an NFT.

Two classes of NFT were offered to IDO participants:

- Klima x SVN M Carbon Horizon: 500 DAI / NFT → airdrop of 50 KLIMA at launch
- Klima x SVN D Carbon Horizon: 1000 DAI / NFT → airdrop of 100 KLIMA at launch

Of the eligible Discord members, 613 chose to participate. 58,050 KLIMA was allocated to IDO participants at an effective price of $10/KLIMA (including additional KLIMA allocated after the IDO sale to match Crucible prelaunch rewards - see below for details).

IDO participants had their KLIMA allocation airdropped to the same address holding their NFT directly on Polygon after KlimaDAO launched. In order to ensure the airdrop went to the same wallet that purchased the IDO NFT, the NFTs were non-transferable until after the airdrop was completed when the protocol launched. The IDO NFTs are now fully transferable.

Copper Fair Launch Auction

The IDO bootstrapped the next stage of KlimaDAO's fair launch. On September 14, 2021, we launched a Liquidity Bootstrapping Pool (LBP) available to the public using the Copper Fair Launch platform. The LBP enabled KlimaDAO:

- To distribute KLIMA into the hands of as many people as possible;
- Achieve sufficient liquidity to bootstrap our Sushi pools at full launch of the protocol; and
- Enable the market to determine a "fair price" of KLIMA.

KlimaDAO **raised ~$18MM and distributed ~113,800 aKLIMA** of the available 120k aKLIMA at a final price of $323.47. 1 aKLIMA became redeemable for 1 KLIMA at launch. See the aKLIMA auction page on Copper for more details on the LBP.

The ~6,200 aKLIMA that were not sold in the auction were retained by the Klima core team for use as part of the initial liquidity pools for KLIMA at launch.

After the LBP, aKLIMA holders could stake their aKLIMA in the Alchemist Crucible Aludel reward program. 2000 alKLIMA (also redeemable for 1 KLIMA at launch) were distributed each day amongst all aKLIMA deposited until the launch of the protocol, with the proportion distributed to each Crucible based on an 18 day linear multiplier.

NOTE: Since the KLIMA allocated to IDO participants was effectively locked until launch, IDOers also received equivalent KLIMA rewards as if they had been staking their IDO KLIMA in the Crucible rewards program.

42,000 alKLIMA (for aKLIMA Crucible stakers) and 21,425 KLIMA (for IDOers who effectively staked) were distributed in association with this prelaunch rewards program.

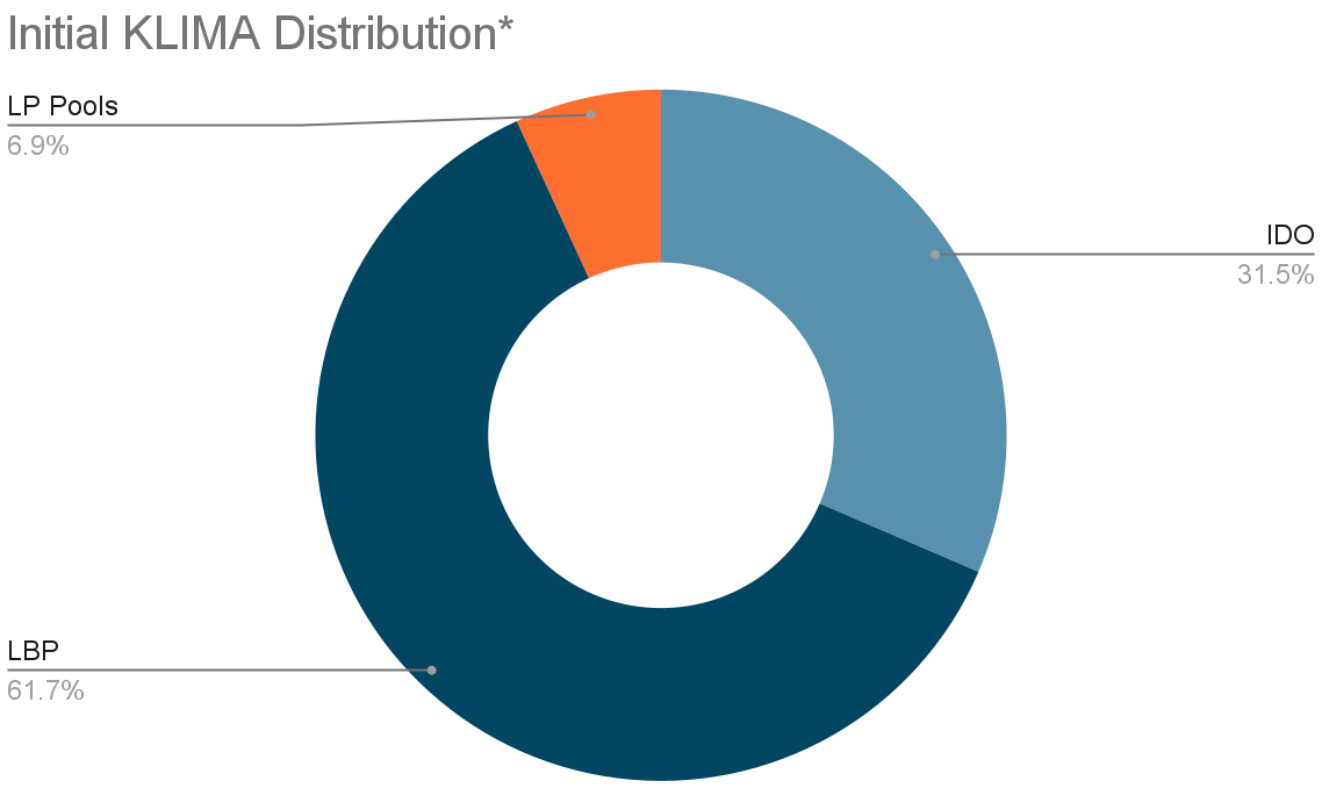
Token Distribution at Launch

Combining the IDO and LBP community distributions, plus the prelaunch rewards, results in an **initial circulating supply of 235,274 KLIMA**

In addition to the community distribution, the KLIMA/BCT liquidity pool was seeded with ~6200 aKLIMA left over from the LBP, combined with an additional ~11k KLIMA minted by the core team using some of the BCT they sourced for launch.

Summing up, the total initial supply of KLIMA was 252,586.

