



National System of Conservation Units  
 Sustainable Use Conservation Units  
 DEFORESTATION  
 National Plan of Protected Areas  
 Monitoring  
 roads  
 federal and state conservation units  
 mining  
 MANAGEMENT PLANS  
 Full Protection Conservation Units  
 Illegal logging  
 ENVIRONMENTAL COMPENSATION

# Protected Areas in the Brazilian Amazon

## challenges and opportunities

INDIGENOUS LANDS



# PROTECTED AREAS IN THE BRAZILIAN AMAZON

## CHALLENGES & OPPORTUNITIES

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PROTECTED AREAS IN THE BRAZILIAN AMAZON: CHALLENGES & OPPORTUNITIES  
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## ACRONYMS

Abeta	Brazilian Association of Eco-tourism and Adventure Tourism Companies	ONG	Non-governmental Organization
ADIN	Direct Action of Unconstitutionality	OEMA	State Environmental Agency
APA	Environmental Protection Area	OSICIP	Organization of Civil Society of Public Interest
ARIE	Area of Relevant Ecological Interest	PAC	Program for Acceleration of Growth
ARPA	Protected Areas of the Amazon Program	PAOF	Annual Plan of Forestry Awarding
ATER	Technical Assistance and Rural Extension Projects	PARNA	National Park
CDRU	Contract of Concession for Real Right of Use	PES	State Park
CGDC	General Coordination of Community Development	PGF	Federal General Prosecutor
CNI	National Industry Confederation	PLANAFLORO	Agricultural and Ranching and Forestry Plan of Rondônia
CNPI	National Commission on Indigenist Policy	PNAP	National Plan of Protected Areas
CNJ	National Council of Justice	PNGATI	National Policy of Environmental Management in Indigenous Lands
CONABIO	National Commission on Biodiversity	PPG7	Pilot Program for Protection of the Brazilian Tropical Forests
CONAMA	National Council of the Environment	PPIGRE	Program for Promotion of Gender, Race, and Ethnicity
CRI	Real Estate Notary Office	PPTAL	Integrated Project for Protection of the Indigenous Populations and Lands of the Legal Amazon
ESEC	Ecological Station	PRODES	Deforestation Monitoring Program of the Brazilian Amazon
FAP	Fund for Protected Areas	PRONAF	National Program for Family Agriculture
FLONA	National Forest	RAPPAM	Rapid Assessment and Prioritization of Protected Area Management
FLORSU	Sustainable State Forest	RDS	Sustainable Development Reserve
FLOREX	Extractive Forest	REBIO	Biological Reserve
FLOTA	State Forest	RESEC	Ecological Reserve
FNDF	National Foundation for Forestry Development	RF	Wildlife Reserve
FNMA	National Foundation of the Environment	RPPN	Private Natural Heritage Reserve
FP	Full Protection	RESEX	Extractive Reserve
FUNAI	National Indian Foundation	RVS	Wildlife Refuge
FUNBIO	Brazilian Biodiversity Fund	SAD	Deforestation Alert System
GEF	Global Environment Facility	SEDR	Secretary of Extraction and Sustainable Rural Development
GT	Work Group	SFB	Brazilian Forestry Service
GTZ	German Technical Cooperation Agency	SICAFI	System of Registry, Collection, and Oversight
IBAMA	Brazilian Institute for the Environment and Renewable Natural Resources	SIMEX	Logging monitoring system
ICMBio	Chico Mendes Institute for Biodiversity Conservation	SISNAMA	National System of the Environmental
IMAZON	Amazon Institute of People and the Environment	SNUC	National System of Conservation Units
INCRA	National Institute for Colonization and Agrarian Reform	SPU	Secretary of Heritage of the Federal Government
INPE	National Institute for Space Research	STF	Federal Supreme Court
ISA	Socioenvironmental Institute	SU	Sustainable Use
MMA	Ministry of the Environment	ZEE	Socioeconomic and Ecological Zoning
MPOG	Ministry of Planning	WWF	World Wildlife Fund
MONAT	Natural Monument		
MPF	Federal Public Prosecutor		
NDFI	Normalized Index of Fractional Difference		



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# Summary

Protected Areas are effective instruments for safeguarding the integrity of ecosystems, biodiversity, and the associated environmental services, such as soil conservation and watershed protection, pollination, nutrient recycling, and climate regulation. Moreover, Protected Areas ensure the right of permanence and the culture of traditional populations and indigenous peoples previously existing there.

In December 2010, the Protected Areas in the Brazilian Amazon covered about 2,197,485 km<sup>2</sup> or 43.9% of the region, or 25.8% of Brazilian territory. Of this Conservation Units account for about 22.2% of Amazon territory while the approved, declared, and identified Indigenous Lands covered 21.7%.

Conservation Units can be classified according to their federation status (federal, state, or municipal) and with regards to the degree of permitted intervention (Full Protection or Sustainable Use). By 2010, the federal Conservation Units totaled 610,510 km<sup>2</sup>, while the state areas occupied 563,748 km<sup>2</sup>. With regards to the level of intervention the Sustainable Use Conservation Units – where economic activities under the management regime and resident communities are permitted – corresponded to 62.2% of the areas occupied by Conservation Units (federal and state), while those under Full Protection totaled 37.8%.

The creation of Conservation Units occurred most intensely from 2003 to 2006, when 487,118 km<sup>2</sup> of these areas were established. In the case of the Indigenous Lands, there were two periods with greater approval statistics: 1990 to 1994, with 85 new units covering 316,186 km<sup>2</sup>, and 1995/1998, also with 85 new units, which totaled 314,061 km<sup>2</sup>.

Despite notable advances in the creation of Protected Areas, there are still many challenges for guaranteeing their consolidation and effective socioenvironmental protection. In the case of the Conservation Units, half do not possess approved management plans and 45% do not have a management council. Moreover the number of public staff in these Protected Areas is only 1 person for every 1,872 km<sup>2</sup>.

Protected Areas are not immune to economic pressure. From 1998 to 2009 the deforestation in these areas reached 12,204 km<sup>2</sup>. In the Sustainable Use Conservation Units (excluding the APAs), the percentage of deforested territory came to 3.7% while in the Full Protection Conservation Units this proportion was lower (2.1%). In the Indigenous Lands deforestation affected 1.5% of their total areas. Moreover, a vast network of illegal roads is advancing into some Protected Areas, particularly in the Sustainable Use Conservation Units, where there are 17.7 km of roads for every 1,000 km<sup>2</sup> under protection. A large portion of these roads is associated with illegal logging .

For the Amazon Institute of People and the Environment (Imazon) and the Socioenvironmental Institute (ISA), the consolidation of the protected areas should occur by means of the following priority actions:

- Curbing irregular uses and occupations, as well as deforestation and forest degradation;
- Amplifying the sources of financing and assuring mechanisms for the effective transfer of financial resources (e.g. the National Fund for Environmental Compensation)<sup>1</sup>.
- Guaranteeing legal protection;
- Enhancing public management, allocating more qualified personnel to the field , elaborating the pertinent management instruments and undertaking their implementation in a participatory manner;
- Amplifying and strengthening management councils in the Conservation Units and guaranteeing the participation of the population in the Indigenous Lands;
- Assuming the challenge of consolidating land management plans for the protected areas, which also should include an environmental agenda for Indigenous Lands
- Concluding the process for recognizing Indigenous Lands.

This report summarizes the status of the Protected Areas in the Brazilian Amazon including indicators of size and data related to the creation of Conservation Units and Indigenous Lands, management status and threats to which they are submitted. In addition, our objective is also to highlight the importance of ensuring the integrity of the Protected Areas, in such a way as to preserve their ecosystems, biodiversity and the environmental services.

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<sup>1</sup> This fund receives the amounts resulting from application of Environmental Compensation mechanism, earmarked for investments in the creation and consolidation of Protected Areas.

# Introduction

The creation and maintenance of Protected Areas – both Conservation Units and Indigenous Lands– is one of the most effective strategies for the conservation of the natural resources in the Amazon. Originally, only the Conservation Units were considered. However, as of 2006, the National Plan of Protected Areas (PNAP) included in this concept the Indigenous Lands and the Quilombola territories - African-Brazilian Lands- (Decree No. 5.758/2006), since both also cover “natural areas defined geographically, regulated, administered, and/or managed with the objectives of conservation and sustainable use of biodiversity” (PNAP, 2006). In addition to being essential for the survival and maintenance of the traditional populations, these areas contribute to conservation of the ecosystems and their biodiversity.

The Conservation Units are areas instituted and managed by the federal, state, or municipal governments. According to the National System of Conservation Units (SNUC – Law No. 9.985/2000), they are defined as being “territorial spaces and their environmental resources including waters, with relevant natural characteristics, legally instituted by the Government, with objectives of conservation and defined boundaries, under a special administrative regime, to which are applied adequate guarantees of protection.” The Conservation Units can be classified in two groups: Full Protection and Sustainable Use. Each group can be further sub-classified into diverse categories, according to the degree of conservation and use.

The Full Protection Areas are those destined for preservation of biodiversity, with only scientific research and, in some cases, tourism and environmental education activities being permitted. In those areas harvesting of forest products (timber and non-timber) or minerals is not allowed, and traditional and non-traditional populations are not allowed to remain as well. According to SNUC the fully protected areas are designated for “maintenance of the ecosystems free from alterations caused by human interference, with only the indirect use of their natural attributes being admitted.” The categories in this group are: Ecological Station (ESEC), Biological Reserve (Rebio), National/ State Park (Parna/PES), Natural Monument (MONAT), and Wildlife Refuge (RVS).

The Sustainable Use Conservation Units are those destined for both biodiversity conservation and sustainable extraction of natural resources. In these areas tourism, environmental education, and the extraction of timber and non-timber forest products are permitted in specific parts of the areas and under a sustainable management standard. The populations classified as traditional may remain within the areas, as long as they undertake activities under a management regime, “in such a way to guarantee the perennially renewable environmental resources and ecological processes, maintaining biodiversity and the other ecological attributes, in a socially fair and economically viable fashion” (SNUC, 2002). The categories of this group are: Area of Environmental Protect (APA), Area

of Relevant Ecological Interest (ARIE), National/State Forest (Flona/Flota), Extractive Reserve (Resex), Wildlife Reserve (RF), Sustainable Development Reserve (RDS), Private Natural Heritage Reserve (RPPN).

Indigenous Lands are federal territories where the Indians have the right to permanent possession and the exclusive use of the soils, rivers, and lakes in which they exist, in accordance with the Federal Constitution of 1988. Through the National Foundation of the Indian (FUNAI), the government is obligated to promote their recognition. The Indigenous Lands considered in the scope of this publication include those in the identification process, with restriction on use by non-Indians, those identified, declared, reserved, and approved up to December 2010. In the Brazilian Amazon there are 414 Indigenous Lands, covering 1,086,950 km<sup>2</sup>, with the objective of protecting the immense sociocultural diversity of the region, such as the richness of knowledge and traditional uses that the indigenous peoples make of the ecosystems and biodiversity. Currently 173 different indigenous peoples inhabit the region, and there are indications of approximately 46 other out of reach groups. The Brazilian Amazon indigenous population totals close to 450 thousand Indians, who speak more than 150 different languages (Rodríguez, 2006; Ricardo & Ricardo, 2006).

The Quilombola Territories will not be covered in this document. INCRA registers 104 recognized Quilombola Territories in 2010. They account for about 9,700 km<sup>2</sup> (0.2% of the Amazon) and cover 183 communities with a population estimated at 11,500 families (INCRA, 2010). There exist, however, many Quilombola communities that have not yet been recognized particularly in the eastern portion of the Brazilian Amazon.

Despite their also having “an identity, a shared history, a memory, and a territory” (Esterci, 2005), other traditional populations have not been highlighted here, unless as communities inserted in Sustainable Use Conservation Units. This is because the objective of this publication is to evaluate the situation of the Protected Areas in the Brazilian Amazon, specifically with regards to the advances in their creation and maintenance, the management situation and the pressure of predatory activities within them or in the surrounding areas (Chart 1).

The sociocultural diversity of the Amazon is part of its rich heritage, as is its biological diversity. The traditional knowledge accumulated by the local populations – riparians, rubber-tappers, fishers, Brazil nut harvesters, and other extractors – can serve as a base for the establishment of effective rules for management and protection of natural resources.

The Amazon may be seen as a highly complex biome that contains ample ethnic diversity associated with superlative biodiversity, with an estimate of millions of animal and plant species. There are records of more than 40 thousand vascular plants (30 thousand endemic or exclusive to the biome); 397 mammal species (230 endemic) (Paglia et al, in press); 1,300 bird species (263 endemic); 378 reptile species (216 endemic); 427 amphibian species (364 endemic), and 9 thousand freshwater fish species (Rylands et al., 2002), not counting the 1.8 thousand species of butterflies, more than 3 thousand ant species, approximately 2.5 thousand bee species, and close to 500 species of spiders (Overall, 2001).

**Chart 1. Evaluation items of Protected Areas in the Brazilian Amazon**

<b>Creation of Conservation Units and recognition of Indigenous Lands</b>	<b>Occupied area:</b> Proportion of area occupied by Indigenous Lands and Conservation Units in relation to the States and the Brazilian Amazon.
	<b>Creation:</b> Area of Conservation Units created and Indigenous Lands recognized by December 2010.
	<b>Creation of Conservation Units in critical areas*:</b> percentage of the total area of the Conservation Units created in territories with human pressure based on the study by Barreto <i>et al.</i> 2005.
<b>Management of Conservation Units</b>	<b>Management Plans*:</b> Proportion of Conservation Units with management plans concluded, under preparation and revision by December 2010.
	<b>Number of personnel*:</b> Number of workers in the Conservation Units by July 2010.
	<b>Management Council Formed*:</b> Proportion of Conservation Units with a management council formed in December 2010.
<b>Pressure on Conservation Units and Indigenous Lands</b>	<b>Deforestation:</b> Deforested area (total and %) in the Conservation Units and Indigenous Lands up to July 2009.
	<b>Roads:</b> Density of official and unofficial roads in Conservation Units and Indigenous Lands as of July 2007.
	<b>Logging:</b> Area of illegal logging in Protected Areas in the States of Pará and Mato Grosso from August 2007 to July 2009.
	<b>Mining:</b> Conservation Units under mining processes as of September 2010.
	<b>Formal threats against the Protected Areas:</b> responsibility for environmental crimes, shutdown of Conservation Units, alterations and proposals for altering Protected Areas.

\* Items adopted only for the Conservation Units, which have their management systems well-established by specific legislation.

The Brazilian Amazon presents the greatest diversity of mammal species among the Brazilian biomes. Of the 397 species of Amazon mammals, the majority (58%) do not occur in any other Brazilian biome. It is the highest proportion of endemism among the terrestrial biomes of Brazil (Paglia *et al.*, in press). The Amazon is also the Brazilian biome with the highest diversity of lizard species (109) and serpent species (138) (Rodrigues, 2005).

The diversity of ecosystems in the Brazilian Amazon territory is related to the high index of endemism and the high number of species. It is necessary to consider the fragility of this intricate network of relations of the species among each other and with the environment, as seen in multiple arrangements of vegetation and habitats, whose balance depends on the climate, water quality, the soil, the recycling of nutrients, and other environmental services.

The occupation of the Brazilian Amazon has occurred through deforestation, depletion of natural resources and social conflicts. Within the past three decades 18% of the Amazon forests have been lost. Furthermore, significant extents of forested areas have been degraded through illegal logging and forest fires. Not differently from any ecosystem, the balance of the Amazon forests has a threshold. Once this threshold is surpassed, this balance could no longer be reassumed. Experts argue that if deforestation reaches 40% of the regional forested area, Amazon forests will be likely pushed into an irreversible process of the transformation into savannas and scrublands. These

undesirable transformations would bring catastrophic implications to climate regulations (global warming), hydrological cycles and biodiversity maintenance.

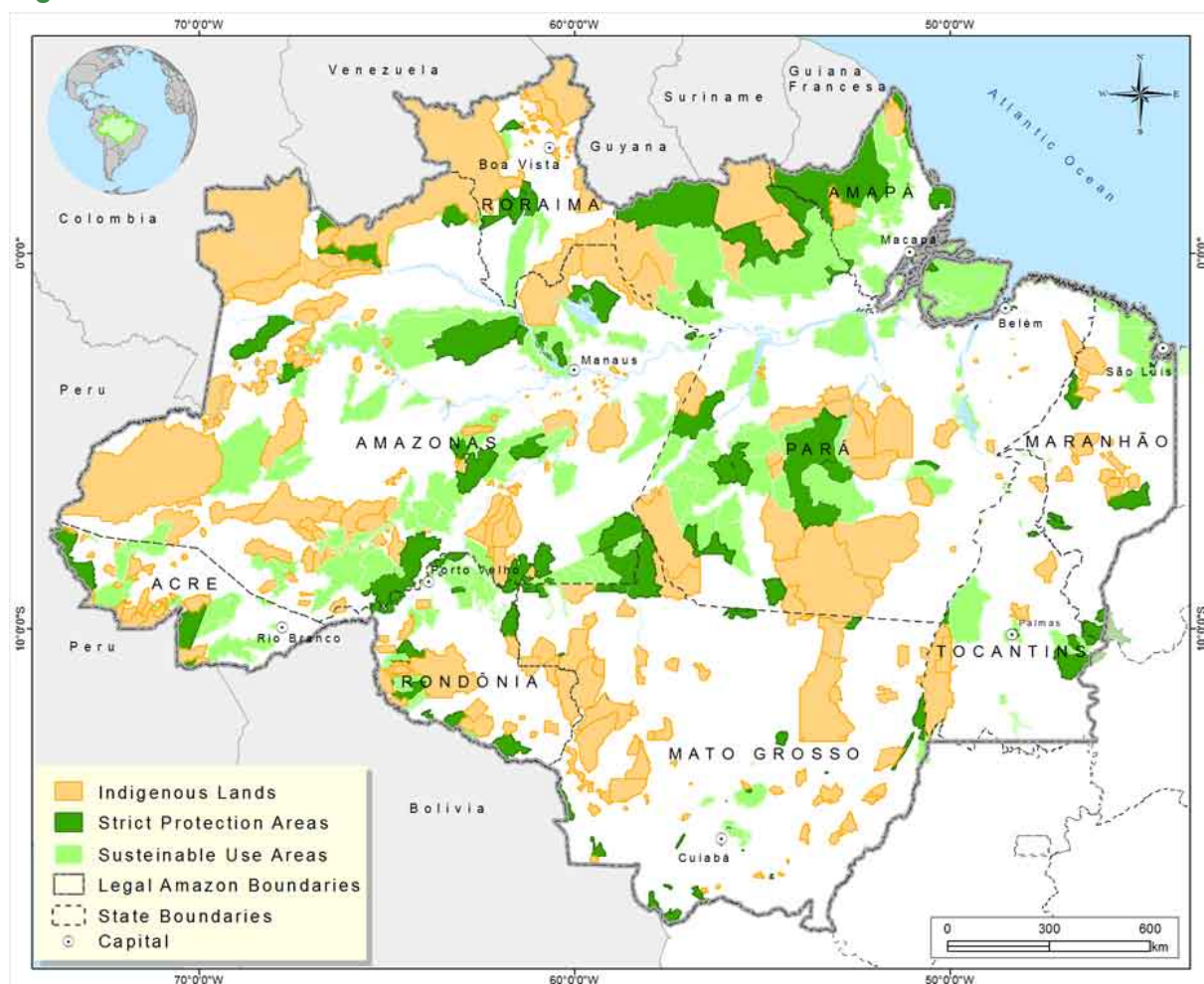
Since the beginning of the XXI century, there has been an overall agreed upon discussion towards the need for a development model that combines economic growth, human well-being and natural resources conservation. Although the implementation of such model is not without its difficulties, two main aspects can be considered as interesting supporters towards this change. First aspect is the strategic importance of the natural resources of the Amazon region for both the national and global levels. Climate regulation and biological diversity are examples of these provided resources and services. Secondly, the region provides resources and services with increasing economic values, including forest based products, non-timber products (from the abundant biodiversity), energy supply from the remarkable hydro-electrical potential of its rivers, and outstandingly rich mining sources.

# Protected Areas in the Brazilian Amazon

Adalberto Veríssimo, Alicia Rolla, Maria Beatriz Ribeiro and Rodney Salomão

The Conservation Units and Territories of Traditional Occupation (Indigenous Lands or Remaining Quilombola Lands) are the groups of Protected Areas included in the PNAP in 2006<sup>2</sup> (Brazil, 2006A) as a part of Brazil's commitments to the Convention on Biological Diversity (CDB)<sup>3</sup> and the 2002 National Policy on Biodiversity (PNB). The goal of the PNAP is to guide the actions for the establishment a system of ecologically representative and effectively managed Protected Areas, integrating terrestrial and marine areas, by 2015.

