PROGRESS REPORT 2024

Milkywire

The Climate Transformation Fund

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INTRODUCTION

The Climate Transformation Fund in brief

Established in 2021 together with Klarna, Milkywire's Climate Transformation Fund (CTF) enables companies to take responsibility for unabated emissions through financing impactful climate solutions beyond their own value chain. As an alternative to traditional offsetting, the fund positions itself as a best-practice solution for beyond value chain mitigation, focusing on contributions toward global climate goals.

The fund's overall impact goal is to achieve the maximum long-term CO_2 reduction or removal per dollar spent. To achieve this, the fund goes beyond solutions available on the carbon market and supports a diverse set of direct and indirect solutions driving global net zero. This includes projects with high catalytic potential as well as strong co-benefits for communities and biodiversity.

2021 - 2024

>$14M

THE CUMULATIVE AMOUNT OF MONEY GOING TO PROJECTS WITHIN THE FUND TO DATE

27

COUNTRIES ACROSS THE GLOBE WHERE THE FUND HAS SUPPORTED PROJECTS TO DATE

FUND BREAKDOWN

UNIQUE PROJECTS SUPPORTED BY THE FUND SINCE 2021

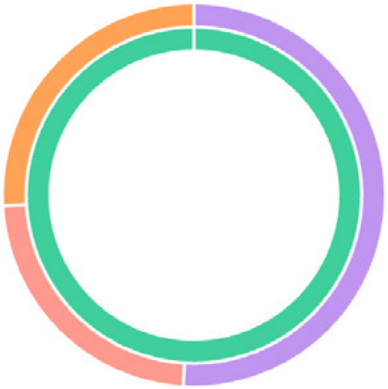
49

TOTAL NUMBER OF PARTNERS THAT HAS CONTRIBUTED TO DATE

22

NUMBER OF NEW PROJECTS ADDED EACH YEAR

TOTAL CONTRIBUTION AND DIVISION PER PILLAR



Total contribution	**$5,343,142**
Durable Carbon Removal	$2,719,415
Nature Protection and Restoration	$1,240,000
Decarbonization	$1,383,727

THE FUND SUPPORTS PROJECTS ACROSS THREE PILLARS

PILLAR 1
CARBON DIOXIDE REMOVAL

- DIRECT AIR CAPTURE WITH STORAGE
- ENHANCED ROCK WEATHERING (ERW)
- BIOMASS
- DURABLE CARBON REMOVAL:GEOCHEMICAL
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PILLAR 2
NATURE PROTECTING AND RESTORATION

- COMMUNITY FOREST MANAGEMENT
- RESTORATION
- TENURE SECURITY
- FARMER MANAGED NATURAL REGENERATION

PILLAR 3
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- ENABLING ENVIRONMENT
- ACCOUNTABILITY
- RENEWABLE ENERGY

INTRODUCTION

Words from Fund Managers

This is our third progress report for the Climate Transformation Fund (CTF). When we began with Klarna's support in 2021, we funded 11 projects. Today, we have supported 49 projects, with over $14 million contributed by 22 companies. This growth reflects an increasing recognition of the need for climate action beyond corporate boundaries.

In March 2024, we co-published the Beyond Value Chain Mitigation (BVCM) guidance with Gold Standard, using the CTF as a blueprint for impactful corporate climate support. We also contributed the foreword to the Science-Based Targets initiative's BVCM guide, and are proud to be recognised among the pioneering practical solutions for BVCM implementation. In 2024, we updated our internal carbon fee white paper, offering companies practical recommendations on implementing these fees effectively.

Our vision for BVCM is to make it standard practice: companies should not only reduce their internal emissions but also support external climate solutions. Every company should allocate resources toward maximising its positive climate impact, even beyond its own operations. Yet, convincing businesses to invest where there's no immediate obligation remains a challenge. For now, BVCM is primarily embraced by forward thinking companies that prioritise an impact-first approach and want to be best-in-class leaders.

We've seen momentum build in the climate space. Our 2024 call for proposals received over 1,000 applications—far more than in previous years—highlighting the growing number of innovators and project leaders working in carbon removal, decarbonisation, and nature-based solutions.

REGREENED LANDSCAPE
PHOTO BY JUSTDIGGIT

INTRODUCTION

Words from fund managers

The catalytic effect of our funding is also becoming clearer. New carbon removal methods are being tested, early-stage companies are securing follow-on funding, and policy wins are happening. Our role is to unlock opportunities for lasting climate solutions, which requires patience and a willingness to take risks on projects that may not deliver immediate results but hold the potential for large, long-term impact.

Progress isn't always linear. The fight against climate change isn't won by a single decisive victory; it's a slow, deliberate effort implemented by many across the different national and social contexts. There are no shortcuts. It's a battle fought one project at a time—gaining ground, sometimes losing it, but always moving forward. Building carbon removal at scale, replacing 80% of our global energy with clean alternatives, and pulling CO_2 from the atmosphere, while maintaining a climate justice lens is one of the hardest tasks humanity has ever faced. It demands innovation, persistence, and collective action where no one is left behind.

In the CTF, we get a glimpse of the monumental effort taking place on the ground. We see it in the thousands of people submitting ideas, the scientists developing new solutions, and the communities restoring their ecosystems. Our job is to find projects where our funding can make the biggest difference—not just in the short-term but with an eye toward scaling solutions that can help turn the tide on climate change.

This report serves two purposes: to evaluate the progress of the projects we've supported to date and to introduce new ones added to the fund in 2024. Our projects vary widely—from direct air capture and biochar to forest conservation and advocacy to phase out fossil fuel. These initiatives are at different stages of maturity and have varying timelines, making it challenging to provide clear, aggregated impact metrics. While it's tempting to focus on "quick wins," we recognise that true climate impact is often complex and unfolds over time.

To accurately capture the full picture, we focus not just on immediate outcomes but also on the long-term potential of each project. This involves evaluating why we funded each initiative, what has been achieved so far, and the role our support has played. Some projects yield quick, measurable results, but many require time to show their full impact. We are continuously refining our methods to ensure we track the real effects of our funding and prioritise the projects with the greatest potential for lasting change.

As we grow, our focus remains on delivering the most impact per dollar spent, prioritising projects that push boundaries and unlock new opportunities. We aim to be part of the solution—supporting and scaling the ideas that will help bring us closer to global net zero.

Robert Höglund
Fund Manager

Natalya Yakusheva Jarlebring
Senior Environmental Lead

Pillar 1: Durable carbon removal

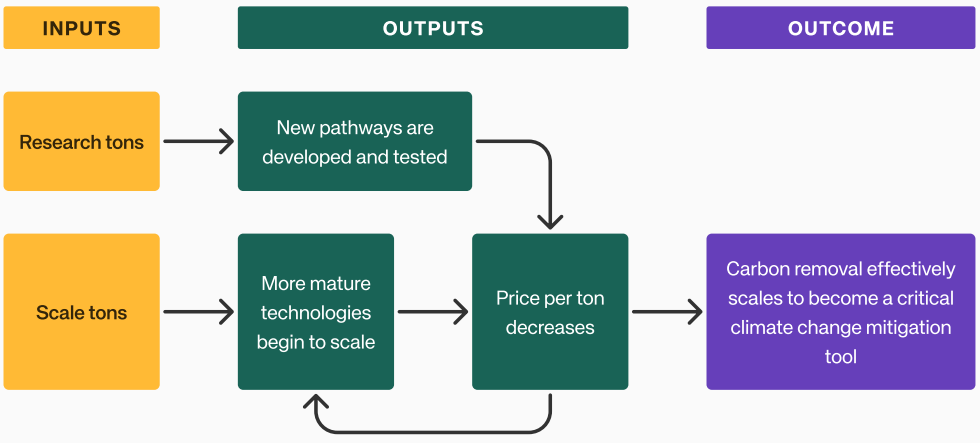
OUR THEORY OF CHANGE FOR CDR INVESTMENTS

Carbon dioxide removal (CDR) is crucial to achieving net zero and stabilising global temperatures, but it's still in its early stages. Currently, only a few hundred thousand tonnes are removed each year, but billions of tonnes will be needed annually to meet global climate targets. We do not yet know which CDR technologies will be the best, most affordable, sustainable, or scalable. Finding this out is the key task of the 2020s, alongside building an industry capable of gigatonne-scale operations.

> *"We invest in CDR to build a diverse and robust ecosystem of high-quality solutions that can scale in the decades ahead, not to maximise the number of cheap tonnes removed today."* ***- Robert Höglund, Fund Manager***

Our approach therefore prioritises diversity in CDR methods, recognising that no single solution will scale to meet global needs on its own. As early adopters, we don't only support technology growth but also help solve technical challenges through practical application. This "get more shots on target" strategy expands the range of technologies, increasing the likelihood of breakthroughs in finding scalable and sustainable solutions.

A strong early demand for CDR technologies helps drive down costs and improve access, making these solutions more affordable and available for a wider range of future buyers.



While our strategy does not aim to dominate the market by volume, our impact is defined by the diversity of methods, strategic timing of purchases, and catalytic support that positions us as a key player in shaping the future of carbon removal. Through this investment strategy, we aim to prevent promising technologies from going untested and avoid locking in suboptimal solutions.

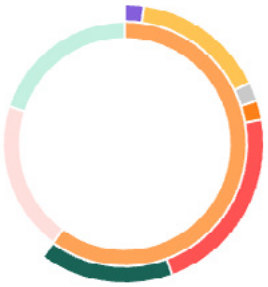
Footnote: Our approach to supporting Carbon removal has been validated by Giving Green, which recommends the CDR part of the CTF.

Pillar 1: Durable Carbon Removal

PORTFOLIO LEVEL RESULTS AND REFLECTION

$6,6M in Pre-Purchases from 27 companies in 15 countries

Since 2021 we have invested in a total of 27 companies in 15 countries, demonstrating our global commitment to early-stage carbon removal. Our funding has been provided at a pivotal stage for these companies. In around 50% of the pre-purchases we've made, we have been the first buyer, providing critical support before their business models are proven bankable.



Durable carbon removal (CDR)	27 projects
Ocean CO_2 capture	1 project
Geochemical Solutions, incl. Enhanced rock weathering	7 projects
Terrestrial Storage of Biomass	1 project
Bio Energy Carbon Capture and Storage (BECCS)	1 project
Direct air capture with storage (DACCS)	10 projects
Biochar	7 projects

Projects per CDR Method

Reflecting on our overall portfolio, the diversity of carbon removal methods supported stand out, ranging from direct air capture (DAC), biochar, geochemical solutions and ocean-based CO_2 capture. Within each method, our portfolio highlights the distinct innovations. The companies we supported uses nine different carbon removal methods, emphasising both established and pioneering technologies. For example, within DAC, Heirloom accelerates natural limestone processes, Octavia Carbon leverages geothermal energy in Kenya, and TerraFixing targets cold climates with unique adsorption technology. This breadth underscores our commitment to exploring multiple pathways, ensuring we identify scalable, cost-effective solutions that can operate across diverse geographies and economic contexts.

A total of 32,000 tonnes purchased since 2021

Almost all tonnes are delivered before 2027

The CTF has facilitated purchases of over 32,000 tonnes of carbon removal with delivery timelines from 2022 to 2033, reflecting the varied readiness levels of supported technologies and our strategy of early commitments to drive innovation. While we may not be the largest volume buyers, we strive to lead in the number of transactions, with a focus on pre-purchases.

Pillar 1: Durable Carbon Removal

PORTFOLIO LEVEL RESULTS AND REFLECTION

Supported companies are reaching key funding milestones and earning prestigous recognitions

Our investments have been pivotal in driving market validation for emerging carbon removal technologies, and we are excited to see many of our portfolio companies reaching key funding milestones and earning prestigious recognitions. Within a few years, previously supported organisations like Heirloom and Carbon Capture Scotland have secured vast government contracts, companies such as InterEarth, MashMakes and Octavia Carbon have closed large offtake agreements, and a majority of the companies have been able to raise investment rounds. Additionally, innovators like Takachar and Silicate have earned recognition such as the XPRIZE Carbon Removal Milestone award. These achievements highlight the catalytic role of early-stage investments in accelerating market acceptance and scaling innovative carbon removal approaches.

X-price top 20 finalists

Heirloom

TAKACHAR

Silicate

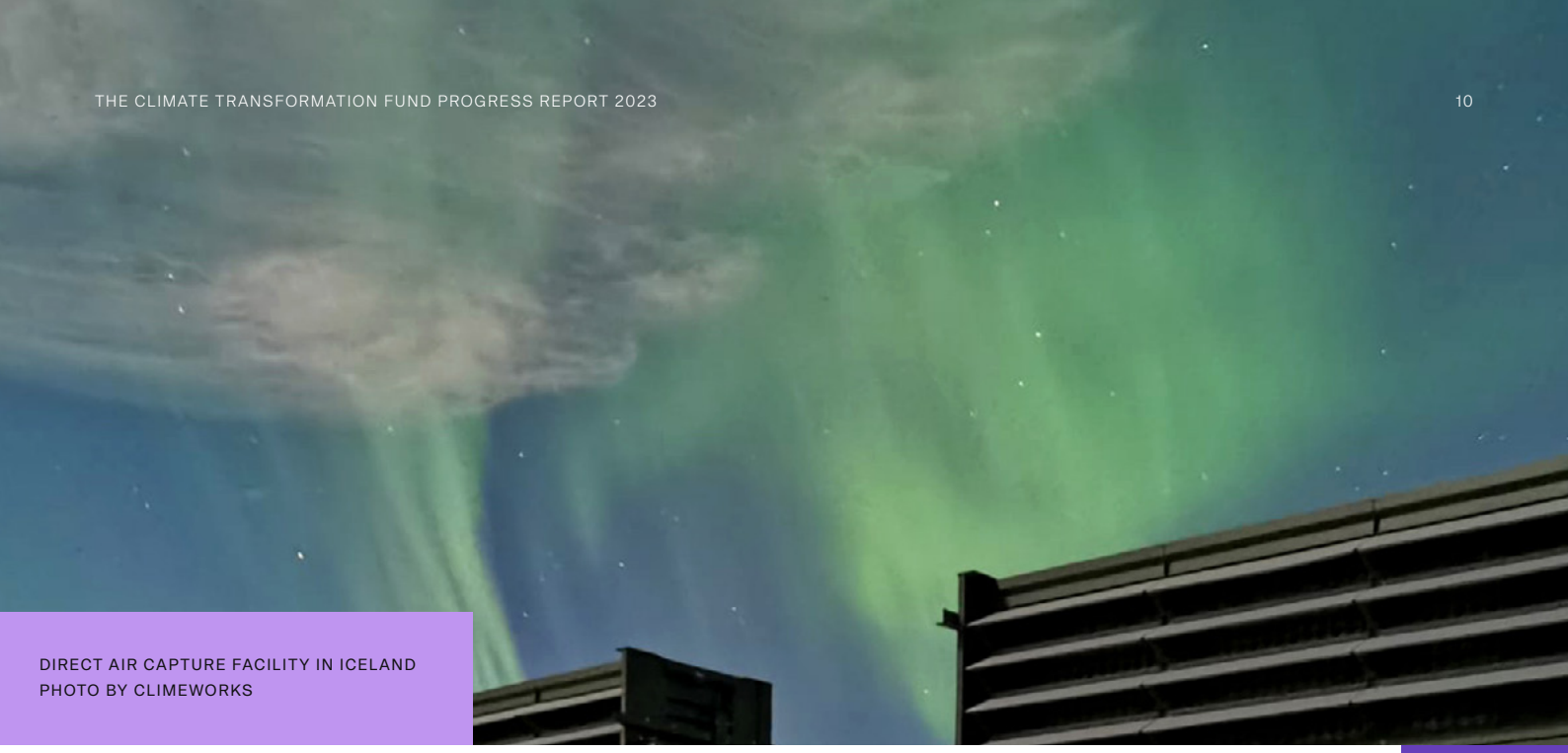
OCTAVIA CARBON

Mati

MASH MAKES

The price we paid per tonne ranges from $50 to $2,050, showcasing the broad spectrum of technological maturity and market readiness.

The pricing of our purchases, ranging from $50 to $2,050 per tonne, reflects the evolving maturity of the market and underscores the importance of continued investment to drive costs down. We are encouraged by early signs of price reductions, such as Heirloom's 50% cost drop since our initial purchase, illustrating how early support can make carbon removal more scalable and affordable over time.



DIRECT AIR CAPTURE FACILITY IN ICELAND
PHOTO BY CLIMEWORKS

PILLAR 1: DURABLE CARBON REMOVAL

Direct Air Capture with Storage (DACCS)

Direct air capture (DAC) refers to taking CO_2 from the air in a chemical way, for example using filters that capture carbon, and then store it permanently underground. One of DAC's strongest attributes is its scalability. Unlike biomass solutions, DAC doesn't rely on large land areas, scarce resources, rare materials, or other scarce resources. It is also easily measurable, verifiable and offers permanent storage of CO_2.

However, DAC technologies face significant challenges, primarily due to high costs. The energy demand, combined with the expense of advanced materials and technologies used in DAC systems, leads to high upfront costs and expensive operations overall. DAC methods vary: solid sorbent and liquid solvent systems require heat to release captured CO_2—ranging from low to high temperatures—while some emerging electrochemical methods use electricity instead of heat. Milkywire's portfolio primarily focuses on solid sorbent-based and electrochemical methods, which are more modular and common. An exception is Holocene, which focuses on a low-temperature liquid-based approach.

Each method has its own cost and efficiency challenges, but as the sector matures, innovations are expected to reduce energy consumption and operational costs, making DAC more competitive with other carbon removal methods

The startups supported by the Climate Transformation Fund are working on novel approaches to make the energy consumption of DAC more efficient and to decrease operational costs. We have been the first buyer of carbon dioxide removal for many of them. By supporting them at this critical juncture, we enable the transition from lab scale prototype stages to demonstration or pilot facilities. Here the solutions can be tried at a relevant scale, giving us more knowledge about which solutions are most promising to scale up. There are more than 120 different DAC companies, and only a handful of them will likely be able to build large facilities. We want to make sure that great ideas are not left untested and that the best solutions are the ones that are later scaled up.

PILLAR 1: DURABLE CARBON REMOVAL - DIRECT AIR CAPTURE WITH STORAGE (DACCS)

Heirloom

SUPPORTED IN 2021 AND 2022

BACKGROUND

Heirloom, one of the leading DACs companies in America, builds low-cost Direct Air Capture technology that rapidly accelerates the natural processes that enable limestone to absorb CO_2 from the air from a timespan of years to days. Heirloom's technology stands out, because it leverages abundant, inexpensive materials, such as limestone to capture carbon. Unlike other methods that use synthetic sorbents and energy-intensive fans, Heirloom uses natural materials and passive air flow, reducing energy use and therefore costs.