For a detailed analysis and breakdown of initial KLIMA supply, see this spreadsheet used by the policy team to plan for launch.



NOTE: this initial distribution does not include pKLIMA allocations, since pKLIMA has to be redeemed by hand after launch to receive KLIMA. LIMA redemptions are limited to a total of 15.8% of KLIMA supply at any point in time, see the pKLIMA section of the emission mechanisms pa for more details.

Emission Mechanisms

Mechanisms that mint KLIMA, increasing total supply

Staking Rewards

Additional KLIMA is distributed every epoch through KlimaDAO's staking rewards. These staking rewards are generated from the excess reserves the KlimaDAO treasury accumulates from selling bonds. A portion of these excess reserves are distributed back to stakers as sKLIMA staking rewards. 1 sKLIMA is redeemable for 1 KLIMA.

KlimaDAO's staking rewards rate is set by KlimaDAO governance, which can be seen here. Note that the staking reward rate that a user receives for their staked KLIMA is equal to the KlimaDAO reward rate / % of circulating supply staked.

The framework for KilmaDAO's staking rewards was ratified by the community in KIP-3. KIP-3 was later amended by KIP-5 because block times on Polygon were shorter than expected: average rebases have been trending closer to ~7.2 hours instead of the expected 8 hours.

Bonding

KLIMA is also minted and distributed when users bond assets to KlimaDAO. An explanation of KlimaDAO's bonding mechanism can be found here, and the amount of KLIMA minted for bonds can be seen on this dashboard.

In addition to the amount of KLIMA minted for the bonder, an extra 30% of the bond value is minted for the DAO wallet to fund operations. For example, if a user bonds assets valued at 10 KLIMA, 10 KLIMA will be minted for the bonder and 3 KLIMA will be minted for the DAO.

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pKLIMA Redemption

KlimaDAO distributed pKLIMA to individuals and organizations committed to helping KlimaDAO become a long-term success. pKLIMA is vested based on supply share. For example, the team's supply share is vested at 7.8%, meaning when the protocol has a supply of 1 million KLIMA, 78,000 pKLIMA can be redeemed by the team.

- Team: 330m pKLIMA, and 7.8% supply share
- Project stakeholders: 70m pKLIMA, and 3.5% supply share
- Advisors: 50m pKLIMA, and 1% supply share
- OlympusDAO: 70m pKLIMA, and 3.5% supply share
- KlimaDAO community: 480m pKLIMA (no supply share)

Cumulatively, all of the stakeholder groups can never own more than 15.8% of total KLIMA supply.

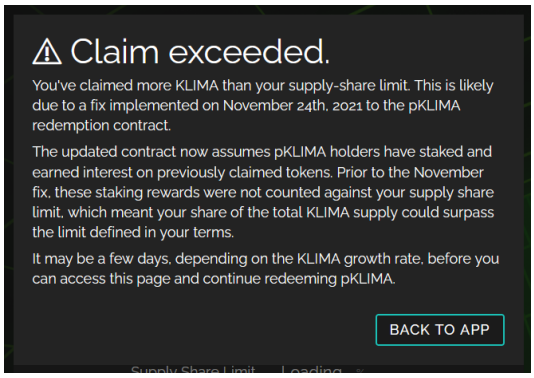
pKLIMA is not the same as KLIMA, aKLIMA or alKLIMA. KLIMA, aKLIMA, and alKLIMA are all backed by 1 BCT. In order to mint any of these tokens, 1 BCT must be locked in the treasury. There are no underlying BCTs locked in the treasury to underpin the distributed pKLIMA supply. To redeem pKLIMA, holders will be

responsible for delivering BCTs to the treasury themselves, 1 BCT for each claimed pKLIMA. By limiting pKLIMA to a % supply share and requiring holders to deliver BCTs to the treasury themselves, pKLIMA ensures that stakeholders, partners, core-members, and community contributors are all focused on the same goal: growing our carbon-backed treasury for long-term success.

Post-Launch Excess pKLIMA Redemption

Until the launch of the wsKLIMA token several weeks after launch, there was a minor implementation issue in the pKLIMA contract that allowed for pKLIMA holders to redeem pKLIMA even though they had a greater % supply share than should be allowed. The original contract could not account for the fact that pKLIMA holders may have staked and earned rebase rewards on previously claimed tokens until the wsKLIMA contract was deployed, providing a way to calculate the index-adjusted value of KLIMA.

The fix was deployed on November 24, 2021 and will gradually automatically correct the issue by preventing further pKLIMA redemption until supply grows sufficiently to bring all pKLIMA allocations in line with vesting limits.



Maximum Supply?

Since each KLIMA must be backed by at least 1 tonne of tokenized carbon offsets held in reserves by the treasury, the maximum supply of KLIMA at any given time is limited to the number of tokenized carbon tonnes held in the treasury's reserves (see Dune for up-to-date metrics).

However, this total can grow over time as more offsets are delivered to the treasury via bonds or pKLIMA redemption. So, the practical limit on the number of tonnes that can be brought into the Klima treasury at any point in time is the total offset tonnage that has been bridged on-chain thus far.

That said, assuming no further bridging, a larger and larger percentage of on-chain offsets would eventually be absorbed into the Klima treasury, which would push up on-chain offset prices and incentivize more offsets to be bridged to capture any price difference with the off-chain offset market.

The true limit on the total supply of KLIMA is the total number of outstanding verified carbon offsets in existence - as of the time of writing this is about 500 million tonnes, but more offsets can be issued by registries like Verra as new offsetting projects complete their verification and issuance process.

Thus, there is no fixed upper bound on the total supply of KLIMA - as long as more offsets are being generated, bridged, and bonded to the treasury, KLIMA supply can continue to grow.

Bonding (1,1)

What is Bonding?

Bonding is the process of trading assets to the protocol for KLIMA. The protocol will quote you an amount of KLIMA for your asset, and the vesting period for the trade. Today, the protocol takes in:

1. Reserve Assets:
    - BCT (Base Carbon Tonne; trades on SushiSwap)
    - MCO2 (Moss Carbon Credit Token; trades on Quickswap)
2. Liquidity Assets:
    - KLIMA/BCT SushiSwap LP tokens
    - KLIMA/USDC SushiSwap LP tokens
    - KLIMA/MCO2 Quickswap LP tokens

Why should I bond?

