Could private land reserves in Brazil’s Amazon be a viable conservation strategy for forest protection? An overview of the challenges and opportunities

As reservas de terras privadas na Amazônia brasileira podem ser uma estratégia de conservação viável para a proteção das florestas? Um panorama dos desafios e oportunidades

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ABSTRACT
This paper identifies Reservas Particulares do Patrimônio Natural, a Brazilian legal land use distinction, as an enabling framework for investment and sustainable development. Brazilian Amazon rainforest contains private land but is a threatened and undervalued public good which humanity needs for climate stability, human health, and cultural and natural heritage. Amazon land use strategy over the last 50 years has divided between strict conservation on public lands that allows nearly no economic activity, and rapid forest conversion on private lands to produce commodities. A third path for private lands promoting biodiversity-based value chains could better incentivize preservation over conversion.

Keywords: biodiversity, investments, natural capital, RPPN, sustainable development.
RESUMO
Este artigo identifica as Reservas Particulares do Patrimônio Natural, uma distinção legal de uso da terra no Brasil, como uma estrutura que permite o investimento e o desenvolvimento sustentável. A floresta amazônica brasileira contém terras privadas, mas é um bem público ameaçado e subvalorizado que a humanidade precisa para a estabilidade climática, saúde humana e patrimônio cultural e natural. A estratégia de uso da terra da Amazônia nos últimos 50 anos se dividiu entre a conservação estrita em terras públicas que quase não permitem atividade econômica e a rápida conversão da floresta em terras privadas para produzir commodities. Um terceiro caminho para terras privadas que promovam cadeias de valor baseadas na biodiversidade poderia incentivar melhor a preservação em detrimento da conversão.

Palavras-chaves: biodiversidade, investimentos, capital natural, RPPN, desenvolvimento sustentável.

1 INTRODUCTION
Deforestation and rural poverty form a single, dual challenge for the future of the Amazon’s people and natural capital. For generations, rainforest has been seen as an unproductive land use and barrier to wealth building. Unfortunately, the resulting deforestation has left Amazon communities poor and uneducated, while contributing to the global climate crisis. Governments vacillate between strict preservation and exploitation, creating confusion and ineffective enforcement. A unified leadership vision is needed.

Preservation provides greater benefits for areas threatened by deforestation. Governments worldwide have long been the principal agents of land protection, conserving 11% of the world’s land and reducing deforestation therein (Andam et al., 2008). Some public preserves are well-protected, and others are not, but regardless we must have included private land strategies to preserve biodiversity. Private nature preserves shift risk and responsibility for preservation from governments to private landholders, meaning that sustainable conservation depends on owners’ economic success (Langholz and Krug, 2004).

This paper’s private land conservation strategy for the Amazon mirrors an international movement for land uses that meet social, environmental and economic objectives. Private conservation units have saved African megafauna,
Patagonian forests in Chile’s 1,000 square mile Pumalín reserve, and American treasures in the Nature Conservancy’s 2,000 square miles of reserves (Langholz and Krug, 2004). These lands only conserve this heritage if they produce a good livelihood for their inhabitants.

2 CONTEXT OF DEFORESTATION IN BRAZIL’S AMAZON REGION

2.1 LAND USE AND DEFORESTATION HISTORY

The history of Brazil’s Amazon is a story of wavering policy, weak enforcement, and markets conspiring to create massive externalities. For 50 years, the rainforest has declined at times rapidly, sometimes slowly; yet Brazil somehow still has world’s largest tropical rainforest.