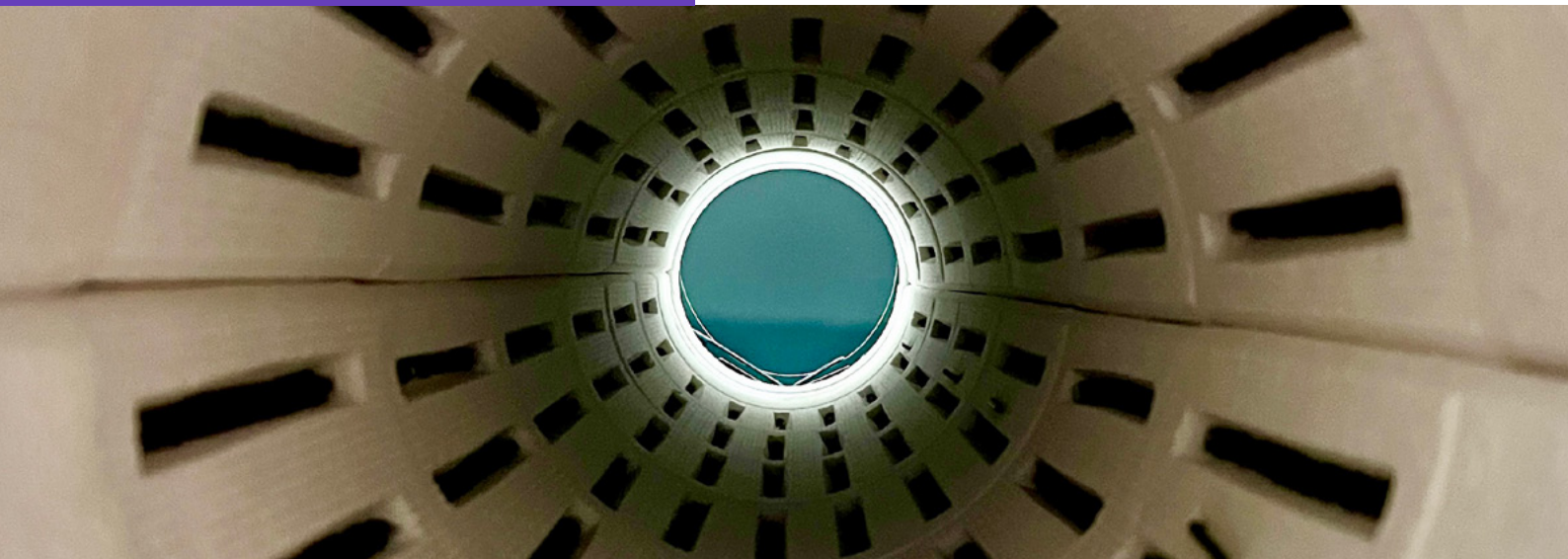
Our purchase from Heirloom was used for early stage development, including the establishment of their very first commercial facility. Since the CTF mainly supports new and underexplored CDR solutions we decided not to re-purchase carbon removal in 2023 due to Heirlooms growth and successes (however they of course still need significant sales to be able to scale up).

CO_2 Removal	
Tonnes purchased:	116
Expected delivery year:	2024-2026

PROGRESS

Heirloom has continued to build on its early successes since we became one of their first buyers in 2021. In September 2023, Heirloom secured a 10-year agreement with Microsoft to remove 315,000 tonnes of CO_2. Heirloom, alongside Climeworks and other partners, was selected for a major project under the Biden Administration's DAC Hub program, granting eligibility for up to $600 million in federal funding to support DAC facilities across the US, starting with Louisiana. Then, in November, one week after launching America's first commercial DAC facility in California, Heirloom signed a $26.6 million agreement with Frontier. This latest deal is a clear indicator of their progress down the cost curve, with prices dropping by 50% since our purchase in 2022. We are expecting the first deliveries of tonnes purchased in 2021 later this year.

INSIDE OF KILN
PHOTO BY HEIRLOOM



PILLAR 1: DURABLE CARBON REMOVAL - DIRECT AIR CAPTURE WITH STORAGE (DACCS)

Octavia carbon

SUPPORTED IN 2023

LEANA MACHINE
PHOTO BY OCTAVIA CARBON

BACKGROUND

Kenya-based Octavia Carbon – the Global South's first Direct Air Capture (DAC) company – designs, builds and deploys DAC technology that uniquely leverages Kenya's geothermal energy, geology & talent to radically accelerate DAC down the cost curve. Their vision is to make Kenya the leading DAC hub storing the CO_2 permanently underground in Kenya's basaltic geology.

CO_2 Removal	
Tonnes purchased:	353
Expected delivery year:	2026

Octavia shows that direct air capture is not only an industry for the global north. Carbon removal can become an important export for countries like Kenya, lowering the costs of removal and creating development. We were the first buyer of carbon removal from Octavia.

PILLAR 1: DURABLE CARBON REMOVAL - DIRECT AIR CAPTURE WITH STORAGE (DACCS)

Octavia Carbon

SUPPORTED IN 2023

PROGRESS

Octavia had a very strong year with many achievements. They were one of 20 finalists in the XPRIZE Carbon Removal competition, which offers a $50 million prize and significant recognition. Additionally, the company is one of seven finalists for the Wilkes Climate Prize, with a $500,000 award. Octavia has also been selected for three major climate tech accelerator programs: Third Derivative, Gener8tor Accelerator, and Remove Accelerator. The company also won the 2023 Carbon Dioxide Removal Innovation Award, alongside Carbon Lockdown by Climate Vault's Tech Chamber.

The company has successfully recruited top 1% engineering talent in the country and, over the past year, has developed and tested several iterations of its first DAC machines. This effort culminated in the Kesses model, which delivers over 95% CO_2 purity.

Octavia has formed key partnerships with Mumbi, Synergetic Development Group, TLV, and CarbonFuture. These collaborations have advanced critical elements of project development, such as pilot site selection, plant design, and certification processes. Octavia's also closed its $2.7 million seed round. CTF purchase was highly catalytic for Octavia, both in the fund raising and allowing them to contract >$1million in additional sales from 8 customers over the past 12 months.

Looking forward, Octavia plans to begin commercial operations for its pilot project, Project Hummingbird Phase 1, in Q4 2024. This phase will initially target a removal capacity of 30-50tCO_2/yr, with plans to scale to 250tCO_2/yr. The company aims to deliver its first verified credits by the end of Q1 2025, with delivery finalised in 2026.

> *"Milkywire's purchases through CTF were instrumental in attracting new buyers on the commercial side, resulting in approximately $1 million in additional revenue from pre-purchases and offtake agreements. The support not only signaled demand for our product but also demonstrated our tech feasibility, helping us secure further funding opportunities and investments."* - ***Martin Freimüller, CEO Ocatavia Carbon***

PILLAR 1: DURABLE CARBON REMOVAL - DIRECT AIR CAPTURE WITH STORAGE (DACCS)

Parallel Carbon

SUPPORTED IN 2023

BACKGROUND

Parallel Carbon is developing an affordable process for DAC and hydrogen production from air, water, and renewable power. They integrate passive, mineral-based DAC with a water splitting process driven by a new kind of electrolyser. Parallel Carbon has designed the process to run on intermittent wind or solar electricity, making it easier to scale up, deploy, and reduce costs. They also produce hydrogen in the process, another valuable product in the green transition. We were the first buyers of carbon removal from Parallel Carbon and our purchase makes it possible for them to build a pilot facility.

PROGRESS

Over the past year, Parallel Carbon completed a $3,6 million seed funding round. They also opened their R&D facility in Manchester, UK. The facility is now equipped with state-of-the-art technology to further develop and test their DAC systems. Parallel Carbon has scaled its prototype capacity by tenfold, a critical step towards achieving commercial-scale carbon removal. They are preparing the deployment of their first pilot facility that will remove carbon with storage in concrete. The deliveries of the carbon removal tonnes purchased are expected in 2026.

CO_2 Removal	
Tonnes purchased:	218
Expected delivery year:	2026

LAB WORK IN PROGESS
PHOTO BY PARALLEL CARBON

PILLAR 1: DURABLE CARBON REMOVAL - DIRECT AIR CAPTURE WITH STORAGE (DACCS)

Mission Zero

SUPPORTED IN 2023

BACKGROUND

Mission Zero has developed a breakthrough technology that combines CO_2 capture and mineralisation in one process. The 'Medusa' Process is simple and energy efficient compared to other CDR methods and has the potential to become among the cheapest DACs solutions. Mission Zero's direct air mineralisation process captures atmospheric CO_2 and turns it into rock in a matter of days. This is the second carbon removal process developed by Mission Zero, which has already piloted an electrochemical direct air capture technology.

This new process shows great potential to radically lower costs and energy consumption of direct air capture. We are the first buyer of carbon removal through the new process. Through our purchase Mission Zero can continue developing the technology and perform the first real world removal with it.

PROGRESS

Over the past year, Mission Zero has successfully raised £21.8 million in Series A funding, which bolstered its financial stability and expanded its network of investors. They have also commissioned the UK's first commercial DAC plant at TERC in Sheffield and secured a contract for a 250 tpa DAC plant with Deep Sky Climate in Canada.

During the year Mission Zero has needed to focus on its electrochemical DAC method, building machines that were ordered, and therefore the direct air mineralisation work has been on the slowburner. Work on it will commence in 2025 and the timeline of delivering tonnes in 2026 is still feasible.

CO_2 Removal	
Tonnes purchased:	150
Expected delivery year:	2026

PILLAR 1: DURABLE CARBON REMOVAL - DIRECT AIR CAPTURE WITH STORAGE (DACCS)

TerraFixing

SUPPORTED IN 2023

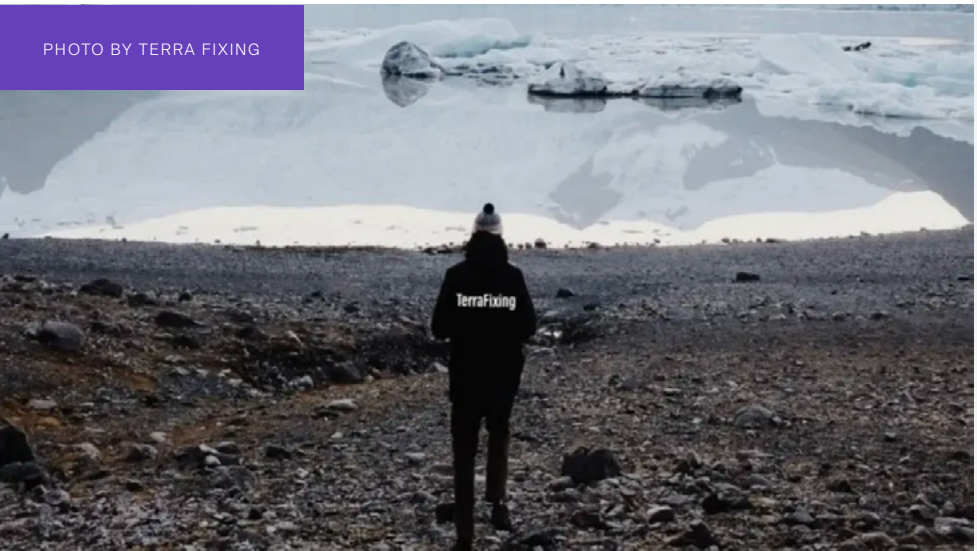
BACKGROUND

Canadian TerraFixing captures CO_2 from the air via a novel Direct Air Capture process that employs adsorption technology. It is designed to operate in cold, remote locations where extracting CO_2 from the air is easier and cheaper, and where the scalability of renewable wind power is large. The greatest challenge with DACs is likely electricity consumption. The electricity must be cheap, clean and the DACs company should not crowd out other uses of the clean electricity. Furthermore, building large amounts of clean electricity quickly is difficult due to permitting and grid connection delays. TerraFixing's technology sidesteps much of this thanks to the possibility of deploying in remote locations where renewable energy can produce more and there is little competition for the electricity.

We supported TerraFixing in scaling its operations and developing its technology further by making a prepurchase of the organisation's first carbon removal tonnes. This support was crucial in enabling the organisation to expand its team, acquire advanced research equipment, raise equity funding, and gain significant industry recognition.

CO_2 Removal	
Tonnes purchased:	235
Expected delivery year:	2025

PHOTO BY TERRA FIXING



PROGRESS

Over the past year, TerraFixing has made significant progress with the development of its first 1,000 t/yr removal unit. They secured $1,6 million CAD in equity funding, over $2,5 million CAD in government grants, and a $10 million CAD commercial agreement, ensuring the deployment of the unit and preparations for future expansions.

The deployment is scheduled for Fermont, Quebec, a mining city with sub-zero temperatures for much of the year. While it will initially be connected to hydro Quebec's grid, TerraFixing is partnering with Tugliq Energy to develop renewable power infrastructure, adding new electricity generation capacity for the township and local mine, and to power the removal process. Engagement with the local community has started and been positive.

TerraFixing has also received significant recognition, including being named a top carbon removal innovator by XPRIZE and winning the title of "Ottawa's Next Big Thing" at the Best Ottawa Business Awards by The Ottawa Board of Trade. They have partnered with the University of Toronto and the University of Ottawa, opened a new R&D lab, and secured new intellectual property rights. Challenges included getting access to the right type of lab space and finding suitable hires, but were able to be overcome.

PILLAR 1: DURABLE CARBON REMOVAL - DIRECT AIR CAPTURE WITH STORAGE (DACCS)

Climeworks

SUPPORTED IN 2021

DIRECT AIR CAPTURE FACILITY IN ICELAND
PHOTO BY CLIMEWORKS

Climeworks, one of the leading DAC companies, was supported through the CTF in 2021, due to their high quality technology. They have two DAC facilities in Iceland and have made significant sales as well as been awarded the US government DAC hub. Therefore we did not purchase from them as the CTF prioritises nascent new solutions. The carbon removal we purchased in 2021 will be delivered later this decade.

CO_2 Removal	
Tonnes purchased:	53
Expected delivery year:	2029

SEEDLINGS
PHOTO BY HUSK

PILLAR 1: DURABLE CARBON REMOVAL - BIOMASS

Biomass

Plants take up CO_2 as they grow, and re-release it when decomposed or burnt. There are numerous ways of stabilising the CO_2 in biomass, a plant's organic matter, so it can be stored longer. For example, biochar, when biomass is heated up in an oxygen-free environment to stabilise the carbon. Another such method is Bioenergy with Carbon Capture and Storage (BECCS), which captures and stores CO_2 emissions from existing processes such as biomass heat and power generation, paper and pulp processing, or biomass fermentation processes such as ethanol and biogas production. Another promising solution is a process of taking biomass, such as tree branches, and storing it in a dry or oxygen-free environment to stop its decomposition.

The key considerations for CDR is where the biomass comes from and what secondary effect using it for removal has. Increasing harvesting from standing forests, disturbing sensitive ecosystems or diverting biomass from another green solution should be avoided. Part of what we ensure is that the biomass used for CDR has few other economic uses and comes from a sustainable source.

PILLAR 1: DURABLE CARBON REMOVAL - BIOMASS

HUSK

SUPPORTED IN 2021 & 2022

BACKGROUND

HUSK focuses on creating affordable carbon-based fertilisers for smallholder farmers in South East Asia. HUSK uses a feedstock (rice husk) that would otherwise be burnt as a cheap fuel or have decomposed, both generating carbon emissions and toxic silica fumes. HUSK transforms the rice husk it into biochar based fertilisers which are then sold to farmers to improve their soils, increase their yields and reduce input costs. Their model contributes to increasing farmers' incomes, restoring soils and removing carbon. In addition their products help farmers to progressively reduce their chemical inputs and thus contribute to regenerative agriculture.

CO_2 Removal	
Tonnes purchased:	3,085
Expected delivery year:	2022-2027

BIOCHAR IN USE
PHOTO BY HUSK

PILLAR 1: DURABLE CARBON REMOVAL - BIOMASS

HUSK

SUPPORTED IN 2021 & 2022

PROGRESS

In 2023, HUSK achieved a significant milestone by commissioning a new pyrolysis unit at its Cambodian factory, effectively doubling its production capacity for biochar-based fertilisers. Additionally, HUSK secured a $5 million investment from Mekong Capital, a Vietnamese private equity firm, which will be used to upgrade machinery, enhance human resources, build a wider product portfolio and expand operations into Vietnam by 2025.

The impact of HUSK's biochar-based fertilisers has been notable, particularly in Cambodia, where it has led to improved living standards for farmers and rural communities through increased crop yields and reduced input costs. For instance, HUSK has provided stable employment for 21 full-time workers at its production site in a rural area with limited job opportunities, thereby contributing positively to the local economy.

Looking ahead, HUSK plans to replicate its successful model in Vietnam, focusing on the development of specialised carbon-based fertilisers tailored to address regional agricultural challenges such as soil salinity, extended droughts and heavy metal uptake.

HUSK has delivered parts of the carbon removal purchased under the CTF and will continue to deliver until 2027.

BIOCHAR AND RICE HUSK
PHOTO BY HUSK

> *"Support through CTF likewise increased our credibility tremendously: having closed a sale for our product was a key piece in the due diligence that enabled us to close a funding round back in May as it validated product-market fit and potential for revenue generation which is important for investors."*
> ***- Heloise Buckland, CEO HUSK***

PILLAR 1: DURABLE CARBON REMOVAL - BIOMASS

InterEarth

SUPPORTED IN 2022 & 2023

BACKGROUND

InterEarth cultivates a diverse selection of highly adapted coppicing woody plants in Australia. This biomass is periodically harvested, with the harvested biomass being encapsulated in dedicated above-ground storage chambers to ensure long-term carbon sequestration. This method offers a cost-effective and durable solution for storing significant amounts of CO_2, provided the local conditions are favorable. The project utilises marginal lands unsuitable for food production for biomass growing, with storage chambers placed on non-arable land such as salinated areas or deserts. As an early adopter of the biomass storage method, we began supporting InterEarth in 2022 to test and evaluate the method's viability.

CO_2 Removal	
Tonnes purchased:	12,660
Expected delivery year:	2027

PROGRESS

A key development is the completion of a demonstration 100-tonne dry-stack biomass storage chamber (pictured). This chamber protects the dry wood from moisture and pests, while sensors monitor the stability of the carbon. To further ensure the long-term durability of the stored carbon, funds from each credit are allocated to a trust for monitoring over a century.

InterEarth plans to scale operations by growing and storing biomass on its own land and has already initiated a mixed native species tree farm. However, due to record dry conditions in Western Australia in 2023, replanting was necessary in 2024. To deliver carbon removal in the near term, InterEarth will purchase biomass that would otherwise be cleared and burned from local farmers

Additionally, InterEarth has successfully deployed a modified mechanical tree planter and secured a major funding partner, providing the financial support needed to accelerate operations.

The project is currently undergoing registration under Puro.earth's Terrestrial Storage of Biomass methodology, which will offer third-party validation and issue carbon credits. The first credits are delayed compared to plan but are expected to be issued later this year.

INTEREARTHS DEMONSTRATION STORAGE MOUND
PHOTO BY INTEREARTH

BIOCHAR IN THE FIELD
PHOTO BY MASH MAKES

PILLAR 1: DURABLE CARBON REMOVAL - BIOMASS

MASH Makes

SUPPORTED IN 2021, 2022, 2023 & 2024 (pending)

BACKGROUND

MASH Makes converts agricultural waste into biochar and biofuel in India, effectively sequestering carbon and reducing the amount of CO_2 in the atmosphere.

This project has a large number of important co-benefits: reduced air pollution; remediated soils; increased crop yields; carbon removal; and lesser dependence on traditional fertilizers and irrigation. In addition, the project targets drought-prone regions and aims to address key climate related issues faced by farmers in India by providing a carbon-negative and easily scalable solution. All carbon removal certificates created in this project were issued through a fully-digitized marketplace and platform, Carbonfuture, whose science-based approach ensures the carbon sink certificates generated remain traceable, transparent, and thus trustworthy.

PILLAR 1: DURABLE CARBON REMOVAL - BIOMASS

MASH Makes

SUPPORTED IN 2021, 2022, 2023, (2024 pending)

PROGRESS

In the past year, MASH Makes has scaled its biochar production by 150%, enabling the distribution of over 1,500 tonnes of biochar across 100s hectares of farmland. This expansion not only contributes to carbon removal but also supports local farmers by enhancing soil fertility and increasing crop yields. Their efforts have had a significant impact, particularly in drought-prone regions where the enhanced moisture retention properties of biochar have led to substantial improvements in crop resilience and productivity.

