

BioCarbon Fund



Carbon Finance
AT THE WORLD BANK

the challenge we face

Rural communities in the developing world depend heavily on productive land and the resources it provides to sustain their livelihoods. With upward population trends in most of these countries, the competition for land increases too. Yet agricultural and forested land is often less productive than it used to be, as it has been degraded over time by soil erosion, deforestation, and other unsustainable land use. Land degradation threatens the important goods and services that healthy ecosystems provide, such as fertile soils, clean water, biodiversity as well as the storage of carbon. As a result, livelihoods, food security, and economic development of rural communities are increasingly compromised.

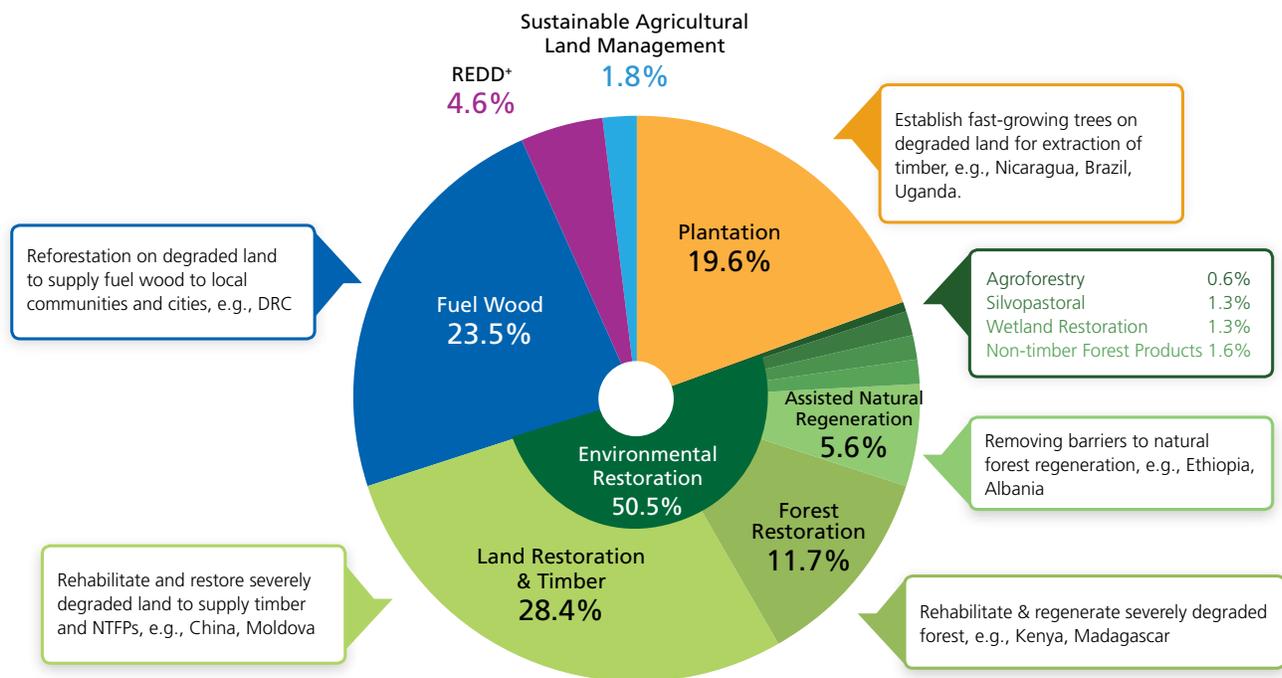
Climate change can also exacerbate stress on degraded ecosystems, further reducing land productivity for crops and livestock, increasing water shortages, and releasing more greenhouse gases into the atmosphere. While agriculture and forestry are themselves susceptible to climate change, they are also major contributors to it. Deforestation, forest degradation, agriculture and other land-use changes together account for almost one-third of global greenhouse gas emissions. Fortunately, sustainable land management practices can lead to simultaneous mitigation and adaptation benefits.

