



Building an **Inclusive** **Voluntary Carbon Market** for **Resilient Communities**

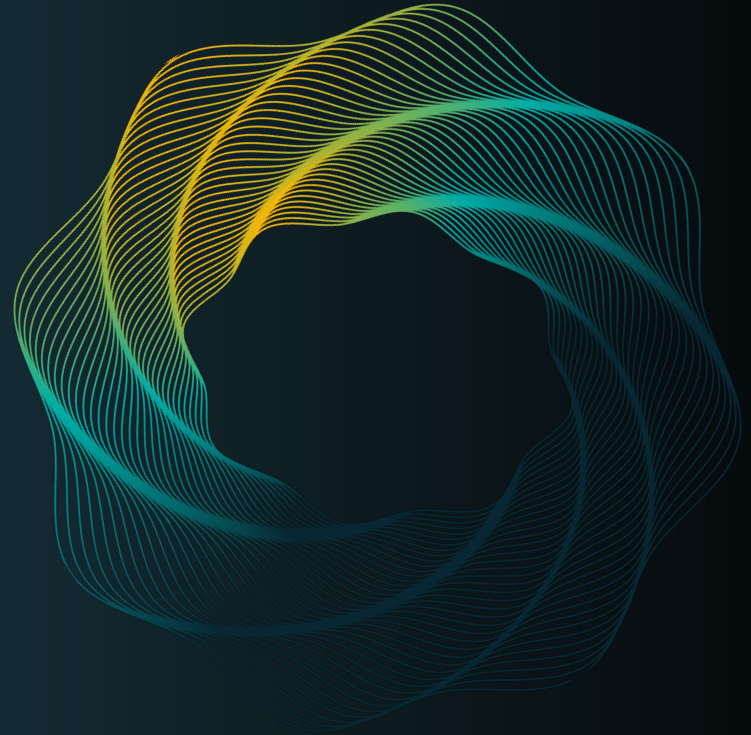
The Climate Landscape Series

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BFA GLOBAL



The Climate Landscape Series Decks

Welcome to our Climate Landscape Series, now available as a public good for all interested parties. Produced by BFA Global, this collection of decks spans essential topics in climate action and finance, including climate justice, the dynamics of digital and climate finance, and the impact of climate change on gender, among others. Aimed at demystifying the complexities of climate action, this series is particularly beneficial for those at the forefront of environmental and financial inclusion efforts, including microfinance institutions, fintechs, and a broad spectrum of stakeholders such as policymakers, financial service providers, NGOs, and academic researchers.

This series, **Building an Inclusive Voluntary Carbon Market for Resilient Communities**, is designed to inform and guide policy makers responsible for supportive carbon market policies, regulations, and initiatives, public and private carbon project developers, especially those focused on low-income, vulnerable populations, and climate finance professionals focused on innovative investment in the voluntary carbon market. By making this content widely available, we aim to empower a diverse audience to develop, benchmark, and implement effective strategies and policies for a more resilient and sustainable future.

Our objective is to ensure that this comprehensive resource contributes to the global discourse on climate action, serving as a foundational tool for enhancing climate resilience and fostering inclusive, sustainable development.

Objective



1. Demonstrate how a voluntary **carbon market can be inclusive*** to benefit low-income and vulnerable populations
2. Explore **enablers** that address the current challenges for building an inclusive voluntary carbon market
3. Highlight the areas for **financial innovation** for an inclusive VCM

*By "inclusive" we mean:

- more accessible technically and financially for marginalized communities
- more revenue going directly to smallholders and land stewards
- better outcomes for vulnerable ecosystems and natural resources (more than just carbon mitigation)

Objective



The document is intended for three primary audiences:

1. **Policy makers** responsible for supportive carbon market policies, regulations, and initiatives
2. Public and private **carbon project developers**, especially those focused on low-income, vulnerable populations, and
3. **Climate finance professionals** focused on innovative investment in the voluntary carbon market



What is the VCM?

- There are several types of carbon finance mechanisms, **compliance carbon market, CCM** (national emissions trading) the **voluntary carbon market (VCM)**, **carbon tax, internal carbon pricing, green bonds**, climate tech **venture capital**.
- Both the singular **VCM** and plural **VCMs** are used and refer to the general trade in self-regulated carbon offsets. Currently, there isn't a single marketplace that exists for the private sector to voluntarily offset emissions.
- The VCM is differentiated from other mechanisms because it is based on **offset credits that can be purchased** by businesses, governments, nonprofits, universities, municipalities, and individuals **outside of existing regulatory regimes**.
- Dating back to 1980, the VCM was started to fill interim gaps while governments ramped up their climate action.

For finance to flow to the carbon projects that serve vulnerable populations, a well-functioning voluntary carbon market (VCM) is needed.





How does the VCM work?

- The goal of the VCM, is to **retire credits** as an offset towards mitigation of carbon dioxide, versus existing as a tradable asset.
- There are different ways to generate offset credits, via **removal** and **avoidance**, which inherent value and associated costs to implement. Examples include renewable energy, avoiding ecosystem damage through land protection, afforestation or direct air carbon capture.
- The lack of a single certification standard ([there are >20](#)) has resulted in **lack of transparency** and negative press for standard setting entities and buyers, i.e. “greenwashing”.
- Because many methods for generating these credits are **nature-based solutions**, there is an opportunity to meaningfully include smallholders and other land stewards that are typically more vulnerable but marginalized.

