Executive Summary

September 2026

PROJECT

Determinant factors in forest restoration intention by landowners in the Atlantic Forest

Team

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Areas of study

Municipalities in the states of São Paulo, Rio de Janeiro and Minas Gerais (Paraíba and Tietê river basins)

Sample

330 landowners interviewed

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1. Why is this research relevant?

Ecological restoration is one of nature's key solutions to address two global crises: biodiversity loss and climate change (GRISCOM et al., 2017; LEWIS et al., 2019). Natural ecosystems, such as forests, help capture carbon from the atmosphere, protect springs, improve soil and house animals and plants.

Brazil has enormous potential to restore native vegetation, especially in the Atlantic Forest, one of the most threatened and most important biomes in the world for biodiversity. An estimated 19 million hectares of native vegetation are in need of restoration on legally protected land in the country. A huge part of it is on private property (SOARES-FILHO et al., 2014). This means that restoration success depends, first and foremost, on landowners' decisions.

Promoting active restoration isn't simple, however. It involves relatively high costs, uncertainties about the direct economic return and legal issues, as well as the need for labor and technical knowledge and the fear of losing space for agricultural production.

Therefore, understanding how landowners make decisions and what they perceive as limitations and motivations for the restoration of native vegetation is essential to create public policies and programs that really work.

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2. An Atlantic Forest snapshot

The set area established for the research is part of SOS Mata Atlântica's territorial strategy, which integrates science, governance and funding to generate measurable results in the biome.

It focuses efforts on three central axes:

WATER: water supply and quality for millions of people;

BIODIVERSITY: conservation of species and protected areas;

CLIMATE: mitigation of emissions and adaptation to extreme events.

The strategy covers the middle Tietê and middle Paraíba do Sul basins, comprising 170 municipalities, where about 12 million people live, in the states of São Paulo, Minas Gerais and Rio de Janeiro.

The two basins are a snapshot of the main challenges and opportunities of the Atlantic Forest: **low forest cover, severe fragmentation, agricultural and urban pressure, water and climate risk, and large population and economic concentration**.

They are strategic areas for water supply, energy production and industrial and agricultural development, as well as concentrating key species and ecosystems.

Why does forest restoration in this territory matter?

Forest restoration actions are critical to **carbon removal, climate regulation and water security**. All this directly reflects on people's quality of life and biodiversity conservation.

