

EEP AFRICA

Knowledge Week

UNLOCKING CARBON FINANCE FOR SMALLER ENERGY BUSINESSES



Karlijn Groen
EEP Africa
(moderator)



Ryan Ombara
Open Capital
Advisors



Nikki Carezza
4R Digital



Dennis Onono
South Pole



Madrin Maina
Sistema.bio



Nicole Kugelmass
Mirova SunFunder

8 FEB - 14.00-15.30 GMT+2





UNLOCKING CARBON FINANCE FOR SMALLER BUSINESSES

Moderator:

Karlijn Groen, Portfolio Manager EEP Africa

EEP AFRICA KNOWLEDGE WEEK 2024

**COOLING SOLUTIONS:
INTERPLAY BETWEEN
BUSINESS MODELS
AND TECHNOLOGY
IN SSA**

6 FEB
14.00-15.30
GMT+2

**EEP AFRICA
CALL FOR
PROPOSALS:**
Grant financing for innovative
clean energy solutions

7 FEB
14.00-15.30
GMT+2

**UNLOCKING
CARBON
FINANCE FOR
SMALLER ENERGY
BUSINESSES**

8 FEB
14.00-15.30
GMT+2

Learn more and access recordings:

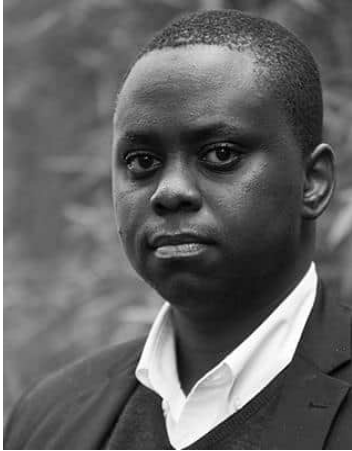
<https://eepafrica.org/eep-africa-knowledge-week-2024-programme/>

AGENDA

- ☼ Welcome & introduction to EEP Africa
- ☼ Introduction Carbon Credits Market Access Study
 - Ryan Ombara, Open Capital Advisors
- ☼ Presentations
 - Dennis Owino Onono, South Pole
 - Nicole Kugelmass, Sunfunder Mirova
 - Nikki Carenza, 4R Digital
 - Madrin Maina, Sistema.bio
- ☼ Panel discussion
- ☼ Audience Q&A



SPEAKERS



Ryan Ombara

Project Leader

**Open Capital
Advisors**



**Dennis Owino
Onono**

Associate
Director

South Pole



**Nicole
Kugelmass**

Director Strategic
Initiatives &
Investments

Sunfunder Mirova



Nikki Carezza

Manager

4R Digital



Madrin Maina

Director East-
Africa

Sistema.bio

AUDIENCE Q&A

Type in the Question box and your queries will be directed to our moderator and panelists

QUESTIONS?

Contact:

cfp@eepafrica.org

Learn more:

<https://eepafrica.org/>

Follow us at:





EEP Knowledge Week:

Carbon Credits Market Access for Smaller-Scale Clean Energy Projects

February 8th, 2024



Open Capital (OCA) is a management consulting and financial advisory firm enabling investment across Africa

Who we are

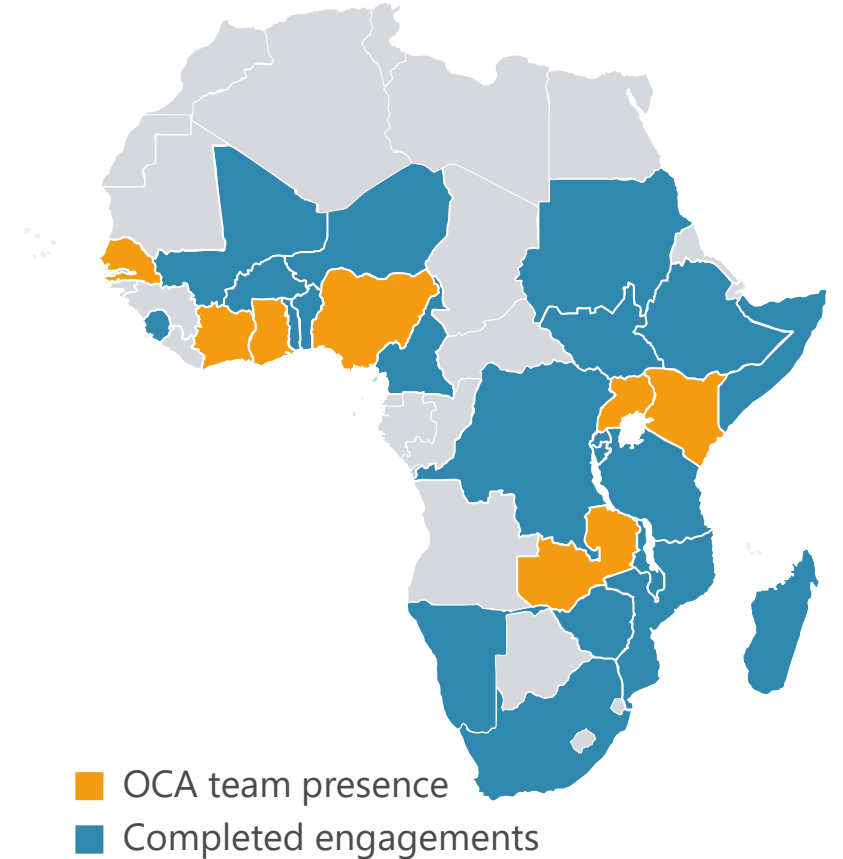
- Founded in 2010 with a mission to advance African economies and build future generations of business leaders
- Work with organizations, companies and investors who seek positive impact throughout Africa
- Blend of management consulting skills including talent management, investment, and finance

Experience

- Team of 170+ full-time employees, with team presence in 7 countries in Africa
- Deep market experience from working in 30 SSA countries
- 1600+ client projects and >US \$1.5B financing catalyzed and raised for clients (US \$100M+ in 2022)

Unique differentiators

- Deep local and regional market expertise in the energy space, working with energy policy makers and SMEs
- Extensive team experience in developing market assessments across multiple sectors
- Global network of over 600+ investors



High level overview of Carbon Credits Markets

Carbon markets enable sustainable projects to get financing from entities looking to offset their carbon emissions

Overview of carbon credits market

- Carbon markets are trading systems in which companies that avoid or remove carbon from the atmosphere can sell credits to companies/individuals who want to reduce their carbon footprint, becoming a new revenue stream
- **A carbon credit equals one tonne of carbon dioxide**, or the equivalent amount of a different greenhouse gas reduced, sequestered, or avoided

Types of carbon credit markets

There are two main types of carbon markets:

- **Compliance Markets:** Mandatory systems regulated by government entities to cap emissions for specific industries e.g., EU Emission Trading System (ETS), South African Carbon Tax Offsets
- **Voluntary Carbon Markets:** Platforms in which carbon credits can be purchased by those who voluntarily want to offset their emissions e.g., Voluntary Carbon Standard (Verra)

Main types of carbon credits players

There are two main types of carbon market players:

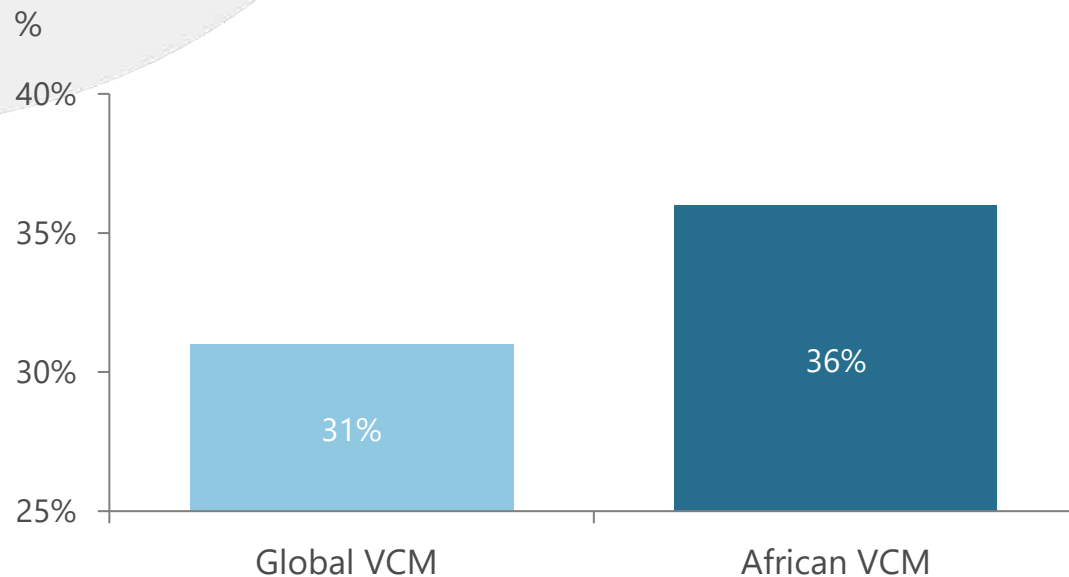
- Carbon credit **producers/project developers:**
 - **Avoidance/Reduction:** Those that prevent/reduce the release of carbon into the atmosphere such as clean cooking and renewable energy
 - **Removal/Sequestration:** Those that remove carbon from the atmosphere such as reforestation and direct Methane Capture
- Carbon credit **buyers:** They are typically corporations located in Europe, North America, or a country with a carbon tax in sectors such as energy, consumer goods, airlines, technology

Globally, the demand for carbon credits exceeds supply, with carbon offset projects in emerging markets that offer other SDG benefits fetching the highest; this presents an opportunity for African project developers to tap into the market

Global carbon markets have been on upward trend in the wake of the Paris Agreement, reaching a record-high of USD 84B in 2021

