

Coffee Biochar Programme | Colombia

Brewing Biochar

Introduction

Turning coffee prunes into biochar

A community-led carbon removal initiative that collaborates with small-scale coffee farmers in Colombia to turn their coffee waste into carbon-rich, crop-nourishing biochar.

The objectives

What we're aiming for...



Carbon removal:
100,000 tonnes of CO₂ removed by 2029



Environmental impact:
50,000 tonnes of biochar applied to the soil by 2029



Social impact:
20,000 small-scale farmers producing biochar by 2029

In Colombia, one of the world's largest coffee exporters, over 500,000 people are directly engaged in coffee production, more than 90% of them being smallholder farmers.

Coffee plantations generate significant amounts of agricultural residues, as coffee trees are pruned on a cyclical basis, producing approximately 25 tons of waste per pruned hectare. This waste, known as zoca, has little economic or practical value and is often left to decompose on the farm, attracting pests and diseases while releasing CO₂ and other greenhouse gases into the atmosphere.

But things are changing...

Through the Coffee Biochar Programme, farmers get the training, tools and technology needed to turn the zoca into biochar, capturing the CO₂ before it's released. Using Planboo's MRV technology, the entire process is tracked and verified, creating high-quality carbon credits as a result.

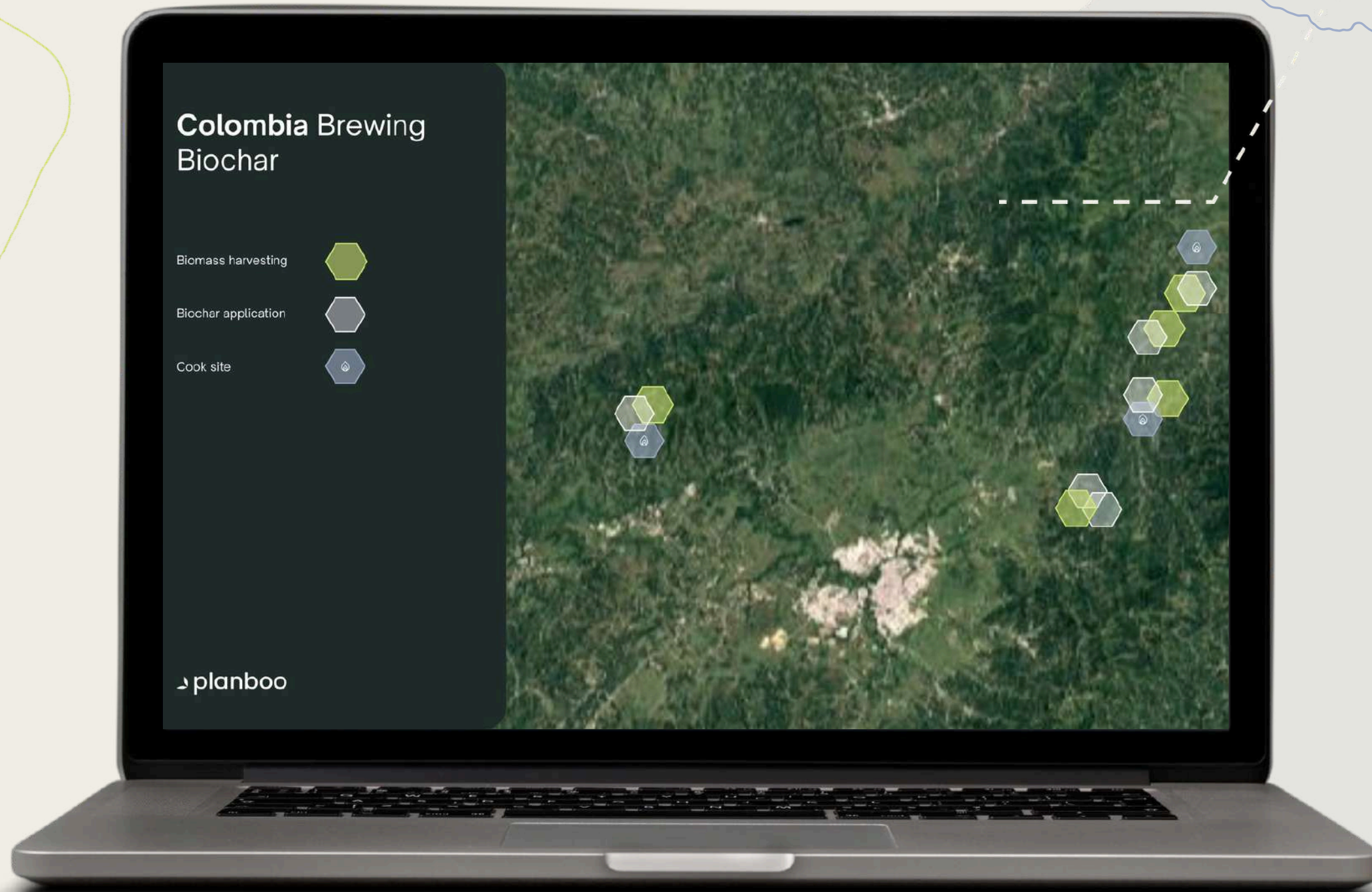
Revenue from these carbon credits funds the project and supports the farmers, who receive a cash stipend for participating in the project, in addition to keeping all the biochar they produce.