For finance to flow to the carbon projects that serve vulnerable populations, a well-functioning voluntary carbon market (VCM) is needed.





What is the current context?

- The demand for credits are fast-growing, their **value reaching ~\$2B in 2023**. The market price of carbon is still too low for project viability.
- Demand has catalyzed **rapid evolution of the VCM**, with new players building supply of credits, acting as quality enablers, developing marketplaces, providing direct procurement, and performing carbon accounting.
- **COP28 negotiations** failed to reach agreement on operationalizing **Article 6** leaving the world without the regulation of international carbon credits (ICC).
- The VCM is expected to **converge** with the CCM by becoming eligible to contribute toward country emissions caps under the Paris Agreement.

For finance to flow to the carbon projects that serve vulnerable populations, a well-functioning voluntary carbon market (VCM) is needed.





01

How can the VCM be
more inclusive for
vulnerable populations?

01.a Vulnerable communities can benefit from the carbon market...

Benefits	Examples
 <p data-bbox="195 274 403 405">Income generation and economic empowerment</p>	<p data-bbox="475 250 1522 279">Youth involvement in carbon projects can lead to direct income generation.</p> <p data-bbox="475 323 1715 388">Entrepreneurship for eco-friendly products or renewable energy can- generate credits and help with sustainability of business models e.g. paygo solar.</p>
 <p data-bbox="195 492 388 585">Gender / Community development</p>	<p data-bbox="475 454 1673 519">Women, who often play pivotal roles in community development, can leverage carbon credits for subsidizing education and infrastructure.</p> <p data-bbox="475 563 1734 628">Capacitating female monitoring and evaluation scouts can build new transferable skills and new jobs.</p>
 <p data-bbox="195 710 426 770">Improved health and well-being</p>	<p data-bbox="475 656 1731 721">Better access to clean energy via cookstoves subsidized by carbon offsets, can also reduce female workload.</p> <p data-bbox="475 765 1721 831">Restoration projects enhancing local clean water resources, where women are often water bearers.</p>
 <p data-bbox="195 929 442 956">Climate resilience</p>	<p data-bbox="475 858 1532 885"><u>Indigenous farming practices</u> are often climate smart and sequester carbon.</p> <p data-bbox="475 929 1711 994">Nature-based solutions / projects can build resilience of ecosystems and reduce the toll of extreme climate events that disproportionately affect indigenous communities.</p>



01.a But substantial barriers still exist for vulnerable communities to access the VCM



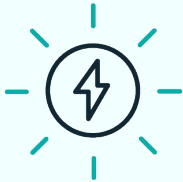
Limited transparency in the market

Buyers don't see how credits benefit women and other marginalized groups, or are being misled about benefits distribution.



Limited financial inclusion

Low-income communities [benefit less](#) from the proceeds of carbon credits or are not able to receive timely, reliable payments.



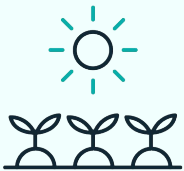
Limited quality projects

Carbon projects are expensive and take time to develop, and may not be sustainable enough to benefit communities.



Limited understanding of potential benefits

Smallholders and land stewards are not incentivized to participate in the market.



Lack of land rights

There are a limited number of women-led carbon projects and female decision-making power is limited.

01.b Much of today's carbon in the VCM comes from "NBS" nature-based solutions and has wide price spread

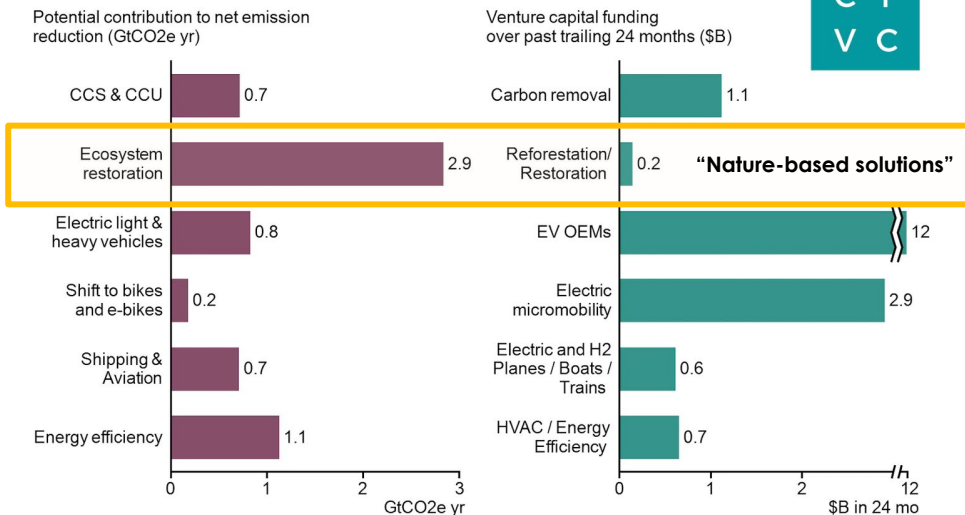
	2019		2020		2021 (through August)	
	Volume (MtCO2e)	Price (USD)	Volume (MtCO2e)	Price (USD)	Volume (MtCO2e)	Price (USD)
Africa	16.1	\$3.94	14.9	\$4.24	23.9	\$5.52
Asia	45.6	\$1.80	63.0	\$1.60	91.8	\$3.34
Europe	1.1	\$2.92	1.7	\$9.47	0.8	\$2.96
Latin America & Caribbean	15.3	\$3.45	18.9	\$4.17	36.6	\$3.74
North America	15.5	\$3.51	11.6	\$6.31	10.0	\$5.13
Oceania	0.5	\$12.53	0.1	\$20.57	0.1	\$32.93

Asia produces almost **4X** of offset volume compared to Africa, with larger volumes credits originating from **forestry** and **land use** projects. Africa has been sitting on the sidelines, right now it is not a major producer of carbon credits (and despite being the lowest emitter). Asia is increasing the credits from forestry and land use. Africa has some of the largest terrestrial carbon sinks in the Congo, and [its tropical mountain forests](#).



