February 11th, 2026

Non-Technical Summary

Gold Standard for the Global Goals (GS4GG) Voluntary Project Activity (VPA) "Transforming Coffee Production Systems in Brazil with Agroforestry to Store Carbon, Regenerate Ecosystems, and Improve Farmer Livelihoods in Mantiqueira de Minas" under the PoA "Global Syntropic Agroforestry Program"

Context

Forests are of great importance for biodiversity, climate, healthy soils, water retention, and food production. However, only in the State of Minas Gerais, Brazil, 3.10 million ha of tree cover was lost from 2001 to 2023, equivalent to a 17% decrease in tree cover since 2000 and 1.66 Gigaton of CO2e emissions.[1] Deforestation linked to agriculture is a major driver of climate change. Commodity-driven deforestation (including cattle pastureland, cocoa, coffee, soy, oil palm, etc.) contributes to 25% of the total tree cover loss worldwide.[2]

The economic impact on society is enormous. In terms of coffee, drier and hotter conditions are jeopardizing Arabica coffee production in Minas Gerais, with climate change and deforestation being the main causes. Since 2010, temperatures in coffee-producing municipalities have risen by 1.2° Celsius during the flowering period; projections indicate more days of extreme temperatures (above 34°C) by 2050.[3]

Many coffee producers in Minas Gerais have widely reported growing concern about water scarcity, extreme heat, and longer dry spells, which are consistent with observed climate variability and are increasingly undermining the resilience of coffee plants. These stressors matter because drought and unfavorable temperatures are among the major climatic limitations for coffee physiology and production, affecting growth and yield.[4] At the same time, the resilience of Arabica coffee is challenged when production landscapes lose conditions closer to its ecological origin. Coffea arabica is native to the shaded understory of Ethiopia's moist evergreen montane forests, where milder microclimates and intact forest-soil processes support plant performance. In simplified, full-sun systems with degraded soils, coffee can lose key supporting functions, such as microclimate buffering and healthy soil biological processes, that help maintain soil structure and water availability.[5]

Coffee in Minas Gerais is widely grown in full-sun systems, often in monoculture compared with agroforestry approaches. Farmers report that plantations are therefore increasingly exposed to pest and disease pressure, including bicho mineiro (Leucoptera coffeella), broca-do-café (Hypothenemus hampei) and ferrugem (Hemileia vastatrix)[6]. Conventional management commonly responds with higher reliance on chemical control (pesticides and fungicides) and other external inputs, and conventional systems are often characterized by greater dependence on agrochemicals and chemical fertilizers. Glyphosate is among the herbicides used in conventional weed management,

[1] https://www.globalforestwatch.org/dashboards/country/BRA/13/?category=forest-change&location=WyJjb3VudHJ5IiwiQlJBIiwiMTMiXQ%3D%3D
[2] Curtis et al. (2018), Classifying drivers of global forest loss, https://doi.org/10.1126/science.aau3445.
[3] https://news.mongabay.com/2023/10/how-climate-change-could-jeopardize-brazilian-coffee/
[4] DaMattal & Cochicho (2006), Impacts of drought and temperature stress on coffee physiology and production: a review, https://doi.org/10.1590/S1677-04202006000100006
[5] Senbeta & Denich (2006), Effects of wild coffee management on species diversity in the Afromontane rainforests of Ethiopia, https://doi.org/10.1016/j.foreco.2006.05.064.
[6] Venzon (2021), Agro-Ecological Management of Coffee Pests in Brazil, https://doi.org/10.3389/fsufs.2021.721117.

and research indicates glyphosate can modify soil microbial communities and biochemical processes, potentially affect soil health and long-term crop productivity when used intensively. Such practices, combined with recurrent heat and water stress, have been associated with gradual declines in coffee productivity in several producing regions of Minas Gerais.[7]

This is where the project "Transforming Coffee Production Systems in Brazil with Agroforestry to Store Carbon, Regenerate Ecosystems, and Improve Farmer Livelihoods in Mantiqueira de Minas" comes in to change that situation.