The organisation's achievements extend beyond the environmental benefits. MASH Makes has created over 50 full-time jobs at its production facility in Udupi, providing stable employment in a region where such opportunities are limited. Additionally, they have been active in raising awareness about sustainable farming practices, conducting workshops and training sessions that have reached hundreds of local farmers.

Despite facing challenges in scaling their operations, MASH Makes has made substantial progress in refining their production processes and expanding their impact. Their efforts have been recognised on the global stage, securing a place as a Top 20 finalist in the XPRIZE Carbon Removal competition, a testament to their innovative approach and potential for growth.

Looking ahead, MASH Makes plans to further scale its operations, aiming to deliver additional tonnes of carbon removal by 2025. They are also deepening their engagement with local communities and stakeholders, ensuring that the benefits of their work are broadly felt. With continued support, MASH Makes is poised to make a significant contribution to global carbon removal efforts while improving agricultural sustainability and community resilience.

Mash has delivered the tonnes we purchased in 2021 and 2022, and will soon deliver the tonnes purchased in 2023.

CO_2 Removal	
Tonnes purchased:	1,250
Expected delivery year:	2023-2024

FIELD HARVEST
PHOTO BY MASH MAKES

PILLAR 1: DURABLE CARBON REMOVAL - BIOMASS

The Carbon Removers

(previously Carbon Capture Scotland)

SUPPORTED IN 2023

BACKGROUND

Fermentation sources are a relatively unexplored carbon removal source. Carbon Capture Scotland who has recently rebranded to The Carbon Removers, focuses on capturing waste biogenic CO_2 from whisky distilleries and storing it permanently. Their proprietary technology reduces the cost and energy footprint of capturing and processing high-purity CO_2 and allows for accurate measuring and reporting along the supply chain.

To capture the CO_2 that is already produced in fermentation is a low-hanging fruit, requiring much less energy than capturing it from the atmosphere. The Carbon Removers has a scalable set up and a sustainable process for doing so. We were the first buyers of carbon removal from The Carbon Removers.

LIQUIFIED CO_2 IN TRANSPORT
PHOTO BY THE CARBON REMOVERS

PILLAR 1: DURABLE CARBON REMOVAL - BIOMASS

The Carbon Removers
(previously Carbon Capture Scotland)

SUPPORTED IN 2023

PROGRESS

In the past year, they've tested deployment at two whisky distilleries and rolled out modular capture units that can be installed at various sites without significant infrastructure, making the technology versatile and deployable across different industries. A major recent achievement is securing a $12 million carbon removal delivery contract with the Danish Energy Agency, which has accelerated their work in CO_2 removal and storage across Europe. The Carbon Removers have also partnered with Project Greensands to store their captured CO_2 permanently. Their plans include capturing and storing biogenic CO_2 on a larger scale over the next few years.

Our support has played a crucial role in enabling The Carbon Removers to expand its operations. It has allowed them to grow their team, deploy more capture units, and speed up project execution. Additionally, the backing enhanced their credibility in the carbon removal space, leading to new partnerships and contracts.

Challenges encountered included delays in securing large-scale CO_2 storage locations, particularly in Europe and the UK. To address this, The Carbon Removers developed flexible procurement strategies and explored alternative storage solutions, such as mineralisation. They also encountered technical challenges in integrating their capture units at distillery sites, which they resolved by providing technical support and training and switching deployment to different sites. This demonstrates the modularity and flexibility of their solution.

CO_2 Removal	
Tonnes purchased:	799
Expected delivery year:	2026

FACILITY IN OPERATION
PHOTO BY THE CARBON REMOVERS

PILLAR 1: DURABLE CARBON REMOVAL - BIOMASS

Takachar

SUPPORTED IN 2023 & 2024 (pending)

BACKGROUND

Takachar produces biochar with a new mobile, low cost, MIT-developed technology that can latch on tractors and pick-up trucks. The advanced equipment is brought to farmers' fields where the waste biomass they have available is turned into biochar, mixed together with nutrients to be applied on the farmers own fields. In many cases, biomass that otherwise would have been burnt in open air is used, avoiding air pollution. Sales of carbon removal credits subsidise the process, enabling them to scale and serve lower-income farmers as well as new regions where biochar would not be economically feasible in the first place. Waste heat from the equipment can be utilised for value addition such as crop drying, or running small boilers.

Takachar brought a new innovative technology with significant co-benefits to the biochar space, bringing down costs and enabling scale. Takachar won the XPRIZE Carbon removal milestone award and the Earthshot prize, which forms a strong validation of their approach but we are the first buyers of carbon removal.

CO_2 Removal	
Tonnes purchased:	2,417
Expected delivery year:	2024

PROGRESS

Takachar has expanded its operations significantly over the past year. New projects have been initiated in India, Kenya, Canada, and the USA. In India, Takachar's collaboration with Aga Khan Foundation has enabled small-holder farmers to produce high-quality biochar from rice straw, while in Kenya, their partnership with Safi Organics is set to scale biochar production for thousands of farmers. They have also been recognised as one of the top 20 finalists in the XPRIZE Carbon Removal (in addition to the milestone award), reflecting their innovative approach and potential impact.

Although the organisation is removing carbon they are still pending certification to issue credits. Takachar is working towards finalising their MRV processes and securing certification through Puro.earth.

Looking ahead, Takachar plans to support additional deployments in underserved communities and further scale their technology. Their work continues to demonstrate the potential for biochar to contribute to significant carbon removal while offering valuable co-benefits for agriculture and local economies.

BIOCHAR APPLICATION SITE FOR SAFI ORGANICS, KENYA
PHOTO BY TAKACHAR

PILLAR 1: DURABLE CARBON REMOVAL - BIOMASS

atmosfair - Carbon farming in Nepal

SUPPORTED IN 2022

BIOCHAR PRODUCTION
PHOTO BY ATMOSFAIR

BACKGROUND

atmosfair is a non-profit organisation that aims to contribute to CO_2 mitigation by promoting, developing and financing renewable energies in over 20 countries worldwide.
In 2022, atmosfair, in collaboration with the Ithaka Institute, embarked on a novel research project in Nepal. The project aimed to explore the potential of changing farming practices to produce more biomass on land used for food production. This increased biomass can be converted into biochar.

The global potential for biochar has been estimated to be 0,3-2 billion tonnes of CO_2 removed per year using existing streams of waste biomass. However, the potential could rise significantly if more biomass could be produced together with food, avoiding taking new land into use for biomass production. The same applies to other uses of biomass to store carbon or replace fossil fuels. This novel project involving some of the world's best biochar researchers can create new knowledge that, when spread, could significantly increase the potential for biochar and other carbon removal methods using biomass without negatively affecting food production.

PILLAR 1: DURABLE CARBON REMOVAL - BIOMASS

atmosfair - Carbon farming in Nepal

SUPPORTED IN 2022

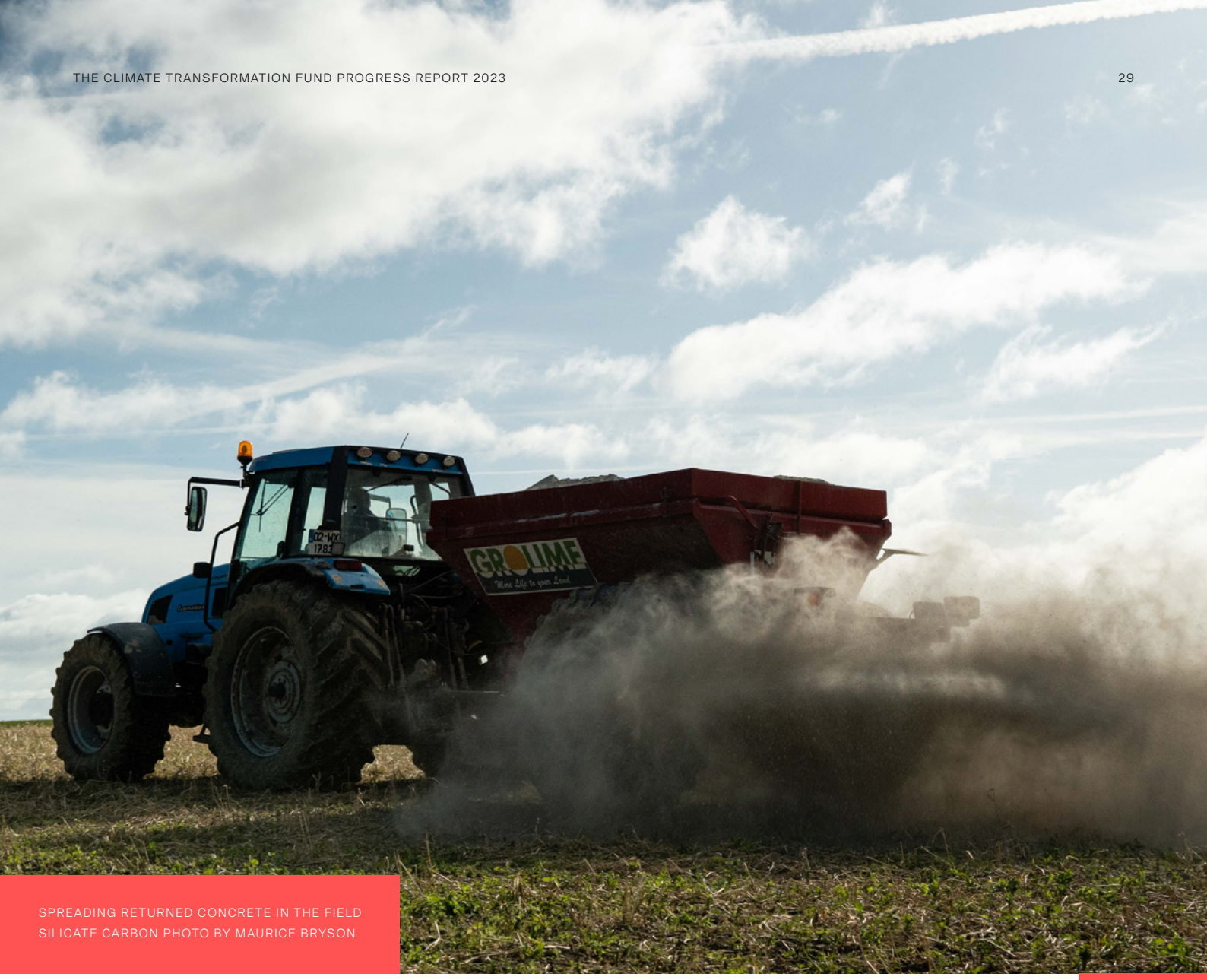
PROGRESS

The Carbon Farming Project in Ratanpur, Tanahun, initiated in 2023, has successfully acquired and prepared 6,75 hectares of long-abandoned farmland to establish a large-scale comparison of nine different carbon farming systems. This project involves rigorous baseline monitoring of soil organic carbon content and the cataloguing of pre-existing trees to assess baseline carbon stocks. The land preparation included the production and application of biochar-based fertilisers derived from local biomass, enriching the soil for the newly planted 4,880 coffee trees, over 1,000 fruit trees, and other beneficial plant species. The project has shown promising early results, with high survival rates (over 90% for coffee trees, and more than 80% for other fruit trees) for newly planted seedlings and the successful harvest of black lentils. Overall, as a result of the project, 180 kg CO2e has been sequestered in the planting pits in biochar, whereas additional 217,35 tCO2eq has been sequestered on the project sites in the above-ground and below-ground biomass.

In partnership with the Kathmandu Forestry College (KAFCOL) and Agroforestry Promotion Nepal (AFPN), the project benefits from dedicated resources including land contributions and expert staff for ongoing maintenance and evaluation. This strategic collaboration aims to enhance the understanding and implementation of carbon farming practices, promoting sustainable agriculture and carbon sequestration efforts as part of broader environmental conservation initiatives in the region.

The project is subject of a PhD thesis (Simon Lotz) who assesses all relevant carbon and plant performance data for scientific publication. Two peer-reviewed papers are expected to be published before the end of the first project phase.

BIOMASS HARVESTING
PHOTO BY ATMOSFAIR



SPREADING RETURNED CONCRETE IN THE FIELD
SILICATE CARBON PHOTO BY MAURICE BRYSON

PILLAR 1: DURABLE CARBON REMOVAL - ENHANCED ROCK WEATHERING

Enhanced rock weathering

Rocks reacting with CO_2 and removing it from the atmosphere is the earth's natural, but slow way of lowering CO_2 levels. It can be sped up by grinding the rocks to a fine powder and spreading it on farmland as a form of mineral fertiliser. It could potentially become a cheap carbon removal method with low energy needs and strong co-benefits. The science of how to best implement and measure this, however, is still evolving. The startups we support are focused on increasing our understanding of how this works, rather than on mass deployment.

PILLAR 1: DURABLE CARBON REMOVAL - ENHANCED ROCK WEATHERING

InPlanet

SUPPORTED IN 2023 & 2024 (pending)

BACKGROUND

InPlanet operates in Brazil as the first Enhanced Rock Weathering startup solely focused on the tropics. They spread silicate rock powder under ideal soil and climate conditions, promoting rapid weathering and carbon capture. The carbon is stored in soil leachates, waterways, and ocean sediments. Key co-benefits include the restoration of degraded soils, improved food nutrition, and reduced reliance on conventional chemical inputs in agriculture. InPlanet conducts rigorous measurements, from laboratory to field, to assess the net carbon removal effectiveness of rock spreading in various agricultural contexts.

Enhanced Rock Weathering is an emerging field, and one of our primary reasons for purchasing from InPlanet is to support the expansion of this knowledge base. As a science-focused company, InPlanet is dedicated to advancing the understanding of rock weathering. Their concentration on the tropics—where soil and climate conditions are ideal for weathering—amplifies the potential impact of their work. InPlanet's recent scientific publication emphasises the importance of robust measurement, reporting, and verification protocols for open system pathways and seeks to summarise quantification methods for carbon dioxide removal through Enhanced Weathering. This contribution to the development of industry-wide standards underscores InPlanet's dedication to advancing cutting-edge science while helping policymakers and buyers make informed decisions about engaging in Enhanced Weathering.

CO_2 Removal	
Tonnes purchased:	750
Expected delivery year:	2025-2028

BASALT ROCK POWDER PRODUCTION
PHOTO BY INPLANET

PILLAR 1: DURABLE CARBON REMOVAL - ENHANCED ROCK WEATHERING

InPlanet

SUPPORTED IN 2023 & 2024 (pending)

PROGRESS

Over the past year, InPlanet has made significant progress in both operational and scientific areas. The team has expanded to 38 members and has established a Science Advisory Board. Notable accomplishments include key presentations at international conferences, contributions to academic publications, and co-founding the Enhanced Weathering Alliance (EWA), a trade association aimed at advancing the industry.

CTF's catalytic pre-purchase in 2023 enabled InPlanet to launch a new project in Southern Brazil. The project has successfully deployed rock powders in collaboration with local farmers, covering various crops, including smallholder farms. Some challenges that the InPlanet team has faced include weather-related delays and complexities in data collection.

Looking ahead, InPlanet plans to expand operations to include perennial crops such as coffee and citrus. This expansion will involve developing new monitoring approaches specifically designed for these crops, further enriching the body of knowledge on Enhanced Rock Weathering and its application in diverse agricultural settings.

ENGAGEMENT EVENT
PHOTO BY INPLANET

PILLAR 1: DURABLE CARBON REMOVAL - ENHANCED ROCK WEATHERING

Silicate Carbon

SUPPORTED IN 2022, 2023 & 2024

BACKGROUND

Silicate is a terrestrial enhanced weathering company accelerating a natural geological process – the weathering of minerals – to durably sequester atmospheric carbon dioxide. The company works with farmers to apply mineral dusts to farmland to counteract soil acidification and durably remove CO2 from the atmosphere. Silicate is the first enhanced weathering company to pioneer carbonate mineral weathering on farmland, and conservatively estimates that their solution could scale to 750 million tonnes of durable carbon dioxide removal each year.

By being the first customer, we help Silicate to test and prove the viability of the method. Silicate's approach to measurement in the field also offers a robust assessment of actual carbon removal rates and will be a verifiable measure of carbon removal volumes.

CO_2 Removal	
Tonnes purchased:	2,036
Expected delivery year:	2026

INSPECTING MILLED RETURNED CONCRETE
PHOTO BY SILICATE

PILLAR 1: DURABLE CARBON REMOVAL - ENHANCED ROCK WEATHERING

Silicate

SUPPORTED IN 2022, 2023 & 2024

PROGRESS

Over the past year, Silicate has made considerable progress. They have implemented long-term field trials in Illinois, USA, and Wexford, Ireland, assessing the effectiveness of their methods across different soil types and climates. These trials, published in a scientific paper have provided valuable data on the carbon sequestration potential of enhanced weathering and increased the scientific understanding of the method. They were able to show that fertiliser use on farms can negate the removal effect, but also showed strong evidence for removal and how to best measure it. The early purchases through the CTF were completely instrumental in bringing about these catalytic insights and successes.

As a result of their trials, Silicate has moved away from using waste concrete, instead focusing on milled limestone, which is a more uniform material that offers efficient and scalable carbon dioxide removal potential. They are pushing science forward on the pathway.

In parallel, Silicate has expanded its operations, establishing a lab in Dublin, Ireland, and Chicago, USA, while growing its team of scientists significantly. Their work has been recognised in various international media outlets and scientific forums, solidifying their role in advancing understanding of geochemical removal.

Silicate was also selected as a Top 20 team in XPRIZE Carbon Removal competition, now competing for the $50 million first prize, which will be announced in April 2025, and joined the prestigious Breakthrough Energy Fellows program in 2023. Silicate is focused on scaling up its operations and delivering verified CDR tonnes by 2026. They aim to further refine their methods, with plans to publish additional peer-reviewed papers and expand their trials to more diverse environmental conditions.