01.c Nature-based solutions are especially important for benefitting marginalized communities but require de-risking

IPCC mitigation options by CO2e reduction vs venture funding



Notes: Exhibits select mitigation options from IPCC Figure SPM.7 with a corresponding matching subsector from CTVC climate venture deals tracking. GtCO2e yr are illustrative and non-exact, based off non-exact visual data. Some IPCC options are grouped and GtCO2e yr totals are summed. Fundraising data based off all CTVC tracked venture capital deals for trailing 24 months since April 2020.

- The UNEP estimates that more than **US\$ 536 billion in nature-based solutions (NBS)** finance will be needed to meet SDG targets
- NbS could contribute **30 percent of the global GHG mitigation** required to reach the 1.5°C target
- NbS in the VCM could contribute to **46 to 87 percent of NbS offsets**
- Receives the least amount of venture capital funding
- NbS supply tends to be perceived as **high risk** due to potential reversibility, difficulties in verification and issues with additionality

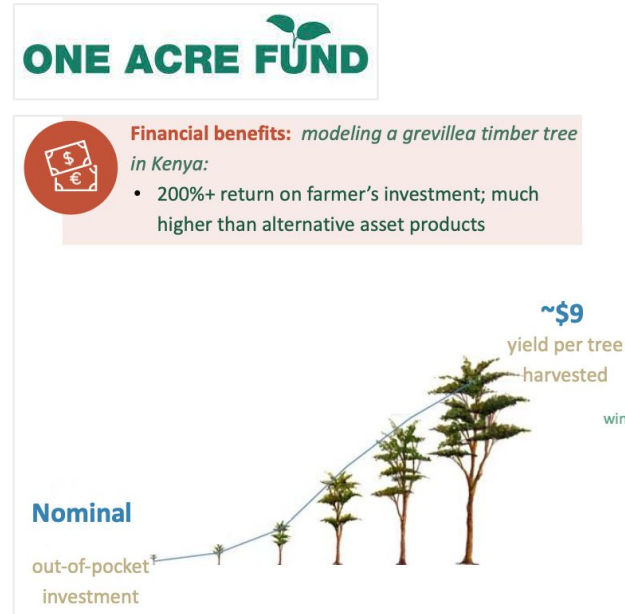


01.c Nature-based solutions are especially important for benefitting marginalized communities but require de-risking

Carbon credit payouts alone will not be enough to lift vulnerable out of poverty.

- Current price is about **14 \$/mt CO2e** ([source](#)), with a lot of spread and ongoing price discovery in the market.
- Estimated **80% of price is lost** to intermediaries (9/10 intermediaries [don't report](#) their profit margin).
- Some NBS can take years to demonstrate carbon sequestration (One Acre Fund example, right).
- Higher prices, market place transparency and MRV can help **increase direct income gains** from carbon offsets.

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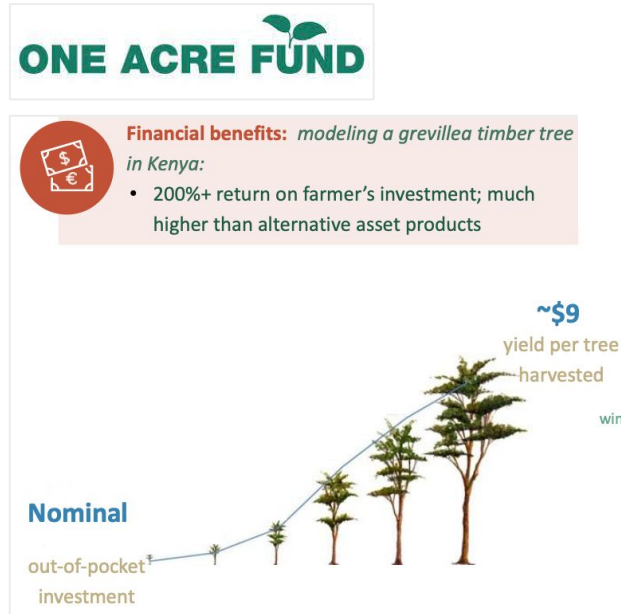
Tree can take 3-10 years before it generates offset income, currently to subsidize expenses but not to serve as livelihood stream

01.c Nature-based solutions are especially important for benefitting marginalized communities but require de-risking

Carbon credit payouts alone will not be enough to lift vulnerable out of poverty.

NBS confer ecosystem **co-benefits** (restored or safeguarded biodiversity, food security, sustainable livelihoods*) that build **adaptation and resilience** of populations vulnerable to climate impacts, in addition to carbon **mitigation**. However, carbon is priced at \$ per tonne of carbon without placing monetary value on critical co-benefits. NBS carbon could command **premiums** from social impact-driven buyers.

