

Thoughts on the Voluntary Biodiversity Market

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Hi folks 🙌

For those who don't know me, I'm Simas from [Bloom Labs](#) - a biodiversity finance newsletter & consultancy. I focus on all things biodiversity markets, nature accounting & biodiversity measurement, reporting and verification (MRV).

Hope you enjoy the piece!

We're at the crossroad of multiple trends: unignorable consequences of biodiversity loss, a landmark global agreement to do something about it and technological advances that can actually help. That puts us in an interesting position - an accelerating biodiversity crisis and a unique opportunity to reverse it.

Although the incentive to destroy nature is systemic and will require a systemic overhaul on what we value and how we consume, let's get more tactical: the estimated biodiversity finance gap is ~\$700b/year. To bridge it, multiple things have to be done: harmful subsidies removed, public finance increased & private finance reimaged.

Every lever should be pulled. In fact, current evidence shows that the public (not private) sector will have to play an integral part in nature finance - something I agree with. Since I come from startups though, I'll take a deeper look into how private capital can play a part in slowing and reversing biodiversity loss. In particular, I'll explore the upcoming voluntary biodiversity market with the challenges and opportunities I see in it.

Overview

Similar to the voluntary carbon market, there is an accelerating movement to form a market around biodiversity. It is one way to scale the private biodiversity finance in time. The space is very young but it will probably work similarly to the carbon one:

1. A developer creates a project that increases the area's biodiversity (e.g. land conservation/restoration/management, regenerative agriculture, etc.)
2. 3rd parties validate & verify the project and issue biodiversity credits

3. Companies and individuals support these projects by buying and retiring the credits

Voluntary Biodiversity vs Carbon Market

There are a couple of core differences:

Purpose of use

Unlike in carbon markets, framing biodiversity credits as offsets is more complicated. Natural ecosystems are inherently unique and restoring one habitat cannot “offset” the destruction of another. That’s why there is increasing momentum around using these credits for nature-positive outcomes without equating it to any damage done.

Locality

Biodiversity is more local by design. It’s still socially acceptable for a company that, for example, emits in UK, to offset their emissions by purchasing and retiring carbon credits that originated in the Amazon. The pressure to support biodiversity as close to their physical operations as possible is stronger. This will probably shape the nature of voluntary biodiversity markets.

Why Voluntary Biodiversity Market?

So, why would we need a standalone market for biodiversity? Isn’t there an increasing trend to develop premium carbon projects with biodiversity co-benefits already? That is true (and great) but we humans have a tricky tendency - we optimize for what we measure. If the main unit measured is metric tonnes of CO₂ and its equivalents, we are incentivized to prioritize it over every other metric. That is how we ended up with carbon projects that clearcut forests and plant eucalyptus monoculture plantations for fast tree growth (i.e. carbon sequestration) while smothering biodiversity and soil health. Premium carbon projects don’t seem to do that but biodiversity still remains a second-class citizen, by design.

On the other hand, focusing on biodiversity improves ecosystem health while sequestering carbon. Healthier soil, more diverse and abundant flora and fauna all lead to more carbon stored. Carbon is essential to life and the more life there is, the more carbon is stored as well. So, good for biodiversity is (almost) always good for carbon. But good for carbon is not always good for biodiversity. Not to mention that biodiversity supports ecological processes that provides us with clean air, fresh water, food and resources - everything we depend on.

Challenges

That brings me to the fun part: the challenges of establishing a biodiversity market.

Data collection

Collecting biodiversity data is still slow, manual and expensive. Historically, a team of ecologists would spend weeks surveying the biodiversity of the area. Among other issues, this method just cannot scale. Just like in carbon markets, we need fast, cheap, accurate & traceable methods of measuring biodiversity. That's where biodiversity MRV companies are pioneering new ways of collecting biodiversity data: from remote sensing using satellites (e.g. [Single.Earth](#)) to combining different sensors (e.g. [Pivotal](#) with drones and bioacoustic sensors) or environmental DNA sampling (e.g. [NatureMetrics](#), [SimplexDNA](#)). The likely future seems to be a combination of all these sensing methods, depending on the ecosystem measured and the context.

Quantification

Since nature is fundamentally unique, we cannot easily come up with a standard unit like tons of CO₂. We can't completely put nature into a number. And if we try, we are bound to miss essential parts we don't even yet understand. Having said that, not explicitly quantifying (and hence valuing) nature in our current system, leads us to value it implicitly and the number is usually 0. That's why it's important to find the best holistic methods to quantify the health of each ecosystem.

Standardization

At the moment, every biodiversity credit scheme has essentially created its own methodology around quantifying biodiversity. Some use a basket of metrics approach, others are "regenerative-by-design". The land size that credits represent usually ranges from 1m² to 1ha. And every scheme usually has a custom formula on how to calculate the biodiversity credits. The credits will need to be thoughtfully standardized to expect adoption at scale.