Figure 1. Protected Areas in the Brazilian Amazon in December 2010



<sup>2</sup> Federal Decree No. 5.758/2006 created the National Strategic Plan for Protected Areas.

<sup>3</sup> The Convention on Biological Diversity (CDB) establishes regulations and principles for regulating the use and protection of the biological diversity in every signatory nation. In general lines, the CDB proposes rules to ensure biodiversity conservation, its sustainable use, and the fair sharing of the benefits resulting from the economic use of the genetic resources.



Discounting the overlap between Indigenous Lands and Conservation Units (63,606 km<sup>2</sup>), it appears that 2,197,485 km<sup>2</sup> (43,9%) of the territory of the Brazilian Amazon was in Protected Areas by December 2010. The Conservation Units accounts for 1,110,652 km<sup>2</sup> (22.2%)<sup>4</sup> while the Indigenous Lands total 1,086,950 km<sup>2</sup> (21.7%) (Figure 1).

According to data from INCRA, as of August 2010 there were 9,700 km<sup>2</sup> of recognized Quilombola territories and, according to IBAMA, in December 2010 there were 1,964 km<sup>2</sup> of constituted RPPNs. Despite the Quilombola Territories being considered in the PNAP as Protected Areas, and the Private Natural Heritage Reserves (RPPN) being a category of Conservation Units, we decided do not include as them as part of our analyses due to the difficulty in obtaining current data and digital maps of these areas.

There are several cases of area overlap of Conservation Units with Indigenous Lands or with other federal and/or state Conservation Units. The largest portion of the overlap comes from prior to the regulation of the SNUC and is the result both of the insufficiency of information on the previous defined areas and the delay in the recognition process of the Indigenous Lands. In other more recent cases, such as the National Park (Parna) of Mount Roraima (State of Roraima), overlapping the Raposa Serra do Sol Indigenous Land, the solution adopted by the government was of double-designation, meaning that management of the overlapped area is the responsibility of ICMBio together with Funai. The overlaps are identified by notes in the Tables presented.

**Table 1. Proportion of states of the Brazilian Legal Amazon occupied by Conservation Units and Indigenous Lands**

State	Area of the state*	% Conservation Unit	% Indigenous Land	% Total	Total of Protected Areas (km <sup>2</sup> )**
Acre	152,581	34.2	15.9	50.0	76,360
Amapá	142,815	62.1	8.3	70.4	100,504
Amazonas	1,570,746	23.5	27.3	50.9	798,808
Maranhão	249,632	17.4	8.7	26.1	65,242
Mato Grosso	903,358	4.6	15.2	19.8	178,722
Pará	1,247,689	32.3	22.7	55.0	686,384
Rondônia	237,576	21.6	21.0	42.7	101,345
Roraima	224,299	11.9	46.3	58.2	130,588
Tocantins	277,621	12.3	9.2	21.4	59,533
<b>Totals</b>	<b>5,006,317</b>	<b>22.2</b>	<b>21.7</b>	<b>43.9</b>	<b>2,197,485</b>

\* Area of the state according to IBGE website, in July of 2010. For teh Maranhão State, was considered just the area inside the Legal Amazon limit.

\*\* Overlapping of Conservation Units and Indigenous Lands with maritime areas was discounted.

<sup>4</sup> Considered the areas defined by official documents of creation of Protected Areas, discounting the units of area outside the perimeter of the Brazilian Amazon, oceanic areas, and the overlap between Conservations Units and Indigenous Lands.

In December 2010, the State of Amazonas has the greatest extension of Protected Areas in the Brazilian Amazon, with 798,808 km<sup>2</sup> followed by Pará with 686,384 km<sup>2</sup>. However, in relative terms, the State of Amapá has the largest proportion of Protected Areas (70.4%) followed by Roraima with 58.2%, and Pará, with 55% of its territory protected. On the other hand, the states with the least proportion of Protected Areas were Mato Grosso (19.8%) and Tocantins (21.4%) (TABLE 1).

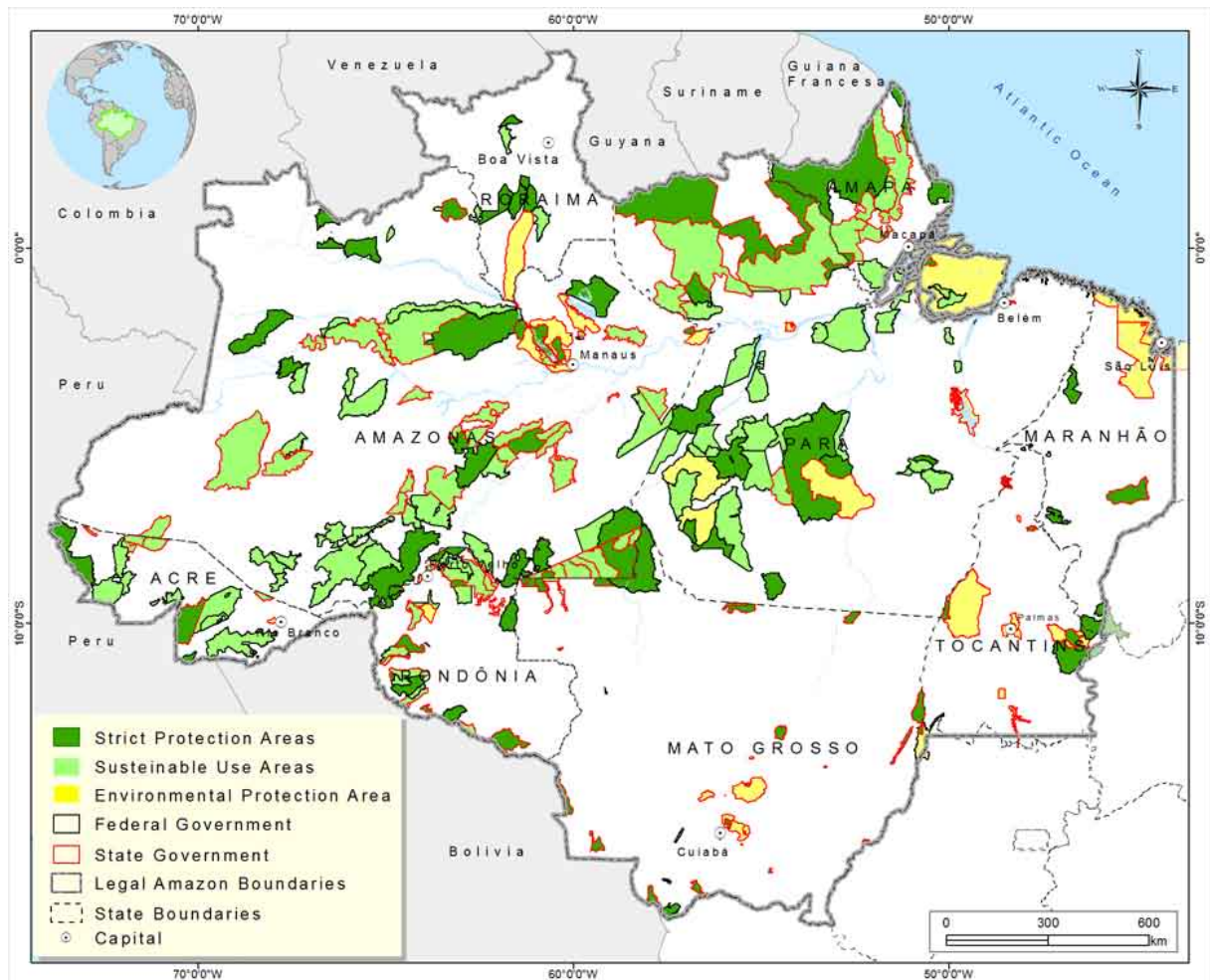
Roraima is the state with the greatest proportion of Indigenous Lands (46.3%) and Amapá had the greatest proportion of Conservation Units (62.1%). The states of Amapá, Maranhão, and Tocantins have the smallest proportions of their Amazon territories protected as Indigenous Lands, with 8.3%, 8.7%, and 9.2%, respectively, while Mato Grosso has smallest area allocated in Conservation Units (4.6%).



## Conservation Units in the Brazilian Amazon

As of December 2010, there were 307 Conservation Units in the Brazilian Amazon, totaling 1,174,258 km<sup>2</sup>, which corresponds to 23.5%<sup>5</sup> of this territory (Figure 2). Of this total, 196 were for Sustainable Use and 111 were for Full Protection. In terms of administration for the Conservation Units: 132 were administered by federal government and 175<sup>6</sup> by state governments. The Federal Units accounted for 610,510 km<sup>2</sup>, with 314,036 km<sup>2</sup> being Full Protection and 296,474 km<sup>2</sup> being Sustainable Use. The State Units totaled 563,748 km<sup>2</sup>: 129,952 km<sup>2</sup> Full Protection and 433,796 km<sup>2</sup> Sustainable Use (Table 2).

**Figure 2. Conservation Units in the Brazilian Amazon in December 2010**



<sup>5</sup> This deals specifically with the Conservation Units and the overlapping areas with Indigenous Lands have not been excluded, as cited in Chapter III.

<sup>6</sup> The Flota of Rio Pardo, created in Rondônia within the Rio Pardo APA, has not been computed, but should still be the object of a specific regulation for the definition of its boundaries. Municipal units were not considered.

**Table 2. Conservation Units in the Brazilian Amazon as of December 2010 by category (excluding RPPNs)**

Category	Quantity	Official area * (km <sup>2</sup> )	Area 2 ** (km <sup>2</sup> )	% of the Area 2 in relation to the total Area of the Conservation Units	% of the Area 2 in relation to the total Area of the Amazon
<b>Federal</b>	<b>132</b>	<b>619,532</b>	<b>610,510</b>	<b>52.0</b>	<b>12.2</b>
<b>Full Protection</b>	<b>48</b>	<b>316,276</b>	<b>314,036</b>	<b>26.7</b>	<b>6.3</b>
ESEC	14	63,359	63,360	5.4	1.3
PARNA	24	215,808	213,567	18.2	4.3
REBIO	9	37,108	37,108	3.2	0.7
RESEC	1	1	1	0.0	0.0
<b>Sustainable Use</b>	<b>84</b>	<b>303,256</b>	<b>296,474</b>	<b>25.2</b>	<b>5.9</b>
APA	4	23,976	21,224	1.8	0.4
ARIE	3	209	209	0.0	0.0
FLONA	32	160,402	158,234	13.5	3.2
RDS	1	647	647	0.1	0.0
RESEX	44	118,022	116,160	9.9	2.3
<b>State</b>	<b>175</b>	<b>605,299</b>	<b>563,748</b>	<b>48.0</b>	<b>11.3</b>
<b>Full Protection</b>	<b>63</b>	<b>132,572</b>	<b>129,952</b>	<b>11.1</b>	<b>2.6</b>
ESEC	9	46,307	46,307	3.9	0.9
MONAT	2	324	324	0.0	0.0
PES	42	71,260	69,640	5.9	1.4
REBIO	5	12,578	12,578	1.1	0.3
RESEC	2	1,039	39	0.0	0.0
RVS	3	1,064	1,064	0.1	0.0
<b>Sustainable Use</b>	<b>112</b>	<b>472,727</b>	<b>433,796</b>	<b>36.9</b>	<b>8.7</b>
APA	39	195,472	160,593	13.7	3.2
ARIE	1	250	250	0.0	0.0
FLOTA	17	133,804	133,803	11.4	2.7
FLOREX	1	10,550	6,883	0.6	0.1
FLORSU	10	2,951	2,674	0.2	0.1
RDS	18	109,901	109,794	9.4	2.2
RESEX	26	19,799	19,799	1.7	0.4
<b>Total in the Brazilian Amazon</b>	<b>307</b>	<b>1,224,831</b>	<b>1,174,258</b>	<b>100.0</b>	<b>23.5</b>

\* Area according to the legal instrument of creation, discounting the parts of the Conservation Units outside of the Brazilian Amazon.

\*\* Area according to the legal instrument of creation, discounting the areas calculated by the SIG: The parts of the Conservation Units outside the Brazilian Amazon, the maritime areas of the Conservation Units, and the overlap among Conservation Units.

When comparing the portion of state territory protected, the State of Pará possessed the greatest extension of Conservation Units in the region with 403,155 km<sup>2</sup>, followed by Amazonas, with 369,788 km<sup>2</sup>. Amapá possessed the greatest proportion of Conservation Units, 62.1% of its

territory, nearly double the proportion of Acre, with 34.2%, and Pará, with 32.3% of its territory protected. On the other hand, the states with the least proportion of Conservation Units were Mato Grosso (4.6%), Roraima (11.9%), and Tocantins (12.3%) (Table 3).

**Table 3. Proportion of the States of the Brazilian Amazon occupied by Full Protection and Sustainable Use Conservation Units in December 2010**

State	Area**	FP %	SU %	Total Conservation Units (%)	Total Conservation Units (km <sup>2</sup> )
Acre	152,581	10.6	23.6	34.2	52,168
Amapá	142,815	33.3	28.8	62.1	88,635
Amazonas	1,570,746	7.8	15.8	23.5	369,788
Maranhão	249,632	5.4	12.0	17.4	43,453
Mato Grosso	903,358	3.2	1.3	4.6	41,242
Pará	1,247,689	10.2	22.1	32.3	403,155
Rondônia	237,576	9.2	12.4	21.6	51,433
Roraima	224,299	4.7	7.3	11.9	26,769
Tocantins	277,621	3.7	8.5	12.3	34,009
<b>Brazilian Amazon</b>	<b>5,006,317</b>	<b>8.0</b>	<b>14.2</b>	<b>22.2</b>	<b>1,110,652</b>

\* Discounting overlap between Conservation Units and ILS and the maritime areas of the Conservation Units.

\*\* Official areas of the States according to the IBGE site, in July 2010. For Maranhão, only the area of the state in the Amazon

## History of Creation of Conservation Units in the Brazilian Amazon

Adalberto Veríssimo, Alicia Rolla, Maria Beatriz Ribeiro e Rodney Salomão

The creation of the first Conservation Unit in the Brazilian Amazon, the Araguaia National Park, dates from 1959. The park covered all the Island of Bananal, with 20,000 km<sup>2</sup>. Later alterations in the boundaries reduced the area of the Conservation to 5,577 km<sup>2</sup>, in order to exclude the overlap with the Araguaia Indigenous Park.<sup>7</sup>

Later on, during the 1960s, more Conservation Units were created, totaling 8,820 km<sup>2</sup>. During the 1970s, the total of Conservation Units went on to be 28,087 km<sup>2</sup>. By the end of 1984, these areas made up close to 124,000 km<sup>2</sup>, the large majority of which (90%) under federal jurisdiction.

Since 1985 the States of the Brazilian Legal Amazon have been engaged in the process of creating Conservation Units. Between 1990 and 1994, there was a significant increase in the creation of state Conservation Units. This occurred especially in Rondônia, thanks to the demands of Polonoroeste and Planaflo, two programs of sustainable development financed by the World Bank<sup>8</sup> (Millikan, 1998).

From 1999 to 2002, the increase of protection was again concentrated on the Federal Conservation Units. This action is largely due, to the strategy of the Federal Government

### Chart 2. Steps in the Creation of Conservation Units

According to Federal Law No. 9.985/2000, or the SNUC Law, and the decree that regulates it (No. 4.340/2002), the creation of a Conservation Unit must be preceded by technical studies and by public consultations.

The technical studies must take into consideration the types of vegetation, the biodiversity, the presence of indigenous or traditional populations, the land use and, human pressure in the area. The public consultations have an advisory (non-deliberative) character and serve for the population to be informed regarding the purposes for creating the Conservation Units and to contribute with information and suggestions (Palmieri et al., 2005). In the public consultations, the information on the unit to be created must be presented by the competent environmental body to the local populations and interested parties in a clear and accessible manner. Following the definition of the category, location, extension, and boundaries of the Unit – following the technical studies and public consultations – the Conservation Unit is created by means of a legal act, generally a decree, from the federal, state, or municipal government.

Once the Conservation Units has been created, a management council must be formed, which can be advisory or deliberative (in the case of Resex or RDS). The council is presided over by the chief of the Unit and is composed of: environmental public agencies of the three federative levels (Union, State, and Municipality); representatives of the traditional populations residing both within and surrounding the Unit; the scientific community; NGOs operating in the location; and the private sector (Palmieri and Veríssimo, 2009).

Within a maximum of five years following the act of creation of the Conservation Units, its management plan must be developed, a document that establishes the zoning of the reserve as well as the regulations of use of the area. The management plan must be developed by the managing body of the Unit and approved by the deliberative councils, in the case of Resex and RDS, or validated by the advisory council, in the case of the other Conservation Units.

<sup>7</sup> Today its extension overlaps with the Indigenous Lands Inãwe-bohona (approved) and Utaria Wyhyña/Iröd u Irãna. Previously, in 1911 the Forest Reserves had already been created in Acre by President Hermes da Fonseca, with the purpose of “containing the disorderly devastation of the forests, which is producing sensitive and disastrous effects, among them climate changes.” See more at: <http://uc.socioambiental.org>.

<sup>8</sup> The focus of Polonoroeste, the Program for Integrated Development of the Northwest of Brazil, in effect during the 1990s was the paving of BR-364 between Cuiabá/MT and Porto Velho/RO. The World Bank conditioned the approval of Planaflo to strong environmental characteristics (Millikan, 1998).

of expanding the Protected Areas in the Amazon in order to meet the biodiversity conservation goals assumed by Brazil within the scope of the Convention on Biological Diversity (CBD) (Chart 2). This strategy reached its apex in 1999 with the holding of the Workshop “Evaluation



Priority Actions for Conservation, Sustainable Use, and Sharing of Benefits,” coordinated by ISA; Imazon; Conservation International (CI); Amazon Work Group (GTA); the Society, Population, and Nature Institute (ISPN); and the Institute for Environmental Research of the Amazon (IPAM) (Capobianco et al., 2001). This Workshop was attended by more than 220 specialists in the areas of biological and human sciences, in addition to representatives of civil society and public managers.

As of 2000, studies conducted by socioenvironmental research institutions, in partnership with the public sector, served as the base for the creation of new Conservation Units. Among such studies can be cited those that provided the foundation for the creation of Flotas and Flonas, held by Imazon beginning in 1998 (Veríssimo & Souza Júnior, 2000, Veríssimo et al., 2000, Veríssimo et al., 2002, Veríssimo et al., 2006) and the surveys undertaken beginning in 2003 whose result was the creation of the mosaic of Conservation Units in the Terra do Meio (ISA and IPAM, 2003).

In terms of area, the greatest number of Conservation Units – both federal and state – was created between 2003 and 2006, which coincides with period in which the Amazon’s Protected Areas Program (ARPA) was in effect (Chart 3, Table 4 and Figure 3). Of the total of Conservation Units existing in 2010, nearly 40% were established during this period. The federal government protected more than 200,000 km<sup>2</sup> in Conservation Units, while state government protection covered approximately 287,000 km<sup>2</sup> (Table 4). Among the states, the greatest contribution came from the government of Pará, with the protection of 149,000 km<sup>2</sup>, followed by Amazonas, with 87,000 km<sup>2</sup>.

### Chart 3. Amazon’s Protected Areas Program (ARPA)

The ARPA program has the objective of investing in the creation, consolidation, and financial sustainability of the Brazilian Amazon Conservation Units. Its attributes and technical-operational execution are the responsibility of the managing public institutions of the Conservation Units – such as the Chico Mendes Institute for Biodiversity Conservation (ICMBio) and the State Environmental Bodies (OEMAs) of the Amazon States under coordination of Ministry of the Environment (MMA). The financial management is undertaken by the Brazilian Fund for Biodiversity (FUNBIO) – an organization of civil society of public interest (OSCIPI) with the mission of providing strategic resources for biodiversity conservation. The program, created by means of Decree No. 4.326/2002, is expected to last until 2015.

During its first phase (2003-2009), ARPA supported the creation of 63 Conservation Units, of which 33 are for Full Protection and 30 for Sustainable Use (except Flonas and Flotas), totaling close to 340,000 km<sup>2</sup> of Protected Areas, among them parks, ecological stations, biological reserves, extractive reserves, and sustainable development reserves.