Photos below: Long dry spell in winter causes the coffee to suffer and can even cause the coffee to die. Bare, uncovered soil results in soil erosion, lack of retention of water, no micro-biological life, and soil compaction.

Photo below: Leucoptera coffeella (bicho mineiro)

Photo below: Hemileia vastatrix (ferrugem) causing early leaf fall and drying out of branches.

Applied Approach, Objectives, and Location of the Project

The implementation of agroforestry systems in coffee, pasture, and degraded areas is structured as an integrated and context specific strategy to promote productive sustainability and environmental regeneration. The project is organized around three complementary lines of action: sustainable coffee production under agroforestry systems, the establishment of silvopastoral systems, and the establishment of smallholder woodlots. Field technicians assess each rural property individually to determine the most appropriate technical approach, recognizing that ecological effectiveness must be aligned with the farmer's operational capacity and long-term maintenance potential.

[7] Mancini et al. (2021), Impact of agroecological management on plant diversity and soil-based ecosystem services in pasture and coffee systems in the Atlantic forest of Brazil, https://doi.org/10.1016/j.agee.2020.107171.

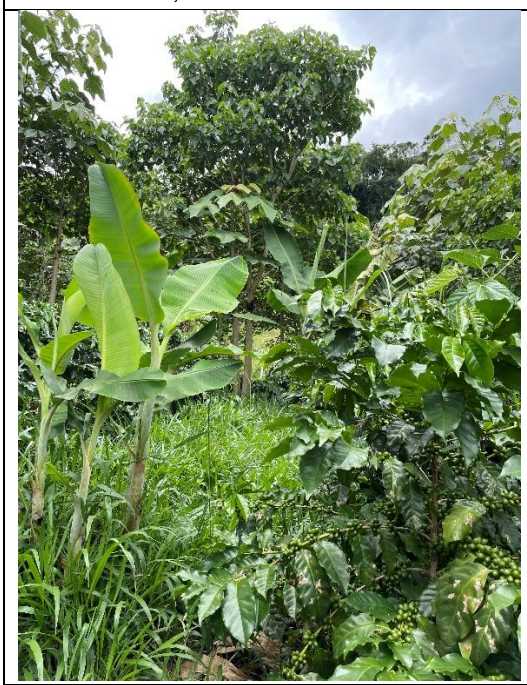
In coffee production systems, the foundation of sustainability lies in proper soil structuring and conservation. Core practices include soil conservation measures, maintenance and improvement of soil fertility, reduction of degrading practices, and the replacement of inefficient or environmentally harmful inputs with lower impact alternatives. Agroforestry systems are designed to remain ecologically balanced while economically viable, maintaining coffee as the central productive component. A basic model establishes minimum sustainability standards, including low complexity and high efficiency agroforestry arrangements that facilitate farmer management, alongside good harvest and post-harvest practices. An advanced model may incorporate greater tree species diversification, intercropping, partial shading, biological control, efficient microorganisms, organic compost production, green manuring, and the development of multi strata succession models. For agroforestry coffee establishment, recommended tree densities range from 150 to 200 trees per hectare.

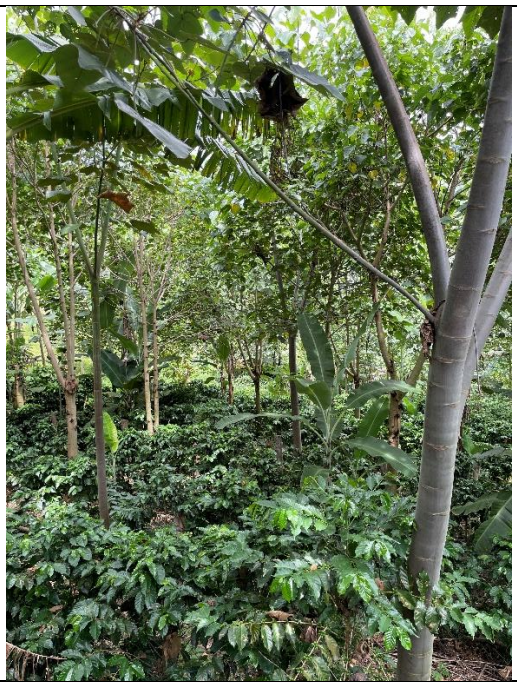
Silvopastoral systems similarly place soil health at the center of animal production. Five principal models are considered: dispersed or isolated trees, tree clusters within pasture, trees planted in strips, timber or fruit plantations, and windbreaks or live fences. Each model may prioritize productive, economic, or ecological functions, including thermal comfort for animals, soil protection, and system resilience. Livestock and pasture remain the protagonists of the production system, while ecological practices function as supportive elements that enhance long term stability. Tree densities in silvopastoral arrangements are estimated at 150 to 200 trees per hectare, subject to adjustment following in situ technical evaluation.