Government policy aimed to destroy and preserve the Amazon under different governments. The military dictatorship of 1964-85 required that Amazon settlers remove at least 50% of their trees to gain title to the land, yet also mandated that 80% of forests be saved as a legal reserve in the Forest Code of 1965 (Metzger, 2001). Ultimately, the deforestation rate for Amazon lots averaged 70% during the first 20 years of private ownership, destroying about 3,900 square miles of rainforest per year--a little less area than Connecticut (Gasparinetti et al., 2019). The more progressive Partido do Trabalhador (Labor Party) government of 2002-15 instituted numerous policies that reduced annual deforestation by 80% by 2012. These policies included new public lands reserves, Forest Code enforcement on private land using satellite technology, denial of credit to landowners who deforested, and European Union and Norwegian Payments for Ecosystem Services (PES) schemes that paid incentives for rainforest preservation. Simultaneously, foreign pressure caused companies like McDonalds to adopt voluntary forest-friendly value chain initiatives, and improved enforcement of existing law (Nobre et al., 2016). However, by 2017 the deforestation rate rose again to nearly 2,700 square miles per year. Deforestation accelerated rapidly under the aggressive deforestation agenda of President Jair Bolsonaro who took office in January 2019.
All throughout, converting forest to commodities production has been the primary economic development strategy for the Amazon (Metzger, 2001). At least two-thirds of Amazon deforested land ends up as cattle pastures, turning the Amazon into the cattle basin of Brazil with 83 million head (Pacheco et al., 2017). Slash and burn agriculture—in which landholders burn all vegetation to eliminate forest cover and create a layer of ash as fertilizer—is particularly well suited to the Amazon during the hot dry season. Slash and burn costs nothing and require no machinery, but contributes half of Brazil’s annual carbon emissions. Cattle grazing strips the land of nutrients within 2-5 years, causing ranchers to destroy more rainforest. Soy and other monoculture, mining, timber and hydropower also contribute to deforestation (Nobre et al., 2016). The state has supported this destruction by building and paving roads to link the region to world commodities markets (Gasparinetti et al., 2019).

By contrast, Brazil also created the world’s biggest land conservation program under the Ministry of the Environment’s (MMA) Protected Amazon Areas Program (ARPA) (Nobre et al., 2016). ARPA now protects about 227,000 square miles, or the equivalent of Nebraska, Kansas and Oklahoma. These lands are strictly regulated with essentially no economic or human activity apart from indigenous tribes. ARPA lands experience a far lower rate of deforestation than private lands, although illegal logging and mining take a toll.

The global community needs new tools to fight deforestation, particularly as political support for deforestation and world beef demand increase (Pacheco et al., 2017). Brazil has shown it can reduce deforestation through command-and-control regulations, but preservation needs a firmer, market-based foundation to endure policy changes and commodities demand.

2.2 ECONOMIC OUTPUT ON DEFORESTED LANDS

Unfortunately, private landowners’ basic economic calculation is that the trees are worth more dead than alive. This drives deforestation, but the economic rewards for deforestation have not created meaningful wealth for Amazon communities.
The Amazon’s soil is poor, and its agricultural output is too low to lift people out of poverty. The region contains 289,000 square miles of deforested food-producing area and delivers 14.5% of Brazil’s overall agricultural output—compared with 74,000 square miles in São Paulo delivering 11.3% of output (Nobre et al., 2016). Rural income, health and education indicators all remain well below national averages, even as agricultural exports have increased since 2005 (Garrett et al., 2017). Families have diversified their income, with 27% of income from non-farm labor such as housecleaning and driving.

Pastures for cattle, which occupy more than 70% of the deforested area, yield just 260 head per square mile (compared to about 660 head in Texas), making ranching a relatively unproductive use of land (Antonaccio et al., 2018). London’s International Institute for Economic Development found that the low-intensity cattle ranching practiced in the Amazon profited only 777 USD yearly per deforested square mile, although well-run high-intensity cattle operations could net substantially more (Grieg-Gran, 2008).

Still, Brazil’s government offers credit and incentives to deforest and expand ranching, betting that the strategy will increase GDP enough to overcome the costs of deforestation. It builds roads, offers fiscal incentives, and leaves the Forest Code unenforced, hoping to help the poor. In addition, ranching does earn profits, driving new clearing of land (Andersen & Reis, 2015). Yet, more financially productive strategies could grow with align incentives and support.