Carbon revenue has grown at 25% CAGR since 2014

Global and African VCM CAGR (2016-2021)¹



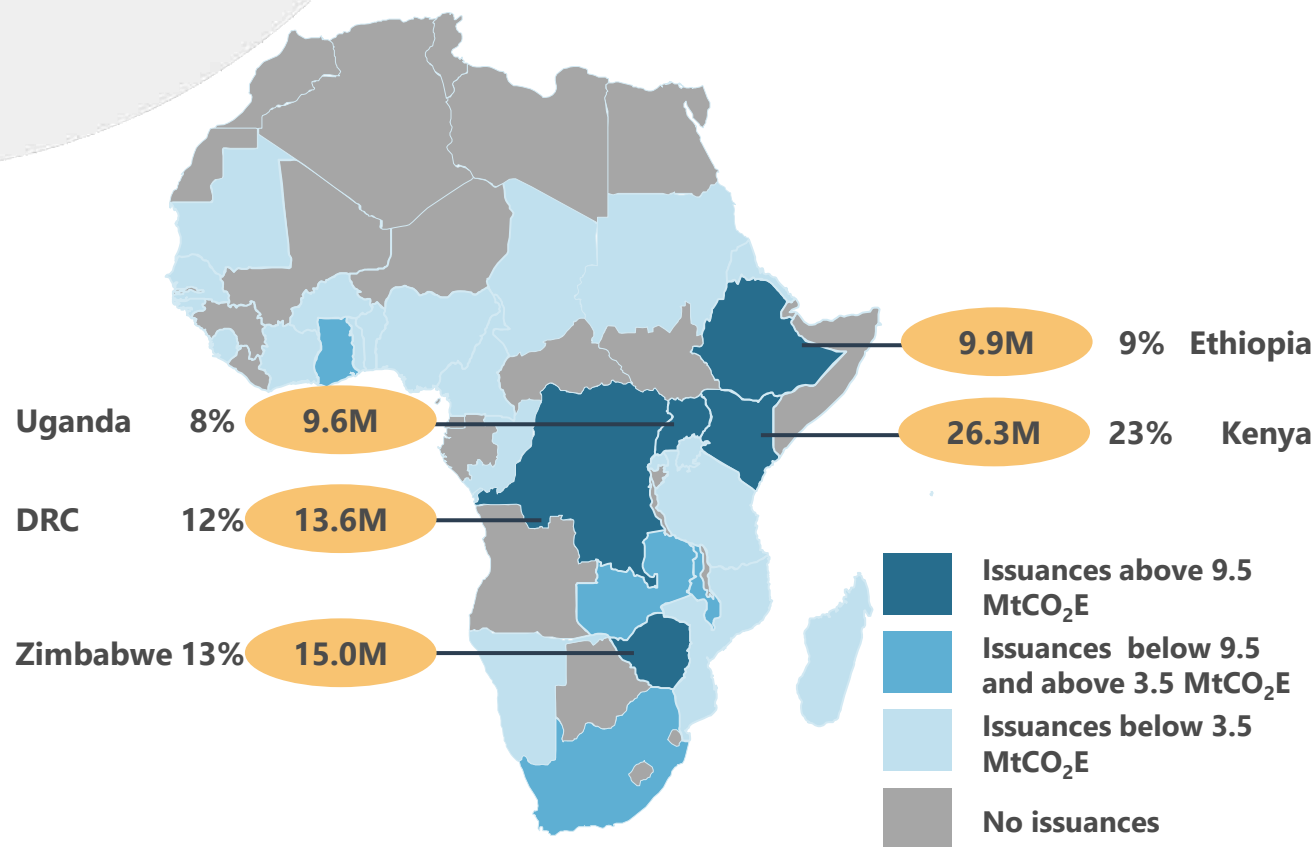
The African Voluntary Carbon Markets are expanding, slightly outpacing the global markets

High growth is mainly attributed to the 2015 Paris Agreement

- **New climate targets through the 2015 Paris Agreement has led to the opening of new international compliance carbon markets** where countries and companies can trade carbon credits, including major markets like China
- **Article 6 of the Paris Agreement allows for transfer of carbon credits** earned from the reduction of GHG emissions between countries to help each other meet their climate targets set out in their Nationally Determined Contributions (NDCs)
- **With limited supply of carbon credits, the price has also increased;** registering new carbon credit projects is a lengthy process which cannot quickly be scaled up to meet demand
- **There has also been increased auctioning in emissions trading systems** due to the increased demand for carbon credits by governments and companies to meet the new climate targets


















The African carbon credits market has significant scope for growth, having attained only 2% of its full potential to date

Carbon credit issuances by country (2016 – 2021)¹

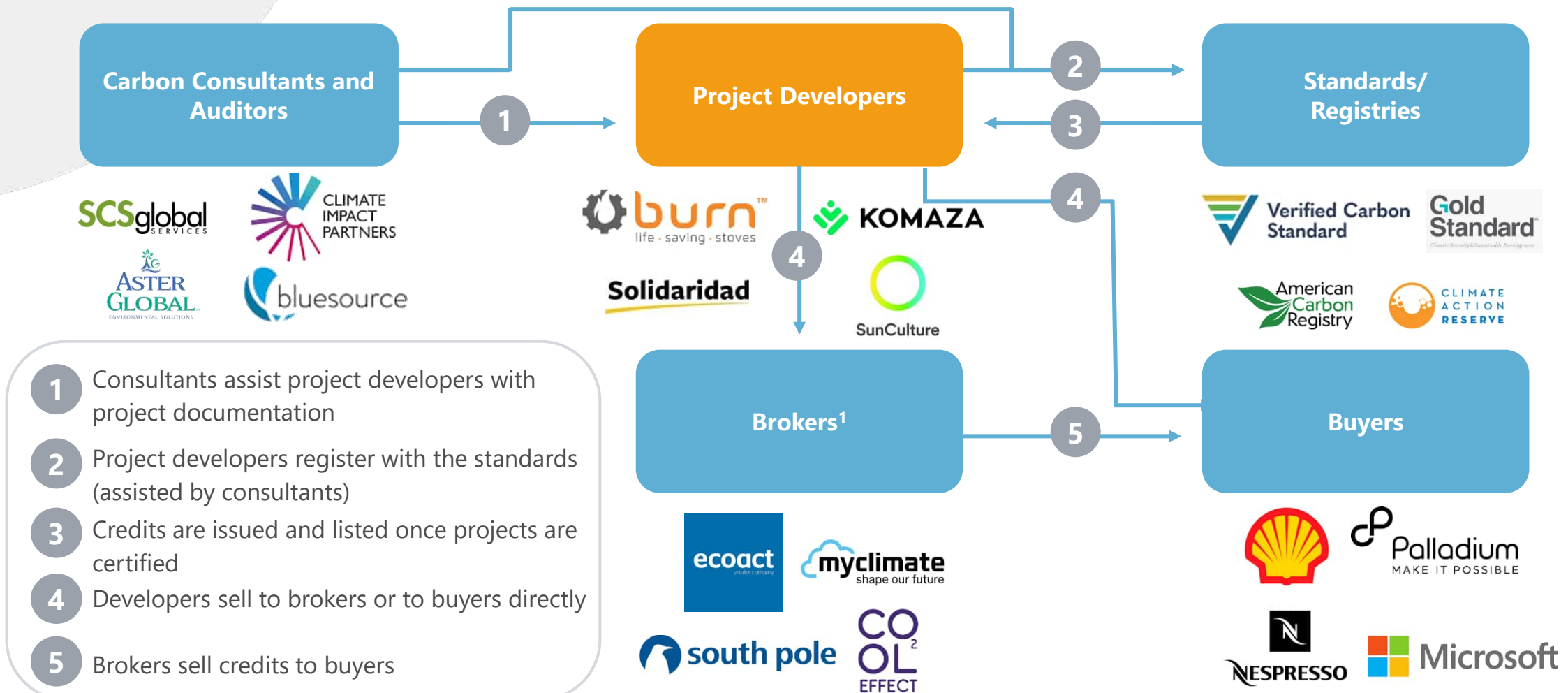


- In recent years, there has been a **growth in the demand for carbon credits originating from Africa**, surpassing the overall global growth in this sector. Despite the strong potential within the region's carbon credit market, which currently accounts for approximately 11% of the total global carbon credit issuance, it **has only tapped into 2% of its maximum potential**. Several initiatives are being undertaken to unlock this untapped potential
- The market exhibits **fragmentation**, with just five countries contributing to approximately 65% of the total issued credits; Kenya leads the way with a 23% share. The market comprises a small number of project developers, typically operating on a small scale with limited diversification. These developers have predominantly concentrated their efforts on similar project types, with roughly **97% of carbon credits being issued for projects related to forestry and land use, renewable energy, and household devices**²

Several types of ecosystem players play key complementary roles to ensure active participation in the issuing of carbon credits

	Project developers	Consultants and auditors	Standards (registries)	Buyers	Brokers	Financiers
Description	Companies, NGOs or governments that develop solutions for climate change	Companies or individuals that assist developers with the certification process e.g., measurement, documentation	Carbon offset programs that certify carbon emissions reductions and act as a clearinghouse for sellers/buyers	Companies, individuals, NGOs looking to offset their carbon emissions	Intermediaries who buy credits from developers to market and sell to a network of buyers	Companies/individuals/DFIs that finance the carbon credit registration process
Engagement	Small companies are part of this group as they run climate change projects	With the help of aggregators, small companies typically do not need to engage them	Small companies engage them through aggregators	Small companies can engage them through aggregators or directly	Small companies engage them directly as they help them with carbon credits registration and sale	Small companies can engage them directly or through aggregators
Examples	  	  	   	  	  	

The relationships between the key players in the carbon credit market can be summarized in several steps



7 Sources: Financial Times – [link](#); Abatable – [link](#)
Notes: CCs – Carbon Consultants

Market-related challenges primarily hinder the development of the carbon credits market in Africa



Supply and standards

Project development:

- Limited number of project developers and low capacity of project developers
- Complex and unfavourable regulatory landscape

Validation & certification

- Methodologies not always relevant for African-based project developers
- High costs and long lead times for certification, validation and verification



Intermediation & financing

Intermediation:

- High reliance on relationships, brokers and traders to access the VCM market
- High intermediary costs, which reduce revenue share for developers

Financing:

- Limited mechanisms to de-risk and enable investment in project development and supply (e.g., futures contracts, project supply-chain financing, insurance)



Demand

- Concerns on the integrity of certain credit types (e.g., emissions reduction / avoidance related to fossil fuel transition)
- Shifting and confusing demand trends that could impact common African carbon credit types (e.g., confusion around the role of avoidance credit types for high integrity offsets)
- Pricing may not accurately reflect the value of Africa carbon credits and their co-benefits (e.g., energy access, biodiversity)

Small businesses in Africa face additional challenges that restrict their direct access to the carbon credit market

Small businesses face additional obstacles that hinder their direct engagement in the carbon credits market, in addition to the broader market and business-related challenges leading to unfair competition and market distortion. These challenges include **high associated costs, required scale, and a lengthy and cumbersome process**



Costs: The carbon markets registration and verification process from project documentation to credit issuance and commercialization costs \$100k - \$500k. The high financial commitment poses affordability challenges for small businesses. This excludes project development costs which are equally significant.