The BioCarbon Fund has contributed to reversing global land degradation trends in several areas of the developing world by applying sustainable land management practices to restore and increase the capacity of degraded lands and to provide increased, yet sustainable yields. These activities have also reduced the vulnerability of rural land users to the impacts of climate change and have helped to diversify their livelihoods, while simultaneously contributing to solving the global climate challenge.

The opportunity to transform landscapes and generate multiple revenue streams

Since its creation in 2004, the BioCarbon Fund has allocated resources to projects that transform landscapes and directly benefit poor farmers. Half of the BioCarbon Fund's projects have invested in environmental restoration of degraded lands, twenty-three percent have invested in fuel wood production, twenty percent in timber production, five percent in conserving forests (i.e., reducing emissions from deforestation and forest degradation-REDD+), and two percent in sustainable agricultural land management.

BioCarbon Fund Activities¹



Housed within the Carbon Finance Unit of the World Bank, the BioCarbon Fund is a public-private sector initiative mobilizing financing to help develop projects that sequester or conserve carbon in forest and agro-ecosystems. It was the first carbon fund established in the world to focus on land use. It has been a pioneer in this sector, developing the infrastructure needed to pilot transactions and paving the way for the growing land-use carbon market established to date.

BioCarbon Fund projects generate multiple revenue streams, combining financial returns from the sale of emission reductions (i.e., carbon credits) with increased local incomes and other indirect benefits from sustainable land management practices. The payments made by the BioCarbon Fund are results-based, thus providing strong incentives for good project management, performance, and impact. Generating multiple revenue streams is crucial to rural communities that otherwise have limited sources of income. An equally important component of BioCarbon Fund operations is the delivery of additional benefits, so called 'co-benefits', that accrue to the communities in addition to the payments for the emission reductions. These co-benefits often take the form of biodiversity conservation, improved water services, and social/institutional benefits (e.g., improved land tenure and stronger community organizations).

Current BioCarbon Fund activities

Over the past decade, the BioCarbon Fund has committed \$90 million to over 20 projects that are restoring 150,000 hectares of degraded lands and reducing deforestation in over 350,000 hectares of land. These projects are sequestering 15 million tons of CO₂ and avoiding the release of 5 million tons of CO₂ in their first 20 years of operation. The projects have all been pioneers in the land-use carbon markets and span 16 countries across major regions of the developing world (Africa, Asia, Europe, and Latin America). Through these projects, the BioCarbon Fund has worked with national entities, private companies and non-governmental organizations. It has tapped the carbon market by both working extensively within the UNFCCC's Clean Development Mechanism (CDM) and the voluntary carbon market.

The BioCarbon Fund has further played an important role in pioneering land-based carbon innovation by supporting early project development, designing the first methodologies and tools for carbon accounting, promoting policy dialogue in the context of the UNFCCC negotiations and other fora, and disseminating lessons learned. Overall, the BioCarbon Fund's first-of-a-kind projects have paved the way for other land-based carbon projects and generated a wealth of knowledge and

¹ Percentages based on the value of purchased emission reductions.

experiences that have been replicated around the world. At a global scale, land-use carbon projects beyond the BioCarbon Fund have now made an impact on some 18 million hectares, which equates to the global expansion of oil palm plantations.

The BioCarbon Fund is complemented by a Technical Assistance Fund, BioCFplus, which provides capacity building, promotes policy research, and supports further methodological work. It has been critical in promoting the land-based carbon market at large.

Our impact on the landscape

BioCarbon Fund projects have helped to restore and protect ecosystems. By planting trees, erosion on degraded land has been halted and reversed. By reducing deforestation, fragile ecosystems and biodiversity have been protected. By adopting sustainable land management techniques, productivity of agricultural systems has been revived or increased. In all cases, tons of CO₂ have been sequestered from the atmosphere or avoided being released into the atmosphere, thereby mitigating climate change.