FIELD MINERALISATION
PHOTO BY SILICATE

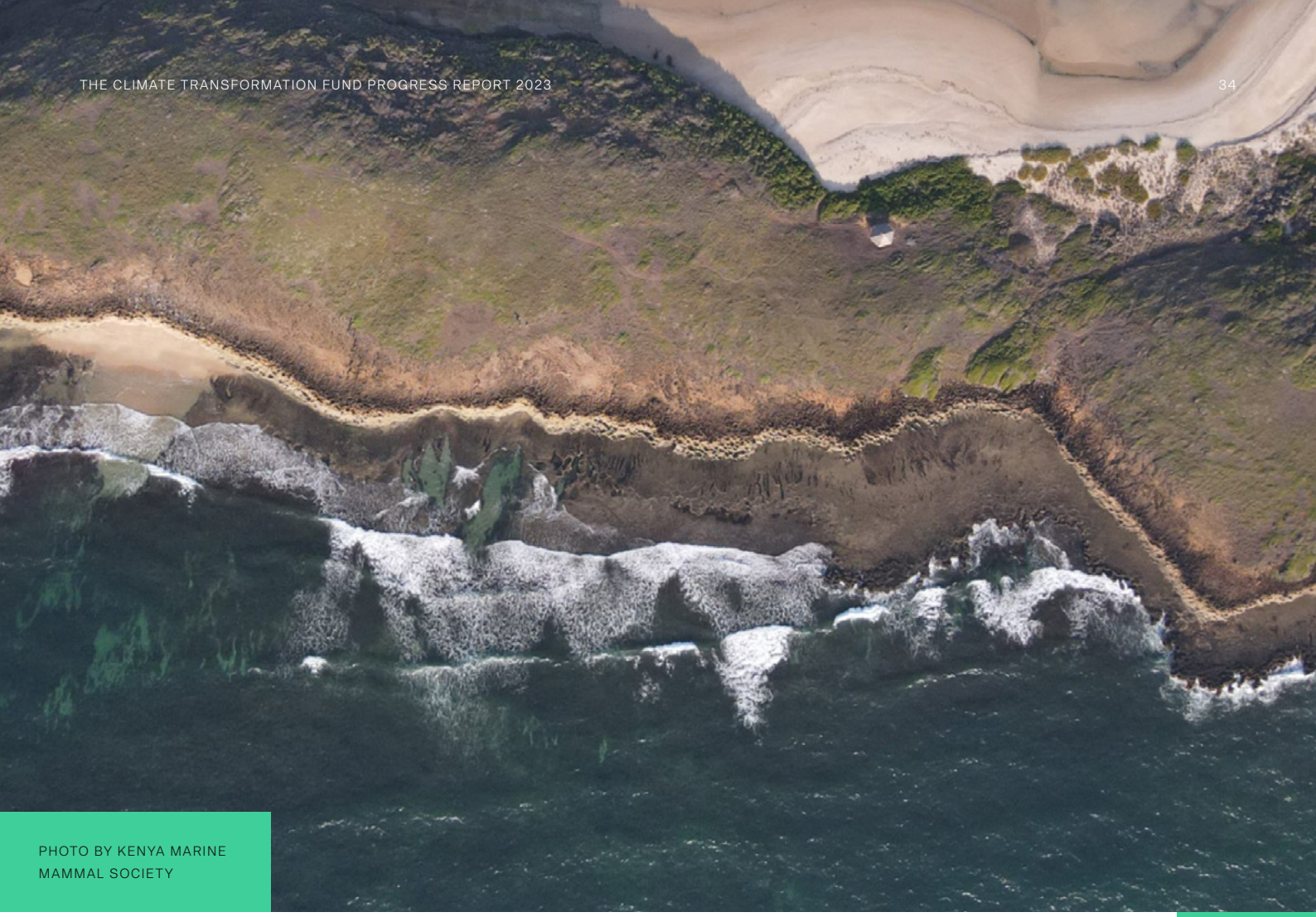


PHOTO BY KENYA MARINE MAMMAL SOCIETY

PILLAR 3: CARBON DIOXIDE REMOVAL - OCEAN CO_2 CAPTURE

Ocean CO_2 capture

The ocean provides several ways to remove carbon, using both biobased methods, such as mineralisation, and technological, such as electrochemistry. Like DAC, ocean-based removal has significant potential for scaling up and contributing to global climate goals. One advantage is that ocean-based methods don't rely on large land areas, similar to DAC, and can potentially store CO_2 permanently. However, much like DAC, the field is still developing, particularly when it comes to accurate measurement and verification, making it essential to support early-stage research and pilot projects.

In 2023, the Climate Transformation Fund supported its first ocean-based CO_2 removal initiative, enabling an early-stage company to launch a pilot project focused on electrochemical carbon capture. In 2024, we expanded our efforts, purchasing from two aqueous carbon removal solutions—Vycarb and Aquarry—that focus on capturing carbon through rivers or lakes, described under new projects. While ocean-based CDR offers exciting opportunities, it also faces challenges, such as high energy requirements for some processes and complex monitoring in dynamic ocean environments. As the field matures, improvements in efficiency and cost-effectiveness will be critical, and our support at this stage ensures that promising solutions can move from the lab to real-world testing and scaling.

PILLAR 3: CARBON DIOXIDE REMOVAL - OCEAN CO_2 CAPTURE

SEAO2

SUPPORTED IN 2023

BACKGROUND

Based in the Netherlands, $SeaO_2$ is developing a new atmospheric carbon removal method by leveraging the ocean, which has 150 times more carbon (as dissolved) compared to the atmosphere. SeaO2's electrochemical oceanic carbon capture technology treats water to capture and store its CO_2 content, returning the treated water to the ocean's surface layer where it can continue to absorb more CO_2.

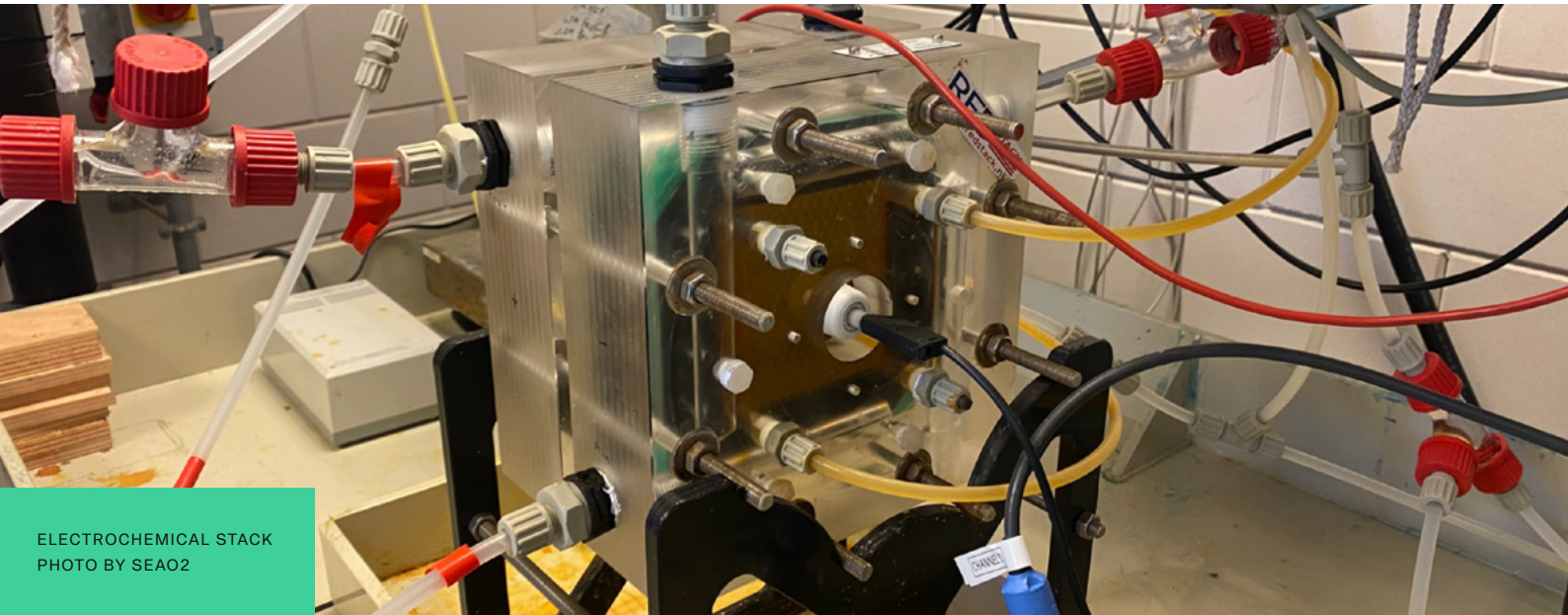
CO_2 Removal	
Tonnes purchased:	134
Expected delivery year:	2025

PROGRESS

Over the past year, SEAO2 has successfully developed and tested its R&D unit, which has a capacity of 1 tonne of CO_2 per year. The team has also expanded from 5 to 12 members and secured key intellectual property. They are also close to raising their seed funding round, securing the capital needed to scale up operations.

The support of the CTF enabled the procurement of essential supplies and materials for further experimentation on its prototype. The pilot unit, located at their R&D facility in the Netherlands, has allowed for comprehensive testing and refinement, with a focus on reducing energy requirements, improving CO_2 stripping efficiency, and lowering overall costs. A significant development was the creation of a new degasser prototype, integrating key innovations into its design. Challenges include securing industrial partnerships and raising funds, both taking longer than anticipated.

A first unit removing 25 tonnes per year is under construction, scaling up to 250t/yr at an industrial partner in 2025. The tonnes purchased in the CTF will be delivered in 2025 and 2026.



ELECTROCHEMICAL STACK
PHOTO BY SEAO2

PILLAR 1: DURABLE CARBON REMOVAL

New projects supported in 2024: Durable Carbon Removal

IN NUMBERS

$2,45M
INVESTED

7,364
TONNES PURCHASED

13 new
CDR SUPPLIERS

8 countries
KENYA, NAMIBIA, ZAMBIA,INDIA, U.S, FRANCE, GERMANY AND CANADA

INTRODUCTION

The carbon removal landscape is rapidly evolving, marked by a surge in innovative approaches and groundbreaking technologies. About a quarter of the over 1,000 proposals received to the CTF in 2024 focused on CDR, with nearly half coming from methods like Direct Air Capture with storage (DACCS) and Biochar, reflecting market maturing at an unprecedented pace. Beyond these, we saw a range of novel ideas pushing the boundaries of carbon removal, from pit lake alkalinity enhancement to biomass underground storage.

The quality of proposals was exceptionally high, with around a third shortlisted for extended applications after rigorous assessments and advisory input. This year, we made pre-purchases from 13 new CDR suppliers, being the first buyer for six of these and the first significant buyer for several others. This positions us at the forefront of accelerating early-stage CDR technologies and nurturing the next generation of solutions.

Our portfolio captures a market rapidly shifting from experimentation to deployment. DACCS is a standout, with companies like Gaia Refinery merging DAC with biomass carbon removal for more cost-effective processes, and Yama and Ucaneo breaking new ground with electrochemical methods enhancing scalability. Phlair and Holocene are pioneering approaches that align with renewable energy, offering scalable, cost-effective solutions ready for commercialisation.

PILLAR 1: DURABLE CARBON REMOVAL

New projects supported in 2024: Durable Carbon Removal

INTRODUCTION CONTD.

> *"2024 has brought us a wave of innovation and ambition in carbon removal, as we see technologies moving from ideas on paper to real-world deployment. Our role is to accelerate this shift, providing the support these groundbreaking solutions need to scale and succeed. The next generation of carbon removal is emerging before our eyes, and we're proud to help drive that momentum."* ***- Robert Höglund, Fund Manager***

Biochar also plays a pivotal role, showcasing how carbon removal can deliver beyond CO_2 reduction. Solidaridad and Planboo's collaboration in Zambia transforms agricultural waste into biochar, enhancing soil health and economic opportunities for farmers. BIOSORRA in Kenya advances sustainable agriculture by converting crop waste into biochar, while PyroCCS in Namibia turns invasive species into carbon sinks, supporting local ecosystems and communities.

FIELD DEPLOYMENT
PHOTO BY MATI CARBON

PILLAR 3: CARBON DIOXIDE REMOVAL

Durable Carbon Removal: Geochemical solutions

AQUARRY

Based in Pit Lake Alkalinity Enhancement, United States Aquarry proposes a new approach to carbon removal called pit lake alkalinity enhancement. This involves adding alkaline materials to flooded surface mines, transforming them into carbon removal and storage assets while also improving water quality. The technology is similar to ocean alkalinity enhancement, but with less environmental risk and more measurable results. The technology has the potential to store millions of tonnes permanently at a low cost. This innovative approach is in its early stages, with laboratory work to confirm measurement and verification methods underway and larger-scale demonstrations planned.

CO_2 Removal	
Tonnes purchased:	500
Expected delivery year:	2027

FLUX

Flux is the first company to start doing Enhanced Rock Weathering (ERW) in Kenya Africa where the potential co-benefits of the method are the highest. They spread crushed silicate rocks on farmlands in Africa to remove CO_2 from the atmosphere and to improve soil quality, improving farmers' yields and climate resilience. Flux is currently conducting a pilot project with smallholder farmers in Kenya and partnering with large-scale commercial farms and existing rock quarries across the continent for rapid scaling. Their gathering of data on how ERW works in African soils will help develop the method and be a catalyst for ERW across the continent.

CO_2 Removal	
Tonnes purchased:	540
Expected delivery year:	2025-2033

FIELD MINERALISATION
PHOTO BY FLUX

PILLAR 3: CARBON DIOXIDE REMOVAL

Durable Carbon Removal: Geochemical solutions

MATI CARBON

Mati Carbon is located in India and is pioneering a unique approach to carbon removal by enhancing rock weathering in paddy rice fields. The project is particularly noteworthy for its focus on smallholder farmers in the Global South, and its ongoing research into reducing methane emissions from paddy farms. Mati Carbon is committed to maximising the carbon dioxide removal value transfer to these farmers showing a potential for very high social and environmental co-benefits. The company also has a strong focus on measurement, reporting and verification, using methods developed in collaboration with the Yale Center for Natural Carbon Capture.

CO_2 Removal	
Tonnes purchased:	469
Expected delivery year:	2025-2028

ALKALI EARTH

Alkali Earth is a unique project in the United States utilising steel slag, a byproduct of the steel industry, to remove CO_2 from the atmosphere. The process involves crushing the slag to increase its surface area and using it in various applications such as on gravel roads. This process converts atmospheric CO_2 into stable carbonate minerals, effectively removing it from the environment. Alkali Earth is currently the only company using steel slag aggregates for carbon removal, providing a low-cost pathway to scale CDR through an industry that already moves gigatons of materials each year.

CO_2 Removal	
Tonnes purchased:	406
Expected delivery year:	2027

STEEL SLAG AGGREGATE
PHOTO BY ALKALI EARTH

PILLAR 3: CARBON DIOXIDE REMOVAL

Durable Carbon Removal:
Geochemical solutions

VYCARB

Vycarb, based in the United States, uses an innovative approach to carbon removal focusing on converting biogenic CO_2 in water into stable bicarbonate and carbonate. The system targets high-CO_2 waters and uses a continuous flow alkaline reactor where direct measurements of the removal are made by their real-time sensing technology. A modular, solar-powered design allows for scalability and autonomy, making it adaptable to various settings. The system also utilises multiple alkalinity sources, requiring minimal upkeep. This unique solution addresses the challenges of water-based CDR, offering a promising avenue for reducing atmospheric CO_2 emissions.

CO_2 Removal	
Tonnes purchased:	600
Expected delivery year:	2025

EXPERIMENTING IN THE FIELD
PHOTO BY VYCARB

PILLAR 3: CARBON DIOXIDE REMOVAL

Durable Carbon Removal:
Direct Air Capture with storage (DACCS)

GAIA REFINERY

Gaia Refinery in Canada is pioneering a unique carbon dioxide removal technology that merges Direct Air Capture with Biomass Carbon Removal. This innovative approach utilises liquid DAC capture technology and biogenic sources of acetic acid to capture three streams of CO_2, offering a potentially more cost-effective solution than current DAC technologies. The hybrid technology requires less electricity, captures more CO_2 per ton of biomass, and can achieve efficient scale at a smaller plant size.

CO_2 Removal	
Tonnes purchased:	30
Expected delivery year:	2026

YAMA

Yama in France is a pioneering Direct Air Capture company with innovative technology that integrates a scalable, low-grade heat source with electrochemistry. Yama's solution addresses key limitations in existing approaches by enhancing energy efficiency; large scale carbon capture, combined with strategic partnerships, indicates a strong potential for scalability.

CO_2 Removal	
Tonnes purchased:	134
Expected delivery year:	2027

UNCANEO

Ucaneo located in Germany is pioneering a biomimetic Direct Air Capture technology. Their innovative approach combines solvents with (bio)catalytic properties and electrochemistry, resulting in a process that can be more energy and cost-efficient than traditional methods. Ucaneo's prototype has demonstrated the capacity to remove roughly 1 ton of CO_2 per year, with scalable modular units designed to remove ~500-1,000 tons of CO_2 annually. Their unique use of electrochemistry and (bio)catalysts, along with an interchangeable modular and scalable design, sets them apart.

CO_2 Removal	
Tonnes purchased:	286
Expected delivery year:	2026-2027

PILLAR 3: CARBON DIOXIDE REMOVAL

Durable Carbon Removal:
Direct Air Capture with storage (DACCS)

PHLAIR (PREVIOUSLY NAMED CARBON ATLANTIS)

Carbon Atlantis in Germany is pioneering a novel Direct air capture approach utilising an innovative electrochemical technology. This process captures CO_2 from the atmosphere with a basified solvent, transforming it into bicarbonates, and then releasing it as gaseous CO_2. The technology is uniquely capable of matching renewable electricity generation curves and is designed to be cost-effective, energy-efficient, and scalable, with the potential for rapid upscaling due to its modularity and reliance on existing supply chains. The project is currently at a promising stage of development, with a clear path to commercialisation.

CO_2 Removal	
Tonnes purchased:	198
Expected delivery year:	2028

HOLOCENE

Holocene located in the United States has developed a continuous, low-temperature, thermochemical direct air capture technology, which combines the best of both traditional DAC approaches. The continuous, liquid absorption system coupled with a solid, low-temperature desorption, brings the benefits of affordability, scale, and flexibility inherent in such an approach. Holocene's proprietary combination of organic sorbents unlocks this whitespace, which can be more scalable and affordable than alternatives.

PRODUCTION RENDER
PHOTO BY PHLAIR

PILLAR 3: CARBON DIOXIDE REMOVAL

Durable Carbon Removal: Biochar

SOLIDARIDAD/PLANBOO

Solidaridad and Planboo in Zambia are teaming up to transform agricultural practices and combat climate change by utilising biochar in a decentralised way. By collaborating, Solidaridad's extensive experience in sustainable agriculture and Planboo's innovative digital MRV system which includes an internet-connected (IoT) device, verification at scale can be achieved. Their partnership hopes to empower over 100,000 smallholder farmers in Zambia converting cotton stalks into biochar, increasing their incomes, improving soil health and permanently removing carbon from the atmosphere.

CO_2 Removal	
Tonnes purchased:	1,344
Expected delivery year:	2026

BIOSORRA

BIOSORRA in Kenya aims to revolutionise sustainable agriculture in the Global South by transforming crop waste into biochar, enhancing soil health and crop yields. Partnering with over 2,036 farmers to date, BIOSORRA's patented pyrolysis technology creates a durable carbon sink and improves farming efficiency. Emphasising community and climate justice, BIOSORRA supports women-led businesses and empowers local farmers with affordable biochar, boosting food security and environmental resilience.

CO_2 Removal	
Tonnes purchased:	850
Expected delivery year:	2025

PYROCCS

PyroCCS in Namibia pioneers sustainable industrial biochar carbon removal in the Global South, deploying its own low-cost, robust, pyrolysis systems powered by renewable energy and backed by a digital measurement and reporting solution. These plants efficiently convert invasive acacia bushes in Namibia, a significant threat to the savanna ecosystem, into high-quality biochar, while providing critical employment in regions with high youth unemployment rates. PyroCCS's scalable technology, which they are also offering as a solution to other project developers, not only captures carbon but also supports local agricultural and environmental recovery as well as food security.

CO_2 Removal	
Tonnes purchased:	937
Expected delivery year:	2025

Pillar 2: Nature protection and restoration

OUR THEORY OF CHANGE FOR SUPPORTING NATURE PROTECTION AND RESTORATION

Protecting and restoring nature is of paramount importance for addressing climate change. Deforestation and forest degradation result in substantial carbon emissions as forests are destroyed. Preserving the carbon currently stored in ecosystems and restoring carbon to areas that have lost it are critical steps in mitigating climate change. These actions not only help reduce greenhouse gas emissions but also have significant co-benefits for both human societies and biodiversity. Within this pillar, our focus is securing land rights, restoring degraded or lost ecosystems, and sustainable management practices, as well as ensuring long-term environmental and social benefits.