The support from ARPA includes the undertaking of studies for the creation of new Protected Areas, development of management plans and strengthening of the management of already-existing areas, through training managers and acquisition of equipment. Additionally, ARPA supports the development and application of economic and financial mechanisms for achieving sustainability in Conservation Units (ARPA, 2009).

In the first phase of ARPA, US\$ 105 million were invested in the program, of which US\$ 65 million were directly allocated to the creation and consolidation of Conservation Units. Parallel to actions in the field, the institutional partners invested in the creation and capitalization of the Protected Areas Fund (FAP), a trust fund that is designed to permanently support the maintenance of Conservation Units created and implemented by means of the program. FAP is considered a strategic tool for preservation of the achievements attained with the ARPA. By the end of the first phase (2009), the fund had an amount of US\$ 40 million; the goal for the second phase is to secure a further US\$ 100 million.

In this second stage of the program (2010-2013), the objective is to support the creation of another 200,000 km<sup>2</sup> in Conservation Units in accordance with the criteria of biological representativeness, intensity of the threats, and relevance to the strengthening of traditional populations.

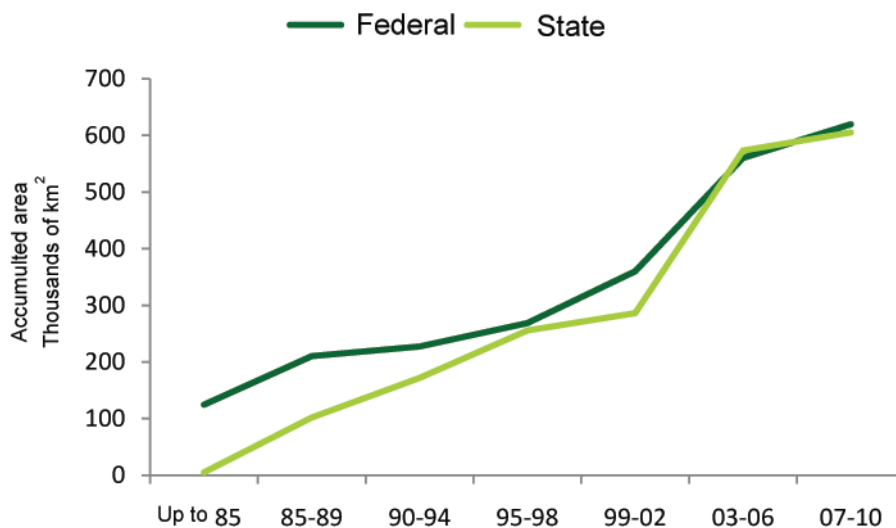


**Table 4. Evolution in the creation of federal and state Conservation Units, by governing period**

Period	Conservation Units created (km <sup>2</sup> )*		Proportion in relation to the total of Conservation Units (%)
	Federal	State	
Up to 03/15/1985	124,615	5,047	10.6
from 03/15/1985 to 03/15/1990	85,882	97,030	14.9
from 03/15/1990 to 12/31/1994	16,841	69,765	7.1
from 01/01/1995 to 12/31/1998	41,316	83,726	10.2
from 01/01/1999 to 12/31/2002	91,442	30,595	10.0
from 01/01/2003 to 12/31/2006	200,053	287,065	39.8
from 01/01/2007 to 12/31/2010	59,383	32,071	7.5
<b>total as of Dec./2010</b>	<b>619,532</b>	<b>605,299</b>	<b>100.0</b>

\* Considerando as áreas oficiais das Unidades de Conservação, com suas configurações em dezembro de 2010.

**Figure 3. Cumulative Area of State and Federal Conservation Units in the Brazilian Amazon.**



In December 2010, the Conservation Units under federal management corresponded to 52% of the extension while State Units totaled 48%.

The boom in the creation of Conservation Units as of 2003 was the result of the efforts by the federal government and the state governments of Acre, Amazonas, Amapá, and Pará. There were three principal reasons for this. First, the need for ordering the territory and

combating illegal deforestation associated with land-grabbing. Second, the urgency to protect regions with high biological value. And, third, the necessity of meeting the demands of the traditional populations (especially Resex and RDS) and sustainable forest production (Flonas and Flotas). In order to guarantee this, the support of programs such as ARPA and of social and environmental organizations operating in the region were crucial.

## Expansion of Sustainable Use Conservation Units in the Brazilian Amazon

Alicia Rolla, Maria Beatriz Ribeiro e Mariana Vedoveto

By 1984 the large majority (92%) of the areas of Conservation Units were occupied by Full Protection group, while the Sustainable Use group contributed with only 8% of the total. The tendency had been reversed by the 1990s, above all after 2002, with a notable increase in the proportion of Sustainable Use Conservation

Units. In December 2010, the Sustainable Use Units totaled 64% of the total area, against 36% occupied by Full Protection Units.

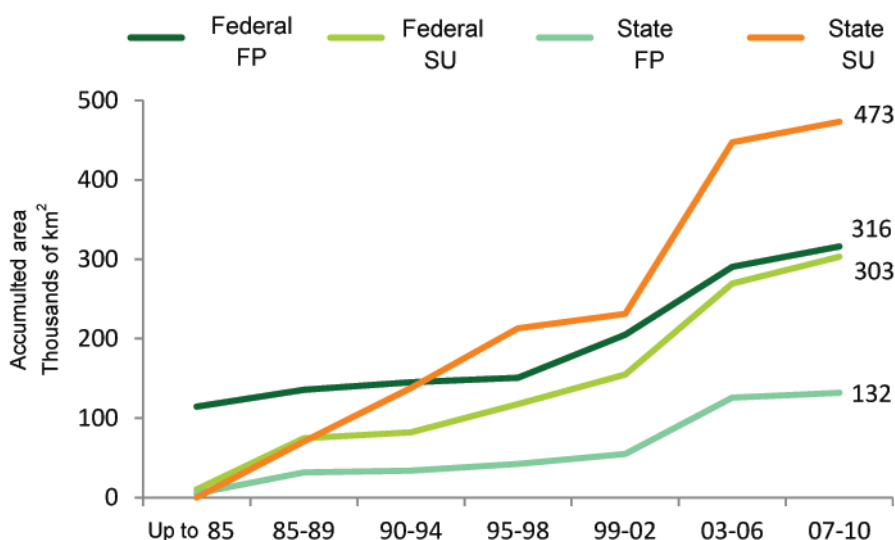
At the state level there is an even greater disparity: the area occupied by Sustainable Use Units accounts for 78% of the total, as opposed to 22% for Full Protection Units. In the case of

**Table 5. Cumulative area of Conservation Units by governing period**

Period	Conservation Units created				Total
	Federal		State		
	FP	SU	FP	SU	
Up to 03/15/1985	114,465	10,150	5,047	0	129,662
from 03/15/1985 to 03/15/1990	21,292	64,590	26,494	70,536	182,912
from 03/15/1990 to 12/31/1994	9,404	7,437	2,301	67,465	86,606
from 01/01/1995 to 12/31/1998	5,780	35,537	8,518	75,208	125,042
from 01/01/1999 to 12/31/2002	54,190	37,252	12,483	18,112	122,037
from 01/01/2003 to 12/31/2006	85,491	114,562	70,914	216,151	487,118
from 01/01/2007 to 30/06/2010	25,655	33,728	6,163	25,908	91,454
<b>As of 2010</b>	<b>316,276</b>	<b>303,256</b>	<b>131,919</b>	<b>473,379</b>	<b>1,224,830</b>

\* In these totals the overlap with Indigenous Lands is not discounted.

**Figure 4. Cumulative area of State and Federal Conservation Units in the Brazilian Amazon, by period of government and group.**



federal Conservation Units, the area earmarked for the Sustainable Use Units (51%) is practically the same size as that occupied by Full Protection Units (49%).

From 2007 to 2010, the states created four times more Sustainable Use Conservation Units when compared to the Full Protection Conservation Units for its part, the Federal Government created nearly the same extension for both groups (Figure 4, Table 5).

The creation of Sustainable Use Conservation Units was stimulated through three different reasons. One of these is the fact that the Sustainable Use Unit model allows for economic

use of its resources, making its creation and implementation politically more acceptable by economic sectors than a Full Protection Unit, whose use and access is quite restricted. The increase in pressure from organized social movements, with the support of non-governmental organizations, in the defense of the local populations – be they riparian, extractive, rubber-tappers – also has been favoring the creation of Resex and RDS with the intent of guaranteeing the permanence of these populations in the area they occupy. Another reason refers to the creation of National and State Forests, fomented by governmental initiative to support forest management for logging.

## Creation of Conservation Units in areas under high human pressure in the Brazilian Amazon

Rodney Salomão, Maria Beatriz Ribeiro and Mariana Vedoveto

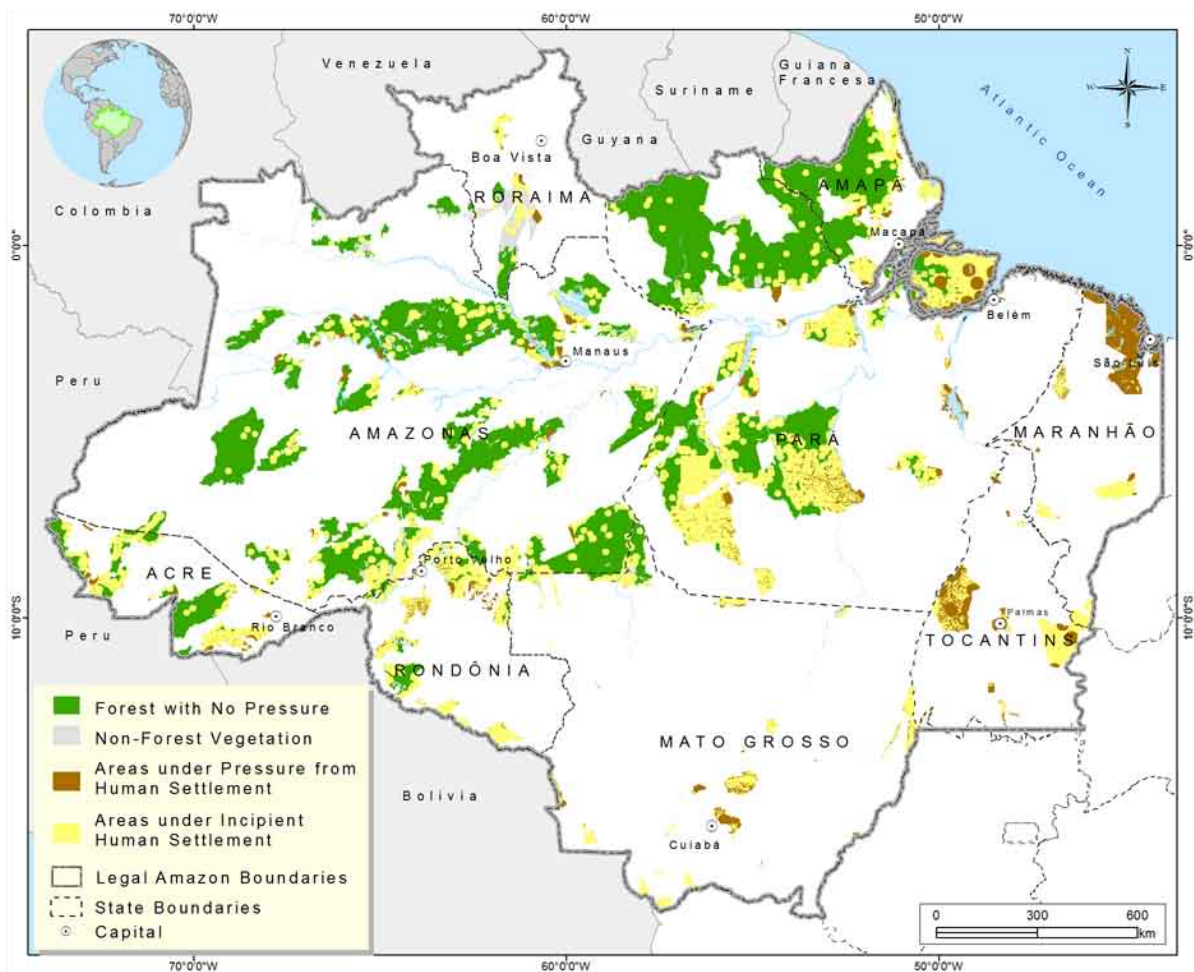
As of 2003, the Federal Government adopted the creation of Conservation Units as a strategy for inhibiting the advance of deforestation and provide land tenure regularization in critical regions of the Amazon. Prior to this period, the Conservation Units were mainly created in remote areas.

Approximately 55% of the national Full Protection Conservation Units and 58% of the Sustainable Use ones created between 2003 and

2010 were situated in regions with consolidated (high) or incipient (moderate) human pressure (Table 6). According to Barreto et al. (2005), the regions of consolidated human pressure are deforested areas; areas of urban influence; areas under the influence of land reform settlements; mining areas; or areas under the influence of intentional and accidental fires.

In the case of the States, the situation is different. As of 2003, the majority of the state

Figure 5. Human pressure in the Conservation Units of the Amazon



**Table 6. Proportion of Conservation Units under human pressure**

Degree of Pressure	State				Federal			
	FP		SU		FP		SU	
	Up to 2002	2003-2010	Up to 2002	2003-2010	Up to 2002	2003-2010	Up to 2002	2003-2010
No Pressure	18	84	53	71	56	42	44	43
Consolidated Pressure	9	0	7	2	3	1	7	5
Incipient Pressure	67	14	35	25	32	54	47	48

Conservation Units were created in remote regions, and, therefore, under less human pressure. Only 14% of the state Full Protection Conservation Units created between 2003 and 2010 were located in regions of consolidated or incipient human pressure. With relation to the Sustainable Use Conservation Units created in this period, the proportion situated in areas under pressure was 33% (Table 6 and Figure 5).

The creation of Conservation Units in areas under low human pressure is relevant in order to protect endemic species and fragile ecosystems; to regulate the use of lands prior to human occupation; and, especially, to avoid land-grabbing. Hidden pressure, for example, was one of the justifications used to justify the creation of the northern Pará state Conservation Units in late 2006, the largest mosaic of tropical forest Conservation Units in the world.

## Management of Conservation Units in the Brazilian Amazon

Mariana Vedoveto, Silvia de Melo Futada and Maria Beatriz Ribeiro

The management of a Conservation Unit requires at least reasonable human and financial resources, basic facilities, such as a headquarters, surveillance, emergency and communication equipment, and surveyed areas for research, visitation, and community and productive use. In addition, it is essential for the management to be based upon an approved management plan, and guided through a management council.

The main instrument of management for all the categories of Conservation Units is the management plan (SNUC, 2000). It a technical report based on objectives of a Conservation Units including diagnosis of natural resources, climate, soils, topography and socio-economic status as well the zoning and the regulations that should guide the natural resource management and use of the area are established.

In 2002, with the intent of providing common directives for the management of federal Full Protection Conservation Units and serving as a model for the state and municipal levels, the Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA) – at the time still responsible for the creation and management of Federal Conservation Units – published the Methodological Planning Guide targeting National Parks, Ecological Stations, and Biological Reserves.

According to this Guide the management plan should have the following sections: context of the Conservation Units and analysis of the

region or the area surrounding, boundaries and planning of the Conservation and its surrounding area, specific Projects and monitoring/evaluation – are linked to the implementation of the management plan (IBAMA, 2002).

In 2004, IBAMA published the Methodological Script for Development of a Management Plan for Private Natural Heritage Reserves (IBAMA, 2004), which seeks to stimulate the participation of the owners of RPPNs from development to use and monitoring of this management instrument, by simplifying the understanding of its structure and content.

For the state Conservation Units, the development of a similar Guide is the responsibility of the environmental agencies in each State. The Methodological Guide for the Development of Management Plans of the State Conservation Units of Pará, for example, has three chapters: General Aspects of the Conservation Unit, which covers the history, location, and access, and presents a technical fact sheet on the Unit; Diagnostic of the Conservation Unit, which characterizes the landscape, the physical, biological, and socioeconomic aspects of the area; and Planning of the Conservation Unit, which presents the mission and future vision of the area, the zoning, the management programs, and timetable of actions for implementation (Sema, 2009).

To be achieved efficiently and effectively, all the management plans must consider the ecosystem approach,<sup>9</sup> enable viable social participation,

<sup>9</sup> The ecosystem focus argues that the boundaries of the Conservation Unit or its buffer zone should not limit the ecosystems that are the object of their protection, and that the ecological processes, as well as the habitats and the majority of the populations of species present strong biological interaction with their surroundings (Sema/PA, 2009).

and be continuous and adaptive (Sema, 2009). The participatory processes promote confidence and legitimacy for management council. The councils are either consultative or deliberative. They enable greater transparency in managing the Conservation Unit, contribute to the development and implementation of the Management Plan, and enable integration of the Conservation Units into the communities, the private sector, research institutes, NGOs and the government, as well as other Protected Areas located in the surrounding area (Palmeiri and Veríssimo, 2009).

In order to guarantee good governance in Conservation Units, Ibase (2006) and Cozollino (2005), also suggest some criteria:

- *Equity*: Existence and execution of clear regulations that are accessible and applied to the group of stakeholders; respect for the rights and practices of traditional populations or of residents in the area surrounding the Conservation Units; and recognition of social injustices and damages resulting from the management of the Conservation Unit.
- *Legitimacy, participation in decisions, and transparency*: Representativeness, decision-making, and performance of all involved (associations and/or individuals) in the management and in the meetings promoted in the Unit.
- *Effectiveness, efficiency, and efficacy of the management instruments*: Management plan and by-laws of the council approved and operating; periodic updating of the instruments; existence and employment of an annual management plan; participation of the population in the development of the management instruments.

The efficacy of the management instrument can also be evaluated by the results achieved, activities planned, and those executed (Chart 4).

The management plan should have objective and specific lines of performance, in order to enable the evaluation and continuous fine-tuning of management.

In general, the implementation of a continued process of management evaluation

#### Chart 4. Effectiveness of Management of the federal Conservation Units in Brazil

Rappam (Rapid Assessment and Prioritization of Protected Area Management) developed by WWF is a method that allows for the rapid evaluation of the management of Conservation Units, and has the objective of supplying tools for developing policies that are appropriate for the protection of ecosystems and the formation of a viable system of Conservation Units (IBAMA e WWF, 2007).

According to Rappam, a solid evaluation of the exercising of management must consider the following points: Planning – includes the objectives of the Conservation Units, the context of the area, the legal support utilized and the planning model in the Unit; Means – human, material, and financial resources employed in managing the Unit; Processes – models utilized in decision-making, in initiatives for achieving financial sustainability, in the evaluation mechanisms, and in planning and monitoring management of the area; Results – evaluates the actions relative to planning, achievement of objectives and goals, containment of pressures and threats, dissemination of information to society, infrastructure implementation and maintenance, the training and development of human resources (workers and management council), and monitoring of all the results.

The Rappam evaluation conducted by IBAMA in partnership with WWF-Brazil, in 2007, evaluated the effectiveness of management in 246 federal Conservation Units (Onaga and Drumond, 2007). The term effectiveness, is understood here as the capacity for achieving the real objective of the Conservation Unit.

Only 13% of the Conservation Units presented high management effectiveness; another 36% were in the middle group; and the remaining (51%) were grouped in the low-effectiveness category.

The best positioned categories were, in order: Flonas (National Forests), ESECs (Ecological Stations) and Rebios (Biological Reserves), and, in third place, Parnas (National Parks) and RVSs (Wildlife Refuges).

The same study affirms that human resources, financial resources, infrastructure, and planning and questions related to the development of research, evaluation, and monitoring are critical in the whole Brazilian system of Conservation Units.



optimizes utilization of the available resources. For the financial and economic consolidation of the Conservation Unit(s), it is important to have a strategy that considers:

- *Public budget:* It is necessary to ensure a minimal budget from the management body directed at the maintenance of the Conservation Units, given that the hiring of the base team and the control and surveillance actions are functions of the Federal Government, the State, and the Municipality.
- *Environmental compensation:* this is a legal obligation provided for in Art. 36 of Law 9.985/3000 (SNUC), and can be a source for obtaining resources for the implementation of Full Protection Conservation Units.
- *Concessions in Public Forests:* Law 11.284/2006 establishes the remunerated assignment for concession of forest resources and services in Sustainable Use Conservation Units. The concessions can enable the creation of a forest-based economy allied with biodiversity conservation.

### Few advances in the development of management plans

In order to evaluate the Conservation Units in the Brazilian Amazon, we have identified the number of management plans approved, management councils formed including the status of their by-laws, and the quantity of workers allotted to these areas.