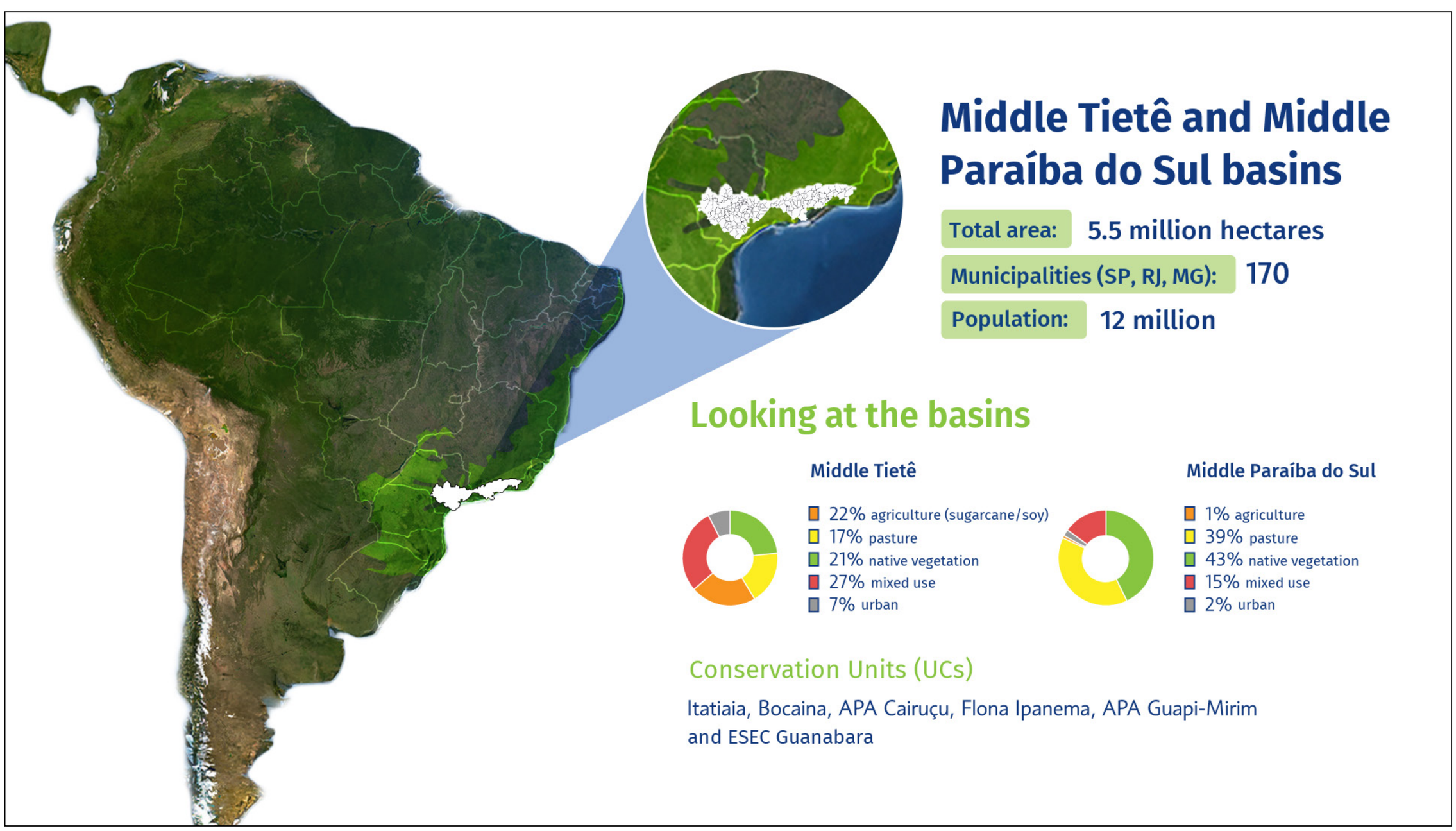


Figure 1: SOS Mata Atlântica Territorial Strategy.

3. How was the research conducted?

3.1 Interviews with landowners

In order to understand how rural producers perceive restoration, interviews were conducted directly with them.

The study area was classified according to the following criteria:

i. Property size, divided into two groups – small properties and medium/large properties;

ii. Dominant land use on the property, that is, the main coverage or productive activity. Five groups were established: pasture, agriculture/silviculture, native vegetation, mixed use and other uses. “Mixed use” represents fallow or transitional crop areas; “other uses” are urbanized areas.

These criteria were established to determine whether the main coverage and property size help explain certain positions of rural producers. These profiles could be useful for creating strategies that better meet each group's expectations regarding the topic.