> *"We aim to fill a gap in the wider funding landscape by supporting projects that, for various reasons, cannot access carbon markets. By focusing on long-term environmental and community co-benefits, we help fill the funding gap for great initiatives that otherwise might not receive support."*
> ***- Natalya Yakusheva Jarlebring, Fund Manager***

Our projects target regions with severe environmental degradation but high restoration potential and biodiversity value. We support diverse ecosystems across the Amazon, Indonesia, and Tanzania, balancing ecological restoration with the socioeconomic needs of local communities. A key part of our strategy is ensuring the strong community co-benefits, including improving their economic and livelihood opportunities, and securing their rights to the land and resources. We prioritise projects where communities benefit economically and participate in every stage, from planning to implementation.This helps ensure that restoration efforts also supports livelihoods of local communities, including women and vulnerable groups.

By investing in scalable, community-focused initiatives, we ensure that our projects not only protect and restore critical ecosystems but also create socially inclusive models that can be replicated globally. Nature restoration serves as both a climate solution and a pathway to community empowerment, contributing meaningfully to climate goals and long-term resilience.

Pillar 2: Nature protection and restoration

PORTFOLIO LEVEL RESULTS AND REFLECTION

7 PROJECTS SUPPORTED 2021-2023

3 NEW PROJECTS IN 2024

16,471
COMMUNITY MEMBERS BENEFITED

312,642
TREES PLANTED OR REGROWN

82,000
HECTARES WITH SECURED TENURE

957,000
HECTARES WITH INCREASED PROTECTION THROUGH ENHANCED MONITORING

Footnote: Metrics represent the progress achieved for the reporting period in focus. Depending on the project start date, for some organisations that may include the twelve months, whereas for others that covers the six months period.

Nature protection and restoration work is inherently long-term, as it requires not only securing land or regenerating ecosystems but also sustaining these over time and embedding lasting behavioural change within communities. The progress reports demonstrate both the strength of our approach and the challenges inherent in this type of work.

With regards to protection efforts, the projects we support show that lasting conservation is deeply tied to both legal empowerment and community-driven stewardship in the long-term. Legal recognition of rights is foundational, but without continuous support and adaptive strategies, these successes can erode over time as new threats emerge, or simply not enough resources are allocated to implementation of sustainable practices. Effective protection means empowering communities with the tools and resources they need to manage their land sustainably, and defend their ecosystems against long-term pressures, whether from industrial encroachment or changing environmental conditions.

Pillar 2: Nature protection and restoration

PORTFOLIO LEVEL RESULTS AND REFLECTION

On the restoration side, our focus on innovative, nature-based techniques continues to show strong results. Projects that prioritise farmer-managed natural regeneration techniques, highlight the power of working with the land's natural systems rather than relying on traditional tree planting. These methods offer more sustainable and cost-effective solutions, encouraging local ownership and long-term engagement in restoration efforts.

Behavioural change is crucial to the success of these projects, as restoration techniques only work if farmers and local communities adopt and sustain them over time. For farmers, whose livelihoods are tied to their land, transitioning to new methods demands more than just training—it requires confidence in the long-term benefits. This confidence is often nurtured through hands-on, peer-based learning environments, which many of our projects provide, helping to build trust and encourage lasting change.

One of the ongoing challenges in both protection and restoration projects is the need for more cost-effective monitoring, reporting, and verification (MRV) systems. Particularly for restoration projects that rely on natural regeneration, quantifying carbon removal is more complex than for traditional reforestation efforts. Moreover, current MRV systems are costly and often impractical at scale. Establishing whether regrowth would have occurred without intervention adds another layer of difficulty. This year, efforts have focused on exploring more scalable, cost-effective solutions, including the potential use of satellite imagery, to provide more reliable and accurate tracking of project outcomes.

Finally, through field visits to projects that have been supported for over three years we have gained valuable, on-the-ground insights. These visits have allowed us to validate reported progress and gain a clearer understanding of the practical challenges faced by the organisations we support. Seeing firsthand how communities are actively protecting and restoring their environments has reinforced our belief in the importance of long-term engagement and adaptive strategies to ensure the success of these initiatives.

NORTH KALIMANTAN LANDSCAPE
PHOTO BY WARSI

PILLAR 2: NATURE PROTECTION AND RESTORATION - COMMUNITY FOREST MANAGEMENT

WARSI

SUPPORTED IN 2021, 2022 & 2023, 2024 (pending)

BACKGROUND

Indonesian Conservation Community WARSI is one of the oldest non-profit organisations in Indonesia addressing the issues of deforestation, illegal logging, illegal extraction of agarwood and expanding mining operations. WARSI in Indonesia helps indigenous groups and local communities get forestry licences for their land, so they have the legal rights to it and can prevent it from being cut down. WARSI also provides capacity building and training so communities can sustainably manage and gain livelihoods from their forests.

Supporting local communities in acquiring the rights to their land is a method that has proven successful in reducing deforestation. WARSI has a long track record of successfully helping indigenous and local communities access forestry licences to protect and manage their lands. They are also a long-standing partner of the Rainforest Foundation Norway, one of the world's leading NGOs engaged in rainforest protection. Our support enables them to support indigenous community forest management and improve local welfare in eight villages across North Kalimantan, Indonesia, covering the area of around 230,000 ha and benefitting more than 2,600 people.

> *"With CTF's support, over years the project has successfully expanded its coverage project area into 8 villages, benefiting 2,651 people."*
> ***- Emmy Primadona, Project coordinator for climate programs, WARSI***

WORKSHOP WITH COMMUNITY
PHOTO BY WARSI

PILLAR 2: NATURE PROTECTION AND RESTORATION - COMMUNITY FOREST MANAGEMENT

WARSI

PROGRESS

Over the past year, WARSI has significantly advanced its work in supporting forest management and community empowerment in North Kalimantan. Key achievements include the establishment of legal boundaries for two additional villages (Metut and Nahakramo Baru), which has set the stage for future legalisation. These villages cover an area of roughly 40,000 ha, of forest, containing up to 70 million tonnes of CO_2. This first necessary step is critical in enhancing the implementation of social forestry initiatives that promote sustainable economic growth and environmental stewardship within these communities.

Additionally, WARSI has expanded its social forestry operations into four villages that had previously secured land rights, in partnership with Malinau Regency Department of Industry, Trade, and Cooperatives. This expansion has not only bolstered the local economy through sustainable forestry products but has also provided the communities with training in various agricultural techniques, including agarwood inoculation and stingless bee honey production. The project contributed to the creation of around 150 jobs across the focus villages, with roughly half of them employing women.

The development and integration of the Village Information System (VIS), essential for enabling better management of forest resources, has also been advanced across project areas. Furthermore, the project's success has inspired other villages to adopt the VIS model, demonstrating the scalability and influence of WARSI's initiatives. The local village governments of Long Pada and Long Nyau have allocated funds specifically for forest protection and the maintenance of VIS, marking a significant shift towards community-led environmental governance.

The increased staffing from 4 to 11 members has greatly enhanced WARSI's on-ground presence and capacity, enabling more comprehensive data collection and support for the legal recognition of village territories. This expansion is complemented by a robust collaboration with the Malinau Regency Government, simplifying interactions and enabling various field activities. WARSI's local work has been widely recognised in regional and national media. These results demonstrate that long-term engagement at the local and regional level can create an enabling environment for spreading social forestry as the model, contributing to the rights recognition and further implementation of good practices.

Looking ahead, WARSI plans to extend legal recognition to more villages, further integrate VIS technology, and promote sustainable forest management practices. These efforts aim to protect valuable rainforest areas and empower more communities to embrace and benefit from the social forestry model. In addition to these efforts, they are committed to improving the measurement and verification of the program's impact, particularly in reducing deforestation and enhancing carbon storage. By building stronger monitoring systems and verifying the effectiveness of their interventions, WARSI aims to ensure that the benefits of their work are both measurable and lasting. The continued support from partners and stakeholders is crucial in realising these goals, ensuring ongoing environmental conservation and community development.

PILLAR 1: NATURE PROTECTION AND RESTORATION - FARMER MANAGED NATURAL REGENERATION (FMNR)

Justdiggit

SUPPORTED IN 2021, 2022, 2023 and 2024 (pending)

BACKGROUND

Justdiggit together with their main partner in Tanzania - LEAD Foundation is on the mission to regreen Africa through promoting Farmer Managed Natural Regeneration (FMNR) or Kisiki Hai method, a simple but very effective natural method to grow the remaining tree stumps into large mature trees. Trees that are part of this treecovery process grow fast because farmers select, prune, mark and protect trunks with an established root system of older trees that are still alive. Once mature, these trees contribute to more water remaining in the ground and create shade for plants to grow, increasing agricultural productivity. This project responds to the primary drivers of deforestation in The Singida region that along with other regions in central Tanzania, has faced environmental degradation due to deforestation, unsustainable agricultural practices, and climate change. This has led to reduced biodiversity, soil erosion, and declining agricultural productivity, negatively impacting the livelihoods of local communities.

The FMNR method used by Justdiggit avoids many pitfalls of traditional reforestation methods, since the restored trees rely on big and old root systems which have been built by these trees over the years, prior to being cut, making them stronger and more resilient. By supporting alternatives to traditional reforestation that relies on seedlings, Justdiggit provides almost “no-cost” solutions to farmers who want to regreen their land, bringing positive effects on incomes, biodiversity, and carbon capture.

FARMER IN THE FIELD
PHOTO BY JUSTDIGGIT

PROGRESS

In 2024, Justdiggit continued to achieve progress in implementing regreening project in the Singida region, Tanzania where the support from the CTF covers about 16% of overall program costs. The program now includes 20 newly added villages, coordinated by one Program District Coordinator (PDC) and supported by 80 champion farmers, four per village. These champions are pivotal in transferring regreening knowledge, aiming to reach 150 households each, totaling 12,000 households during the program period.

This year, the Regreening Singida Program has impressively restored over 2,37 million trees using the Farmer Managed Natural Regeneration (FMNR) approach and implemented nearly 30,000 rainwater harvesting bunds. Although the target was initially set for 53,650 trees through CTF support, the project has already realised 78,859 trees by

PILLAR 1: NATURE PROTECTION AND RESTORATION - FARMER MANAGED NATURAL REGENERATION (FMNR)

Justdiggit

PROGRESS CONTD.

June 2024. This substantial overachievement highlights the program's efficacy and the commitment of local communities and program staff.

Moreover, the advanced tracking and estimation tools have allowed for a preliminary calculation of long-term carbon sequestration benefits, projecting that the current number of trees will sequester approximately 16 200 tonnes of CO2 over the next 20 years, assuming an 80% survival rate.

Education and awareness efforts have been central to the program's strategy, with 66,775 community members benefiting from training sessions led by champion farmers. These educational initiatives have not only bolstered community engagement but have also catalysed ecological improvements such as increased water availability and access to sustainable firewood sources, thanks to enhanced vegetation and soil health through FMNR efforts.

In 2024 Justdiggit received additional support from the Climate Transformation Fund for the implementation of the Digital Regreening App. This initiative aims to accelerate outreach to farmers and offers personalised advice for land regreening on a large scale and help reach organisation's ambitious goals to reach 350 mln. farmers by 2030.

FIELD VISIT

In August 2024, Milkywire facilitated a field visit by the independent expert to the Justdigit project in the Singida region. The purpose of this visit was to directly observe and verify project activities. By engaging with stakeholders on the ground, we wanted to gain an on-the-ground perspective that complemented self-reported data. This approach helps us identify potential issues and successes, providing a more accurate impact assessment.

The key insights from this visit demonstrate that the project has achieved high awareness of promoted techniques among farmers, and many of them are enthusiastic and see a direct benefit from implementing Kisiki Hai and other techniques on their land, especially when it comes to better rain water harvesting and other water preservation techniques, as well as improved microclimate due to more shade from restored trees. Champion farmers play a crucial role in spreading the knowledge and being strengthened and supported in leadership roles, enhancing the peer-learning model. The project team demonstrates a high professionalism and level of commitment to the results of the project.

This project relies on the behavioural changes of the participating farmers, since they are the one implementing the techniques. On the one hand, this is a great approach which empowers farmers and gives them tools to be both regreening champions, as well as improve their livelihoods. On the other hand, implementation of such techniques is hard work, which may limit the long-term adoption of these practices among trained farmers. Currently, these bottlenecks are mitigated by the close engagement of the project team with villagers on the ground. In this light, the new supported project on scaling these methods through digital tools can give further valuable insights on the limitations and key pathways for success.

PILLAR 1: NATURE PROTECTION AND RESTORATION - TENURE SECURITY

Ceibo Alliance

SUPPORTED IN 2023 & 2024 (pending)

BACKGROUND

The Ceibo Alliance, an Indigenous-led organisation operating in the Upper Amazon (Ecuador, Colombia, and Peru), supports Indigenous communities to combat deforestation and preserve vital carbon sinks across their territories. They map and monitor forests, assisting community land patrols in detecting and deterring rainforest-harming activities. Ceibo Alliance's approach is rooted in their proven and effective strategy of empowering Indigenous communities to take ownership of and protect their ancestral lands. By granting them additional funding, CTF aims to amplify the impact of this successful model. This expansion leads to the protection of more rainforest and sequestration of a larger volume of carbon.

Furthermore, the grant ensures the long-term sustainability of these efforts, fostering a lasting positive influence on both environmental conservation and Indigenous rights. Ceibo Alliance's work exemplifies a holistic approach that not only benefits the environment but also respects the rights and autonomy of Indigenous communities.

PROGRESS

Ceibo Alliance, in close partnership with Amazon Frontlines, has continued to advocate for indigenous rights and environmental protection in the Upper Amazon. This past year, the Alliance's efforts have been particularly impactful, with the establishment of the Regional Land Defense School, which trains indigenous land patrols, and notable legal victories that have secured land titles over vast areas of rainforest. These efforts not only reinforce the sovereignty of indigenous communities over their ancestral lands but also contribute to the conservation of critical ecosystems and the sequestration of carbon dioxide, enhancing global climate resilience.

The organisation's achievements this year include the expansion of its educational and territorial defence initiatives. This has been achieved by training over 45 indigenous patrols from 24 communities. Another milestone included securing 42,000 hectares of legally recognised land for the Siekopai nation, an essential step to safeguard these ancestral territories. Ceibo Alliance has laid a strong foundation for future environmental advocacy and land protection efforts. Additionally, the completion of a vital digital mapping project for the Wajoya's ancestral territory supports their land claims with tangible proof of their historical presence, an essential tool in the fight against unauthorised encroachment by extractive industries.

Looking forward, Ceibo Alliance aims to further extend its impactful programs, focusing on increasing the protected areas under indigenous governance and enhancing educational opportunities for community members. The organisation's approach not only addresses immediate threats from resource extraction and environmental degradation but also builds a sustainable model for community-driven conservation. The recognition received from notable environmental and humanitarian awards, including St Andrews Prize for the Environment, the TIME Earth Award 2024, and the Hilton Humanitarian Prize (for the Amazon Frontlines) underscores the efficacy and importance of their work, validating their strategies and collaborations.

PILLAR 1: NATURE PROTECTION AND RESTORATION - TENURE SECURITY

Landesa

SUPPORTED IN 2023 & 2024 (pending)

BACKGROUND

Mangroves are important carbon sinks and among the most degraded ecosystems with high restoration potential. Landesa, a global development organisation, strives to secure land rights for vulnerable populations, recognising their significance for poverty reduction, environmental sustainability, and peace. CTF funds Landesa's project that aims to protect and restore mangrove forests in the Bay of Bengal, and engages in policy dialogues on promoting legal rights of small-holder forest owners across Southeast Asia. This project focuses on securing forest tenure, sustainable land management, reforestation, and afforestation. Landesa collaborates with national and six regional governments to advance sustainable mangrove management, blending on-the-ground restoration efforts with advocacy for secure tenure rights.

Their commitment to advocating for systemic reforms at the national level not only tackles issues of poverty but also addresses critical environmental concerns, including degradation and deforestation. Landesa's hands-on approach involves community assessments, forest mapping, and locally driven climate adaptation initiatives. This inclusive method ensures that the local communities and governments are active participants in the process, safeguarding the sustainability and long-lasting impact of their projects.

PROGRESS

Over the past year, Landesa has significantly enhanced its impact in advancing land rights and environmental conservation, particularly through its work in Indonesia and with the ASEAN Intergovernmental Commission on Human Rights (AICHR). They continued to work towards nudging major policy shifts towards the protection of mangrove ecosystems by embedding land tenure security into national policies. Notable achievements include the strategic role in the Agrarian Reforms Task Force in Indonesia, where they became the only NGO invited for the dialogue and could advocate for prioritising mangrove protection across all related policy areas. Another important progress has been achieved in the dialogue with the Papua Province Government to include a clause of not only certifying the customary (ulayat) land, but also accommodating the option to register it in the land record as a ulayat land registry (Daftar Tanah Ulayat). This alternative provides a path to greater tenure security for the millions of Indigenous Peoples in the Papua provinces.

Additionally, Landesa established close working relations with the ASEAN Intergovernmental Commission on Human Rights and contributed to the development of the draft Framework on Environmental Rights within ASEAN, ensuring that tenure rights for coastal communities are considered. This effort is part of a broader strategy to secure and restore more than 4,6 million hectares of coastal mangrove areas across the region, critical to both biodiversity and the livelihoods of over 70 million people. The organisation's ability to navigate complex policy environments and engage with high-level governmental bodies has helped them to significantly advance their work and become an important player in regional environmental governance.

Looking forward, Landesa is set to deepen its engagement with policy reforms in Indonesia, as well as in Thailand, and expand its influence across ASEAN. The organisation plans to leverage its established platforms and ongoing projects to further integrate land tenure security with environmental protection efforts. This approach is expected to yield substantial co-benefits for climate resilience, community empowerment, and sustainable development.

PILLAR 1: NATURE PROTECTION AND RESTORATION - RESTORATION

Plant with Purpose

SUPPORTED IN 2022, 2023 & 2024 (pending)

> *"The CTF grant has been instrumental in our work, covering 98% of the total budget for our initiatives in the Sanya River watershed. This substantial financial support has been crucial in implementing our comprehensive approach, and the achievements in this region would not have been possible without this funding"*
> ***- Doug Satre, Senior Director of Strategic Partnerships, Plant With Purpose***

BACKGROUND

Plant with Purpose is a non-profit organisation that works with rural communities, implementing initiatives related to nature restoration and regenerative agricultural practices along watersheds, to improve crop yields, to bolster food sovereignty, and to improve water quality and access. They do it while empowering communities to find a path to self-sufficiency and resilience through so-called community Purpose Groups.

CTF support contributes to the Plant with Purpose project in the Sanya River, Tanzania, with annual goals to plant more than 215 000 trees, support 117 existing Purpose Groups and launch 4 new ones with a total participation of 2,956 families. This project showcases the positive impact of more trees and improved agricultural practices on local livelihoods, as well as empowers communities to take charge, which creates conditions for sustainable long-term community engagement and maintenance of results.

PROGRESS

This year Plant With Purpose celebrated the 40th anniversary of impactful community engagement and environmental stewardship across the globe. In Tanzania, the past year was marked by the successful completion of its largest triennial impact evaluation survey to date, involving over 5,000 households. This survey allowed them to collect solid evidence to aid more robust impact evaluation. In Sanya River, where the CTF supported project is implemented, the survey revealed a substantial 74% reduction in multidimensional poverty among the engaged households. This has been achieved through implementation of the elements of Village Savings and Loan Association (VSLA), so-called Purpose groups, an integrated model that synergistically combines sustainable agriculture, environmental stewardship, and economic empowerment. Overall, 79% of households in Sanya River participate in saving groups, whereas 83% attend agricultural training sessions provided through the Farmer's Field School.