2.3 NON-ECONOMIC MOTIVATIONS FOR RANCHING

The persistence and expansion of cattle ranching may seem surprising, considering its low profitability. However, families also choose the practice based on cultural preferences, social connections and independence, which can mask its low economic returns. Small Amazon landholders are primarily immigrants to the Amazon region from other parts of Brazil, bringing limited education and resources to invest (Gasparinetti et al., 2019). They have little knowledge of sustainable economic activities, and little or no access to technical assistance and planning. The cattle herd however is viewed as a status symbol and a means
to build family assets in Latin American culture (Garrett et al., 2017). Cattle are considered lower risk, being more tolerant of drought than crops and not requiring machinery and associated indebtedness. Clearing one’s land of rainforest is culturally associated with greater well-being, because it enables a higher income and more options. Most ranchers participate in cattlemen’s associations, which provide a sense of community as well as access to markets.

2.4 “THIRD WAY” OPPORTUNITIES AND BIODIVERSE VALUE CHAINS

Brazil’s weak results from cattle ranching and strict national park conservation policies create an opportunity for a third way to emerge—a strategy to produce higher incomes from the land while better meeting environmental objectives. Biodiversity-based value chains and products already in production, with expansion possibilities, include the following:

2.5 ECOTOURISM

Tourism remains the world’s largest industry, and rainforests already provide living wage ecotourism jobs that depend on conservation. Worldwide, tourism is the biggest impetus for formal conservation of private land (Langholz & Krug, 2004). Private parks and reserves in Africa provide safaris and thousands of jobs; Colombia has a profitable reserve network around sustainable coffee. Brazil’s Atlantic rainforest and Pantanal have ecotourism promotion associations that attract Brazilians and foreigners (Ladle et al., 2013).

Other private parks (RPPNs or similar legal status) in Brazil demonstrate the potential. The RPPN Sesc Pantanal has preserved 95% of its 400 square miles as wilderness, while building a successful ecotourism business and museum, and providing hundreds of living wage jobs (SESC Pantanal, 2019). The Vagafogo Wildlife Sanctuary, other Brazilian RPPN, was created in 1990 to promote environmental education, ecotourism and sustainable food production. The reserve has a beautiful and accessible interpretive trail, where the numerous centenary trees and the riparian forest that borders the Vagafogo
River allow the interaction with the fauna, flora and the observation of birds (Vagafogo, 2023).

Figure 1. Small waterfall in Vagafogo Wildlife Sanctuary, state of Goiás, Brazil.

2.6 SUSTAINABLE TIMBER AND AGRICULTURE

High-value, forest-compatible agricultural products can be an exciting option. Lagging supply chains are biggest barriers, resulting in high startup costs for processing, storage, and transportation (Garrett et al., 2017). Some examples include:

- Fruits and nuts: babaçu, cupuaçu, Brazil nut (Nobre et al., 2016)
- Stimulants and health products: guaraná, coffee, and açaí (Ladle et al., 2013)
- Perennials and horticultures: pineapple, black pepper, cucumber, citrus (Garret et al., 2017) have provided landowners with returns +1300%
returns over livestock and +200% over soy, with comparable operating and labor costs.

Sustainable agriculture combines well with existing projects and policies. Brazil’s Low-Carbon Agriculture Plan launched in 2010 and provides for sustainable agricultural expansion, agroforestry, and integration of crops, livestock and forests (Antonaccio et al., 2018). It promotes reforestation of degraded land and has built a research base into agricultural best practices.

2.7 MEDICINE

The highest value potential among biodiversity-based products lies in medicine, which is largely unexplored. South America’s tropical ecosystems include about one-third of the planet’s biodiversity. The U.S. alone buys more than $5 billion of herbal medicines, yet none of the top 10 U.S. herbals originates in the Amazon (Desmarchelier, 2010). A majority of pharmaceutical compounds approved for fighting cancer come from natural products.