Bonding allows you to buy KLIMA at a lower cost basis. Because the protocol can sell at a discount to the market price (as it can mint KLIMA at IV), bonding when there is a positive discount may be advantageous compared to simply buying KLIMA on the market and staking.

Bonding Dynamics:

The protocol quotes the price of a bond based on the intrinsic value of KLIMA, and the premium charged on bonds:

$$BondPrice = 1 + Premium$$

This premium is dependent on 2 factors, the total debt of the system, and a external controllable variable. This ties the price of the bond to the amount of bonds outstanding. The more bonds there are (more demand), the higher the premium and the lower the discount is and vice versa.

$$Premium = DebtRatio * BCV$$

$$DebtRatio = BondsOutstanding/KLIMAsupply$$

Carbon Custodied:

Carbon Custodied (CC) refers to the tokenized carbon offsets held in the treasury reserves. For each KLIMA token minted, there is some amount of carbon offsets in the treasury. Any excess reserves above the 1 tonne/KLIMA Intrinsic Value will eventually be paid out to stakers via rebase rewards.

Because an LP share can fluctuate in value in terms of offset tonnage as offsets are bought and sold out of the pool, we mark it down to reflect the fact that not all the carbon will be left in the pool in extreme market conditions This is formularized below:

$$CC_l = (LP/TotalLP) * 2sqrt(K)$$

Where K is the constant product of the LP pool.

Naked carbon assets that represent one tonne of carbon per 1 token (BCT, MCO2, etc) contribute a carbon custodied value of 1 tonne per token, though the KLIMA token itself ends up backed by a weighted average of the price and quantity of the different carbon assets, which constitute Carbon Custodied.

Expectations:

With the bonding mechanism, not only will we acquire carbon assets into the treasury, it also allows us to acquire liquidity to facilitate market operations as well. This assists in creating a decentralized carbon market, as well as provide a passive revenue generation through the LP fees.

Staking (□,□)

Staking is the primary reward distribution mechanism of the protocol. It is intended to be the primary mechanism of value accrual for the majority of users.

Whenever the protocol has an excess of reserves per token (i.e when the CC of the treasury is higher than the assets needed to back KLIMA), the protocol will mint and distribute tokens to the stakers. The amount minted and distributed is controlled by a variable named the reward rate. This is the % of supply that is rebased. This massively slows down how fast the protocol expands supply, as doing so is detrimental to the health (rapid expansion without backing causes a price collapse).

KLIMA and sKLIMA always have a 1:1 ratio, meaning that you will always obtain 1 sKLIMA for every 1 KLIMA and vice versa via staking or unstaking on the KlimaDAO Dapp.

$$KLIMA = sKLIMA$$

When a rebase occurs, the treasury deposits KLIMA into the distributor contract, which deposits it in the staking contract. Since there is now more KLIMA then there is sKLIMA, the sKLIMA is rebased to keep them in parity.

$$RewardRate = 1 - KlimaDeposits/sKlimaOustanding$$

Because not all KLIMA is staked, the user gains a larger piece of the share of rebases:

$$RewardYield = RewardRate/(\%Staked * \%Circulating)$$

This translates to AKR:

$$(1 + RewardYield)^{(365*24/(BlockTimeInHours)}$$

Market Dynamics

Purchasers of tokenized carbon tonnes are responsible for "pricing in" carbon to the system. Holders of KLIMA have exposure to a new type of money, backed by these assets.

The market value of these tokenized offsets (e.g. BCT, MCO2) over time will be dictated by supply and demand of the underlying offsets composing the offset token; as demand for carbon offsetting at the macro-level increases, and the quality of carbon offset projects increases, the market value of carbon offsets will also increase. All extrinsic value (i.e. value of KLIMA - value of carbon assets) is new wealth created.

Player Goals

Stakers care primarily about their KLIMA balance. While price is important in valuing their KLIMA and indicating the market's perception of Klima DAO's utility and impact, it is not the main goal in the shorter-term. KLIMA is a long-term play, and maximizing holdings is the objective of stakers.

A smart staker cares about the long-term price exploration of tokenized carbon offsets, as well as the quality of the offsets that flow into the ecosystem.

Bonders care primarily about the On-chain Carbon Tonne supply and their KLIMA balance. Bonders purchase KLIMA at a discount to market price by relinquishing carbon assets or liquidity provider (LP) tokens to the treasury to be locked away indefinitely. Their impact on the carbon market and KLIMA returns from bonding are proportional to the amount bonded.

In the case where demand for bonds is low relative to capacity, purchasing carbon assets or providing liquidity and bonding for new KLIMA will be cheaper than purchasing KLIMA on the free market.

Bonding is a much more active strategy, as you must consider the trade-off between bonding carbon assets or LP at a specific discount vs. buying KLIMA directly and staking. Since bonds vest linearly over 5 days, calculations are typically necessary to quantify if the discount is worth it relative to simply staking KLIMA.

Underlying Dynamics

The initial state of BCT token **is at intrinsic value**, determined by the cost of the carbon in the pool.

The default state of the network and KLIMA is also at intrinsic value. After some long period of inactivity, price will always return to the intrinsic level. Contractions are conceivably only triggered by short-term liquidity crises. KLIMA holders have a guarantee that price will come back above intrinsic value eventually, so the only sellers below should be those who need a short term exit and are willing to take the extra loss.

Expansions can be triggered by an increase in staking or bonding.

An increase in the percentage of KLIMA staked will generally be preceded by purchases of KLIMA from the market. That increases the price of KLIMA, which allows the protocol to sell bonds at a higher premium and increases rewards (in KLIMA) for stakers. That should serve to bring in more stakers and continue the cycle as long as there is demand for the carbon offsets backing KLIMA.

Meanwhile, the rising price of KLIMA increases the bond discount, which causes more demand for bonds and leads to more assets being bonded into the treasury per KLIMA minted. An increase in LP bonded to the treasury from a rising KLIMA price will also generate additional liquidity, which improves the protocol's ability to facilitate large transactions. This positive price-liquidity feedback loop should serve to create sustainable expansionary periods. However, it works both ways. Falling demand reduces the premium on the KLIMA token which makes bonding less efficient.

This slowdown in the growth of bonds, particularly carbon asset reserve bonds, could lead to a reduction in staking rewards which could cause sell pressure and further reduce the token price. This is an unavoidable fact of systems like this; even the most established (i.e. Bitcoin) are no stranger to significant declines after periods of expansion. But we can work to mitigate busts. Firstly, the anticipated growth in demand for carbon offsets is expected to ensure that there is demand for KLIMA and the intrinsic value will trend upwards.

