

# Past and present of conservation policies in the Amazon basin: status of conservation units, indigenous territories and local communities

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## ABSTRACT

This work builds on the Amazon Assessment Report by the Science Panel for the Amazon (2021), examining historical processes shaping conservation in the Amazon Basin, particularly Protected Areas (PAs) and Indigenous Territories (ITs). It explores the institutionalization of national PA systems, their categories, and the legal status of ITs. We analyze IT recognition across Amazonian countries and its correlation with state policies influencing land occupation, land-use change, and demographics. We highlight management frameworks that incorporate Indigenous and traditional territorialities, recognizing their rights and the role of ecological connectivity in conservation. Examples of landscape-scale conservation initiatives illustrate these approaches. While policy advancements have strengthened PA and IT protections, increasing development pressures threaten decades of conservation achievements. After a decade of declining deforestation, rates surged between 2016 and 2022, even within PAs and ITs. These trends highlight the urgent need for more effective, innovative conservation strategies and political commitment to honoring conservation goals. This article relies on geographical data from the Amazon Network of Georeferenced Socio-Environmental Information (RAISG – <https://www.raisg.org/en/>), a literature review, and country-specific analyses.

**KEYWORDS:** Amazonia, protected areas, indigenous territories, Raisg

## Pasado y presente de las políticas de conservación en la cuenca amazónica: estado de las Áreas Naturales Protegidas, Territorios Indígenas y comunidades locales

### RESUMEN

Este trabajo se basa en el Amazon Assessment Report del Science Panel for the Amazon (2021) y analiza los procesos históricos que han dado forma a la conservación en la Cuenca Amazónica, especialmente en las Áreas Protegidas (AP) y los Territorios Indígenas (TI). Se examina la institucionalización de los sistemas nacionales de AP, sus categorías y el estatus legal de los TI. Además, se analiza el reconocimiento de los TI en los países amazónicos y su regularización en relación con políticas estatales que han determinado la ocupación de la Amazonía, el cambio de uso del suelo y la composición demográfica. Destacamos marcos de gestión que incorporan las territorialidades de comunidades indígenas y tradicionales, reconociendo sus derechos y el papel de la conectividad ecológica en la conservación. Se presentan ejemplos de iniciativas de conservación a escala de paisaje. Aunque ha habido avances en las políticas de conservación, el aumento de las presiones por el desarrollo convencional pone en riesgo logros obtenidos en más de medio siglo. Tras una década de disminución de la deforestación, entre 2016 y 2022 se registró un aumento significativo, incluso dentro de AP y TI. Esto refuerza la necesidad urgente de estrategias de conservación más efectivas e innovadoras, así como del compromiso político de los gobiernos amazónicos con sus metas de conservación. Este artículo se basa en datos geográficos de la Red Amazónica de Información Socioambiental Georreferenciada (RAISG – <https://www.raisg.org/en/>), revisión bibliográfica y análisis de contexto por país.

**PALABRAS CLAVE:** territorios indígenas, áreas protegidas, territorios indígenas, cuenca amazónica, Raisg

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**INTRODUCTION**

Ensuring the integrity of the Amazon ecosystem is a global priority in the current environmental crisis. To achieve this goal, it is essential to assess the representativeness and conservation effectiveness of PAs in the region, as well as to understand the close link between ecological dynamics and the knowledge and territorial management systems of indigenous peoples who have inhabited the region for thousands of years, ensuring the conservation of vast territories.

This review is a version of the Chapter 16 (Part II) of the report produced by the Science Panel for the Amazon (<https://www.theamazonwewant.org/>). Authors are/were from seven institutions in six Amazonian countries. We aimed at a scientific assessment of the current state of conservation policies in the Amazon and explored opportunities for policy-relevant actions. Broad accessibility to this information is at the core of understanding the complexity of the Amazon basin and the urgency for conservation actions. The geographical reference of the boundaries of the Amazon basin, the Indigenous Territories (ITs) and the Protected Areas (PAs) used in this study were taken from the Amazonian Network of Georeferenced Socio-Environmental Information - RAISG (RAISG 2021). For the maps and statistics presented in here, we used the RAISG database of PAs and ITs by environmental protection category updated through 2020. For the sake of the updated data we recommend the SPA Policy Brief Protected Areas and Indigenous Territories: Pillars for Achieving Conservation Goals in the Amazon (Josse *et al.* 2024).

The socio-environmental dynamic corresponding to the historical period covered in this review highlights a common starting point among all the countries that share the Amazon basin considered by Amazon Network of Georeferenced Socio-Environmental Information – RAISG (by its acronyms in Spanish and Portuguese) (<https://www.raisg.org/en/>). During the first half of the 20th century, or later in some countries, the National Security Doctrine (Leal Buitrago 2002) was the paradigm from which state policies were designed and implemented to guarantee sovereignty in a space that was still disputed among Amazon countries, but also among transnational companies and between the latter and local populations. Therefore, campaigns such as the “Living Frontiers” in the Ecuadorian Amazon or the great “Westward March” in the Brazilian Amazon were promoted, aiming at the colonization of “wastelands” and the expansion of the extractive economy in the Amazon (RAISG 2016). This logic of the occupation of wastelands, or uncultivated

lands, was followed by institutional frameworks associated with agrarian development, colonization, and deforestation, with the market (formal, but also illegal) for land and tropical timber (RAISG 2015). Therefore, the contemporary process of forest loss was only one of the major impacts of the accelerated process of land-use change in the 20th century; the other was the displacement of Amazon peoples from their ancestrally occupied land. With the agrarian reform of 1953 in Bolivia and a few years later in Colombia, Ecuador, and Peru, the colonized land in the region was distributed to settlers. These circumstances gave rise to schemes of dispossession and trafficking of lands inhabited by indigenous peoples and other traditional groups, which enabled the concentration of land in parts of the Amazon (RAISG 2016).

Although Peru's 1920 constitution recognized the legal existence of indigenous communities, their legal status, autonomous makeup and communal land ownership did not apply to the Amazonian indigenous peoples until 1974, when the first Law of Native Communities of the Peruvian Amazon was enacted (Decree Law 20653, Law of Native Communities and Pro-motion of the Regions of La Selva and Ceja de Selva, Peru). In 1937, the Ecuadorian government was forced through the first communes law to “protect [these] historical communities”, recognizing them as beneficiaries of rural lands by the competent authority. However, this was not the case for the indigenous populations of the rainforests on the Pacific coast and in the Amazon, as they did not fit into the farmers' economy scheme, where land is a factor of production, and because of the high level of ignorance and stigmatization of their culture. Later, traditional occupation and community lands were the subject of legislation, and, between 1964 and 1994, communal lands were titled in Ecuador over an area of approximately 40,000 km<sup>2</sup>. The Ecuadorian Agrarian Development Law from 1994 recognized the exercise of collective land ownership and access to land titling. In subsequent years, through different codifications of this law, forms of access to collective land of ancestral possession were established, and in 2004, Article 49 of the Legalisation Law stated that “the State will protect the lands that are destined to the development of the *Montubio*, Indigenous and Afro-Ecuadorian populations and will legalize them through free adjudication to the communities or ethnic groups that have been in their ancestral possession, under the condition that their own traditions, cultural life and social organization are respected.” With the recognition of ethnic groups as beneficiaries in Ecuador, the spectrum of land tenure

was opened beyond the scope of the community, making room for the legalization of a territory claimed by a nationality (Ley de Tierras Baldías y Colonización, Codificación de 2004).

Beginning in 1966, Colombia promoted the creation of indigenous reserves as a form of provisional collective tenure, and by 1977 these reserves began to be legally recognized as “*resguardos*” (similar to indigenous reservations). At the end of the 1980s, territorial rights over 200,000 km<sup>2</sup> in the Colombian Amazon were recognized. The State adopted the legal regime of “Indigenous Reserves” for recognized territories of collective property of the communities, which have the character of being inalienable, imprescriptible, and unseizable (as defined in Article 63, 329 of the 1991 Political Constitution). The indigenous reserves are a legal and socio-political instance of special character, formed by one or more indigenous communities, which enjoy the guarantees of private property through a collective property title, and govern and manage their territory through their autonomous organizations, protected by the indigenous jurisdiction and their own normative system. The Colombian constitution recognized these indigenous managed territories as part of the political-administrative structure of the nation.

In Brazil, in the context of the “Westward March”, the official pattern was the incorporation of Indigenous People into agricultural production and the appropriation of their territories. Starting in the 1960s, the Indian Protection Service (SPI, acronym in Portuguese) played an important role in the management of the indigenous heritage. In this context, the term “indigenous land” appeared, which would later become part of the Indian Statutes in 1973. In 1967, the National Indian Foundation (FUNAI, acronym in Portuguese) was created to continue the role of the SPI in the management of indigenous issues (land, work, and other resources). The creation of FUNAI was framed in the plans of the military government (1964–1984) for development, expansion of the agricultural frontier, and occupation and integration of the Amazon (RAISG 2016).

The Brazilian federal constitution of 1988 defines indigenous lands as “those inhabited by [indigenous peoples] on a permanent basis, those used for their productive activities, those indispensable to the preservation of the environmental resources necessary for their well-being, and those necessary for their physical and cultural reproduction, according to their uses, customs, and traditions”. According to the 1988 constitution, the indigenous lands belong to the federal state, but the indigenous peoples have permanent possession and exclusive use of the riches of the soil, rivers, and lakes on the lands, and the State is obliged to promote the recognition of these lands. In Venezuela, the first official recognition of Indigenous peoples came in 1991 with the establishment of the Alto Orinoco-Casiquiare Biosphere Reserve, as reflected

in its founding arguments (<https://www.refworld.org/es/leg/legis/acnur/1991/es/130631>).

The first period of incipient recognition of Amazonian indigenous peoples and their right to land amid the colonization of the region by national states was followed by processes of social organization. At the start of the 1980s in Ecuador, an Amazon confederation, currently CONFENIAE (Confederación de Nacionalidades Indígenas de la Amazonía Ecuatoriana), was consolidated. In Peru, subsidiaries of regional representative bodies such as AIDSESEP (Asociación Interétnica de Desarrollo de la Selva Peruana) and others were created. In Bolivia, the CIDOB (Confederación de Pueblos Indígenas del Oriente Boliviano), and in Colombia the regional organization OPIAC (Organización Nacional de los Pueblos Indígenas de la Amazonía Colombiana) were created. In Brazil, the regional organization COIAB (Coordenação das Organizações Indígenas da Amazônia Brasileira) was born in 1989 after the 1988 constitution favored “political representation by delegation” within the indigenous movement, thus improving dialogue with public institutions, especially to deal with territorial demands (RAISG 2016). In addition to the demand for the right to land and the reaffirmation of indigenous cultural identities, an international milestone in the recognition of indigenous people’s rights was the ILO Convention No. 169 in 1989, named Indigenous and Tribal Peoples Convention, ratified by the Amazon states over time.

Towards the beginning of the second half of the 20th century, the institutionalization of areas set aside for the protection of nature was also developing in the Amazonian countries. After the 1940 Pan-American Convention for the Protection of Fauna, Flora and Natural Scenic Beauties (Washington Convention), several countries advanced towards the creation of the first PAs. This first effort focused on the protection of transition zones, as in the case of the La Macarena Reserve in Colombia, created in 1948 to protect the significant biological diversity of Andean, Amazon, and Guiana Shield origin. In 1959, the first unit with a strict protection category was created in the Brazilian Amazon (Araguaia National Park), and then, in 1960, the first system of national natural parks was institutionalized in Colombia. In 1961, Peru established the first PA in the Peruvian Amazon, Cutervo National Park, Venezuela created the first forest reserve in the Venezuelan Amazon (Imataca), Brazil established new forest reserves in its Amazon region. Bolivia created its first Amazonian PA, Isiboro Sécure National Park in 1965. In 1970, two conservation units were created in the Ecuadorian Amazon, both in the Andean–Amazon foothills (RAISG 2016; Supplementary Material)

The designation of PAs in the early twentieth century did not follow a standard, and each nation used its own approach to management. In 1962, during the First World

Conference on National Parks in Seattle, the IUCN's newly formed Commission on National Parks and PAs (CNPPA), now the World Commission on PAs (WCPA), proposed a categorization of PAs. The Second World Parks Conference in 1972 called on IUCN to define types, suitable standards and nomenclature for PAs, which was the background to the CNPPA decision to develop and periodically update a category system for PAs. This system eventually secured its endorsement by the Convention on Biological Diversity (CBD) at the 7th Conference of the Parties to the CBD in Kuala Lumpur in 2004 (Dudley 2013). This endorsement, as well as new norms of conduct entailing commitments from the countries, such as the 1992 CBD, triggered the development of new mechanisms and policy instruments (decrees, regulations, laws, codes or strategies and national programs), now better for protecting a cultural and natural legacy in the Amazon biome of the countries that occupy the Amazon basin. These antecedents are now articulated by centralized institutions that manage the national system of PAs in each Amazonian country (SNUC in Brazil, INPARQUES in Venezuela, SNAP in Ecuador, SINANPE in Peru or SINAP in Colombia).

## PROTECTED NATURAL AREAS

In the Amazon basin, as defined by RAISG, there are currently 571 PAs (Figure 1) (RAISG 2020), some with a certain level of overlap between them. The PAs are grouped according to the administrative level at which they are managed (country, state/department, municipality or private), and/or according to the level of environmental protection or conservation they have been assigned. PAs of indirect use are equivalent to IUCN categories I, II, and III and include most national parks, natural monuments and nature reserves, among others. In PAs of direct use, the sustainable extraction of natural resources is allowed, and in PAs of indirect/direct use, internal zoning defines areas of strict protection and areas where resource exploration is allowed (IUCN 2004). The PAs in all Amazonian countries resulted in a total net PA of 1,819,368 km<sup>2</sup> (Table 1).