TREE NURSERY
PHOTO BY PLANT WITH PURPOSE

PILLAR 1: NATURE PROTECTION AND RESTORATION - RESTORATION

Plant with Purpose

PROGRESS CONTD.

In the first half of 2024 Plant With Purpose exceeded their reforestation targets by planting 169 283 trees, surpassing the initial goal by over 50%. This effort has contributed to an estimated annual carbon sequestration of 18,000 tonnes of CO_2, with an average estimation of 6,2 additional tonnes of CO2eq annually for each partner household. This is achieved through implementation of agroforestry, regenerative annual cropping, and reforestation practices. The survival rate of newly planted trees over the past triennial cycle was recorded at 68%, affirming the effectiveness of the planting techniques and maintenance provided by the community and supported by the organisation.

Additionally, in the past year the project continued to engage with local schools and expand its engagement with the Purpose Groups.

The support provided by the Climate Transformation Fund covered nearly the entire budget for the Sanya River watershed project. With renewed support, Plant with Purpose aims to continue their work of integrating environmental conservation with community development, making it a model of effective practice in rural development and a valued partner in fostering global environmental and social resilience.

FIELD VISIT

In August 2024, Milkywire facilitated a field visit by the independent expert to the project in Sanya River. The purpose of this visit was to directly observe and verify project activities. By engaging with stakeholders on the ground, we wanted to gain an on-the-ground perspective that complemented self-reported data. This approach helps us identify potential issues and successes, providing a more accurate impact assessment.

The key insights from the visit concludes that the program is fully and comprehensively implemented on the ground, as well as acknowledged high professional standards and dedication of the program staff. The program effectively integrates various elements with the Village Savings and Loan Association (VSLA) at its core, emphasizing local economic empowerment as a foundation for environmental impact. This holistic approach has shown promising results in both environmental restoration and community prosperity. The Farmer Field Schools (FFSs) are particularly effective, serving both as training grounds for promoted techniques and as sources of income generation for the VSLAs.

The local community demonstrates a high level of engagement and appreciation of the project, especially among women. For example, since the inception of the program in 2016 in a particular Purpose Group, 26 members had started businesses through loans received from the VSLA, engaging in activities such as selling vegetables, running retail shops, livestock and jewellery making. Others reported important improvements in their lives through being able to buy gas stoves for cooking, building wells for their farms, and sending their children to school and even colleges. Finally, several community members acknowledged that they have been able to construct new houses thanks to the increased income flows. The key recommendations from the visit included strengthening support to the facilitators of VSLA's in the villages, along with enhancing quantification of carbon impacts of the projects to have a clearer assessment of environmental outcomes.

PILLAR 1: NATURE PROTECTION AND RESTORATION - RESTORATION

Planète Urgence

SUPPORTED IN 2023 & 2024 (pending)

BACKGROUND

Planète Urgence is a non-profit organisation dedicated to environmental conservation and community development, with a notable presence in Indonesia. Their work spans various critical areas, including the restoration of mangroves and coastal trees, fostering sustainable aquaculture practices, and enhancing the economic well-being of local communities.

The supported project is specifically tailored to combat the ecological harm caused by shrimp farming and deforestation in the fragile ecosystems of Borneo's Mahakam Delta and Adang Bay. This multifaceted initiative includes essential components such as environmental education, the establishment of community mangrove nurseries, and the provision of training in sustainable aquaculture practices. Through these concerted efforts, Planète Urgence aims to not only mitigate the environmental damage but also empower the local communities to adopt more sustainable livelihood practices.

Indonesia has the world's largest mangrove forests (20-25% or 3,36 million ha) and is among the top three countries for blue carbon stocks in Southeast Asia. However, estimates indicate that without interventions, as much as 600,000 hectares of mangroves could be lost to shrimp farming by 2035. Planète Urgence's way to approach the issue is not only reactive but also proactive, addressing the root causes of deforestation while offering sustainable alternatives that simultaneously benefit the ecosystem and the local economy. By empowering local communities with knowledge and skills, it establishes a foundation for sustainable practices and fosters a sense of ownership and responsibility for the environment.

MANGROVE PLANTING
PHOTO BY PLANÈTE URGENCE

PILLAR 1: NATURE PROTECTION AND RESTORATION

Planète Urgence

YOUNG MANGROVES
PHOTO BY PLANÈTE URGENCE

PROGRESS

Over the past year, Planète Urgence has made significant progress in its efforts to restore mangrove ecosystems in Indonesia's Mahakam Delta and Adang Bay. The establishment of seven nurseries, which now house over 210,000 seedlings, sets a solid foundation for future planting activities planned through early 2025. In 2024, the initiative successfully planted 63,500 propagules and 1,000 trees across 64 hectares, engaging communities in hands-on conservation efforts. Since the start of the project in early 2023, Planète Urgence and its partners have planted 218,500 trees in total covering around 104 ha of degraded land, estimating overall removals at about 31,304 tCO2e to date.

Planète Urgence has not only focused on ecological restoration but also on building sustainable livelihoods and enhancing local governance. The project's approach includes comprehensive community engagement through Free Prior Informed Consent (FPIC) processes, ensuring that local stakeholders are active participants in the conservation activities. This inclusion has fostered strong community relationships, evidenced by the active participation of 180 community members, including women's groups and reforestation groups, in environmental stewardship and sustainable economic practices.

Looking ahead, Planète Urgence plans to continue its impactful work while expanding its monitoring and evaluation measures to ensure the long-term success and sustainability of the project. Although the project faces challenges such as competition for resources, especially seedlings due to many different actors involved in planting activities across the area, as well as internal stakeholder coordination, these are being addressed through strategic partnerships and continuous community dialogue, ensuring that the efforts remain aligned with both local needs and broader environmental conservation goals.

PILLAR 2: NATURE PROTECTION AND RESTORATION

New projects supported in 2024: Nature protection and restoration

$600K

IN GRANTS SHARED AMONG THREE PROJECTS

over 500

PROJECTS APPLIED FROM 80 COUNTRIES ACROSS SIX CONTINENTS

INTRODUCTION

The nature protection pillar received over 500 applications from more than 80 countries across six continents. We look for projects that scale existing nature-based climate solutions by supporting the deployment of ecological and socially sustainable re-greening practices, as well as help stop deforestation and protect high conservation value landscapes. We primarily focus on projects that lead to direct impact on the ground in either protecting or increasing carbon stocks in nature, as well as bringing significant co-benefits to community and local ecosystems. The potential catalytic effect of our donation is also an evaluation criteria, meaning we prefer the projects that can be replicated, spread to new communities, or help create new innovative solutions. We tend to deprioritise nature projects that offer carbon credits since we believe such projects are better fit within the existing Voluntary Carbon Market. Finally, we mostly focused on assessing already working solutions to maximise potential for catalytic effect.

Within the nature pillar we are committed to re-support projects we are already partnering with, given they perform according to the plans and demonstrate a need for continued funding. For this reason, we select fewer new projects within this category than within the CDR pillar.

The high number of applications from regions like East Africa and Asia, particularly Kenya, Tanzania, Uganda, Malawi, Indonesia, and India, as well as from Latin American countries like Peru and Ecuador, reflects the critical need for local and scalable interventions. These regions have among the highest capacity for storing CO_2 in forests, as well as high needs in restoring landscapes. Furthermore, forest restoration and protection in these regions can increase community and ecosystem resilience to the negative effects of the changing climate.

The majority of the applications concerned forest and trees, varying from protection, tree planting, large-scale restoration, agroforestry, sustainable forest management, and farmer-managed natural regeneration (FMNR). We were excited to receive applications focused on restoring ecosystems beyond forests, including several seagrass projects. Developing robust methods to assess and monitor the climate benefits of diverse ecosystems and landscapes is crucial.

Applications varied greatly in size and focus, from small community projects to large-scale restoration efforts. This variety shows the urgent need for more funding across different projects to support the global nature-positive movement. Scalable models that can be replicated across regions and ecosystems are vital to addressing the climate and biodiversity crisis.

PILLAR 1: NATURE PROTECTION AND RESTORATION

New projects supported in 2024: Nature protection and restoration

JUSTDIGGIT DIGITAL REGREENING

This project develops a mobile app for regreening techniques like Farmer Managed Natural Regeneration (FMNR). The app delivers real-time, location-specific advice directly to farmers' phones. This approach reduces intervention costs by eliminating the need for in-person visits to every location. We already support Justdiggit's regular work since 2021, and now added this project because it builds on proven FMNR methods, increasing cost-efficiency and potential for rapid scaling in dry landscapes.

ULYSSES

This project focuses on large-scale seagrass ecosystem restoration in Western Australia using robotic technology. Ulysses is working in collaboration with the University of Western Australia. The group aims to restore thousands of hectares of seagrass meadows, which can store large amounts of carbon annually. The project develops innovative robotic technology for seed collection, planting, and monitoring. Ulysses, in partnership with UWA, provides a novel, scalable method with significant co-benefits for carbon sequestration, biodiversity, and coastal ecosystems.

JOCOTOCO CONSERVATION FOUNDATION

The "Plant the Forests of Tomorrow" project in Ecuador aims to reforest 400 hectares with 200,000 native trees over eight years in the Buenaventura Reserve. Jocotoco works on both establishing nature reserves and reforesting degraded landscapes in some of the world's most threatened biodiversity hotspots. Jocotoco has a strong track record of establishing reserves and preventing species extinction, as well as addressing the root causes of deforestation.

REGREENING APPLAUNCH
PHOTO BY JUSTDIGGIT

Pillar 3: Decarbonisation

OUR THEORY OF CHANGE FOR SUPPORTING DECARBONISATION

Achieving global net zero targets and stabilising the climate require transformative shifts across sectors. These shifts could be enabled by supportive policies, large-scale deployment of renewable energy solutions, and robust accountability mechanisms. However, change is not happening fast enough on its own, and efforts to reduce emissions face complex regulatory, technical, and social barriers. This pillar focuses on projects that address such challenges to accelerate the pace of decarbonisation.

> *"Our theory of change acknowledges the inherent uncertainties and complexities of transformative policy work. Instead of avoiding these challenges, it embraces them as key leverage points for driving long-term impact in global decarbonisation efforts."*
> ***- Robert Höglund, Fund Manager***

PHOTO BY TAURAI MADUNA FOR HUMAN RIGHTS WATCH

Pillar 3: Decarbonisation

OUR THEORY OF CHANGE FOR SUPPORTING DECARBONISATION CONTD.

Under this pillar, we focus on high-risk, high-reward initiatives that must demonstrate flexibility and agility to respond to changing external conditions and leverage unplanned opportunities. At the same time, we advance technology adoption in underprivileged environments that contribute to hands-on decarbonisation efforts. While these initiatives come with varying risk profiles—some even carrying the risk of failure—their success can be highly catalytic, driving profound impact. Embracing this uncertainty, we prioritise adaptability, continuous reassessment, and the ability to navigate complex, dynamic landscapes, knowing that even a few successful bets could be transformative.

Traditional climate finance often overlooks these efforts due to the difficulty in measuring direct outcomes and attributing success to specific actions. However, by supporting these crucial but less tangible areas, we fill a critical gap, ensuring the foundational elements of a sustainable, scalable, and equitable transition are in place.

> *"Funding from Milkywire was instrumental in enabling Industrious Labs to take seriously, for the first time, the prospect of launching a global cement decarbonisation campaign"* ***- Industrious Labs***

Enabling Environment:
Projects that shape policies, regulatory frameworks, and engage stakeholders to drive systemic change. These efforts create the conditions needed for clean energy and decarbonisation.

Renewable Energy:
Projects that deploy renewable energy solutions, reduce emissions and tackle infrastructure barriers where economic profitability is not yet viable. Our priority is practical, scalable projects that demonstrate feasibility and pave the way for wider adoption of renewable technologies.

Accountability:
Initiatives that hold governments and industries accountable, promoting transparency and adherence to climate commitments. These watchdog efforts strengthen the integrity of climate actions, ensuring they are credible and just.

Pillar 3: Decarbonisation

PORTFOLIO LEVEL RESULTS AND REFLECTION

8 PROJECTS SUPPORTED 2021-2023

3 NEW PROJECTS IN 2024

Industrious Labs

Played a pivotal role in securing federal funding for Century Aluminum to construct a decarbonised smelter, the first of its kind in the U.S. in over 40 years, significantly reducing CO_2 emissions in aluminum production.

HUMAN RIGHTS WATCH

Their report on environmental pollution in Louisiana's Cancer Alley led to new federal regulations mandating over 200 fossil fuel operations to curb emissions and improve air quality, alongside a $160 million investment in renewable energy for the region.

NEW ENERGY NEXUS

Successfully engaged five ministries and thirty-five local government agencies, facilitating policy dialogues and signing a Memorandum of Understanding with the Ministry of Industry to support cleantech startups in Indonesia.

beyond ZERO emissions

Played a pivotal role in securing federal funding for Century Aluminum to construct a decarbonised smelter, the first of its kind in the U.S. in over 40 years, significantly reducing CO_2 emissions in aluminum production.

Since 2021, we have supported non-profits working on decarbonisation through grants that enable them to pursue high-impact, often uncharted paths. Reflecting on the progress reported, we see both promising advancements and significant challenges. Projects like those led by Beyond Zero Emissions and Clean Air Task Force are making headway in difficult regulatory and market environments, influencing policy debates and supporting renewable integration in key regions. However, not all initiatives progress smoothly. New Energy Nexus has gained valuable insights from a pre-study looking into the viability of scaling coastal electrification efforts, illustrating the unpredictability and difficulties of working in volatile and often under-resourced contexts. These setbacks highlight that transformative change is rarely linear, requiring resilience, strategic pivots, and continuous adaptation.

Pillar 3: Decarbonisation

PORTFOLIO LEVEL RESULTS AND REFLECTION CONTD.

Our strategy is being tested in practice as grantees navigate complex landscapes, leveraging unexpected opportunities and responding to political shifts. For instance, Industrious Labs has had to evolve its tactics in the heavy industry sector, showing that flexibility is crucial when tackling systemic issues in areas traditionally seen as hard to abate. This adaptability, driven by real-time learning and adjustment, underscores our belief that financial support alone is not enough; strategic guidance and an openness to change are also key.

> *"It's clear that progress in this type of work comes not from playing it safe but from daring to support bold, high-risk initiatives. It's about leaning into uncertainty, adapting to challenges, and seizing the unexpected opportunities that drive real change."* ***- Natalya Yakusheva Jarlebring, Fund Manager***

While progress varies across the portfolio, there are clear signs of momentum. Human Rights Watch's work on fossil fuel accountability, for example, has sparked significant policy discussions in the USA, demonstrating the catalytic impact that targeted advocacy can achieve. These reflections confirm that the journey toward decarbonisation is complex and fraught with obstacles, but our commitment to high-risk, high-reward projects remains essential. By embracing the inherent uncertainties of this work, we are helping to unlock the systemic changes needed to drive global climate action forward.

LOCAL FISHMONGER
PHOTO BY NEW ENERGY NEXUS

PILLAR 3: DECARBONISATION - ENABLING ENVIRONMENT

Industrious labs

SUPPORTED IN 2023 & 2024 (pending)

BACKGROUND

Industrious Labs is an organisation dedicated to decarbonising heavy industry, with a specific focus on the aluminium, cement, steel and waste sectors. Their global cement campaign is centred around advocating for a shift from carbon-intensive Portland cement to existing, low-carbon technologies that can significantly reduce emissions in this sector. Whereas, their aluminium campaign aims to decarbonise the U.S. primary aluminium industry, leading to a substantial reduction in its CO_2 footprint. Industrious Labs prioritises four interconnected approaches to reducing emissions: advocacy campaigns, data and analysis, movement building, and strategic communications.

Heavy industries significantly contribute to global carbon emissions, despite the fact that lower carbon emitting technologies already exist as an alternative for many industrial production processes. There is a pressing need to accelerate the adoption of these low carbon technologies and decarbonisation of heavy industries. Unfortunately, progress in this area has been slow, plagued by the notion that industry is “hard to abate”. Industrious Labs challenges the "hard to abate" narrative by demonstrating the feasibility of low-carbon technologies and mobilising policy change. Industrious labs is also one of the top recommendations from Giving Green.

PROGRESS

In the aluminium sector, Industrious Labs has made significant progress. The organisation played a pivotal role in securing federal funding for Century Aluminum, facilitating the construction of a new, decarbonised smelter—the first of its kind in the U.S. in over 40 years. This milestone represents a crucial step in reducing emissions in aluminium production. Moreover, Industrious Labs successfully mobilised key industry players and maintained continuous dialogue with federal entities, including the Department of Energy and the White House. These efforts have not only advanced the aluminium decarbonisation agenda but have also established Industrious Labs as a key influencer in the sector.

In the cement sector, Industrious Labs’ progress has been more developmental. The organisation initially aimed to launch a global campaign focusing on the International Finance Corporation (IFC) and World Bank Group. However, after re-evaluating its strategy, and while continue to work on the fostering relations and engagement with international financial institutions, the primary focus of the program shifted toward building capacity in key geographies like India, Brazil, and California, and engaging with Holcim-Lafarge, a major global cement producer. This new route is expected to yield decarbonisation of cement in the nearer term. Although these shifts have delayed the public launch of the campaign, they reflect a responsive and strategic approach to complex global challenges.

Looking ahead, Industrious Labs plans to continue its work in both sectors, with an emphasis on launching a global cement network by early 2025 and furthering the decarbonisation of U.S. aluminium production. Their work will remain critical in driving the heavy industry sector toward a sustainable future, and the CTF will closely monitor their progress.

PILLAR 3: DECARBONISATION - ENABLING ENVIRONMENT

New Energy Nexus: Advocacy in Indonesia

SUPPORTED IN 2022 ,2023 & 2024 (pending)

BACKGROUND

New Energy Nexus (NEX) is a global non-profit organisation dedicated to innovation and adoption of clean energy technologies. We are supporting NEX in Indonesia to establish a policy and regulatory framework for the growth of clean energy technology startups. NEX has a good global track record as well as strong results from supporting clean energy startups in Indonesia.

As energy needs in Indonesia continue to rise alongside an expanding coal sector, the intervention provided by NEX is both timely and crucial. To facilitate investment in decarbonisation, the business environment for clean energy companies needs to improve in Indonesia and key challenges include the lack of coordinated spaces for cross-sector dialogue between government, industry, and startups, as well as a limited understanding among policy-makers about cleantech needs. Additionally, insufficient government incentives and difficulties in securing financing from investors hinder startup growth. NEX contributes to this improvement by creating a space for dialogue between startups, policy-makers, and investors. The NEX advocacy program was started thanks to the CTF donation and is fully funded with our grant.

FISHMONGER
PHOTO BY NEW ENERGY NEXUS

PROGRESS

In the second year of funding from the CTF, until the middle of 2024, NEX engaged with five ministries and thirty-five local government agencies across six provinces, employing methods like the World Café technique to facilitate discussions for cleantech startups with local decision-makers. Their strategy is to raise awareness of clean energy startups' needs and how they benefit government agencies' targets, not only in achieving the energy transition but also in promoting local economic development. As part of their efforts to increase youth participation in the energy policy-making process, the NEX STEP XChange initiative engaged over 375 young people across four provinces, enhancing their policy-making capabilities and enabling dialogue on sustainable energy practices.