KLIMA holders have a guarantee that price will come back above intrinsic value.

In the case that demand stagnates, the protocol's reserves can step in to catch the market when velocity turns too far to the downside. It does so through forward guidance: the fact that the protocol will buy lowers risk the lower we go, which can mean we don't have to.

In the long-term steady state, KLIMA is expected to trade around intrinsic value (IV) of 1 tonne of tokenized carbon offsets. Contractions are conceivably only triggered by short-term liquidity crises. KLIMA holders have a guarantee from the treasury that price in carbon offset terms will come back above intrinsic value eventually (likely implemented via inverse bonding), so the only sellers below IV should be those who need a short term exit and are willing to take the extra loss.

Inverse Bonding With a Diversified Treasury

Since the treasury holds multiple types of tokenized carbon with differing market prices, but each KLIMA is backed by 1 tonne of carbon regardless of type, the treasury is incentivized to start buying back KLIMA via inverse bonds if KLIMA is trading below any of the individual carbon tonnes in the treasury.

The Importance of POL

“POL” stands for “Protocol owned Liquidity”

Liquidity

What is Liquidity and why is it important?

In the off chain world most trades are matched through an orderbook system. Market orders move the price and the amount and the size of limit orders, set in the order book, decide how far the price is moved. In the DeFi world, things are a bit different. Here, so-called AMMs (Automated Market Makers) are used. Decentralized exchanges like Uniswap or Sushiswap created on-chain Liquidity Pools (LPs), which are smart contracts with two paired assets in them, for example KLIMA and USDC (to learn more about AMMs, here is a good video about it). The bigger the pool, the better, trades can be facilitated: this reduces the volatility in the price; reduces the possible slippage (difference between requested and actual trade price) and makes large trades feasible. This is why protocols will want to have a large liquidity pool for their tokens. In the case of KlimaDAO, that would mainly be the KLIMA token and all the other carbon tokens held in KlimaDAO’s treasury. KlimaDAO aims to create a liquid on-chain market for carbon assets, so large LP’s are needed for KLIMA and the Carbon Tokens which are used to back it.

Protocol Owned Liquidity

Who owns the liquidity?

In “DeFi 1.0” providing liquidity was mainly incentivised by rewards of the native tokens of the protocol so you would get extra tokens X when you would provide liquidity in the X/USDC Pool. Liquidity was therefore owned by individual users who were looking to “farm” the incentive rewards. This brought a few problems with it:

1. Temporary liquidity: The liquidity is mercenary, once the rewards leave, so does the liquidity. You've provided liquidity for the short term.
2. Lack of security: The liquidity is owned by users and not by the protocol, they are free to exit at any time. This means during times of turmoil, liquidity providers will leave in order not to suffer impermanent loss, when the protocol needs it the most.
3. Constant selling pressure: Since rewards are paid to the LP, they sell these rewards either to LP more, causing more emissions, or to another asset, causing constant selling pressure to the token.

DeFi 2.0

In “DeFi 2.0” protocols introduced new techniques by which the liquidity is owned by the protocol instead of individual users. This means that the protocol has a guaranteed amount of liquidity available at all times. This also reduces the cost for the protocol of the long term availability of liquidity. In “DeFi 1.0” rewards have to be constantly paid out to Liquidity Providers just to hold the liquidity. In “DeFi 2.0” the protocol purchases the Liquidity only once via bonding and is able to hold on to it forever from then on. KlimaDAO owns the vast majority of its liquidity and can guarantee a stable trading experience for the users.

Game Theory (Olympus Inspired)

At a high level, Klimates have 3 possible actions to interact with the protocol:

1. Stake
2. Bond
3. Sell

Klimates will most likely buy when there is supply or price expansions, and sell when there is supply and price contraction. When is a neutral price/supply growth, Klimates are more inclined to bond.

Staking is most beneficial for the protocol. they lock supply up and minimize selling pressure, causing price appreciation on the token. This allows the protocol to greatly accrue more assets in the treasury with the least expansion. They also benefit the most, as they obtain rewards when staked.

Bonders are the next best actors. They trade in assets for the protocol, allowing the protocol to function. However, for these assets, they exert selling pressure when selling bonds. They get some rewards due to the difference they make from the bond and market price.

Lastly, sellers are the most evil actors, as they reduce confidence in the protocol, provide selling pressure, and get the least rewards from the 3.

By pairing these players together, you get a Nash table outlining the outcomes and the overall benefit to the protocol:

	Stake	Bond	Sell
Stake	(3, 3)	(1, 3)	(-1, 1)
Bond	(3, 1)	(1, 1)	(-1, 1)
Sell	(1, -1)	(1, -1)	(-3, -3)

(Tree,Tree)

As you can see, the best strategies are all cooperatives. If both players stake, it is the most benefitable for the protocol. Bonding and staking yield significant benefits, and everyone bonding benefits the protocol. We can see that conflicting actors, (equal stakers/sellers) yield a neutral result. We only see a negative sum outcome when everyone sells. Unlike other protocols where you never want to be the last person holding, and you're competing against others to maximize your value, in Klima (Olympus) the maximal value is obtained when everyone cooperates.

Note that this is oversimplified greatly. These dynamics are greatly dependent on the premium, market conditions, and a myriad of other factors. The numbers are simply there to demonstate the overall idea.

This system enables KlimaDAO to build out a long-term sustainable protocol that incentivises the growth of the on-chain carbon market, and underpins the growth of this new carbon-backed economic paradigm. Ultimately, this is achieved through information sharing and aligning incentives between all participants.

We believe that this incentive structure, and the wide-scale co-ordination it enables, can be a game-changer in the fight against climate change, enabling DeFi participants to move the dial on climate action. To learn more, you can read our thought piece published in Bankless.

Strategies for Defending Backing Value

What does it really mean for KLIMA to be backed by carbon offsets?

Introduction

We say, "KLIMA is backed by carbon offsets" because each KLIMA token has an Intrinsic Value (IV) of 1 BCT - which means the treasury must have at least 1 BCT held in reserves in order to mint 1 KLIMA. In addition, the treasury contains excess reserves, comprising the Carbon Custodied (CC) above 1 BCT which will eventually be paid out to stakers of KLIMA in the form of rebase rewards.