In degraded area restoration, the focus shifts toward reestablishing ecological balance and environmental resilience. These systems may incorporate higher species diversity and require careful planning of soil conservation strategies, species protection, and ecological succession management. Initial fertilization, pest and disease control, and management of competitive vegetation are monitored to ensure successful establishment, addressing factors that are often neglected in restoration efforts. Recommended densities range from 600 to 800 trees per hectare, depending on field assessments, seedling availability, and regional adaptation.

Across all three lines of action, agroforestry systems enhance biodiversity by creating habitats for natural pest enemies, improve microclimatic conditions through shading and wind protection, support soil regeneration and erosion control, and increase carbon sequestration in both biomass and soils. By integrating ecological principles with productive objectives, the project strengthens the resilience of rural production systems while promoting long term environmental and economic sustainability.

Photos below from the diversified smallholder agroforestry farm Campo Mistico in Bueno Brendão, Minas Gerais, Brazil.





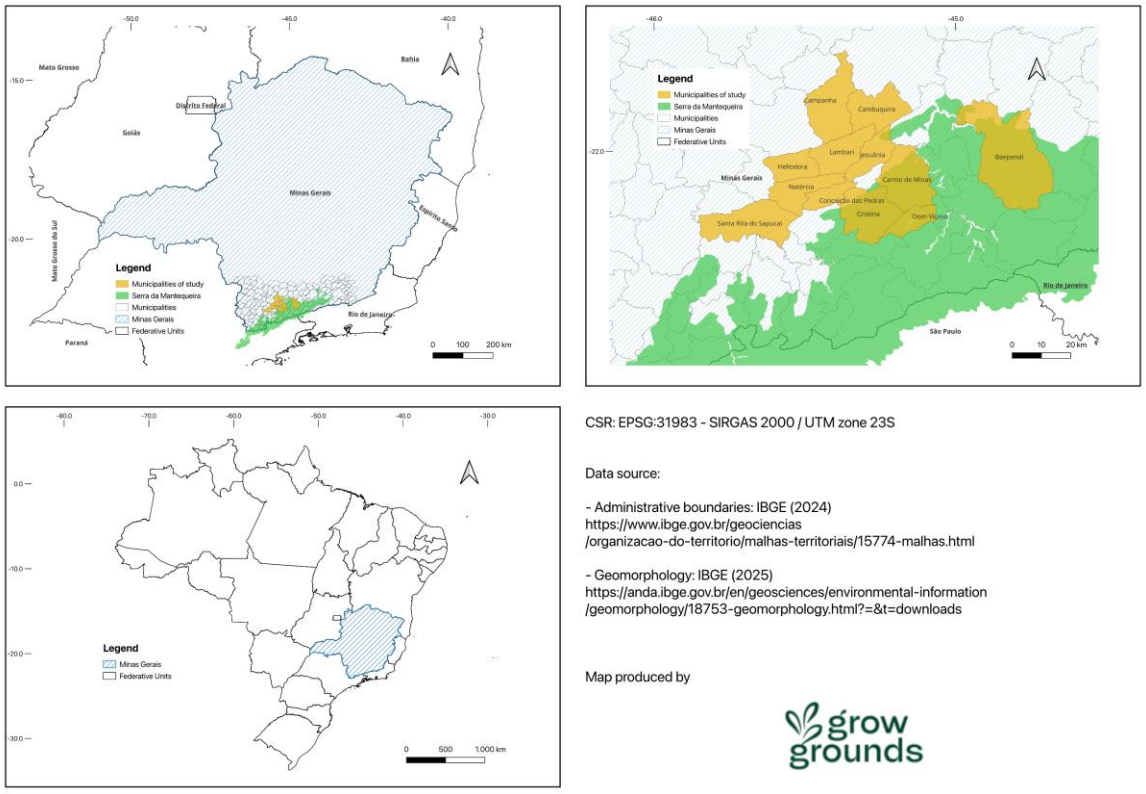
Objectives

The project aims to support coffee farmers in transitioning from full-sun monoculture to an agroforestry approach in order to restore soils, stabilize or potentially increase coffee productivity and farmers' income, enhance food security, strengthen the resilience of coffee production, and remove carbon dioxide (CO_2) from the atmosphere through carbon sequestration.

To achieve this, the project's key objectives are to: (i) generate high-quality carbon credits through Gold Standard certification under the PoA; (ii) improve soil health, water regulation and farm resilience through diversified tree-based systems; (iii) strengthen biodiversity outcomes and habitat connectivity in a landscape adjacent to Key Biodiversity Areas (KBAs), including through riparian restoration and increased tree cover; and (iv) promote inclusive participation, with targets for women's participation in training and leadership roles.

The project will focus on non-mechanised coffee plantations being in the municipalities of Carmo de Minas, Baependi, Natércia, Cristina, Dom Viçoso, Santa Rita do Sapucaí, Heliodora, Lambari, Jesuânia, Conceição das Pedras, Campanha, Cambuquira, in the state of Minas Gerais, South-East Brazil (see map in the following).