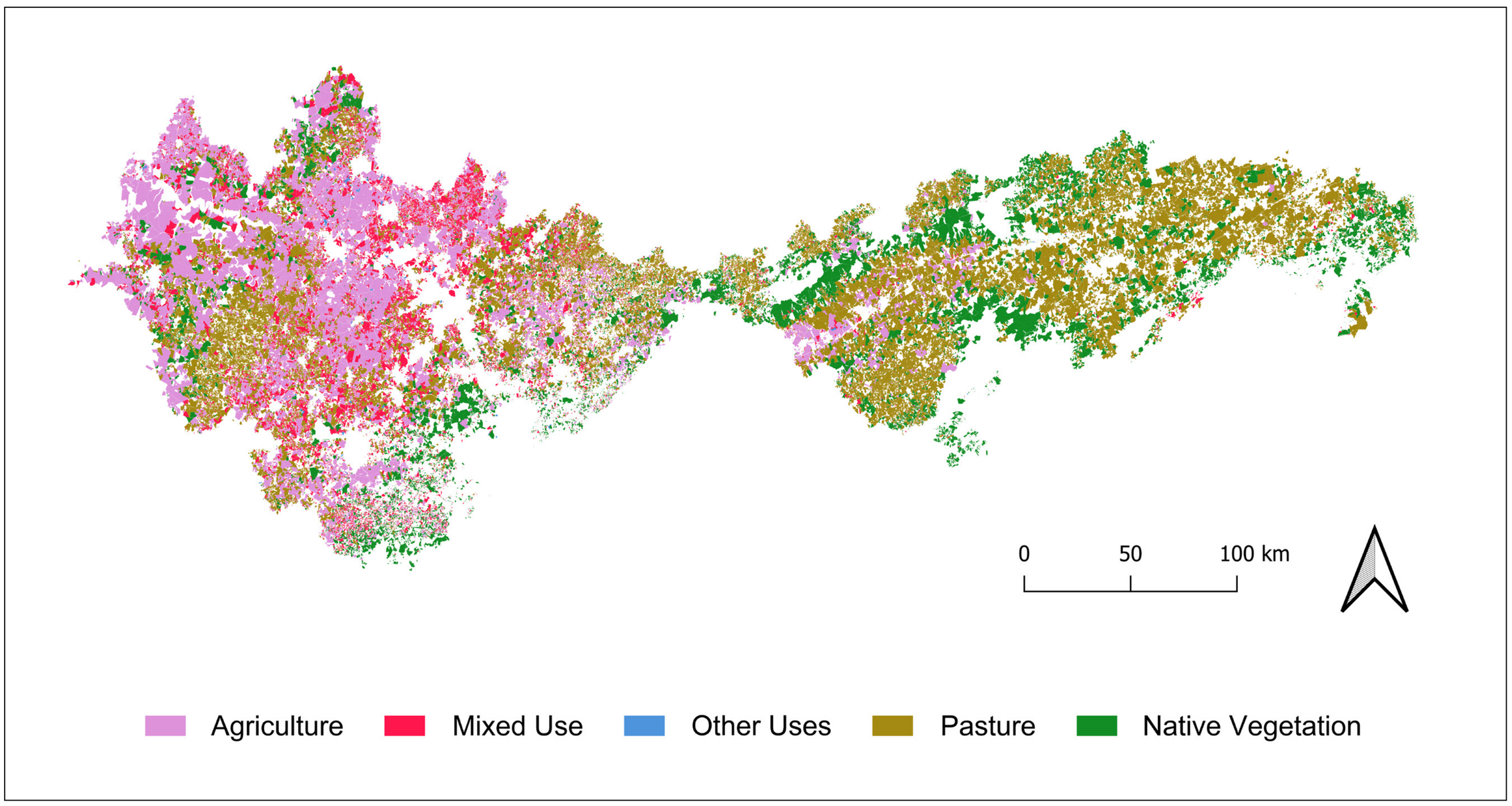


Figure 2: Map with predominant land use in the study area.

3.2. How was the interview script prepared?

The questions were selected with the intention of determining the owner's perception of: the benefits of restoring native vegetation, the factors that could motivate or inhibit their adherence, the execution of restoration projects and the current satisfaction with their land and income.

Each question had an associated hypothesis to be tested and was inserted into a behavioral analysis model based on human psychology (COM-B model), which can help explain when an action occurs (ERICKSON; JONES, 2026).

4. Key findings on motivations and barriers

4.1. Benefit recognition is almost universal

Owners give high marks to benefits such as:

- Water provision and protection
- Improved soil quality
- Personal well-being and appreciation of the forest landscape
- Biodiversity conservation
- Carbon sequestration
- Property or brand reputation

4.2. But effective intention is much lower than recognition

Despite recognizing the benefits, the declared intention to restore is relatively low. The average score for intention to restore was 4.66 (on a scale of 0 to 10), with much of the data concentrated at the extremes (very low or very high scores). This disparity shows the existence of two groups of owners: those with high and those with low intention to restore.

