

# ReFi Ecosystem Litepaper

Compiled by Marco Schletz

This Litepaper summarizes the findings of a climate ecosystem workshop held during Devcon VI in Bogotá, Colombia. The 'ecosystem' is made up of participants from leading organizations working in the field of regenerative finance (ReFi). Here we follow the definition that **ReFi is a decentralized movement that uses blockchain technology and web3 concepts to finance, govern, and regenerate common pool resources**. In this workshop, we examined the current state of the ReFi ecosystem, identifying key areas for collaboration and laying out a roadmap for the future.

## Key Messages

### Technology

#### Interoperability

Technical components must be innovated and developed in collaboration with practitioners on the ground and climate experts. Historically, climate technology innovation in the multilateral climate agreements, such as the Kyoto Protocol and now the Paris Agreement, has been slow and notoriously difficult to enforce. However, this should not be a barrier, and we should look for ways to engage Paris Agreement participants in driving innovation and accelerating climate action. Web3 and the legacy climate system can inspire one another and develop evolving synergies.

Creating interoperability across the many blockchain networks in the ReFi ecosystem is critical. This necessitates the development of web3-native carbon standards, token standards, and decentralized storage solutions, as well as implementations (smart contracts) and mechanisms that use them to tokenize off-chain digital environmental assets. Furthermore, new governance mechanisms,

such as DAO infrastructure, could enable decentralized forms of governance and be used by more registries and other entities.

#### Standardization

Improving interoperability, along with format and language standardization, necessitates effectively convening various internal and external communities to the ReFi ecosystem. Climate data is extremely diverse, varying by sector, jurisdiction (varying capacity in developing and developed countries), and the corporate sector itself. Coordination across these segments is therefore required to achieve the standardization and interoperability required to provide transparency and reconcile them into a globally integrated market mechanism (as envisioned by Article 6 of the Paris Agreement).

Another important area of innovation is the development of infrastructure that allows for and reduces the complexity and cost of bridging carbon tokens and data between blockchain projects or bridging from off-chain to on-chain. Mature, scalable ReFi solutions, for example, rely on the deployment of digital monitoring, reporting, and verification (dMRV) solutions to provide sufficient quality data and scalability of MRV approaches. dMRV is still in its infancy, and the application and development of use cases and pilots, ideally with government support, is the next critical step.

### Community

While technological innovation is complex, the more significant challenges for ReFi lie in the 'human component' of developing tech solutions that truly benefit our planet and adopting these solutions to accelerate climate action to the required pace.



## Internal alignment

There is a rapid growth of initiatives and an inflow of talent into the space. While there is generally an 'open-source' and 'collaborative' spirit, we need to ensure that this collaboration grows organically to avoid duplication and fragmentation.

Several efforts are already working to improve the alignment and interoperability. For example, the [Blockchain Infrastructure Carbon Offset Working Group](#) (BICOWG) hosted a ReFi interoperability retreat in the heart of the Colombian Amazon, focusing on human-level collaboration and resulting in working groups that are now moving forward. Similarly, the [Blockchain x Climate Leadership Network](#) (BCLN) organized the 'Greenland Ark,' a retreat on a cruise ship to Greenland to promote interoperability.

Here, using successful techniques from other open source communities can provide inspiration on how to grow in a more structured way (e.g., [OpenDev community](#) or "[Open Source is not enough](#)"). To rally individuals and projects in the same direction in the future, it will be necessary to establish a shared narrative. ReFi in its current form is primarily focused on digital environmental assets like carbon credits and, more specifically, the voluntary carbon market at the moment. This focus is advantageous when tackling a specific problem and driving applied innovation. To stay true to the mission of providing "*web3 concepts for the financing, governance, and regeneration of common pool resources*," ReFi innovation should eventually expand into other common pool resources.

## External impact

In the climate and web3 ecosystems, there is a growing awareness and recognition of ReFi. While there is still a long way to go in terms of effective coordination, initial efforts are already opening up dialogue and fostering synergies. The Gold Standard proposal to allow the

creation of [digital tokens for carbon credits](#) and [Verra's public consultation on "Third-Party Crypto Instruments and Tokens"](#) serve as critical assessments of existing linkages and will result in an expression of the incumbents' opinions, with the expectation that new policies will result in early 2023 that clarify the extent to which incumbent registries will support tokenization.