Overall, 25% of the area of the Amazon basin is protected, of which 59.6% are administered at the national level and the remainder at the departmental or state level (Table 2). The municipal level and private reserves were not considered due to limitations in access to this information and due to the small area that they represent. The protected proportion of the Amazon basin area in each country varied between 21% and 51% (Table 1). Peru had the lowest proportion of protection of its national Amazon basin and French Guiana the highest. Overall, 42.2% of the protected surface is under the category of indirect use, 57.6% under direct use, and the remaining 0.2% in other categories (Table 2).

In five of the seven Amazonian countries there are a total of 342 direct-use PAs, 66% in Brazil (grouped into 10 categories), 21% in Bolivia (27 categories), 11% in Peru (six categories) and the remaining 2% in Colombia and French Guiana. The name or category does not always reflect the actual management of the PA. For example, in Bolivia and French Guiana, there are PAs of direct use that are national parks and natural parks, which are considered areas of preservation and indirect use in most countries of the basin. Furthermore, in Bolivia and Colombia, constitutionally recognized PAs can also be designated autonomous indigenous

**Table 1.** Coverage of protected natural areas in the Amazon Basin. N = number of PAs; overlapping areas were excluded (2020).

Country	N	PA without overlap (km <sup>2</sup> )	Proportion of total PA in the Amazon Basin per country (%)	Proportion of the Amazon Basin in each country set aside as PA (%)
Bolivia	81	216,322	11.9	30.3
Brazil	340	1,226,241	67.4	24.3
Colombia	39	89,091	4.9	26.0
Ecuador	26	35,487	2.6	26.8
French Guiana	5	12,685	0.7	50.7
Peru	66	203,916	11.2	21.1
Venezuela	6	23,838	1.3	46.0
<b>Amazon Basin</b>	<b>563</b>	<b>1,819,368</b>	<b>100</b>	<b>24.9</b>

**Table 2.** Natural PAs in the Amazon Basin by administrative level and type of management (2020).

PA category	Area in each category relative to Amazon Basin area per country (%)							Amazon Basin (%)
	Bolivia	Brazil	Colombia	Ecuador	French Guiana	Peru	Venezuela	
National total	14.1	13.2	25.7	26.3	51.5	17.8	50.7	15.1
Indirect use	6.8	6.6	25.5	26.3	41.0	10.7	50.7	8.8
Indirect/direct use	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Direct use	6.8	6.6	0.2	0.0	10.5	6.5	0.0	6.1
Departmental total	16.7	11.8	0.3	0.5	0.0	3.2	0.0	10.2
Indirect use	0.0	2.6	0.3	0.5	0.0	0.0	0.0	1.8
Direct use	16.7	9.2	0.0	0.0	0.0	3.2	0.0	8.4
<b>Total</b>	<b>30.7</b>	<b>25.0</b>	<b>26.0</b>	<b>26.8</b>	<b>51.5</b>	<b>20.9</b>	<b>50.7</b>	<b>25.3</b>

INDIGENOUS TERRITORIES AND NATURAL PROTECTED AREAS

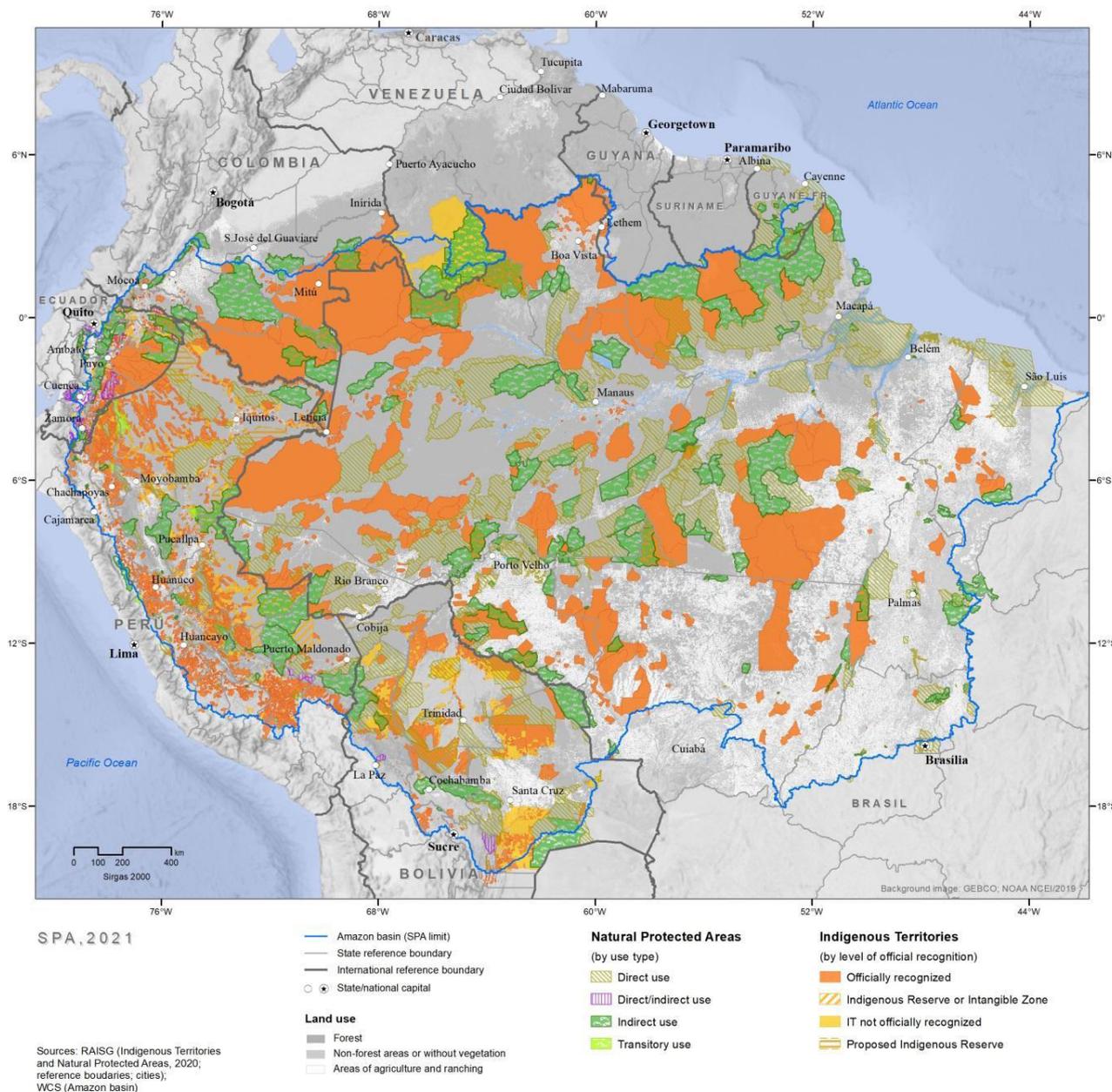
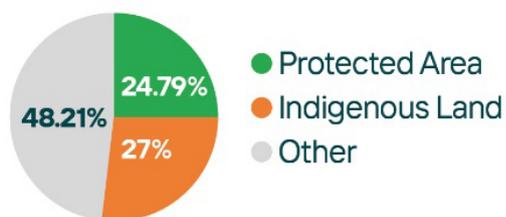
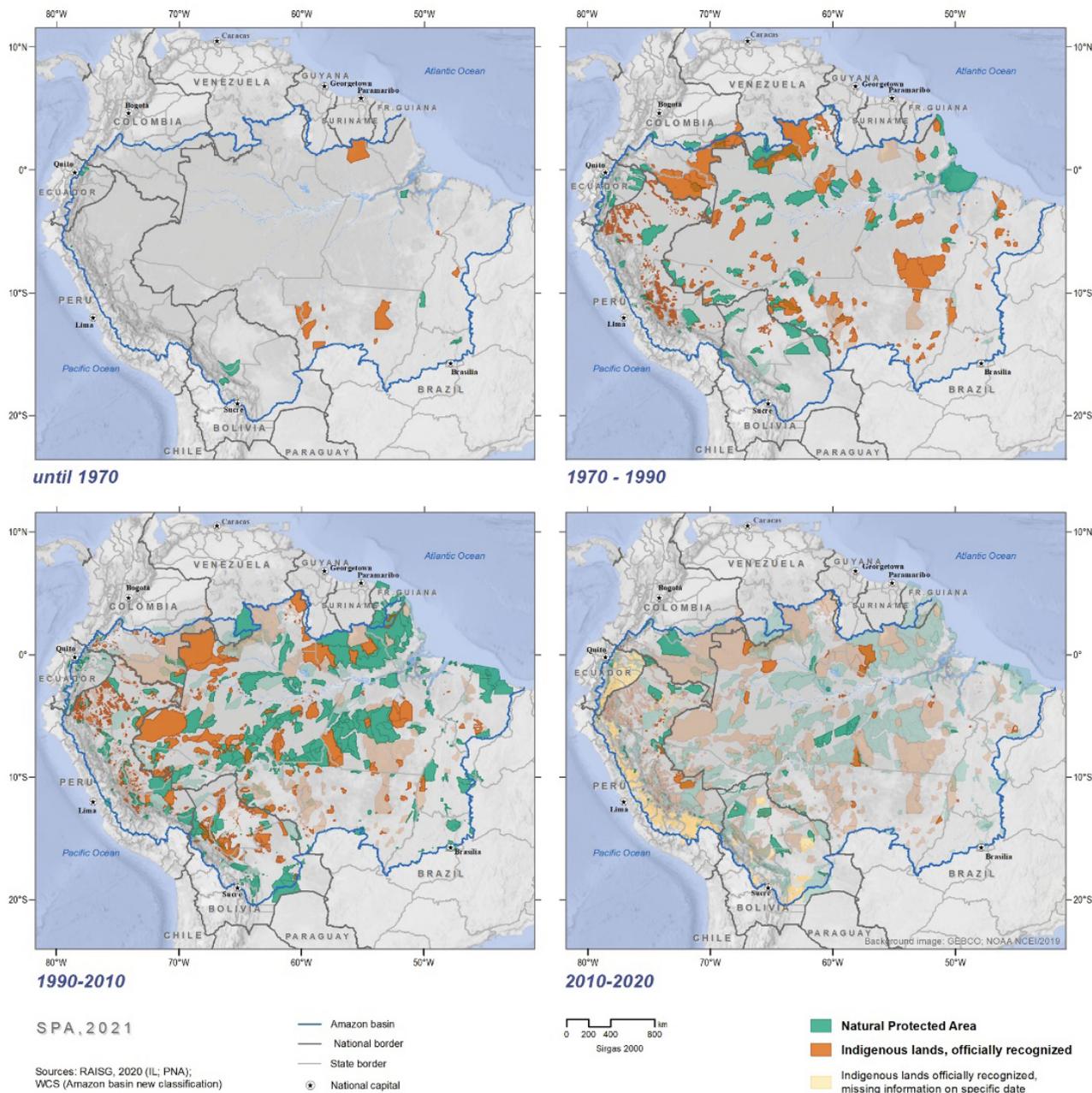


Figure 1. PAs and ITs in Amazonian countries in 2020.

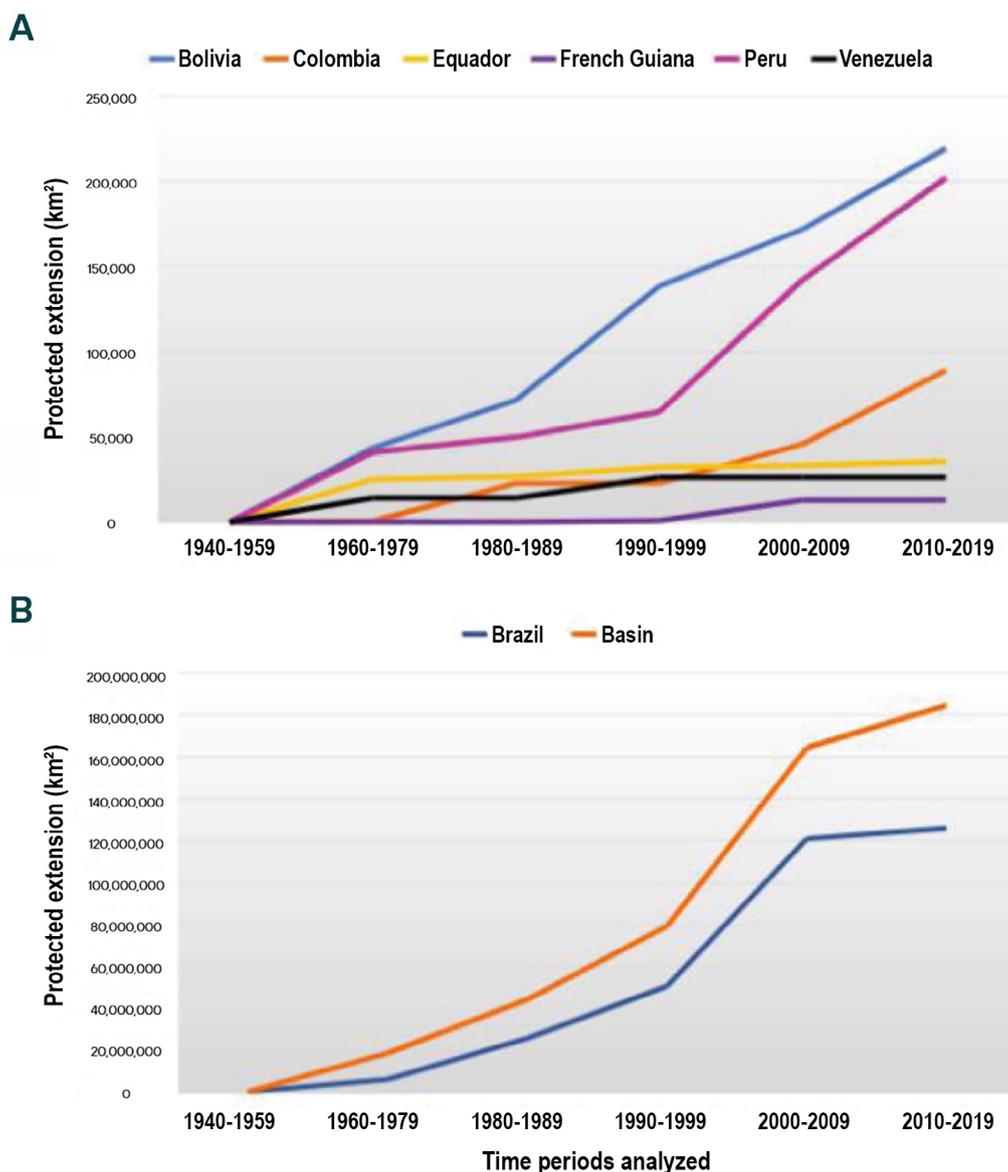
territorial entities, and both roles are seen as complementary. The declaration of PAs in the Amazon Basin since 1940, when the first PA was decreed, reached a maximum in terms of the number of PAs in the period 2000–2009 (Figure 2 and 3b), a trend observed in Brazil, Bolivia, and French Guiana (Figure 3). In Peru, the decades 2000–2009 and 2010–2019 are equally relevant, due in part to new PAs established in the largest Amazonian department of Loreto, during 1999–2018 (Pitman *et al.* 2021; Figure 3a). In Colombia, most PAs were created in 2010–2019, while in Venezuela and Ecuador, all PAs were established prior to 1999 (Figure 3a).