Despite the development of the management plan being obligatory in a maximum timeframe of five years following the decree of creation from the Federal Government, the majority (70%) of the

### Chart 5. Economic potential of Conservation Units in the Calha Norte region

The concessions in public forests can be a key instrument for attracting investment, generating employment and income for the Sustainable Use Conservation Units of the Northern Corridor of the Amazon River (Calha Norte), in northwestern Pará State. In 2010, Imazon undertook a study with the objective of quantifying the potential for the generating income, employment, and contributions from timber harvesting and Brazil nut extraction in the three Flotas (Faro, Trombetas, and Paru) in the region (Bandeira et al., 2010).

The results obtained show that timber harvesting and Brazil nut collecting may generate R\$ 4.4 billion over 20 years (2011-2030), in 2010 values, taking into consideration an annual rate of discount of 6%. The federal, state, and municipal governments would thus collect R\$ 887 million, which corresponds to 20% of the gross income from these activities. By 2013, 8,986 direct and indirect jobs would be generated.

In addition, it is possible to incorporate other productive chains, such as tourism, mining, extraction of other non-timber products, and environmental services or REDD (Reduction of Emissions through Deforestation or Degradation) credits. In this manner, the contribution of the Flotas may exceed the economy currently in operation in the region and bring economic sustainability to the Conservation Units of the Northern Corridor.

plans of the Conservation Units in the Brazilian Amazon have still not been initiated or concluded. Of the 308 state and federal Conservation Units<sup>10</sup> analyzed, only 24% possess approved management plans; 1% had their plans in the revision phase; 20% were in the development phase; and 50% had not even initiated their management plans as of December 2010.

Considered as a group, the federal Full Protection Conservation Units are in a better situation, with 35% of the management plans approved. The federal Sustainable Use Conservation Units, on the other hand, have a lower rate of approved plans, with only 17%.

<sup>10</sup> In this section the total of Conservation Units is 308, one more than in the previous section, by virtue of our considering the FLOTA Rio Pardo (RO), even given the pending exact delimitation.

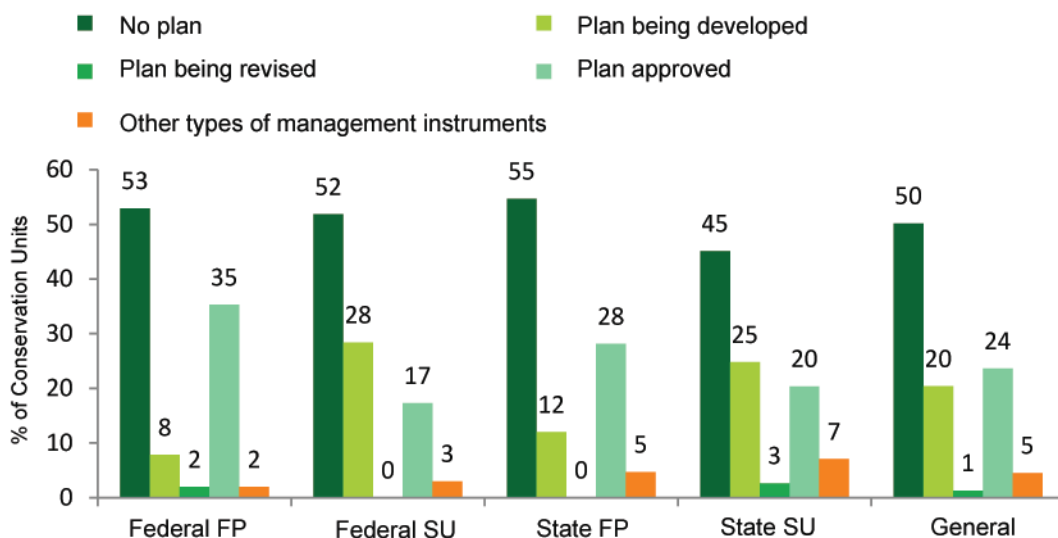


Among the state Conservation Units, those in the Full Protection category also had more management plans approved (28%) than those of Sustainable Use (20%) (Figure 6).

The efforts for development and approval of management plans have been intensified in recent years, but still there are large gaps. As of 1998, there were only 10 management plans officially recognized. In 2006, this number rose to 36; and by December 2010 another 37 were approved, totaling 73 management plans (Table 7).

There are also other cases of management instruments that contribute to the consolidation of Conservation Units or have a specific purpose, such as, for example, an emergency plan of action. In the case of Sustainable Use Conservation Units, the plan of utilization or plan of use is the first phase of the management plan, and with it are implemented actions of protection, signalization, and land regularization. Approximately 3% of the total of Conservation Units possess management instruments of this type.

**Figure 6. Status of Management Plan of the Conservation Units in the Brazilian Amazon**



**Table 7. Management Plans development status of Conservation Units in the Brazilian Amazon by December 2010**

Status of the plan	Federal		State		Total
	FP	SU	FP	SU	
Concluded	18	14	18	23	73
In revision	1	0	0	3	4
Under development	4	23	8	28	63
<b>Total</b>	<b>23</b>	<b>37</b>	<b>26</b>	<b>54</b>	<b>140</b>
<b>No plans</b>	<b>27</b>	<b>42</b>	<b>35</b>	<b>51</b>	<b>155</b>
<b>Other types of instruments</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>8</b>	<b>14</b>

## Insufficient number of management councils

The number of Conservation Units in the Brazilian Amazon with consultative or deliberative management councils is still low (48%); however, there was a considerable increase from 2007 to December 2010. During this period approximately 61% of the councils existing today were created.

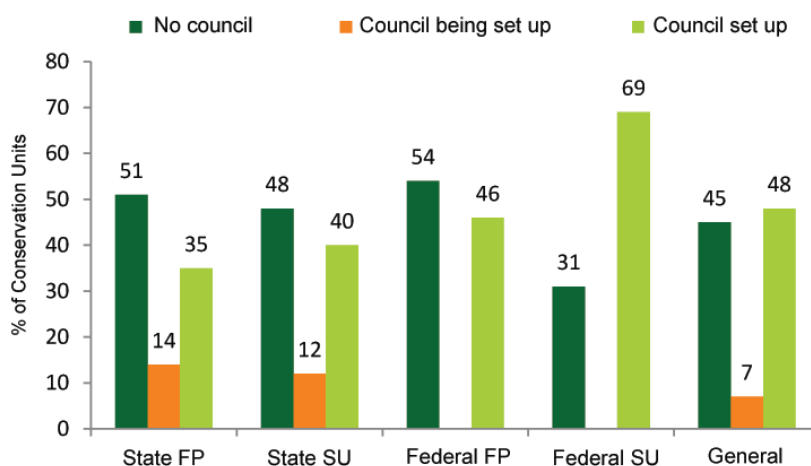
In December 2010, 147 (48% of the total) Conservation Units had their councils established; whereas in another 21 (7%) their management councils were being set up; the remaining (45%) still did not possess a management council. Among the groups, the Federal Sustainable Use Units presented the greatest proportion of management councils created (69%), followed by the Federal Full Protection Units (46%), and State Sustainable Use Units (40%). The State

Full Protection Units appeared in last place, with 35% of the councils created (Figure 7).

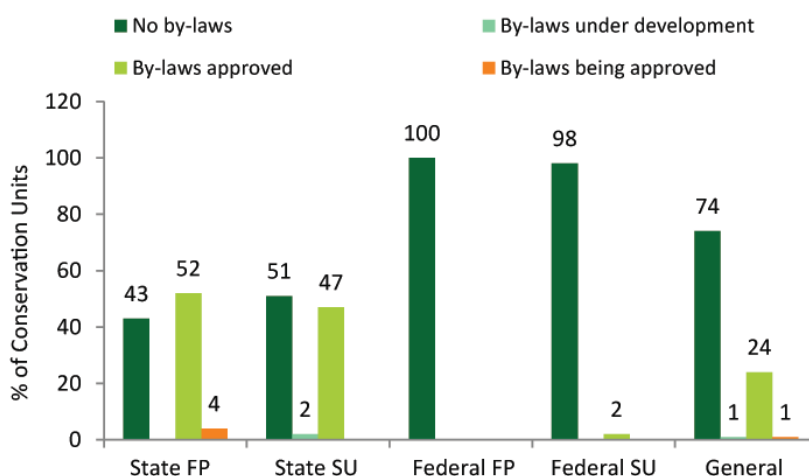
For better performance, the management council needs to have its by-laws developed and approved by its participants. The functioning of the council is defined by its by-laws, in which the form of participation of the council members, their attributes, and responsibilities in relation to the Conservation Units must be included.

Only 24% of the Units analyzed presented management councils with approved by-laws. The situation was more serious in the case of the federal Conservation Units, with both the Full Protection and the Sustainable Use Units, of which practically no council has by-laws. The condition of the State Units was relatively better, as presented in Figure 8. With relation council activity, only 8% were declared inactive.

**Figure 7. Situation of the Conservation Units in the Brazilian Amazon with regard to status of their management councils (%)**



**Figure 8: Status of Management Councils of Conservation Units in the Brazilian Amazon**



### Scarcity of Public Staff

The number of public personnel employed in the management of Conservation Units is not available on the electronic sites of the institutions responsible for the Units. This information is obtained by means of letters sent to the State Environment Agencies in the Brazilian Amazon, of which only SEDAM-Rondônia State has not responded. The same happened with ICMBio, responsible for the federal Conservation Units, which was also consulted, but did not respond.

In July 2010, each state Conservation Unit had, on average, only two workers, hired or outsourced, full-time or shared among different areas.<sup>11</sup> The state Full Protection Conservation Units are the ones that presented the greatest number: an average of 5 workers. On the other hand, the state Sustainable Use Conservation Units employ, on average, only 2 workers each. Overall the number of workers in the 133

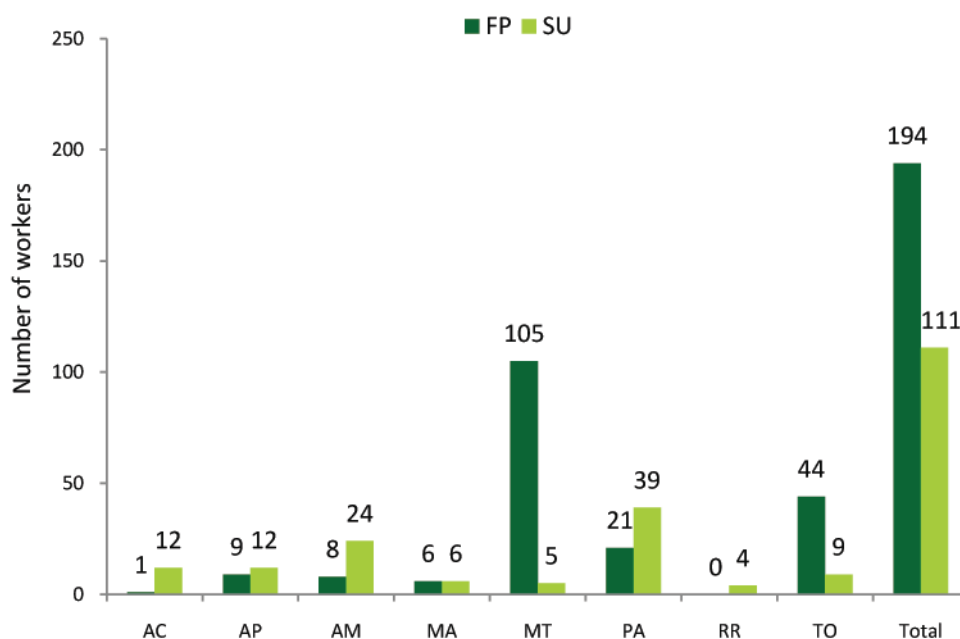
Conservation Units consulted totals 305. The state Full Protection Units employ 194 workers, while those for Sustainable Use employ only 111 people (Figure 9)

Although there is not a consensus on what the ideal number of workers for each Unit would be, since the management demands and the external pressures are very different according to the size of the area, location, and category, among other factors, the average of 2 workers per Unit is still extremely low. In the Brazilian Amazon, each worker is responsible for, on average, 1,872 km<sup>2</sup> (Table 8). However, this area varies according to the State and group of the Unit.

Amazonas State presented the worst case, with only one worker for every 5,890 km<sup>2</sup> in the Sustainable Use Units. The State of Mato Grosso presented the opposite situation, with an average of 247.9 km<sup>2</sup> per worker in the Full Protection Units. It is important to consider that

<sup>11</sup> Only the workers of the state Conservation Units of Acre, Amazonas, Amapá, Maranhão, Mato Grosso, Pará, Roraima, and Tocantins were counted.

**Figure 9. Number of Public Staff in the State Conservation Units in the Brazilian Amazon by December 2010\***



\* The Rondonia State Conservation Units was not counted.

Amazonas has large territorial extensions far from consolidated urban occupations, while in Mato Grosso the pressure from occupation and agricultural expansion is much more intense.

With relation to the groups, the Full Protection Units employ one for every 635km<sup>2</sup>.

In the Sustainable Use Conservation Units this area is more than six times greater: There are 4,033 km<sup>2</sup> per worker. The situation can be aggravated by the condition of access to the Conservation Unit and by the lack of minimal infrastructure for sheltering the workers.

**Table 8. Number of workers employed per square kilometer of the State Conservation Units in the Brazilian Amazon**

States	Area Conservation Unit FP (km <sup>2</sup> ) <sup>1</sup>	Area Conservation Unit SU (km <sup>2</sup> ) <sup>1</sup>	Number of workers FP	Number of workers SU	Area Conservation Unit FP (km <sup>2</sup> )/worker	Area Conservation Unit SU (km <sup>2</sup> )/worker	Total Area Conservation Unit (km <sup>2</sup> )/worker
Acre	6,953.0	6,125.1	1.0	12.0	6,953.0	510,4	1.006,0
Amapá	1.1	31,987.2	9.0	12.0	0.1	2.665,6	1.523,2
Amazonas	35,822.1	152,644.1	8.0	24.0	4,477.7	6.360,2	5.889,6
Maranhão	5,484.3	47,620.4	6.0	6.0	914.0	7.936,7	4.425,4
Mato Grosso	17,697.4	9,569.2	105.0	5.0	168.5	1.913,8	247,9
Pará	54,359.4	162,711.8	21.0	39.0	2,588.5	4.172,1	3.617,9
Roraima	-	12,076.5	-	4.0	-	3.019,1	-
Tocantins	2,909.9	24,901.2	44.0	9.0	66.1	2.766,8	524,7
<b>Total</b>	<b>123,227.3</b>	<b>447,635.5</b>	<b>194.0</b>	<b>111.0</b>	<b>635.2</b>	<b>4.032,7</b>	<b>1.871,7</b>

\* The areas considered in calculating the number of workers per km<sup>2</sup> correspond to the State Conservation Units listed in the letters.

In 2010, the National System of Conservation Units completed 10 years of existence. Instituted by Law No. 9.985/2000, the SNUC defined the criteria and regulations for the creation, implementation, and management of Conservation Units, establishing common directives for the Conservation Units at the federal, state, and municipal levels. This first decade was marked by the implementation of the law, through the creation and structuring of the connected authorities and centers; standardization of process; expansion and training of teams; and consolidation of the Conservation Units themselves. In the following section, we present the main regulatory and structural advances that occurred between 2007 and 2010, mainly with regards to management, land regulation, and resource management at the federal level.

### Creation of the Chico Mendes Institute

The Chico Mendes Institute for Biodiversity Conservation (ICMBio) was created in August 2007<sup>12</sup> as an integral authority of the National System of the Environment (SISNAMA) and linked to the Ministry of the Environment. Its attributes are protecting natural heritage and promoting the conservation of the Brazilian biodiversity, including through Full Protection and Sustainable Use Conservation Units, with the latter contributing to the respect for the practices and knowledge associated with traditional communities and toward the promotion of socioenvironmental development.

Part of the functions previously accumulated by the Brazilian Institute of the Environment and

Renewable Natural Resources (IBAMA) were transferred to the ICMBio. IBAMA maintains the environmental police power and the responsibility for environmental quality control and for licensing, including authorizations for the use of natural resources. Among the objective attributes of the ICMBio are the consolidation of the SNUC through its standardization; the creation, implementation, and management of federal Conservation Units; and the research and application of conservation strategies for flora and fauna by means of Specialized Centers for Research and Conservation.

The creation of the ICMBio occurred in a scenario of political conflicts and without strategic planning guided by in-depth dialogue, internally or with the other sectors of society. Despite this, after three years it is important to recognize the advances and its contribution toward a progressive structuring of the bodies and regulations that make up the basis of the SNUC.

The creation of a specific managing body for the Conservation Units, with its own budget contributed to greater transparency in the destination, monitoring, and evaluation of the effectiveness of the investments in the sector. In addition, the holding of a civil service exam in 2008 for new environmental analysts allotted by priority to the Conservation Units of the Brazilian Amazon is also noteworthy. With precarious conditions of access and communication, the large majority of these Conservation Units lack a consolidated administrative and operational structure. Many times there is not even a complete and numerically satisfactory team,

<sup>12</sup> Federal Law No. 11.516 de 28/08/2007.

which makes performance of the managers difficult, a common reality in the state levels as well, as already explained in Chapter 4.4. Such shortcoming, added to the complex historical context of the Conservation Units tend to result in a much higher resignation rate than in other regions of Brazil.

11 Regional Coordinations of the ICMBio in Brazilian territory were also created, to which all the federal Conservation Units are linked (Ordinance No. 7 of 02/19/2009). This structure is expected to contribute towards improving the quality of management of the decentralized units, promoting their articulation and integration; supporting the planning, execution, and monitoring of programs in their territorial circumscription; and benefitting the interlocution between the decentralized units and the Institute head office.

The National Centers for Research and Conservation were also created (Ordinance No. 78 of 09/03/2009), decentralized units responsible for, by means of scientific research, data organizing and analysis, promoting biodiversity conservation, speleological heritage, and sociobiodiversity. The Centers are structured along two main lines of action: a focus on the Biomes, ecosystems, or management (4) and a specialty in taxonomic groups (7). In order to “recreate” already-existing Centers, previously linked to IBAMA, a revision of their attributes was necessary in order to make them appropriate for the exclusive competencies of the ICMBio, which also led to the extinguishment of the National Center for Orchids and Ornamental, Medicinal, and Aromatic Plants (COPOM), with its structure being absorbed by the National Center for Research and Conservation of Biodiversity of the Cerrado and Caatinga (CECAT).

The main regulations of the ICMBio related to the management of the federal Conservation Units from 2007 to 2010, were:

- ICMBio Regulatory Instruction No. 1/2007: Disciplines the directives, regulations, and procedures for development of a Participative Management Plan for a federal Conservation Units in the Resex and RDS categories.
- ICMBio Regulatory Instruction No. 2/2007: Disciplines the directives, regulations, and procedures for the formation and functioning of the Deliberative Council of a Resex and RDS.
- ICMBio Regulatory Instruction No. 3/2007: Disciplines the directives, regulations, and procedures for the creation of a Resex and RDS.
- ICMBio Regulatory Instruction No. 4/2008: Disciplines the procedures for the authorization for research in the federal Resex and RDS, which involves access to genetic assets or associated traditional knowledge.
- ICMBio Regulatory Instruction No. 2/2009: Regulates the technical and administrative procedures for the compensation from improvements and expropriation of rural properties located in federal Conservation Units of public domain.
- ICMBio Regulatory Instruction No. 5/2009: Establishes procedures for analysis and concession of Environmental Licensing for activities or undertakings with the potential for impacting federal Conservation, their buffer zones, or surrounding areas.

Special attention is deserved for Regulatory Instruction No. 4, whose topic – research involving access to genetic assets or associated traditional knowledge – deals with new concepts and recent practices, without

consolidated rules, even in the scope of the CDB, which, if well evaluated in the future, could serve as a parameter for scientific research, bio-prospecting, or technological development in other categories of Conservation Units or even outside of them, including in what is referred to as improvement of the Contract for Utilization of Genetic Assets and Sharing of Benefits (CURB).

Other regulatory actions of the ICMBio and the SNUC itself reinforce the intent on promoting research in the Conservation Units, in the case of promoting scientific activities and volunteering in the federal Conservation Units, through the creation of the Scientific Initiative Program – in order to give incentive to university students for research – and the Volunteer Program. The implementation of these programs is important, not only for their immediate benefits – in this case, an increase in research and assistance for daily activities in the Conservation Units – but also, more importantly, because the research and volunteer processes contribute to the involvement of the local communities with the objectives and the possibilities of use of the Conservation Unit and its surrounding area.

