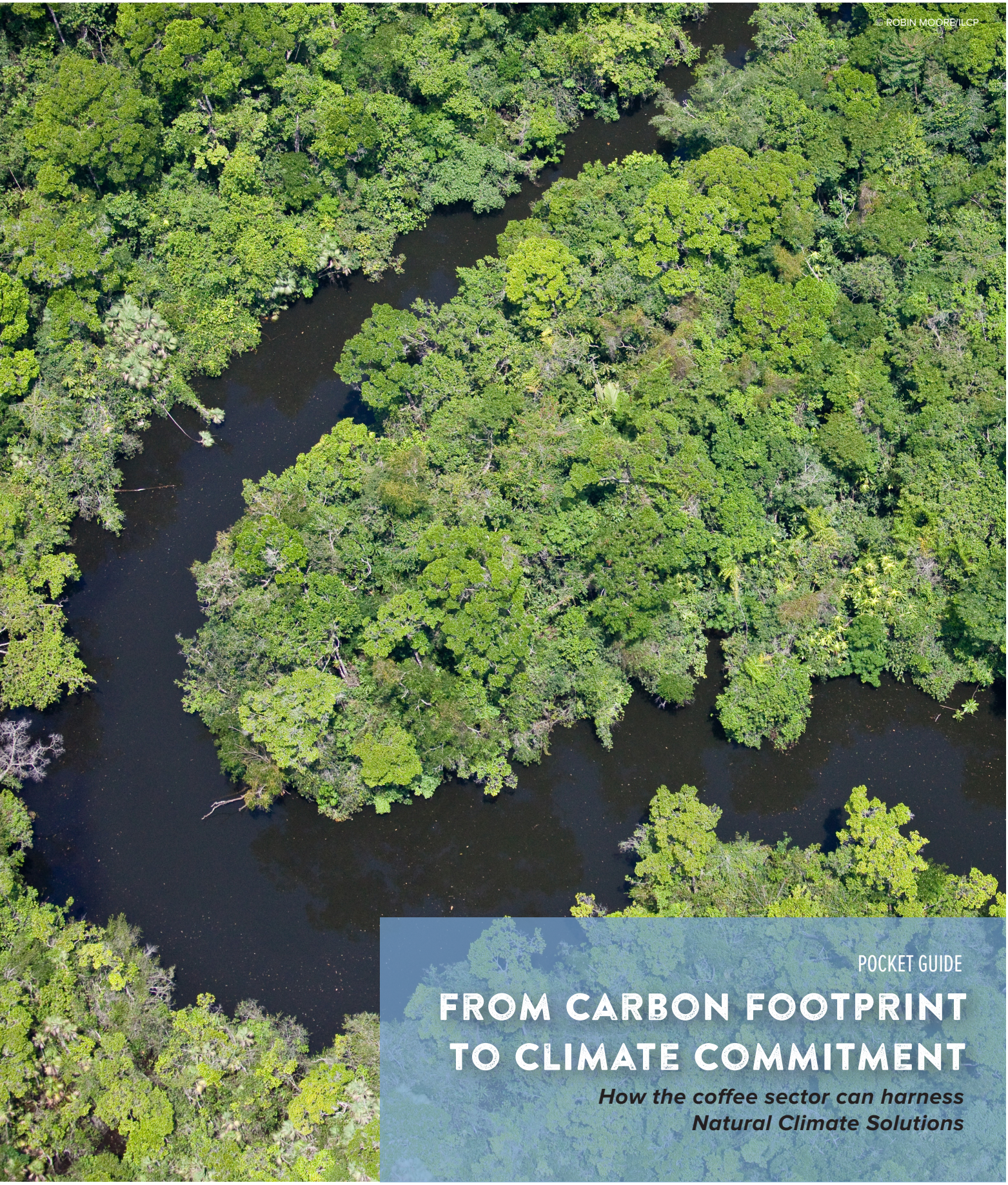


POCKET GUIDE

FROM CARBON FOOTPRINT TO CLIMATE COMMITMENT

How the coffee sector can harness Natural Climate Solutions

SUSTAINABLE COFFEE CHALLENGE

CONSERVATION INTERNATIONAL

CLIMATE CHANGE MITIGATION + THE COFFEE SECTOR

We have 10 years to drastically cut our greenhouse gas emissions or humanity will suffer devastating consequences.

