



Basket of Ecosystem Products and Services from the Sierra Gorda Biosphere Reserve

- A Project for Reduction of Emissions from Deforestation and Degradation Plus (REDD+), Marching Forward
- “Sierra Premium Carbon,” Carbon Sequestration in Communities of Extreme Poverty
- “Sierra Solidarity Carbon,” Making the Most of Forest and Carbon Sequestration
- Sierra Carbon Sequestration and Storage in Natural Regenerations
- Wildlands Forever

Sierra Gorda, Queretaro State, Mexico—Summary

The Sierra Gorda Biosphere Reserve (SGBR) was created in 1997 and is located in the north of Queretaro State forming part of the Eastern Sierra Madre; it has an area of 383,567 hectares (approx. 1 million acres) equivalent to 32% of the state’s territory. Within the federally protected Biosphere Reserve there is a population of around 95,000 inhabitants who own 97% of the territory (27% ejidal, 70% small landholders).

In terms of ecosystem diversity, the SGBR occupies first place in megadiverse Mexico among natural protected areas making its conservation essential; vegetation types range from arid scrub to temperate and mountain cloud forests, riparian forests, and three variants of tropical forests. It shelters numerous species of flora and fauna in risk of extinction and serves as a refuge for migratory species. For its extraordinary biotic values, the SGBR is part of the International Network of Biosphere Reserves MAB (Man and Biosphere) of UNESCO, Important Bird Conservation Areas, and RAMSAR.

The Sierra Gorda Biosphere Reserve has more than 500 archaeological sites and five 18th century Franciscan Missions designated as UNESCO World Cultural Heritage sites.

Significantly, this is a living model of community-based conservation management where 35,000 residents have received training, organized thousands of small actions in restoration, recycling, education, productive development for the last 25 years. Conservation of the ecosystems and the services they provide is only sustained by the opportunities generated locally and so, finally, fighting global warming and fighting poverty go hand in hand. The Grupo Ecológico Sierra Gorda and the alliance of grassroots organizations are recognized by Ashoka: Innovators for the Public, Schwab Foundation for Social Entrepreneurs, Rolex Prize for Enterprise and many valuable partners around the world.



● Sierra Gorda Biosphere Reserve

● Queretaro State



Social Returns on Investment (SROI) for Ecosystem Services

Biodiversity conservation

- Reduce the number of cattle
- Field visits (two visits/year)
- Regeneration of forest understory
- Natural regeneration of forests
- Reduce the extent of cattle grazing

Fight Climate Change

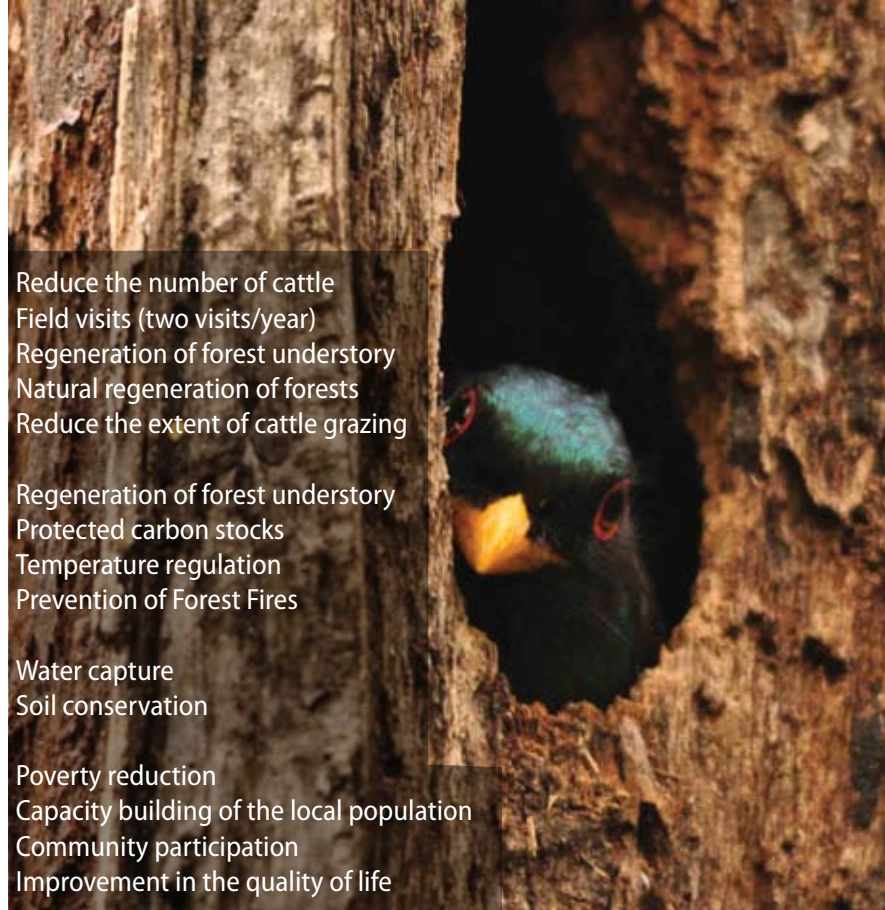
- Regeneration of forest understory
- Protected carbon stocks
- Temperature regulation
- Prevention of Forest Fires