Local knowledge of natural medicines could provide scientists many candidates for further study, since native communities have used the Amazon’s plants for healing purposes for centuries. Some proven medicinal therapies from the Amazon include jambu *Acmella oleracea*, rosewood *Aniba rosaeodora*, and copaiba *Copaifera langsdorfii* (Nobre et al, 2016), producing the glaucoma drug Timpilo and more (Skirycz et al., 2016). Forest barks, fungi, leaves, seeds and fruits act as antioxidants, hepatoprotectives, anti-inflammatory, cicatrizers, anti-ulceratives, stimulants, and diabetes treatments.

Few herbals and pharmaceuticals have reached the global market for several reasons. Europeans had earlier contact with Asian medicines, resulting in more uptake (Desmarchelier, 2010). Latin America’s colonization was based on raw material production and exportation, rather than trade or local finishing of secondary products. Today, exportation of plants and herbs is legally and logistically complicated, particularly in Brazil. Regulatory barriers prevent unlicensed exploitation of species, and tropical humidity complicates the drying or icing of raw material (Skirycz et al., 2016). Big pharmaceutical companies are
risk averse and have tended to combine known therapies rather than introducing entirely new compounds.

The promise of Amazon medicinals requires bioprospecting joint ventures and quicker approvals on both sides (Desmarchelier, 2010). These partnerships could arise from the new government’s encouragement of foreign investment. Communities can make strategic alliances with risk-friendly institutions like academic laboratories, public research institutes, and small biotech companies. Community benefit agreements that promote local capacity building could ensure that Brazil retains a fair share of the value of its materials, and prevent excessive economic dependence on foreign buyers.

2.8 RESEARCH

Beyond specific opportunities in pharmaceuticals and herbals, the Amazon promises research opportunities for universities, tech and energy companies, and more. Amazon-related biomimicry, or the use of natural design to engineer new consumer products, shows promise in energy generation, materials, pollution remediation, and textile structures (Nobre et al., 2016). High value innovations require protection of biodiversity and rare habitat for threatened species.

The cosmetics industry has already turned its Amazon research into major products, and built end-to-end processing in rainforest communities (Morsello, 2006). Natura Brasil is a biodiversity-based cosmetics company and a certified B-Corp since 2014, and has 7,000 employees. Natura’s 255 products are rainforest-certified, and Natura claims to have preserved nearly 1,000 square miles of forest through its sustainable sourcing. Some promising Amazon cosmetics products include murumuru butter and ucuuba (Nobre et al., 2016).

2.9 PAYMENTS FOR ECOSYSTEM SERVICES (PES)

The Amazon stores 150-200 billion tons of carbon dioxide, a service which largely remains uncompensated (Nobre et al., 2016). Costa Rica receives more payments for these ecosystem services (Andam et al., 2008). Brazil has treated
carbon sequestration more as a legal obligation than a business opportunity, causing it to be undervalued (Gasparinetti, 2019).

The biggest international investment into the Amazon is the Amazon Fund, a public fund engaged in grantmaking and monitoring since 2008. The fund raised more than $3 billion US from the governments of Norway (93% of contributions) and Germany (6%) (Amazon Fund, 2018). It implements the international strategy for wealthy countries paying developing countries for preservation, known as REDD+ (Reducing Emissions from Deforestation and Forest Degradation). The Amazon fund supports 95 projects throughout Brazil, chosen in a transparent public call, covering fields such as forest management, aquaculture, and fishing, alternative agroecological production, and community-based tourism.

PES schemes like REDD+ have numerous challenges in Brazil. Generally, they have not proven themselves as an effective practice for the most threatened land (Ladle et al., 2013) and suffer from perverse incentives to overstate the carbon benefit (Gasparinetti, 2019). PES is in its infancy and accounted for less than 200 square miles of forest preserved as of 2013.

Foreign investments and partnerships that preserve forest and build community wealth will be challenging. Brazil ranks 109 of 185 countries in the World Bank’s “Ease of Doing Business Index” in 2018. Tax compliance in Brazil requires 10 times the worker-hours as in the United States; the language and business culture are challenging to enter; and transport in the Amazon complicates logistics. Companies and organizations will need support and partnerships to succeed in this market.