Most of society's collective emissions come from carbon dioxide. Carbon dioxide made up 81 percent of greenhouse gas emissions in 2018.[1] Climate change is already evident on the ground; extreme weather patterns and increased pests and diseases are all affecting global livelihoods.[2] To stop a climate breakdown, we must emit less carbon and remove the excess carbon from the atmosphere.[3]

Nature is one of the most cost-effective assets in the fight against climate change. The protection and restoration of tropical forests and mangroves can produce 30 percent or more[4] of the action needed to limit average temperature increase to 1.5 degrees Celsius (2.7 degrees Fahrenheit) by mid-century. Yet, globally, only two percent of finance is set aside for nature's climate solutions.[5]

Meanwhile, we use 10 million hectares of land around the globe to grow the coffee that keeps us caffeinated. And demand for coffee keeps increasing. To continue satisfying our coffee cravings, we would need to double or even triple the amount of production by 2050. If we can't produce that on existing coffee farms, this could mean converting an additional 10-20 million hectares. Consequently, loss of just 10 million hectares of tropical forest would result in an estimated 1.5GT of carbon emissions. We cannot allow coffee to contribute to climate change by releasing this GHG into the atmosphere.

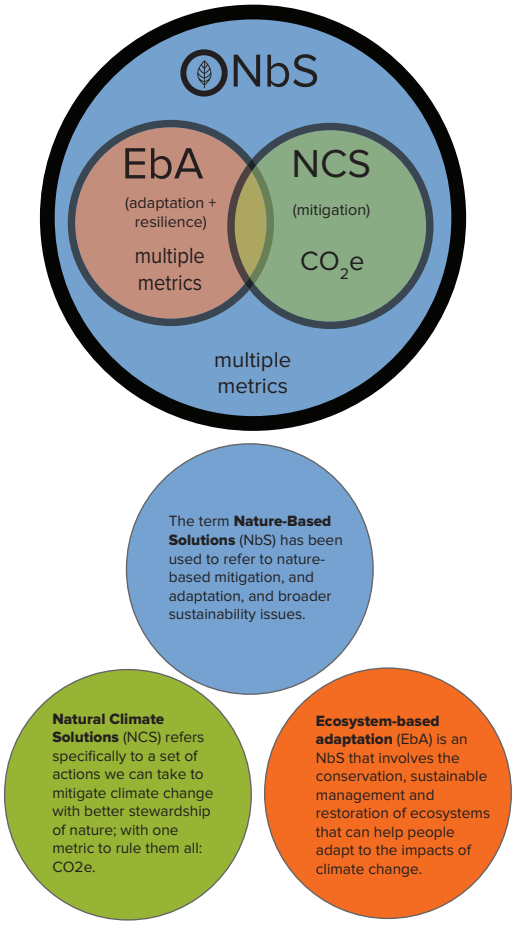
Yet, there is some good news. The coffee sector *can* optimize production and store carbon on current coffee lands; by doing so coffee can be a so-called 'nature-based solution' to climate change. Let's find out more!

NATURE'S SOLUTIONS FOR A CLIMATE RESILIENT WORLD

To reduce emissions and create a more climate resilient world, nature has the solutions. What are **nature-based solutions,** or **NbS**?

The International Union for the Conservation of Nature (IUCN) defines NbS as "actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits." This can include climate adaptation, food security, water security, human health, and social and economic development derived from nature.