Protect Hydrologic Services

- Water capture
- Soil conservation

Leverage Socio-Economic Benefits

- Poverty reduction
- Capacity building of the local population
- Community participation
- Improvement in the quality of life



A Project for Reduction of Emissions from Deforestation and Degradation Plus (REDD+), Marching Forward

Objective. Making the most of the synergy achieved in the Sierra Gorda Biosphere Reserve (SGBR) through Payment for Environmental Services by the National Forestry Commission (CONAFOR), World Bank, and the Gonzalo Río Arronte Foundation, thus ensuring a very significant stock of carbon in local ecosystems.

Eligibility Criteria. Priority will be given to areas most fragile and endangered, seeking to supplement the resources currently available.

Quantification methodology. As an example, the estimated average increase in biomass per year with the removal of cattle from oak forests is 5.33 t/ha/year and the average annual increases in carbon sequestration corresponds to 2.67tC/ha or 9.77 tCO₂e per hectare; with this information, projections render 7,000 net metric tonnes of carbon in oak forest in an area of 2,626.64 hectares annually.

Benefits of Community and Biodiversity. Community and biodiversity benefits will be monitored, and an Analysis of Social Return on Investment will be maintained. SVT Group helped develop a framework for a unified system to measure and manage program performance and carbon offset co-benefits of multiple community-based environmental initiatives in the Sierra Gorda Biosphere Reserve and buffer areas. Based upon the indicators, we calculated a Social Return on Investment of 12.34:1. In other words, for every dollar invested in the project, GESGIAP and its project partners have generated a return of \$12.34 dollars in social and environmental returns.

Operational Mechanisms for Sierra Premium Carbon

Step 1: **Promote.** At the beginning of the year, reforestations are promoted in the Sierra Gorda communities.

Step 2: **Community Organization.** Meeting with landowners interested in entering the program to look over the properties and collect information.

Step 3: **Visit the Property.**

During which the following activities are carried out:

- Description. (Record all of the biotic and abiotic characteristics of the property.)
- Evaluation. (Evaluate the biotic and abiotic characteristics of the property to confirm whether the species to be planted can survive.)
- Georeferencing. (With a GPS unit, record the dimensions of the proposed property to determine its position and analyze images with help from the GIS.)