Liquidity

Another topic of great discussion is ensuring a liquid market for biodiversity credits. In the carbon markets, companies like [Toucan Protocol](#) and [KlimaDAO](#) have kicked off the trend of bridging carbon credits to the blockchain and pooling similar credits into fungible tokens. This fungibility, for the first time ever, has temporarily created an actually liquid carbon market at scale (although mostly through arbitrage of low-quality carbon credits and speculation that resulted, unfortunately). Now, fungible pooled on-chain carbon credits are still not the default but Toucan has probably set a precedent for the future of liquid carbon markets. This liquidity creation is enabled by having enough somewhat similar carbon credits that are equated to

each other, something that remains a contentious topic to this day. And again, since nature is inherently unique, one could doubt that it's even possible to commoditize biodiversity credits the way Toucan did for carbon. That would lead to completely different biodiversity and carbon market dynamics in the long run.

So, if you thought that establishing a well-functioning voluntary carbon market is hard, say hello to biodiversity.

Opportunities

With the mounting pressure from governments, investors and customers, companies will contribute to biodiversity finance in one way or another. What's left is to make sure that the private funding infrastructure is designed well and fast. Ideally, as much of the dollar as possible would reach the nature stewards (with particular focus on historically underserved Indigenous Peoples and local communities), while ensuring financial traceability and nature-positive outcomes.

I found three core categories in the voluntary biodiversity market: MRV, demand and supply. Let me share some thoughts on each and the opportunities to contribute that I see.

1. MRV

The backbone of the whole space. Without fast, cheap, accurate & traceable real-time biodiversity data and ML algorithms to make sense of it all, the space is bound to repeat the mistakes of the carbon market, ending up with demand-side trust issues.

A couple of opportunities I see:

Data collection & processing

The space badly needs high quality digital-first biodiversity data to build financial derivatives on. Once collected, raw data must usually be processed to make sense of it. That's where ML algorithms and their ability to crunch massive amounts of data comes in. This problem space is usually reserved to elite teams of ecologists and scientists.

Biodiversity MRV on-chain infrastructure

Data that is used to derive financial assets is prone to manipulation. It would be great if such data would be stored on a transparent, immutable and verifiable database; or, in other words, blockchain. That's why I believe that eventually all data used for creating environmental assets will be stored on chain. It's still super early for biodiversity but starting a company that helps biodiversity projects store their data on chain might be a great opportunity.

2. Demand

With the initial credits gaining traction, buying, selling & retiring them has to become as effortless as possible. Currently, if you're a company that wants to buy and retire biodiversity credits, your only real option is to get a broker and set up an over-the-counter trade with credit owner. The bureaucracy and legal concerns are hurdles we need to overcome.

Some opportunities I see:

Biodiversity footprint API

Measuring biodiversity footprint is incredibly complicated, whether for companies, product lines, activities or individuals. Currently, there are multiple different biodiversity impact assessment methods and datasets required. There might be a chance to aggregate public biodiversity databases, standardize, quality-check & enrich them and offer easy access to them via APIs. Basically Climatig but for biodiversity.

Biodiversity action API

Nature action should be programmed into our economic activities, just like climate action. This could be done by an API that aggregates top biodiversity credits and allows companies to offer nature-positive transactions to their customers, making it super easy to contribute for example, a percentage of each transaction to the causes users care about and track their verifiable impact in real-time. In other words - Patch but for biodiversity.

Biodiversity credit marketplace

Simplifying biodiversity credit purchases for companies will help more companies take nature action. A marketplace of vetted biodiversity projects that lets companies buy credits in a couple of clicks is one (obvious) way to do that. Ideally, all of the transacting would also happen on-chain.

Biodiversity credit tokenization

Most biodiversity credit schemes are working using traditional databases at the moment. Partnering with these credit issuers and registries to offer the credits on the blockchain is another potential opportunity, if one can solve biodiversity credit pooling. Higher credibility, lower transaction costs and higher credit programmability are benefits that overtime will overcome the technical and novelty risk, I believe.

3. Supply

Biodiversity projects are still in an early stage of maturity. With no consistent methodologies, MRV infrastructure, and not enough guaranteed and accessible demand, these projects can still be risky. This is an area I'm not yet well acquainted with but it seems like, unlike carbon markets, the current bottleneck is in demand (which is projected to skyrocket but is still not readily accessible) and not supply, which makes credit standardization, and biodiversity credit demand infrastructure all the more important.

Summary

The voluntary biodiversity market is still very early. We urgently need to move faster to prevent a catastrophic global biodiversity collapse and enabling (and forcing) companies to contribute is a lever that should be pulled. At the same time, we should also create a safe space for the pioneering biodiversity projects. Mistakes are bound to happen. We just need to accept that and continue iterating fast.

Finally, it's important to keep in mind that a well-functioning voluntary biodiversity market depends on support, clarity and guidance from the public sector. Clear regulations and industry standards are essential. The sector should be protected from perverse incentives of self-regulation. We can't afford another slow build-up of an environmental market because of credibility issues.

Footnote: A quick note of appreciation to just a couple of voluntary biodiversity market pioneers, without whom, the space would not be where it is today: Mariana Sarmiento from [Terrasos](#), Dr. Tim Coles from [Operation Wallacea](#), Simon Morgan from [ValueNature](#) & Zoe Balmforth from [Pivotal](#).