Scale: Generally, a project should be able to generate at least \$~300K+ in carbon revenue to make it economically viable to pursue the carbon credit registration process. This necessitates a larger scale of operation which small companies may not readily achieve.



Lengthy and cumbersome process: It can take 2 to 5 years for a project to go through the entire carbon credit cycle (depending on the type of project, its requirements, and involved verification process, the quality of the project, and the efficiency of the registry), with a lot of required documentation. This means that companies need to devote resources to an opportunity that will take years to generate income while continuing to operate their business.

Participating across the carbon registration & commercialization process would typically cost a business USD 100-200K

	Project Documentation	\$50,000 - \$60,000
	Validation	\$10,000 - \$50,000
	Registration	\$10,000 maximum*
	Implementing and monitoring	Depends on the project
	Verification	\$10,000 - \$50,000
	Credit Issuance	\$0.025 - \$0.05 per credit**
	Commercialization	Depends on the project



\$100,000 - \$200,000
(minimum)
Total Cost of Carbon Access



To determine the feasibility of carbon credits as a revenue source, project developers need to assess the economic viability of the project and the operational commitments required throughout the project

Given the high cost for smaller companies, some emerging innovative approaches are helping address this challenge

Cost-effective and innovative solutions are emerging within the carbon credits market, catering to the needs of smaller businesses. This is anticipated to foster greater involvement from smaller companies in the market

Example players

Pre-financing

Small companies can establish financial agreements with buyers or investors, enabling them to secure funding for carbon reduction projects before they generate and sell carbon credits. Investors are reimbursed once the projects are commercialized. This approach helps facilitate the expeditious execution of carbon projects



Aggregation & consolidation

Carbon project aggregators are emerging to facilitate the consolidation of carbon projects from smaller firms with similar technologies, enabling them to achieve the necessary scale for credit issuance, thereby reducing the costs and effort associated with small companies entering the carbon credits market.



Disruptive technology platforms

Small companies can leverage technology platforms to streamline and economize the process of obtaining carbon credits, making it more accessible and cost-effective for them. For instance, **Carbon Clear** helps reduce the costs of generating carbon credits from solar projects



Pre-financing: Though a nascent space, some funders are helping to provide financing for projects to help developers access VCM

Businesses can secure pre-financing to support the carbon credits registration and commercialization process by larger project developers or other investors, who typically fund either the entire process or specific aspects based on the contractual agreements

Areas of support



Case study

- **South Pole** is a carbon credit developer that supports the supply and demand sides as well as offset agreements
- It **invests in carbon projects** and works in partnership with project developers and implementers. Their expertise is in project design (preparing documentation, profitability computations, emission reduction estimates, etc.)

Requirements for pre-financing

South Pole's approach to selecting carbon projects for investment hinges on a careful **evaluation of the project's total investment needs, associated risks, and specific considerations unique to each project.**

Their primary focus is on forging strong partnerships for carbon project development, recognizing the pivotal role that implementation plays in determining the quality of the carbon credits generated.

For organizations seeking to take advantage of pre-financing opportunities, it is imperative that they satisfy certain prerequisites:

- **Active Carbon Project:** The organization must have a carbon project that is actively in progress. This means that the project is not merely a conceptual idea but has already commenced its operations.
- **Basic Carbon Credit Eligibility:** The project must meet the fundamental criteria for carbon credit eligibility, which includes additionality, measurability, verifiability, uniqueness, and permanence

Aggregation/consolidation: Similar project developers have the option of engaging with the markets through aggregators

For businesses operating in similar carbon-credit generating projects (e.g., renewables), aggregators help eliminate much of the logistical challenges faced in the registration and commercialization process by pooling carbon rights and selling directly to willing buyers on the market

Areas of support



Case study

- **Mirova Sunfunder** intends to establish a Special Purpose Vehicle (SPV) to consolidate carbon rights from clean energy firms. This will help facilitate funding for the consortium of companies, allowing them to pre-finance carbon projects and lower their initial costs.
- A broker (partner) will offer project feasibility, design, implementation, and commercialization

How aggregation/ consolidation works

- Ecometrix Africa offers two financing models for renewable energy and energy efficiency projects: a **consulting model**, where clients pay upfront for consulting, auditing, and standard fees, and a **credit-sharing model**, where both parties agree on carbon credit sharing after commercialization, with the registration costs borne by the parties.
- Projects are grouped and registered with established standards. Clustering during verification can also be implemented. Overall, aggregation **enhances flexibility and boosts carbon credit generation, all while being more cost-effective and efficient.**
- Key requirements include the concept of "**additionality**," which is crucial in carbon asset development. Projects must be disclosed to the relevant standards, and credits cannot be generated for projects in existence for more than two years.

Disruptive tech: Disruptors are further helping to link buyers with the market by reducing much of the upfront costs involved

Given the challenge of finding a sustainable pipeline of project developers, tech platforms further reduce the logistical challenge of matching willing buyers with developers at a fraction of the cost typically borne by the businesses

Areas of support



Case study

- 4R Digital plans to launch the Carbon Value Exchange (CAVEX) platform, an innovative digital ecosystem designed to streamline the aggregation of carbon credits. It aims to facilitate carbon offsetting and the procurement of carbon credits for micro and small enterprises.
- Notably, 4R Digital recently secured \$3 million, earmarked for the platform's development

How technology platforms work

- 4R Digital engages in projects involving electric motorbikes, solar water pumps, and community-based reforestation initiatives, leveraging existing technology to efficiently gather and authenticate data related to carbon displacement and sequestration. This data, originating from various sources, will be consolidated into units for sale in the Verified Carbon Market (VCM).
- The accessibility of the CAVEX platform is designed to be **cost-effective** (10% sales commission). Additionally, the firm plans to remotely monitor environmentally-friendly projects, leading to reduced verification expenses.
- Buyers have the convenience of completing their purchases directly on the platform, with funds being disbursed to project developers via mobile money channels.



Unlocking Carbon Finance

for small businesses



About us.

Who we are

South Pole partners with climate action projects and corporate clients worldwide to drive finance towards sustainable practices



Diverse expertise

Based in 30 offices, our team of 1100+ sustainability advisors, scientists, and engineers are leading experts in their fields



Innovative solutions

An award-winning, 16-year history of providing sustainability solutions

Project developer

Largest developer of emission reduction, avoidance and removal projects globally



Our impact

through climate action projects

1.6m ha

of land protected

That's about the size of Wales.

Over 175,000 jobs

created in local communities

That's more than the whole of Apple Inc. (164,000)

24m MWh

of renewable electricity generated

That's nearly eight times the annual energy consumed in Jamaica.

Over 58,000 ha

of land restored

That's around the size of 143 football fields.



Over 1000 climate action projects

enabled, globally

Includes consulting and emission reduction projects for e.g. renewables, forestry, agriculture or households.

210m metric tonnes

of carbon dioxide removed and avoided

That's around 5 times more than the annual emissions of Switzerland (37m)

Over 5bn liters

of clean water provided



That's around half of Malaysia's total water footprint (11.2 bn liters/year).