Along with these changes promoted by the ICMBio, Interministerial Ordinance MDA/MMA No. 3 of 10/3/2008 is also noteworthy, in recognizing that the peoples and traditional communities in the Resex, RDS, and Flona Conservation Units categories as potential beneficiaries of the National Program for Agrarian Reform. Such action facilitates access by this population to the differentiated credit associated with the Policy of Agrarian Reform.

## Environmental Compensation

Environmental compensation, an important source of resources for the financial sustainability of the SNUC, is an instrument that guarantees the earmarking of, at least 0.5% of the value of a large investment to the creation or management of Full Protection Conservation Units, in the case of undertakings with significant environmental impact.

Although this mechanism has become better known following its inclusion in the SNUC, it was established in 1987 by CONAMA Resolution No. 10, according to which “In order to cope with the repairing of the environmental damages caused by the destruction of forests and other ecosystems, the licensing of large-scale projects, (...) will always have as one of its pre-requisites the implementation of an Ecological Station by the entity or company responsible for the undertaking, preferably connected to the area,” explaining further that “the value earmarked for this should be proportional to the damage caused and cannot be less than 0.5% of the total costs provided for the undertaking.”

In the years following the creation of the SNUC, the National Confederation of Industry (CNI) headed up a very strong movement for establishing the value of environmental compensation, detaching it from the percentage of the value of the undertaking. Even the extinguishing of environmental compensation was discussed.

In April of 2008, the Superior Court (STF) ruled on the merits of a lawsuit brought by the CNI (Direct Action of Unconstitutionality –

## Chart 6. The Case of Juruti/Alcoa

Pará was the pioneer state in regulating the charging of environmental compensation for supporting Conservation Units. Alcoa was the first company to sign a term of commitment with Secretary of the Environment of Pará, in 2007. Conducted by a new methodology of calculating the gradation of environmental impacts, the term earmarked close to 1.5% of the total costs of installation of the Juruti Mine for environmental compensation. As a result Alcoa's compensation totaled R\$ 54 million and was passed along to the State by August 2008.

At first, the percentage should be applied in three Conservation Areas located in the region where the Juruti Mine is: the Grão Pará ESEC, the Maicuru REBIO and the Amazônia PARNA. However, SEMA still does not have an Environmental Compensation Fund available (FCA) that administers the resources raised through compensation. Temporarily, according to State Decree No. 2.033/2009, the resources from environmental compensation will be earmarked for a specific account, connected to the State Fund for the Environment (FEMA). However, because it lacks a well-defined governing policy and exclusive administrative team, FEAM faces difficulties in administering the resources raised from compensation. By the end of 2010, there was no news on the destination of the sum paid by Alcoa, as the financial report from FEAM is neither public nor made available, which makes following up the resource allocation difficult.

Source: [http://www.alcoa.com/brazil/pt/custom\\_page/environment\\_juruti\\_meioambiente\\_snuc.asp](http://www.alcoa.com/brazil/pt/custom_page/environment_juruti_meioambiente_snuc.asp)

ADIN No. 3.378), affirming that the charging of environmental compensation was constitutional and should be proportional to the damage caused by the project, although it overturned the minimum value of 0.5%. Also in 2008, the Federal Chamber for Environmental Compensation was created, with deliberative character, involving representatives from the MMA, IBAMA, and ICMBio,<sup>13</sup> with the power to decide on the application of resources originating from environmental compensation.

In May 2009, President Luiz Inácio Lula da Silva signed Federal Decree No. 6.848,<sup>14</sup> establishing a maximum value charged of 0.5% of the cost of the undertaking. Thus, what

had previously been the minimum became the maximum. The following month, ISA and the Friends of the Earth – Brazilian Amazon filed a new action in the STF (Reclamation No. 8.465) alleging the unconstitutionality of the decision by reason homologous to that which led the STF to judge ADIN No. 3.378: If the value of compensation must be proportional to the damage of the undertaking and the minimum fixed rate of 0.5% is unconstitutional, evidently the ceiling of 0.5%<sup>15</sup> is as well. There has not yet been a pronouncement on the Reclamation.

### Land Questions

One of the great challenges in implementing Conservation Units is its territorial consolidation. In addition to an appropriate delimitation, land regularization is indispensable for this territorial consolidation, since the goal is to conserve not only species or landscape attributes, but also ecological processes, considering both the natural formations and the use that the local community makes of this territory and its resources.

The lack of land regularization stems not only from administrative slowness and lack of budget resources that guarantee the due compensations are made, but also from the absence of an official, updated land registry. Although there is still no public survey detailing the land situation in each Conservation Unit, it is known that conflict over this issue is generalized. According to ICMBio, three out of ten hectares of federal Conservation Units in Brazil are private lands, and of the 251 federal Conservation Units required to have their territory public, 188 still contained private properties inside their boundaries (FSP, 2011).

<sup>13</sup> Joint Ordinance IBAMA/ICMBio No. 205 of July 17, 2008.

<sup>14</sup> Federal Decree No. 6.848 of 05/14/2009.

<sup>15</sup> See more in "NGOs go to the STF to bring down new rule on environmental compensation," Socioenvironmental News Item (06/18/2009), at [www.socioambiental.org](http://www.socioambiental.org).



The publication of Interministerial Ordinance No. 436/2009<sup>16</sup> was an important advance in this area. The MPOG (Ministry of Planning, Budget, and Management) and the MMA assumed responsibilities that simplified and accelerated the land regularization of the federal Conservation Units by means of a series of standardizations, these being:

- The MPOG commits itself donate lands under Federal domain to the MMA, when they are located in federal Conservation Units belonging to the SNUC, of public possession and domain. Prior to the registration of such areas, they were under the control of Incra and this impeded the regularization of lands for community use, such as those in Resexs;
- Commitment of the MMA to, once the delivery is made, promote the regularization of the land situation in the Conservation Units and promote the support of their sustainable development;
- Authorization for the MMA to promote the concession of the received areas to ICMBio, under the modality of concession of free use or under the regime of Concession of Real Right of Use (CDRU). This enables the collective and free awarding of the CDRU to the associations and cooperatives that represent the benefitting traditional populations, resident in Sustainable Use Conservation Units.

The CDRU contract is a document with a stipulated timeframe that makes the use of the land legitimate, granting the right to reside

there and to utilize the resources according to the plan of use. However, it does not guarantee property, in such a way that transmission occurs only by hereditary character.

In 2010, the following were celebrated:

- 8 CDRUs between the ICMBio and communities, involving the Cururup, Marinha de Araí-Peroba, Marinha de Gurupi-Piriá, Marinha de Tracuateua, Marinha do Maracanã, São João da Ponta, Barreiro das Antas, Rio Cautário, and Rio Ouro Preto Resexs, and the Jamari, Tapajós, and São Francisco FLONAS.
- 11 CDRUs between the Secretary of Heritage of the Federal Government (SPU) and the MMA/ICMBio or the Incra/ICMBio: In the Barreiro das Antas, Chocoaré Mato Grosso, Itaúba, Lago do Capanã Grande, Lago do Cuniã, Rio Cautário, Rio Ouro Preto; as Flonas Pau-Rosa, and São Francisco Resexs; the Rio Ouro Preto REBIO; and the Serra da Cutia Parna.

Regulatory Instruction ICMBio No. 2/2009, which regulates the technical and administrative procedures for the compensation of improvements and expropriation of rural properties located in federal Conservation Units of public domain (or, rather, except for RPPNs), has also contributed to this question. Although the procedures may still receive criticism (mainly by being directed toward the cases in which the existence of a thirty-time uninterrupted ownership change is proven), it is very important that they be clear and accessible to those involved in the process.

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<sup>16</sup> Regulatory Instruction ICMBio No. 2, of 09/02/2009. Regulates the technical and administrative procedures for the compensation of improvements and expropriation of rural properties located in federal Conservation Units of public domain.

## Tourism

One of the potential resources for promoting the financial sustainability of the SNUC in general, and the Conservation Units in particular, is public use by means of tourism. In recent years, some measures have sought to stimulate this activity, in an organized way, in the Conservation Units. Although the practical results are not yet evident, there is the expectation that such measures may generate positive actions.

In September of 2008, within the bilateral schedule signed between the MMA and the Ministry of Tourism, the GT (Work Group) for Fomenting Tourism with Environmental Sustainability<sup>17</sup> was created. The objective is to promote the principles of sustainability in developing tourist activity in Brazil. The GT would have the commitment to evaluate and propose: Regulatory and institutional mechanisms for improving procedures for environmental licensing of tourist projects; directives for educating and training workers in the sectorial bodies involved in the licensing process; alternatives for evaluating environmental impact of projects and undertakings; and mechanisms for articulation between environmental policy actions and national development of tourism relative to the evaluation of impact, and environmental licensing of investment projects in the tourism sector.

In May 2009, a new ordinance<sup>18</sup> created another Interministerial GT for 2 years, with the objective of promoting and structuring tourism in the National Parks and in their respective areas of influence. Incumbent upon this GT are: Monitoring the execution of the investments in the Parnas, mainly with regards to

the socioeconomic and environmental impacts of tourism in the municipalities where they are located; promoting the necessary adjustments for implementation of the actions provided for in the Parnas and the respective areas of influence; defining strategies that foster greater proximity between the Parnas and Brazilian society; and establishing mechanisms for promoting tourism in the Parnas in an way integrated with the policies and other types of projects developed in these areas.

In this same scope, a reciprocal term of agreement was signed between ICMBio and Abeta (Brazilian Association of Ecotourism and Adventure Tourism Companies). This term has the intent of establishing bases for developing joint projects in the area of planning, structuring, and management of visitation in Federal Conservation Units with respect to the activities of adventure tourism and ecotourism. In addition, IN No. 8/2008 was published, which establishes the regulations and procedures for providing guide services connected to tourism in Federal Conservation Units.

## Hydroelectric Dams

The Federal Law that instituted the SNUC states that in the Full Protection Units only “the indirect use of their natural resources” is permitted, with the term indirect use understood as being “that which does not involve consumption, collection, damage, or destruction of the natural resources.” Thus, although there is no explicit rule on prohibiting of Hydroelectric Plants within the boundaries of Conservation Units in this group, this is evidently an activity that is not permitted through logical result of the regulatory system (Valle, 2011).

<sup>17</sup> Ministry of the Environment and Ministry of Tourism. Interministerial Ordinance No. 281 of 09/16/2008.

<sup>18</sup> Ministry of the Environment and Ministry of Tourism. Interministerial Ordinance No. 171 of 05/21/2009.

In relation to the Sustainable Use Conservation Units, the objective is “to make compatible the conservation of nature with the Sustainable Use of a portion of its natural resources,” with Sustainable Use being the “utilization of the environment in such a way as to guarantee the durability of the natural resources and the ecological processes, maintaining biodiversity and the other ecological attributes, in a socially just and economically viable way.” There is also no explicit citation relating to hydroelectric dams in the SNUC or in the decree of regulation of the SNUC, No. 4.340/2002. However, the most common legal understanding is that this type of undertaking is capable of being licensed in these areas.

Federal Decree No. 7.154/2010, published in April, establishes “procedures for authorizing and undertaking studies for the potential harnessing of hydraulic energy and systems of transmissions and distribution of electric energy within Conservation Units as well as authorizing the installation of systems of transmission and distribution of electric energy in Sustainable Use Conservation Units.” The decree also exempted the undertakings of the need for previous authorization from the ICMBio

for the holding of studies of technical, social, economic, and environmental viability for the categories APA and RPPN. In both cases, this decree decentralizes territorial management.

### Law for Management of Public Forests (Forest Concession Law)

The Law for Management of Public Forests (Law No. 11.284/2006) addresses sustainable projects in public forest and institutes the Brazilian Forestry Service (SFB) in the structure of the MMA.<sup>19</sup> The SFB has administrative autonomy and operates exclusively in the management of public forests. Its responsibilities include the creation of national, state, and municipal forests; the earmarking of public forest for use by the local communities; and forestry concession for utilization by the private sector, including natural or planted forests, and the management units of the Conservation Units. The Full Protection Conservation Units, the RDSs, the Resexs, the Wildlife Reserves (RFs), and the ARIEs are excluded from the scope of public forests earmarked for forestry concession.

In Brazil, delegation is costly, done by the SFB (or another concessionary body), of the right to practice sustainable forestry management

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<sup>19</sup> Federal Law No. 11.284 of 03/02/2006. Addresses the management of public forests for sustainable production; institutes, in the structure of the Ministry of the Environment, the Brazilian Forestry Service – SFB; creates the National Fund for Forestry Development – FNDF; alters Laws No. 10.683, of May 28, 2003, No. 5.868, of December 12, 1972, No. 9.605, of February 12, 1998, No. 4.771, of September 15, 1965, No. 6.938, of August 31, 1981, and No. 6.015, of December 31, 1973; and makes other provisions.

for the utilization of products and services in a management unit. The concession is done through bidding to a legal entity, in consortium or not, that meets the demands made by the SFB in published guidelines. The investments and eventual risks run integrally on behalf of the company or consortium and the timeframe is determined (Brasil, 2006B).

In December 2007, Ordinance No. 558/2007 (MMA) ratified the practice of sustainable forestry management in the first lot of forestry concession, located in the Flona Jamari, in Rondônia. The first stage of the process was completed in September 2008, with the signature of three contracts for tracts of 170, 330, and 460 km<sup>2</sup>. The total area under concession is 960 km<sup>2</sup>, or 42.6% of the 2,250 km<sup>2</sup> of the FLONA.

The second lot of management units to be submitted to forestry concession was the Flona Saracá-Taquera, in Pará, in accordance with Ordinance 171/2008 (MMA). During the first phase the timetable was changed due to claims forwarded by the Association of Communities Remaining from Quilombolas in the Municipality of Oriximiná, which were: 1) the need to delimit the Quilombola areas in

order that these are not included in the areas of concession; 2) the absence of evaluation of the impact of the concession on the Quilombola communities, and 3) the absence of previous consultation with the Quilombola communities. This led to a temporary suspension of the bidding by order of the Federal Courts until the Federal Government identified and delimited the territories of the Quilombola and Riparian families. The SFB resumed the process in 2009. In August of the same year, the concession of 1,400 km<sup>2</sup> was bid upon and, in September, a further 930 km<sup>2</sup>.

In 2010, the bidding guidelines for the Flona Amaná (PA) were opened, with an area equal to 2,101 km<sup>2</sup> of forests to be distributed in five forestry management units. The total of lots already bid comes to 11,703.67 km<sup>2</sup> and the period of utilization is for 40 years.

For 2011, the Annual Plan of Forestry Awarding (PAOF) has identified 11 National Forests eligible for forestry concession (Pereira et al., 2010). Among those, the preliminary guidelines for the Flona Altamira (PA) and the Flona Jacundá (RO), for example, have already been opened for public consultation (Brazilian Forestry Service, 2011).



# Indigenous Lands in the Brazilian Amazon

Fany Ricardo

## Recognition process: Historic and current situation

In December 31, 2010, in the Brazilian Amazon there were 414 Indigenous Lands (TABLE 9), covering a total of 1,086,950 km<sup>2</sup>, or 21.7% of the Amazon territory. This area represents 98.6% of the extension of Brazil's Indigenous Lands .

In the 414 Indigenous Lands of the Brazilian Amazon there are 173 known peoples, with an approximate population of 250,000 people. This total does not take into consideration the population of Indigenous Lands in the initial phase of identification or the Indians who live in cities and capitals of the region. The 2010 census promises advances in this regard, as it has incorporated for the first time a specific questionnaire for self-proclaimed indigenous peoples. Provisionally (and based on scarce but varied sources) we estimate the indigenous

population inhabiting inhabits cities and rural areas in the Brazilian Amazon at 450,000.

TABLE 9 presents the legal situation of the Indigenous Lands in the Brazilian Amazon, in December 2010. Around 15% of these are in the identification process. The approved lands correspond to 74% (308 Indigenous Lands). In area, the total of approved Indigenous Lands covers slightly more than 1,023,215 km<sup>2</sup> or 94% of the area occupied by Indigenous Lands in the Brazilian Amazon.

In addition to the Indigenous Lands that are in the recognition process, there are a number of lands that several indigenous communities claim for recognition by the Brazilian State. In November 2007, FUNAI had a list of these claims recorded with the agency. In the Amazon Region they totaled 192 new lands, in addition

**Table 9. Legal situation of the Indigenous Lands in the Brazilian Amazon**

Situation	Quantity of Indigenous Lands	%	Extension (km <sup>2</sup> )	%
In process of identification	60		50.6	
With restriction on use by non-Indians	4		7,042.6	
<b>In Identification (total)</b>	<b>64</b>	<b>15.46</b>	<b>7,093.2</b>	<b>0.6</b>
<b>Identified</b>	<b>6</b>	<b>1.45</b>	<b>5,922.6</b>	<b>0.5</b>
<b>Declared</b>	<b>36</b>	<b>8.70</b>	<b>50,719.4</b>	<b>4.7</b>
Reserved	6		388.5	
Approved	14		59,464.8	
Reserved or Approved with registry in the CRI and/or SPU	288		963,361.9	
<b>Approved (total)</b>	<b>308</b>	<b>74.4</b>	<b>1,023,215.2</b>	<b>94.2</b>
<b>General Total</b>	<b>414</b>	<b>100</b>	<b>1,086,950.4</b>	<b>100</b>

to 63 Indigenous Lands to be revised/amplified. The claims are thus distributed: Acre: 4 new Indigenous Lands and 3 revisions; Amapá: 1 new lands and 3 revisions; Amazonas: 159 new lands and 20 revisions; Maranhão: 6 new lands and 4 revisions; Mato Grosso: 4 new lands and 3 revisions; Pará: 4 new lands and 4 revisions; Rondônia: 4 new lands and 7 revisions; Roraima: 1 new lands and 16 revisions; and Tocantins: 3 revisions.<sup>20</sup>

Taking into account that the Indigenous Lands forgo official recognition in order to be considered as such, there is a phase of the process that may be adopted as “creation” data, the example of which happens with the Conservation Units. Thus, we opt to show a history of the approvals of the Indigenous Lands per presidential term, which better reflects the recognition promoted by the State from the political point of view.

It is worth highlighting that there are setbacks in the recognition process, especially through the revision of Indigenous Lands prior to Decree No. 1.775/96. Therefore, the quantity of approved lands per president () cannot be simply totaled, given that many of the Indigenous Lands approved in one period were revised in later periods.

The José Sarney era, in the period following promulgation of the 1988 Federal Constitution, between 1989 and March 1990 was marked by many setbacks that generated great insecurity with regards to the effectiveness of indigenous rights. In the context of the military-inspired Northern Corridor Project Sarney sought to limit or impede the recognition

<sup>20</sup> It is possible that some of the lands on this list in 2007 may have initiated the identification process and already figure into the computation of Table 9. By the information published it is not possible to relate the name of the Indigenous Land that entered into identification with the protocolled locations.

## Chart 7. What are Indigenous Lands?

The legal framework of the Federal Constitution of 1988 was fundamental for the regularization and the expansion of the areas earmarked for indigenous peoples. Article 20 establishes that the Indigenous Lands are “territories of the Federal Government, over which the indigenous right to permanent possession and exclusive use of the riches of the soil, rivers, and lakes existing within it is recognized, with the government obligated, by means of FUNAI, to promote its recognition by declaratory act that makes its boundaries known, ensures its protection, and impedes its occupation by third parties.” Article 231 further assures the necessity of guaranteeing the lands “inhabited in a permanent character, those used for their productive activities, those indispensable to the preservation of natural resources necessary to their well-being, and those necessary to their physical and cultural reproduction, according to their uses, customs, and traditions.”

The process of formal recognition is done in steps, in accordance with the administrative procedures – established by the Indian Statute, of 1973, and altered by diverse decrees in 1976, 1983, 1987, and 1991\* - set today in Decree No. 1.775/1996. The steps of recognition are:

- 1) Lands in Identification – an anthropological study identifies the indigenous community and establishes the work done by a Technical Group (GT) specialized in questions of the ethno-historic, sociological, judicial, cartographic, environmental, and land nature. The GT is coordinated by an anthropologist and composed of technicians from FUNAI. It must present to FUNAI a detailed report, with the characterization of the Indigenous Lands being demarcated.
- 2) Approved Lands, subject to challenges: They are areas whose identification studies have been approved by the President of FUNAI and whose summary of the report has been published in the official newspaper *Diário Oficial da União*, with descriptive history and map. For 90 days the boundaries can be challenged by anyone interested (including States and municipalities) that claim indemnity or point out defects in the identification studies.
- 3) Declared Lands: They are of permanent indigenous possession, declared by the Ministry of Justice by means of ordinance. FUNAI must undertake physical demarcation and promote the removal of non-Indian occupants, compensating improvements made in good faith. INCRA is responsible for priority resettling of the non-Indian occupants.
- 4) Approved Lands: These have already received a presidential decree, approving the physical demarcation. They include the lands defined by procedures prior to 1996: The Indigenous Dominions, the Reservations, and those demarcated by INCRA, as well as Registered Lands through the Property Registration Registry of the municipalities (CRI) and/or the Secretary of Heritage of the Federal Government (SPU).