Step 4: **Investigate Carbon Leaks.**

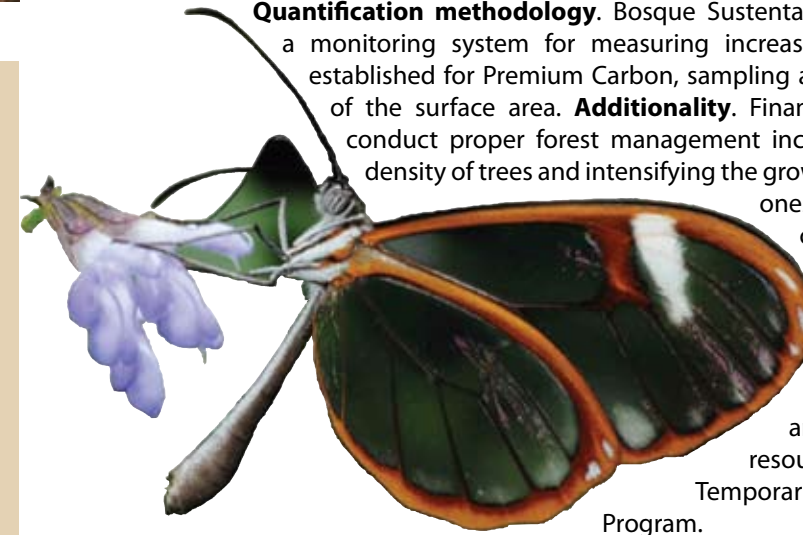
Step 5: **Review Images.** (Determining the current area of the property; comparing the current image with images of the vegetation a decade ago to confirm that there is no native forest in place of the current reforestation.)

Step 6: **Confirm Property Tenancy.** (Requesting that the participant demonstrate legal tenancy of the land through valid official documents.)

Step 7: **Approval.** (Once the previous steps are completed.)

Step 8: **Complete documentation.**

Step 9: **Include in the Sierra Premium CO₂e Inventory.**



"Sierra Premium Carbon," Carbon Sequestration in Communities of Extreme Poverty

Background. Premium Carbon is the product of the Carbon Sequestration Project in Communities of Extreme Poverty, reforestations established between 1997 and 2009, and all of those to be established between 2010 and 2013. Currently, there are reforestations in which 163 landholders are participating with a total of 191.5 hectares.

Quantification methodology. Through this product, we project a net sequestration of 115,185 tCO₂e by 2042. Each year, we are going to sample 20% of the area required by the performance methodology of carbon sequestration until a statistical confidence of 95% is reached.

External validation. Bosque Sustentable A.C. has contracted an outside auditor to evaluate a possible external validation of the project, with the standards of Climate, Community, and Biodiversity (CCB) and the Voluntary Carbon Standard (VCS).



"Sierra Solidarity Carbon," Making the Most of Forest and Carbon Sequestration

Background. The Sierra Gorda Ecological Group (GESGIAP in Spanish) established the first carbon reforestations from 1987-1996 and the property owners have maintained 213 reforestations that cover 257 hectares.