However, the actual market price of KLIMA at any given time is dictated by market pressures. The policy team has a variety of levers to ensure that KLIMA will consistently trade above IV, i.e. to defend the backing value.

In a typical market, price bounds can be represented broadly as IV < CC/token < KLIMA price. However, this may not always be the case. In order to guarantee a return to backing value, the policy team must have strategies prepared in advance for defending KLIMA's backing value.

While the policy team always makes decisions for the long-term benefit of the protocol, rapidly shifting market conditions call for a rapid response. As needed, KIPs will be published, proposing to grant the policy team any specific powers required to implement strategies discussed below in response to market conditions.

NOTE: remember that the treasury prices KLIMA in terms of carbon tonnes - not dollars - so we only discuss the KLIMA price in terms of the tokenized carbon tonnes held by the treasury - primarily BCT at the time of writing.

KLIMA Trading Below CC But Above IV

Ultimately, the policy team must maintain the trust and confidence of the community and the market. The best way to do that is by behaving predictably, within the parameters agreed upon by the community.

In such a situation, the policy team would be seeking input from the community about what actions they think are appropriate, as well as clearly communicating any important policy changes prior to implementation.

With that said, in most other Olympus forks, the answer seems straightforward: if the token is trading below the CC per token, the protocol should stop bonding assets, reduce the staking reward rate, and deploy inverse bonds. However, Klima is NOT a typical Olympus fork.

Comparison with Vanilla Olympus Mechanics

Typical Olympus Fork Strategy Below RFV

Bonding assets when the price is below the RFV (called CC in Klima) per token accelerates the reduction of the RFV/token and diminishes the "risk free" nature of the trade (see table below). Thus, the first move for a typical Olympus fork trading below RFV is to disable bonding entirely.

If the RFV/token is $25, for example, and the token is trading at $20, then you ideally want someone who buys 1 token at $20 to feel confident that this is a "risk free" trade for them. Why would it be risk free? Because even if the price per token drops down to $1, the holder still has a claim on a treasury that is equal to $25. Even accounting for staking rewards, which lowers RFV/token assuming no bonding, the holder's claim remains constant.

However, if the protocol continues selling tokens through bonds to the market at $18, then $16, then $14, and so on, the entire way down, the trade for the original buyer is no longer "risk free": By the end, the holder's claim could be much less than $20 because of these additional tokens on the market.

To illustrate, consider the following simplified scenarios, assuming the above RFV/token of $25:

	Bonding at $40	Bonding at $25	Bonding at $10
Total Tokens	100	100	100
Your Tokens	10	10	10
RFV	$2500	$2500	$2500
RFV per Token	$25	$25	$25
Your Share of RFV	$250	$250	$250
Total Tokens + 10% (Staking)	110	110	110
Your Tokens + 10% (Staking)	11	11	11
RFV per Token	$22.73	$22.73	$22.73
Your Share of RFV	$250	$250	$250
Total Tokens + 10 (Bonding)	120	120	120
RFV After Bonding	$2900	$2750	$2600

RFV per Token	$24.17	$22.92	$21.67
Your Share of RFV	$265.83	$252.08	$238.33

How is Klima different?

Klima is different from most other Olympus forks in that its "risk free" assets are held in non-stable tokens (tokenized carbon offsets). This means that there is an additional reason that KLIMA's price could trade below its CC (formerly called RFV) in dollar terms: because the market believes these assets should be worth less in dollar terms than they are currently priced. For example, if the RFV/token is 5 BCT and BCT is currently trading at $5, one would assume the CC/token in dollar terms is $25. However, if the market believes BCT is currently overpriced, this value could very well become $20.

Ultimately, BCT is composed of tokenized Verra carbon offsets, which have inherent use-value to compensate for the emissions of an individual or organization. With BCT trading below off-chain prices for comparable Verra offsets, on-chain offsets like BCT will become increasingly attractive to legacy buyers of offsets. At the same time, as the on-chain offset market matures, tokenized carbon offsets will have many more use-cases and integrations (e.g. user-friendly retirement functionality, additional protocols for borrowing and lending, AMMs built around offsets, automated offsetting through wallet and protocol integrations, and so on). These additional sources of demand will ensure that even if the protocol’s bond facility had to be disabled in a crisis, the on-chain offset market would not collapse.

While disabling bonds entirely is an option for Klima, it would have to be evaluated based on market conditions. If we are in a scenario where KLIMA is trading below RFV but the on-chain carbon market has not yet matured sufficiently to absorb BCT selling, Klima's policy team must be more flexible with the actions it takes. For instance, at the time of writing, bonding is the primary source of demand for on-chain offsets, so disabling bonds entirely could create a negative feedback loop which risks crashing the on-chain carbon offset market.

As such, the protocol prefers to simply reduce bond capacity across the board and adjust the bond minimum prices such that there is no bond discount. This allows the treasury to continue absorbing offsets without excessive dilution. Even then, the bonder still benefits: they don't experience slippage, and they won’t have to pay AMM transaction fees when exchanging bondable assets for KLIMA.

Available Strategies

Adjust Bond Parameters

In order to mitigate the impact of continued bond dilution below CC, bond minimum prices would be adjusted such that the maximum bond discount is 0%. Since adjusting minimum prices is just another mechanism for managing bond capacity, this power falls within the policy team’s existing remit to manage bond capacity without KIP votes.

This signal should reassure buyers of KLIMA below CC per token that their claim on the treasury reserves will not be *excessively* diluted by continued bonding below CC.

** NOTE: adjusting bond minimum prices involves deploying a new set of bond contracts which allow minimum price to be adjusted dynamically via a contract function. This change would not be disruptive as*

existing bonds would continue to vest, and any new bonds would use the new contracts, while the old contracts would be disabled.

Reducing Staking Reward Rate

In order to give an irrational market pricing KLIMA below CC the time to correct itself, the policy team may **propose an emergency reduction of the staking reward rate**.

There are some pros and cons: on one hand, this extends the runway, buying time for the DAO to deliver on its vision and demonstrating a long-term commitment to keep the protocol alive. On the other hand, it signals to arbitrageurs buying KLIMA below CC that it may take them longer to actualize their claim on the treasury. This decision will need to be taken very carefully based on market conditions and the current reward rate at the time.