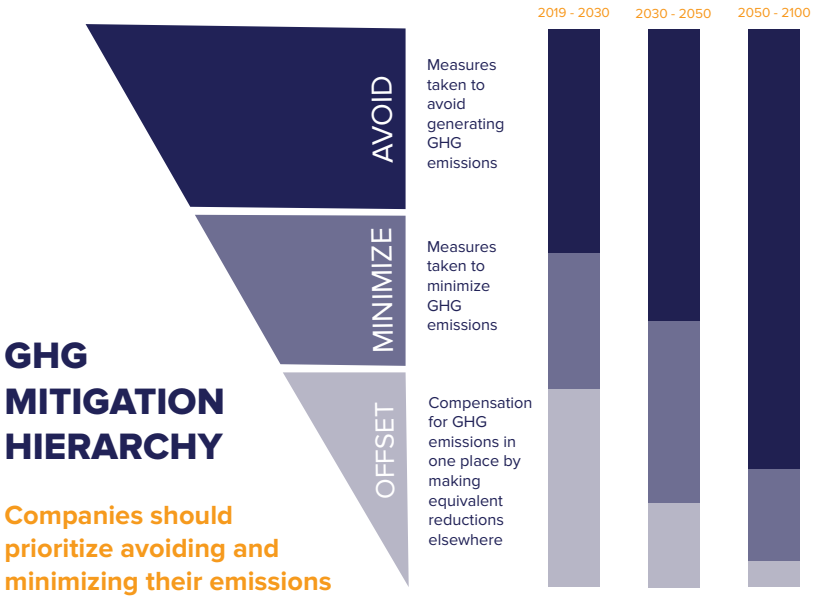
We call nature-based solutions that *specifically* focus on conservation and management actions that reduce greenhouse gas emissions, **natural climate solutions**, or **NCS**. Nature provides one of the most immediate, cost-effective solutions in removing excess carbon from the atmosphere and storing it – benefiting our climate, local communities, and biodiversity. This can mean planting trees and forest protection on coffee lands, which is great. It can also include conservation of coastal areas and wetlands, savannah restoration and marine protection.[6] Any activity that protects, manages, or restores nature contributes to a lower carbon footprint and a healthier world.



While we recognize the impact of climate change on coffee production and coffee producers, and the importance for the industry to support climate adaptation efforts (e.g. Ecosystem-based Adaptation (EbA), this guide specifically focuses on climate mitigation and coffee's potential as a NCS.[7]

GHG MITIGATION HIERARCHY + ASSURANCE PRINCIPLES FOR NCS INVESTMENTS

A simple and useful tool to understand how and when NCS can play a role in a company's decarbonization strategy is the so-called *'GHG Hierarchy of Mitigation'*[8]. This framework stresses and clearly visualizes that avoiding and minimizing a company's emissions should be prioritized. Investments in compensation for GHG (i.e. offsetting) should only be considered for the hardest-to-abate emissions, and with a clear trajectory for reducing that portion over time.



To complement the guidance provided by the GHG Mitigation Hierarchy, Conservation International has developed NCS Principles to guide companies in responsible engagement with NCS.

1. **Company aligns with the Paris Agreement and does not undermine Paris Agreement-aligned policies, either directly or through industry associations**. In particular, company targets a halving of operational emissions by 2030 and net-zero emissions (scopes 1, 2, and 3) by 2050. Further, if in a sector impacting forests, company has a timebound net-zero deforestation target.
2. **Company discloses its carbon emissions and is making progress toward climate targets.**
3. **Offsets? Certainly, but only if company keeps cutting emissions**. More specifically, company uses offsets to supplement other decarbonization efforts and does not delay progress in decarbonizing scope 1, 2 and 3 emissions, reserving offsets for the hardest-to-abate emissions, for a limited fraction of emissions reductions, and for a limited time.
4. **Projects equitably benefit people.** More specifically, NCS projects support community and Indigenous rights, promote gender inclusion, meet social and environmental quality standards (CCB or equivalent), share benefits based on negotiated agreement with host communities and governments, and apply a carbon price or other investment that meets these needs.
5. **Projects meet rigorous standards for quality and additionality (Verra/VCS or equivalent) and deliver results verified by a third party.**
6. **Projects align with national policy and national carbon accounting.** In particular, projects have support of the national government, and comply with host government guidance related to carbon credit claims.