NEX has dedicated much of its work to laying the groundwork for future energy policy shifts through initiatives like dialogue facilitation between cleantech startups and policy-makers and establishing an MoU with key ministries, which plays a significant role in providing a formal framework for integrating cleantech startups into national programs. This MoU will help address the gaps in government support, such as offering clearer pathways for startups to access resources and market opportunities. By focusing on these foundational efforts, NEX has successfully raised awareness and created essential platforms for clean energy startups. In its third year, NEX will build on this progress by continuing policy advocacy, expanding stakeholder involvement, and publishing actionable recommendations. We anticipate that these efforts will pave the way for meaningful policy changes and drive positive outcomes in the cleantech sector.

PILLAR 3: DECARBONISATION - ENABLING ENVIRONMENT

Beyond Zero Emissions

SUPPORTED IN 2022, 2023 & 2024 (pending)

BACKGROUND

Beyond Zero Emissions (BZE) is an independent think-tank working on net zero pathways for Australia, highlighting how the green transition benefits the economy. The CTF provides core support to BZE to strengthen its organisational capacity, research, and advocacy work.
Australia is a highly fossil-fuel-dependent country, and BZE is one of the few organisations demonstrating a track record in bringing about real change. They are also among the rare NGOs being strictly non-partisan, able to influence policymakers across the political spectrum.

BZE has been highly successful in the past, including implementing strategies to reduce emissions and securing investments in renewable energy. Our support helps them expand their work and increase the chances that well-crafted policy proposals win support.

> *"Thanks to the generosity of multi-year funding from Milkywire, we were given the flexibility needed during a period of time when the organisation was maturing and required to be reactive to the external operating environment, allowing us to direct the funds to where they were needed the most."* ***- Beyond Zero Emissions***

REPORT PRESENTATION
PHOTO BY BEYOND ZERO EMISSIONS

PILLAR 3: DECARBONISATION - ENABLING ENVIRONMENT

Beyond Zero Emissions

SUPPORTED IN 2022, 2023 & 2024 (pending)

PROGRESS

BZE has been recommended as a highest-impact climate NGO in 2024 by Giving Green, a climate philanthropy research group (reaffirming their 2021 listing). To reach this recommendation, Giving Green conducted a literature review, interviewed climate experts, policymakers, and industry leaders, and directly reviewed BZE's work. Giving Green's thorough assessment highlighted BZE's significant policy influence, including contributions to Rewiring the Nation and the National Net Zero Authority. BZE's track record shows they can drive impactful climate action and put additional funding to work.

Since 2023 BZE has published three new influential reports pivotal to this effort: The National Supergrid, Safeguarding Our Future, and Make It Here. CTF's core funding has been important in allowing BZE to hire staff and engage technical consultants, ensuring the delivery of high-quality research, effective advocacy, and broader community outreach.

Despite BZE's and other climate organisations' work as well as raised governmental ambitions, progress on reducing emissions in Australia has faced challenges. A lack of federal coordination has slowed on-the-ground progress, with workforce shortages and local resistance delaying renewable energy projects. Misinformation campaigns, particularly around energy solutions, have added to these hurdles.

BZE works with very concrete solutions to this, showing where there are profitable opportunities to deploy climate solutions, and how Australia can utilise its natural resources to become a major green exporter. A major focus is overcoming practical barriers that are slowing the delivery of renewable energy projects and shut down of fossil fuel facilities. BZE is supporting their national policy agenda by running regional tours to promote clean energy, and build acceptance. A next step includes launching a National Action Plan to coordinate Australia's decarbonisation efforts, building on BZE's local work and partnerships with industry.

FIELD VISIT IN PERTH
PHOTO BY BEYOND ZERO EMISSIONS

PILLAR 3: DECARBONISATION - RENEWABLE ENERGY

Clean Air Task Force

SUPPORTED IN 2021, 2022, 2023 & 2024 (pending)

BACKGROUND

Clean Air Task Force (CATF) is a non-profit focused on reducing atmospheric pollution and mitigating global warming. The CTF funds the CATF's Africa Energy & Climate Innovation Program which seeks to build the foundation for a large-scale clean energy future in Africa, addressing both local needs and economic growth. Unlike small-scale solutions like microgrids, CATF focuses on systemic changes such as renewable grid integration and strategies to address industrial emissions to influence clean energy development across the continent.

Their work in this area is critical but challenging to measure in terms of direct impact, as it targets long-term structural changes often overlooked in energy transition strategies. CATF's inclusion in the CTF is due to its strong track record of policy advocacy and emissions reduction, as well as recommendations from groups like Founders Pledge and Giving Green. Their focus on clean energy access in high-growth regions highlights the justice aspects of Africa's energy transition, a highly under-researched and underfunded area.

WEST AFRICA UTILITIES ROUNDTABLE IN ACCRA, GHANA
PHOTO BY CLEAN AIR TASK FORCE

PILLAR 3: DECARBONISATION - RENEWABLE ENERGY

Clean Air Task Force

SUPPORTED IN 2021, 2022, 2023 & 2024 (pending)

PROGRESS

CATF has been running several projects across West and East Africa. In Northern Ghana CATF focused on reducing grid inefficiencies and unbilled energy consumption to stabilise utilities and cut fossil fuel reliance. High grid losses increase costs, limit access to electricity, and push utilities toward fossil fuel-based generation, worsening emissions.

CATF partnered with a third-party consultant to analyse the grid and identified significant inefficiencies. Recommendations from the study have started to be implemented, with CATF helping the utility secure funding to address the remaining issues. These include installing in-line metres, upgrading infrastructure, and improving energy management. The utility assesses the saved energy from these initial interventions as totaling 9,5GWh of annual power savings compared to business as usual, and net revenue saved of 1,15 million USD which it is re-investing in modernising parts of its network that is severely outdated.

Reducing grid losses will allow the utility to connect more customers, many of whom currently lack electricity, and integrate more renewable energy. This will reduce the need for additional fossil fuel generation, ultimately cutting emissions while enhancing energy access and financial stability for the utility. CATF's work in Ghana is part of a larger effort to improve grid efficiency across West Africa, where energy losses are a critical barrier to cleaner, more reliable power

In 2024, CATF also launched three new projects in Sierra Leone, Gambia, and Kenya to support Africa's energy transition. These initiatives stemmed from CATF's annual utilities roundtable which collects key power companies in the region. The discussion forum helps identify inefficiencies and challenges in expanding electricity access.

In Gambia and Kenya, CATF conducted technical analyses to guide renewable energy integration into existing grids, addressing critical challenges such as grid reliability, transmission efficiency, and the true cost of Variable Renewable Energy (VRE). In Kenya, the study highlighted concerns about over-reliance on Levelized Cost of Electricity (LCOE) calculations, which often omit transmission, distribution, and system costs. There is also a risk to the reliability of electricity supply due to the lack of complementary infrastructure upgrades. This study provides recommendations to improve operational guidelines and procedures for better VRE integration, and compares Kenya's approach with other countries to identify best practices.

CATF also completed a scoping exercise with the Manufacturers Association of Nigeria (MAN), identifying key areas for industrial decarbonisation. This marks an important step toward developing a decarbonisation roadmap for Nigeria, though more resources are needed for full implementation.

CATF's research has been recognised in Energy Policy and The Electricity Journal. A study on Kenya's electric mobility sector was highlighted by the Kenya Energy and Petroleum Regulatory Authority (EPRA). The report demonstrated that the Kenyan grid is well-positioned to accommodate e-mobility growth, provided that EPRA mandates periodic assessments of infrastructure capacity and enforces stringent standards to prevent sub-standard battery products from entering the market. This will help preserve the e-mobility sector and maximise benefits for users

Looking ahead, CATF plans to expand its work to additional countries in West and East Africa while continuing its collaboration with Nigerian industries.

PILLAR 3: DECARBONISATION - RENEWABLE ENERGY

New Energy Nexus - Bungin Island

SUPPORTED IN 2023

BACKGROUND

The Bungin Island project, led by New Energy Nexus Indonesia and fully funded through the CTF, aims to help decarbonise Indonesia's fishing sector by introducing electric boat motors and solar-powered cold storage facilities. Bungin Island was chosen as a pilot project location. It is recognised as one of the most densely populated islands globally, and relies heavily on fishing for its community's livelihood. Albeit a high upfront cost, electric motors have the theoretical ability to have lower lifetime costs than fossil engines, as well as less local pollution and sound disturbances. We chose this project to explore innovative business models for the widespread adoption of electric boat motors, as well as the direct emission reductions coming from introducing electric motors in the projects.

PROGRESS

The first step of the pilot project was to conduct a feasibility study to validate key assumptions, assess readiness for widespread adoption among the local fishing community beyond the pilot and validate the business case. This comprehensive feasibility study involved 54 participants from the local fishing community, and provided valuable insights into current practices and readiness to adopt sustainable solutions. The study revealed significant challenges. One was that the carbon savings from the introduction of electric motors had been overestimated. High capital costs also make the project less economically viable than anticipated, and limited interest from fisherfolk, stemming from concerns over maintenance costs and lack of local support, inhibits community adoption. Additionally, without significant investment in renewable energy infrastructure, charging the electric motors may bring less environmental benefits than hoped. Given the findings of the feasibility study, we are carefully considering the future of the pilot project.

CATCH OF THE DAY
PHOTO BY NEW ENERGY NEXUS

PILLAR 3: DECARBONISATION - RENEWABLE ENERGY

atmosfair - Biomass electricity on Mafia Island

SUPPORTED IN 2021

In 2021, CTF supported atmosfair and Kisiwa Farming Limited project on establishing a pilot biomass power plant on Mafia Island, Tanzania to replace the island's dependence on diesel generators and directly displacing fossil fuel emissions. The facility has been successfully installed, but due to difficulties in securing a power purchase agreement, less electricity was sent to the grid than expected. Since the project has been only partially implemented the remaining fund has been redirected to the development of biochar generation from the various biomass waste streams arising from farming operations on Mafia Island. Our funds will be matched by additional investment both from atmosfair and the implementing partner Kisiwa Farming Limited, in order to increase the scale of the biochar generation. Once fully operational, the expected avoided emissions of CO_2 comprise 105 tCO2/year, whereas permanent sequestration from various uses of biochar, along with other types of sequestration comprise 87 tCO2/year 29 tCO2/year respectively. This is in addition to the 250 tonnes that the emission reduction from electricity reduction the project is expected to contribute to in its partially implemented form.

COCONUTS READY TO BE PROCESSED INTO COCONUT OIL
PHOTO BY ANNIKA RICHTER, ATMOSFAIR

PILLAR 2: DECARBONISATION - ACCOUNTABILITY

Carbon Market Watch (CMW)

SUPPORTED IN 2023

BACKGROUND

CMW is a prominent organisation striving to influence EU carbon removal policies. In the ongoing legislative revision, there's a risk that the EU might permit low-durability measures like afforestation and soil carbon as substitutes for fossil emission reductions. CMW proposes a novel approach to monitor the EU's carbon removal targets, preventing the risk of discouraging mitigation efforts due to the absence of distinct reduction and removal targets. This approach aims to achieve near-zero emissions for the benefit of both the climate and society.

Given the EU's critical role as a global leader in emission reduction commitments, it is crucial to ensure that these ambitious promises translate into concrete decarbonisation actions. Policymakers play a central role in this process, and holding them accountable for delivering on their commitments is a potentially influential pathway towards achieving emission reduction goals. Therefore, supporting CMW, an organisation actively working to influence EU decision-making on carbon removal, and advocating for effective monitoring of carbon removal targets, is a strategic and impactful choice in advancing the EU's efforts toward global net zero goals.

PROGRESS

During the reporting period, CMW has advanced advocacy efforts in the EU climate policy by promoting the separation of carbon removal from emissions reduction targets. The project focused on two major outcomes: conceptualisation and drafting of an open letter and conducting co-creative policy workshops to support development of carbon removal policy.

The prominent open letter released in November 2023 advocated for distinct targets for emissions reductions, land-based sequestration, and permanent carbon removals within the EU 2040 climate framework. The letter has received endorsements from over 116 stakeholders including scientists, NGOs, and businesses. The policy proposal presented in the letter received a positive reception, leading to its inclusion in the European Parliament's stance on the Carbon Removal Certification Framework. The publication of the open letter not only garnered substantial media coverage across major platforms like POLITICO and Euronews but also triggered significant policy discussions, including a formal reply and a strategic meeting with the European Commission. This dialogue was instrumental in advancing CBW's advocacy efforts.

Alongside these achievements, CMW has been actively building a coalition to support a dedicated policy framework for carbon removals. This initiative included a series of workshops designed to co-create practical policy solutions, registering significant interest with 67 participants engaged in shaping a robust blueprint for future EU legislation.

CBW work this year has not only maintained the planned trajectory but has also adapted to enhance transparency and stakeholder engagement through digital platforms, ensuring broader access and participation in the ongoing discussions on EU climate strategies. As they continue to advocate for clear and separate targets for carbon removals, CMW remains at the forefront of policy innovation, contributing to a more sustainable and equitable climate future in the EU.

PILLAR 2: DECARBONISATION - ACCOUNTABILITY

Human Rights Watch

SUPPORTED IN 2021, 2022, 2023 & 2024 (pending)

BACKGROUND

Human Rights Watch (HRW) is an international non-governmental organisation that focuses on advocating for human rights, including the right to a healthy environment, and holding governments and other entities accountable for human rights abuses. HRW's work in the context of fossil fuels involves investigating and exposing their negative impacts on human rights and health, advocating for a transition to cleaner energy sources, conducting research in affected regions, and engaging in global advocacy efforts to better regulate the industry, end public financing for it, and phase out the use of fossil fuels. HRW's goal is to protect human rights and promote environmental sustainability in the face of the challenges posed by fossil fuel industries.

HRW is a highly capable research and advocacy organisation with a multifaceted approach to reducing dependency on fossil fuels, including a novel focus on exposing the effects of fossil fuels on human health.

PROGRESS

Over the past year, CTF's support has been instrumental in advancing Human Rights Watch's initiatives against the adverse impacts of the fossil fuel and petrochemical industries. In the first half of this year, HRW produced 13 influential publications highlighting the human and environmental toll of fossil fuel operations in various countries including Azerbaijan, Uganda, the United Arab Emirates, and the United States. This included the release of a compelling report detailing the failure of local, state, and federal governments in the US to protect residents of Louisiana's "Cancer Alley" from the harmful effects of these industries. The report, which has garnered significant media attention with features in over 220 news stories globally, underscores the ongoing environmental and health crises in similar regions.

The US federal government has responded to these findings and community activism by introducing nationwide air regulations that mandate over 200 fossil fuel and petrochemical operations to significantly curb toxic emissions, minimise flaring, and improve air quality monitoring. This policy shift aligns closely with HRW's recommendations and represents a critical step forward in our ongoing environmental justice campaign. Furthermore, the federal announcement of more than $160 million USD in grants to facilitate Louisiana's transition towards renewable energy is linked to the results of exposing harmful consequences of environmental pollution.

Additionally, HRW's recent research in Turkey, documenting the health impacts on communities near the country's largest coal power plants in the Afşin-Elbistan coal region, has prepared the groundwork for robust legal challenges and advocacy efforts. With Turkey positioned as Europe's largest coal-powered electricity producer, the imminent government decision to expand the Afşin-Elbistan coal plant has become a focal point of their efforts. These findings will be used to support community-led legal challenges and

PILLAR 2: DECARBONISATION - ACCOUNTABILITY

Human Rights Watch

SUPPORTED IN 2021, 2022, 2023 & 2024 (pending)

PROGRESS CONTD.

to advocate for a governmental commitment to align Turkey's air pollution standards with the European Union's standards and phase out coal by 2030.

This project supports their new line of work to engage the EU more directly. Building on their success in Bosnia and Herzegovina, where their reporting moved the government to suspend a licence for a new coal power plant last year, HRW launched a new research project in Bulgaria, where air pollution levels are among the highest in Europe. They are documenting the coal industry's impact on public health in communities near coal plants. They plan to leverage the EU's air quality regulations, including upcoming new standards, to press Bulgaria to align its national standards and ensure they are enforced. HRW released a short publication in September with an update on Bosnia and Herzegovina's progress toward transitioning to cleaner energy. In February, the Republika Srpska entity of Bosnia and Herzegovina adopted renewable energy legislation, a direct result of HRW's advocacy efforts with local partners in 2023. Similar plans for the Federation of Bosnia and Herzegovina are expected later in 2024.

Looking forward, HRW plans to both continue the ongoing work and broaden its research and advocacy scope into new regions, including Iraq and the UAE, continuing to push for policies that ensure a timely and rights-respecting transition away from fossil fuels. The ongoing support from CTF is vital in enabling them to meet these challenges and maintain momentum in HRW advocacy for environmental justice and public health.

PHOTO BY TAURAI MADUNA FOR HUMAN RIGHTS WATCH

PILLAR 3: DECARBONISATION

New projects in 2024: Decarbonisation

INTRODUCTION

In this year's call for proposals the emission reduction pillar received over 200 applications. Projects spanned the globe focusing on areas such as hydrogen fuel systems, eco-friendly cooking solutions, solar energy, biogas, reforestation, water quality management, waste transformation, capacity building, education, as well as completely new technologies.

Our selection process aimed to identify projects that occupy a critical 'sweet spot' between high-impact potential and measurable outcomes, focusing on initiatives beyond early-stage R&D or capacity building, but yet not so advanced and market-ready that they've lost their catalytic potential. We look both at the direct impact a project can have today in reduced emissions, as well as the long-term catalytic impact.

PRECISION DEVELOPMENT (PXD)

This project promotes Leaf Color Charts (LCCs) among smallholder rice farmers in India to help farmers optimise nitrogen fertiliser use, thereby reducing their production costs and nitrous oxide emissions for the global community. PxD will collaborate with an implementation partner to distribute 10,000 LCCs with accompanying digital advisory services during this project. This project addresses the critical need for timely and customised fertiliser application to reduce GHG emissions, with the potential for continued scaling through government and other partners and significant long-term emissions reduction.

LUMS/NEUBOLT

This initiative introduces Electric Three-Wheelers (E3Ws) in Pakistan, replacing traditional three-wheelers with E3Ws with swappable batteries. The project implements solar- and biogas-powered battery swapping stations in peri-urban agricultural areas. Using the energy efficiency of E3Ws the project demonstrates a scalable model for sustainable mobility in Pakistan.

THE CLINTON HEALTH ACCESS INITIATIVE (CHAI)

HAI will work on the high impact project of transitioning a portfolio of hospitals in South Africa's Western Cape Province to renewable energy. This could be a high impact measure that is currently not occurring due to the limited capacity of the department of health and because of bureaucratic hurdles to innovative financial and energy contracts. The project has the potential to reduce emissions by hundreds of thousands of tons, and leverages CHAI's extensive experience in health sector procurement and innovative finance.

APPENDIX 1

Financial data

The CTF is a selection of projects by Milkywire. Companies can support these selected projects by donating to Milkywire's charitable partners, WRLD Foundation Sweden ("WRLD Sweden") and WRLD Foundation US ("WRLD US"). These foundations facilitate the pre-purchase of carbon removal and make donations to the projects chosen for the fund.

Purchases of carbon removal tonnes have been conducted both via Milkywire's charitable partners and directly from Klarna to the projects included in the CTF. Tonnes purchased by WRLD are immediately retired and cannot be resold.

In 2023, 24 projects were supported, totalling over $5,34 million. Of this, $3,89 million was paid out by WRLD US and WRLD Sweden, while the remaining funds represent direct support from Klarna to carbon removal suppliers selected for the CTF. A detailed breakdown of the support per project is provided in the table below.

