Large-Scale Forest Restoration in the Amazon:

The Potential of Secondary Vegetation

AMAZÔNIA 2030

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About Amazônia 2030

The Amazônia 2030 project is a Brazilian research initiative with the purpose of developing an action plan for the Brazilian Amazon. Our objective is to achieve conditions for a higher standard of economical and human development in the region, and to achieve a sustainable use of natural resources by 2030.

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Keywords

Amazon; secondary vegetation; forest restoration; natural regeneration; environmental regularization.

Executive Summary

Brazil has a goal of restoring at least 12 million hectares of native forests by 2030 (Brazil 2017). This goal was presented in international commitments of the climate and landscape restoration agendas, under the Paris Agreement, the Bonn Challenge, and the 20x20 Initiative. Specifically for the Amazon biome, Brazil's National Plan for the Restoration of Native Vegetation *(Plano Nacional de Recuperação da Vegetação Nativa* - Planaveg) sets the goal of restoring 4.8 million hectares of native vegetation (MAPA 2017).

The Amazon forest has a high capacity for natural regeneration, i.e., for restoring its functionalities and physical structure through ecological succession, with an eventual need for some assistance. This happens as long as the conditions for guaranteeing its resilience remains present. The existence of a seed and seedling bank, seed dispersers and pollinators, and remaining forests in the vicinity of the area to be restored are essential conditions for natural regeneration to take place.

The natural regeneration of the forest is also key to recovering forest liabilities (legal reserve and permanent preservation areas) within the scope of the Forest Code (*Código Florestal* – CF). In addition, it can help Brazil achieve goals for forest restoration and reduction of greenhouse gas emissions. Finally, it also contributes to the conservation of biodiversity and the provision of environmental services.

This study, which is part of the Amazon 2030 (AMZ 2030), intends to analyze the potential of natural regeneration in the Amazon biome, as well as provide details on the territories where secondary vegetation is located. The objective is to support the work of public policy makers and contribute to a better use of natural regeneration in Brazil in the coming decades.

The natural regeneration process poses challenges for its characterization through satellite images. For example, it is very difficult to distinguish fallow areas, where vegetation regrowth is temporary (usually up to 5 years), from abandoned areas, where regeneration tends to be more perennial. For this reason, in the analyzes of this study, we used secondary vegetation 6 years or older.

We assessed the status of natural regeneration or secondary vegetation in the Amazon biome for 2019, based on Collection 5 of the MapBiomas Project. These analyzes were aimed at answering the following questions:

i) What is the potential of secondary vegetation in the region?; and

ii) Where are the areas of secondary vegetation of the Amazon biome considering occupation zones, political geography, land classes, among others.

In 2019, we identified an area of 7.2 million hectares of secondary vegetation with a minimum age of 6 years in the Amazon biome, equivalent to the territory of Ireland.

We also looked at the length of survival and the rate of suppression of secondary vegetation. First, we found that the majority (62%) of the 7.2 million hectares are over 10 years old and the rest (38%), between 6 and 10 years old. Second, we estimated an average annual clearing of native vegetation of 236,000 hectares in the Amazon biome between 1992 and 2019.

In terms of geographic location of secondary vegetation (7.2 million hectares), the observed pattern was as follows: first, there is a greater concentration of natural regeneration in the old occupation zone (arc of deforestation); second, Pará is home to 42% of this natural regeneration, followed by far by Mato Grosso and Amazonas (17% each); third, private properties (titled properties) hold 26% of this natural regeneration and agrarian reform settlements 15%; another 11% are in areas with a Rural Environmental Registry (*Cadastro Ambiental Rural* - CAR) and 19% of them are in undesignated public forests; finally, the remainder (29%) is distributed among other land ownership categories.

The results above illustrate a great potential for forest restoration in the Amazon. If, on the one hand, the size of the area under regeneration for at least 6 years illustrates the enormous waste in relation to deforestation that has occurred in recent decades, on the other hand, it points to promising paths for public policy and other initiatives associated with the climate agenda.

In terms of public policy, these areas are outside the system for monitoring and combating deforestation and could be better integrated into the implementation of the Forest Code. In particular, we recommend: (i) implementation of the CAR and Environmental Regularization Programs (*Programas de Regularização Ambiental* - PRAs) in the states; (ii) monitoring of secondary vegetation and (iii) prioritization of areas with secondary vegetation. Furthermore, the results show that the Amazon is very well positioned for recent initiatives aimed at the bioeconomy of forest restoration and also for a growing interest from the so-called voluntary carbon markets in arrangements to offset greenhouse gas emissions.

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