The GHG Mitigation Hierarchy as well as the principles for NCS investments help clarify where and how NCS investments in coffee supply chains can help **avoid**, **minimize**, and **offset** GHG emissions. We will explore this further in the next section.

COFFEE AS A NATURAL CLIMATE SOLUTION

As a tree itself, coffee can act as a natural climate solution if it helps restore tree cover and hence stores carbon in a landscape. Coffee grows naturally under shade, which presents additional opportunities to enhance tree cover. For instance, windbreaks protect coffee trees from strong storms. In addition, coffee farmers may manage not only coffee fields, but other crops and livestock. In these areas, there may be opportunities to introduce additional agroforestry systems through live fencing and other interventions.

However, globally, 41 percent of coffee is grown with no shade cover.[9] This amounts to 4.1 million hectares of land where there may be an opportunity to add tree cover as an important climate adaptation strategy for farmers. Doing so could potentially store an additional 25 million – 148 million tonnes of carbon, depending on the system applied.[10] If the coffee sector can store carbon on current coffee lands, the total carbon benefit from sustainable coffee could be upwards of 1.5 GT by 2050[11].

In summary, why should the coffee industry care about NCS?

- NCS can help reduce the sector's carbon footprint, while building climate resiliency of farmers to withstand climate and market shocks, diversify income sources and drive profitability.
- NCS helps mitigate financial and reputational risks for the industry and may even produce cost savings and contribute to long-term supply security.

FOLLOW THE JOURNEY OF 'CRACKING BEANS'

Where does a coffee company start when they think about a climate-focused commitment? Let's take an imaginary coffee roasting company '*Cracking Beans*' as an example.

Cracking Beans consumers and own employees have spurred the company to explore a public target to become carbon neutral. The company is committed and keen to explore how to reduce GHG emissions within its operations and supply chain as much as possible and to invest back into nature through natural climate solutions.

What are the steps *Cracking Beans* will need to take? Let's follow the company's journey to carbon neutrality to understand how they formed their commitment and find out what role nature can play in helping them get there.

UNDERSTAND AND MEASURE YOUR CARBON FOOTPRINT

First, to begin their journey to carbon neutrality by 2030, *Cracking Beans* must calculate its carbon footprint to understand how much they emit and on what scale. Knowing and being publicly transparent about this data not only guides the company in taking active measures to reduce emissions, but also empowers the credibility of *Cracking Beans*' carbon neutral claim.

For a coffee company, the **carbon footprint**[12] is the total amount of greenhouse gases emitted from tree to cup, including the growing, processing, roasting, transportation, brewing and disposal and recycling. Within the carbon footprint community, this assessment of the entire 'lifecycle' of a product is referred to as 'cradle to grave' (i.e. tree to cup) as opposed to 'cradle to gate', which limits the scope from to the point of distribution (i.e. tree to bag).

To understand a business' carbon footprint, experts usually refer to 3 'scopes' of GHG emissions that can be attributed to the company's activities.[13] These so-called 'scopes' are defined by the Greenhouse Gas Protocol. This organization developed the world's most widely used greenhouse gas accounting standards for companies.

SCOPE 1 – All Direct Emissions from the activities of an organization or under their control. Including emissions from non-renewable energy sources in the company's operations, such as office heating, and fleet vehicles (e.g. fossil fuels for owned or operated ships and other vehicles).

SCOPE 2 – Indirect Emissions from electricity purchased and used by the organization. Emissions are created during the production of the energy and eventually used by the organization.