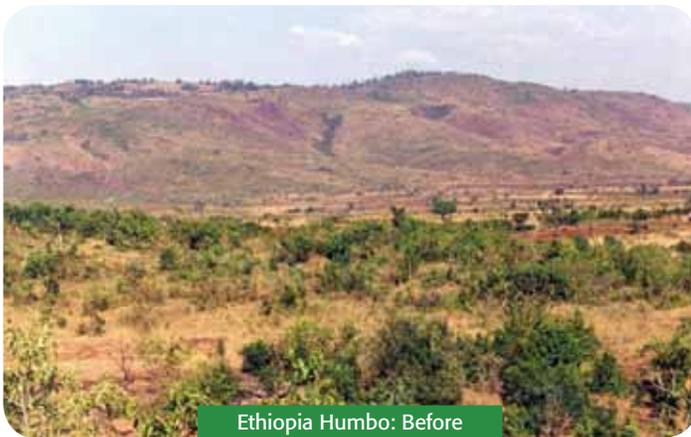
- **In Ethiopia:** Hills barren from deforestation for over 50 years resulted in erosion that was threatening water reserves for 65,000 people. Working with a non-governmental organization and community groups in the area, the vegetation of these areas has grown back on 2,700 hectares using regeneration techniques, while bringing back native forest species, significantly reducing erosion, and providing alternative livelihoods to the surrounding population.
- **In Brazil:** 11,600 hectares of deforested and abandoned pasture lands have been reforested by a private company in order to substitute renewable biomass from sustainable plantations for the use of fossil fuels in the production of pig iron. The company

has become the first in the world capable of producing iron totally based on the use of renewable charcoal, with several additional environmental and social benefits. Today, the project has become a model in the Brazilian iron industry.

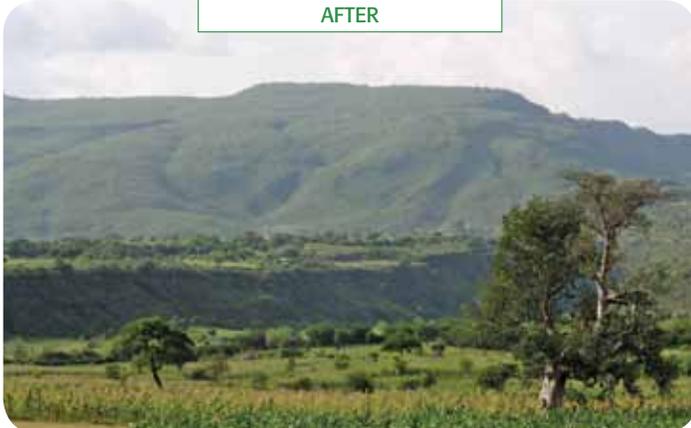
- **In China:** Through a partnership between a regional government agency, farmer cooperatives, and a private forestry company, threats to the extraordinary plant biodiversity of the Pearl River Basin have been reduced with the reforestation of 3,000 hectares of multiple-use forests owned by small-scale farmers, while simultaneously reducing severe soil erosion in the Guangxi watershed.
- **In Madagascar:** Through an effort spearheaded by the Government and an international NGO, a protected area of over 350,000 hectares was created to conserve Madagascar's precious animal biodiversity including the lemur, which is endemic to the island and threatened by forest fragmentation, by focusing on alternative livelihoods for local communities reducing the pressures on native forests.
- **In Moldova:** Through a partnership between the country's National Forest Agency, local communities and other partners, 20,300 hectares of public land has been restored by planting trees and improving soil quality. Following decades of creeping desertification due to the lack of investment in, and restoration of degraded lands, this land was previously so severely degraded that it was unfit for agriculture.

Our impact on rural communities

BioCarbon Fund projects have important economic, social, and institutional co-benefits that are key incentives for local communities to participate in project implementation. Social benefits have included



Ethiopia Humbo: Before
AFTER



Moldova: Before
AFTER



opportunities for greater land tenure security, new employment opportunities for communities with limited sources of income, and improved income from higher yields in agricultural, timber or wood fuel products.