300K+

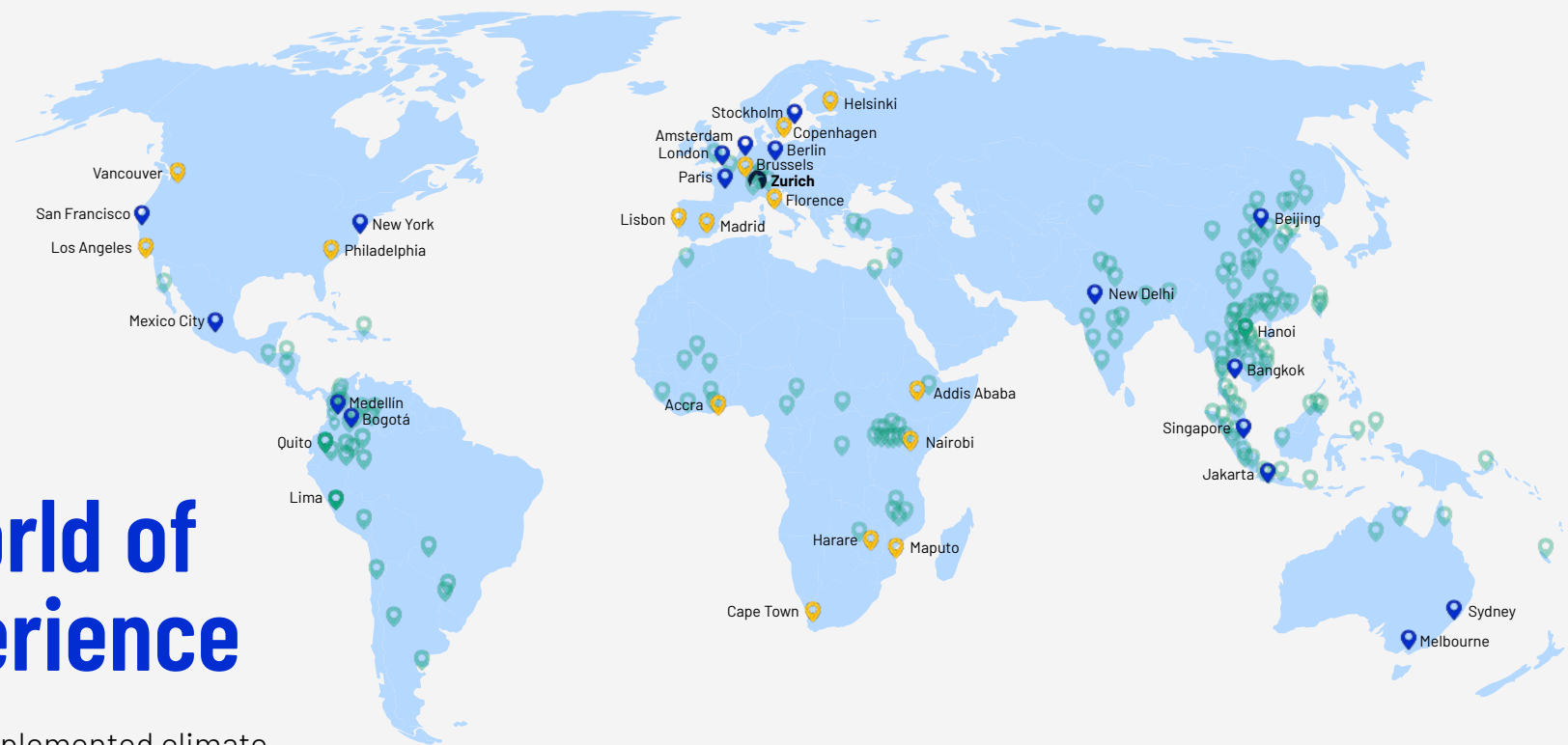
People with access to clean and energy efficient cookstoves





That's around the whole of Pepsico (315,000)



A world of experience

We have implemented climate projects all over the world and have experts in over 40 local offices and representations



-  Headquarters
-  Representations
-  Regional offices
-  Selection of South Pole's climate action projects



Our Expertise.

Which sectors are we active in?



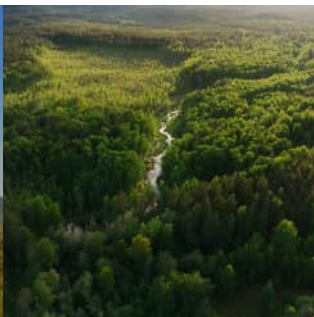
Household

Reduce amount of fuel needed for household tasks



Renewable Energy

Lower the carbon intensity of the energy supply



Forestry & Agriculture

Increase or protect natural carbon sinks and transition to sustainable practices



Clean Water

Reduce fuel needed to boil water for purification



Innovation in industry

Promote green growth through energy efficiency and circularity



Technical carbon removals

Remove and store carbon

We oversee every step of project development...

South Pole is both a carbon developer and credit retailer



Communities

The communities in the areas where the project is being developed. These are often the most important actors because they are involved in implementing and maintaining project activities.

These can be the same or different entities depending on the project structure



Project Partner (PP)

The PP coordinates implementation and data collection. This organisation also must hold the rights to claim the carbon, or establish agreements with the individuals (and/or other parties) who transfer the carbon rights to the project entity.



Carbon Developer

South Pole assumes the costs and responsibility of developing and certifying the project under a relevant methodology and standard. We are responsible for preparing all documentation and managing the carbon cycle for the life of the project.



Third-Party Auditor

An organisation which verifies the accuracy and appropriateness of methods and calculations at the verification and validation stages.

Also known as Validation and Verification Bodies (VVBs).



Credit Retailer

South Pole markets and sells the resulting carbon credits on the voluntary carbon market, returning value. We manage credit deliveries and registry administration.



Certification Standard

The organisation or label that endorses the project according to strict standards. This organisation typically owns and administers the methodologies and credit registries.



Management of the certification process

Project Development and Registration



Relevant Approvals

Written approval for the project (and the ownership of its resulting credits) is obtained from a designated national authority (DNA). Whether this step is required depends on the country, activity or standard.



Project Design Documentation (PDD)



Third-party Validation

The project's eligibility, additionality and emission reduction calculations (presented in the PDD), as well as any relevant co-benefits, negative environmental impacts and stakeholder consultations, are validated by a third-party auditor.



Registration with the Certification Standard

Following a review by the certification standard, the PDD together with the Validation Report issued by the Auditor are registered on a public registry.



Monitoring, Reporting and third-party Verification

A monitoring and verification framework is set up for the periodic reporting of the project's emission reductions (ex-post, i.e. after the fact). A third-party auditor verifies the emission reduction claim.



Issuance

Subject to the certification standard's acceptance of the Monitoring and Verification Reports, tradable credits are issued to a public registry.



Credit Commercialisation

Issued credits are sold on the voluntary market and value is returned to the project.



Repeats each monitoring period



Impact beyond carbon

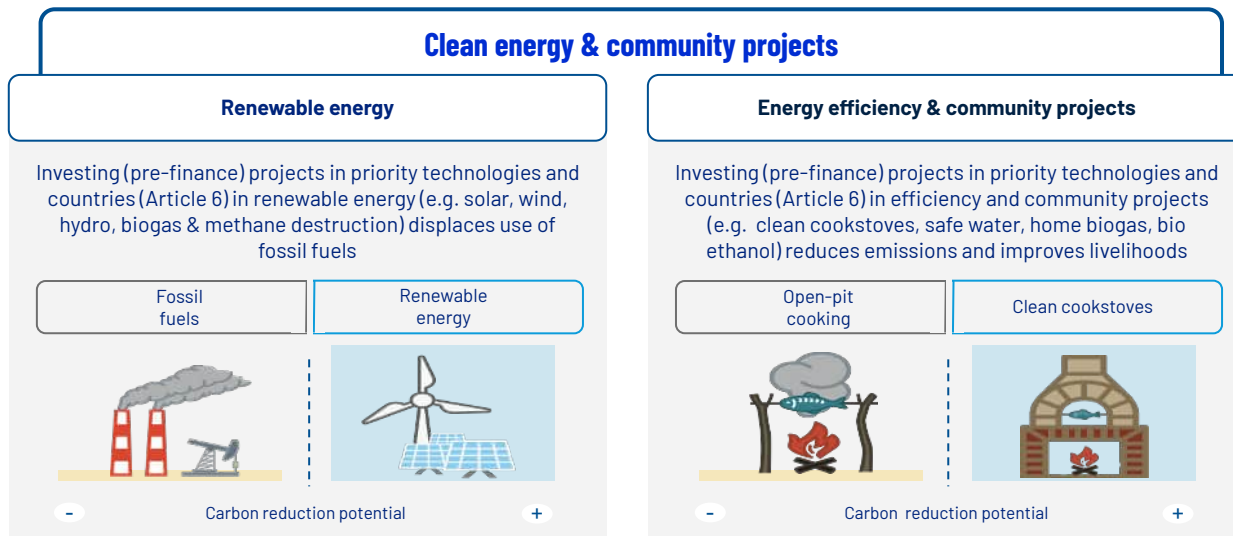
Measuring project impacts against the SDGs



- The **UN Sustainable Development Goals (SDGs)** provide a global framework to measure and report environmental and social impacts.
- For each project, we select **a number of SDGs under the chosen standards or label**. To do this we select from a robust series of metrics, parameters and sub-targets.
- We also **align other notable project impacts with the SDGs** in our project materials.
- This allows buyers to fully understand how **purchasing carbon credits goes beyond emission reductions** to measurably drive the low-carbon transition and support economic development in local communities.



We invest in local projects that have high climate impact potential



Companies can claim verified emissions reductions from all project types

To become certified, carbon projects must demonstrate that their emissions are:

Real:

The project removes or prevents GHGs from entering the atmosphere

Additional:

The project would not be possible without financial backing

Verifiable:

A neutral, third party auditor verifies the offset project regularly

Quantifiable:

The volume of GHGs can be accurately measured





Key Considerations.

There are a number of things to consider before embarking on a carbon project

- Is carbon finance a **strategic financing mechanism** for the future growth and sustainability for your organisation? (i.e, what role does carbon finance play in your organisation business model?)
- What are your **priority technologies** and regions?(countries)
- The overall **regulatory and policy** frameworks in your priority regions.
- What **scale** is needed for the project to be profitable? NBS, Clean Cooking and can you be able to achieve this scale?
- Which **standards** to use and specific methodology (integrity, quality & price)
- Internal **implementation** capacities and who can you partner with?
- Overall cost associated with carbon asset development (**grouped projects**)

What is your carbon strategy?

Thank you.