4.3. The main barriers are risk aversion and loss of productive area

Statistical analysis has shown that the factors associated with lower intention to restore are:

- Risk aversion – owners who agree with phrases like “I'd rather continue with what I'm already doing, without risking anything new” have much less intention of restoring. That was the strongest barrier of all.
- Loss of productive area – the perception that restoration may mean less space for planting or raising cattle is very relevant.
- Perception of economic loss – those who believe that restoring generates losses are 65% less likely to present high intention.
- Surprisingly, the direct costs of implementation (buying seedlings, fencing the area, etc.) were not a significant barrier. What weighs more is the opportunity cost (no longer earning from the land) and the risk (seeing restoration as a new activity compared to what is already done on the property).

4.4. Visible environmental problems increase intention

The presence of problems associated with environmental degradation on the property increases the intention to restore. Among them, the following stand out:

- Presence of erosion;
- Degraded soils that need constant fertilization;
- Property water sources in poor condition.

This shows that environmental degradation creates a window of opportunity: when the problem is evident (erosion, muddy water, lack of vegetation around watercourses), the owner realizes they need to take action.

4.5. Regional influence: Tietê and Paraíba do Sul basins

Properties located near the Tietê basin showed less association with the intention of restoring native vegetation.

Tietê

- Recent agricultural expansion (less depleted soil)
- High opportunity cost (urbanization/ industrialization hub, land that is easier to farm and mechanize). Better land suitability.
- Predominance of land cover by agricultural areas (66%), with emphasis on commodities (22% sugarcane/soy)
- Few conservation units open for visitation and low income associated with nature tourism.

Paraíba do Sul

- History of old deforestation and more degraded soil
- Previous strong industrial development, with lower current pressure
- Predominantly pasture (39%) and forest (43%) land cover due to topography
- Presence of large conservation units and appeal for nature tourism

None of the hypotheses presented could be tested with the study data, but they point to trends that can be taken into consideration when creating engagement strategies on the restoration of native vegetation in both basins.

5. Property profiles and restoration intention

5.1. Property size

Properties up to 4.8 tax modules and with a less intensive land use pattern — with activities such as horticulture, tourism and silviculture — show a higher intention to restore than larger properties and properties with more intensive productive activities, such as pasture and sugarcane/grain farming. Therefore, the size of the property might signal openness to restoration, but the main economic activity of the property is very relevant.

5.2 The role of economic activities

Economic activities influence the willingness to restore native vegetation in different ways. While some activities are associated with higher intention to restore, others have the opposite effect.

Tourism as an economic activity was the positive factor most strongly associated with high intention to restore. Owners who already undertake rural tourism or ecotourism see the forest as an asset that increases the business' value, not as a cost.

On the other hand, sugarcane crops on the property are associated with less intention to restore. Properties with sugarcane tend to be more intensive and less willing to allocate areas for forests. Livestock also showed a negative trend in terms of restoration intention.

Economic activity with agroforestry was neither a determining factor nor an impediment to the intention to restore, nor was the use of non-timber forest products. On the other hand, the economic benefit of timber use provided by restoration can lead to higher restoration intention.

These results suggest that productive forest restoration should be factored into native vegetation recovery projects. It is possible that, with incentives for the non-timber forest product market and the demystification of the commercial use of native wood, more owners will see forest restoration as an alternative economic activity or income supplement, instead of leasing their land for pasture or sugarcane, for example, in legal reserve areas.