*Other approaches to carbon removal or reduction (e.g. renewable energy, paygo solar, industrial capture, geotech) still hold potential employment and livelihoods pathways for vulnerable communities.

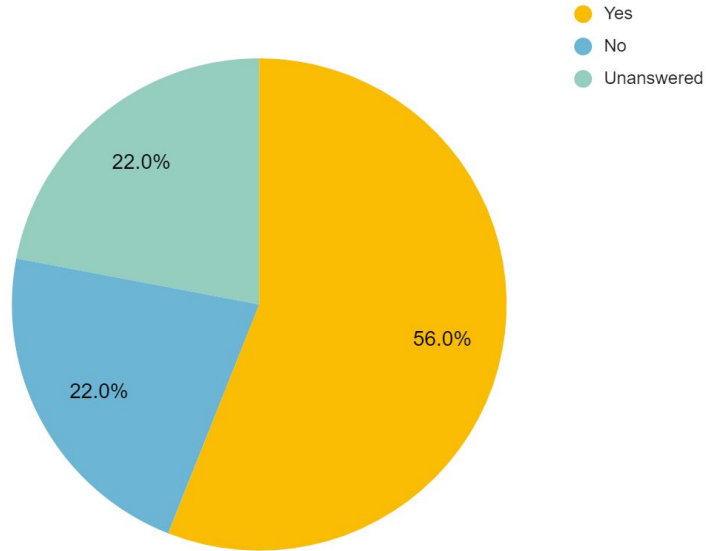


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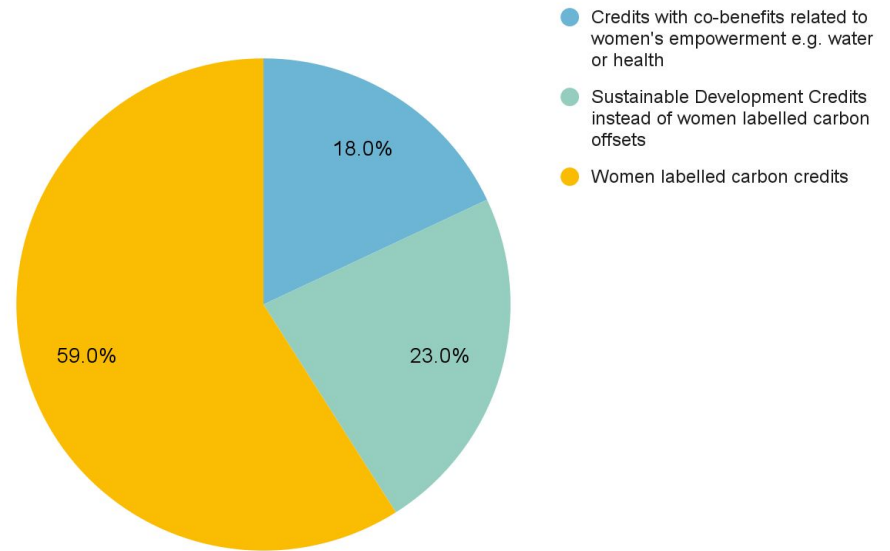


01.d Carbon credits with co-benefits specifically benefiting women will increase in demand

Will buyers pay a premium for credits with women empowerment?



What kind of credits would buyers have a preference for?



Source: [WOCAN 2021](#)



01.e Case study for women-focused carbon: W+ Project in Indonesia



Implementer: Hivos

Aim: Disseminate domestic biogas digesters as a local and sustainable source of energy

Women impacted: 4,500

Benefits to women:

- 1.1 hours per day time saved
- economic savings from reduced biomass and gas purchases
- improved health from reduction of smoke and dust
- increased crop production from application of bio slurry

Carbon reduction: 2.6 tons/CO₂/household/year



15 W+ registered carbon projects globally
596,98 W+ credits generated
59,723 women's lives improved





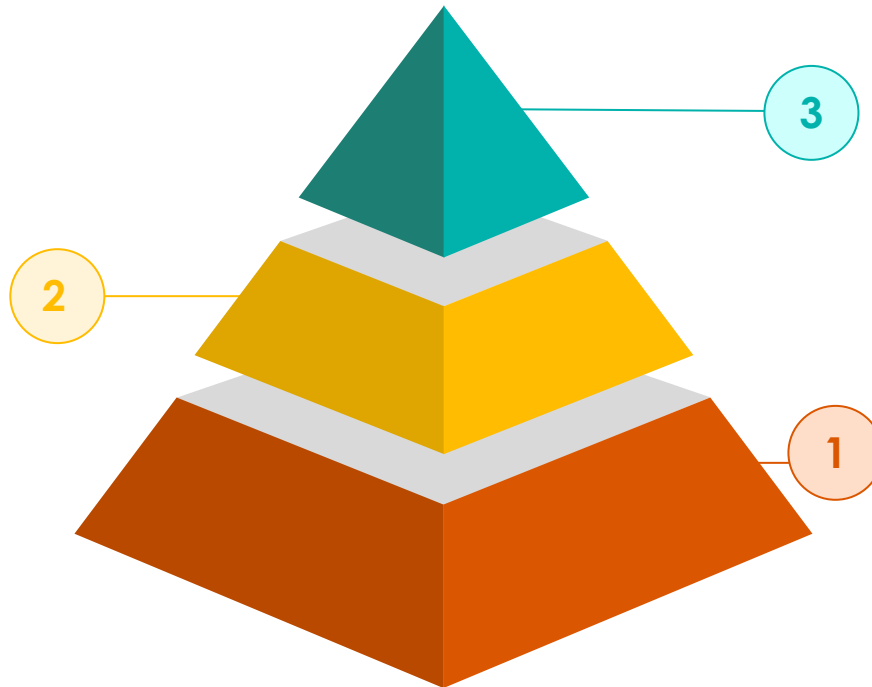
02

What are the enablers that could address the challenges and barriers for inclusivity in the VCM?