MIROVA SUNFUNDER

Unlocking carbon finance for smaller businesses

8th February 2024

Mirova & Mirova SunFunder Overview

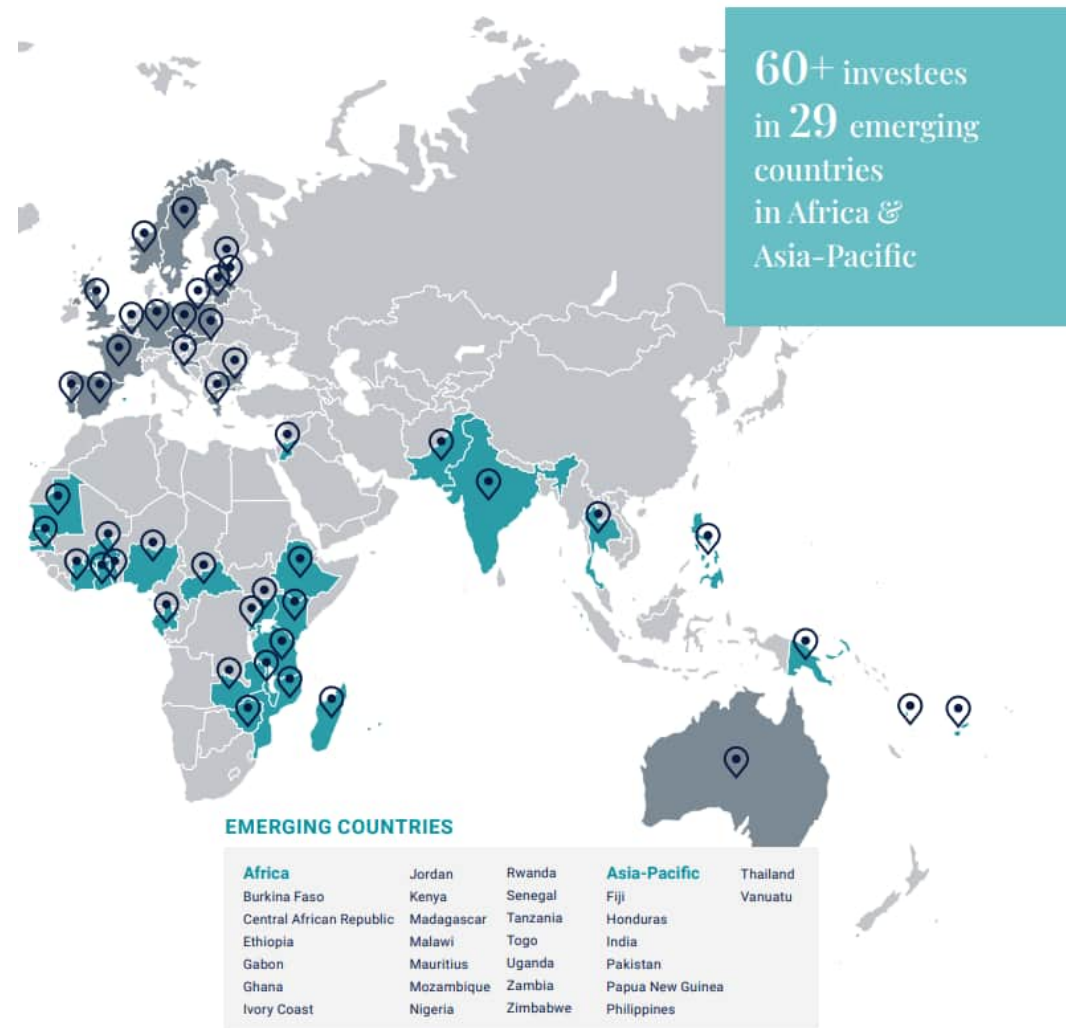
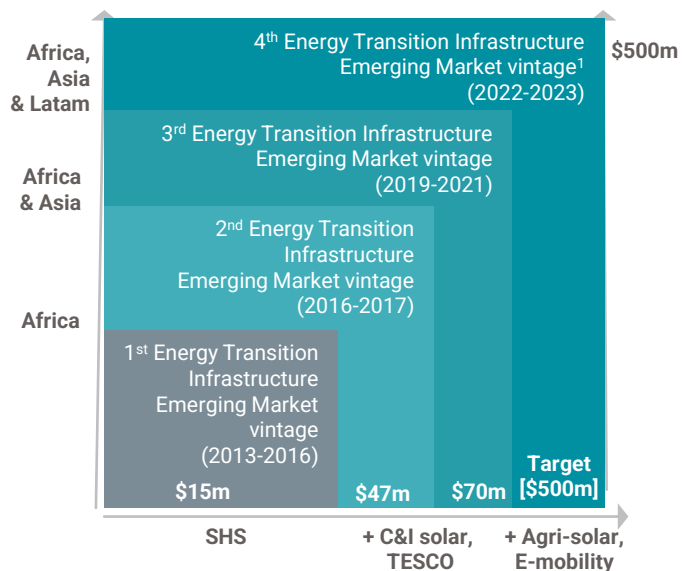
ENERGY TRANSITION INFRASTRUCTURE EMERGING MARKETS

- Mirova is a leading European Asset Manager. A pure player of impact, a mission-driven firm2, B-corp3 label certified, with €4.3bn of AuM4 dedicated to energy transition infrastructure, natural capital and impact private equity.
- Mirova SunFunder (MSF) is wholly owned by Mirova.
- MSF finances Distributed Renewable Energy (DRE) Companies in low- and middle-income countries in Africa, Asia & Latin, accelerating the transition to a low-carbon economy, improving energy access in emerging markets, as well as supporting economic development and gender, diversity & inclusion.

Mirova SunFunder's ambition is to solve energy poverty and creating an equitable, low- carbon world

OUR TRACK RECORD

- ▶ Mini-grid, Solar Home System (SHS), Commercial & Industrial (C&I) solarization, Telco ESCO (Energy Service Company), other clean energy
- ▶ Sub-Saharan Africa, Asia-Pacific, Middle-East & North Africa, Latin America



The information provided reflects Mirova's opinion / situation as of the date of this document and is subject to change without notice. Source: Mirova 2022

Mirova SunFunder Impact Finance Services overview and team

Mirova SunFunder Impact Finance Services is dedicated to delivering specialized corporate advisory services to companies operating in the clean energy sector.

As a firm supporting the Distributed Renewable Energy (DRE) sector in emerging markets, both through our fund investments as well as financial advisory services, we recognize the challenges that currently hinder the DRE sector.

In our work for individual companies and sector initiatives, we have a strong focus on developing tailored solutions to addressing these challenges by bridging the gap between the sector and the financing sources required to helping them succeed.

TRACK RECORD

 <p>Off-grid solar Solar home systems for lighting & appliances</p> <p>Active since 2012</p>	 <p>Mini-grids and agri-solar Productive use clean power and village-scale electrification</p> <p>Active since 2014</p>	 <p>Commercial & Industrial solar Installations for businesses & institutions</p> <p>Active since 2017</p>	 <p>Telco solarization Energy service model for telecom tower portfolios</p> <p>Active since 2017</p>	 <p>Other clean energy E-mobility, storage, energy efficiency and other emerging areas</p> <p>Active discussions with 20+ companies*</p>
--	---	--	---	---

A HIGHLY EXPERIENCED TEAM



Christiane Würdemann, Managing Director

Chris is an experienced corporate finance specialist with both legal and financial background. She brings 20+ years' experience in raising capital and advising at Clifford Chance LLP, at ING as a senior banker and at Zola Electric among others.



Nicole Kugelmass, Director

Nicole has an investment banking background, with over 15 years of capital markets experience having worked at Bank of America and Lloyds Bank. Based in London, Nicole joined from off-grid solar company BioLite, where she was a strategy consultant in their Nairobi office.



Benard Mwikya, Analyst

Benard brings support to the Advisory team having started his career at a boutique corporate finance advisory firm and later joining a Nairobi based Investment Bank, Genghis Capital, in their Corporate Finance Division as a Corporate Finance Associate.

WITH A SOLID NETWORK OF PARTNERS & COLLABORATORS

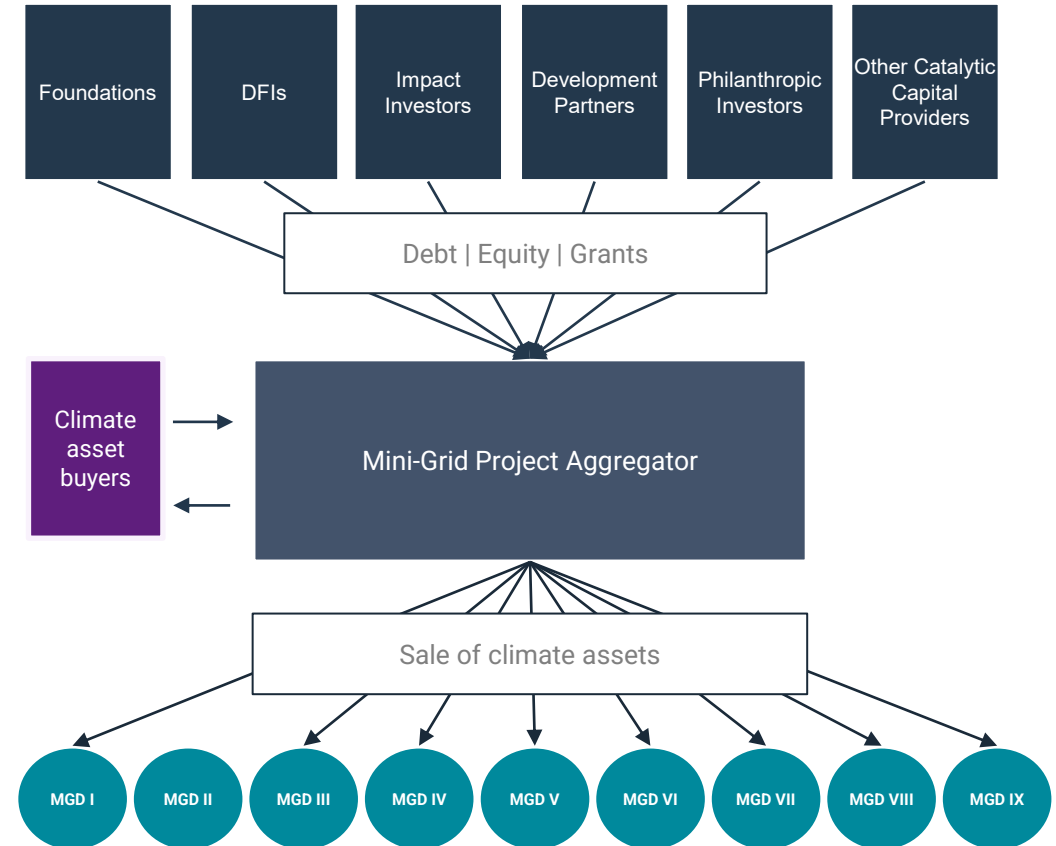


Climate Assets Aggregator Platform

The Challenge: High barriers of entry to climate finance for Mini-Grid Developers (MGDs)

- The solar mini grid sector is widely understood as key to solving the challenge of **access to clean energy**, by providing rural communities with stable, reliable and cost-efficient access to power in addition to other key impact and development outcomes.
- It is also broadly acknowledged that it is notoriously **challenging to finance mini grids** in the absence of subsidies, given the large capex costs and their long paths to commercial breakeven, owing to the very reason that makes the sector so crucial; the affordability it provides to users.
- This perceived high risk of financing companies results in high borrowing costs **limiting the affordability and accessibility of clean energy solutions for end users**.
- Climate assets offer an additional revenue stream for companies; However can be **costly, time consuming and not quite worth the effort for individual developers**.
- The **scale and cost of the financing** required is also a challenge, as it is often too small for lenders, and the **market volatility makes it a riskier investment**.
- **The small scale of the projects** leads to high costs of marketing the assets and limits the buyer pool owing to the limited number of credits issued.