As always, **significant reward rate reductions will be voted on by the community of token holders through the normal governance process**. Any such proposal will be put forward before the runway goes down too far, so the community has the usual period of ~10 days (5 days for informal vote on the forum, 5 days for formal token vote on Snapshot) to provide input and discuss the rationale for the reduction.

Assuming an emergency reward rate reduction proposal passes, the reduction would be implemented rapidly to maximize the impact of the emergency change, rather than in the usual gradual manner over the course of a week.

Seek Yield on Treasury Assets?

In theory the policy could take out debt against its reserve assets to deposit into a yield-generating protocol, like QiDAO's Green Locker for BCT. But, **this is a big risk for a relatively small reward**. Furthermore, committing reserves to a risky position during a downturn could jeopardize the ability of the community to vote to liquidate the treasury, since those reserves might not be available immediately for distribution. **Security** and **facilitating** a carbon market is magnitudes more important than **yield** for this protocol.

While we do plan to eventually put the treasury's assets to use by investing in offset projects and by incubating new protocols in our ecosystem, **we do not plan to seek out risky investments while the protocol is hurting**, as this jeopardizes trust in the backing value of KLIMA.

KLIMA Trading Below IV of 1 BCT

In the case that demand for KLIMA stagnates completely, the protocol's reserves can step in to catch the market. The policy team manages this risk through forward guidance: the fact that the protocol *will* buy lowers risk the lower we go, which can mean we end up *not having to* buy. Thus, the protocol serves as the "buyer of last resort" for KLIMA below IV.

Manual Buyback and Burn

The policy team has the power to borrow reserves from the treasury and buy back KLIMA on the open market, then burn the KLIMA it buys, thereby reducing the amount of reserves required to back the supply of KLIMA.

Inverse Bonds

In the event that KLIMA were to trade persistently below IV, as a last resort the policy team plans to launch inverse bonds, which accept KLIMA in return for BCT at a discounted rate, and then the bonded KLIMA is burned, shrinking the supply of KLIMA. This process increases the backing per KLIMA and extends the runway.

The ability to introduce inverse bonds was not initially a part of the protocol, but was voted for by the token holders on Feb 17, 2022 within the framework of KIP-12.

This method has very similar results to manual buyback-and-burn, but does not require manual action by the policy team based on market conditions - rather than the automated market-driven mechanism provided by inverse bonds.

For example, consider the scenario where an inverse bond can buy 1 KLIMA for 0.5 BCT. In that case, for every 1 BCT in the treasury, 2 KLIMA are taken off of the market. Then, given that 1 KLIMA < 1 BCT = IV, CC/token increases from this inverse bonding (that is, while the treasury - and hence the RFV - decreases, the number of circulating tokens decreases faster).

While inverse bonds could be launched between CC and IV, they are only effective at boosting CC/KLIMA when KLIMA is trading below IV – while they do take KLIMA tokens out of circulation between CC and IV, RFV/token would decrease faster than supply.

Endgame: Restart the Flywheel

In the event that KLIMA persistently trades around IV, and inverse bonds or manual buy-backs continuing to burn KLIMA any time it trades below IV, eventually the protocol would be left with a much smaller total supply of KLIMA.

Assuming all inverse bonders are selling their BCT for USDC, that BCT would end up in the BCT/USDC liquidity pool owned almost entirely by the Klima treasury. In the most extreme scenario, all of the KLIMA supply would be bought back and burned, and the treasury would end up with more BCT than we had initially (though most of it in the LP pools instead of reserves) - so with just a small amount of bonding we can restart the liquidity flywheel with a much higher initial balance of BCT and USDC.

With responsible treasury management, the Klima protocol can rise like a phoenix from the ashes of even the most dramatic market collapse.

The Only Way Out Is Through

In a scenario where KLIMA is persistently trading significantly below CC or IV, the policy team can only do so much to drive additional reserves to the treasury and to reinvigorate the protocol on its own - the rest of the DAO must deliver on our business development goals, including executing marketing campaigns, shipping new reserve-generating products and securing high impact partnerships to allow for a full recovery.

The DAO contributors and core team are all here for the long haul: Klima has always been a long-term project with a decadal scope. **We have no intention of liquidating the treasury prematurely, nor of letting the protocol stagnate.**

References

Bug Bounty

The Klima token holder community voted to implement a bug bounty in KIP-2, with the vote closing on November 20, 2021.

Please reference the full text of KIP-2 linked above for details of the bounty program.

Contracts

Treasury

The treasury contract is a simple vault implementation holding all the funds collected by the protocol. Access to the treasury is secured by a 3 of 5 multisig held by the core team.

If for instance a user purchases a BCT bond, the bonded BCT is fully taken in by the treasury in return for the market equivalent of KLIMA bonded for (plus or minus any discount or premium priced into the bond). New KLIMA will be minted based on the RFV of the bonded assets.

Below are listed treasury contracts by version, where the latest version represents the currently active contract.

- V1: 0x7Dd4f0B986F032A44F913BF92c9e8b7c17D77aD7

Bonds

All bond contracts are more or less the same, with the one exception of the assets or LP tokens they manage. The bond contracts handle all deposits and redemptions.

Here parameters for monetary policy are configured. Such parameters are, for instance, the BCV and the max individual payout.

Where applicable, the bond contracts are listed by version, where the latest version represents the currently active contract.

BCT Bonds:

- V1: 0x7De627C56D26529145a5f9D85948ecBeAF9a4b34

MCO2 Bonds:

- V1: 0x00da51bc22edf9c5a643da7e232e5a811d10b8a3

KLIMA/BCT Bonds:

- V1: 0x1E0Dd93C81aC7Af2974cdB326c85B87Dd879389B

BCT/USDC Bonds:

- V1: 0xBF2A35efcd85e790f02458Db4A3e2f29818521c5

KLIMA/USDC Bonds:

- **V1:** 0xb5aF101742EcAe095944F60C384d09453006bFde

KLIMA/MCO2 Bonds:

- V1: 0x18c3713d523f91fBd26E65C8BaBAB63A0f31B9a6

Policy

The policy contract is an address guarded by a simple gnosis safe implementation. The policy address manages adjustments of the monetary policy of the Olympus DAO protocol. This includes BCV and reward rate adjustments.