In terms of the size of PAs, most Amazonian countries have set aside significant extensions in the region well before the 1990s. Many PAs were delimited overlapping indigenous lands that were not yet recognized as ITs at the time. Another relevant period of PA designation and, more importantly, of institutionalization and, therefore, enhanced planning and resourcing of national systems of PAs, was clearly associated with the Earth Summit of 1992, which achieved international commitments from Amazonian countries and gave visibility to conservation as an issue of collective interest and political relevance. National constitutions of Amazonian countries

## OFFICIAL RECOGNITION OF INDIGENOUS LANDS AND NATURAL PROTECTED AREAS IN THE AMAZON, ACCORDING TO DIFFERENT TIME PERIODS



**Figure 2.** Natural PAs and ITs created in different periods until 2020 in the countries that share the Amazonian Basin.



**Figure 3.** Periodical evolution of total surface area covered by natural PAs in the Amazon Basin and in each Amazonian country from 1940 to 2019.

included the States’ obligation to promote the conservation of biological diversity and guarantee for its citizens safe environmental conditions and access to natural resources. Another trigger for PA designation and enhanced management was the increase in international funding for conservation programs directed at the Amazon, for example, the ARPA program in Brazil, which started in 2002 (MMA 2022).

Over the 2000s and 2010s the growth of PAs was greater at the departmental than at the national level (142% and 101%, respectively), although national PAs represent 60% of the PA in the Amazon Basin. The administrative level is relevant to ensure human and financial resources to achieve the conservation and sustainable use objectives the PA were created for. On the other hand, even though the increase in

PAs can be considered an achievement in terms of protection of Amazon ecosystems, there is a concern associated with the type of use of these PAs, as 57.4% are destined for direct use, i.e., they do not have conservation as their primary objective as defined by IUCN categories I-III; IUCN 2004. In parallel with the designation of new PAs, there has also been a process of downgrading, downsizing and degazettement (see below).

Direct-use PAs correspond to 40.6% of the overall PA in the basin, but this category experienced the highest proportional growth in surface area in the period 2000–2019 (79.8% versus 63.8% for other categories) (Table 3). In the case of PAs at the departmental/state level, 82.2% are for direct use. The greater proportional increase in the areas of PAs destined for direct use indicates a political permissiveness

**Table 3.** Proportion of the total area protected (%) in the Amazon Basin per administrative and environmental protection category in two periods (1980-1999 and 2000-2020).

Category	1980-1999	2000-2020	Total
National	19.7	39.8	59.6
Indirect use	12.6	22.3	34.9
Indirect/direct use	0.03	0.14	0.20
Direct use	7.1	17.1	24.2
Departmental	11.8	28.6	40.4
Indirect use	0.4	6.8	7.2
Direct use	11.4	21.8	33.3
<b>Total</b>	<b>31.5</b>	<b>68.5</b>	<b>100</b>

that jeopardizes the conservation objectives within and the connectivity among PAs, as it also affects PAs designated for stricter conservation purposes. The highest relative proportion of direct-use PAs occurs in Brazil (63.1%) and Bolivia (76.4%).

### Assessment of effective protection

Evaluating the effectiveness of PA management is a crucial component in advancing the CBD Strategic Plan and achieving its Aichi Targets, particularly Target 11. This target focuses on the effectiveness, efficiency, and equity of PA management (Hockings *et al.* 2015). Management effectiveness encompasses: (i) the design of both individual PAs and PA systems, (ii) the adequacy and appropriateness of management systems and processes, and (iii) the achievement of PA objectives (Hockings *et al.* 2006).

In 2008, the program Vision for the Conservation of the Biological and Cultural Diversity of the Amazon Biome based on Ecosystems - Amazon Conservation Vision (FAO n.d.) was launched as part of the regional efforts for the implementation of the Programme of Work on PAs of the Convention on Biological Diversity (PoWPA CBD) (<https://www.cbd.int/protected/pow>), and the Latin American Technical Cooperation Network on National Parks, other PAs, Wild Flora and Fauna (REDPARQUES, acronym in Spanish) (<https://redparques.com>), with the support of the CBD Secretariat, WWF, IUCN, the Organization of the Amazon Cooperation Treaty (ACTO), and the Andean Community of Nations (Odello 2015). Its mission is to contribute to the administration and effective management of national PA systems, the maintenance of goods and services, and the integrity, functionality, and resilience of the Amazon biome, and to benefit economies, communities, and biodiversity. The Amazon Conservation Vision had a 2010–2020 Action Plan structured around the PoWPA elements to comply with the CBD Aichi Targets, and a 2018-2022 Strategic Plan.

In recent years, REDPARQUES has made an outstanding effort to evaluate the management effectiveness of PAs at the biome level, with a focus on two PoWPA objectives: objective 1.4, related to improving the planning and management of

site-based PAs; and objective 4.2, related to the evaluation and improvement of the effectiveness of PA management. The results show that significant progress was made in creating strategies to strengthen the management and governance of national PA systems, “a factor that has allowed the States to comply with the commitments of the CBD” (REDPARQUES 2016). However, important gaps have also been identified in the protection beyond the formally established PAs, i.e., territories conserved by indigenous peoples and local communities. They are also observed in the light of the highest international standards, as is the case of the IUCN Green List of Protected and Conserved Areas (IUCN 2024). Nomination to the Green List “implies the most thorough analysis of world-class management effectiveness standards” (REDPARQUES 2016). Peru achieved two certified Amazon PAs in 2018, the Cordillera Azul National Park and the ECA Amarakaeri. In 2020, 17 PAs from the Amazon biome in Bolivia, Colombia, Ecuador, and Peru started the certification process for the Green List standard (IUCN 2020).

Tools have also been developed and applied to analyze the effectiveness of the management of PAs of transboundary territories, such as the Trinational Program for Conservation and Sustainable Development of the Corridor of PAs in Putumayo - Colombia, Peru and Ecuador, which corridor covers 12 million hectares, 39% Indigenous territories and 19% protected areas, ([https://www.wwf.org.pe/en/our\\_work/in\\_peru/amazon/the\\_importance\\_of\\_sharing\\_conservation/trinational\\_program\\_conservation\\_without\\_borders\\_in\\_putumayo/#:~:text=The%20Trinational%20Program%20is%20an,the%20framework%20of%20multilateral%20environmental;see%20also%20https://www.corredorputumayo.com/el-corredor](https://www.wwf.org.pe/en/our_work/in_peru/amazon/the_importance_of_sharing_conservation/trinational_program_conservation_without_borders_in_putumayo/#:~:text=The%20Trinational%20Program%20is%20an,the%20framework%20of%20multilateral%20environmental;see%20also%20https://www.corredorputumayo.com/el-corredor)); Protected Areas mosaics in Brazil (<https://www.gov.br/mma/pt-br/assuntos/biodiversidade-e-biomas/gestao-integrada-de-paisagem/mosaicos>; <https://mosaico.eco.br/mosaicos-de-areas-protegidas-e-outros-conceitos/> and <https://redmosaicos.com.br/rede-de-mosaicos/>; beside others), the binational corridor Vilcabamba-Amboró - Peru and Bolivia (CEPF 2004), among others. Since 2014, Ecuador’s decentralized autonomous governments have collaborated with NGOs and local communities to establish the Sangay-Podocarpus Connectivity Corridor (CCSP), linking Sangay and Podocarpus National Parks. Officially declared in 2020, this 567,067-hectare corridor ensures species migration, genetic flow, and biodiversity resilience while maintaining Andean-Amazon ecological connectivity and serving as a model for regional connectivity regulations. Another initiative is the North Amazonian Alliance (see <https://institutoiepe.org.br/2022/03/segunda-contribuicao-da-alianca-noramazonica-a-marco-global-para-a-biodiversidade-pos-2022/>). In terms of management effectiveness, the Amazon Conservation Vision initiative showed the need to jointly interpret the variables of the national tools from a regional perspective to identify reference indicators common to the Amazonian

countries, to analyze how PAs contribute to the conservation of the biome from a regional perspective (Navarrete 2018): This need was addressed in the protocol for the measurement of management effectiveness of the Amazon biome and the priorities identified were governance, climate change, evaluation of socio-environmental impacts, management programs, and compliance with the conservation objectives of the protocol, and were considered for the components of the IUCN Green List Standard (IUCN 2020). Overall, the protocol contained 26 indicators. It was applied in 62 Amazonian PAs in Bolivia, Brazil (Acre state), Colombia, Ecuador, and Peru. The main results for the priority indicators showed that up-to-date management programs presented the least progress at the scale of the Amazon biome, followed by those linked to climate change and impact assessment, while those with the highest levels of effectiveness were those related to achievement of the conservation goals and governance (REDPARQUES 2019; Table 4). The recommendations for successful management of Protected Areas (PAs) in the Amazon biome, based on the REDPARQUES 2019 protocol (REDPARQUES 2019), include strengthening shared management agreements between PA administrations and local communities to resolve conflicts, promoting the perception of PAs as sources of benefits for local people, implementing sustainable economic alternatives, generating data for biodiversity and cultural conservation, enhancing institutional capacities for governance, improving land use planning for regional integration and connectivity, and developing climate change adaptation strategies to support inclusive regional conservation efforts.

These recommendations indicate that what is most lacking in the Amazon is the implementation of an integrated conservation vision among PAs and other effective area-based conservation measures with well-defined goals for the conservation of biodiversity and ecosystem services, in co-management with local communities, involving private stakeholders and other sub-national and local forms of government (Prüssmann *et al.* 2017; RAISG 2020; Maxwell *et al.* 2020). The constituent parts for this kind of conservation network are abundant in the Amazon given the extent of PAs and ITs, intact forests,

and other private and community-based conservation and sustainable use areas. However, there are significant challenges, particularly those related with PA resourcing and tracking of biodiversity protection effectiveness (Maxwell *et al.* 2020). Based on the significant correlation between PA resources (budget and staffing) and positive changes in vertebrate abundance (Geldmann *et al.* 2018; Coad *et al.* 2019), an analysis of adequacy of resources comparing PAs of four biogeographical realms of the world (excluding North America, Western Europe and Australia) found that PAs of ecoregions in the Neotropics had the lowest scores (Coad *et al.* 2019). When geographic ranges of thousands of vertebrate species were overlapped with the scored PAs, only a very low percentage of the species were adequately protected (Coad *et al.* 2019) Using simple PA area coverage metrics to measure progress towards CBD Aichi Target 11 under the assumption that all PAs are effective is likely to overestimate effectively PA coverage by approximately 400% and vertebrate species representation by up to 700% (Coad *et al.* 2019). In the Amazon region, there is a reduced number and extension of PAs for strict conservation (IUCN categories Ia and Ib) (Prüssmann *et al.* 2017). In some Amazonian countries, these categories are even non-existent in their Amazon region. On the other hand, PAs in IUCN category VI, which allows sustainable use of natural resources, are the most implemented in the region. To aggravate the situation, the current economic downturn in the Amazonian countries, combined with low political priority for environmental conservation issues, could widen the financing gap of all PAs in the Amazon (Prüssmann *et al.* 2017). The magnitude of threats that currently affect PAs is discussed below.

### IT governance as a conservation example

All Amazonian countries ratified Convention 169 of the International Labor Organization, which, in its Article 13, highlights that territory means “the entire habitat of the regions that the peoples in question occupy or use in any other way.” In Brazil’s Federal Constitution of 1988, the lands traditionally occupied by indigenous people are those “they permanently inhabit, those used for their productive activities, those essential for the preservation of the environmental resources necessary for their well-being and for their physical and cultural reproduction, according to their uses, customs, and traditions”. Colombian legislation (COLOMBIA 1994, 1995) specifies that ITs are “areas owned regularly and permanently by an indigenous people group and those that, although not controlled that way, constitute the traditional scope of their social, economic, and cultural activities”.