The location

...and where?

THE LOCATION

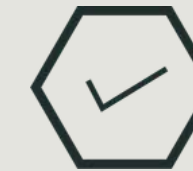
Huila, Colombia Pilot site



Production site:
Operational
since September 2024



Involves
21,000 ha of
coffee farms



Coffee Farmers:
20,000
coffee farmers

The project pilot is situated in the Huila province in southern Colombia, which is one of the country's major coffee-growing regions. Most of the coffee produced here comes from smallholder farmers who are particularly vulnerable to the impacts of climate change and fluctuating coffee prices.

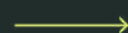
We're aiming to scale and reach 20,000 more coffee farmers across the entire country in the next five years.

The Process

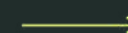
How we do it...



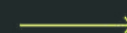
BIOMASS



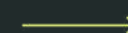
PYROLYSIS



BIOCHAR



MIXING



APPLICATION



CARBON REMOVAL

Combining nature's solution and Planboo's technology, we remove carbon from the atmosphere at scale. Your climate action makes this possible.

Nature's solution includes the storage of CO₂ in plants, while our technology tracks the process of turning this into biochar from cradle to grave - biomass collection to application - documenting the carbon emissions generated and removed at every step using a Life Cycle Assessment.

In the end, we have a carbon removal credit = to 1t CO₂ removed or 1 CDRC.



OUR TECHNOLOGY



Biomass

Coffee



20,000 coffee farmers



21,000 ha coffee farms



60,000 tonnes zoca cuttings/year

Coffee beans, the world's favorite little pick-me-up, thrive in balanced climates of stable temperatures and consistent rainfall. Colombia's tropical climate, combined with the cooler temperatures on its high-altitude green hills, creates the perfect haven that coffee plants just love. However, climate change is putting the entire coffee production in Colombia at risk due to rising temperatures and more unpredictable rainfall cycles.

To improve the quality and yield, the coffee trees are pruned way back every five to seven years. But this results in substantial volumes of waste residue that can become problematic on the orchard. **Because coffee branches are a hard, woody biomass, they provide an ideal feedstock for top-quality biochar**, containing high levels of organic carbon, close to 80%. This carbon, which would otherwise escape into the atmosphere, is buried in the ground, where it remains for centuries, enriching the soil and fostering microbial life.



BIOMASS

planbo



PYROLYSIS

The process

Pyrolysis



Pyrolysis:
>550°C



Kiln type
**Kon-Tiki,
1,500L**

The project uses **Kon-Tiki kilns** for pyrolysing waste biomass, combining traditional fire-making techniques with modern biochar production. These kilns operate with an open flame, producing high-quality biochar with low emissions. By combining carbonisation and gas flaming in a single process, Kon-Tiki kilns make biochar production **simpler and more cost-effective**, thus **accessible to farmers worldwide**.

The Kon-Tiki kilns have been tested with emissions analyses and environmental impact assessments conducted by the Ithaka Institute. We also adhere to best practices, such as measuring the moisture levels of biomass before each cook and using Greenbox technology to monitor each production cycle. This ensures that we **consistently produce high quality biochar from this distributed project**.

planboo



The product

Biochar



Level of
permanence:
1000+ years



1 tonne
biochar =
2 tCO2



Carbon
content
75%

Through the pyrolysis of coffee prunes, premium biochar is produced with high carbon content, **permanently removing carbon for over 1,000 years.**

The project is producing high-quality biochar by using dry feedstock, cooking at high temperatures, and maintaining consistent cooking curves. This process is complemented by Planboo's technology, which efficiently tracks, measures and verifies the carbon removed.





The application

Mixing & application

The biochar produced is returned to the farmers' fields, helping to improve the health of their topsoil, increase their climate resilience, and reduce their reliance on chemical fertilizers – all while creating valuable carbon sinks.



Applied to:

Coffee, corn, yuca,
plantain gardens



Hectares:

21,000 ha





RESPONSIBLE REMOVAL

Responsible Removal

People & Planet



Income opportunities

~ \$150 USD/
hectare



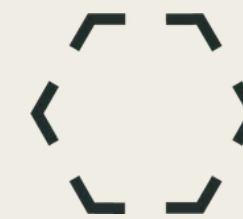
Community impact

~70 smallholders
farmers/cluster

Small-scale coffee farmers are among those being hit by climate change the worst. Their livelihoods, as well as the entire coffee industry, are at risk. Preparation and adaptation are key to weathering this storm.

Our project provides farmers with the support they need, including tools, training, and simple technology to start producing biochar and adopt more sustainable farming methods. By applying the biochar in their own soil, they not only improve its quality and resilience but also open the door to a new income stream amidst fluctuating coffee prices and an uncertain industry shaped by climate change.

Project Partners



PARTNERS



dMRV Technology & Carbon Sales
Freddie Catlow | Hedda Björck



C-sink Manager
Santiago Martínez



Standard & Registry



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Brewing Biochar

Nature's solution. Our technology. You in?

[Get in touch](#)