The Proposed solution: Aggregating climate assets from MGDs



A scalable, blended finance- portfolio approach to the benefit of all stakeholders

THE PROPOSED SOLUTION

Advantages for Developers

- ✓ Increased ability to attract funding and tap into the climate asset opportunity
- ✓ Better terms for financing and climate assets sales due to scale
- ✓ Minimises cost and time of setting up carbon projects & financing for individual project developers
- ✓ Standardizes support and templates for impact assessment and reporting

Advantages for Financiers

- ✓ De-risking of investments through a blended financing structure, consolidation and diversification
- ✓ Bigger ticket size and therefore cost reduction
- ✓ Visibility over portfolio performance of the sector as a whole
- ✓ Standardized, cohesive impact reporting

Advantages for Climate Asset Buyers

- ✓ Benefit in scale and quantum of climate attributes issued from a quality source
- ✓ Ensures continuity of issuance through the pool of backup servicers for the projects

- The aggregator platform will support Mini Grid Developers through a dedicated entity to promote scalability and bankability of projects;
- The framework will attract funding from **blended sources** including **climate asset financing** (i.e., D-RECs or carbon credits) and **concessional funding** from identified institutions

OUTCOMES OF THE SOLUTION

- **Social and economic impact:** increases business opportunities and improves livelihoods through a holistic system for sustainable electricity production.
- **Enhanced bankability and financial sustainability** for the sector: unlocks climate assets benefits for developers and increases proceeds through scale.
- **Catalyzing financing to the sector:** through a blended finance vehicle, the solution crowds in investors, while reducing financing costs for developers.
- **Scalability of the sector:** the structure will enable multiple developers that meet certain criteria to join the facility.

Chris Wurdemann

Impact Finance Services

christiane.wurdemann-ext@mirova.com

Nicole Kugelmass

Impact Finance Services

nicole.kugelmass@mirova.com

Benard Mwikya

Impact Finance Services

benard.mwikya@mirova.com

Thank you

Disclaimer

The information in this document does not purport to be comprehensive and no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by Mirova SunFunder Inc., (Mirova SunFunder) or any of its affiliates or by its or any of their respective officers, employees or agents in relation to the adequacy, accuracy, completeness or reasonableness of this document, including with respect to any financial projections or calculations. All and any such responsibility and liability is expressly disclaimed. Mirova SunFunder, its affiliates, contractors and employees do not provide tax, financial, legal, regulatory or accounting advice. This material has been prepared for informational purposes only, and is not intended to provide, and should not be relied on for tax, financial, legal and accounting advice. You should consult your own advisors before engaging in any financial transaction.

The content in this document is provided for informational purposes only, and does not constitute any solicitation, recommendation, commitment or offer by SunFunder or any affiliate to extend or arrange credit or to provide any other product or service.

This information is provided on a confidential basis and may not be reproduced, redistributed or disseminated, in whole or in part, without our prior written consent. Any unauthorised use is strictly prohibited.



Cavex overview

8 February 2024

The screenshot displays the Cavex dashboard interface. At the top, there is a navigation bar with the Cavex logo, 'Cavex Dashboard', 'Browse Projects', and 'My Account' links, along with utility icons for heart, notifications, and a user profile. A personalized greeting 'Hello William,' is followed by a welcome message: 'Welcome to the Carbon Value Exchange (Cavex) platform, a marketplace that connects environmentally positive projects with companies seeking to offset carbon emissions as part of a climate commitment (e.g. a NetZero target).' Below this, three key statistics are shown: '34,221 Total carbon credits available', '3,231 Projects on Cavex', and '88,231 Credits available over the next 5 years'. A 'Carbon Credit Price' section features a line chart showing price fluctuations from April to September, with a current price of £5.94 - £12.62 and a change of +3.84/23%. A sidebar on the left lists project categories: All Categories, Solar Water Pumps, Solar Energy, Forestry, Electric Vehicles, Agriculture, Fuel Switching, Other Land Use, and Cookstoves. The 'Recently added projects' section includes cards for 'Safaricom Reforestation Project' (54 credits, £7.57), 'Central Kalimantan Peatlands' (121 credits, £8.20), 'Kisumu Forest Conservation' (89 credits, £3.54), 'Bajo Calima y Bahia Park' (54 credits, £7.57), another 'Central Kalimantan Peatlands' card (121 credits, £8.20), and 'Isla Bosque Reforestation' (89 credits, £3.54).

Critical challenges remain to grow carbon markets at scale, particularly for projects in the Global South



High cost and time barriers to entry for projects

Transaction costs for standards, auditors, and brokers minimise revenue for projects

1.5–6
YEARS

Current time for full verification process on average¹

\$ 2.6B

Estimated cost of verification delays for projects until 2030¹



Buyers lack visibility and quality assurance of offset validity

Guarantee of offset source, quality, and validity is a key inhibitor for buyers seeking flexibility and control

4.8GT

Total credits prevented from issuance by 2030 due to verification delays¹

90%

Of trades today occur over-the-counter and rely on brokers



Lack of market data to verify quality and drive efficiencies

Current verification standards rely on analogue, manual processes and lack uniform pricing mechanics to drive market equity and efficiency

Lack of transparency and standardisation by intermediaries perpetuates market inefficiencies

“Data collection is crucial: it takes a lot of time and if its not well done, the whole project is undermined”¹

A digital financing platform unlocking access to climate finance and accelerating markets



DRIVE MARKET EFFICIENCIES THROUGH DIGITAL CONNECTIVITY



Minimise cost and time required to onboard small-scale projects through digital data capture and verification of micro-activities direct at the source

AMPLIFY SMALL-SCALE, HIGH-QUALITY CARBON PROJECTS



Enable market access for carbon offset projects across the Global South and return 90% transaction proceeds to project participants through digital finance

FACILITATE MARKET VISIBILITY AND PRICING TRANSPARENCY

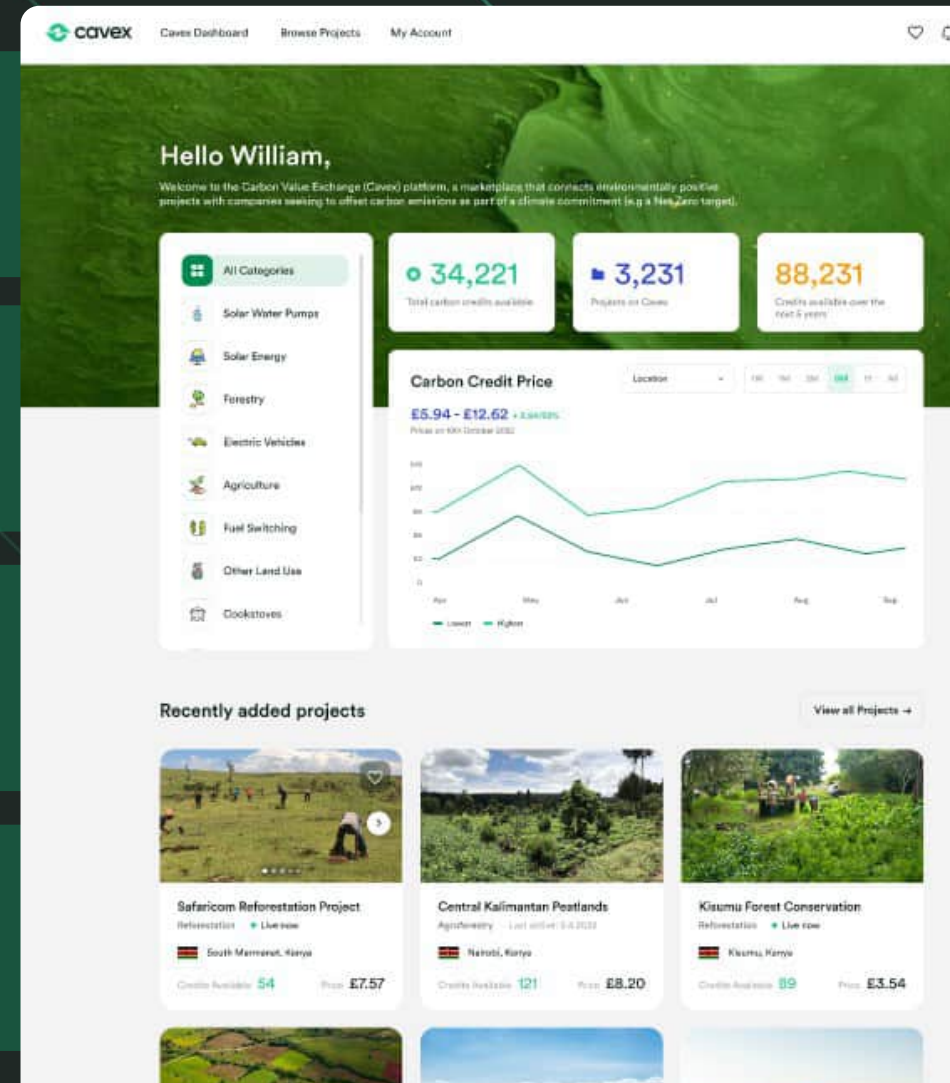


Provide buyers with end-to-end, direct visibility of data and fund flows, real-time pricing transparency, and purchase optionality to support climate commitments

