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INSTITUTO INTERNACIONAL PARA SUSTENTABILIDADE

Executive Summary:

Solutions and strategies to reduce legal deforestation in the Cerrado

Behavioral and financial analysis

Introduction

Despite being considered a global biodiversity hotspot, the Cerrado has been leading the deforestation ranking among Brazilian biomes. Only the four states in the region known as Matopiba – Maranhão, Tocantins, Piauí and Bahia – accounted for almost half (47%) of all native vegetation loss in the country in 2023. Almost all of the country's deforestation (97%) in the period was caused by agricultural expansion. In Matopiba, direct conversion from forist to soybeans was responsible for much of this deforestation.

> A key challenge to achieving agricultural sustainability is to increase production without intensifying deforestation and biodiversity loss.

15.7 million hectares of areas in Brazil were identified as possible for the expansion of agriculture without the need to convert native vegetation, with 47% of these areas located in the Cerrado.

This value is higher than the target of 11.3 million hectares presented in the projections developed by the Ministry of Agriculture, Livestock and Supply for the years 2030/31.

In the context of international trade flows of agricultural products, responsible deforestation-free production is particularly important, as is the need to conserve biodiversity and the provision of ecosystem services.

Therefore, the debate on how to encourage the conservation of native vegetation areas on rural properties beyond the minimum requirements established by the Forest Code is gaining importance, especially in regions under high pressure for agricultural expansion, such as Matopiba, considered Brazil's new agricultural frontier.

This summary presents the results of the project “Incentives and interventions for behavior-based policies for a soybean production chain free of deforestation and conversion in the Cerrado”, carried out in 4 phases, with the objective of:

1. **To assess the behavior of soybean producers in the Cerrado to identify the main causes that influence the decision about the use of their land and develop a hypothesis about the causes and motivations of these behaviors.**
2. **Design incentives and interventions incorporating behavioral science principles to eliminate deforestation from the Cerrado soy supply chain based on the results of phase 1.**
3. **Test producers' acceptance of the solutions designed to understand their preferences and willingness to accept incentives for voluntary conservation of native vegetation and to what extent these incentives can be improved by behavioral interventions, by applying a choice experiment with farmers.**
4. **Analyze the costs and benefits of the proposed solutions and define the operationalization of the incentive to develop a detailed plan for its implementation, scaling and monitoring.**

Behavioral factors influencing voluntary conservation

> Financial motivations are the behavioral factors with the greatest influence on the legal deforestation of native vegetation in the Cerrado.

Interviews conducted with rural producers in Matopiba showed that the main reason for legal deforestation for agricultural expansion is the expected financial return from soybean cultivation. Another frequently cited factor is the appreciation of mechanized rural property (open land ready for planting) at the time of sale. In addition to financial motivation, emotional factors such as the “desire to plant” and “produce food for the world,” which predominate among farmers, also favor the conversion of native vegetation into arable land.

If the area were not suitable for agriculture – due to very rocky soil or sloping terrain – some producers reported that they would choose to deforest the excess Legal Reserve (RL) to invest in livestock farming, motivated by the possibility of diversifying production and increasing income.

The main barrier to conservation is the loss of potential revenue that could be obtained from soybean cultivation in the area, although the high value of the investment required to remove native vegetation and prepare areas for cultivation (machinery, fuel, inputs for soil correction and labor) sometimes ends up inhibiting deforestation.

Most farmers are open to voluntary conservation of native vegetation if the financial compensation exceeds the expected profits from soy or livestock. Thus, financial incentives may prove to be the most effective strategy for reducing legal deforestation.

> Actions that aim to offer financial incentives and rewards to producers must present clear and transparent rules and mechanisms. The incentives and rewards must be perceived by producers as financially fair and adequate, since they will be giving up a right that, in their view, has a high opportunity cost.

Therefore, the proposed action must be shown to be superior to the "investment" in deforestation and superior to the future profit from the area.

However, financial instruments such as payments for environmental services (PES) have come under intense scrutiny and criticism for leading to mixed and sometimes adverse environmental and social outcomes. It remains unclear whether such an approach represents an improvement over existing approaches to governing sustainability in supply chains, and especially as a mechanism to reduce ecosystem conversion.