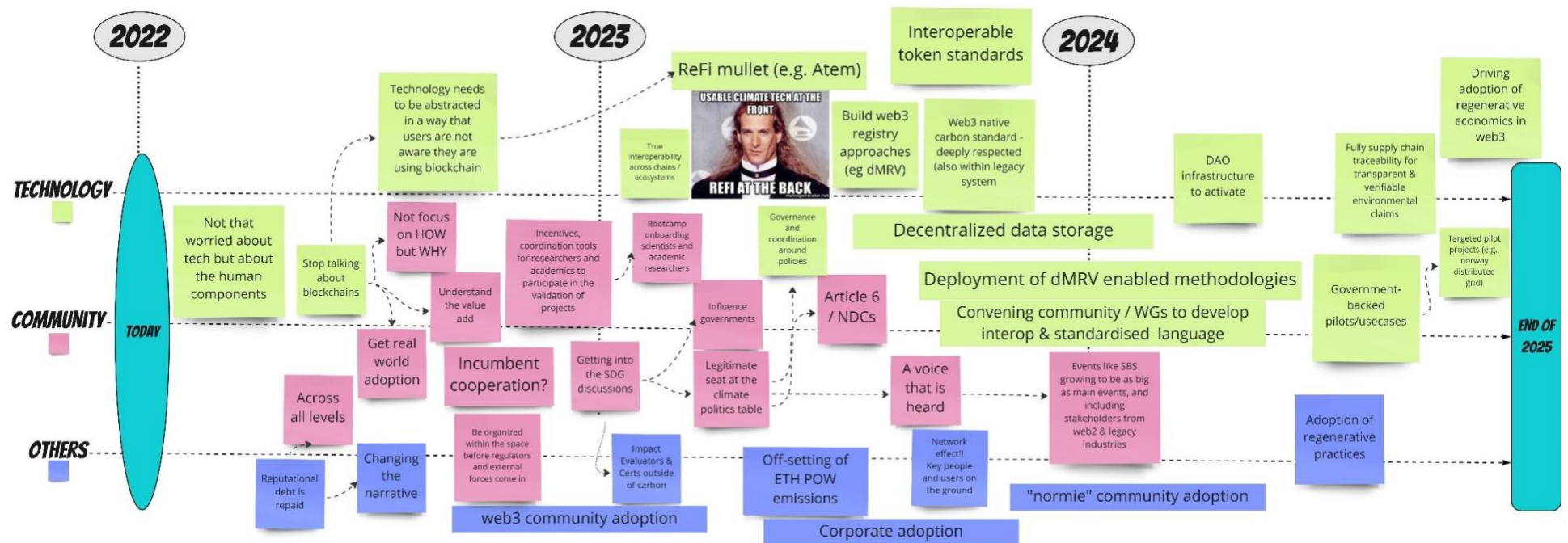
ReFi has already substantially impacted the voluntary carbon market (VCM), tokenizing significant volumes of credits while bringing unprecedented transparency, liquidity, and access. However, this is only the beginning of the space's innovation, which aims to drive the evolution of alternative business and funding models for project development and execution, while accelerating transparency via public, verifiable data available on outstanding credits, transaction history, retirement claims, and eventually the underlying environmental claims themselves via blockchain-native registries. There are currently over national and international 60 carbon pricing models in use worldwide that must be reconciled into a global market to provide effective pricing of assets like carbon credits ([World Bank 2022](#)). To achieve this, the ReFi space must evolve into a voice that is also heard at the national and international climate policy levels in order to co-create technical solutions based on the inputs of key Paris Agreement participants.

Furthermore, stronger integration with research can address current knowledge gaps in the ReFi and web3 spaces, as well as in the climate space, to identify leverage points and develop joint solutions. Outward education is critical for developing the digital literacy and capacity required to collaborate with climate decision- and policy-makers, as well as for adopting a shared language with legacy climate actors.