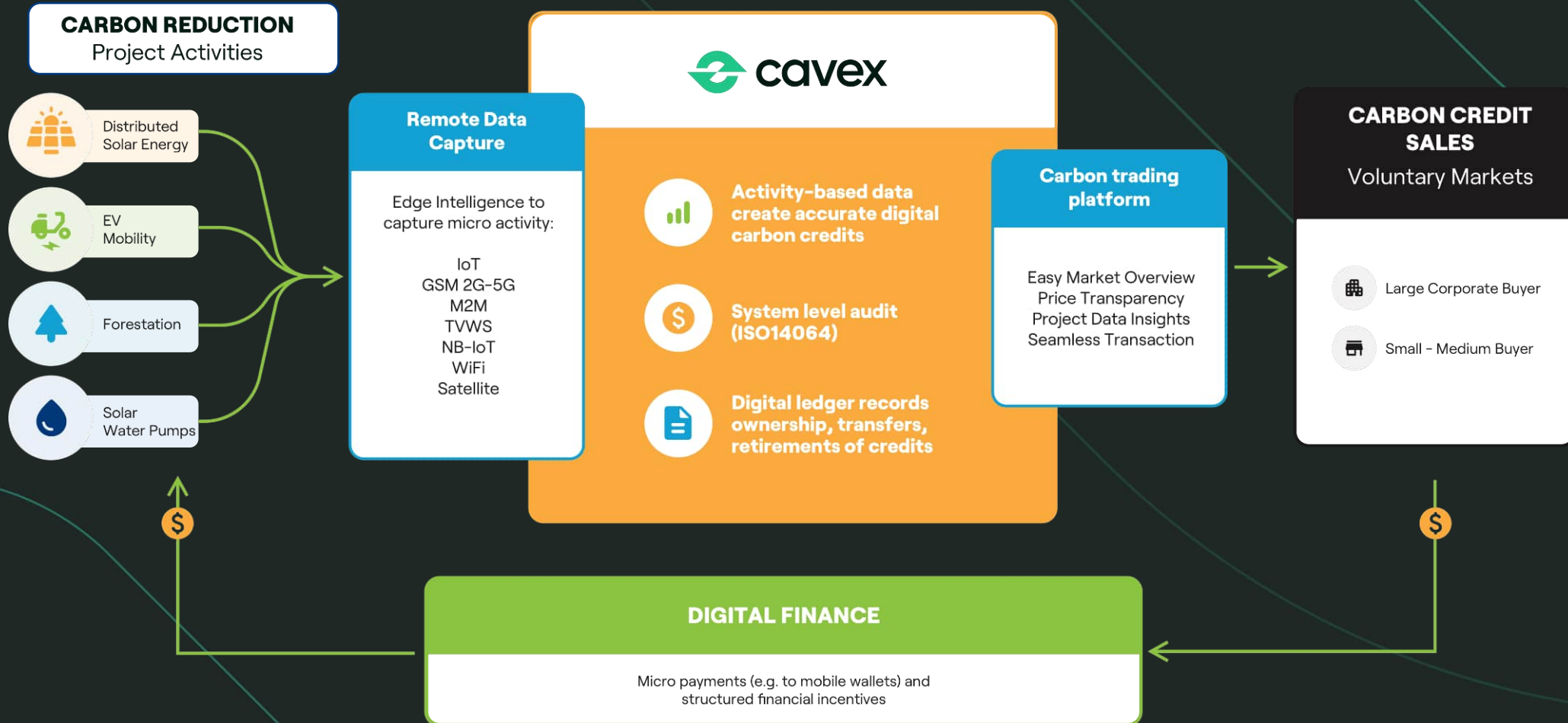
ACCELERATE MARKET KNOWLEDGE AND SCALE



Develop and open-source data protocols and use case methodologies, including fully-verified and independently audited source data



Utilising digital technologies to drive market efficiencies and maximise return to carbon projects





SISTEMA.bio®
CREATING VALUE FROM WASTE

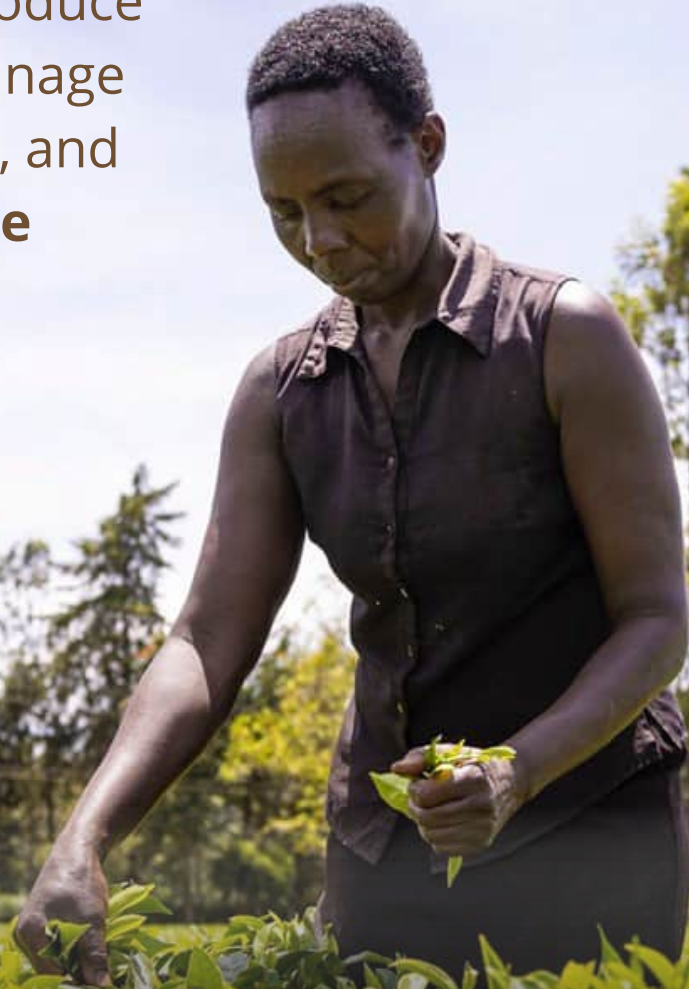
Sistema.bio's Experience with Carbon Financing

Content

- 1. Brief introduction
- 1. How Sistema.bio reduces emissions
- 1. Entry point to carbon markets
- 1. Trajectory
- 1. Key learnings



400 million family farms produce **70% of the world's food** manage the **majority of arable land**, and are home to **a quarter of the World's people**.



They collectively represent one of the **largest carbon mitigation, sequestration and adaptation opportunities on Earth.**



There is a high **economic, health and environmental cost** of current waste, energy, and agriculture systems of family farms and farmers face a **high risk** from climate change. These factors threaten the global food system.

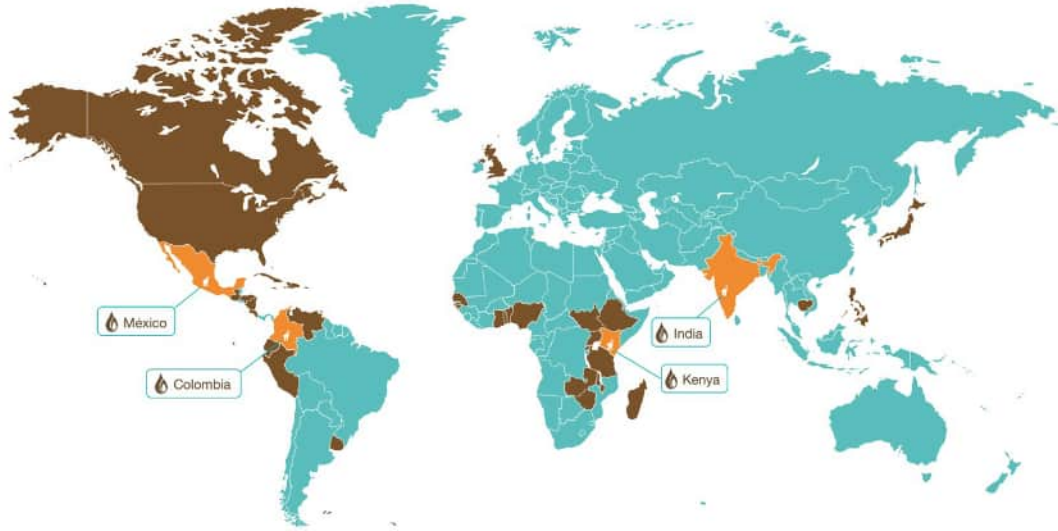


Working together with farmers worldwide, Sistema.bio delivers high-quality carbon mitigation, sequestration and climate change adaptation programs using innovative technology, training and financing



Our innovation is creating true economic value and Climate Change impact from an existing waste stream. Sistema.bio can create climate-smart farm infrastructure profitably at scale while generating carbon offsets.

Sistema.bio has a global presence



We operate **globally** with the potential to bring clean-energy and sustainable agricultural practices to a **100M farmers on over 15% of the world's farmland**. Our strategy and technology has proven scale, and we are ready to accelerate growth to reach more farmers. Sistema.bio has hired strong local leadership to set up new hubs to expand into new markets. The hubs are responsible for regional markets and B2B partnerships.



