

Complexities of Co-Management in the Brazilian Amazon and Atlantic Forests

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Introduction

Brazil is home to two of the most biologically and culturally diverse forests in the world: the Amazon Rainforest and the Atlantic Forest. Both forests provide essential ecosystem services for local communities, the country, and the world. The two regions face similar challenges between conserving the forest and promoting sustainable development for the local forest-dwelling communities. Sustainably managing the Amazon and Atlantic Forests is a difficult task given the complexity of the systems and many people involved in their governance; however, finding effective solutions is essential for the health of local people and the planet. While advocates across the world promote “saving the forests,” doing so in practice is a complex, nuanced process that impacts many people across the biomes.

Amazon and Atlantic Forests

The Amazon and Atlantic Forests are biotically connected, meaning species historically migrated between the two biomes, though they are now geographically separated¹. Today the ecosystems face many similar challenges, but also have distinct characteristics.

The Amazon is one of the largest ecosystems in the world, and its biome spreads over nine countries in northern South America. The largest portion of the Amazon Forest is located in Brazil, spanning nine northeastern Brazilian states. Most deforestation in the Brazilian Amazon has occurred in the Arc of Deforestation, located in the southern and eastern edge of the forest, and continues to push inward as demand for timber and agricultural pasture land increases². These deforested areas are most connected to roads, making it logistically easier to cut trees for logging or to clear land for cattle grazing. The deep reaches of the Amazon can take days to weeks to get to by boat from Manaus, the largest city in the Brazilian Amazon. Given the difficulty to travel into the forest and the lack of accessible regions, areas nearest already developed roads are usually most at risk for being degraded or deforested. In deeper regions of the forest, the main goal is to conserve trees that have not been cut down. However, this remoteness also makes it difficult to establish supply chains of non-timber forest products.

The Atlantic Forest is located on the Atlantic coast of Brazil, also reaching into parts of Paraguay, Uruguay, and Argentina. In Brazil, the Atlantic Forest spans 13 of the 26 states and contains the country’s two largest cities, São Paulo and Rio de Janeiro. Brazil’s coastal region is also the site where the Portuguese first colonized Brazil. The forest has been largely deforested due to the early influence of colonialism and the desire to extract the rich natural resources. Because of the lasting effects of heavy natural resource extraction, land clearing for cattle grazing, and urban sprawl, the Atlantic Forest is now just 10% of the size of the original forest. In parts of the forest, the cabruca method of cacao farming, which entails keeping taller trees intact while planting cacao trees in the understory, has helped to conserve some of the remaining forest. In the Atlantic Forest the big drive is for reforestation due to the prior destruction of the vast majority of the primary forest³.

During our time in both the Amazon and Atlantic forests, it quickly became apparent that because of the intertwined system of users, actors, and governance systems at play,

sustainably managing these forests is a complex endeavor (Figure 1). Adding in the vast size of the forest resources and overlapping scales of governance increases this complexity. In this analysis, based on an academic trip in the summer of 2023 and research into the subject, we will address the overarching systems and complexities that affect these biomes.

Forest Governance

In both forests, federal, state, and municipal governments are involved in conservation efforts, sometimes in overlapping or adjacent areas, called conservation units. These conservation units are classified as either “comprehensive protection,” with very strict limitations on permitted activities, or “sustainable use,” where resource extraction activities, like timber or non-forest product extraction can happen in concurrence with conservation efforts, as long as it is done in accordance with a formal management plan⁴. The effectiveness of these protected areas to conserve the forest often depends on government capacity, bureaucracy, and the alignment between policy creation and the lived experience of people on the ground. Ineffective monitoring, enforcement, or policy implementation can lead to forest degradation, which is the opposite of the intention of these protected areas.

Land and forest management in Brazil mainly falls under Law No. 9.985, which establishes the National System of Protected Areas Management (SNUC)⁵. Under this regulation, conservation units are designated and regulated by local, state, and federal governments. Conservation units are areas that range from allowing sustainable use to comprehensive protection. Because they are government-designated areas, they are reliant on government funding to carry out daily operations, including staffing park rangers, enforcement officers, and in the case of sustainable use areas, forest technicians. However, due to frequent changes in administration and recent severe funding cuts of conservation programs, many conservation units face challenges with lack of staffing. As a result, park rangers and enforcement officers are responsible for areas that are too large for them to quickly or reliably respond to reports of illegal activity or to calls from local communities for support. This has all led to the current landscape, where illegal logging and hunting are commonly taking place in prohibited areas of conservation units.