## Roadmap & Milestones

The roadmap was created as a workshop exercise to outline critical milestones or components for the ReFi ecosystem. While several of these components already exist at the conceptual or prototype level, the roadmap emphasizes the importance of scaling such solutions so that they are widely adopted within the ReFi ecosystem or even on a larger multilateral scale as part of the Paris Agreement. The goal here is to scale the innovative solutions developed by ReFi into the context of the Paris Agreement, and for ReFi to become a recognized voice capable of inspiring national and international processes.





## Documentation of Roundtable Insights

These insights are based on an informal roundtable that took place during Devcon VII in Bogota, Colombia. The insights are the joint opinions of key ecosystem stakeholders (see figure 1 for the participants and their respective organizations). The statements presented in the next sections are the original quotes from roundtable participants, organized thematically for better structure.



These participants were divided into three groups during the roundtable to work on two exercises. The first exercise critically assessed the ecosystem's status, identifying the top three accomplishments and challenges. The second exercise was to recognize future milestones and key achievements, develop a roadmap and define a high-level vision up to 2025. The preliminary results are documented in the following [Miro board](#).

## Ecosystem Status

### Accomplishments

#### Recognition of the ecosystem

- ReFi has become a topic of conversation at main crypto events (DevCon/EthCC);
- Incumbents and legacy institutions are aware and reflect on their approach to it (e.g. Verra consultations);
- Integration with incumbents of the regeneration movement;
- Successfully completed Ethereum Merge provides additional confidence that very complex technical challenges can be overcome.

#### Impact on the 'real world'

- Strong impact on the voluntary carbon market, tokenizing substantial amounts of Voluntary Carbon Market Credits;
- Supporting local solutions that are actually driving regeneration;
- Changing/evolution of business models;
- Opening new funding models;
- Accelerating transparency by connecting and making verifiable data available.

#### Talent inflow and collaboration



- Rapid growth of initiatives and talented people joining the space;
- Massive increase of collaboration across the space;
- Collaborative spirit and organic coordination across participating initiatives;
- Reaching a tipping point in establishing narrative.

## Challenges

### Lack of climate ecosystem understanding

- Most blockchain/web3 natives have very limited understanding of the broader climate system, such as the Paris Agreement mechanisms as well as regarding local climate solutions
  - Need to link technical developments with on-the-ground and climate experts' insights
- Knowledge gap between (academic) research, ReFi/web3 projects, and climate research
  - Need for more research to identify leverage points
- Slow pace of innovation in the broader climate ecosystem
- Climate data is very diverse and differs for example by sector, jurisdiction (varying capacity in developing and developed countries), and even in the corporate sector itself

### Nascent technology

- The essential Digital Monitoring, Reporting, and Verification (dMRV) is still at an early stage and needs to become scalable
- Unclear how to define co-benefits and how to accurately track these co-benefits in a granular way
- Need for stronger interoperability among the different ReFi projects and protocols
- Individual efforts and lack of open-source collaboration

### Legacy mindset and lack of digital literacy

- How to interact with the legacy space and its incumbents?
- Hesitancy of the legacy space to adopt due to lack of understanding or even conflicts with vested interests and existing business models
- Mental blocker to try and understand digital technologies, but also limited capacities to access the technologies due to high upfront investments needed (specifically for developing countries)
  - ReFi/Web3 is still in an (innovation) bubble, need for education of the legacy space
- A lot of climate data is proprietary, which is incompatible with the transparency and ReFi ethos

## Current Status of the Ecosystem

### Many Opportunities

- Positive momentum
- Figure out what works (and what doesn't)
  - Many opportunities
  - 1000 flowers blooming
  - What is the most impactful allocation of talent and resources?
- Exciting and new
  - Novel financial and governance models
  - Innovation taking place
  - More disruption to come – rethinking and redesigning our (financial, social, and ecological) systems

### Driving innovation



- Not only focusing on carbon offsets but on broader common goods
  - New impact certificates emerging but not yet mature
- Relatively small ecosystem needing more outward education
- Evaluate process
- Need for humility

#### **Lack of coordination**

- Fragmented projects - still competitive and need more cooperation
- Need to address the problems at a fundamental level
- Overcoming regulatory uncertainties
- Attention on interoperability but need to work on building consensus
  - Coordination among ecosystem participants
- Need to define and align toward a common direction
- Need for better onboarding and UX (e.g. account abstraction)