02.a High Level Opportunity: Leveraging the VCM for vulnerable populations via DPI, marketplace and financial service innovation

Marketplaces that prioritize direct payment to beneficiaries and include co-benefit verification will be necessary for bringing real value to vulnerable populations

These marketplaces are emerging but requiring scaling and further integration of co-benefit verification to bring carbon to meaningful prices



Financial service innovation will bring capital to marginalized communities

This will require new ventures and innovation in current financial service providers

Creating Digital Public Infrastructures (DPIs) for the VCM could significantly enhance global impact

Collaborations between governments, industry leaders and tech innovators will be required

1

02.a.i VCMs could operate as Digital Public Infrastructures (DPIs)

VCMs could become **global, decentralized DPIs**, learning from other sectors like digital identity systems (e.g. [Aadhaar](#) in India), mobile payment and banking platforms (e.g. [M-Pesa](#) in Kenya), or E-governance platforms (e.g. Estonia's [e-Residency](#) program).

Attributes of Ideal DPI ([Bhaskar Chavakoti, HBR article](#))

- Enabling the SDGs, Inclusive, Human-centric, Trustworthy, Supportive of Innovation, Interoperable, Resilient, Politically Viable

1

Innovation and scalability

- DPIs can enable combining traditional ecological knowledge with modern carbon sequestration techniques
- By reducing cost of measurement, reporting and verification (MRV), digital tech can make community-based projects more financially viable

Democratization of the market

- DPIs could allow for active role by marginalized communities
- Platforms could provide education materials and training resources for such populations



2

Transparency and traceability

- Can help protect land and carbon rights by clear documentation, preventing exploitation
- This would build trust among local communities, project developers and credit buyers

Data management and reporting

- Can empower local communities to monitor and report on their own carbon projects
- This helps ensure projects are designed and implemented in ways that respect local needs and priorities

Standardization and interoperability

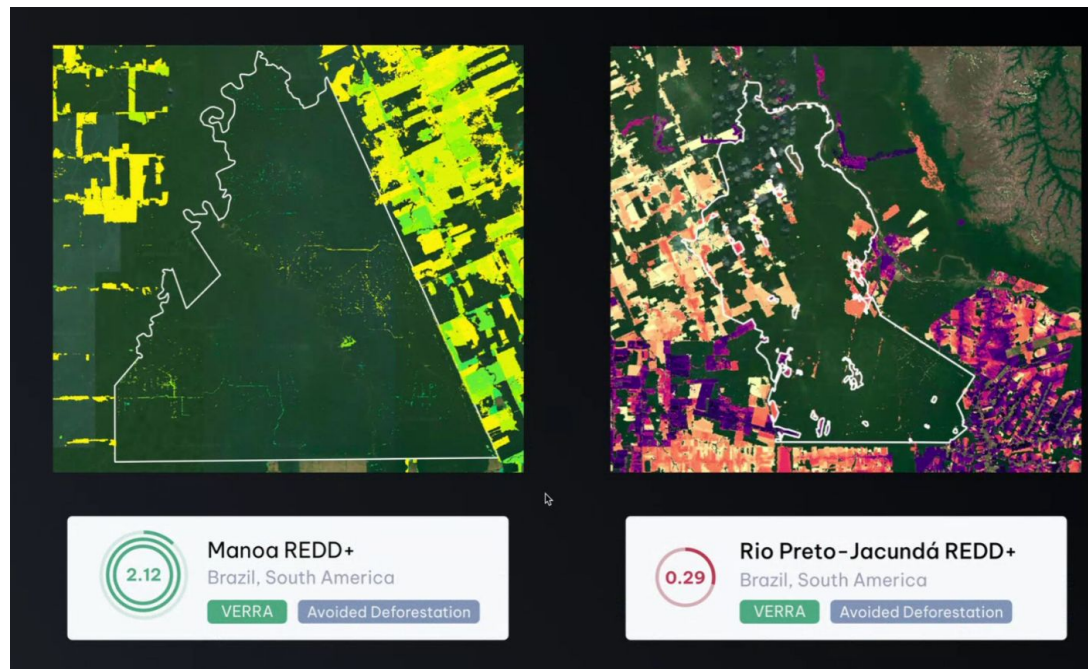
- Inclusive standards take into contextual considerations of marginalized communities
- Interoperable DPIs can integrate with local systems and practices without requiring overhaul of traditional land management practices



02.a.ii DPI: Component for transparency: Renoster: Innovating deep transparency of carbon projects via open source

RENOSTER

- Provide deep transparency on how much offsets are worth from a carbon perspective. Is 1 credit = 1 carbon tonne?
- [The shortcomings of the Kariba Forestry Project were exposed in October of 2022.](#) Kariba is one of the oldest and largest REDD+ projects in Africa, protecting **784,987** hectares of land in Zimbabwe since 2011.
- Project was **over-crediting by 30x** due to an extremely aggressive baseline.