SCOPE 3 – All Other Indirect Emissions from activities of the organization, occurring from sources that they do not own or control. These are usually the greatest share of the carbon footprint, covering emissions associated with coffee growing and processing until it reaches your business, business travel, procurement, and in most cases product use.

A carbon footprint calculation for a coffee supply chain will generally reveal that most carbon emissions happen at the farm-level (including land-use change) and during the consumption phase. From one coffee company's perspective however, these two 'hotspots' in the carbon footprint are not always within their direct control. Exact footprint numbers will vary from company to company and supply chain to supply chain, depending on production methods, including irrigation, pesticide use, processing method, altitude, etc., as well as brewing methods and recycling options. This means that *Cracking Beans* will most likely need to talk to their suppliers and get to know their own supply chain as much as possible. Where in the world does *Cracking Beans* source from? How is the coffee processed? How is the coffee roasted? Transported? Packaged? How much carbon does each step in the process use? The more relevant data that *Cracking Beans* can gather and analyze, the better. These carbon footprint calculations will help the company identify emission reduction opportunities throughout their operations and supply chains. *Cracking Beans* may use an internal technical expert or may turn to an external support to help them calculate their current carbon footprint.

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MAKING A CLIMATE COMMITMENT

Let's assume that *Cracking Beans* has now calculated their carbon footprint and understands the scale of their emissions. *Cracking Beans* is ready to mitigate its carbon emissions with concentrated action. The roaster needs to figure out how, by when and where they will take action to meet their goals.

- ***How:*** *Cracking Beans* should first look at options within its own operations – how can the company reduce its energy use and other direct emissions (scope 1). Second, it should look at opportunities to transition to renewable energy sources (scope 2). Finally, the company can invest in interventions within its supply chain to reduce its footprint (scope 3).
- ***When:*** Coffee companies like *Cracking Beans* who are interested in making a climate commitment should consider one that has time-bound targets to reduce emissions from all scopes, with transparent reporting and monitoring of progress (for example, carbon neutral, net-zero or even climate positive). Public claims associated with certain terms such as net-zero, carbon neutral, etc., often do not have clearly agreed-upon meanings. It is important for any claims to be clearly described to stakeholders via reporting methods, on websites, or through other publicly accessible materials.
- ***Where:*** At this stage, *Cracking Beans* has publicly committed to become carbon neutral by 2030, with clear milestones for the upcoming decade and plans for reducing and eliminating GHG emissions (including scopes 1, 2, and 3). Following what many companies have done in recent years, *Cracking Beans* has engaged with the Science-Based Targets initiative (SBTi) to ensure that their climate commitment is independently assessed and approved (see text box for details).

Setting Carbon Neutrality Targets

Setting and pursuing scientifically based targets to achieve net zero emissions by 2050, aligned with the goals of the Paris Agreement, is an important piece of responsible corporate engagement in NCS.

One initiative focused on providing guidance for such processes is the **Science-Based-Targets initiative (SBTi)** which has become a common business practice to ensure that a company's targets to reduce GHG emissions are line with the level of reductions necessary to limit the risk of catastrophic climate change. The platform is a collaboration between CDP, UNGC, WRI, and WWF.

In addition, building on the success of SBTi, the **Science-Based Targets Network (SBTN)** – a partnership of over 50 organizations, including Conservation International – is extending this science-based target approach to nature – land, oceans, freshwater and biodiversity – and to give direction and create incentives for key actors across the world to operate within planetary boundaries. The SBTN guidance is currently in development and will include cutting edge thinking on how to define transformational change.

Cracking Beans has now formulated its commitment and is ready to create a diversified portfolio of actions and investments to decarbonize their business, both in their own operations as well as in their supply chains.

ROLE OF NATURAL CLIMATE SOLUTIONS: PROTECT, RESTORE, MANAGE

To supplement their decarbonization efforts, *Cracking Beans* is considering using "carbon offsetting" for the hardest-to-abate emissions.[14] *Cracking Beans* plans to develop a portfolio of NCS investments, which will ensure that the company stores more carbon than they emit by 2030.