Indigenous people have traditionally and immemorially occupied their territories, spaces culturally defined by their knowledge systems. Most of these systems of traditional thought share “cultural principles” that are related to what the non-indigenous world has defined as conservation

**Table 4.** Level of progress in the management effectiveness of priority measures established by the Amazon Conservation Vision initiative at the scale of the Amazon biome. The percentages are based on the data for 62 protection areas in different Amazonian countries reported in REDPARQUES (2019) (n/a= not analyzed).

Themes	Progress level (%)				
	High	Medium	Low	Limited	n/a
Governance	52	32	8	5	3
Climate change	37	6	0	0	57
Socio-environmental impacts	45	48	2	5	0
Management strategies	26	55	13	2	4
Conservation goals of PA	89	3	2	0	6

models, since they result in the protection of biodiversity and ecosystems (ACIMA 2018).

In an area of 1.3 million km<sup>2</sup> in the northwestern Amazon connecting the hydrographic basins of the upper Negro–Vaupés and lower Caquetá–Japurá rivers in Colombia and Brazil, the ancestors’ journey to settle in this area is described in the origin myths of the local indigenous peoples, providing precise details that explain the relationship between the territory’s geography and their traditional knowledge, as well as daily life practices and rituals of each group (Fundación Gaia Amazonas 2020a). This cultural framework, rooted in geographical knowledge, sacred site management, and ecological calendars, forms the basis of Indigenous governance and conservation in shared territories. Its maintenance requires passing traditional knowledge to new generations amidst challenges like population growth, lack of income sources, and cultural globalization. Government neglect and illegal activities (e.g., mining, logging) further threaten these territories.

### Recognized ITs: Coverage and recognition state

There are currently at least 375 indigenous peoples in the Amazon (Walker *et al.* 2020), depending on the source and the geographic delimitations used (RAISG 2020), with a total population estimated at approximately 2 million. If all the other social groups that live in the region are counted, both in urban and rural areas, the Amazon is currently inhabited by more than 40 million people.

In the Amazon Basin as defined here, 6,443 ITs were identified, covering approximately 27% of the region (Figure 1; Table 5). The country with the highest number of ITs is Peru, followed by Ecuador, many with small areas. The average IT area in Brazil, Venezuela, Bolivia, Colombia, and French Guiana ranges from 3,021 to 818 km<sup>2</sup>, in decreasing order, while in Peru, Ecuador, and Guyana it ranges from 65 to 192 km<sup>2</sup>. This difference indicates that, in the former countries, ITs are considered as a large territorial unit, i.e.,

the macro territories described in the previous section, while in the latter countries, IT area is reduced in consequence of the procedures and requirements for their recognition (Peru’s case is further explained below).

Basin-wide, 89% of the surface area of indigenous lands is officially recognized ITs, 6.5% is not legally protected, and the remaining 4% are officially recognized or proposed indigenous reserves and intangible zones (Table 6). Indigenous reserves and intangible zones (depending on the country) are territories for the protection of indigenous peoples in voluntary isolation or in isolation and initial contact (PIAV and PIACI, acronyms in Spanish). In Colombia and French Guiana, all ITs are officially recognized. In Brazil, many of the ITs are in an unfinished process of recognition. Since the promulgation of the 1988 constitution in Brazil, the federal government has had the responsibility to complete the demarcation of the ITs within five years, but this has not occurred timely. By 2020 in addition to the demands that have not even had their legal recognition process initiated, the recognition of 114 ITs was being reconsidered due to the lack of match between the territory identified before 1996 and the actual extent of the ancestral land claimed by the indigenous people (Fany Ricardo, pers. comm., Aug 2020), among other issues. In the amazonian Venezuela, all claims for recognition of ancestral indigenous lands are not yet being legally considered.

From a regional historical perspective, before 1970 less than 6% of the total surface area of indigenous lands in the Amazon Basin had some type of recognition, mostly in Brazil (RAISG 2016). In the following two decades, additional areas were recognized in Brazil, Peru, Colombia, and Ecuador under different categories according to existing national regulations. Since the 1990s, extensive surface areas of ITs were recognized in Bolivia, Ecuador, and Peru in response to claims for territorial rights based on the demands of the indigenous movement and its supporting organizations in the context of 500 years of resistance in 1992 (RAISG 2016).

**Table 5.** Indigenous Territories in the Amazon Basin and each of the countries that share the basin (2020).

Country/basin	Number of ITs	Surface area (km <sup>2</sup> )	Proportion of basin-wide IT area (%)	Proportion of Amazon Basin area recognized as IT (%)
Bolivia	148	189,037	9.6	26.5
Brazil	382	1,153,843	58.6	22.8
Colombia	162	185,852	9.4	54.3
Ecuador	643	73,957	3.8	55.9
French Guiana	4	3,271	0.2	13.1
Peru	5,060	328,183	16.7	34.0
Venezuela	17	29,259	1.5	56.5
<b>Amazon Basin</b>	<b>6,443</b>	<b>1,968,594</b>	<b>100</b>	<b>27.0</b>

**Table 6.** Total area of four classes of recognized and not yet officially recognized ITs (ITs) and reserves in the Amazon Basin and in each country that shares the basin (2020).

Country/basin	Officially recognized ITs (km <sup>2</sup> )	ITs without official recognition (km <sup>2</sup> )	Indigenous reserve or intangible zone (km <sup>2</sup> )	Proposed indigenous reserve (km <sup>2</sup> )
Bolivia	123,208	65,828		
Brazil	1,153,843			
Colombia	185,852			
Ecuador	51,804	10,222	11,931	
Guyana	5,192			
French Guiana	3,271			
Peru	233,510	23,557	29,129	41,988
Venezuela	0	29,223		
<b>Amazon Basin</b>	<b>1,756,716</b>	<b>128,830</b>	<b>41,060</b>	<b>41,988</b>

## Policies for Indigenous Peoples in voluntary isolation

Brazil is the Amazonian country with the highest number of records of the presence of isolated indigenous peoples, of groups formed by hundreds of people to a few survivors (Opas *et al.* 2018). In the Brazilian Amazon, 120 records have been identified in 55 indigenous lands and 24 conservation units, of which 28 have been confirmed. Although not consistent with official indigenous policy, there are still eight areas with no protection status (Ricardo and Gongora 2019). With the shift towards the autonomy of indigenous peoples in Brazil in 1987, FUNAI played an important role in PIAV policies, determining that “the verification of the existence of isolated indigenous people does not necessarily determine the obligation to contact them” (FUNAI 1987). This policy reversed the preceding contact logic, and has since accumulated information on the identification, demarcation, monitoring and protection of ITs without physical contact with those populations (Torres *et al.* 2021).

In 2018, the Ministry of Culture of Peru reported the existence of approximately 7,000 people belonging to 18 indigenous peoples in a situation of isolation or initial contact in the Peruvian Amazon. Between the 1990s and 2005, five territorial reserves were created in Peru in perpetuity, and a few others were proposed. However, only in the 2000s specific regulations were developed to guarantee the protection of PIACI (PERU 2006), establishing that if there is evidence of the presence of PIACI in an area, an indigenous reserve will be created. Article 2 of the regulation defines these areas as “Lands delimited by the Peruvian State, of temporary intangibility, in favor of [the PIACI] [...], and as long as they maintain such situation, to protect their rights, their habitat and the conditions that ensure their existence and integrity as peoples”. Article 5 grants intangibility to these areas, but Article 6 establishes a series of exceptions to this condition. The regulation of the law (PERU 2016) adds the use of natural resources within the reserves when the State “... deems it of public necessity”. This modification puts the survival of the reserve inhabitants at risk due to the lack of clarity regarding the definition of public need. Currently, there are three indigenous reserves (adjusted from the former territorial reserves), two territorial reserves, and proposals for the creation of six indigenous reserves in the Peruvian Amazon (<https://bdpi.cultura.gob.pe/piaci>).

As in Brazil, although currently to a different degree, the advance of territorial recognition and the effective work of protection systems in Peru are facing opposing interests from the governments themselves in promoting investment and large infrastructure in the Amazon. Likewise, the protection system for these reserves does not effectively confront illegal activities such as timber extraction and drug trafficking, which are proven to commonly occur in ITs (Vaz 2019).

In 1979, Ecuador designated the Yasuní National Park (ECUADOR 1979). During the following years, reports of random encounters and violent or fatal attacks evidenced the presence of uncontacted groups near Yasuní NP, Executive Decree ED552 established the which led to the creation of the Tagaeri Taromenane Intangible Zone (ZITT, acronym in Spanish) in the eastern portion of the Yasuní NP, in which “...in perpetuity, all kinds of extractive activities” were banned (Executive Decree # 552, 29 Jan 1999). However, little or nothing was done to effectively enforce this legislation. The map of oil concessions underwent only small variations, and the farming frontier, tourism, deforestation and illegal logging, the incursions of explorers, religious missionaries, and adventurers all augmented the threats and pressures to these territories and worsened pre-existing conflicts with the newly contacted Waorani people. In 2006, the Organization of American States’ Inter American Commission for Human Rights requested the Ecuadorian government “to adopt effective measures to protect the life and integrity of the people living in voluntary isolation, the Tagaeri-Taromenane”, within the ZITT. Accordingly, the ZITT limits were set in 2007 (ECUADOR 2007), resulting in an area of 758,051 ha, with a buffer zone of 10 km around it, and a plan of precautionary measures for the protection of uncontacted groups was designed and implemented through a national policy. In 2008, the Ecuadorian Constitution, in its Article 57, declared the ancestral and irreducible possession of the Tagaeri-Taromenane territories. However, in 2013, the Ecuadorian National Congress approved a resolution declaring oil exploitation within two blocks that partially overlap with the northeastern areas of the ZITT of national interest. In 2018, a national consultation process approved an increase of at least 50,000 ha in the ZITT, granting it a total area of 818,501 ha, but also altered and abolished various articles of the 2007 decree, allowing hydrocarbon perforation and exploitation platforms within the buffer zone.

## Current risks: Cases from Brazil and Peru

### Brazil

Contrary to constitutional rights achieved over many years of struggle by indigenous and traditional peoples and civil society movements, the Brazilian federal government from 2019 to 2022 sought to eliminate the social, cultural, and material reproduction of indigenous, *quilombola*, and traditional peoples, including violation of their territorial rights, which were were unjustly considered as an obstacle for agribusiness and development (Escobar 2018; Ferrante and Fearnside 2019; Araújo 2020; Andrade *et al.* 2021; Vale *et al.* 2021). In reality, small-scale agriculture is responsible for most of Brazil’s food production, rural employment, and agricultural income (Paulino 2014). The conflict does not concern production, but rather the eagerness of access to land under indigenous tenure, to put in action a paradigm shift in public

policies aimed at reestablishing the ideological, political, and economic project prior to the Federal Constitution of 1988. The policy prior to the re-democratization favored not only agribusiness interests, but also the exploration of the subsoil of indigenous lands, to weaken their territorial rights while simulating the transformation of indigenous peoples into some sort of business partners.

In 2019, a drastic proposal of ministerial restructuring (although later revised in some points) subordinated the recognition of indigenous and *quilombola* territories to the Ministry of Agriculture. In fact, most of the proposals under the 2019-2022 government were connected to the agribusiness lobby, a historical opponent of the democratization of access to land in Brazil (Torres *et al.* 2017; Opas *et al.* 2018; Oliveira 2021; Urzedo and Chatterjee 2021). A small but very destructive portion of the sector poses a threat to the economic prospects of Brazil's agribusiness, in addition to causing regional and global environmental impacts (Rajão *et al.* 2020). The proposal for a ministerial restructuring also tried to withdraw competences from the Ministry of Environment over the national natural heritage (forests and water resources), and the climate agenda, in addition to preventing the participation of civil society in councils and collegiates guiding public policies (BRAZIL 2019). In 2020, the government created a specific unit for concessions in the Ministry of Environment, an exceptional move in the history of the ministerial structure. An action by the Federal Public Prosecutor's Office (BRAZIL 2020) requested immediate removal of the secretary for the environment due to administrative improbity by promoting regulatory disorder through legal and infra-legal changes, dismantling of transparency and social participation bodies in resource allocation and inspection processes. The Prosecutor's Office considered the secretary to be directly responsible for the dismantling of the country's environmental protection system that caused an increase in deforestation, fires, illegal mining, and land grabbing.

Also in 2020, the government reassigned the fight against environmental crimes in the Amazon from the Ministry of the Environment to the Brazilian army. The previously responsible environmental authorities (IBAMA and ICMBio) had achieved the historical reduction of deforestation between 2004 and 2009, and the demobilization of the criminal network logistics involved. Public investment in environmental protection had been declining since 2014, to the point that an audit by the Federal Audit Court determined that only 4% of Amazonian federal and state conservation units had a high degree of implementation. The historical analysis of the mandatory and discretionary budget for the Ministry of the Environment and related entities showed that the expenditure forecast for 2021 was the lowest in two decades, with a 27.4% drop in the federal budget for environmental inspection and fighting forest fires

in comparison with 2020, and 34.5% compared with 2019 (OC 2021).