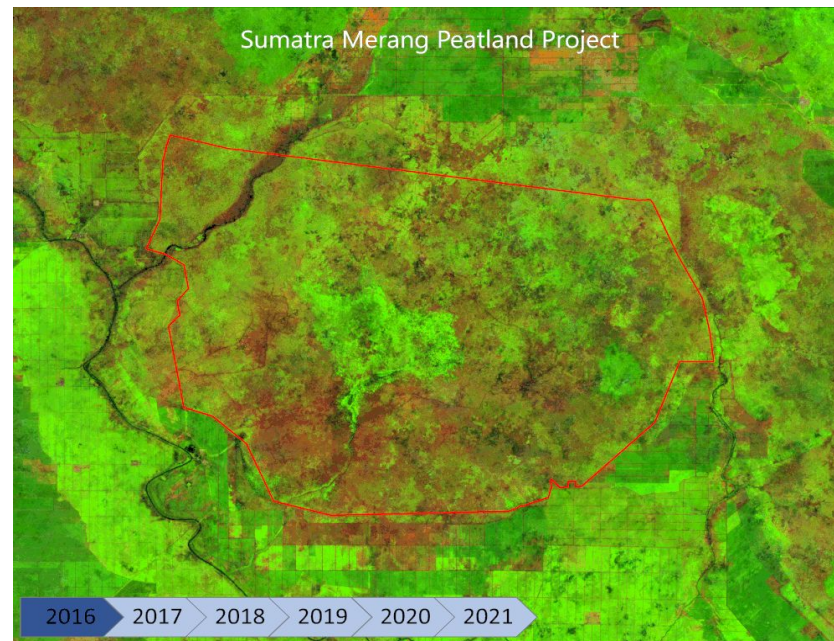
02.a.iii DPI: Structuring projects for quality and financing at scale. Forest Carbon: A premium project developer restoring degraded wetland forests

FOREST CARBON

Forest Carbon **restores degraded wetland forests** and is a premium restoration project developer in Southeast Asia that delivers benefits for local communities, biodiversity and investors through a proven business model.

Forest Carbon relies on this technical expertise and a growing pipeline of project opportunities to secure millions in private sector investment for threatened ecosystems.

- [Forest Carbon's Sumatra Merang Peatland Project](#) is now a proven business model for large-scale restoration, with more than **5 million Euro** in investment capital raised.

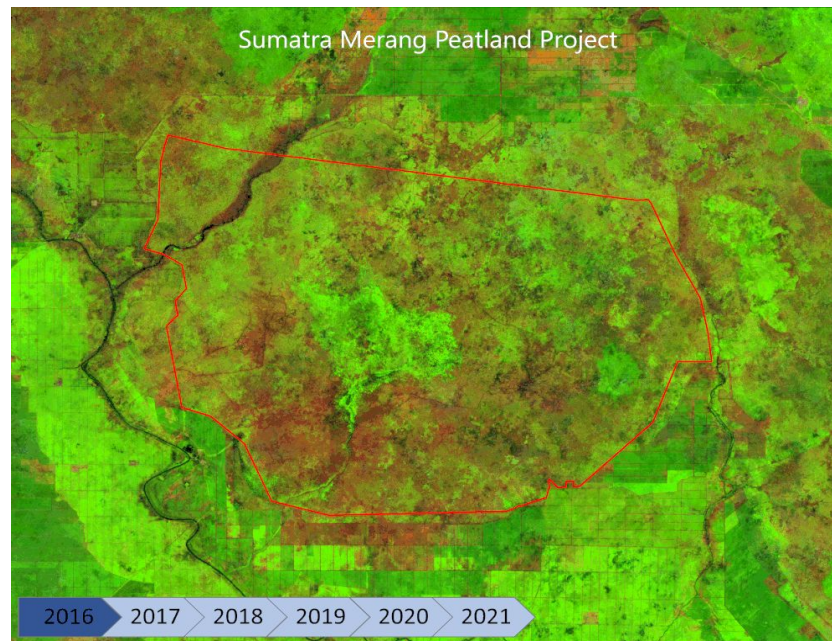


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02.a.iii DPI: Structuring projects for quality and financing at scale. Forest Carbon: A premium project developer restoring degraded wetland forests

FOREST CARBON

- Sales secured from major global brands support restoration efforts on more than **22,000 hectares**, which reduces the risk of fire, strengthens the rural economy and creates jobs, and delivers returns for investors and partners.
- Technology has enabled the company to increase its hectares under management from **22,000 to 229,000** in the past **18 months**.



02.a.iv Marketplace: CAVex.io, is a tech-enabled, inclusive carbon credits platform democratizing marketplace access

CAVex.io a data-rich platform using only verifiable data sources to **improve accuracy and reduce the need for site visits** that allow small project developers to **manage verification costs**.

- 4R Digital Ltd (4RD) is a UK based start-up developing a digital platform called the **Carbon Value Exchange (CaVEx)** that facilitates the collection and aggregation of data for small scale climate positive activities to allow for the creation of carbon credits.
- CaVEx enable buyers or investors in climate action to purchase these carbon credits from **small scale projects** on an **aggregated or unit basis using digital payments**.