\* For more information on the systematics of demarcation of Indigenous Lands prior to Decree No. 1.775/96, access: <http://pib.socioambiental.org/pt/c/terras-indigenas/demarcacoes/introducao>.



**Table 10. Approved Indigenous Lands in the Brazilian Amazon, by presidential term, as of 1985**

Presidential term	Number of lands	Area (km <sup>2</sup> )
José Sarney (03/15/85 to 03/15/90)	53	144,428
Fernando Collor (03/16/90 to 10/2/92)	75	261,189
Itamar Franco (10/3/92 to 12/31/94)	10	54,997
Fernando Henrique Cardoso (1995 to 1998)	85	314,061
Fernando Henrique Cardoso (1999 to 2002)	18	96,369
Luiz Inácio Lula da Silva (2003 to 2006)	50	108,472
Luiz Inácio Lula da Silva (2007 to 2010)	13	76,901

of Indigenous Lands considered by others as extensive, above all in the border areas. This policy had the objective of facilitating economic utilization, especially mining, and benefitting the expansion of colonization fronts.

In the end, the Sarney Government approved 53 Indigenous Lands in the Brazilian Amazon, which corresponds to more than 140 thousand km<sup>2</sup>. However, it denied the proposal for continuous demarcation of the Yanomami and Upper Negro River Indigenous Lands dividing them into isolated portions. The first was fragmented into 19 islands, and the second into 14; both surrounded by Flonas. In January 1990, in the final days of his government, Sarney signed the decree revoking the Uru-Eu-Wau-Wau Indigenous Lands, recognized at the start of his term, in 1985.

The fragmentation of the lands into smaller and isolated areas threatens the biological and cultural continuity of the indigenous peoples, as it limits or impedes contact between the villages and exposes the populations to the front lines of commercial extractive activities, such as timber harvesting and mining, be these legal or illegal. These are some of the problems that have implications far beyond a simple totaling of Indigenous Lands.

In addition, the constant back and forth of the processes for recognizing Indigenous Lands – which occur even following the decrees approving them – also weaken the historic series of territorial extension.

This is without considering the possibility that the various phases that correspond to a single process of territorial recognition will be accounted for in diverse ways, at different periods.

The government of Fernando Collor de Mello, between March 1990 and September 1992, marks the beginning of the effects of the Federal Constitution of 1988 in Brazil. In 1991, Decree No. 22 established new bases for the administrative procedure of demarcation. In the same year, also by means of decrees, a wide-ranging reform in the National Foundation of the Indian (FUNAI) was undertaken. The indigenous body, previously linked to the now extinguished Ministry of the Interior, was transferred to the Ministry of Justice. The responsibilities for health, education, rural development, and the environment were decentralized, and came to be exercised, respectively, by the Ministries of Health, Education, Agrarian Development, and Environment. In this context, FUNAI concentrated its functions in the policies of regularization, protection, and management of Indigenous Lands.

Collor approved 75 Indigenous Lands in the Brazilian Amazon, for a total of 260 thousand km<sup>2</sup>. Sarney's decisions regarding the Yanomami and Uru-Eu-Wau-Wau Indigenous territories were repealed. The first was surveyed in a continuous fashion, with 96,640 km<sup>2</sup>, and the second was recognized, as in the original project, with 18,671 km<sup>2</sup>. However, the Roraima and Amazonas Flonas, created irregularly over Yanomami Territory, were not repealed.<sup>21</sup>

President Itamar Franco, in his 2 year mandate, between October 1992 and December 1994, approved 10 Indigenous Lands, for a total of 54,990 km<sup>2</sup>. Among these, the Menkragnoti, with nearly 50,000 km<sup>2</sup> became known for the international campaign led by the chief Raoni and by the singer Sting in order to obtain resources for its physical demarcation.

Between January 1995 and December 2002, the government of Fernando Henrique Cardoso promoted the greatest expansion of Indigenous Lands in the Brazilian Amazon. 103 Indigenous Lands were approved, for a total area of 410,430 km<sup>2</sup>, including the five continuous Indigenous Lands on the Negro River, with 106 thousand km<sup>2</sup>, and the Javari Valley Indigenous Lands, with 85 thousand km<sup>2</sup>. This result is due mainly to the Integrated Project for Protection of Indigenous Lands in the Brazilian Amazon (PPTAL) (Chart 8), one of the components of the Pilot Program for Protection of the Brazilian Tropical Forests (PPG7), coordinated by the MMA and financed by the countries of the G7, particularly Germany. The financing contract of

the PPTAL with FUNAI became a concrete reality in mid-1996.

In this year, Decree No. 1.775/1996 (still in effect) substituted Decree No. 22 in defining the surveying procedure and included the principle of contradiction in the recognition process of Indigenous Lands. This principle makes it possible for people or institutions to contest the boundaries of the Indigenous lands, when published in the official gazettes *Diário Oficial da União*, *Diário do Estado*, and affixed in the government seat of the municipality where the Indigenous Lands is located. Highly criticized to begin with, the measure did not make undermine the recognition procedures. To the contrary, 590 thousand km<sup>2</sup> were approved after the decree. However, opponents have been lawsuits with greater frequency.

### Chart 8. The PPTAL

From 1996 to 2008, the Integrated Project for Protection of the Indigenous Populations and Lands of the Legal Amazon (PPTAL) was the main program responsible for the financing and viability of the studies and work of physical demarcation of Indigenous Lands in the Brazilian Amazon.

The PPTAL proposed creating concrete, long-term alternatives to the custodial model. The basis was the encouragement of social control and qualified indigenous operation within the FUNAI and State structure. In its scope, based on the experience of the Wajãpi of Amapá, the model of "participatory demarcation" was developed, the basic premise of which is the partnership and correspondence of the indigenous peoples in the formulation of the policies that affect them directly. The demarcation itself is undertaken as one of the broadest steps of the process of sustainable management of the Indigenous Lands.

Since its creation, PPTAL has decisively contributed to the fine-tuning of the process of regularization of the Indigenous Lands of the Brazilian Amazon. In December 2010, in the finalization and balance phase, the PPTAL had still not disclosed consolidated computations with the total of lands demarcated by the agreement. In its place the creation of a new Integrated Project is considered, with the support of international cooperation, with views on the mounting of plans for protection, management, and administration of the Indigenous Lands.

<sup>21</sup> The Roraima Flona had its boundaries reduced in October 2009 by Federal Law No. 12.058, when it ceased overlapping the Yanomami Indigenous Land. The Amazonas Flona still overlaps nearly the entire area of the Indigenous Land. In the act of physical demarcation of the Yanomami Indigenous Land, the of the Federal Police destroying with bombs the clandestine landing strips of miners and other invaders who had been taking advantage of the gap in the fragmented demarcation became, indicating the risks in the model adopted.

## Balance of recognition of Indigenous Lands in the period of 2007-2010

In the period from January 2007 to December 2010, corresponding to the second mandate of President Luiz Inácio Lula da Silva, there was a heightened reduction in the recognition of the Indigenous Lands in the Brazilian Amazon. Even in comparison with his first mandate – when 50 Indigenous Lands were approved, for a total of 108,470 km<sup>2</sup> – the numbers from the second mandate are low: only 13 Indigenous Lands were approved, whose total is 76,901 km<sup>2</sup> (Table 11)

In 2007, only three Indigenous Lands received their approval decree. In 2008, only the Baú Indigenous Lands was approved. In 2009, encouraged by the commitments taken on at the 15th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 15), held in Copenhagen, Denmark, President Lula approved eight Indigenous Lands in the Brazilian Amazon, totaling 51,021 km<sup>2</sup>. And, in 2010, in December

he approved only one, the Apurinã do Igarapé Mucum Indigenous Lands, in Amazonas.

One of the causes of this deceleration in the recognition of the Indigenous Lands in the Amazon is due to the Program of Accelerated Growth (PAC), launched in January 2007. Several projects provided in this program, such as roads, hydroelectric dams, and water shipping routes, would have impacts on the Indigenous Lands, which resulted in numerous protests from the indigenous organizations and their allies. It is also worth noting that the Indigenous Lands in the recognition process, or those that have not entered into the recognition process, are located in more populated areas, or are under strong influence from planned infrastructure projects. These lands will certainly incite land conflicts.

Among the 13 Indigenous Lands approved in this period, we highlight the Apyterewa, of the Parakanã, located in the Southeast of Pará, whose decree was signed by President Lula on the Day of the Indian, April 2007. The recognition process took more than two decades to be concluded,

**Table 11. Indigenous Lands approved between 2007 and 2010**

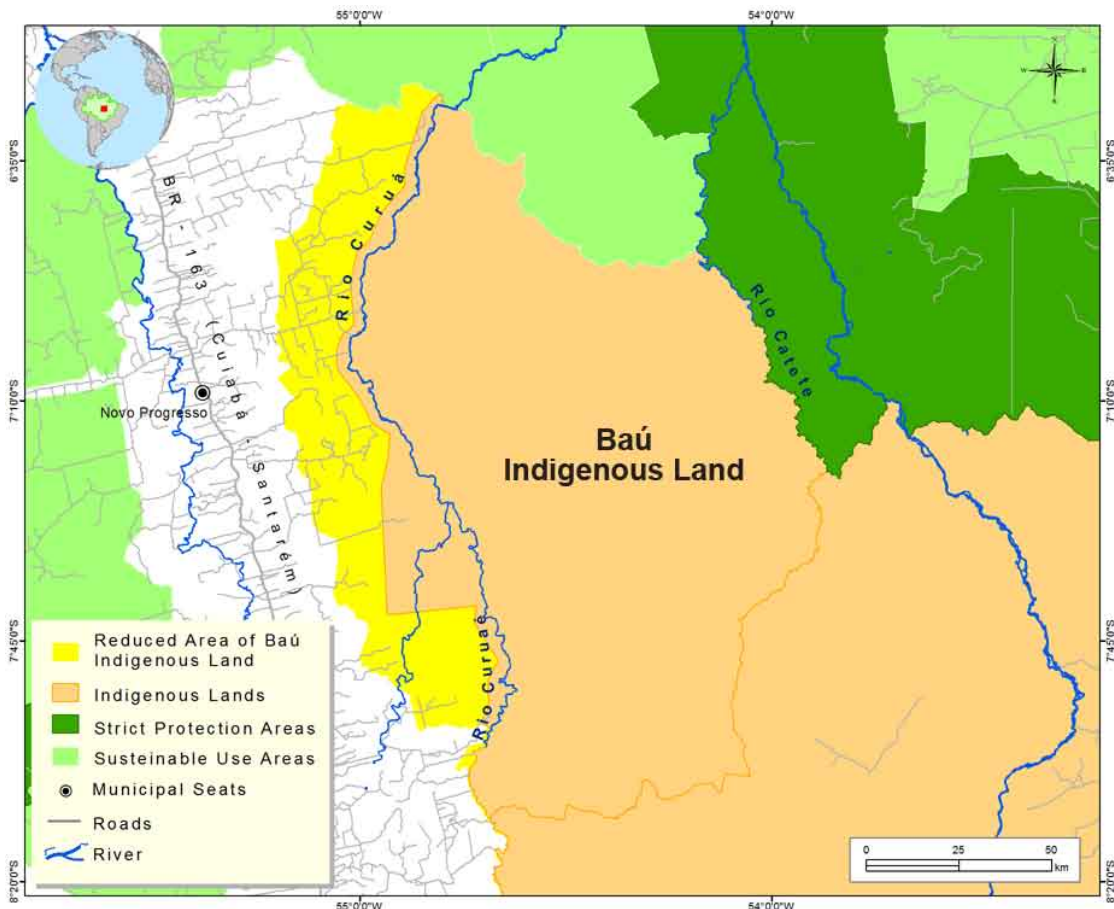
Indigenous Land	People	Municipality	State	Extension (km <sup>2</sup> )	Year
Apurinã do Igarapé S. João	Apurinã	Tapauá	AM	182.3	2007
Itixi Mitari	Apurinã	Anori, Beruri, Tapauá	AM	1,821.3	2007
Apyterewa	Parakanã	S.Felix do Xingu	PA	7,734.7	2007
Baú	Kayapó Me-krãgnotire	Altamira	PA	15,409.3	2008
Anaro	Wapixana	Amajari	RR	304.7	2009
Balaio	Tukano, etc	São Gabriel da Cachoeira	AM	2,572.8	2009
Lago do Correio	Kokama, Ticuna	Santo Antônio do Içá	AM	132.0	2009
São Domingos do Jacapari e Estação	Kokama	Jutai e Tonantins	AM	1,347.8	2009
Prosperidade	Kokama	Tonantins	AM	55.7	2009
Las Casas	Kayapó	Redenção	PA	213.4	2009
Trombetas Mapuera	Wai-Wai, Hyskariana,	Oriximiná e outros	AM/PA/RR	39,708.9	2009
Zo'é	Zo'é	Óbidos	PA	6,685.6	2009
Apurinã do Igarapé Mucum	Apurinã	Lábrea	AM	733.5	2010

with many backward and forward steps. In 1992, the Indians took permanent possession over an area of 9,800 km<sup>2</sup> (Ordinance No. 267/1992). In 1997, already under the aegis of Decree No. 1.775, a dispatch from the Minister of Justice Nelson Jobim (Dispatch No. 17) determined that FUNAI restudy the area, proposing a reduction in its boundaries to the South. In 2001, the Minister of Justice Aloysio Nunes Ferreira reduced the area, in accordance with the dispatch, to 7,734 km<sup>2</sup> (Ordinance No. 1.192/2001). The area repealed was occupied by loggers and farmers. In 2003, the president of FUNAI accepted a determination from the STJ that declared the reduction void (Writ of Mandamus No. 8.241-DF). In 2004, the Minister of Justice, Marcio Thomaz Bastos, declared the Apyterewa Indigenous Land as being of permanent indigenous possession

(Ordinance No. 2.581/2004), however maintained the 7,734 km<sup>2</sup> of the ordinances declared void. Finally, in 2007, the approval was signed. Despite being approved with the reduction, the area continues to be occupied by farmers, settlers, squatters, and loggers. Such occupation foments judicial processes and great pressure against demarcation. The reaction against the approval heated up emotions and the conflict remains latent.

In the Baú Indigenous Lands divergences also persist. The area of the Kayapó Mekragnoti was approved in June 2008, with 15,409 km<sup>2</sup>. Located in Altamira – southern Pará, near the municipality of Novo Progresso, with a timber-based economy – it had been declared as being of permanent indigenous possession in 1991, with 18,500 km<sup>2</sup>. In 1997, two mining

**Figure 10. Boundaries of the Baú Indigenous Land**



companies and the Municipality of Novo Progresso contested the area and claimed lands on the left bank of the Curuá and Curuaés Rivers. The then-Minister of Justice, Nelson Jobim, accepted the challenges and reduced the Indigenous Land by 3,500 km<sup>2</sup> (Dispatch No. 18). The reduction was not accepted by the Kayapó and generated several confrontations.

In August 2000, for example, the Kayapó detained 15 tourists who were fishing in the Curuá River and demanded demarcation of the Indigenous Lands in its integrity. The Ministry of Justice then determined immediate demarcation, with the entire extension of 18,500 km<sup>2</sup>, reestablishing the limits from 1991 (Dispatch of 08/03/2000). However, new conflicts made the physical demarcation of the area unviable. In 2003, with the intent of resolving the impasse and guaranteeing the effective demarcation of the Indigenous Lands, the Kayapó signed the accord with representatives of FUNAI and the Federal Public Prosecution Service (MPF), accepting the reduction of the area. The Minister of Justice Thomaz Bastos reduced the area by 3,070 km<sup>2</sup> (Ordinance No. 1.487) (Figure 10). However, the reduction negotiated between the parties does not coincide with the exclusion determined in 1997, in the dispatch from former Minister Jobim. In this manner, a strip of land three kilometers wide along the left bank of the Curuá River and the left bank of the Curuaés River, which widens in front of the village, in an extension of nearly 15 km.

Another similar case is that of the Anaro Indigenous Land of the Wapixana Indians, located in Roraima and approved in 2009, with 304 km<sup>2</sup>. The approval had its effect suspended until final judgment, through an injunction from the STF, over an area of 15 kilometers belonging to the Topografia Farm. The farmers allege that they bought the farm decades ago and that they develop agricultural and ranching activities. As of this moment there has not been a decision.

### Amplified Indigenous Lands

From 2007 to 2010, three Indigenous Lands were expanded: Porquinhos (MA), Rio Negro Ocaia (RO), and Bacurizinho (MA) (Table 12).

The amplification of lands also has its comings and goings. The Ministry of Justice Tarso Genro declared the Porquinhos Indigenous Lands permanent possession of the Canela Apãñjekra Indians in October 2009, expanding its limits from 795 to 3,010 km<sup>2</sup> (Ordinance No. 3.508/2009). Four months later, in February 2010, the same minister annulled the effects of the declaratory ordinance in compliance with an injunction from the STJ. And three months later, in May, he reestablished the ordinance from 2009, in compliance with the Accord of the STJ in the records of the Writ of Mandamus No. 14.987/DF.

On the other hand, in the same period (2007-2010), 17 new Indigenous Lands entered the study and identification phase in the States of Tocantins (2), Acre (3), Amapá (1), Pará (10), Mato Grosso (1), and Amazonas (4).

**Table 12. Indigenous Lands expanded between 2007 and 2010**

Indigenous Land	State	Previous Area (km <sup>2</sup> )	Current Area (km <sup>2</sup> )	Expansion (km <sup>2</sup> )
Porquinhos	MA	795	3,010	2,215
Rio Negro Ocaia	RO	1,040	2,350	1,310
Bacurizinho	MA	824	1,340	516

## Setbacks in the declaratory phase

The ordinance from the Ministry of Justice that declared the area as being of permanent indigenous possession determines the administrative demarcation of the land. The demarcation is initiated by the bidding guidelines for the work of physical demarcation, followed by the removal of the non-indigenous occupants. However, some Indigenous Lands have had setbacks in the declaratory process.

The Cachoeira Seca Indigenous Lands (PA) of the Arara Indians, for example, has been in the recognition process for more than 25 years. It is the largest area with pending demarcation recognition in the Amazon. In 1985, FUNAI interdicted the area in order to make it possible to work on attracting the Arara Wokongmã Indians, who were still isolated. In that same year, the Bannach Timber Company was installed in the area, setting up a large sawmill, opening roads and stimulating the entrance of hundreds of settlers to occupy the area.

In 1986, the first GT was created to identify and conduct a land survey. In 1992, FUNAI approved the studies and one year later the land was declared as being of permanent indigenous occupation with 7,600 km<sup>2</sup>. There was an immediate reaction against the recognition of the Indigenous Lands: The declaratory ordinance was questioned in the Judiciary and the physical demarcation was impeded by a court decision that suspended the effect of the declaratory ordinance.

In 2005 FUNAI restricted the use of the area by non-Indians for the undertaking of new studies on the Cachoeira Seca Indigenous Lands. The land survey held in 2006 identified 1,231 possessions by non-Indian occupants. In 2007 the new study was approved by FUNAI, with alterations of the boundaries and, finally, on June 30, 2008, the minister signed the ordinance

of declaration of permanent possession of the Arara Indians with 7,340 km<sup>2</sup>.

The land situation of this land is still the source of conflict. In 2009, a new physical demarcation had its contract published in the official newspaper *Diário Oficial da União*, which has motivated confrontations in the area, impeding the work of physical demarcation.

## The STF confirms the constitutionality of the demarcation of the Raposa Serra do Sol Indigenous Land

Ana Paula Caldeira Souto Maior

In the period of 2007-2010 there was the important judgment on the demarcation of the Raposa Serra do Sol Indigenous Land (RR) by the Federal Supreme Court (STF) that confirmed the constitutionality of the demarcation, but opened up gaps for interpretations that can violate the right to the land and autonomy in territorial management by the indigenous peoples.