- **In Kenya:** 60,000 small-holder farmers have adopted sustainable agricultural land management practices, such as cover crops, crop rotation, mulching, compost management, agroforestry, organic fertilizer, etc., resulting in increased crop yields and farm productivity as well as increased resilience to climate change on about 45,000 hectares of degraded land in Western Kenya.
- **In Ethiopia:** Seven community cooperative societies have used farmer-managed natural regeneration techniques to halt erosion and green barren hills. They are now benefitting from a direct income stream from the harvesting of forest resources while also receiving 100 percent of carbon revenues from the project. In addition, they have gained legally recognized land rights, turning their land into valuable assets.
- **In Albania:** Twenty-four communes and over one hundred villages in some of the poorest regions of the country are engaged in reforestation activities that translate into employment, and thus improved livelihoods, as well as result in other community benefits that take the form of reduced maintenance cost for irrigation and drainage infrastructure, better affordability of water treatment, and diminished flooding risks.
- **In India:** In a project in Orissa and Andhra Pradesh, small-scale subsistence farmers representing indigenous communities were supported to organize themselves and build partnerships with local industries for the sale of timber and non-timber products from new plantations as well as agroforestry schemes. In another project in Himachal Pradesh, communities have benefited from employment in reforestation and watershed management activities. A share of the resulting carbon revenues is supporting local organizations that foster the empowerment of women, strengthening the social stability in the area.

Pioneering land-based carbon schemes with results

Over its nearly 10 years of operation, the BioCarbon Fund has built a strong track record of pioneering land-based carbon schemes. Key achievements include:

- First issuance of carbon credits for a forestry project under the Clean Development Mechanism (CDM), globally and also in Africa;
- First registered Afforestation/Reforestation (A/R) CDM project;
- First registered CDM project in a number of countries (such as Albania, DRC, Ethiopia);
- First A/R methodology approved under the CDM;
- First methodology for carbon benefits from sustainable land management approved under the Verified Carbon Standard (VCS²);
- Nine carbon accounting methodologies developed and approved;
- Tools for carbon modeling and monitoring developed; and
- Capacity built for various stakeholders including project entities, governmental agencies, policy-makers and project auditors.

²VCS is a standard for validating, measuring and monitoring projects for the voluntary carbon offset industry.



Why accounting methodologies are important:

The BioCarbon Fund has developed nine approved carbon accounting methodologies; seven on Afforestation/Reforestation under the CDM, one on Reducing Emissions from Deforestation and Forest Degradation (REDD⁺), and one on sustainable land management. These methodologies are necessary to first establish a baseline scenario and subsequently to calculate and monitor the emissions reductions attributable to a project and its implementation. Methodologies are complex and often represent a bottleneck in the development of land-based carbon finance operations. The proactive role of the BioCarbon Fund in the development of cost-effective carbon measurement methodologies has energized the development of the forest carbon markets and pioneered forest carbon transactions on the basis of local know-how. The methodologies are available in the public domain and can be used by any interested project developer. An ongoing trend in the carbon markets is to simplify and consolidate carbon accounting methodologies, which is also an important prerequisite for scaling up from site-specific to landscape-level interventions. At this time, many of the tools and systems originally developed for carbon finance operations are being used to develop a new framework for results-based payments. For example, the new framework builds on the fundamentals of monitoring systems applied in carbon finance operations and draws on the various existing standards that ensure the quality of carbon credits (e.g., CDM, VCS).

Next generation BioCarbon Fund activities

Building on a successful track record of supporting projects, developing methodologies for carbon accounting across different standards and promoting policy dialogue, the BioCarbon Fund aims to continue incentivizing better land management, mitigating climate change and helping communities adapt by providing revenues through the carbon markets or other forms of results-based payments. The BioCarbon Fund will:

- Explore integrated carbon accounting at the landscape level, breaking down the current narrow sectoral silos, to include various land management practices and energy activities that have an impact on land;

- Factor carbon and non-carbon benefits such as biodiversity conservation and social co-benefits, into the results-based incentive structures;
- Continue expanding the scope and scale of afforestation and reforestation projects;
- Pioneer new sustainable land management approaches on agricultural land, grasslands, pastures, rice paddies, in wetlands, and with biochar.