Nick Hughes, OBE
Founder & MD
4RDigital (CAVex)

02.a.iv Marketplace: CAVex.io, is a tech-enabled, inclusive carbon credits platform democratizing marketplace access

- Proceeds from the sale of carbon credits are digitally transferred to the individuals involved in the small-scale actions, thus greatly improving access to climate finance for smaller projects.

4R Digital's founder also have extensive experience in developing innovative digital finance platforms having spearheaded the development of **M-PESA** and Co-Founded and grown **M-KOPA**.



Nick Hughes, OBE
Founder & MD
4R Digital (CAVex)

02.a.v Marketplace: Africa has potential to enter market as huge supplier of quality carbon via the Africa Carbon Markets Initiative (ACMI)

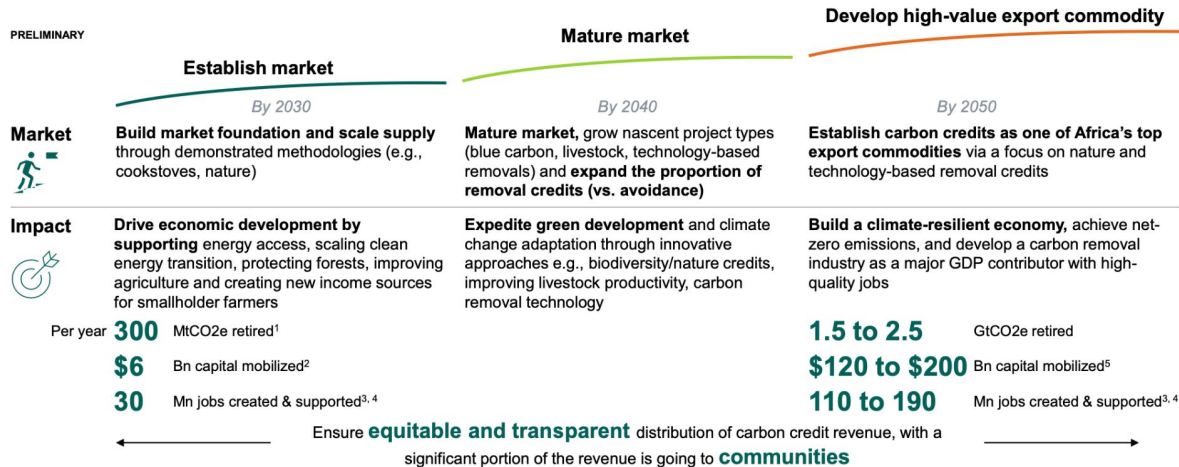


ACMI Goal:

Scale voluntary carbon markets across Africa by growing Africa's carbon market to 300 MtCO₂e in 2030 and over 1.5 GtCO₂e by 2050.



UN Climate Change
High-Level Champions



02.a.vi Financial service innovation: An array of products can remove or reduce barriers for vulnerable populations

Financial Service	Use case	Example Innovator
Digital payments	Provides direct income benefits to marginalized carbon credit producers, reduces costs of delivering payments to vulnerable communities, allows for aggregation of multiple producers	Cavex - provides direct payments to mobile wallets from carbon trading platform
Digital loans	Allows low-income populations to lead new or scale existing carbon projects	HeavyFinance - green loans subsidized by carbon credits for converting to regenerative agriculture
PAYGo	Helps low-income communities to overcome high upfront costs of new projects	ATEC - leveraging IoT, digital verification allows for ATEC to receive carbon credits and subsidize their PAYGo model for cookstoves



02.a.vi Financial service innovation: An array of products can remove or reduce barriers for vulnerable populations

Financial Service	Use case	Example Innovator
Smart contracts	Provides traceable, secure payments in automated installments to increase reliability and transparency of payments to vulnerable communities	Toucan Protocol - blockchain based protocol using programmable smart contracts and open APIs
Crowdfunding	Connects individual or corporate investors to smaller scale projects where marginalized benefit	Raise Green - platform for investing in clean energy entrepreneurs
Online marketplaces	Allows buyers to find women-led projects	Gold Standard - offers W+ certification showcasing women-led projects
Insurtech	Helps reduce risks of purchasing small-scale projects in climate vulnerable areas	Kita - insures pre-purchased carbon credits to help finance new carbon projects

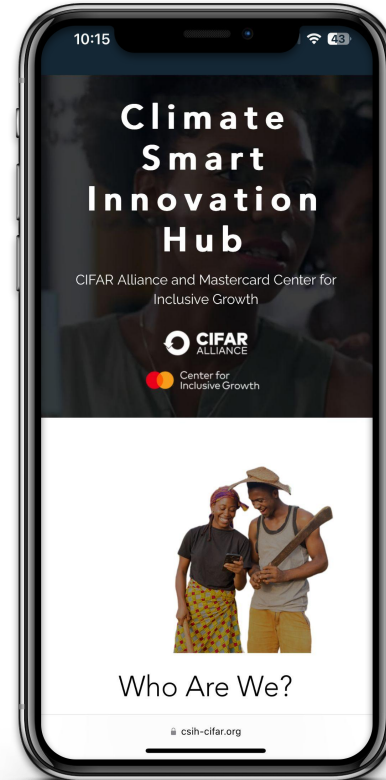


02.a.vii Financial service innovation: Climate Smart Innovation Hub (CSIH) showcases financial products for climate resilience

Our [CSIH Website](#) is a space where you will find information about various climate-related products.