This portfolio may include a variety of geographies and unique selection of NCS activities to: 1) protect; 2) manage; and 3) restore. *Cracking Beans* wants to link their NCS portfolio to their sourcing regions. Example activities will include:

PROTECT

Avoid forest and tree cover loss through growing and formalizing protected areas (places set aside to conserve nature) and other interventions that result in reduced deforestation rates.

Activities to protect nature:

- National and/or local regulation and enforcement
- Government + community engagement to support forest protection (e.g. increasing community patrols to help protect standing forests)
- Incentives (payments, services) with embedded safeguards to communities in return for forest protection
- Technical support to farmers so they can better manage areas through conservation

MANAGE

Avoid GHG emissions or enhance carbon sinks on 'working' lands through improved land management practices. This could mean planting trees within agricultural lands (e.g. agroforestry systems), natural forest management (e.g. reduced-impact logging), or improved nutrient management. It is important to note that these actions by themselves may not result in positive climate outcomes, but when coupled with safeguards for protections, they can be part of the solution.

Activities to improve management of production areas include:

- Establishment or enhancement of coffee agroforestry systems
- Technical assistance services to improve management practices on existing farms (e.g. regenerative agriculture)
- Support for formalization of services that enable increased farm income (i.e.: farmer coops)
- Incentives (payments, services) with embedded safeguards to communities in return for improved management practices (could include farmer coops, etc.)

RESTORE

Capture and store carbon for the long-term via landscape-scale restoration, in areas that have been degraded because of human activity. This might include planting trees and/or encouraging forests to regrow naturally (e.g. assisted natural regeneration)

Activities to restore nature:

- Assisted natural regeneration by protecting and preserving natural tree seedlings in forested areas
- Tree nurseries and distribution of native seedlings
- Technical assistance for reforestation
- Incentives (payments, services, technical assistance) with embedded safeguards to communities in return for restoration activities)

EXAMPLE: NCS INVESTMENT PORTFOLIO

Depending on *Cracking Beans*' available budget and level of commitment necessary to ensure progress towards their climate targets, the roaster has several options and instruments to drive their investments into projects related to forest protection, restoration, and management. For simplicity we identify 3 categories: 1) purchasing carbon credits from an existing project/initiative that is generating Verified Emission Reductions; 2) investing in landscape conservation and restoration projects; and, 3) co-designing and originating forest carbon projects.

These options are not mutually exclusive, but range in increasing levels of complexity, engagement and ownership. The table below explores the key activities under each of the options, as well as some of the pros / cons of each.

Pathway	Overview key activities	PROS	CONS
Purchasing off the shelf credits (e.g. REDD+)	• Offset emissions from green coffee footprint • Direct purchase of forest carbon credits from high quality natural climate solutions	• Easy and flexible way to start trajectory towards carbon neutral/positive future • Independent verification of the results and use of best-in-class standards • A company can build a portfolio sourced from multiple project types subject to available budget more efficiently	• Limited ownership of the project design + implementation
Landscape Conservation and/ or Restoration project(s)	• Protect and restore forests and freshwater alongside sustainable production systems • Any landscape will encompass multiple levels of governance and a wide range of uses	• Possibility to explore/ facilitate a 'land positive' and other biodiversity claims, by measuring # hectares as outcome • Support projects at different levels of maturity • Opportunity for tailored activities w/in a specific landscape	• Often no ability to link outcomes to carbon neutral/ positive claims • Limited additional economic incentive for communities to protect + restore
NCS Carbon Project(s)	• Co-designed and tailored pipeline of landscape project(s) that protects or restores forests to produce a verifiable carbon benefit • Includes a robust Monitoring, Reporting and Verification (MRV) protocol • Usually generate a supply of marketable forest carbon credits	• Robust monitoring + verification enables carbon neutral/ positive claims • Ability to tailor carbon project design to coffee & can influence project design features • Can be more cost effective in the medium-long term and allow for more control over type and quantity of supply	• Significant upfront investment and transaction costs to establish carbon baseline for the landscape • Requires higher level of investment and long-term commitment (unless shared with others)