The consequent perception of impunity led to increased illegal activities such as deforestation and gold mining, driving violence in the countryside, which grew 23% from 2018 to 2019, adding up to more than 1,800 conflicts, a record since 1985 (Comissão Pastoral da Terra 2020). In the 2010s, Brazil was among the most lethal countries for environmental activists (Global Witness 2019). From 2019 to 2022, the highest deforestation rates in 14 years were recorded in the Legal Amazon (INPE 2024). Illegal mining has also intensified throughout the Amazon. In mid-2020, in the Yanomami IT alone, an estimated 20,000 invaders were estimated, who, in the context of the COVID-19 pandemic, would have the potential to contaminate nearly 40% of the Yanomami, whom they lived close to in the illegal mining areas, a situation denounced by indigenous organizations in the Human Rights Council of the Inter American Commission of Human Rights (IACHR 2020).

#### Peru

In 1978, the New Law of Native Communities (PERU 1978) granted ownership to native communities only of those areas proven to be suitable for agriculture in their demarcated territory, while lands suitable for forestry and protection remained under the ownership of the State but were ceded in perpetuity to the communities. These actions took place within the framework of the Forestry and Wildlife Law (PERU 1975), which, in its Article 1, stated that "Forest resources and wildlife are in the public domain and there are no acquired rights over them", implying that land with forestry aptitude is of exclusive property of the State. From the perspective of indigenous organizations, this constituted a direct violation of the rights of Amazonian indigenous peoples, as their economy largely depends on the extensive use of the forest, and practically all the lands of the Peruvian Amazon are of "forestry aptitude" and are therefore excluded from being granted in private property to the indigenous peoples. Likewise, the territorial rights of indigenous peoples are only specific to the lands, not granting any rights over forests, water bodies, and subsoil, which continue to be the property of the State. The processes of recognition and titling of communal lands have been institutionalized since 1975 with the Law of Native Communities. In the first decade of its observance, only small communal areas were titled. Since the mid-1980s, communities have succeeded in titling larger spaces (up to 500 km<sup>2</sup>) owing to pressure from indigenous organizations and supporting organizations, which now amount to a substantial fraction of the region. However, the titling processes have continued to be slow for several reasons, including successive regulatory adjustments that have legal loopholes or excessively complicate the titling processes. This has generated numerous socio-environmental conflicts motivated by the overlapping

of various rights, mostly extractive concessions and easements on the communities' territories.

## CONFLICTING POLICIES AND THREATS

In all Amazonian countries, the transfer of ownership in favor of individual or communal owners can be reversed if a priority interest for the nation is alleged. In fact, the most common conflict that occurs in recognized territories is due to the overlapping of concessions for extractive industries or infrastructure, which impacts the rights of the owners in various ways. According to Convention 169 of the International Labor Organization and the United Nations Declaration on the Rights of Indigenous Peoples, the indigenous peoples are entitled to be consulted by the States on all laws, projects, strategies, etc., that affect their territories and their lives through culturally appropriate procedures, through a process called Free, Prior and Informed Consent (FPIC). Both Convention 169 and the UN Declaration affirm that the objective of consulting indigenous peoples is to obtain their agreement or consent. The consulted peoples should have the possibility to modify the initial plan, and the State has the duty (1) of accommodation (the duty to adjust or even cancel plans or projects based on the results of the consultation process, or, when it does not comply with this duty, the State must provide objective and reasonable justifications for not having done so); and (2) to approve reasoned decisions (although not all consultation processes seek consent, this does not reduce them to a simple formality). States should take into consideration the concerns, demands, and proposals of the impacted indigenous peoples and consider them in the final design of the plan or project.

The reality is that, due to the absence of clear regulations at the national level, in most cases the consultation process is reduced to a mere notification or informing of the decisions already taken, or it is carried out by dividing indigenous organizations between fractions for and against the extractive industry. Overall, 51% of PA and 48% of IT extent in the Amazon are under some type of pressure of extractive activities and infrastructure development (i.e., energy and roads), with most pressure on PAs being moderate or low, while one third of IT area is under high or very high pressure (RAISG 2020). The pressure rates vary among Amazonian countries, with Ecuador as the most dramatic case owing to the prevalence of moderate, high, and very high pressure rates on its ITs and PAs (RAISG 2020).

The expansion of the agricultural frontier is one of the drivers of change towards PAs. Between 2001 and 2018, new areas of agricultural use within PAs increased by more than 220%, transforming 53,269 km<sup>2</sup> inside PAs, 74% of which had forest cover in 2000 (RAISG 2020). Sixty-four percent of this conversion took place in departmental PAs of direct use, a category that represents 33% of the total protected extent

in the region. PAs of direct use can allow the sustainable use of resources, but not forest conversion and land-use change. Across the basin, the growth of departmental PAs was greater in the last 20 years than that of national PAs (142% and 101%, respectively), which, together with the trend in land-use conversion, poses a matter of concern. In ITs, 42,860 km<sup>2</sup> have been converted into new areas of agricultural use in 2001-2018, of which 71% were forests in 2000. Despite fluctuations throughout the period, the figures of annual deforestation in ITs varied between 1,000 and 1,700 km<sup>2</sup> until 2016, but exceeded all the preceding annual values (including the 2004 peak) in 2017 and 2018, with values of 2,500 km<sup>2</sup> and 2,600 km<sup>2</sup>, respectively (MAPBIOMAS 2020):

Many of these transformations initially occur illegally through land invasions or land grabbing by external agents, who later attempt to legalize ownership. This situation underscores the need for stronger land-use control, the urgent implementation of rural cadasters, and improved production practices to enhance productivity while preventing further encroachment. Most importantly, it highlights the necessity of effective management for areas designated for protection or sustainable use.

## Forest conversion within and outside of PAs and ITs

Unlike PAs, which have biodiversity conservation as their main objective, the aim of ITs is to safeguard the rights of indigenous peoples to their land and social, cultural and equity aspects of their livelihood (Maretti *et al.* 2014). However, there is sufficient evidence in the scientific literature that the indigenous peoples of the Amazon play a measurable and significant role in conserving forests, thus reducing forest carbon emissions and mitigating climate change (Ricketts *et al.* 2010). ITs in the Amazon act as buffers for external pressures associated with the expansion of the agricultural frontier, reducing deforestation (Oliveira *et al.* 2007; Soares-Filho *et al.* 2010; Schwartzman *et al.* 2013; Stevens *et al.* 2014; Jusys 2018) and the occurrence of fires (Nepstad *et al.* 2006) compared with the areas outside their limits. Between 2000 and 2018, 87% of the total deforested area was located outside ITs and PAs, and 13% within their limits (MAPBIOMAS 2020), even though PAs and ITs together cover more than half of the region's forests (Walker *et al.* 2020). A combined regression analysis and cross-sectional correspondence to estimate avoided deforestation and carbon emissions attributable to indigenous management found that indigenous peoples' land-use practices reduced deforestation and associated carbon emissions (Blackman and Veit 2018).

Considering deforestation from 2000 to 2018, in 2015 there has been a clear upward deforestation trend in the Amazon, after reaching its lowest point in 2010 (RAISG 2020). Only 8% and 5% deforestation occurred in PAs and ITs, respectively, mainly in 2017 and 2018. Deforestation in ITs without legal recognition increased more than 50%

between 2000–2005 and 2010–2015 (RAISG 2016). The comparative analysis of the effectiveness of deforestation reduction in legally recognized ITs is significantly higher than in not yet fully recognized ITs (Blackman *et al.* 2017; Baragwanath and Bayi 2020).

Similar findings were obtained by Walker *et al.* (2020), who analyzed carbon gains and losses in the Amazon during the 2003–2016 using an updated dataset from that used by Baccini *et al.* (2017) and disaggregating the losses into those attributable to the conversion of forests (deforestation) and those due to anthropogenic degradation and natural disturbances. Land outside ITs and PAs accounted for approximately 70% of the total carbon losses, and almost 90% of the net change, in less than half of the total land area. In contrast, ITs and PAs, which accounted for more than half of the total land area, accounted for only 10% of the net change, and 86% of losses on those lands were offset by gains through forest growth. Therefore, there was a nine-fold difference in net carbon loss outside ITs and PAs (–1,160 MtC) compared with inside (–130 MtC). The authors suggest that the continued regeneration of forests in ITs has allowed these lands to offset emissions from degradation and disturbance.

### Downgrading, downsizing and degazettement

PA downgrading, downsizing and degazettement (PADDD) refers to the processes by which PAs undergo reduction in their spatial extent, are reclassified to a lesser protection category, or are eliminated. Historically hundreds of thousands of square kilometers of protected land have been lost in the world through this process, including the Amazon region (Mascia *et al.* 2014).

Despite agreements of the Parties to the Convention on Biological Diversity (CBD) to increase the global extent of PAs to 17% of national lands, PADDD has been occurring increasingly over the years, impacting the achievement of the CBD land protection goal in some countries. Downsizing is the most common event and appears to be linked to industrial agriculture expansion, local land claims or resettlements, among other causes, whereas mining and infrastructure are the most common causes for the downgrading of PAs (Mascia *et al.* 2014). Although PADDD could be used as an option for better conservation planning, prioritized allocation of resources (Fuller *et al.* 2010; Kareiva 2010), tradeoffs between competing policy objectives (Bass *et al.* 2010), or the fair recognition of land rights (Dowie 2009), the analysis showed that a majority of PADDD events are a consequence of industrial-scale activities and local pressures (Mascia *et al.* 2014), and far from conservation objectives.

In Brazil, an analysis of PADDD events since 1900 found that 70% of the events have occurred since 2005, of which 48 events affected 88,341 km<sup>2</sup> of protected lands in the Brazilian Amazon, and 10 active proposals related to PADDD would alter an additional 65,715 km<sup>2</sup> of conservation units in the

region (42% in strict PAs and 58% in sustainable-use PAs) (Pack *et al.* 2016). Downsizing is the most common PADDD event and has had the most impact on Amazonian PAs relative to other biomes, with many of the altered sites considered biologically irreplaceable based on their representativeness and vulnerability (Pack *et al.* 2016).

PADDD has become more prevalent in Brazil since the early 2000s and is linked to hydropower development in 39% of the cases. Within the Brazilian Legal Amazon, PADDD has resulted in the removal of 72,136 km<sup>2</sup> of land protected in conservation units, both at federal and state level, highlighting the need for a clear legal process for PADDD (Araújo *et al.* 2012; Bernard *et al.* 2014; Ferreira *et al.* 2014; Pack *et al.* 2016). While the creation of PAs has well-defined technical and legal steps, the proposal or enactment of PADDD lacks a clear national policy and can proceed legally without technical studies, solely based on a specific, *ad-hoc* piece of legislation (e.g., a federal decree or provisional measure), in a process that lacks transparency. In most cases, the process does not include clear geographical documentation about the area to be altered, making it difficult to track the event. In 2018, the Supreme Federal Court of Brazil ruled the use of a federal provisional measure to change the category, reduce, or extinguish conservation units to be unconstitutional. The provisional measure is an exceptional legislative instrument in the Brazilian legal framework that is based on the relevance and urgency of the issue in question, has the force of law, determines validity and is edited by the President, and must be approved by the Legislature to become law. Although the Supreme Court decision does not guarantee reversibility to the provisional measures already applied, the ruling establishes the unconstitutionality of future attempts to use this figure to void the environmental safeguards.

In Ecuador, PADDD events have been mostly characterized by the reconfiguration of limits of PAs with the aim to exclude extractive areas (López-Acevedo *et al.* 2015). As a result, the extent of the affected PAs ended up being larger, though not necessarily a better fit for conservation. There also has been the elimination of protected forests to allow for mining concessions. According to the Ecuadorian Environmental Code, “if necessary and considering the results of such technical evaluations, the National Environmental Authority may re-delimit them [the PAs] or change their category under technical considerations, as appropriate.” This leaves the legal procedure for any PADDD event rather open, especially in terms of the discretionary decision by the environmental authority.

In Peru, any modification of a national-level PA can only be enacted through a law issued by the national congress (RAISG 2016). As of 2016, two events have occurred in PAs in the Peruvian Amazon, one resulting in the subdivision of an existing reserve (transitory category) into three types of protected land, but downsizing the initial extent of the reserve.

The area eliminated was concessioned to mining companies (PERU 2007). There are no reports of PADDD events in PAs of Colombia and Venezuela.

## COMPLEMENTARY CONSERVATION STRATEGIES

### Conservation including people

The Brazilian National System of Conservation Units (SNUC, acronym in Portuguese) is composed of 12 PA categories, which correspond to the IUCN classification. Other specific categories have been created at state level based on the domain and concession of the land, the possibility and intensity of resource use, and the degree of conversion of the environment.

Among the new PA categories, the extractive reserve (Resex, acronym in Portuguese) deserves mention, an innovation that resulted from the struggle of the organized rubber tappers and their partners to deal with the unfair land concentration in Brazil. In 1985, the 1st National Meeting of Rubber Tappers was held in Brasília, in the context of opposition to the exploitation of family work in the rubber plantations in the state of Acre, in the southwestern Brazilian Amazon, the appropriation of public lands, and the clearing of native forests. The meeting was the first articulation that brought visibility for the movement at national level. The National Council of Rubber Tappers was created, of which Chico Mendes became president in 1988, forging alliances spanning the Green Party, Brazilian and foreign non-governmental organizations, and the Union of Indigenous Nations, led by Ailton Krenak, with whom Chico Mendes launched the “Alliance of the Peoples of the Forest” (Almeida 2004). The political and intellectual boldness of the movement was based on the systematic reconcentration of land in areas of agrarian reform, proposing an innovative model that rejected individual property titles, affirming the collective right to land and the traditional extractivist occupation rights (Allegretti 2008). This innovation was proven capable of guaranteeing the local governance of resources, implementing an adaptive governance model of complex systems and a robust institutional arrangement (Dietz *et al.* 2003).