95,000+
Sistemas installed



35
Countries with Sistema.bio
installation



4
HUBS: Countries offices



High-quality biodigester technology



Durable



Easy to install



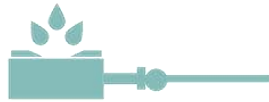
Diversity of sizes



Modular



Easy maintenance



Single-burner
cooker



Double-burner
cooker



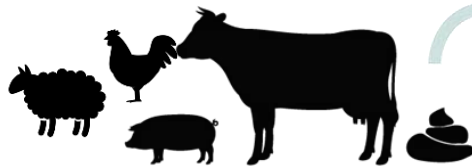
Water heater



Chaff cutter



Milking machine



Inlet tank



Biodigester system



Biofertilizer
tank

Grains & napier grass,
tea & coffee plantation
and vegetable and fruits

Sistema.bio generates impactful credits



By providing proper manure treatment

Capturing methane in a sealed container to avoid it being released into the atmosphere.

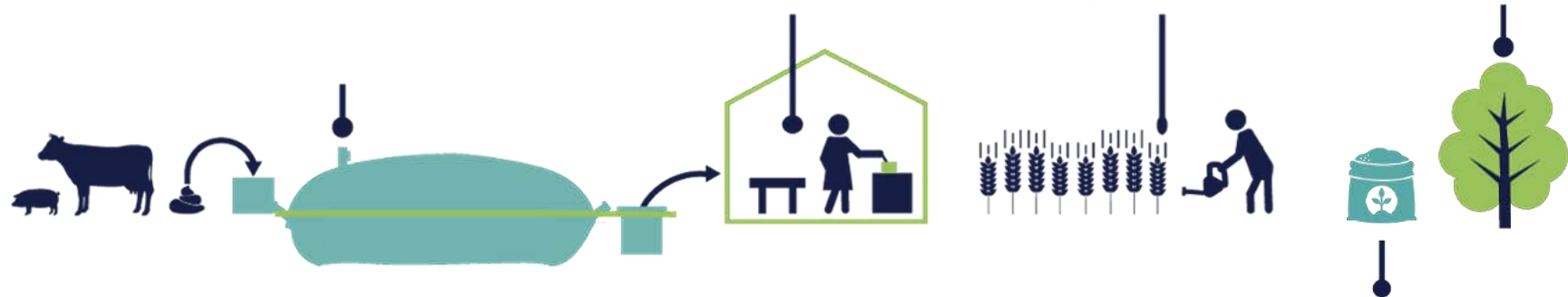
By providing a reliable source of clean, renewable energy

Substituting fossil fuels and non-renewable or unsustainable energy sources.

By providing a powerful, organic biofertilizer

Allowing for partial or complete displacement of chemical fertilizers and greater soil carbon capture.

GHG emissions reduction

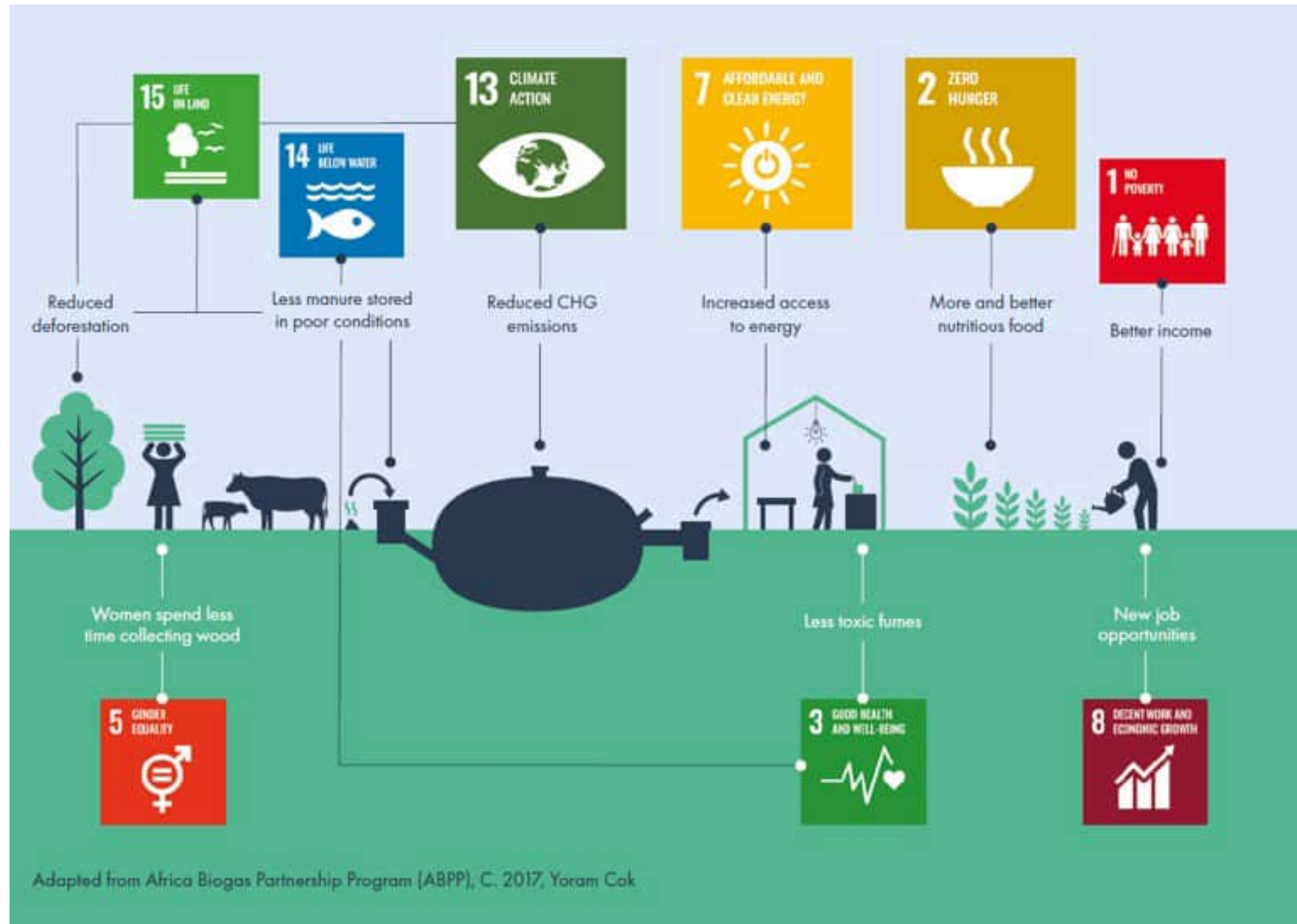


Our farmers can further reduce CO₂ in the atmosphere by

Agroforestry, reforestation and carbon capture in the soil CO₂ is absorbed by trees and is locked in soil when farmers use Sistema.bio regenerative agricultural techniques and products on their land.

Scalable business with measurable SDGs outcomes

- In 2020, Shell Foundation, IPE Triple Line and Sistema.bio released the report [Demonstrating the potential of biogas to contribute to the SDGs](#), which analyses the contribution of biogas towards SDGs.
- The benefits that biodigesters generate contribute to many SDGs but have particularly strong links with **SDG 2** (Zero Hunger), **SDG 3** (good health), **SDG 7** (Affordable and Clean Energy) and **SDG 13** (Climate Action).



Shell Foundation | 

IPE TRIPLELINE 
Expanding Horizons. Enriching Lives.

Source: Shell Foundation. (2020). Demonstrating the potential of biogas to contribute to the SDGs. https://shellfoundation.org/app/uploads/2020/12/Demonstrating_Biogas_Contribution_SDGs_Final.pdf

Entry points

- Sistema.bio signed its first ERPA (emissions reductions purchase agreement) in 2019 when the carbon market was starting to gain traction.
 - Aside from our CEO there was no in-house experience on carbon projects so this project was managed entirely by a technical partner who is also the buyer of the credits.
 - Important learning curve within the company on project registration, monitoring, audits and certification.
- In 2021, Sistema.bio started developing its second carbon project, this time managing project registration and certification internally, with support from an external consultant with over 20 years of experience in carbon markets
 - Better contract structures and independence over project design.
 - Built in-house capacity.
- In 2023 it registered a multi-country Program of Activities in Gold Standard, a structure that allows developers to register its carbon projects in an efficient way by adding on new projects (VPAs) systematically, bringing speed, cost-effectiveness, and replicability to the issuance of carbon credits.
- Prepayments / financing over spot purchases at the beginning to have initial funding for projects → price discounts directly benefit farmers



Experienced partner successfully delivering projects



India:

- Sistema.bio is the technology provider for an existing carbon credit program of one of our corporate partners.
- Sistema.bio is registering a program to generate carbon credits from all other installations that fall outside of the program above - revenue secured for 37K digesters, project listed with Gold Standard

Kenya: As of 2021, Sistema.bio is selling carbon credits generated from our Kenyan program through an established reseller fully certified with Gold Standard

Mexico: Pre-financing and a long term off taker agreement project certified with Gold Standard for 3,000 systems

Uganda: Pre-financing and long term off taker agreement project listed with Gold Standard

Malawi: Compliance project through Swiss government to reach 10,000

With 6-150 tCO₂e per unit per year, our combined program averages will generate significant additional revenue which can be used to reduce to price to the farmer, improve repayment conditions, and maintain long-term adoption and monitoring frameworks

Partners

Challenges

- Important technical learning curve at the beginning which meant multiple survey redesign, internal capacity building, new processes and reliance on consultants
 - Intentional work to train staff
 - Improving internal tools to align with carbon
- Long timelines for registering and certifying projects, closing deals, etc. means there are risks and costs incurred well before revenues start coming in
 - Applying to technical assistance grants to de-risk initial work
- Aligning carbon revenues with normal operations; communicating (future) carbon with investors and others





Copyright © Sistema.bio. All rights reserved.

www.sistema.bio



Sistema.bio | Sistema Biobolsa