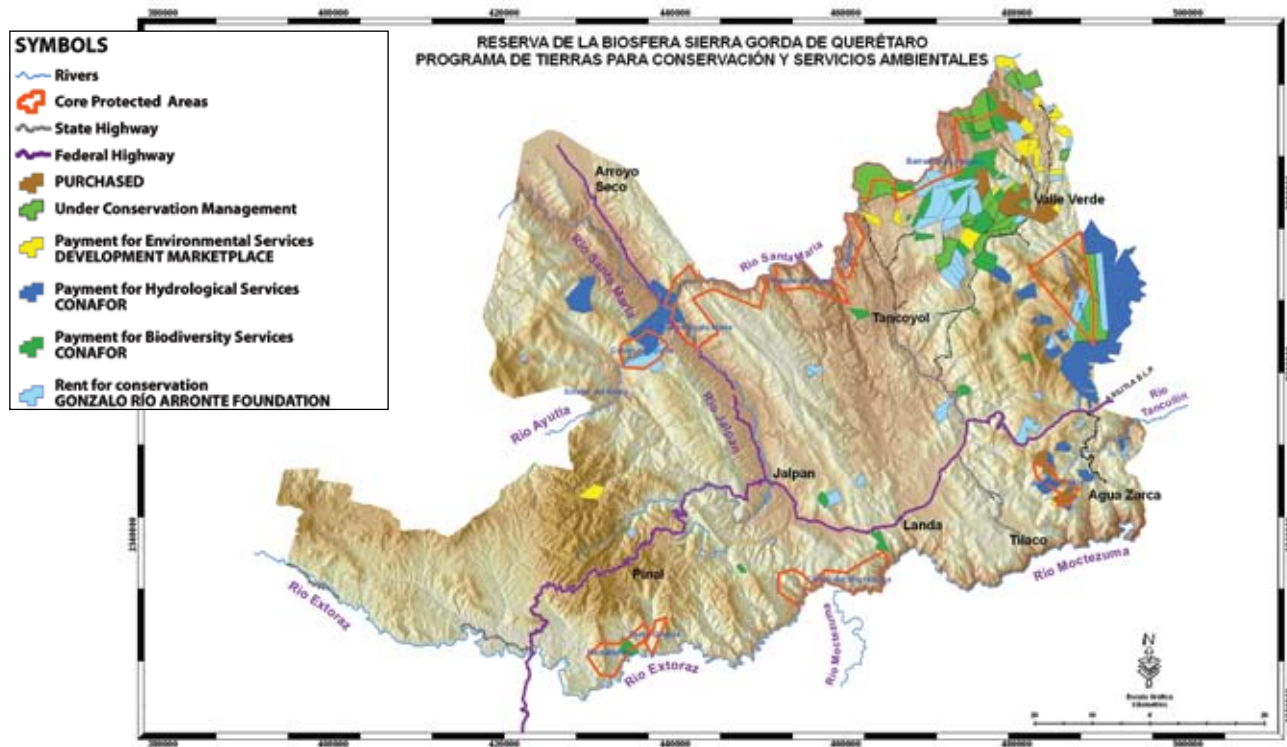
Quantification methodology. Bosque Sustentable A.C. established a monitoring system for measuring increases similar to those established for Premium Carbon, sampling a reliable proportion of the surface area. **Additionality.** Financing is required to conduct proper forest management including thinning the density of trees and intensifying the growth of the remaining ones and, thus, of the captured carbon.

This will result in additional income for owners in the sale of timber from thinning and application of resources of the federal Temporary Employment Program.



Sierra Gorda's Track Record in Voluntary Carbon Offsets 2006 to 2010

- 13 Transactions
- 11 Donations
- 28,387 tCO₂e
- US \$399,235



Sierra Carbon Sequestration and Storage in Natural Regenerations

Background. In the SGBR, throughout nearly 23 years, natural regenerations have been managed in different types of vegetation. Carbon Sequestration, Storage and Regeneration in Natural Ecosystems within the SGBR is a project born of the need for financing in order to increase carbon sequestration capacity and provide other environmental services. **Quantification methodology.** Research plots will be established to quantify and monitor the CO₂ absorption capacity in regenerated forests. **Additionality.** With proper silvicultural treatment the growth of variegated natural regeneration will be stimulated and the increase in carbon sequestration will be quantified. **Benefits of Community and Biodiversity.** The project will provide alternative income and training for small producers in communities living in extreme poverty as well as benefit the fight to protect biodiversity and to adapt to climate change.

Wildlands Forever

Background. Since 1996, we value through purchasing the civil society organization purchase (200 hectares



have achieved protection in perpetuity of sites of high biological lands for conservation in high-priority ecosystems. To this end, Joya del Hielo A.C. was formed in 1996, and made the first of a magnificent cloud forest) with resources from the founding partners and a clear statement in its constitution that the acquired properties will be held exclusively for conservation management. Thus, to date, almost 3,700 hectares have been protected with excellent results. In this project, we have counted on partners such as World Land Trust, the Netherlands Committee for IUCN, Tropical Forest Forever Foundation, World Park's Endowment, People's Trust for Endangered Species, and other donors who have made it possible to strengthen the Network of Private Nature Reserves of the SGBR. **Advantages.** This strategy ensures perpetual protection of unique sites for biodiversity and carbon storage.

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 www.sierragordaeotours.com
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 www.carbonneutralplanet.org

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