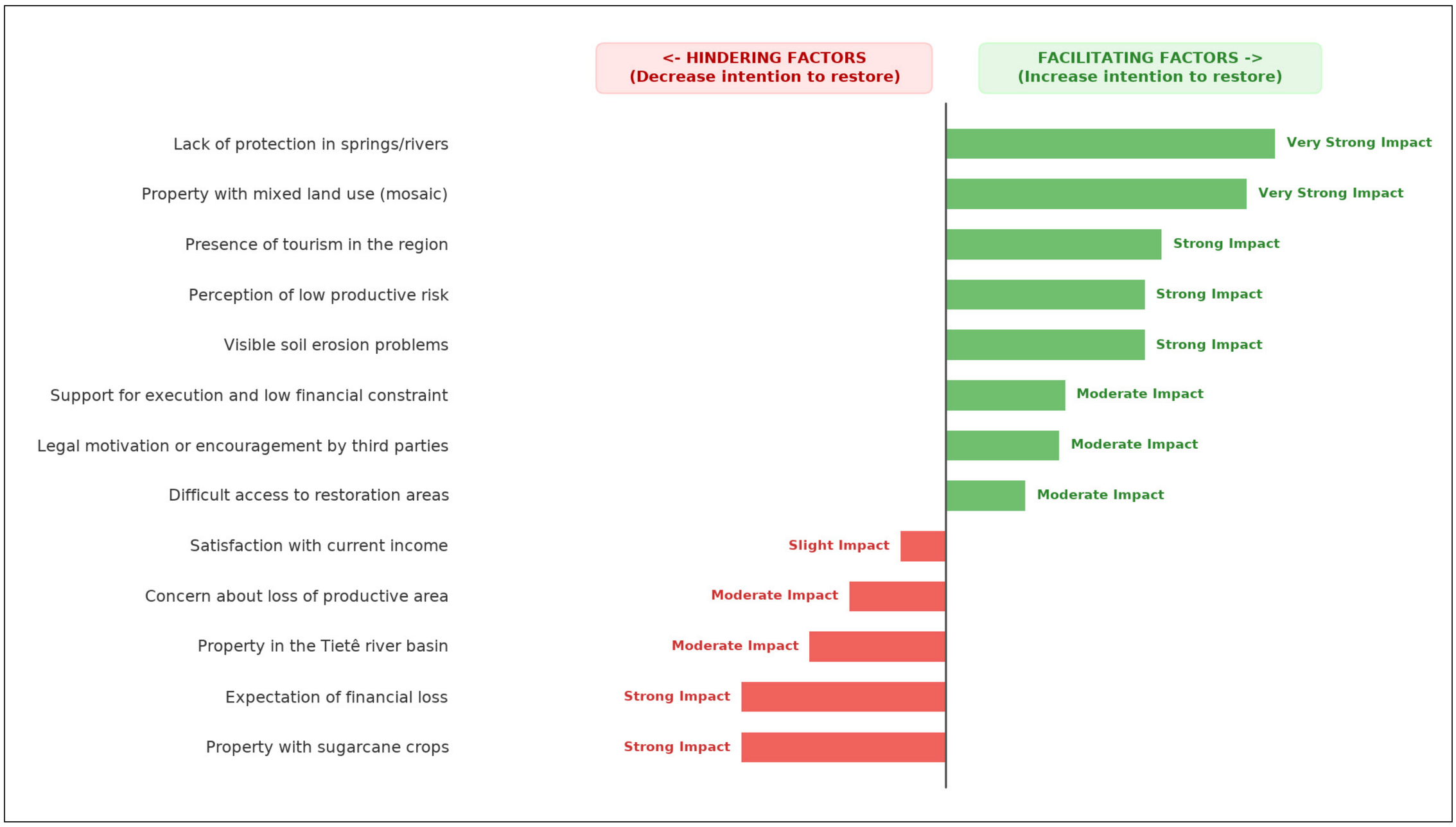


Figure 3: Lack of water protection and tourism encourage forest restoration; economic loss and sugarcane are the biggest barriers.

6. Overcoming barriers and creating opportunities

Restoration opportunities are mainly associated with the absence of two barriers indicated by the owners: high risk and loss of productive area. Setting up favorable conditions for this to occur, through projects or incentives, for instance, also matters.

With that in mind, creating opportunities requires

(I) Showing that native vegetation restoration is not a financial or productive risk to the owner.

How:

- Demo projects or portfolio: working examples, especially in the region close to the property, bring credibility and security;
- Linking forest restoration to the improvement of environmental conditions on the property, such as containment or prevention of erosive processes, protection of springs and watercourses;
- Native forest insurance: some insurance companies already offer this product, which can reimburse the investment made in restoration in case of accidents that impact the forest;
- Safeguards: forest restoration projects take precautions so that they are safely implemented;
- Risk monitoring: forest restoration projects are monitored both to meet the criteria of environmental agencies, when it comes to compensatory activity, and to meet the goals of the projects they are part of, often with third-party audits.