Non-governmental organizations (NGOs) play a big role in governance of the forests and conservation units because they are able to step in where the government falls short or lacks resources to effectively manage these protected areas. In some cases, NGOs create (or support the creation of) management plans for sustainable use areas and help local communities implement projects that promote sustainable economic development. The effectiveness of an NGO’s work often depends on their ability to listen to the community’s needs and capacity, implement projects that the community wants, and create economic opportunities that are self-sustaining.

Local communities living in the forests are often the most important stakeholders in the implementation of a conservation or sustainable development project as their livelihoods depend on the effective conservation of these forest resources. Often, land that is home to local communities is more effectively conserved since local people take ownership for its management and understand its importance. It is critical that these communities have access to sustainable economic development that can support essential services like stable infrastructure, healthcare, and education, so that they can continue to thrive while keeping the forest intact.

Co-Management of Conservation Units in the Amazon and Atlantic Forests

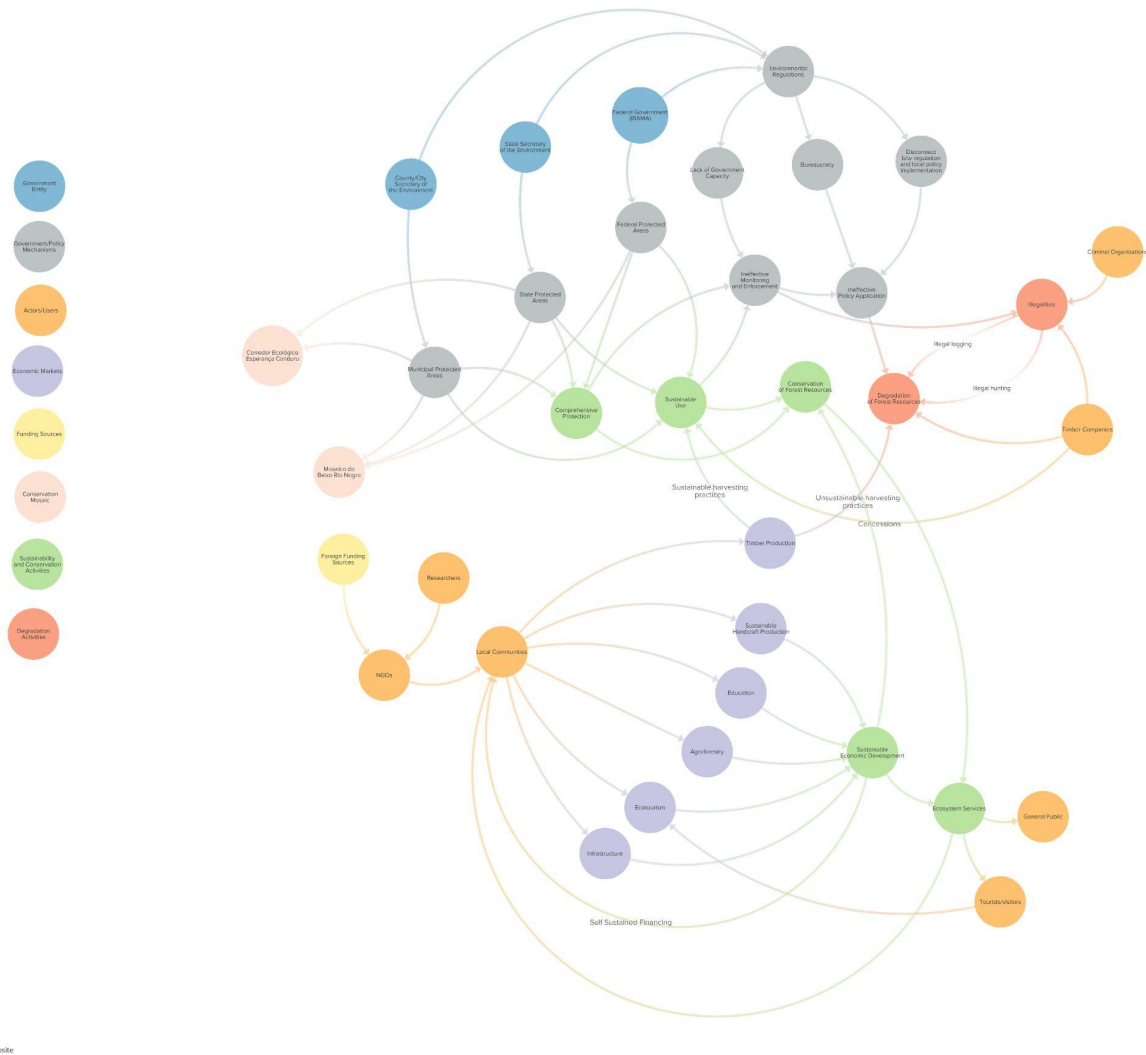


Figure 1. Systems map of interconnected user groups, regulation, and markets related to forest resources in Brazil (please see interactive map [here](#)).