- V1: 0xD2f4A710b7dB5C0A05f17b68Fd5dA3C4c6b63be1

Staking

Distributor

The distributor contract receives minted KLIMA from the treasury in order to drip-feed rewards to stakers. Note that the reward rate determines the rebase rate and that the rebase rate determines the AKR. Below are listed distributor contracts by version, where the latest version represents the currently active contract.

- V1: 0x4cC7584C3f8FAABf734374ef129dF17c3517e9cB

Tokens

KLIMA

Klima is the currency token of KlimaDAO. This will have the largest liquidity on all chains.

- V1: 0x4e78011Ce80ee02d2c3e649Fb657E45898257815

sKLIMA

sKlima is the staking token of KlimaDAO. This allows stakers to gain rebasing rewards.

- V1: 0xb0C22d8D350C67420f06F48936654f567C73E8C8

wsKLIMA

wsKlima is the wrapped, staked, version of sKLIMA. This allows you to get the rebasing rewards of sKLIMA, while having a static balance in your wallet.

- V1: 0x6f370dba99e32a3cad959b341120db3c9e280ba6

aKLIMA

aKlima is Alpha Klima, and was given to the IDO holders. This was traded 1:1 to KLIMA once the protocol was live.

- V1: 0xeb935614447185eeea0abc756ff2ddc99fbb9047

alKLIMA
alKlima is Alchemist Klima, and was given to users participating in LBP. This was traded 1:1 to KLIMA once the protocol was live.

- V1: 0xd50EC6360f560a59926216Eafb98395AC430C9fD

pKLIMA

pKLIMA is a KLIMA derivative token given to stakeholders, advisors, core team, and the DAO. It gives the holder the option to mint KLIMA by burning pKLIMA and providing the intrinsic value of KLIMA. For example, an investor would provide 1 BCT and 1 pKLIMA to mint 1 KLIMA.

- V1: 0x0af5dee6678869201924930d924a435f6e4839c9

DAO Wallet

The DAO wallet is an address guarded by a simple Gnosis safe implementation. The DAO wallet holds all the DAO funds accumulated over time.

Access to the DAO wallet is controlled by a 3 of 5 multi-sig held by members of the core team.

The DAO wallet's revenue comes from a 30% fee on every bond: the depository contract mints an additional 10% of the bond payout in KLIMA and deposits it into the DAO wallet.

- V1: 0x65a5076c0ba74e5f3e069995dc3dab9d197d995c

Glossary

AKR

Annualized KLIMA Rewards is the annualized reward rate in percentage terms, taking into account autocompounding over one year assuming a constant reward yield and constant epoch length.

Note that AKR is quoted as a ballpark estimate and does not guarantee precise future returns. AKR will go down periodically in accordance with KIP-3 and fluctuates along with Reward Yield due to changes in % of KLIMA staked and Polygon blocktime variability.

NOTE: AKR was previously called APY.

APR

Annual Percentage Rate, is the annualized reward rate without taking the effect of compounding into

account.

BCV

Bond Control Variable, is the scaling factor at which bond prices change. A higher BCV means a lower discount for bonders and higher inflation by the protocol. A lower BCV means a higher discount for bonders and lower inflation by the protocol.

BCT

BCT (Base Carbon Tonne) is a Toucan Protocol carbon pool, which accepts any TCO2, independent of project type (e.g. forestry carbon offsets, renewable energy carbon offsets or methane capture offsets). At this time, the only requirements for TCO2s to be eligible for deposit into the BCT pool are: the TCO2 is verified by Verra, and has vintage later than 2008 (there is also one blacklisted methodology).

Bonding

Market participants can acquire KLIMA at a discounted rate via the bonding mechanism. The bond contracts require the user to provide some carbon asset (e.g. BCT, MCO2) or KLIMA-paired LP tokens in return for discounted KLIMA over a fixed vesting period.

See this page on Bonding for more details.

CC

Carbon Custodied, the total amount of tokenized carbon offsets held by the treasury to back KLIMA supply. Includes all carbon offset reserves (e.g. naked BCT, MCO2), as well as a marked down portion of KLIMA/carbon liquidity pairs.

This metric was formally referred to as "RFV" or "risk-free value" in the context of the Olympus protocol, whose backing is dollar stablecoins. Since carbon offsets are volatile assets whose price can vary over time, this value is not actually "risk free" in the Klima protocol.

The carbon is considered "custodied" because, if incoming reserves were to drop to 0 and the protocol simply paid out all remaining staking rewards, CC would be the final supply of KLIMA, backed at IV of 1 tonne of carbon offsets. So, in this endgame scenario, each 1 KLIMA would end up being a claim on 1 tonne of carbon offsets from the treasury - thus CC/KLIMA is the estimated number of carbon offset tonnes that a holder of 1 KLIMA today would have after all staking rewards are paid out if they remain staked until the end.

C3 Token

A utility token for the C3 carbon bridge. It is distributed as a reward to users of the protocol that stake, bridge or provide liquidity. C3 can be locked for veC3, which is eligible to vote on C3 protocol decisions and gauge weights. See the C3 docs for more details on the C3 token.

C3T

C3 Tonne (C3T) is the general term for fungible tokenized carbon offsets bridged via C3. When you fractionalize the C3VCU NFT received after bridging, the resulting C3T ERC20 token will have C3T- as a prefix, followed by an information-rich name that includes the registry of origin, the project, and the vintage.

DAO

Decentralized Autonomous Organization, is a governance mechanism for making decisions in a more trustless and collaborative way. Voting rights are often bound to a governance token.

DCV

Deflation Control Variable, is the scaling factor at which protocol defined buy pressure changes. A higher DCV means more buy pressure from the protocol, resulting in a higher deflation. A lower DCV means less buy pressure from the protocol, resulting in a lower deflation.

EVM

Ethereum Virtual Machine, is a state machine in which all Ethereum accounts and smart contracts live. At any given block in the chain, Ethereum has one and only one canonical state, and the EVM is what defines the rules for computing a new valid state from block to block.

KIP

Klima Improvement Proposal, the principle mechanism for DAO governance. Most KIPs begin as posts on our discussion forum, either proposed by DAO contributors, sourced from the community, or brought forward by a third party (typically to propose a partnership).

All KIPs must pass a vote by token holders on Snapshot prior to implementation - see our Governance

Framework for more details on the KIP lifecycle

Klima

Climate (in Greek and German).