(II) Viewing native vegetation restoration as an asset, considering opportunities where the forest can generate financial benefits or offset costs for the property:

- Compliance with legislation and access to credit;
- Certification and valuation of products;
- Rural or nature tourism;
- Payment for environmental services;
- Benefits of vegetation to productive systems.

(III) Facilitating landowners' access to the planning and inputs necessary for the implementation of restoration projects, such as:

- Presenting low-cost projects to the owner;
- Providing seedlings, seeds or other inputs;
- Technical assistance and rural extension;
- Access to technical information and guidance on how to find initiatives and partners;
- Local partnerships (unions, cooperatives etc.).

(IV) Communication and engagement:

- The owners reported that there are no restoration projects in the region or that they are unaware of their existence. In addition, the survey indicated that environmental projects can favor the reputation of the property in the region, which is perceived positively by the owners. This scenario points to a window of opportunity: good communication and dissemination of the results can increase engagement in the regions where the projects are developed, while good examples can motivate other owners to consider joining restoration initiatives.

7. Key findings and recommendations for restoration strategies

The success of forest restoration initiatives depends on alignment between environmental objectives and the motivations, fears and socioeconomic constraints of landowners.

This study shows that:

- Risk aversion and fear of losing productive area are more important barriers than direct costs;
- Visible environmental problems (erosion, degraded soil) increase willingness to restore;
- Smaller properties, with a less intensive land use pattern, show greater intention to restore than larger properties and those with more intensive productive activities, such as pasture or sugarcane/grain crops. Property size may indicate receptivity to the idea of restoration, but the main economic activity of the property matters a lot to the intention to restore;
- The development of tourism on properties is a relevant positive factor for the intention to restore;
- Offering opportunities and strategies aligned with the motivations of the owners is associated with greater intention to restore;
- Models that do not consider the demands of owners or assume that general information and subsidies are sufficient are not the best option to promote engagement. Personalized, profile-based strategies with an emphasis on reducing perceived risk and creating direct economic benefits are the path to ecologically robust, economically viable and socially legitimate restoration.

Barriers and challenges that lower the intention to restore



Sense of economic and productive area loss

The fear of reducing the productive area, especially in intensive crops, such as sugarcane and grains, leads to strong resistance towards forest restoration.



Sense of risk/innovation

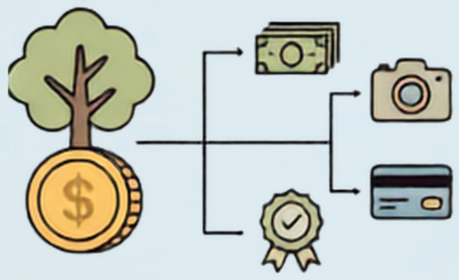
The lack of visibility on local projects can affect adherence to restoration practices, especially since it means a new thing with associated risks.



Lower intention when there is financial satisfaction

Owners satisfied with their current earnings show less intent to restore. If it ain't broke, don't fix it, right?

Strategies and opportunities to motivate restoration adherence



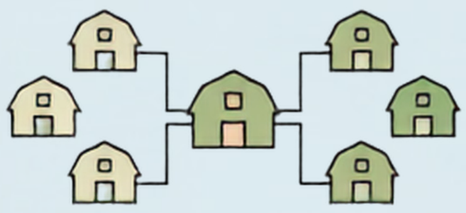
The forest can bring financial benefits

Instruments such as payments for ecosystem services (PES), rural tourism, certifications (agricultural product valuation) and facilitated access to credit (environmental compliance) can turn the native forest into an asset. In addition, the forest is a resource that protects the crops and environmental conditions of the property.