Study area of the VPA "Transforming Coffee Production Systems in Brazil with Agroforestry to Store Carbon, Regenerate Ecosystems, and Improve Farmer Livelihoods in Mantiqueira de Minas"



The project will be certified as Gold Standard carbon project under a broader framework, known in the carbon market as 'Programme of Activities (PoA)'. A PoA establishes the guidelines for any project that will make part of the PoA.

This first voluntary project activity (called real case VPA) as well as several possible follow up projects (called regular VPAs) make part of a grouped local stakeholder consultation (LSC) . Any future projects under this group LSC would be located in any or all of those twelve municipalities and can cover both non-mechanised as well as mechanised coffee plantations.

Involved Parties

GrowGrounds ApS (GG), being the Coordinating and Managing Entity (CME) of the PoA and at the same time project developer of the given first real case VPA, is a Danish-based impact-driven start-up that is focused to decrease coffee's negative CO2 impact and helps farmers to move away from monoculture coffee farming to syntropic agroforestry systems, while giving farmers access to the global carbon market.

Hanns R. Neumann Stiftung (HRNS) is a private non-profit foundation established in 2005 pursuing three main goals: (1) improving the social and economic situation of smallholder farming families in tropical countries, (2) protecting the environment and nature, and (3) promoting youth perspectives. HRNS has been active in Brazil since 2009 and will be the local project implementer on the ground for the project in Minas Gerais.

Carbon Credits

Greenhouse gas (GHG) sequestration achieved through the plantation or assisted natural regeneration of trees will result in carbon credits following Gold Standard certification rules and procedures. The PoA will apply the Gold Standard methodology "Afforestation/Reforestation GHG Emissions Reduction & Sequestration Methodology".

The first project implemented by GrowGrounds aims to pay back at least 70% (cash and/or in kind) of revenues from the sale of carbon credits to the farmers. The remaining portion of the revenues are used to finance the carbon certification related costs and to cover costs incurred by the project developer/implementer.

Duration, Scale and Time-schedule

The duration of the project is 30 years, in line with Gold Standard long-term requirements for afforestation/reforestation activities.

The project start date is 01 October 2026, with planting of the first trees.