3 RPPNS: LEGAL FRAMEWORK, ADVANTAGES AND RISKS

3.1 DESCRIPTION OF RPPNS

RPPNs or Reservas Particulares do Patrimônio Natural, are sustainable development reserves, privately owned and adopted, which prohibit extractive activities but allow non-extractive ones (Ladle et al., 2013). They were established by amendments to the Forest Code after democratization in the
1980s. Landowners of Atlantic rainforest initially adopted RPPNs to provide ecotourism while preserving habitat for endangered species and coastal beauty. RPPNs appeared in the largely deforested Pantanal, creating research and ecotourism zones.

3.2 ADVANTAGES OF RPPNS AS A TRIPLE BOTTOM LINE STRATEGY

Many biodiversity-based value chains already exist on undesignated private lands, but would the RPPN designation reduce financial risks around foreign investment, deliver greater social and economic value for communities, and make conservation gains permanent? The RPPN strategy offers numerous advantages including:

3.3 CONSERVATION PERMANENCE

Once established, RPPNs are permanently designated as conservation units and neither heirs nor future owners can reverse it (Langholz and Krug, 2004). The environmental ministry monitors and inspects the designated land for compliance (Ladle et al., 2013). Numerous studies show that permanent legal land preservation results in greatly reduced deforestation across all types of land—whether private or public, in rich or developing countries, encompassing fragile landscapes (Andam et al., 2008). Because private land is most threatened and represents as much as 90% of Amazon deforestation, placing some private land off-limits is a worthy activity. Investors will influence Brazilian land use by scoring and selecting mission-aligned sites.

3.4 POLITICAL EXPEDIENCY

Bolsonaro’s government was hostile to conservation measures, but RPPPNs do not require new policy creation or executive actions. Landholders alone choose the designation, although the government approves it. Brazil has approximately 1,400 RPPNs in other regions, so Amazon communities have ample legal precedents and business models to use as inspiration.
3.5 ECONOMIC POTENTIAL

Unlike other land use designations, RPPNs can draw impact investment and create relationships with foreign companies. The management plans and community benefit agreements with investors and companies can reduce communities’ risks for developing new resources. Forest products can profit more than the alternatives, making all stakeholders value the living forest (Morsello, 2006). Existing tax incentives provide a small subsidy as well, although they are modest and need to be combined with additional sources.

Globally, private reserves require profitability and a support network to achieve sustainability (Langholz and Krug, 2004). Brazil's Manaus-based Bolsa Floresta program provides a model for a membership network supporting sustainable development reserves, in the Amazon's indigenous communities.

3.6 COMMUNITY BUILDING

RPPNs can be built in ways that support community and inclusion. As previously discussed, some farmers and communities prefer ranching for cultural reasons and social connectedness. Community benefit agreements negotiated in the partnership process can be a vehicle to foster community support and provide attractive public goods (Garrett et al., 2017). Such an agreement could include investments in healthcare, education, transportation networks, ecotourism development, and capacity building (Morsello, 2006). Impact investors and companies can offer foundation funds for community projects, following the lead of Natura Brasil. Investors may select projects that involve the whole community, to reduce risk and accomplish broadly shared prosperity. Associations and state governments may attract more investment and carve an economic niche by organizing community support for RPPNs. In South Africa and Namibia, many small landholdings have been pooled to create a “collaborative reserve,” creating a stronger collective support network and preservation incentive (Langholz and Krug, 2004). Several Atlantic states, where RPPNs are already common, have established state-level RPPN associations to provide legal and network support.
3.7 RISKS OF RPPNS AS A TRIPLE BOTTOM LINE STRATEGY

While the RPPN potential for the Amazon is exciting, their risks are real. They require logistical and legal support that does not yet exist and challenge a development model, which is half a century old. Sustaining projects to realize triple bottom line gains will not be easy.