Willingness to accept PSA for voluntary conservation

Five factors are the most decisive for the potential for engagement in a PSA program for voluntary conservation of native vegetation in Matopiba:

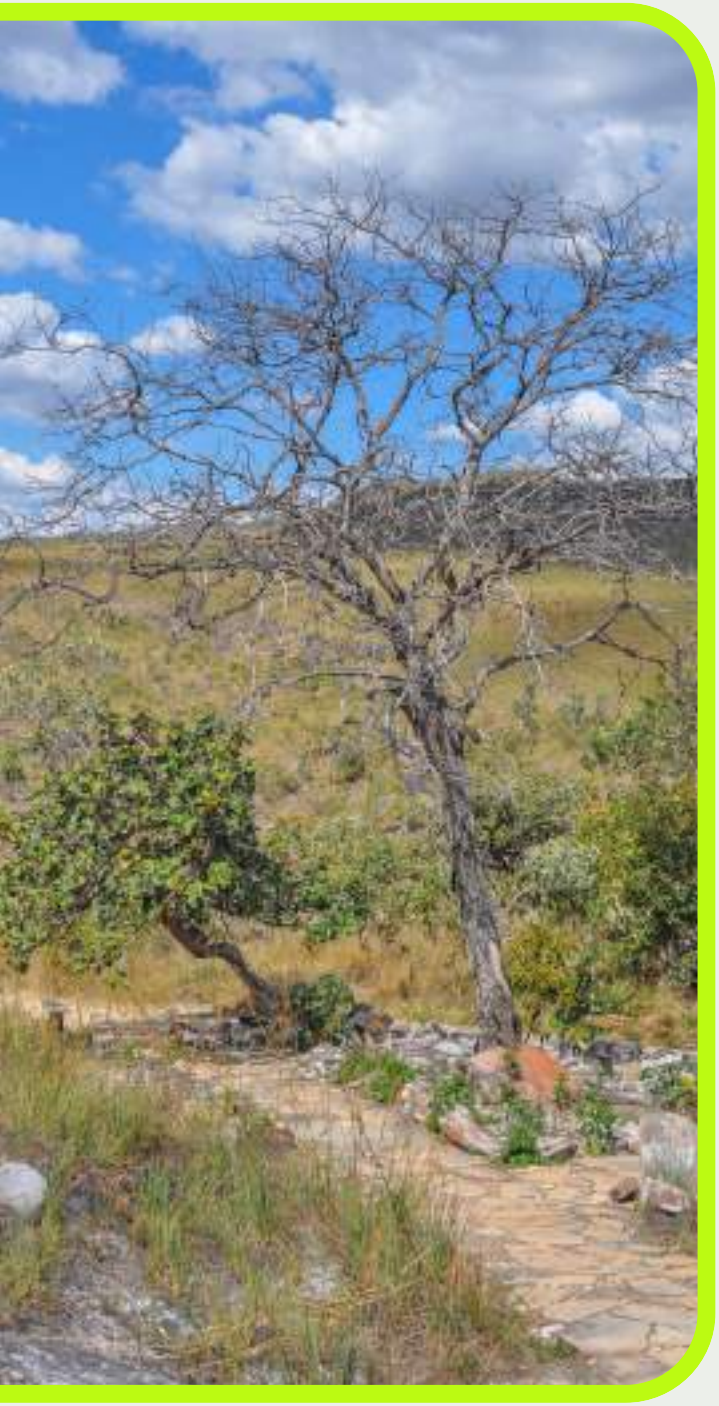
1. the PSA value;
2. the requirement or not to transform the area into a Private Natural Heritage Reserve (RPPN);
3. the prior expectation of obtaining a license to remove vegetation;
4. the lack of capital for expanding production;
5. knowledge of other producers who participate in PSA programs.

It is important to emphasize that the additionality of the conserved area and the effectiveness in avoiding legal deforestation are related to the characteristics and motivations of the owners, such as the desire to obtain a license to remove vegetation in the coming years and the financial capacity to expand the productive area.

However, these landowners, who should be the target group of a PES program, demand higher than average prices to engage voluntarily. Offering prices below the opportunity cost may result in the selection of producers who would not deforest anyway – either due to a lack of agricultural aptitude or a lack of capital – reducing the additionality of the program. This occurs because deforestation was no longer in the short-term plans of those who would most readily engage.

Another risk of including in the program a producer who would accept a below-average amount because they have no plans to expand their area due to capital constraints is that this could help these producers overcome their current financial limitations, allowing them to expand their soybean production area over native vegetation in the future. In this scenario, financial incentives would only result in temporary conservation, followed by deforestation.

To avoid this perverse incentive, ensuring the permanence of conservation represents a significant challenge. The mechanism evaluated in the study to ensure permanence was the conversion of areas into RPPN. However, this option is unacceptable to most landowners in the contexts analyzed, resulting in the requirement of PES values equivalent to the purchase price of the area, or even higher. Landowners attach great importance to the “option value” of the land, that is, the possibility of freely deciding on its future use as new opportunities arise. This represents an enormous challenge to demonstrate the viability of long-term conservation after the end of the PES program.