The PoA, along with the first real case VPA (pilot) being implemented in Minas Gerais, Brazil received the Design Certification in December 2025. This is a regular VPA and is expected to reach key certification milestones with submission of the Project Design Document (PDD) in Q3 2026 and Gold Standard registration in Q4 2026, subject to successful validation and completion of required legal, technical and stakeholder processes.

The project is planned to be implemented across approximately 500 hectares of coffee and pasture landscapes through phased enrollment and farmer onboarding.

Local stakeholder engagement and farmer enrollment has already started.

Compliance with the Safeguarding Principles

Any VPA to be implemented guarantees to follow all safeguards as defined in the Gold Standard requirements, which are as per the following.

Principle 1 - Human Rights

The project respects internationally proclaimed human rights and is not complicit in violence or human rights abuses of any kind, as defined in the Universal Declaration of Human Rights. It does not discriminate on the basis of gender, religion or sexual orientation.

Principle 2 - Gender Equality and Women's Rights

The project activity does not support any form of discrimination based on gender. The project will take into account the gender roles and capacities of women and men to participate equally in the design and consultation activities of the project activity.

Principle 3 - Community Health, Safety and Working Conditions

The project will not expose the community to increased health risks and will not adversely affect the health of workers and the community. Workers involved in the project activity are not exposed to unhealthy working environments, as the project activity will not involve hazardous chemicals or other hazardous materials. It will be ensured that youth/farmers involved in tree management practices activities will be properly trained and equipped with protective equipment as and when necessary.

Principle 4 - Cultural Heritage, Indigenous Peoples, Displacement and Resettlement

The project activity will not negatively impact cultural heritage, indigenous peoples or displace or resettle people. The project is not located on lands/territories claimed by indigenous people.

Principle 5 – Corruption

The project does not involve, complicit in, or inadvertently contribute to corruption or corrupt projects. The project is implemented on farmers lands who have full control over their land.

Principle 6 -Economic Impacts

No negative economic consequences are expected from the project activity. On the contrary, the project is expected to contribute to sustainable economic growth. The project will respect all labor rights and follow the respective national laws.

Principle 7 - Climate and Energy

The project will sequester CO2, which will be monitored and verified in accordance with Gold Standard carbon requirements.

Principle 8 - Water

The project will not have any negative impact on natural water patterns/flows or cause further erosion and/or instability of water bodies. On the contrary, increased vegetation through trees and other plants allows for better water retention and infiltration, which has a positive impact on groundwater availability.

Principle 9 - Environment, Ecology and Land Use

The project will not have any negative impact on the environment and ecology. The project does not adversely affect or alter intact high conservation value (HCV) ecosystems, critical habitats, landscapes and key biodiversity areas.

Contribution to Sustainable Development

The project aims to contribute to the following Sustainable Development Goals (SDGs):

SDG 2 – Zero Hunger

The project activity will implement resilient agricultural practices, hence create better soil conditions and sustainable food production systems, which will benefit farmers in form of stable incomes and food for subsistence. The project activity expects to reduce or even eliminate the use of external inputs (chemical or organic fertilizer, pesticides, herbicides, fungicides) resulting in cost savings for the farmers. The farmers will benefit from the carbon project in form of cash and/or in-kind payments.

SDG 4 – Quality Education

The project activity will provide training/workshops to farmers and technicians in agroforestry practices following syntropic farming principles, thereby enhancing their skills and knowledge of sustainable agriculture. This will make their work more efficient, effective and sustainable for soils and the environment.

SDG 8 – Decent Work and Economic Growth

The project activity expects to create jobs for technicians, service providers for conducting pollarding activities, for staff carrying out monitoring activities and others. Hence, the project activity will increase business and income opportunities in the municipalities where the project will be implemented.

SDG 13 – Climate Action

The project activities result in carbon removals through planted trees as well as from trees of assisted natural regeneration. Soil Organic Carbon will also be enriched.

SDG 15 – Life on Land

The project activity expects to convert up to 500 ha of full-sun monoculture coffee plantations with different coffee farmers scattered across the 12 municipalities into diverse agroforestry systems following syntropic farming principles. This will provide new habitats for flora and fauna.

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