3.8 GENERAL INTERNATIONAL DEVELOPMENT RISKS

Brazil is both a large democracy and a developing country, with opportunities and risks typical of international economic development and investment. Some of these risks include governance and enforcement capacity, bureaucratic hurdles, leadership changes inside and outside Brazil, economic cycles, currency crises, health factors, crime, and natural and human-created disasters. Climate change exacerbates risk to innovations based on natural capital. Factors such as laws governing forests, availability of credit, commodities markets, and tourist demand will influence opportunities.

3.9 GENERAL RISKS OF CLIMATE CHANGE IN THE AMAZON REGION

The logistical and environmental challenges of the hot, vast Amazon have protected it against deforestation. Forest communities live with risk and instability. As that environment changes, communities there must deal with risks beyond their immediate control.

Climate change could cause a destructive feedback loop in the Amazon region. Science predicts additional heat waves, storms, and droughts, which will cause additional tree mortality (Aleixo et al., 2019). This may cause further heat waves and drought as rainfall requires transpiration from the trees themselves. Amazon trees are slow-growing, nutrient conserving species that recover slowly from shocks. RPPNs relying on forest services may lose rainfall and productivity or face destructive storms and fires as the climate changes. Research-oriented RPPNs can add to forest research knowledge and prepare the region for adaptation.
RPPN business models could also be threatened by outbreaks of tropical diseases, political unrest, and regional or national boycotts that drive away tourism and investment (Langholz and Krug, 2004). On the balance, RPPNs mitigate these risks by providing rainforest-certified products, strengthening community health networks, and education systems.

3.10 FINANCIAL AND INVESTMENT BARRIERS

The current federal tax incentive for RPPNs is modest and insufficient to stimulate more RPPN development (Ladle et al., 2013). The addition of foreign capital and partnerships, plus additional state and local incentives wherever possible, could change communities’ calculations. As Brazil liberalizes rules on foreign investment and extraction, it will open new opportunities for communities and impact investors to create sustainable development projects. Despite its meager size, the national RPPN association must lobby to maintain this tax break and all types of development assistance to RPPN projects.

3.11 HUMAN CAPITAL AND SOCIAL BARRIERS

The Amazon has the country’s lowest concentration of research and educational institutions, resulting in limited local human capital (Nobre et al., 2016). Foreign investment and community benefits will be key to training and retaining local innovators.

Increasing income must not be the sole community objective for RPPNs. Social networks that support producers, farmers and workers must be built, along with asset-building institutions and mechanisms (Garrett et al., 2017). Currently 88% of cattle-focused property owners participate in at least one agricultural association, which provides a sense of community and enables credit and market access. RPPN alternatives must offer a similar or stronger sense of financial security and social status to compete with ranching.
3.12 LAND OWNERSHIP BARRIERS

Many landholders who lack title to their land are unable to take advantage of public policy initiatives (Gasparinetti, 2019). Groups organizing RPPNs must collaborate with Brazil’s Terra Legal Program, which grants titles to Brazilian citizens on small family farms who have occupied their area peacefully and cultivated some part of their land (Antonaccio et al., 2018).

3.13 ENFORCEMENT BARRIERS

It is common among Brazilians to state “Brazil has plenty of great laws, but no one is enforcing them”. Illegal mining and timber harvesting increased under Bolsonaro’s government, as the environmental ministry losed resources. The same illegal conduct could threaten RPPNs. The prior Temer government provided amnesty for all illegal deforestation on private lands up to 2018, so landowners are continuing to deforest while hoping for another amnesty (Gasparinetti et al., 2019). The PRODES satellite-monitoring program has been documenting illegal deforestation faithfully since 1988, and yet it continues. RPPN investors should ensure community involvement in the projects they support to reduce poaching risks and consider building community-based policing capacity where appropriate.

The Brazilian bureaucracy tends to work against landowners too. The processing of RPPN applications takes two years or more (Ladle et al., 2013). Landowners are reluctant to allow another bureaucracy the right to inspect their lands, fearing rent seeking.