REPORTING PROGRESS AND PUBLIC DISCLOSURE

Now that *Cracking Beans* has selected their portfolio, it is time to act! As the roaster invests in carbon neutral activities over time, it should also publicly report progress made against their commitment on a consistent basis, for example, annually. It's one thing to state a commitment to carbon neutrality, but another thing to monitor and report progress made towards that goal. Reporting progress holds a company accountable and spotlights the environmental and social information that can validate their claims.

Reporting will also provide insights into *Cracking Beans'* efforts to entirely decarbonize their business and supply chains, and shows how the carbon benefits from their NCS investments will help to offset their hardest-to-abate emissions, which will gradually reduce over time.

Reporting may be achieved via internal company systems, using external verification (assurance), and/or also stated in third party platforms such in the Challenge's Commitments Hub. Regardless of the method used to publish progress, reporting should be backed by a robust monitoring system that enables the company to credibly stand behind their claim. Transparent reporting may help a company such as *Cracking Beans* foster greater trust with industry peers and coffee consumers alike. Time for *Cracking Beans* to "get cracking"!

GLOSSARY OF OTHER RELEVANT TERMS

Carbon credits: "A tradeable certificate that represents the avoidance or removal of one tonne of carbon dioxide emissions. High-quality carbon credits adhere to a strict set of standards. You can check this by ensuring the projects you invest in are registered with a third-party internationally recognized verification standard, such as Verra's Verified Carbon Standard (VCS), Social Carbon and Climate, Community and Biodiversity Standards (CCBS), Gold Standard or standards verified by the UNFCCC. These standards also help highlight different benefits while ensuring that the project is real, verified, permanent and of course additional. In terms of transparency, carbon credits are assigned serial numbers and are issued, transferred, and permanently retired in publicly accessible emission registries, such as the Markit Environmental Registry and APX VCS Registry."[15]

Carbon footprint: A carbon footprint is "the total amount of greenhouse gases emitted from production, use and end-of-life of a product or service."[16]

Greenhouse gas/GHG: Gases that trap heat in the atmosphere, including carbon dioxide (81% of emissions in 2018), methane (10% of emissions in 2018), nitrous oxide (7% of emissions in 2018), and fluorinated gases (3% of emissions in 2018).[17]

Life cycle assessment: "A methodological framework that quantifies all environmental impact caused during the life cycle of a product or a process. The basic idea of LCA is that the analysis is done over the entire 'life cycle' of the product or service. Thus, not only the production phase, but also all phases: pre-manufacture, manufacture, use, and disposal of the product, including all relevant infrastructure (e.g. the plant to make the product and its decommissioning)."[18]

Offsetting: Harnessing "the positive impact of a GHG reduction activity totally outside of a company's direct or indirect operations."[19]

Payments for Ecosystem Services/PES: "Payments to farmers or landowners who have agreed to take certain actions to manage their land or watersheds to provide an ecological service. As the payments provide incentives to landowners and managers, PES is a market-based mechanism, like subsidies and taxes, to encourage the conservation of natural resources."[20]

Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (REDD+): REDD+ stands for countries' efforts to reduce emissions from deforestation and forest degradation, and foster conservation, sustainable management of forests, and enhancement of forest carbon stocks. The "+" signifies the role of conservation, sustainable management of forests and enhancement of forest carbon stocks. The REDD+ framework was developed under the United Nations Framework Convention on Climate Change (UNFCCC).

Restoration: is "rewilding" interconnected systems of living Earth, enabling nature to recover its ability to sequester carbon, provide critical habitat for species and support long-term human well-being.[21]

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