These activities could be implemented within the voluntary or regulated carbon markets (CDM or upcoming new market mechanisms), or under other results-based frameworks.

How the BioCarbon Fund works

On behalf of its investors, the BioCarbon Fund pays for land-based carbon emission reductions from projects implemented on forested or agricultural lands in developing countries. The investors can choose to use these purchases against obligations for emission reductions under the Kyoto Protocol or for other regulated or voluntary greenhouse gas emission reduction regimes, and investors have the option to retire the emission reduction credits altogether, thereby funding these powerful projects without purchasing any carbon credits. The payment made for the emission reductions in turn benefit the project stakeholders as per benefit-sharing arrangements agreed with each individual project.

Investors in the BioCarbon Fund

Participants investing in the BioCarbon Fund currently include six governments and public entities and 12 private companies. The emission reductions that the BioCarbon Fund purchases on behalf of its investors are subsequently transferred to them pro-rata their financial participation in the fund.



Governance structure of the BioCarbon Fund

The governance structure of the BioCarbon Fund is set up to encourage participation and knowledge sharing among all involved stakeholders. The Participants in the fund are involved in decisions on inclusion of projects in the portfolio as well as review of proposed annual activity reports and annual budget and business plans. Participants meet once a year with additional virtual or in-person meetings as needed. The World Bank serves as the Trustee of the BioCarbon Fund.

Day-to-day operation of the BioCarbon Fund is handled by the BioCarbon Fund team that is part of the World Bank's Carbon Finance Unit within the Climate Policy and Finance Department. The team is responsible for supervising and monitoring BioCarbon Fund activities, proposing new projects to the Participants for review, serving to facilitate interactions with the Participants, and developing the land-use sector based on broad discussions with the public and private sector as well as market regulators.

Expertise and experience investors can count on

Day-to-day operations of the BioCarbon Fund are fully integrated with the World Bank's processes and specialized teams that provide high-quality support services on financial management, legal guidance, and technical aspects. The application of the World Bank's environmental or social safeguard policies to all BioCarbon Fund operations ensures that undue harm to people and their environment is prevented or mitigated. Safeguard policies have further fostered the participation of stakeholders in project design and helped build ownership among local communities. For policy and methodological processes, the BioCarbon Fund can draw on the expertise of the internationally renowned experts that are part of the World Bank's Carbon Finance Unit.

Synergies with other climate finance instruments

The BioCarbon Fund complements a range of other instruments pioneered by the World Bank that focus on climate finance and land-related activities. Being part of a comprehensive approach to sustainable land management as well as climate change mitigation and adaptation plans in a given country provides highly innovative BioCarbon Fund projects with a broader platform to engage with policy and decision makers and further offers opportunities for potential multiplication effects.

Closely related initiatives include the Forest Carbon Partnership Facility (FCPF) as well as the Forest Investment Program (FIP) and the Pilot Program for Climate Resilience (PPCR), both financial instruments under the Climate Investment Funds (CIFs). As a highly flexible, fast-moving, and adaptive mechanism that can operate at different scales, i.e., from project level to landscape level, the BioCarbon Fund serves as a pioneer for new approaches and techniques to enhance climate resilience, to reduce deforestation and forest degradation, and to restore degraded agricultural and marginal lands. Lessons learned by first-of-a-kind BioCarbon Fund projects provide important guidance and experience for the operationalization of other results-based financial mechanisms, such as the FCPF's Carbon Fund operation at the national or jurisdictional scale. More specifically, the BioCarbon Fund is generating experiences on:

- How to set up, monitor and verify results-based payments on the ground;
- How to set up benefit-sharing mechanisms for the payments from forest carbon transactions;

- How to define and account for non-carbon benefits, such as environmental and socioeconomic co-benefits; and
- How to prevent and address the potential occurrence of reversals that could undermine the environmental integrity of a land-use carbon transaction.

More information

More information on the BioCarbon Fund and the projects supported can be found at:

www.biocarbonfund.org