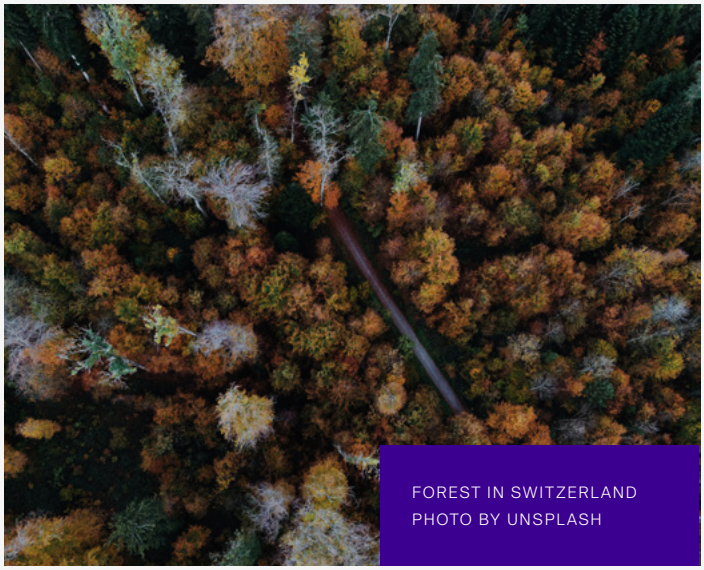
In 2024, 19 new initiatives have been selected for support. In October 2024, we will also take a decision on which initiatives to continue funding from the previous years. Total amounts disbursed per project in 2024 will be available in next year's progress report.

The WRLD Foundation Sweden is a Swedish foundation, registered under the organisational number 802526-9328. The WRLD Foundation US is a Delaware-registered non-profit organisation, holding a 501(c)(3) status with EIN 87-2610501.

TOTAL CTF PAYOUTS PER YEAR

YEAR	USD
2021	**1,059,546**
2022	**1,891,195**
2023	**5,343,142**
2024	**5,425,000**

Figures in the table include donations from WRLD Foundation Sweden, WRLD Foundation US, and carbon removal purchases by Klarna.



FOREST IN SWITZERLAND
PHOTO BY UNSPLASH

APPENDIX 1

Financial data

SUPPORT GIVEN IN 2023	TOTAL CTF PAYOUTS	PAID OUT BY (USD)	
All numbers in USD	**USD**	**WRLD**	**Klarna**
Carbon removal suppliers	**2,719,415**	**1,269,415**	**1,450,000**
Husk	50,000		50,000
Silicate	280,000	30,000	250,000
InterEarth	330,000	30,000	300,000
Mash Makes (through Carbonfuture)	45,000	45,000	
Octavia Carbon	299,750	199,750	100,000
Mission Zero	239,200	139,200	100,000
Terrafixing	240,425	140,425	100,000
Parallel carbon	239,700	139,700	100,000
Takachar	290,040	140,040	150,000
SEA02	240,400	140,400	100,000
Inplanet	225,100	125,100	100,000
Carbon Capture Scotland (The Carbon Removers)	239,800	139,800	100,000
Grant recipients	**2,623,727**	**2,623,727**	**0**
Beyond Zero Emissions	75,000	75,000	
New Energy Nexus	441,712	441,712	
Clean Air Task Force	215,000	215,000	
Human Rights Watch	215,000	215,000	
Justdiggit	240,000	240,000	
Warsi	130,000	130,000	
Plant with Purpose	240,000	240,000	
Ceibo alliance	210,000	210,000	
Planete Urgence	210,000	210,000	
Landesa	210,000	210,000	
Industrious labs	250,000	250,000	
Carbon market watch	187,015	187,015	
Total all projects	**5,343,142**	**3,893,142**	**1,450,000**

For details about allocation in 2021 and 2022, please refer to the CTF Progress Report 2021/2022 and 2022/2023.

APPENDIX 2

The team and advisory board

THE TEAM AND ORGANISATIONAL STRUCTURE

Milkywire works with an advisory group to help us choose the most impactful and sustainable climate projects for the fund. Final decisions on chosen projects are made by Milkywire but the ambition is to follow the advisory group's guidance as far as possible. The group members have different competencies that cover the areas in the fund but every member does not review every project. The advisory group is independent of Milkywire and the members do not necessarily endorse all of the projects that are chosen for the CTF.

Milkywire has a team of >20 staff, the main persons responsible for developing the CTF are:

Fund manager - Robert Höglund
Robert specialises in carbon removal, and how the corporate sector best can contribute to climate action. He co-founded the CDR market overview CDR.fyi, works with the NGO Carbon Gap, and writes reports and articles on carbon removal and corporate climate contributions. He is also a member of the EU Expert Group on Carbon Removals, the Science-based Target initiative's (SBTi) Technical Advisory Group and the board of the research program Mistra sustainable consumption. Robert previously headed Oxfam Sweden's policy and communications team and founded the Climate Goal Initiative in Sweden.

Senior Environmental Lead - Natalya Yakusheva Jarlebring
Natalya holds a Ph.D. in Environmental Science, from Södertörn University, with her thesis focusing on nature conservation governance. She has since worked as a postdoctoral researcher on International Forest Policy at the Department of Forest Science at the University of Helsinki, where she focused on the EU debates around forest-related issues and their implications for the EU climate commitments. Natalya also has extensive experience working as a consultant in natural resource management and the development of sustainability policies.

THE MEMBERS OF THE ADVISORY GROUP THAT PARTICIPATED IN THE 2024 SELECTION WERE:

Alexander Farsan, former SBTI lead at WWF

Cara Maesano, Manager & Geochemical Lead at RMI's CDR Initiative, PhD

Carsten Warnecke, Senior expert at NewClimate Institute

Cyril Brunner, Managing director remove, ETH Zurich

Danny Cullenward, Climate policy expert, climate economist, PhD

Derik Broekhoff, Senior scientist, Stockholm Environment Institute

Grant Faber, Techno-economic analysis expert, Carbon-Based Consulting LLC

Karen Holl, Professor of Environmental Studies, University of California

Kathleen Draper, Biochar expert, former chair of International Biochar Institute

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Mawa Karambiri, Policy and technical engagement specialist for the Sahel, CIFOR-ICRAF

Marian Krüger, Managing director Remove accelerator, previously at ETH Zurich

Mica Taborga, Direct Air Capture expert, Chemical engineer, individual capacity

Lucia Simonelli, Senior researcher Giving Green, assisted by Emily Thai and Dan Stein, Giving Green

APPENDIX 3: HOW WE SELECT AND EVALUATE PROJECTS

Project selection process

Our project selection process is designed to ensure fairness, transparency, and quality. Here's a breakdown of the process:

OPEN CALL FOR PROPOSALS

To ensure fairness and transparency, we follow a structured and competitive process for sourcing new initiatives to be part of the fund. Anyone can submit a concept note. We received over 1,000 proposals in our 2024 open call across the fund's three pillars.

ASSESSMENT AND SHORT LISTING

The submitted concept notes are first reviewed by the Fund Managers. The most promising initiatives are invited to elaborate on their concept notes with a project proposal. These proposals are then pre-assessed by the Fund Managers. A shortlist of promising projects are invited for the interview and fully assessed and scored against our evaluation framework. We utilise an extensive scoring matrix, which breaks down criteria into numerous questions to ensure a comprehensive project evaluation. This two-tiered approach enables us to get a broad overview of projects available to fund, and do deep evaluations on the most promising ones.

EVALUATION AND INPUT FROM THE ADVISORY GROUP

The full information from shortlisted projects are submitted for evaluation of the Advisory Group. Not each project is assessed by each member of the Advisory Group, but several experts review each project. The assessments and scoring is then discussed in a meeting with the Advisory Group.

FINAL SELECTION

The final selection combines the scores with our aim to create a diverse portfolio in terms of geographical coverage and methodologies employed. Milkywire oversees the curation of the fund, and makes a recommendation to the WRLD Foundation which receives donations from our partners and pays out funds to selected organisations.

DUE DILLIGENCE

Before we sign contracts with selected organisations, WRLD Foundation conducts a standard due diligence screening. This includes for example financial crime related screenings of the non-profit/company and its key staff, an assessment of the internal control environment of the organisation and its legal status.

APPENDIX 3: HOW WE SELECT AND EVALUATE PROJECTS

Evaluation framework

We use a comprehensive evaluation framework structured around the pillars of the fund. While each pillar has unique criteria tailored to its specific focus, they share common themes such as effectiveness, additionality, and co-benefits. Below is a summary of our evaluation framework, in our assessments these criteria are further operationalised.

For CDR the effect of our support is a key consideration where we evaluate whether Milkywire's funding is essential for the project's success, the potential to widen the CDR ecosystem, and the reliability of project delivery. We also put great weight on the theoretical potential of the project, examine the durability of carbon storage, overall climate effectiveness, resource efficiency, scalability, cost reduction pathways, and the likelihood of achieving projected outcomes. Additionally, Milkywire emphasises integrity by ensuring safety, legal compliance, and robust measurement, reporting, and verification (MRV) practices. Projects are also assessed for their ability to provide social and environmental co-benefits.

Decarbonisation projects are assessed based on their effectiveness, including the organisation's track record in driving change and the potential for long-term catalytic impact. The framework considers the estimated CO_2 avoidance, the probability of success, and the overall expected impact. It also evaluates the necessity of funding to ensure additionality, the presence of co-benefits, and the certainty that the project will proceed as planned.

When selecting nature protection and restoration projects, Milkywire focuses on effectiveness by reviewing the organisation's experience in similar initiatives and the project's direct environmental impact, such as the number of trees regrown or areas put under protection or better management. Social safeguards and land rights are crucial to ensure respectful and equitable implementation. The criteria also include the need for funding to guarantee additionality, the potential for catalytic effects that amplify the project's benefits, and the certainty of successful project execution. Last, but not least we assess the possible ecological effects of the project in terms of its contribution to local biodiversity, water cycles, soil health and other nature co-benefits.

APPENDIX 3: HOW WE SELECT AND EVALUATE PROJECTS

Reporting and impact assessment

To determine actual impact and ensure accountability, we have a robust system of narrative, financial and audit reporting, dialogue, and post-evaluation. Initially, self-reported data from the projects is collected to ensure they are meeting expected KPIs and spend the funding as agreed, but also identify challenges and deliver the anticipated climate impact. This data serves as the foundation for deeper evaluations.

We complement this self-reported data through three additional layers of verification and dialogue. First, we engage in an in-depth follow-up dialogue with partners to assess progress beyond initial reports. This dialogue provides a forum to draw additional qualitative insights, identify risks, discuss adaptations where relevant, and emerging opportunities that may not be captured in standard reports.

Second, this year marks the introduction of field visits to community-based nature projects that have been supported for at least three years. This milestone allows us to witness on-the-ground changes and validate reported outcomes in real-world settings. These visits are critical, as they provide firsthand evidence of progress and offer a deeper understanding of how the projects are impacting the communities and ecosystems they aim to support.

Third, we also leverage our advisory group in the progress review. Their external perspectives and contextual expertise allows us to triangulate our own assessments, ensuring we critically examine the ongoing effectiveness and potential future impact of the projects.

Together, these three elements—dialogue, field visits, and advisory group consultations—strengthen our impact assessment process, allowing us to refine the framework for project selection and future support.

As the projects mature and the fund expands, we continuously refine and elaborate on our impact measurement methodologies. This helps us not only to make informed decisions on continued support but also to sharpen our focus on what works, ensuring we continuously learn and adapt to maximise climate impact.

It is important to recognise that support for projects across all categories is based on the expected climate impact. However, not all projects will deliver their anticipated results. For example, some advocacy projects may not lead to ambitious policy shifts, and certain carbon removal initiatives may fall short of their goals. Conversely, other projects could surpass expectations. Given this inherent uncertainty, we focus on supporting organisations with strong track records and the capacity to adapt and succeed even in the face of challenges.

Projects included in the fund are not guaranteed renewed support. Instead, support is evaluated annually based on both the project's performance and evolving needs, ensuring that our resources are continually directed to where they will have the most significant and sustainable impact.

APPENDIX 4

Scientific evidence in support of various methods

BIOCHAR
PHOTO BY ATMOSFAIR

WHAT SCIENTIFIC SUPPORT IS THERE FOR CARBON REMOVAL BEING AN EFFECTIVE CLIMATE SOLUTION?

The scientific community and the IPCC is very clear that carbon removal is a crucial solution to reaching net zero and the 1.5C target. The IPCC defines (1) three roles of CDR, reducing CO_2 levels now, reaching net zero, and reducing temperatures. To fulfil these roles removal methods must be developed from the very nascent state they are in now to enhance the technologies, bring down costs and start building the necessary infrastructure.

Direct air capture that several of our selected projects use, is one of the most theoretically scalable CDR solutions, and there are no question marks around if it works to remove and store CO_2 or not. However DACs high energy requirements and high capital costs are issues that need to be worked on to bring down carbon removal costs and resource requirements.(2) The same goes for direct CO_2 removal from oceans that SEAO2 uses, adding that some uncertainties around the measurement and verification of the method (3).

Biochar, that Husk, Mash Makes, PyroCCS, Biosorra, Planboo and Takachar produces, is an established carbon removal solution, with large possible co-benefits on for example soil health and agricultural productivity (4, 5). Recent science has shown that high-quality biochar may be as permanent as geological storage of CO_2 (6). Previous consensus was that biochar stored the majority of the carbon for well over 100 years (7, 8, 9). However, there are some uncertainties around how different feedstocks, soil types, and soil temperatures affect the permanence (9).

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Terrestrial Storage of Biomass, the solution InterEarth works with, is a low tech solution for CO_2 storage recently starting to gain popularity. Research shows that when performed in an appropriate way, the durability of the carbon stored can be several hundreds or thousands of years (10,11), but in most cases require continuous monitoring. The efficacy of the method also depends on the best use of biomass and secondary effects of land use which are very important to consider.

Enhanced Weathering, that Silicate, Flow, Mati and InPlanet uses is a promising method for carbon removal that could reach a massive scale as demonstrated in several scientific studies (12, 13). However, as explained in the description of the work of these companies, there is a lot left to be explored scientifically around exactly when and how fast the method captures carbon and how that can be measured. A challenge with the method is that weathering (and thus carbon removal) takes place over several years after the deployment of rock. The signal showing that occurred removal can also be obscured by natural variations. As more field data is collected in various soils with various crops our understanding and certainty will increase. The carbon registry Isometric also published a new very detailed methodology for enhanced weathering that most of our suppliers will use. The new organisation Cascade Climate leads a working group with a large number of academics and suppliers, (among them companies we support) in creating community standards on enhanced weathering which is soon to be published. Milkywire will also require ERW organisations we purchase from to share data with scientists following the Cascade data sharing protocol.

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WHAT SCIENTIFIC SUPPORT IS THERE FOR COMMUNITY FOREST MANAGEMENT AND TENURE SECURITY IN STOPPING DEFORESTATION?

Community forest management and secure land tenure are increasingly being recognised as effective strategies in combating deforestation globally. Globally, research suggests that protected areas and secure land tenure can lead to positive forest outcomes, with less deforestation occurring across various forms of tenure (1). Additionally, community-managed forests tend to have lower annual deforestation rates compared to protected forests (2). In countries like Brazil and Peru and across Amazon basin, lower rates of tree cover loss were recorded in lands managed by indige-

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nous and local communities from 2013 to 2018 compared to other areas (3). Assigning property rights to these communities notably reduces deforestation levels within indigenous territories (4). Other strategies, including enforcing forest protection laws and payments for ecosystem services, have also shown potential in mitigating deforestation (5). Studies in Thailand, Madagascar, and Nepal illustrate the effectiveness of community forest management in both conserving forests and reducing poverty (6,7,8).

In Indonesia, where several of our projects are located, the introduction of social forestry licences, or "Hutan Desa", has been linked with decreased deforestation rates in some studies (9). However, the evidence is not always conclusive with some studies not seeing reduced deforestation (10). Crucially, the provision of land rights alone is not enough; communities require substantial support to leverage these rights for improved social, economic, and environmental welfare, without which there could be losses, particularly for marginalised groups within these communities (11). With appropriate strategies, social forestry licences have been successful in reducing deforestation (12).

In conclusion, community forest management and tenure security shows great promise in being effective against deforestation but needs to be done in the right way, and followed up to determine the results.

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HARVEST IN PROGRESS
PHOTO BY CEIBO ALLIANCE

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WHAT SCIENTIFIC SUPPORT IS THERE FOR FARMER MANAGED NATURAL REGENERATION AND RESTORATION INITIATIVES?

Farmer-Managed Natural Regeneration (FMNR) is a promising approach to land restoration and reforestation, utilising natural regeneration techniques, especially beneficial in dryland regions facing severe land degradation challenges (1, 2, 7). Land degradation, driven by factors such as high population pressure, reliance on woody resources, and livestock overgrazing, has been negatively impacting communities worldwide (5). It not only affects local livelihoods but also exacerbates vulnerability to climate change (4). Integrated approaches to land restoration, such as FMNR, offer a promising solution by improving livelihoods, enhancing biodiversity, and increasing climate mitigation through carbon sequestration (3).

FMNR is characterised by its low-cost and sustainable nature, making it an effective method for rapidly rejuvenating degraded croplands and grazing lands . It fosters increased resilience to extreme weather events and restores biodiversity (3, 5). The success of FMNR depends on the presence of desired tree species nearby and the protection of regeneration from grazing (6). While FMNR can achieve significant restoration, in cases where natural regeneration alone is insufficient to meet targets, it can be complemented with tree planting (2).

Examples from large-scale FMNR initiatives in Africa demonstrate its cost-effectiveness as farmers become familiar with the practice and spontaneously adopt it (6, 3, 2). This approach can directly alleviate poverty, reduce rural migration, combat hunger, and improve livestock conditions. It also benefits crops by modifying the microclimate and enhancing soil fertility through livestock manuring (1,4). Moreover, FMNR contributes to biodiversity enhancement and restores natural processes, reducing tensions over land-based resources (2, 1). However, challenges remain in building an evidence base and standardising measurements to address gaps in evidence (2).

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WHAT SCIENTIFIC SUPPORT IS THERE FOR ADVOCACY BEING AN EFFECTIVE CLIMATE SOLUTION?

Political advocacy is arguably the most powerful form of action that citizens and non-profit organisations concerned about climate change can take (3). Influential actors within the climate philanthropy, such as Giving Green and Founders Pledge, that ground their recommendations in the rigorous assessments both primarily recommend policy and advocacy initiatives as the most cost-efficient climate funding opportunities (1; 2). Such initiatives can be highly impactful, bringing about systemic technological, market, and human behaviour changes necessary to address climate change, as well as speed up decarbonisation and avoid carbon lock-in in emerging economies (1; 2; 4). The need for policy advocacy and mobilising financing for policy change is also voiced by international organisations, national governments, and other actors (3; 6).

However, the outcomes of advocacy efforts can never be known beforehand, funds are given based on an expected impact. After a project has been completed evaluations are also challenging, often requiring a deep understanding of how the change that happened occurred (4; 1; 5).

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REGROWN TREES
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About Milkywire

Milkywire, founded in 2018, is a planet health-tech platform that enables companies to fund trusted environmental organisations. Through digital tools and an engaging feedback model, Milkywire helps fund a wide spectrum of initiatives, from in-the-field nature restoration and species preservation to cutting-edge carbon removal research, enabling corporations to make a positive planetary impact.

Sveavägen 49, 11359 Stockholm
www.milkywire.com
climate@milkywire.com