3.14 GOVERNANCE CHALLENGES

Investors in RPPNs should steer investments toward RPPNs with solid governance strategies. Some of the governance risks include:

- The concentration of land in few hands can exacerbate wealth as RPPNs are declared. RPPNs can be approved with no guarantee of community involvement, living wages, transparency, or NGO involvement (Ladle et al., 2013). Ecotourism development can turn RPPNs into islands
of elites where only wealthy landowners and tourists can go (Langholz and Krug, 2004).

• Owners and business partners can be economically tempted to over-exploit resources and under-invest in capacity building and quality control (Morsello, 2006). If communities produce raw materials without learning skills and creating facilities for processing, they will never become independent.

• Communities can become dependent on the companies that purchase their products and services (Morsello, 2006). Community risk particularly increases when there is a weak state role in enforcing agreements, when companies reserve the right to set prices, and when they create official or de facto exclusive trade relationships.

Models to avoid these inequities exist. The B-Corp cosmetics company Natura Brazil has created a community fund for the communities it works with and publishes transparent community benefit agreements.

In fact, RPPNs have succeed as conservation strategy in other parts of Brazil, notably the Atlantic Rainforest of Rio de Janeiro state. By 2021, Rio de Janeiro state has 91 RPPNs that are responsible for protecting integrally over 8 thousand hectares of the Atlantic Rainforest. More than that, this has been responsible for protecting critically endangered species as flagships for this environment. Now, it is a consensus that RPPNs are responsible for the recovery of the populations of the golden-lion tamarin *Leontopithecus rosalia* and the maned sloth *Bradypus torquatus*, among other endangered species.

### 3.15 HABITAT MANAGEMENT RISKS

Since they depend on landowner willingness, it is difficult to ensure that RPPNs provide sufficient, quality, contiguous habitat for megafauna (Ladle et al., 2013). Owners of the most important habitats may not be interested or may exploit important habitats and only designate the least exploitable lands. The RPPN strategy can create biological islands of protected land that cannot support megafauna (Langholz and Krug, 2004), as 75% of Latin American private
reserves protect less than 10 square miles. A patchwork of preservation unsuitable for wildlife may occur as deforestation “leaks” to adjoining, unprotected lands (Andam et al., 2008).

RPPNs without proper environmental agency monitoring may choose poor tradeoffs between their ecological and economic goals. For example, ecotourism reserves have kept exotic species in captivity for tourist viewing or inappropriately constructed cabins, roads and hotels (Langholz and Krug, 2004). Owners could allow most of their land to deteriorate and preserve only enough to stage a nature walk and may piggyback on their region’s reputation to offer “ecological” tours that are not actually responsible.

RPPN investors should consider habitat preservation and broader conservation objectives in the projects they support. Optimal RPPNs will preserve at least 90% of their rainforest, follow a habitat impact plan, and border larger national parks and other conserved habitat. With agency approval, these reserves can facilitate low-impact excursions into national park lands with tourists and researchers. Investors can have a preference for groups of landholders who come together to create contiguous RPPNs. One such model is the previously described “collaborative reserves,” of Namibia and South Africa. Ecotourism RPPNs face temptations to cheat, but also face increased scrutiny with online tourist reviews. Importantly, investors must balance environmental and economic needs, remembering that RPPN sustainability requires that conservation is a financially competitive land use.

4 CONCLUSION

Today we understand that good forest management includes the economic success of communities that live there. Furthermore, we know that private lands play a critical role in habitat management and fighting climate change. RPPNs offer a tool for communities and investors to come together, fight deforestation, and lift people out of poverty.

Evidence suggests that private reserves succeed in meeting their triple bottom line goals when quality partnerships are in place. Investors and
communities should use written, transparent community benefit agreements, which include local capacity building and government and third-party NGO monitoring. By legislating RPPNs Brazil’s government has created a path for forest stakeholders; it is up to those stakeholders to follow that path to a better future in the living rainforest.
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