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Amazon Region: Eco-Efficient Landscapes

Introduction

The Amazon Basin is so diverse that one could say many Amazons exist, not just one. Indeed, its diversity is considered unique in the world. Although the Basin occupies 7% of the planet's land, it carries 25% of the world's terrestrial biodiversity. The region is so vast, it represents one-third of South America's land surface. It covers, or partly covers, nine countries: Colombia (36% of the land area), Venezuela and Guyana (6% each), Suriname and French Guiana (almost 100% each), Brazil (60%), Bolivia and Peru (75% together), and Ecuador (45%).

Yet, more than 100 million hectares of this complex of ecosystems, that is, 16%, have been deforested. With this loss, important environmental services have been degraded, for example, the conservation of biodiversity, storage of carbon dioxide, regulation of regional and global climates, and regulation of water cycles. The drive behind this deforestation has been, and still is, extensive agriculture of such low productivity that, in a few years, as soils deteriorate, it becomes unproductive. More forest is then cleared, repeating the cycle. The situation is further exacerbated by climate change phenomena and the region's vulnerability to these.

CIAT's role

CIAT has worked in the Amazon for more than 30 years. It has contributed towards such aspects as developing eco-efficient crop-and-livestock systems; improving markets

for small farmers; monitoring and analyzing deforestation; and directing research at understanding, mitigating, and adapting to climate change. These activities were carried out in collaboration with a strong network of entities, including some strengthened by CIAT's participation in the international consortium *Amazon Initiative*.

The pressure to conserve and sustainably use the Amazon requires strategic action. CIAT scientists, working with external actors, have formulated a strategy to provide a framework for collaborative efforts in this region.

The strategy encompasses two general foci: first, to understand the dynamics of the Amazon Region. Activities will include monitoring environmental, social, and economic changes of different Amazon landscapes. Findings will then be used to visualize future scenarios in the context of climate change. The second focus is to create and use models for intensifying land use through eco-efficient production systems in those areas of the Amazon that have long since been heavily degraded.

General objective

CIAT's general mission is to promote eco-efficient agriculture for reducing poverty. Within this framework lies the strategy's central objective to create models that describe eco-efficient landscapes, ranging from the farm to the watershed, for the Amazon Region.

Areas of action

CIAT will focus its areas of action in the Amazon on three intimately linked themes:

Monitoring the Amazon: Geographical information tools such as Terra-i and IAViewer will be used to support countries in monitoring the Amazon Region. To provide elements for decision-making, the focus will be on changes in land use and on the generation of economic, environmental, and social indicators.

Optimizing land-use systems: The Center will generate models of soil restoration and intensive and sustainable management of degraded areas, focusing on agroecosystems. It will use its experience in (i) the management of crops, soils, crop-forage rotations, and access to markets; and (ii) analysis of economic impact to improve farm productivity in an integrated way. CIAT will prioritize crop research on cassava, forages, rice, and fruits, which are widely grown in the Amazon. This work is expected to contribute significantly to the conservation of the Amazon Region as a whole.

Improving access to markets is fundamental for generating not only eco-efficient farms (whose carbon footprints are small), but also substantially upgrading living standards for rural populations. The Center's strategy is to involve communities in participatory and interactive exercises to construct and develop valid marketing options. Markets would be visualized from the perspective of crops and their production chains, thus giving an aggregate value to the Amazon's conservation by recognizing the environmental services it provides.

Mitigating and adapting to climate change: The most efficient strategy for mitigating climate change in the Amazon Region is to stop deforestation. This is the goal of options such as REDD+. CIAT's challenge, in contrast, is to recuperate areas already deforested and to

mitigate climate change in systems such as extensive livestock-raising. This can be done by, for example, converting them into intensive and sustainable agrosilvopastoral systems.

Information generation and training

These three areas of action will also count on cross-cutting programs for information generation and training. The programs will be designed to generate access to information for informed decision-making. They will also promote development strategies that incorporate the principles of eco-efficiency and sustainable development.

CIAT expects to conduct these programs in collaboration with different partners in the Amazon Region. To ensure that research results on eco-efficient Amazon landscapes are relevant to policy decision-making, governments and other strategic agents will be encouraged to become partners.

Collaborators

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