Another new type of Brazilian PA category is the sustainable development reserve (RDS, acronym in Portuguese), which arose from the mobilization of riverside communities to ban commercial fishing from their territories, which intensified unequal competition, leading to the exhaustion of resources and affecting the local way of life (Lima and Peralta 2017). The RDS category was created in the context of the 1992 Rio Summit, in an attempt to combine conservation and development, and the first RDS in Brazil was RDS Mamirauá, located in the state of Amazonas (Lima and Peralta 2017).

Articulation among social movements with different trajectories and livelihoods at national level, spreading

the idea of these communal reserves throughout Brazil. Currently, there are extractive reserves in 19 Brazilian states and sustainable development reserves in eight, especially in the Amazon region and along the coast, contributing to guarantee the collective rights of populations with diverse forms of organization and ways of life, such as rubber tappers, artisanal fishermen, shellfish gatherers, and Brazil-nut and babazu collectors, among others. Currently, there are 77 Resex and 26 RDS in the Brazilian Amazon, representing approximately 3% and 2.3% of the region’s area, respectively. According to the Brazilian Ministry of the Environment, in 2015 there were 199 proposals for the creation of new federal PAs over the country, of which 97 were Resex and 14 were RDS, and 72 were proposed for the Amazon region (data requested by the Instituto Socioambiental to the Brazilian Ministry of Environment through protocol # 02680000839201556).

### Ecological and sociocultural connectivity policies

#### Connectivity as an object of conservation

Ecological connectivity refers to the uninterrupted movement of species and the flow of natural processes that sustain life on Earth (Taylor *et al.* 1993), a condition without which ecosystems cannot function adequately. Since the 1970s, evidence has shown that isolated areas of the forest lose their functionality and their biological diversity deteriorates, with serious consequences for ecosystems, their functioning, their regulatory capacity, and the environmental services they provide (Tollefson 2013). As it enables species transit, seed dispersal, gene flow, and colonization of suitable sites, connectivity decreases the rate of extinction (Beier and Noss 1998). It also facilitates seasonal and daily migrations among a variety of habitats, contributes to the preservation of biodiversity and ecosystems, the protection of water resources, balancing of the climate, and the recovery of the landscape (Beier and Noss 1998), all of which are key conditions to enable adaptation in a climate change context.

A significant percentage of PAs are not connected, and the loss of biodiversity within PAs continues to be high due to lack of connectivity with other PAs, limiting or impeding the interaction with other populations and natural habitats (Saura *et al.* 2017). Therefore, it is widely recognized that increasing connectivity in PA systems is the most urgent and challenging task for conservation strategies and programs. Although 15% of the land globally is under some form of protection corresponding to IUCN categories I to IV IUCN (IUCN 2004), only 7.5–9.3% of the land has well-connected PA systems (Castillo *et al.* 2020). To address the global challenge of managing well-connected PA systems, it is important to re-evaluate the different PA categories and the very concept of national PA systems (Saura *et al.* 2017) within the concept of ecological networks for conservation, understood as “a system of habitats (PAs, other effective

conservation measures, and intact natural areas) connected by ecological corridors, established, restored (if necessary) and maintained to conserve biological diversity in systems that have been fragmented” (IUCN 2020).

In addition to public lands and PAs, private properties also play an important role in landscape connectivity. In Brazil, 80% of each property in the Amazon forest and 35% in Cerrado savannah areas are protected under the 2012 Forest Code, unless the municipality already has over 50% of its area occupied by PAs or ITs (BRAZIL 2012), despite the Code having been subject to changes that substantially weakened it.

### Contribution of ITs to connectivity

The discussion regarding area-based goals has been a central element in the framework for the formulation of the new global biodiversity goals, as many countries may be overestimating their areas under protection and management by misreporting the percentage of the territory under protection (Coad *et al.* 2019; Castillo *et al.* 2020). In this context, it is important to value not only areas in IUCN categories that allow the sustainable use of natural resources, but also those territories that provide effective conservation through their governance and management regimes, even though conservation may not be their primary objective (IUCN 2024).

The negotiations of the Conference of the Parties to the Convention on Biological Diversity (CBD 2020), and the global report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES 2019), constitute global frameworks that promote the importance of connectivity, as well as the role of indigenous peoples in the protection of biodiversity. The post-2020 CBD Framework (CBD 2020) highlighted key elements for full recognition of the contribution of ITs to the protection of biodiversity. Goals 1 and 2 of the Framework draft address area-based goals, reiterating the importance of (a) a system of PAs instead of PAs as isolated units, to promote a vision of ecosystem connectivity; (b) including cultural diversity as well as biological diversity; (c) including other effective area-based measures; and (d) strengthening the importance of effective management (CBD 2020). These elements reflect the relevance of considering both quantitative and qualitative aspects to determine how to constitute ecologically representative and well-connected PA systems.

### Connectivity in the Amazon

The widespread interest in raising the commitment of countries to the protection of biodiversity through area-based strategies (previously Aichi Target 11) to 30% in marine and terrestrial areas of the Earth by 2030 presents an opportunity to position the contribution made by ITs to the protection of biodiversity and to consolidate a vision of safeguarding macro-regional connectivity in the Amazon. The articulation between PAs and ITs constitutes a framework within

which sustainable-use landscapes, conservation corridors, community-based conservation areas, and other effective conservation measures can be established.

In the Amazon, connectivity can be achieved through the coordination of a diversity of management categories related to conservation and sustainable use, such as PAs, ITs, forest reserves and extractivist reserves, and complementary strategies such as connectivity corridors. In fact, if ITs are included, 50% of the basin is under some type of recognized or legal protection (RAISG 2020), placing the Amazon among the world’s biomes that have a high connectivity index (Saura *et al.* 2017). The sum of the efforts that each Amazonian country has made independently and the adoption and ratification of a series of binational and international agreements constitutes the basis for maintaining connectivity and guaranteeing the functions of the Amazon ecosystems, which are key to the regulation of global climate and protection of biodiversity. However, the continuous transformation of natural landscapes in key areas such as the Andean–Amazon foothills not only affects current connectivity indices, but also compromises the future of the system of PAs as a network (Castillo *et al.* 2020).

International frameworks (CBD 2020) have emphasized the importance of building comprehensive conservation plans for large ecoregions or sets of adjacent ecoregions, which are crucial to formulating global goals (Woodley *et al.* 2019). The continuous relevant work that has been carried out in the Amazon region by civil society organizations and governments resulted in the formulation, design, and implementation of a series of conservation projects and initiatives, policies, and models to ensure the integrity of the region. Because of the close relationship of the comparatively good state of forest in ITs with the ancient system of land management of the indigenous peoples, key actors in the region have pressed for integration of ITs in the context of ecological and socio-cultural connectivity in the Amazon, to maintain ecological flows and local habitat networks necessary for maintaining landscape permeability, biodiversity, the water cycle, climate balance, and the system’s resilience as a whole.

## CONCLUSIONS

The eight Amazonian countries considered by RAISG have traversed a long and fruitful path in recognizing the importance of protecting the biological diversity and associated ecological processes and services of their Amazon regions. After more than 60 years of conservation policies, 25% of the Amazon area is under some category of protection, with percentages by country ranging from 21% to 51%. Many of them are classified as megadiverse countries at a global level because of their Amazon territory. Even with some differences, societies and governments have progressed in the development of policies for the declaration, administration, management, planning, and financing of systems of protected natural areas.

In the recent historical context, the most prolific periods in the declaration of conservation units are linked to the influence of international political currents and the actions of actors and groups that advocate the need to protect biodiversity, its inherent processes and the services it generates for humanity. This context has exerted pressure on regional governments to enact laws and regulatory frameworks favorable to conservation and sustainable development. We must not forget that the Amazon region was simultaneously the last frontier in the process of occupation of national territories and that, in the conception of the dominant culture, it was considered an empty space to be occupied for the extraction of renewable and non-renewable resources and the expansion of activities linked to predatory developmentalism concepts and colonization.

Today, scientific evidence has converged with what many Peoples have been saying for a long time: that the Amazon is not only forests and exuberant biodiversity, but also an occupied territory, and has been for centuries, by a myriad of peoples who have not only lived there and sustained themselves from the area, but also have created diversity and new landscapes. It also is in this context that the legal framework for the recognition of the rights of Indigenous Peoples - driven by the protagonism of Peoples and communities and their political articulations, are evolving, including the right to their territories. This process has been difficult and rugged, but there has also been progress, although 27% of the Amazon territory formally recognized for indigenous peoples is far from the extent of ancestral occupation that they claim. Besides the local, organized struggle of these peoples that has made the achievements in terms of rights of possession of their communal lands possible, there are advances in international legal frameworks regarding indigenous rights, which facilitate formal spaces for demands and pressure in the face of injustices committed or to gain participation in decisions that directly affect their rights. There are numerous injustices, as the recognition of indigenous rights to land is not complete, nor includes ownership of subsoil resources, which has been one of the major causes of conflicts. Furthermore, the use of resources by others has generally left behind pollution, transculturation, and very little of the wealth generated for the nation, even in the form of health, sanitation, education, and the development of capacities to function in an ever-changing reality. Despite all this, the recent improvements in data record and analytical integration clearly shows that ITs have worked as well as PAs to stop the advance of deforestation in the Amazon. In the face of the imminent threats of climate change, the protection provided by indigenous peoples to the forests in their territories is an invaluable service to humanity and not currently recognized the way it should be.

In a world that is increasingly connected in every way, where, in addition to the production of commodities and raw materials, growing illegal activities also play a disruptive role in

the Amazon, it is not enough to recognize ITs or the extension of declared PAs. In the face of risky and precipitous changes, new, transparent, participatory, proactive, and creative forms of management and law enforcement based on knowledge, are necessary. This will lead to the safeguarding of key services at national and global scales, such as water and food security and climate resilience, while ensuring the protection of biodiversity and enhancing benefits for indigenous communities.

## RECOMMENDATIONS

Protected Areas (PAs) and Indigenous Territories (ITs) in the Amazon face numerous challenges and threats, including rising deforestation driven by agricultural expansion, mining (both legal and illegal), and infrastructure development. Climate change is exacerbating these issues, with more frequent and severe droughts leading to forest degradation and diminished resilience. In addition, poorly designed policies, legal setbacks, and organized crime further hinder conservation efforts in the region. The Amazon's complex web of socioecological, cultural, and evolutionary connections requires strong ecological connectivity to maintain functional ecosystems and global climate stability. As landscapes fragment, strengthening conservation pillars like PAs and ITs and promoting a unified governance and management approach are critical to ensuring long-term preservation. Despite its extensive protected areas, the Amazon lacks an integrated conservation strategy that aligns ecological networks, biodiversity objectives, and ecosystem services with community co-management, researchers, private stakeholders, and local governments. Achieving this vision requires increased funding, respect for grassroots initiatives, and more concrete actions to protect Indigenous and local communities' territories. This includes full recognition of their territories, strengthening territorial governance, and adopting a just conservation approach. Essential strategies to protect forests and mitigate external threats, including health crises like COVID-19, must prioritize more balanced, direct bottom-up funding and governance, as well as the adaptation of public policies to better support Indigenous Peoples and community organizations.

For the sake of the updated data in this same context, we recommend the SPA Policy Brief Protected Areas and Indigenous Territories: Pillars for Achieving Conservation Goals in the Amazon (Josse *et al.* 2024).