KLIMA

The primary KlimaDAO token. Each KLIMA is backed by a TCO2 locked in the Klima DAO treasury. KLIMA has an intrinsic value underpinned by the cost of TCO2s. KLIMA is an ERC20 token.

Liquidity Bonds

Liquidity bonds are LP token bonds. Examples are KLIMA-BCT LP bonds and BCT-USDC LP bonds.

MC

Market capitalization - total market value of all KLIMA tokens in existence

`KLIMA price * KLIMA supply`

MCO2

Moss Carbon Credit (MCO2) is a relatively homogenenous, centrally managed pool of tokenized Verra VCUs. Moss created it in August 2020, by curating REDD+ projects in the Amazon Rainforest (one in Peru, five in Brazil).

MCO2 was the first tokenized carbon credit to be listed on major centralised exchanges like Gemini and Coinbase, and the reconciliation of its ledger pool is done in real time by crypto auditor Armanino.

More information is available on the Moss website.

NBO

NBO (Nature Based Offset) is a pool from the C3 protocol. Accepts all VCS and GS methodologies

characterized as NCS, including REDD+, IFM, and those with VCS or GS certification utilizing CDM-based forestry methodologies such as AR-AM0014. Vintage of 2014 onwards.

More information is available in the C3 docs

NCT

NCT (Nature-Based Carbon Tonne) is a Toucan Protocol carbon pool, which accepts TCO2 from nature-based methodologies such as avoided deforestation or afforestation.

See this page from Toucan for the detailed requirements for pooling TCO2 into NCT.

POL

Protocol Owned Liquidity, is the amount of LP the treasury owns and controls. The more POL the better for the protocol and its users.

PoR

Proof of Reserve, is the mechanism of strengthening the reserve of Klima DAO treasury via the sales of bonds. Bonders provide liquidity to the treasury, thereby building its reserve. In return for their service, bonders get paid in KLIMA.

Reserve Bonds

Reserve bonds are single asset bonds. They are sometimes referred to as "naked" bonds. Examples are BCT bonds.

Reward Rate

Reward rate is the configured percentage of KLIMA distributed to all stakers on each rebase relative to the total supply. The reward rate is precisely set by the policy team.

Reward Yield

Reward yield refers to the actual amount of KLIMA received by each staker on each rebase. The reward

yield is a rough target from a policy point of view. It can almost never be maintained precisely due to fluctuating percentage of KLIMA staked and variabilities in Polygon blocktimes.

RFV

Risk Free Value - this term has been deprecated in favor of Carbon Custodied (CC)

SLP

Sushiswap Liquidity Provider, is the token received when providing liquidity on Sushiswap. For instance LP bonds require SLP tokens of the KLIMA / USDC pair.

Staking

Market participants can deposit their KLIMA tokens in the staking contract to receive additional KLIMA as reward in return. These rewards are distributed via rebasing of the staked token (sKLIMA), which can be unstaked at any time to receive an equal amount of KLIMA.

See the Staking page for more details.

TCO2

Toucan Carbon Tokens (TCO2) is the general term for fungible tokenized carbon offsets bridged via Toucan. When you fractionalize a BatchNFT received after bridging, the resulting TCO2 ERC20 token will have TCO2- as a prefix, followed by an information-rich name that includes the registry of origin, the project, the vintage, and so on. More information on the tokenization process can be found in the Toucan docs.

Tokenized Carbon Asset

A Tokenized Carbon Asset (TCA) refers to a carbon asset (e.g. voluntary carbon offset) brought onto the blockchain.

TCAs are usually represented as an NFT for bridging purposes, since carbon assets are typically only semi-fungible: each asset has attributes such as vintage, methodology, and country of origin. Tokenized carbon can refer to a single unit (e.g. one carbon offset) or a batch of assets (e.g. a certain number of carbon offsets from a specific project and vintage period). These NFTs can be deposited into Carbon Pools to create fungible ERC-20 tokens representative of that tokenized can that meets those pool's requirements.

TMV

Treasury Market Value - the current market value in dollars of all assets held in the treasury, including both reserves and all LP tokens.

TTC

Treasury Total Carbon - total carbon offset tonnage held by the Klima treasury, including both carbon offset reserves and the full value of the carbon assets in all carbon-paired LP pools (both KLIMA/carbon and stablecoin/carbon pairs).

Note that this value fluctuates up or down as carbon offsets are sold into or bought out of the liquidity pools.

TWAP

Time Weighted Average Price, is the average price of an asset over a specified time. TWAPs are used to represent the fair value of an asset as defined by the market.

UBO

Universal Basic Offset (UBO) is a pool from the C3 protocol. Accepts most VCS and GS methodologies for credits issued from 2014 onwards. There are a number of blacklisted methodologies, including VM0002 due a perceived lack of additionality after 2014. More information is available in the C3 docs.

VCU

Verified Carbon Unit (VCU) is a carbon credit issued under the Verra Carbon Standard (VCS). Under the VCS Program, projects are issued unique carbon credits known as Verified Carbon Units or VCUs. Each VCU represents a reduction or removal of one tonne of carbon dioxide equivalent (CO2e) achieved by a project. VCUs are characterized by a number of quality assurance principles which are confirmed through the project validation and verification process. VCUs are ultimately purchased and retired by an end user as a means of offsetting their emissions. All VCU issuance and retirement records are publicly available on the Verra Registry.

Links

Official

- Website
- Twitter
- Medium
- Discord

Third Party

- Community Call Recordings
- The Evolution Of Trust
- Toucan Protocol Docs

Testnet Deployment

All of Klima's core protocol contracts were deployed on Polygon Mumbai testnet prior to launch.

Part of the process for earning a whitelist slot to participate in our IDO was participation in quality assurance testing on our Mumbai testnet deployment.

The Polygon Mumbai token addresses are as follows:

- **KLIMA:** `0x6b4499909fd8947a3bdea5d524fb3697018fc750`
- **sKLIMA:** `0xde0cd0d51b9981bab50db974a1877c1c01b86e91`
- **BCT (called VCU20 at the time):** `0x8f8b7d5d12c1fc37f20a89bf4dfe1e787da529b5`

See this constants file in our public frontend repository for a full listing of the testnet contract addresses.

Translations

Community members have contributed translated versions of the KlimaDAO GitBook for French, Spanish and German Speakers. Please note that these Books are not updated by the team.

Spanish Translation

French Translation

German Translation

Get Involved