The history of this began in 1977, when FUNAI started the demarcation of the Indigenous Lands inhabited by thousands of Macuxi, Wapichana, Yanomami, Ye'kuana, Ingarikó, Wai-Wai, Taurepang, and Patamona Indians. The Macuxi – the fourth largest indigenous population of the country – led an intense campaign in favor of the demarcation of the Raposa Serra do Sol Indigenous Land. Organized into the Indigenous Council of Roraima (CIR), they protested in regional and general assemblies, developing documents for authorities in which they denounced the violence to which they were being submitted and called for the implementation of rights to education, health, and territorial management. Together with the Ingarikó, Wapichana, Taurepang, and Patamona, the Macuxi actively participated in the demarcation process of the Indigenous Land.



In 1993, the Indians were part of the identification Working Group from FUNAI. In February 1996, based on issuance of the decree that introduced the right to adversarial proceedings (Decree No. 1.775/1996), the CIR offered subsidies to FUNAI in order to disqualify dozens of disputes presented by farmers, a miner, a municipality, and the State itself. The majority of the demarcation disputes were represented by attorneys hired by the Legislative Assembly of the State of Roraima.

Despite being declared as an area of indigenous occupations since 1998, the demarcation was only approved in 2005, in an act that created a double classification in relation to the PARNA of Mount Roraima, created in 1989. The land is indigenous, but the use of the park must be decided upon by means of shared management between the environmental body, the Indigenist body, and the indigenous communities, reconciling indigenous rights and environmental preservation.

In April 2008, the STF suspended the Federal Police operation for the removal of the last non-Indian occupants and decided to review the administrative procedure for demarcation of the area (Petition No. 3388/2005). In August 2008, the STF began the judgment of one of the best-documented FUNAI cases, with distinct indigenous participation throughout the process, strong national and international support, and with repercussion in the media.

Finally, in a judgment that lasted three sessions over seven months (August 2008 to March 2009), the STF maintained the demarcation of the Raposa Serra do Sol Indigenous Lands. However, in an innovation of legal technique that reflected the pressures suffered by the Court, it opened gaps for interpretations that may hinder the right to

the land and the autonomy in the territorial management by the indigenous peoples.

The expectation announced by the then-President of the STF, Gilmar Mendes, that the judgment on the validity of this demarcation would establish a new manner of surveying the Indigenous Lands succumbed to a solid administrative procedure, constructed over more than thirty years, strengthened by the obstinacy of its inhabitants and the use of all interested parties to adversarial proceedings. Validation of the demarcation, however, was conditioned so as to attend to interests contrary to the Indians, in a vote from Minister Menezes de Direito, who had the support of the majority of the other Ministers. The Court Reporter Carlos Ayres Britto transformed the 19 “conditions” into “safeguards” and framed them positively in the pertinent legislation.

The nearly unanimous decision that the process of demarcation is not tainted by administrative error and that the demarcation does not detract from the assets of the State, brought a solid jurisprudence to all the demarcations undertaken in accordance with the criteria established by the Federal Constitution of 1988, to wit:

- The administrative procedure of demarcation of Indigenous Lands is constitutional;
- The demarcation must be done in whole or continuous form, and not in the form of “islands”;
- The demarcation in the border zone does not compromise the nation’s territorial integrity and national defense by the Armed Forces;
- Indigenous rights to the land are based on origin. The Federal Constitution of 1988 is the temporal mark for benchmarking this right. The peoples who were not in possession at this date because they were impeded do not lose this right.



- Demarcation is an act of the executive branch and not the legislative branch.
- Environmental rights and the Indian origin rights over the land and the use of its natural resources are reconcilable.
- Demarcation of an Indigenous Land does not make the existence of units of the federation (states and municipalities) unviable or compromise its economic development.

It turns out, however, that the “safeguards” may allow for interpretations that restrict rights and cause damages to the indigenous peoples, which contradicts infra-constitutional, constitutional, and international dispositions to which Brazil is committed. Among these we highlight:

The recorder in the case established the date of the promulgation of the Federal Constitution, October 5, 1988, as the timeframe for the application of the right to the land. The application of this right demands proof of tradition of occupation: The indigenous peoples have to demonstrate the effective occupation of the lands in 1988. The STF stated the right of those peoples who were not occupying the land in 1988 as the result of expulsion by third parties. It turns out that the fixing of the mark of 1988 opened up the possibility for the interpretation of there being domain titles conceded prior to 1988 and if the Indians were not located there on that date, the lands would not be indigenous.

The expansion of a demarcated Indigenous Lands was vetoed. This condition contradicts the constitutional device with regard to the right of Indians to the land, which is considered perpetual. If the administration erred in demarcation and/or did not consider the four constitutional criteria, it is legally possible to request reparation of this error. Currently there exist nearly 90 requests for revision of demarcation of Indigenous Lands at FUNAI. Thus, by law, amplification is vetoed only

if the demarcation observed the constitutional criteria of 1988.

Indigenous use in a Conservation Unit overlapping with an Indigenous Land is the responsibility of the ICMBio, with the participation of the indigenous communities, which must be heard, taking into account the indigenous uses, traditions, and customs, with FUNAI consultation being available for this. The ICMBio must consider indigenous participation and the form in which the Indians use the overlapping land, based on the shared management initiated for the creation of participatory management.

Entrance, transit, and permanence of non-Indians cannot be subject to the charging of any tariffs or quantities of any nature on behalf of the indigenous communities; it also cannot focus or be demanded in exchange for the utilization of the roads, public equipment, energy transmission lines, or any other equipment or installations placed for serving the public, whether expressly excluded in the approval or not. This restriction may impede the indigenous peoples from practicing income-generating activities, such as tourism, in addition to being discriminatory in relation to the other Brazilians who may be indemnified for damages caused to their rights.

These safeguards or conditions are not part of the request of the action that was judged, which was annulment of the demarcation procedure; therefore, they were not submitted to debate and, to the contrary, arose from an innovation in the legal technique that seeks to guide future decisions. The interpretation of these safeguards must, therefore, consider in a coherent manner the whole decision of the STF over the case, the solid Brazilian Indigenist legislation, including international legislation to which the country is obligated, under pain of violating indigenous rights.

## Administration, management, and protection of Indigenous Lands

Leandro Mahalem de Lima

Since the Constitution of 1988, policies directed at the indigenous peoples have passed through several transformations, aimed at the creation of concrete and long-term alternatives to the custodial model that had served until then. These policies gradually become plural and decentralized, undertaken by different ministries, which act in partnership with international cooperation agencies and NGOs. The stimulus for participation and correspondence of the indigenous peoples in managing the policies earmarked for them is the basic premise guiding the group of new Indigenist actions.

As Bruce Albert points out,<sup>22</sup> the end of the 1970s and the 1980s were marked by mobilizations of the indigenous peoples and their partners, centered on the defense of their territories and gaining of rights. By the 1990s, with the formal advance of the constitutional guarantees and the demarcations of the Indigenous Lands, the political challenge turns back to the creation and participatory consolidation of the mechanisms of administration, management, and protection of the Indigenous Lands. How does one articulate the traditional modes of occupation and management with the new strategies of environmental and territorial sustainability? How does one promote intercultural dialogue, in such a way as public policies may fully incorporated, and in an integrated fashion, the demands, practices, and categories of the indigenous peoples?

In the case of the Brazilian Amazon, a region that concentrates 98.6% of the area of Indigenous Lands in Brazil, the consolidation and amplification of the participatory management process must be urgently faced as prime necessity.

In addition to historical pressures, such as migration, disorderly occupation, land-grabbing, and deforestation, it is necessary to consider the specificity of the current moment, marked by the construction of large-scale projects provided for in the Program for Accelerated Growth of the Federal Government (PAC). The new roads, ports, hydroelectric dams, mines, and other undertakings, will bring new impacts and will intensify even more the pressures already existing on the indigenous peoples of the region.

In all the Indigenous Lands both in those that still maintain a good state of environmental preservation and those that present degradation, it is necessary for the discussions and projects to advance with large steps. The support and systematic stimulus of the Federal Government and partner organizations are fundamental for effectively implementing and expanding participatory actions. In these processes, it is the aim that the different peoples may evaluate in the best way the conjuncture in which they find themselves, in order, based on this, to construct in their way effective models of administrative, management, and protection of the Indigenous Lands in which they live.

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<sup>22</sup> Source: <http://pib.socioambiental.org/pt/c/iniciativas-indigenas/organizacoes-indigenas/na-amazonia-brasileira>.

## Vagueness of the concepts of administration, management, and protections of the Indigenous Lands

In accordance with the determination of the Federal Constitution of 1988 (Art. 231), the strategies for environmental conservation of Indigenous Lands must be intimately articulated with the strategies and the notions of conservation of the indigenous peoples themselves. In this fashion, we point out that it is vital that we not confuse the administration, management, and protection policies for Indigenous Lands with the environmental management policies for the Conservation Units that, in certain cases, may be uniquely developed based on technical-scientific terms from governmental agencies.

As of the 1990s, above all as of the creation of the PPTAL<sup>23</sup> and the PDPI,<sup>24</sup> the concepts of administration, management, and protection of Indigenous Lands has been the target of varied interpretations and proposals, which involve indigenous peoples, specialists, partner organizations, and State bodies.

In the evaluation of the PDPI, the environmental problems in Indigenous Lands are, via the rule, associated to the following factors: 1) the reduction of the original occupied lands, resulting in the intensification of the utilization of the resources; 2) population increase in lands that are, by law, finite; 3) substitution of traditional forms of natural resource use for other, more intense ones; 4) external demand for existing resources in the

Indigenous Lands, increasing the intensity of utilization by Indians and third parties; and 5) new demands by the Indians for manufactured goods (Miller, 2008:2).

The PDPI also points to the lack of dialogue and political integration among the indigenous peoples and the managing bodies, as well as the focus on unilateral aspects (territorial autonomy, environmental conservation, and protection of biodiversity, food sovereignty, or generation of income), may end by accentuating the tensions and risks that it is aimed at solving. In this way, the policies of administration, management, and protection of Indigenous Lands must reflect the role of the indigenous peoples, who, together with their partners and public agencies, will be able to develop the appropriate strategies in order to guarantee the possession and sustainable use of the demarcated Indigenous Lands.

The incentive for indigenous participation in the political processes of direct interest to them gives impulse to the insertion of diverse leaders into regional, national, and international forums. Such forums cover complex themes that befit them directly, such as environmental services, carbon stocks, and immaterial heritage. In this manner, it is expected that the integrated evaluation of this broad group of questions will make it possible to build "life plans", bringing together concrete and long-lasting alternatives for the challenges of administration, management, and territorial protection of the Indigenous Lands.

<sup>23</sup> On the Integrated Program for Protection of Indigenous Populations and Lands of the Legal Amazon (PPTAL), see Chart 8.

<sup>24</sup> In 2001, by means of international cooperation (PPG7), the Demonstrative Project of the Indigenous Peoples (currently in the final phase of evaluation) was created, headquartered in Manaus and undertaken by the Secretary of Coordination of the Amazon (SCA) of the MMA. The demand originated from the indigenous peoples themselves, who complained of the difficulty of access to governmental programs of support. Broadly stimulated, its implementation brings the challenge of guaranteeing the sustainability of the demarcated territories.

Apart from the practical results, the reflections and the alternatives generated by the indigenous peoples may also bring great contributions to global discussions on current fundamental themes. However, in order that these initiatives occur in practice, it is necessary for there to be, before anything else, judicial security and the guarantee of the exclusive rights of use by the indigenous peoples on their lands, in such way that they may not be invaded or irregularly occupied.

### Public Policies related to the Indigenous Lands

With the objective of effecting indigenous participation in the undertaking of public policies directed toward them, diverse reforms and programs have been implemented in the ministerial level, in the exercising of international cooperation, and among partner organizations.

In recent years, diverse reforms and programs have been implemented with the objective of effecting a participatory paradigm. This is a complex challenge that, in order to be successful, must rely on contributions from all involved social segments.

In 2006, the National Commission of Indigenist Policy (CNPI) was created, with the participation of indigenous peoples, the State, and NGOs. This Commission, together with FUNAI, has the task of articulating the state actions in defense of indigenous rights, as well as definitively overcoming its custodial role. In 2009, the CNPI

presented a proposal of substitution of the Indian Statute of 1973<sup>25</sup> to the National Congress, which is still awaiting a vote. The new text proposes the integrated and participatory regulation of the diverse themes of the indigenous agenda: Heritage and traditional knowledge; protection and territorial and environmental management; sustainable activities and the use of renewable resources; use of water and mineral resources; social assistance; and scholastic education and health care, both differentiated.

In 2008, within the scope of the MMA,<sup>26</sup> the National Policy for Environmental Management in Indigenous Lands (PNGATI) was approved, guided by the implementation of actions of support to the indigenous peoples in the administration and sustainable management of the natural resources in their legally recognized lands. Its objective is to contribute, in a priority fashion, to the protection of the territories and the environmental conditions necessary for physical and cultural reproduction, as well as to the well-being of the indigenous communities. The indigenous peoples and the partner organizations now debate the objectives and the directives of the PNGATI, with views on creating alternatives for the conservation of sociobiodiversity in the Indigenous Lands of Brazil.

At the end of 2009, also with the objective of updating its practices and modes of functioning, the Lula Government announced a broad plan for the restructuring of FUNAI (Decree No. 7.056/2009), which promises to

<sup>25</sup> The Indian Statute of 1973, with its integrationist philosophy, is still in effect today. Between 1991 and 1994, the National Congress received a first proposal for substitution of the text, which was never voted on. In this new context, it is expected that the Congress will vote on the current proposal for substitution of the text in a regime of urgency.

<sup>26</sup> The challenge of environmental management in Indigenous Lands was defined as a responsibility of the MMA, on May 19, 1994, in Decree No. 1.141, which "provides for the actions of environmental protection, health, and support for the productive activities for the indigenous communities" (Verdum, 2006: 05). The responsibility of the Ministry is not restricted to an internal area delimited by the perimeter of the Indigenous Land, but also includes its surrounding area and the activities that, undertaken outside of the Indigenous Land, may promote impacts on the living conditions of the indigenous population. We include in this situation, for example, the cases of fluvial water pollution located upstream from the Indigenous Lands and that pass within them (Verdum, 2006: 06).

offer greater capacity for operating in areas inhabited by indigenous peoples.<sup>27</sup>

In addition to these initiatives, there are diverse programs for fomenting and supporting the administration, management, and territorial protection, created in recent years. It is the case, for example, of the Indigenous GEF, the Indigenous Identification Card, among others (Chart 9). It is

expected that these debates and new mechanisms will be effectively converted into participatory and effective public policies. To this end, it is absolutely necessary that these diffused programs and projects be articulated amongst each other. In the event there is not integration and participation, the new proposals may generate or even aggravate the problems that, from the state, they aimed at solving.

**Chart 9. Sectorial programs and projects aimed at Brazilian Indigenous Lands**

Program/Project	Proposal	Institutions Responsible
ATER	Supports indigenous projects in the areas of management, territorial control, valorization of traditional productive techniques, commercialization, aggregation of value, agro-industrialization, and certification of indigenous production.  <a href="http://www.mda.gov.br/portal/saf/programas/projetosespeciais/2308122">http://www.mda.gov.br/portal/saf/programas/projetosespeciais/2308122</a>	Ministry of Agrarian Development (MDA) – Secretary of Family Agriculture (SAF).
PPIGRE	Support for ethno-development projects, with a focus on environmental recovery and support for productive activities. The program contemplates, among others, the indigenous communities.  <a href="http://sistemas.mda.gov.br/aegre">http://sistemas.mda.gov.br/aegre</a>	MDA - SAF
PRONAF	Actions aimed at family agriculture: Technical assistance and rural extension, training, aggregation of value, and credit. It does not have any specific credit line for indigenous groups, although these groups may access the PRONAF B and C lines.  <a href="http://portal.mda.gov.br/portal/saf/programas/pronaf">http://portal.mda.gov.br/portal/saf/programas/pronaf</a>	MDA - SAF
National Program for Sustainable Development of Rural Territories	Support for the articulation and economic dynamics of territories, social administration, and strengthening of networks of cooperation.  <a href="http://www.mda.gov.br/portal/sdt/programas/territoriosrurais">http://www.mda.gov.br/portal/sdt/programas/territoriosrurais</a>	MDA - SAF
Indigenous Identification Card (Card for the Zero Hunger and Sustainable Development in Indigenous Communities Programs)	Supports indigenous projects in food security, self-sustainability, arts and crafts, traditional practices and knowledge, strengthening of the organizations and communities. Transfers resources directly to the indigenous organizations  <a href="http://www.mma.gov.br/sitio/index.php?ido=conteudo.monta&amp;idEstrutura=98">http://www.mma.gov.br/sitio/index.php?ido=conteudo.monta&amp;idEstrutura=98</a>	Ministry of Social Development and Combatting Hunger (MDS) / Ministry of the Environment (MMA)
Territories and Citizenship Program	Program for sustainable regional development and guarantee of social rights articulated on the notion of territories with social, cultural, and geographic identity and cohesion. Aimed not only at indigenous populations.	Ministry of Social Development and Combatting Hunger (MDS) in partnership with another 14 Ministries.

cont./

<sup>27</sup> By means of the FUNAI reform, the Regional Executive Administrations (AERs) and Indigenous Posts (PIs) were substituted by Regional and Local Technical Coordinations, formed by qualified technicians, hired through civil service examination, who went on to develop participatory actions together with the indigenous peoples involved. This structure provides for the creation of Consultative Councils, by means of which the indigenous peoples and the partner organizations directly participate in the formulation, implementation, and management of the public policies earmarked for them. In addition, the creation of 3.1 thousand jobs is expected, to be filled by 2012. The new structure intends, according to its direction, to overcome the historic impasses of the official Indigenist body. Apprehensive, several peoples have positioned themselves against the changes and have complained of the lack of previous consultation provided for in Convention No. 169 of the International Labor Organization (OIT).

Program/Project	Proposal	Institutions Responsible
	<a href="http://www.territoriosdacidadania.gov.br/">http://www.territoriosdacidadania.gov.br/</a>	
CGDC	Deals with defining the policies of sustainable management of the biodiversity resources in Indigenous Lands, with focus on food security and the generation of income. Aids productive projects and the valorization of community knowledge.	Ministry of Justice – National Foundation of the Indian (FUNAI)
	<a href="http://www.funai.gov.br/quem/endereco/fone/cgdc2.htm">http://www.funai.gov.br/quem/endereco/fone/cgdc2.htm</a>	
General Coordination of Indigenous Heritage and Environment	Monitors the licensing of projects with impacts on Indigenous Lands and administers the accounts originating from compensation arrangements, based on a plan for application and monitoring by the management committee. In 2005 it began supporting small projects for ethno-development.	Ministry of Justice – National Foundation of the Indian (FUNAI)
	<a href="http://www.funai.gov.br/quem/endereco/fone/cgpima2.htm">http://www.funai.gov.br/quem/endereco/fone/cgpima2.htm</a>	
Ecological Corridors Project	Has the objective of integrating Conservation Units and promoting the connection of the landscape; discouraging uses of high environmental impact and involving institutions and people in the participatory management of Protected Areas.	Ministry of the Environment (MMA)
	<a href="http://www.mma.gov.br/sitio/index.php?ido=conteudo.monta&amp;idEstrutura=109">http://www.mma.gov.br/sitio/index.php?ido=conteudo.monta&amp;idEstrutura=109</a>	
FNDF	Fosters the development of sustainable forestry activities in Brazil and promotion of technological innovation in the sector. Applies resources into forestry management, monitoring, environmental education, training of agents, and recovery of degraded areas.	Ministry of the Environment (MMA)
	<a href="http://www.mma.gov.br/index.php?ido=conteudo.monta&amp;idEstrutura=95&amp;idMenu=7383">http://www.mma.gov.br/index.php?ido=conteudo.monta&amp;idEstrutura=95&amp;idMenu=7383</a>	
Secretary of Extraction and Sustainable Rural Development (SEDR): Demonstrative projects of the Indigenous Peoples	Finances projects aimed at sustainable economy, cultural valorization, territorial protection, and strengthening of the movement and the indigenous organizations.	Ministry of the Environment (MMA)
	<a href="http://www.mma.gov.br/ppg7/pdpi/">http://www.mma.gov.br/ppg7/pdpi/</a>	
FNMA	Finances projects that envisage rational and sustainable use of the natural resources and the maintenance, improvement, and recovery of environmental quality. Supports the development of diagnostics and plans for ethno-environmental management in Indigenous Lands.	Ministry of the Environment (MMA)
	<a href="http://www.mma.gov.br/fnma">http://www.mma.gov.br/fnma</a>	
Voluntary Environmental Agents Program	The Voluntary Environmental Agents Program of IBAMA seeks to propitiate the participation of civil society in the protection of natural resources of Protected Areas. It establishes partnerships with diverse indigenous organizations in the Brazilian Amazon.	Ministry of the Environment (MMA)
	<a href="http://www.ibama.gov.br/voluntarios/">http://www.ibama.gov.br/voluntarios/</a>	
FUNBIO	Administers funds with resources originating from other institutions for products of territorial and environmental sustainability in the Indigenous Lands with interface in Conservation Units. Supports the REDD program with the Surui and is involved in the construction of the Kayapó Fund.	Ministry of the Environment (MMA)
	<a href="http://www.funbio.org.br/">http://www.funbio.org.br/</a>	





# Pressure on Protected Areas in the Brazilian Amazon

Deforestation, logging, construction of roads, and mining as key human pressures on the Conservation Units and the Indigenous Lands in the Brazilian Amazon.