Co-management in the Amazon and Atlantic Forests

Because many conservation units (including national, state, and local parks) are under-resourced, strategies to co-manage parks have been proposed and implemented in the Amazon and Atlantic Forests. Co-management, or the management of separate conservation units together under coordinated governance, can improve the efficacy of management and enforcement within each conservation unit. We will focus on two examples: the Mosaico do Baixo Rio Negro (Lower Rio Negro Mosaic) near Manaus in the Amazon Forest, and the

Corredor Ecológico Esperança Conduru (Ecological Corridor of Esperança Conduru) in Southern Bahia in the Atlantic Forest.

Both of these examples implement co-management of conservation units given the limited resources of each individual park. In the Lower Rio Negro, a mosaic was created and regulated under the National System of Conservation Units (SNUC). To be a formal “mosaic,” conservation units must be close or overlapping and management of the conservation units must integrate the different conservation objectives, biodiversity characteristics, and socio-environmental benefits of each. In Southern Bahia, ecological corridors are implemented to prevent habitat fragmentation by forming narrow corridors that connect separated habitats (in most cases, different national, state, or municipal parks) in an effort to prevent biodiversity loss due to fragmentation.

The Mosaico do Baixo Rio Negro is made up of 11 conservation units of varying jurisdiction levels and protection statuses (Figure 2), and was created in 2010 with the purposes of implementing shared governance of the closely situated parks and promoting the different ecosystem services and products of the region. The mosaic covers 7.5 million hectares (18.5 million acres), and is home to 1.8 million people and 80 indigenous and forest-dwelling communities⁶. A local NGO, Fundação Vitória Amazônica (FVA), is one of the leading local agencies that helped create and continues to manage the mosaic. FVA focuses on both maintaining the habitat and biodiversity within the parks and on the sustainable development of the communities that live and depend on the forest resources for their livelihoods.



Figure 2. Map of the Mosaico do Baixo Rio Negro⁷.

The Corredor Ecológico Esperança Conduru is made up of three national and state parks in southern Bahia, and was implemented to preserve the biodiversity between the three⁸. This ecological corridor is part of a larger system called the Corredor Central da Mata Atlântica (Central Atlantic Forest Ecological Corridor; Figure 3), which was created in 2000, covers about 21.5 million ha (53 million acres), and includes 128 conservation units⁹. While there isn't a single NGO or agency that takes complete responsibility for the management of the Corredor Ecológico Esperança Conduru, park managers work with local communities and nearby parks to effectively manage the corridor areas between parks.



Figure 3. The Central Atlantic Forest Ecological Corridor, of which the Corredor Ecológico Esperança Conduru is a part¹⁰.

Community Impacts

In both co-managed forest conservation systems, indigenous and local communities live within the boundaries of the conservation units. In some cases, especially in conservation units that allow sustainable use practices, communities can continue harvesting timber products as long as they are harvested in accordance with the management plan. However, particularly in the Rio Negro region, it is not unusual for conservation units to change statuses from comprehensive protection to sustainable use. Communities living in the conservation units can be caught unaware that they are not operating according to the updated regulation, simply because the government entity that regulates the conservation unit failed to update the communities or include them in the decision-making process. One problem that this can cause is that the community can be punished by enforcement agencies for failing to comply with a regulation, even though they were unaware of it. Another problem this can cause is that communities may have long standing timber production processes (oftentimes sustainable) that are suddenly prohibited, preventing them from accessing a previously reliable source of income.

The co-management of these conservation units allows for better communication between parks and communities living within them, and contributes to more effective environmental conservation practices in these areas threatened by deforestation and degradation. Implementing governance structures that span not just conservation units but overarching regions leads to increased community buy-in and ownership of the conservation goals, further leading to more successful long-term conservation outcomes.

Conclusion

Though the Amazon and Atlantic Forests are threatened by rapid and large-scale deforestation and degradation of forest resources, the implementation of regional-scale co-management of conservation units can be looked to as an example of efficiently and effectively increasing the ability of local leaders and communities to conserve and protect their forest resources. The complex system of users, actors, policy, and different ecosystems in Brazil's forests have created a very nuanced situation impacting large-scale conservation measures. But through active co-management of conservation units, as seen in the Mosaico do Baixo Rio Negro and Corredor Ecológico Esperança Conduru, there is hope that what is left of these forests can remain intact and regenerate for future generations.

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