Alternative solution: land acquisition for voluntary conservation

The alternative solution to PSA for voluntary conservation proposed in the study is the acquisition of lands with native vegetation by private entities or the third sector for specific conservation purposes, thus dissociating the cost of voluntary conservation from the opportunity cost of land for soybean cultivation or cattle raising.

While both approaches rely on a robust property rights framework, there are significant differences between them. For example, land purchases can have market side effects, such as higher prices due to changes in supply and demand, which can ultimately undermine conservation goals. PES, on the other hand, can also impact local labor and land markets, and are influenced by changes in agricultural productivity and the appreciation of fallow land values.

It is essential to analyze the relationship between "program quality" and price. In both solutions, the permanence and additionality of the program could be guaranteed by requiring the conversion of the area into a Private Natural Heritage Reserve (RPPN). However, this option has disadvantages, such as low adherence by landowners to a PSA that requires the conversion of the area into a Private Natural Heritage Reserve (RPPN) compared to a traditional program. In addition, there are restrictions on the options for economic use permitted in this type of conservation unit, limited to scientific research activities and visits for tourism, recreational, and educational purposes. Therefore, in the solution of acquiring land for voluntary conservation, the option of converting the area into a Private Reserve for Sustainable Development (RPDS) was also considered.

Although this category of conservation unit is not included in the National System of Conservation Units (SNUC) and is regulated only in some Brazilian states, it offers additional incentives such as the possibility of generating income and jobs through the sustainable use of natural resources, especially non-timber forest resources and fauna, resulting in positive social impacts for local communities.

Cost-benefit analysis

In both solutions – PSA or acquisition of land with native vegetation – there is potential revenue generation through the issuance and sale of carbon credits for Reducing Emissions from Deforestation and Forest Degradation (REDD+). Thus, the values for a potential carbon credit price were calculated to be sufficient for the net present value (NPV) balance of the implementation of the solution to equal zero (breakeven) in each scenario: PSA with and without conversion into RPPN and acquisition of land with conversion into RPPN or RPDS, for an area of 10,000 hectares of preserved native vegetation.

PSA or land acquisition with conversion into RPPN

The cost-benefit analysis with the requirement to convert the area into a Private Natural Heritage Reserve (RPPN) in the base land purchase scenario presents a carbon price of R$79/tCO$_2$. For the solution of transforming it into a RPPN based on a PSA, the carbon price in the base scenario should exceed R$463/tCO$_2$.

Therefore, the PSA option is almost six times more costly than purchasing land.

PSA without conversion into RPPN and land acquisition with conversion into RPDS

The cost-benefit analysis of the PSA solution without the requirement to convert the areas into RPPN indicated a carbon price of R$168/tCO$_2$ in the base scenario. For the solution of land acquisition and conversion into RPDS, the carbon price in the base scenario is R$79/tCO$_2$.

In this scenario, the PSA option is potentially twice as costly as purchasing land.

Conclusion

The main factor affecting the financial viability of a PSA for voluntary conservation or the purchase of land for conservation is the trade-off between the cost of land acquisition and the opportunity cost of land held by rural producers, given that land with native vegetation has a much lower price than land that has already been converted and is suitable for cultivation.

Therefore, the financial solution of purchasing land with conversion of the area into RPDS is recommended. This solution offers the following benefits:

1. greater control over conservation;
2. lower contracting costs with rural producers;
3. lower reputational risks;
4. greater social and economic benefits, through the generation of income arising from the sustainable use of sociobiodiversity products by local communities.

In particular, areas of native vegetation owned by actors with an environmentalist profile or who have no interest in converting them into agricultural areas represent an opportunity for voluntary conservation.

Recommendations for acquiring land for voluntary conservation

The land acquisition initiative in Matopiba is an opportunity for conservation and sustainable use of biodiversity, although it is not a model widely adopted in Brazil.

Fundraising

Success depends on the continuous raising of financial resources, mainly from international cooperation, as well as private and third sector donations.