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## REFERENCES

- ACIMA. 2018. Asociación de Capitanes Indígenas del Mirití Amazonas, Sistema de Ordenamiento Ambiental. Amazonas, Colombia (unpublished report).
- Allegretti, M. 2008. A construção social de políticas públicas. Chico Mendes e o movimento dos seringueiros. *Desenvolvimento e Meio Ambiente* 18: 39–59.
- Almeida, M.W.B. de. 2004. Direitos à floresta e ambientalismo: seringueiros e suas lutas. *Revista Brasileira de Ciências Sociais* 19: 33–52.
- Andrade, M.B.; Ferrante, L.; Fearnside, P.M. 2021. Brazil's Highway BR-319 demonstrates a crucial lack of environmental governance in Amazonia. *Environmental Conservation* 48: 161–164.
- Araújo, S.M.V.G. de. 2020. Environmental policy in the Bolsonaro government: The response of environmentalists in the legislative arena. *Brazilian Political Science Review* 14: e0005.
- Araújo, E.; Martins, H.; Barreto, P.; Vedoveto, M.; Souza Jr., C.; Veríssimo, A. 2012. *Redução de Áreas Protegidas Para a Produção de Energia*. Imazon-Instituto do Homem e Meio Ambiente da Amazônia, Belém, 14p.
- Baccini, A.; Walker, W.; Carvalho, L.; Farina, M.; Sulla-Menashe, D.; Houghton, R.A. 2017. Tropical forests are a net carbon source based on aboveground measurements of gain and loss. *Science* 358: 230–234.
- Baragwanath, K.; Bayi, E. 2020. Collective property rights reduce deforestation in the Brazilian Amazon. *Proceedings of the National Academy of Sciences* 117: 20495–20502.
- Bass, M.S.; Finer, M.; Jenkins, C.N.; Kreft, H.; Cisneros-Heredia, D.F.; McCracken, S.F.; et al. 2010. Global conservation significance of Ecuador's Yasuní National Park. *PLoS One* 5: e8767.
- Beier, P.; Noss, R.F. 1998. Do habitat corridors provide connectivity? *Conservation Biology* 12: 1241–1252.
- Bernard, E.; Penna, L.A.O.; Araújo, E. 2014. Downgrading, downsizing, degazettement, and reclassification of PAs in Brazil. *Conservation Biology* 28: 939–950.
- Blackman, A.; Corral, L.; Lima, E.S.; Asner, G.P. 2017. Titling Indigenous communities protects forests in the Peruvian Amazon. *Proceedings of the National Academy of Sciences* 114: 4123–4128.
- Blackman, A.; Veit, P. 2018. Titled Amazon indigenous communities cut forest carbon emissions. *Ecological Economics* 153: 56–67.
- BRAZIL. 2012. Senado Federal, Lei nº 12651/2012 (código florestal). ([https://www2.senado.leg.br/bdsf/bitstream/handle/id/633822/Codigo\\_florestal.pdf](https://www2.senado.leg.br/bdsf/bitstream/handle/id/633822/Codigo_florestal.pdf)).
- BRAZIL. 2019. Presidência da República, Decreto nº 9759, de 11 Abr 2019 (extingue e estabelece diretrizes para colegiados). (<https://legislacao.presidencia.gov.br/atos/?tipo=DEC&numero=9759&tano=2019&tato=279oXW65keZpWT12c>).
- BRAZIL. 2020. Ministério Público Federal, Ação civil de improbidade administrativa, 8ª Vara de Justiça Federal proc. nº 1037665-52.2020.4.01.3400. ([https://litigancia.biobd.inf.puc-rio.br/visualizar\\_documento/1121/](https://litigancia.biobd.inf.puc-rio.br/visualizar_documento/1121/)).
- Castillo, L.S.; Correa Ayram, C.A.; Matallana Tobón, C.L.; Corzo, G.; Areiza, A.; González-M.R.; et al. 2020. Connectivity of PAs: Effect of human pressure and subnational contributions in the ecoregions of tropical Andean countries. *Land* 9: 239. doi.org/10.3390/land9080239
- CBD. 2020. *Zero Draft of the Post-2020 Biodiversity Framework*, Conference of the Parties to the Convention on Biological Diversity, 2020 UN Biodiversity Conference. (<https://www.cbd.int/article/2020-01-10-19-02-38>).
- Coad, L.; Watson, J.E.; Geldmann, J.; Burgess, N.D.; Leverington, F.; Hockings, M.; Knights, K.; Di Marco, M. 2019. Widespread shortfalls in PA resourcing undermine efforts to conserve biodiversity. *Frontiers in Ecology and the Environment* 17: 259–264.
- COLOMBIA. 1994. Presidencia de la República de Colombia, Ley nº 160 de 1994 (promueve el acceso progresivo a la propiedad de la tierra de los trabajadores agrarios y a otros servicios públicos rurales). (<https://www.funcionpublica.gov.co/evalgestornormativo/norma.php?i=66789>).
- COLOMBIA. 1995. Presidencia de la República de Colombia, Decreto nº 2164 de 1995 (establece lineamientos y procedimientos para regular el uso de tierras indígenas en Colombia). (<https://www.anla.gov.co/07rediseureka2024/normativa/decretos/decreto-reglamentario-2164-de-1995-resguardos-indigenas-dotacion-y-titulacion-de-tierras-a-las-comunidades-indigenas-para-la-constitucion-reestructuracion-ampliacion-y-saneamiento-de-los-resguardos-indigenas-en-el-territorio-nacional>).
- Comissão Pastoral da Terra. 2020. Conflitos no Campo Brasil 2019, technical report, 252p. (<https://isa.to/2F7OwIW>).
- Dietz T.; Ostrom, E.; Stern, P.C. 2003. The struggle to govern the commons. *Science* 302: 1907–1912. Online supplement. (<https://www.science.org/action/downloadSupplement?doi=10.1126%2Fscience.1091015&file=dietz.som.rev.pdf>).
- Dowie, M. 2009. *Conservation Refugees: The Hundred-Year Conflict Between Global Conservation and Native Peoples*. MIT press, Cambridge, 269p.
- Dudley N. 2013. *Guidelines for Applying PA Management Categories*. IUCN Best Practice PA Guidelines Series, 119p. (<https://portals.iucn.org/library/node/30018>).
- ECUADOR. 1979. Acuerdo Ministerial nº 322 (establece el Parque Nacional de Yasuní). (<https://www.ecolex.org/es/details/legislation/acuerdo-no-322-establece-el-parque-nacional-yasuni-pny-lex-faoc179753/>).
- ECUADOR. 2007. Presidencia del Ecuador, Decreto nº 2187 (delimita la Zona Intangible Tagaeri Taromenane - ZITT). (<https://faolex.fao.org/docs/pdf/ecu179761.pdf>).
- Escobar, H. 2018. Scientists, environmentalists brace for Brazil's right turn. *Science* 362: 273–274.
- FAO. n.d. Integration of Amazon Protected Area (IAPA) Project <https://www.fao.org/forestry-fao/wildlife/96162/en/>
- Ferrante, L.; Fearnside, P.M. 2019. Brazil's new president and 'ruralists' threaten Amazonia's environment, traditional peoples and the global climate. *Environmental Conservation* 46: 261–263.
- Ferreira, J.; Aragão, L.; Barlow, J.; Barreto, P.; Berenguer, E.; Bustamante, M.; et al. 2014. Brazil's environmental leadership at risk. *Science* 346: 706–707.

- Fuller, R.A.; McDonald-Madden, E.; Wilson, K.A.; Carwardine, J.; Grantham, H.S.; Watson, J.E.M.; Klein, C.J.; Green, D.C.; Possingham, H.P. 2010. Replacing underperforming PAs achieves better conservation outcomes. *Nature* 466: 365–367.
- Fundación Gaia Amazonas. 2020a ¿Qué es la conectividad ecosistémica y cultural Andes, Amazonas, Atlántico? <https://gaiaamazonas.org/noticias-y-comunicados/que-es-la-conectividad-ecosistémica-y-cultural-andes-amazonas-atlantico/>
- FUNAI. 1987. Fundação Nacional do Índio, Portaria # 1900/1987 (determines criteria for contact with isolated indigenous groups). (<https://acervo.socioambiental.org/acervo/documentos/portaria-do-presidente-pp-n-190087-de-06071987-estabele-diretrizes-para>).
- Geldmann, J.; Coad, L.; Barnes, M.D.; Craigie, I.D.; Woodley, S.; Balmford, A.; et al. 2018. A global analysis of management capacity and ecological outcomes in terrestrial PAs. *Conservation Letters* 11: e12434.
- Global Witness. 2019. Defenders of the earth: Global killings of land and environmental defenders in 2016, technical report, Global Witness, London, 60p. (file:///C:/Users/claud/Downloads/Defenders\_of\_the\_earth\_report.pdf.pdf).
- Hockings, M.; Leverington, F.; Cook, C. 2015. PA management effectiveness. In: Worboys, G.; Lockwood, M.; Kothari, A.; Feary, S.; Pulsford, I. (Eds.). *PA Governance and Management*. ANU Press, Canberra, p.889-929.
- Hockings, M.; Stolton, S.; Leverington, F.; Courrau, J.; Dudley, N. 2006. Evaluating effectiveness: a framework for assessing management effectiveness of PAs, 2nd ed. IUCN Best Practice PA Guideline Series, Monograph # 14. IUCN, Gland, 105p.
- IACHR. 2020. Inter-American Commission on Human Rights, United Nations Human Rights Council, Resolution 35/2020, Precautionary measure No. 563-20 (members of the Yanomami and Ye'kwana Indigenous Peoples in Brazil). ([https://www.oas.org/en/iachr/decisions/pdf/2020/res\\_35-20\\_mc\\_563-20\\_br\\_en.pdf](https://www.oas.org/en/iachr/decisions/pdf/2020/res_35-20_mc_563-20_br_en.pdf)).
- Iepé. 2017. Instituto de Pesquisa e Formação Indígena – Mosaico de áreas protegidas do oeste do Amapá e norte do Pará. (<https://institutoiepe.org.br/areas-de-atuacao/mosaico-da-amazonia-oriental/>).
- INPE. 2024. Instituto Nacional de Pesquisas Espaciais, Prodes - Monitoramento do Desmatamento da Floresta Amazônica Brasileira por Satélite. (<http://www.obt.inpe.br/OBT/assuntos/programas/amazonia/prodes>).
- IPBES. 2019. Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, UN Environment Programme. IPBES secretariat, Bonn, 1148p. (<https://www.ipbes.net/global-assessment>).
- IUCN. 2004. PA Categories 2004. International Union for the Conservation of Nature, 92p. ([https://iucn.org/sites/default/files/import/downloads/14\\_3lowres.pdf](https://iucn.org/sites/default/files/import/downloads/14_3lowres.pdf)).
- IUCN. 2020. *Un Estándar de Éxito para Áreas Protegidas y Conservadas en la Amazonía*. International Union for the Conservation of Nature. (<https://www.iucn.org/es/news/america-del-sur/202005/un-estandar-de-exito-para-areas-protegidas-y-conservadas-en-la-amazonia>). Accessed on 14 Apr 2021.
- IUCN. 2024. Green List of Protected and Conserved Areas. International Union for the Conservation of Nature. (<https://iucn.org/resources/conservation-tool/iucn-green-list-protected-and-conserved-areas>).
- Josse, C.; Tupinambá, R.; Viscarra, F.E.; Armenteras, D.; Barreto Filho, H.T.; Guzmán León, A.; et al. 2024. Protected Areas and Indigenous Territories: Pillars for Achieving Conservation Goals in the Amazon. Policy Brief. Science Panel for the Amazon, United Nations Sustainable Development Solutions Network, New York. (<https://www.theamazonwewant.org/spa-reports/>).
- Jusys, T. 2018. Changing patterns in deforestation avoidance by different protection types in the Brazilian Amazon. *PLoS One* 13: e0195900.
- Kareiva, P. 2010. Trade-in to trade-up. *Nature* 466: 322–323.
- Leal Buitrago, F.L. 2002. La Seguridad Nacional a la Deriva: Del Frente Nacional a la Posguerra Fría. Alfaomega Editorial, Bogotá, 247p.
- Lima, D.D.M.; Peralta, N. 2017. Developing sustainability in the Brazilian Amazon: twenty years of history in the Mamirauá and Amaná reserves. *Journal of Latin American Studies* 49: 799–827.
- López-Acevedo, V.; Aragón-Osejo, J.; Ulloa, J. 2015. *Cartografía Histórica de las Áreas Naturales Protegidas y los Territorios Indígenas de la Amazonía Ecuatoriana*. EcoCiencia, Quito, 37p. (<https://biblio.flacoandes.edu.ec/libros/144831-opac>).
- MAPBIOMAS. 2020. Mapbiomas Amazonia. (<https://amazonia.mapbiomas.org/en>). Accessed on 28 Apr 2021.
- Maretti, C.C.; Riveros, S.J.C.; Hofstede, R.; Oliveira, D.; Charity, S.; Granizo, T.; Alvarez, C.; Valdujo, P.; Thompson, C. 2014. *State of the Amazon: Ecological Representation in PAs and ITs*. WWF Living Amazon Global Initiative (technical report), Brasília/Quito, 82p. ([https://wwfint.awsassets.panda.org/downloads/final\\_report\\_11\\_11\\_14.pdf](https://wwfint.awsassets.panda.org/downloads/final_report_11_11_14.pdf)).
- Mascia, M.B.; Pailler, S.; Krithivasan, R.; Roshchanka, V.; Burns, D.; McCard, J.M.; Murray, D.R.; Peng, N. 2014. PA downgrading, downsizing, and degazettement (PADDD) in Africa, Asia, and Latin America and the Caribbean, 1900-2010. *Biological Conservation* 169: 355–361.
- Maxwell SL, Cazalis V, Dudley N, et al. 2020. Area-based conservation in the twenty-first century. *Nature* 586: 217–27.
- MMA 2022. Arpa. Ministério do Meio Ambiente e Mudança do Clima. (<https://www.gov.br/mma/pt-br/noticias/programa-areas-protegidas-da-amazonia-completa-20-anos>).
- Nature and Culture Ecuador. 2020. (<https://www.natureandculture.org/ecuador/#:~:text=What%20do%20we%20do%3F,sustainable%20livelihoods%20for%20local%20communities>).
- Navarrete, S. 2018. *Protocolo y Guía Metodológica para Medición de Efectividad del Manejo del Bioma Amazónico*. Redparques/Visión Amazonia, Bogotá, 51p. ([https://issuu.com/proyectoipa/docs/59\\_protocolo\\_y\\_gu\\_a\\_metodol\\_gica\\_p](https://issuu.com/proyectoipa/docs/59_protocolo_y_gu_a_metodol_gica_p)).
- Nepstad, D.; Schwartzman, S.; Bamberger, B.; Santilli, M.; Ray, D.; Schlesinger, P.; et al. 2006. Inhibition of Amazon deforestation and fire by parks and Indigenous lands. *Conservation Biology* 20: 65–73.