The primary objective of this space is to facilitate product comparisons and **highlight the most prominent ones based on the user's interests.**

BFA GLOBAL  Center for Inclusive Growth





03

How might financial innovation reduce barriers for vulnerable populations?

03.a There several carbon revenue payment mechanisms* which can be improved for digital use, transparency, and accessibility



Direct Payments

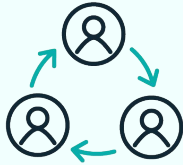
1. To individual
 - a. **One Acre Fund** farmers (60% are women) receive payments via mobile money currently, and would be the mode for future carbon revenues.
 - b. **TreeO2** platform provides pdf of how payment is delivered, lists complaints, calculates carbon stock, and how much farmers are getting paid. Direct payments to individuals are made via mobile money.
2. To organization**
 - a. Payments are sent to dedicated bank account, which allows for weekly transfers to community member accounts.
 - b. Members can access via mobile money or get cash from momo agents (or bank agents make visits to communities).

* Examples we have learned about through the Carbon Finance CoLab under CIFAR Alliance, not intended to be exhaustive

** Based on research by [Imperative](#) Carbon Developer about a project in SSA, not disaggregated by gender.

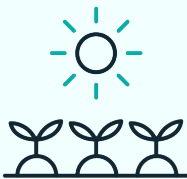


03.a There several carbon revenue payment mechanisms* which can be improved for digital use, transparency, and accessibility



Community Funds

1. Payments are pooled into community fund, and overseen by a local community or organization.
2. The revenues go toward community development projects, that can be targeted toward women or seed women-led enterprises.
3. Funds can also go toward training and building capacity for female farmers.



Mikoko Pamoja Community-Led Mangrove Restoration (Kenya)

Proceeds from carbon revenue go into building school, water pump, funding cooperative enterprises and mangrove boardwalk is run by women in the community. Carbon credits via Plan Vivo.

* Examples we have learned about through the Carbon Finance CoLab under CIFAR Alliance, not intended to be exhaustive

** Based on research by [Imperative](#) Carbon Developer about a project in SSA, not disaggregated by gender.



03.b There are innovator points of entry for scaling inclusive carbon finance and making projects more sustainable

1

Quality verification

Transparency of data and certifiable against established standards or new methodologies for assessing quality

*Certification with incumbent standards can take 2-5 years

*Often 40-60% of the carbon credit price goes to “middle men” and only small % arrives to small land steward

2

MRV (for small scale land stewards)

Reduce cost and challenges of measuring, reporting, and verifying with remote sensing

Need for better tools that provide more accurate, more transparent and verifiable data that can be done remotely and at scale

3

Project financing (small to mid scale)

Pre-sales or forward contracts to direct funding to invest in projects

Current prices are too low to be viable for small project developers and to spur more suppliers to invest in projects



03.c More innovation in financing approaches are needed to catalyze VCMs

Approach	Instrument	Desired Outcome	Examples
Seeding innovation	Grants, loans	Identify and test new opportunities in points of entry, building pipeline from the bottom-up and in vulnerable communities.	Build locally-led carbon finance innovation ecosystems in Africa.
Proofs of concept to scale	Grants, loans	Providing funding and helping scale up to engage additional capital, crowd-in investors. Due diligence to share with other investors or buyers.	Target investments in points of entry areas, run pilots and accelerate innovators and provide adaptation strategy to existing innovators and ecosystem actors.
Risk mitigation	Guarantee	Change risk profile for investors and secure developers long lead-time to carbon maturity.	First-loss guarantee for 3-10 years until project produces offset.

NbS funding gap needs to be closed with **innovative finance** (a set of financial solutions and mechanisms that create scalable and effective way of channeling private money toward solving global problems by:

1) generating additional funds and by 2) making projects more effective and efficient



03.c More innovation in financing approaches are needed to catalyze VCMs

Approach	Instrument	Desired Outcome	Examples
Technical support	Grants	Grant funding to increase chances of success.	Venture building support along with investment / flexible grant capital.
Additional impacts / co-benefits	Grants	Allocating financial value for benefits as a result of intervention (socioeconomic, environmental, community-level).	Bundling of offsets with resilience or biodiversity credits.
Mitigation strategy	Purchase credits on VCMs	Long-term and forward contracts , and prioritizing NbS-focused or small projects on the continent.	Targets for type of projects and marketplaces /platforms. Consumer or project climate strategies for mitigation.

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03.d About the Carbon Finance Co-lab

To date, we have held **9** learning brown bags, with One Acre Fund, CAVex, PayPal, Forest Carbon, ACMI, Imperative, Renoster, Open Forest Protocol, and Verra.

Since 2022, we are **6** organizations who have been regularly convening through the Carbon Finance Co-lab for partnership explorations.



[Carbon Finance Co-lab Opportunity brief \(2022\)](#)





The Climate Landscape Series Decks

- **Conceptual Frameworks for Climate Action:** Climate Justice, Digital Finance and Climate Finance Flows
- **Climate Finance Taxonomies:** Frameworks for the current landscape
- **Climate Change and Gender**
- **Climate Innovation:** Climate Smart Essential Services & The Opportunity for Philanthropy
- **Climate Resilience Insurance:** Learnings, Gaps, Opportunities
- **Inclusive Climate Finance:** G2P Programs
- **Building an Inclusive Voluntary Carbon Market for Resilient Communities**
- **Climate Finance:** Data and Data Platforms

Thank you!

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