Land acquisition

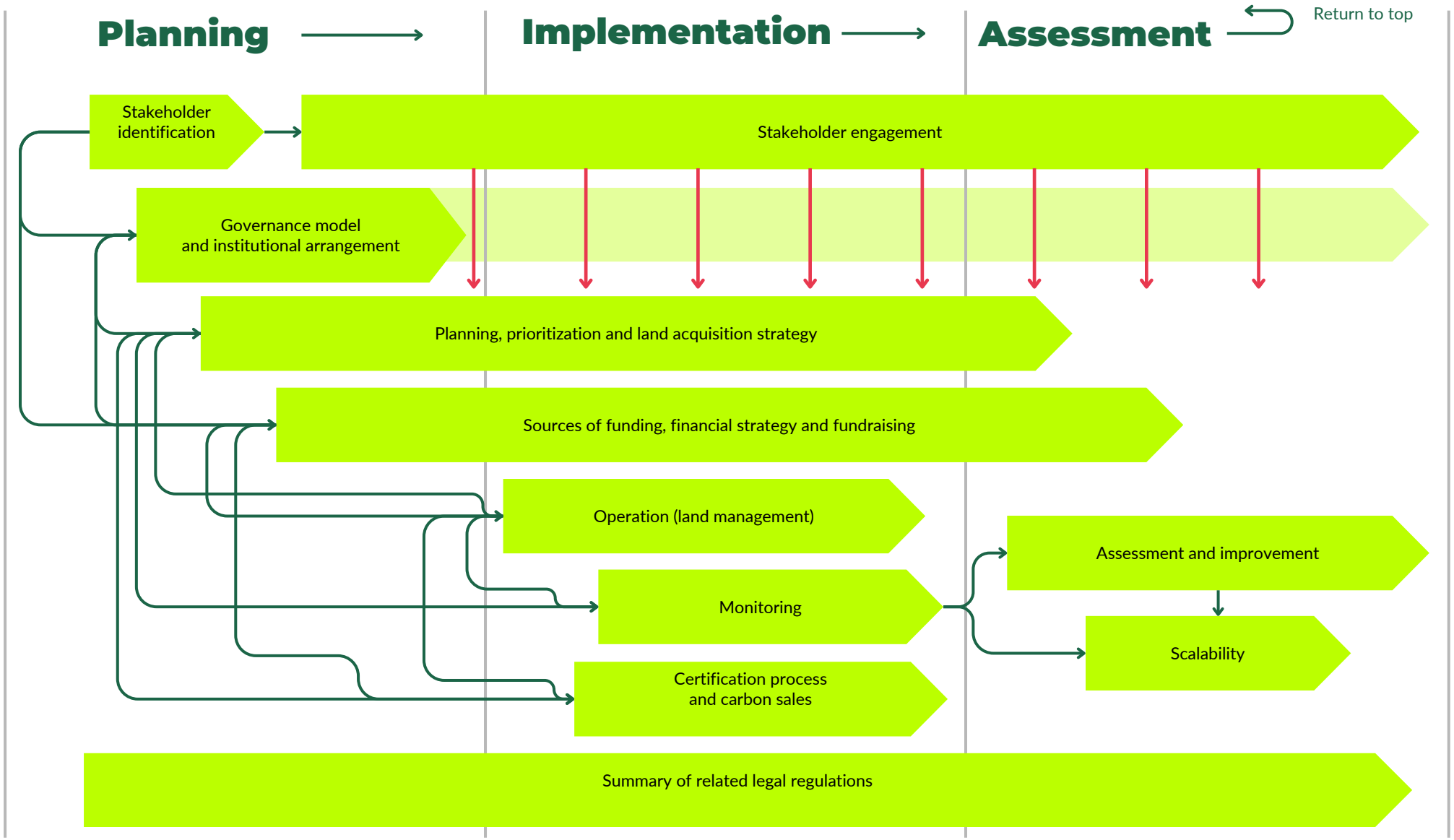
Land acquisition is the central stage of the project and involves high costs, risks and bureaucracy, requiring detailed analyses in several areas. After the purchase, the operational phase includes management and protection actions, in addition to the possibility of selling carbon credits, which must follow strict standards to maximize credibility and market value.

Governance Model

A transparent and participatory governance model is essential to give credibility to the project and ensure its long-term effectiveness. Governance should include a steering committee and other advisory and operational bodies. Engaging key stakeholders is essential to minimize risks and expand opportunities, and a structured stakeholder engagement plan is necessary.

Monitoring and evaluation

Monitoring and evaluation are essential to measure impact, drive improvements, and support project scalability. Expanding the initiative will depend on new rounds of planning, engagement, and fundraising, considering changes in context over time.


Planning
Implementation
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Stakeholder identification
Stakeholder engagement
Governance model and institutional arrangement
Planning, prioritization and land acquisition strategy
Sources of funding, financial strategy and fundraising
Operation (land management)
Monitoring
Certification process and carbon sales
Assessment and improvement
Scalability
Summary of related legal regulations

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