- OC. 2021. Observatório do Clima. Orçamento do Meio Ambiente é o menor em 21 anos. (<https://www.oc.eco.br/orcamento-meio-ambiente-e-o-menor-em-21-anos/>).
- Odello, M. 2015. The Andean Community of Nations. In: Odello, M.; Seatzu, F. (Eds.). *Latin American and Caribbean International Institutional Law*. T.M.C. Asser Press, The Hague, p.117-157.
- Oliveira, A.U. de. (Ed.). 2021. *A Grilagem de Terras na Formação Territorial Brasileira*. FFLCH/USP, São Paulo, 296p.
- Oliveira, P.J.C.; Asner, G.P.; Knapp, D.E.; Almeyda, A.; Galván-Gildemeister, R.; Keene, S.; Raybin, R.F.; Smith, R.C. 2007. Land-use allocation protects the Peruvian Amazon. *Science* 317: 1233–1236.
- Opas, M.; Torres, L.F.; Milanez, F.; Shepard Jr., G. 2018. Resistance beyond the frontier : Concepts and policies for the protection of isolated indigenous peoples of the Amazon. *Tipiti* 16: 1–4. doi.org/10.70845/2572-3626.1304
- Pack, S.M.; Ferreira, M.N.; Krithivasan, R.; Murrow, J.; Bernard, E.; Mascia, M.B. 2016. PA downgrading, downsizing, and degazettement (PADDD) in the Amazon. *Biological Conservation* 197: 32–39.
- CEPF 2004. Critical Ecosystem Partnership Fund. Portfolio review Vilcabamba-amboró conservation corridor tropical andes Biodiversity hotspot. (<https://www.cepf.net/sites/default/files/tropical-andes-portfolio-review-2004.pdf>).
- Paulino, E.T. 2014. The agricultural, environmental and socio-political repercussions of Brazil's land governance system. *Land Use Policy* 36: 134–144.
- PERU. 1975. Presidencia de la República del Perú, Ley n° 15442 (Ley Forestal y de Fauna Silvestre). (<https://sinia.minam.gob.pe/normas/ley-forestal-fauna-silvestre-0>).
- PERU. 1978. Presidencia de la República del Perú, Decreto Ley n° 22175 (Ley de comunidades nativas y del desarrollo agrario de la selva y de ceja de selva). (<https://www.acnur.org/fileadmin/Documentos/BDL/2008/6751.pdf>).
- PERU. 2006. Congreso de la República del Perú, Ley n° 28736 (protección de pueblos indígenas u originarios em situación de aislamiento o contacto inicial). (<https://www.gob.pe/institucion/congreso-de-la-republica/normas-legales/2943964-28736>).
- PERU. 2007. Presidencia de la República del Perú, Decreto Supremo n° 023-2007-AG (categorización parcial de la Zona Reservada Santiago–Comaina). (<https://legislacionnp.org.pe/establecen-categorizacion-parcial-de-la-zona-reservada-santiago-comaina-como-parque-nacional-ichigkat-muja-cordillera-del-condor-y-reserva-comunal-tuntan/>).
- PERU. 2016. Ministerio de Cultura del Perú, Decreto Supremo n° 008-2016-MC (modifica el reglamento de la Ley n° 28736, aprobado por Decreto Supremo n° 008-2007-MIMDES). (<https://www.gob.pe/institucion/cultura/normas-legales/206201-008-2016-mc>).
- Pitman, N.; Vriesendorp, C.F.; Alvira Reyes, D.; Moskovits, D.K.; Kotlinski, N.; Smith, R.C.; et al. 2021. Applied science facilitates the large-scale expansion of PAs in an Amazonian hotspot. *Science Advances* 7: abe2998.
- Prüssmann, J.; Suárez, C.; Chaves, M. 2017. *Atlas of Conservation Opportunities in the Amazon Biome under Climate Change Considerations*. Amazon Vision Initiative/Redparques/WWF/FAO/IUCN/UNEP, Cali, 80p. ([https://drive.google.com/file/d/1\\_pbyvaaKRUtZiyGfwfw7U9XaFYbstWat/view](https://drive.google.com/file/d/1_pbyvaaKRUtZiyGfwfw7U9XaFYbstWat/view)).
- RAISG. 2015. *Deforestación en la Amazonía, (1970-2013)*. Red Amazónica de Información Socioambiental Georreferenciada – RAISG, São Paulo, 48p. (<https://www.raisg.org/es/publicacion/deforestacion-en-la-amazonia-1970-2013-atlas/>).
- RAISG. 2016. *Cartografía Histórica de Áreas Naturales Protegidas y Territorios Indígenas en la Amazonía*. Red Amazónica de Información Socioambiental Georreferenciada – RAISG, São Paulo, 161p. (<https://gaiaamazonas.org/recursos/documento/cartografia-historica-de-areas-naturales-protegidas-y-territorios-indigenas-en-la-amazonia/>).
- RAISG. 2020. Amazonia Under Pressure. Digital Atlas 2020. Red Amazónica de Información Socioambiental Georreferenciada – RAISG. (<https://atlas2020.amazoniasocioambiental.org/en>).
- RAISG. 2021. Red Amazónica de Información Socioambiental Georreferenciada - RAISG. Cartographic data. (<https://www.raisg.org/pt-br/>).
- Rajão, R.; Soares-Filho, B.; Nunes, F.; Börner, J.; Machado, L.; Assis, D.; et al. 2020. The rotten apples of Brazil's agribusiness. *Science* 369: 246–248.
- REDPARQUES. 2016. Implementación del Programa de Trabajo Sobre Áreas Protegidas 2011-2015: Región Bioma Amazónico. Informe regional. Redparques/Visión Amazónica, Bogotá, 115p.
- REDPARQUES. 2019. Evaluación de efectividad del manejo a escala de bioma amazónico: resumen del proceso de construcción, avances y recomendaciones. Redparques/Visión Amazónica/ Unión Europea/WWF/IUCN/ONU/FAO, 24p. ([https://redparques.com/modules/ecom/documentos/publicacion/archivo\\_fc490ca45c00b1249bbe3554a4fdf6fb.pdf](https://redparques.com/modules/ecom/documentos/publicacion/archivo_fc490ca45c00b1249bbe3554a4fdf6fb.pdf)).
- Ricardo, F.; Gongora, M. 2019. Enclosures and resistance, isolated Indigenous peoples in Brazilian Amazonia. Instituto Socioambiental, São Paulo, 256p.
- Ricketts, T.H.; Soares-Filho, B.; Fonseca, G.A.B. da; Nepstad, D.; Pfaff, A.; Petsonk, A.; et al. 2010. Indigenous lands, PAs, and slowing climate change. *PLoS Biology* 8: e1000331.
- Saura, S.; Bastin, L.; Battistella, L.; Mandrici, A.; Dubois, G. 2017. PAs in the world's ecoregions: How well connected are they? *Ecological Indicators* 76: 144–158.
- Schwartzman, S.; Boas, A.V.; Ono, K.Y.; Fonseca, M.G.; Doblaz, J.; Zimmerman, B.; et al. 2013. The natural and social history of the Indigenous lands and PAs corridor of the Xingu River basin. *Philosophical Transactions of the Royal Society B Biological Sciences* 368: 20120164.
- Soares-Filho, B.; Moutinho, P.; Nepstad, D.; Anderson, A.; Rodrigues, H.; Garcia, R.; et al. 2010. Role of Brazilian Amazon PAs in climate change mitigation. *Proceedings of the National Academy of Sciences* 107: 10821–10826.
- Stevens, C.; Winterbottom, R.; Springer, J.; Reytar, K. 2014. *Securing Rights, Combating Climate Change*. Technical report, World Resources Institute, Washington D.C., 64p. (<https://files.wri.org/d8/s3fs-public/securingrights-full-report-english.pdf>).
- Taylor, P.D.; Fahrig, L.; Henein, K.; Merriam, G. 1993. Connectivity is a vital element of landscape structure. *Oikos* 68: 571–573.

- Tollefson, J. 2013. Forest ecology: Splinters of the Amazon. *Nature* 496: 286-289.
- Torres, M.; Doblas, J.; Alarcon, D. 2017. "Dono É Quem Desmata": *Conexões Entre Grilagem e Desmatamento no Sudoeste Paraense*. Instituto Agrônomo da Amazônia, Altamira, 280p.
- Torres, L.F.; Opas, M.; Shepard Jr., G.H. 2021. Políticas públicas e indígenas en aislamiento en Perú y Brasil: Entre la asimilación y la autonomía. *Revista de Antropología* 03/2012 (8): 61–83.
- Urzedo, D.; Chatterjee, P. 2021. The colonial reproduction of deforestation in the Brazilian Amazon: Violence against Indigenous peoples for land development. *Journal of Genocide Research* 23: 302–324.
- Vale, M.M.; Berenguer, E.; Argollo de Menezes, M.; Castro, E.B.V. de; Siqueira, L.P. de; Portela, R. de C.Q. 2021. The COVID-19 pandemic as an opportunity to weaken environmental protection in Brazil. *Biological Conservation* 255: 108994.
- Vaz, A. 2019. Povos indígenas em isolamento e contato inicial na Amazônia : as armadilhas do desenvolvimento. *Tipiti* 16: 125–145.
- Walker, W.S.; Gorelik, S.R.; Baccini, A.; Aragón-Osejo, J.L.; Josse, C.; Meyer, C.; et al. 2020. The role of forest conversion, degradation, and disturbance in the carbon dynamics of Amazon ITs and PAs. *Proceedings of the National Academy of Sciences* 117: 3015–3025.
- Woodley, S.; Locke, H.; Laffoley, D.; MacKinnon, K.; Sandwith, T.; Smart, J. 2019. A review of evidence for area-based conservation targets for the post-2020 global biodiversity framework. *Parks* 25: 31–46

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**DATA AVAILABILITY:** The study is based on the Amazon Network of Georeferenced Socio-Environmental Information (Raisg) (<https://www.raisg.org/en/>) geographical data, literature review and descriptive context from each country.



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## SUPPLEMENTARY MATERIAL

Futada *et al.* Past and present of conservation policies in the Amazon basin: status of conservation units, indigenous territories and local communities

### Appendix S1. Ecological and sociocultural connectivity corridor initiatives and protection coordination initiatives in the Amazon

In the Amazon region, various initiatives, policies and programs are being implemented that seek to guarantee ecosystem connectivity of landscapes at different scales (national, regional, cross-border) by way of different approaches and sectors of society, as well as the coordination of different protection categories and management for conservation and sustainable development (Figure 2). These initiatives seek to promote the conservation of the ecological and sociocultural connectivity in the Amazon by providing innovative solutions to conservation management, to respond to the challenges posed by ecosystem fragmentation and uncoordinated environmental management. Some of these initiatives are presented below.

#### Mosaico da Amazônia Oriental (Brazil)

This initiative aims for the implementation of participatory and integrated management for conservation and sustainable development units in the eastern Brazilian Amazon. It has its origin in a project presented to and approved by the National Environment Fund – FNMA (acronym in Portuguese) in 2006. The FNMA is part of the legal framework of the Brazilian National System of Conservation Units (SNUC, acronym in Portuguese), in which the integrated management of mosaics of protected areas is recognized. The initiative includes six conservation units and three indigenous lands, for a total of 12,397,347 ha. In the context of this project, various public institutions of the state of Amapá, civil society organizations, and representatives of the agro-extractivist and indigenous communities of western Amapá and northern Pará state have participated in the effort to develop a proposal to integrate the management of the conservation units and other protected areas. The management is implemented through a participatory and inclusive management council, that contributes to social, cultural, political, and ecological connectivity among the conservation units (Iepé 2017).

#### Sangay-Podocarpus connectivity corridor (Ecuador)

Since 2014, the Ecuadorean decentralized autonomous governments (GAD, acronym in Spanish) of Azuay, Loja, Zamora Chinchipe, and Morona Santiago have been consolidating a connectivity corridor in collaboration with non-governmental organizations and local populations, as a complementary conservation strategy to connect the Sangay National Park, and the Podocarpus National Park, a core area of the Podocarpus Biosphere Reserve. As a result of this work, the Sangay-Podocarpus Connectivity Corridor (CCSP in Spanish) was declared in May 2020. A ministerial agreement also provided the guidelines for the establishment, design, and management of connectivity corridors in the country. The

CCSP was the first connectivity corridor under the existing environmental regulations (Nature and Culture Ecuador 2020), covering an area of 567,067 ha located on the eastern slope of the Andes. The CCSP is an example of how connectivity corridors contribute to guarantee species migration, genetic flow between populations, biodiversity conservation and resilience in degraded ecosystems, enabling species adaptation to climate change. Additionally, the CCSP helps to maintain the ecological connectivity of the Amazon with the Andean region, which presents high degrees of fragmentation, and sets a precedent for the management and regulation for ecosystem connectivity in the countries of the Amazon region.

#### Putumayo Biological and Cultural Corridor Cross-Border Initiative

This is an initiative to bring together the various actors of the four countries that make up the Putumayo River Basin (Brazil, Colombia, Ecuador, and Peru) (<https://www.corredorputumayo.com/el-corredor>). It integrates the management of PAs and ITs, strengthens cultural connections, and ensures a coordinated response to threats to the watershed, which is home to one of the last great intact forests in the world, with more than 75% of the watershed within ITs, PAs or areas proposed for conservation. Currently, there is a proposal to create three conservation areas in Peru: Medio Putumayo-Algodon, Ere-Campuya-Algodon, and Bajo Putumayo. The corridor has an area of 12 million ha, of which 39% are made up of ITs and 19% of PAs. The initiative works on the creation of an advisory council with representatives of national and local governments, indigenous peoples, local communities, and civil society organizations of the four countries to ensure integrated management of the basin and protect its ecological integrity going forward.

#### Ecological and Socio-Cultural Connectivity Andes-Amazon-Atlantic

Civil society organizations, regional indigenous organizations, and governments have been promoting the connectivity of the Amazon with the bioregions of the Andes and the Atlantic coast, including strategies to strengthen the ecological and sociocultural connectivity (Beveridge *et al.* 2024). That includes ITs and reserves of sustainable development in the northern part of the Amazon River, which covers approximately 200 million ha in eight countries and is 67% legally protected. Based on the identification of strategic corridors for connectivity, the initiative seeks to motivate decision makers from the Amazonian countries and other actors to implement, through their legal frameworks and instruments for conservation management and development, the sustainable use of the forest, participatory programs for the recovery of fragmented ecosystems, integrated management among PAs and the strengthening of the governance of collective territories (Fundación Gaia Amazonas 2020b).