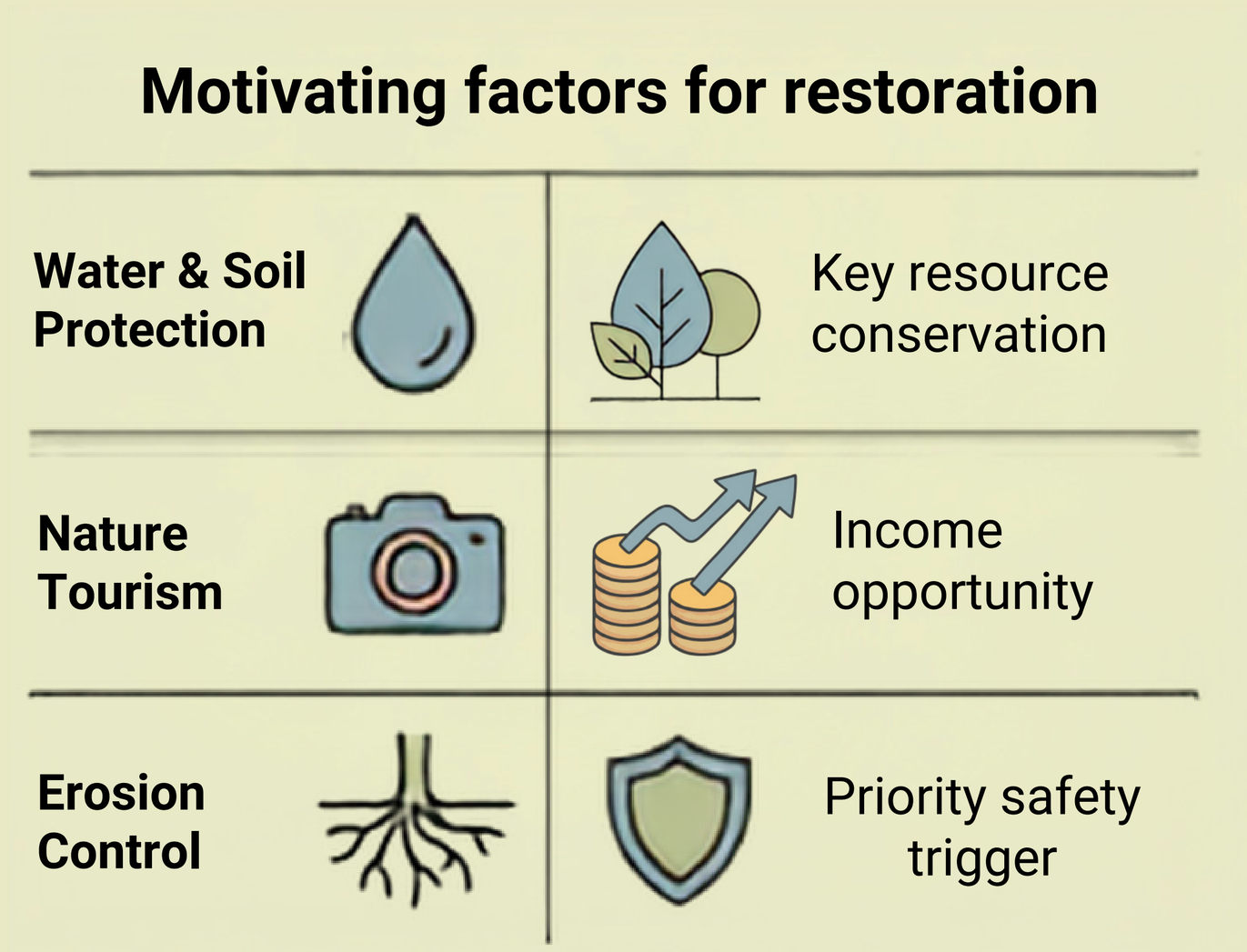
Risk mitigation and partnership building

Factors such as forest insurance, seedling provision, technical assistance, local mobilization with rural institutions or offering low-cost restoration projects can contribute to the owner's sense of security and intention to restore.



Examples can be motivating

Real examples of good projects in the region and property reputation gains from good practices are important triggers to motivate restoration.



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