Deforestation means the loss of habitat for many species and the loss of balance in the ecosystems that the Conservation Units intends to preserve. When undertaken in a predatory manner, logging can affect and compromise the integrity of the forest. In some isolated areas, illegal logging goes on to open up irregular access routes, exposing the forest to indirect impacts from the connection of these routes with roads or navigable rivers.

The roads are the means of incursion by illegal extractors – loggers, miners, hunters, wildlife traffickers, bio-pirates – and also the dissemination of forest fires. The roads also have impacts on biodiversity, through the animals killed by collisions with vehicles running over animals or the introduction of invasive exotic species.

In mining, there are cases of severe impacts on the forest, the riverbeds, and water quality. Added to this is the placer-mine activity, with its history of invasions, violence, and disrespect for the natural heritage, and we have a scenario of grave socioenvironmental conflicts, justifying the concern with the number of requests for mining projects in Protected Areas underway.

## Deforestation in the Protected Areas

Alicia Rolla e Rodney Salomão

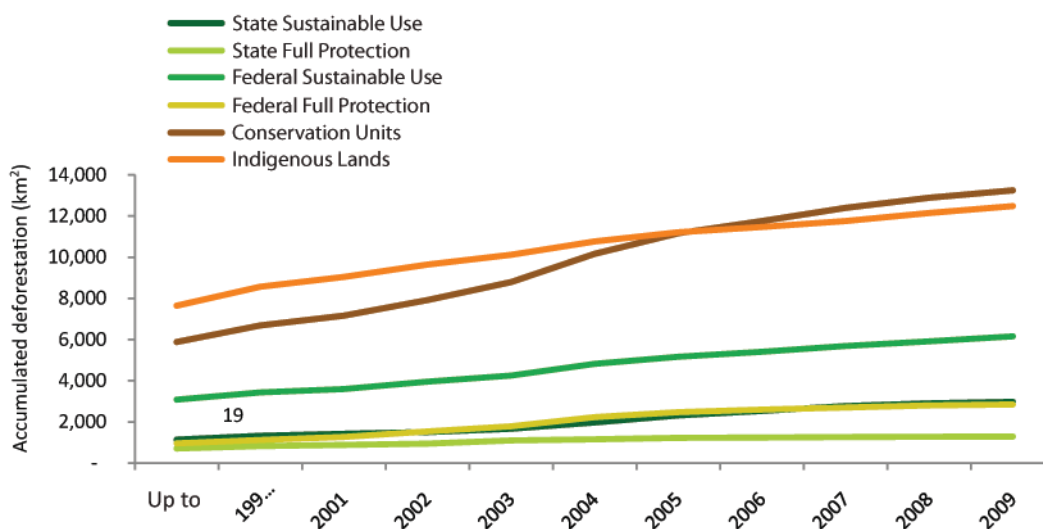
The accumulated deforestation as of July 2009 in the forested areas in the Brazilian Amazon<sup>28</sup> was 735,373 km<sup>2</sup>. Of this total, in the areas of forest within the Protected Areas<sup>29</sup> – the cutting of 25,739 km<sup>2</sup> was registered, or 3.5% of the all deforestation occurring in the region.

Of the total deforestation in Protected Areas, 13,249 km<sup>2</sup> were registered in Conservation Units and 12,481 km<sup>2</sup> in Indigenous Lands In the last decade along – from

August 1998 to July 2009 – the deforestation in the Protected Areas was 12,204 km<sup>2</sup>, half of all the deforestation occurring in the forests of these areas ((Figure 11 AND 12 Table 13).

When we analyze the deforestation by category of Protected Areas, the federal Sustainable Use Conservation Units are those that had the most deforested areas, arriving at 6,150 km<sup>2</sup> or 2.46% of their territory. The other categories of Protected Areas had a little more than 1% of their territory deforested (Table 14).

**Figure 11. Accumulated deforestation in the Protected Areas in the Brazilian Amazon up to 2009**



<sup>28</sup> Considering the Protected Areas with their configuration in December 2010. The deforestation in neither the APAs nor the TI's with restriction on use by FUNAI was computed. The APAs, by being areas of little restriction, are more aimed at territorial ordering, which includes urban areas. The Indigenous Lands with restriction because the restriction on use imposed by FUNAI is an administrative decision, aimed at knowledge of the territory. The limits of such interdiction will not be obligation by the same in an eventually identified land.

<sup>29</sup> Data on deforestation from Prodes/INPE, accessed in July 2010. The cartographic data referent to 2010 were not yet available as of the closing of this publication. The partial estimates for 2010 were analyze separately in Chart 10. Prodes maps the deforestation in the forested areas of the Brazilian Amazon, which excludes the enclaves of Amazonian Cerrado and includes forested areas of the Cerrado biome.

The numbers from Tables 13 and 14 consider the configuration of the Protected Areas in December 2010. However, in many cases, the deforestation verified in the Protected Areas occurred prior to the creation of the Conservation Units or the approval of the Indigenous Lands.

In order to verify the deforestation after the creation/recognition of the Protected Areas and to see how the previous analysis may inflate

Figure 12. Deforestation in Protected Areas in the Brazilian Amazon up to 2009

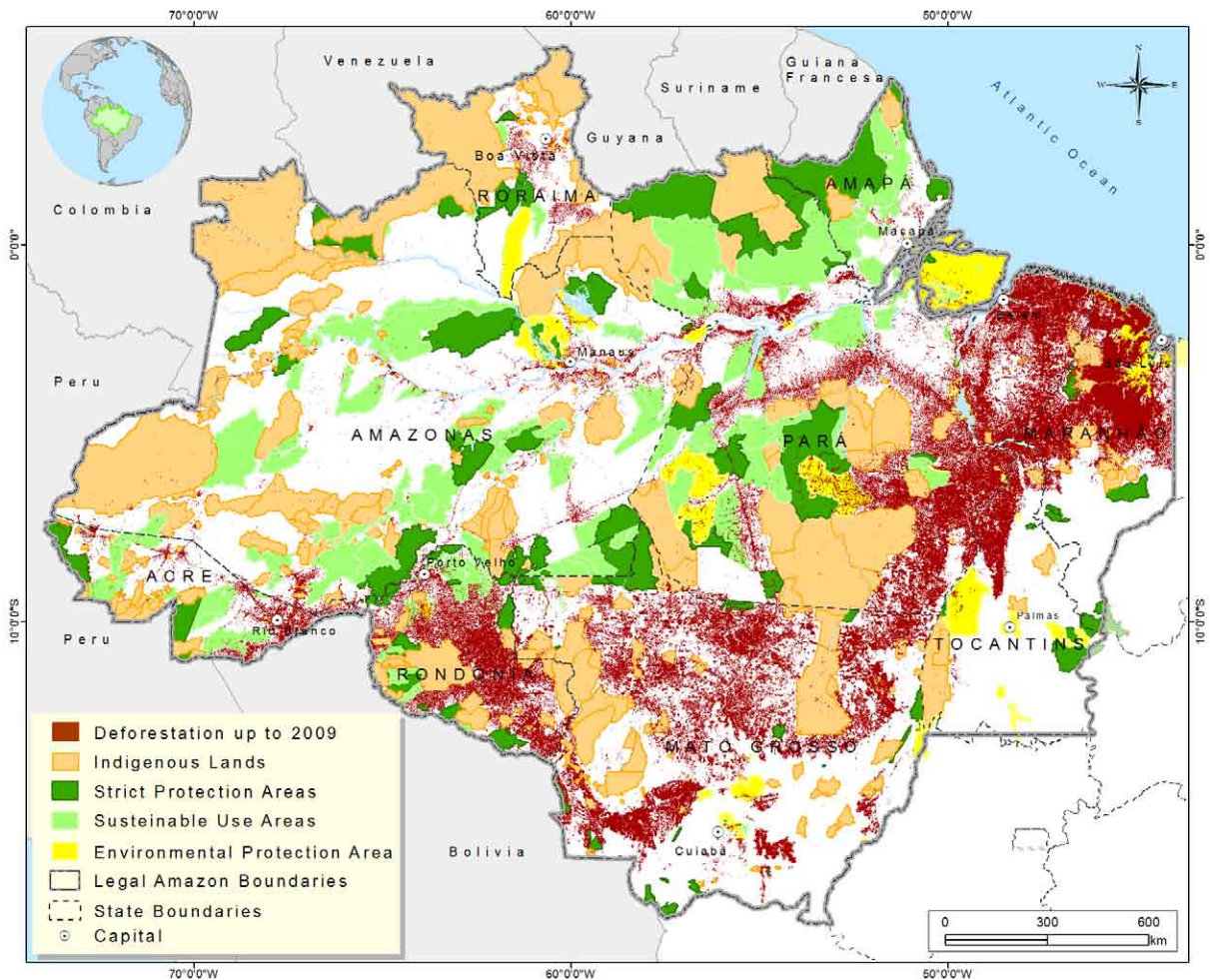


Table 13. Accumulated deforestation in the Protected Areas in the Brazilian Amazon by 2009\*

	Up to 1997	1998-2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Sustainable Use - State	1,135	1,321	1,418	1,502	1,667	1,970	2,315	2,530	2,768	2,900	2,967
Full Protection - State	708	820	875	935	1,095	1,151	1,218	1,236	1,256	1,277	1,286
Sustainable Use - Federal	3,080	3,427	3,595	3,950	4,245	4,817	5,158	5,400	5,684	5,915	6,150
Full Protection - Federal	956	1,119	1,271	1,533	1,781	2,224	2,471	2,593	2,692	2,796	2,845
<b>Conservation Units - total</b>	<b>5,878</b>	<b>6,687</b>	<b>7,159</b>	<b>7,920</b>	<b>8,788</b>	<b>10,162</b>	<b>11,162</b>	<b>11,759</b>	<b>12,401</b>	<b>12,888</b>	<b>13,249</b>
<b>Indigenous Land</b>	<b>7,647</b>	<b>8,562</b>	<b>9,038</b>	<b>9,643</b>	<b>10,119</b>	<b>10,762</b>	<b>11,210</b>	<b>11,471</b>	<b>11,757</b>	<b>12,151</b>	<b>12,481</b>

\* in km<sup>2</sup>. regardless of the date of creation/approval, excluding the APAs.

the results, we also analyze the data taking into consideration the year of creation of the Conservation Units and the approval date of the Indigenous Lands (when the boundaries of the

Indigenous Lands have already been signaled on the land by physical demarcation).

As the data on deforestation utilized (Prodes/INPE) only went on to be disaggregated

year by year as of 2001,<sup>30</sup> such analysis has only been possible as of this date. Thus, we account for deforestation year by year over all the Conservation Units and Indigenous Lands created or approved until the immediately previous year. The total accumulation of deforestation in the period analyzed is 7,985 km<sup>2</sup>, approximately one third of the total accumulated deforestation in these areas (Table 15 and Figure 13).

The creation of Conservation Units and the recognition of Indigenous Lands has not always been accompanied by the actions for their territorial consolidation, such as the physical demarcation of the lands, the removal of invasions, and the continuous surveillance, which explains part of the post-creation deforestation.<sup>31</sup>

One observes that deforestation in Conservation Units and Indigenous Lands after 2001 follows a similar rhythm. After 2006 the

**Table 14. Proportion of deforestation in the Protected Areas in the Brazilian Amazon\***

Category	% of the Category deforested
State Conservation Unit – Sustainable Use	1.22
State Conservation Unit – Full Protection	1.40
Federal Conservation Unit – Sustainable Use	2.46
Federal Conservation Unit – Full Protection	1.25
<b>Conservation Unit total</b>	<b>1.63</b>
<b>Indigenous Lands</b>	<b>1.46</b>

\* regardless of the date of creation/approval, excluding the APAs.

deforestation in the Conservation Units is superior to that of the Indigenous Lands. In absolute numbers, the Sustainable Use Units present a greater deforested area if compared to the Full Protection Units. This result does not surprise, as the Sustainable Use Units surpass by 129,312 km<sup>2</sup> the Full Protection Units,<sup>32</sup> and their category allows for the use of natural resources within their limits, although the occupation and suppression of vegetation must obey specific rules, seeking sustainability.

**Table 15. Annual deforestation in the Protected Areas in the Brazilian Amazon**

Category	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
State Conservation Unit – Sustainable Use	58	54	123	239	305	192	235	131	67	1.405
State Conservation Unit – Full Protection	32	59	154	55	65	16	20	21	9	429
Federal Conservation Unit – Sustainable Use	94	135	145	160	229	110	262	213	233	1.580
Federal Conservation Unit – Full Protection	64	61	45	110	81	70	79	91	49	652
<b>Conservation Unit – total</b>	<b>247</b>	<b>310</b>	<b>456</b>	<b>564</b>	<b>681</b>	<b>388</b>	<b>596</b>	<b>457</b>	<b>358</b>	<b>4.066</b>
<b>Indigenous Land</b>	<b>477</b>	<b>605</b>	<b>476</b>	<b>643</b>	<b>448</b>	<b>261</b>	<b>285</b>	<b>394</b>	<b>330</b>	<b>3.919</b>

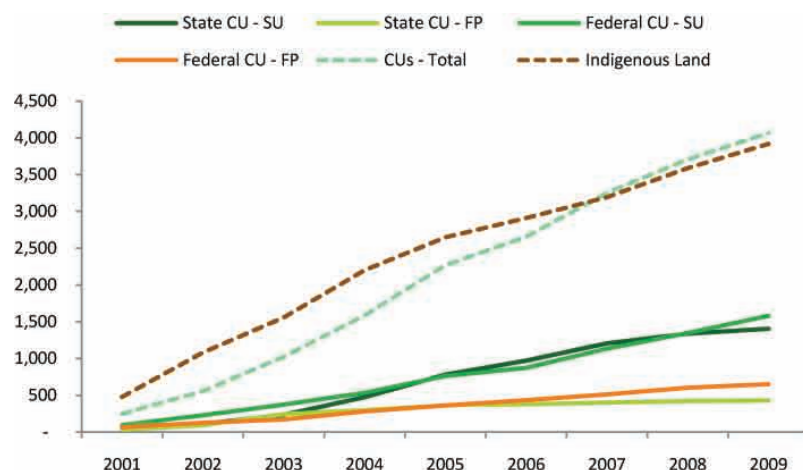
<sup>30</sup> The data offer the accumulated deforestation up to 1997, and after for the period from 1998 to 2000, and only then go on to be year by year.

<sup>31</sup> For greater contextualization of each of the cases above, access the Socioenvironmental Characterization of Indigenous Lands (<http://pib.socioambiental.org/caracterizacao.php>) and the Site of Conservation Units in the Legal Amazon (<http://www.uc.socioambiental.org>).

<sup>32</sup> Not considering the APAs, the maritime areas of the Conservation Units, and the overlap with Indigenous Lands.

With regards to the annual percentage of deforested area (area deforested in the year over the area of forest of the Conservation Units created or the Indigenous Lands approved as of the previous year), the federal Conservation Units and Indigenous Lands (Table 16 and

**Figure 13. Annual deforestation in the Protected Areas in the Brazilian Amazon\*.**



\*Following creation of the Conservation Units and approval of the Indigenous Lands (in km<sup>2</sup>)

Figure 14) were maintained below 0.15%, while the state Conservation Units presented higher proportions, mainly in 2003 (0.83%) and 2005 (0.29%). The high percentage in the state Conservation Units occurred, above all, as a result of the deforestation that occurred in the Rio Preto Jacundá Florex (RO), one of the many Conservation Units that were never implemented in Rondônia, and in the Cristalino II PES (MT), located at the edge of the agricultural and ranching expansion in the North of MT, at the limits of the arc of deforestation. In a

general way, the Conservation Units of the Full Protection group present a lesser proportion of deforestation, followed by the Indigenous Lands and the Sustainable Use Conservation Units.

As of 2005, a strong decline in deforestation is observed in the Conservation Units, coinciding with the drop in total deforestation in the Amazon. The federal Sustainable Use Units still present an increment of deforested area between 2006 and 2007, though followed by a drop between 2008 and 2009.

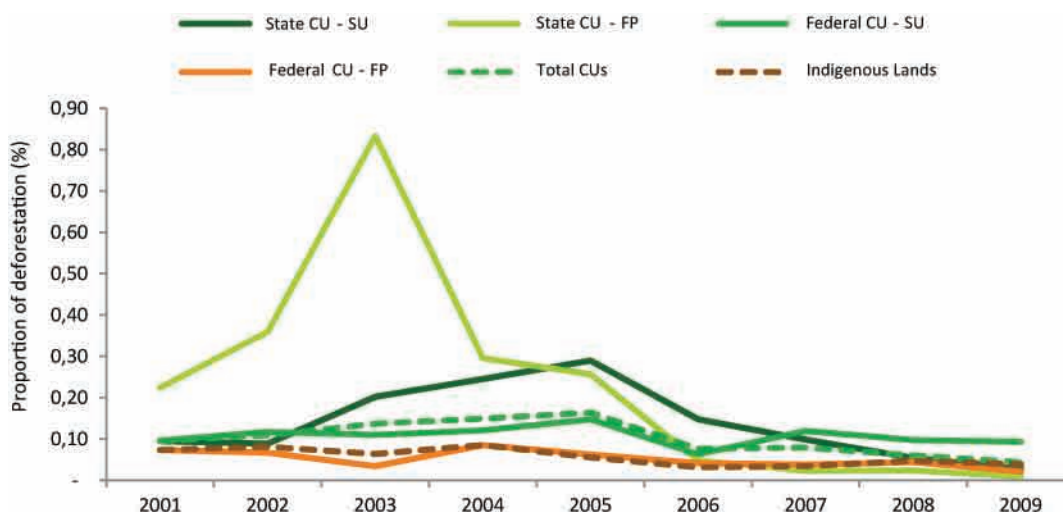
**Table 16. Proportion of annual deforestation\* in the Protected Areas in the Brazilian Amazon in relation to the extension of forest for each group (%)**

Category	2001	2002	2003	2004	2005	2006	2007	2008	2009	average total
State Conservation Unit – Sustainable Use	0,10	0,09	0,20	0,25	0,29	0,15	0,10	0,05	0,03	0,58
State Conservation Unit – Full Protection	0,22	0,36	0,83	0,30	0,26	0,05	0,02	0,02	0,01	0,47
Federal Conservation Unit – Sustainable Use	0,10	0,12	0,11	0,12	0,15	0,06	0,12	0,10	0,09	0,63
Federal Conservation Unit – Full Protection	0,07	0,07	0,03	0,09	0,06	0,04	0,04	0,04	0,02	0,29
<b>Conservation Unit total</b>	<b>0,10</b>	<b>0,11</b>	<b>0,14</b>	<b>0,15</b>	<b>0,16</b>	<b>0,08</b>	<b>0,08</b>	<b>0,06</b>	<b>0,04</b>	<b>0,50</b>
<b>Indigenous Lands</b>	<b>0,07</b>	<b>0,08</b>	<b>0,06</b>	<b>0,09</b>	<b>0,06</b>	<b>0,03</b>	<b>0,03</b>	<b>0,05</b>	<b>0,04</b>	<b>0,46</b>

\* Annual deforestation following the creation of the Conservation Units and approval of the Indigenous Lands on the extension of forest for each group in the previous year. Only the Conservation Units created and Indigenous Lands approved as of 2008 were considered. The APAs and Indigenous Lands with restriction on use by FUNAI were not considered. Deforestation: Prodes. 11/17/2009.



**Figure 14. Proportion of annual deforestation in relation to forested area in the Protected Areas of the Brazilian Amazon (excluding the APAs)**



With regards to evolution, the annual deforestation in Indigenous Lands is rather similar to that observed in the federal Full Protection Units, or rather, a light increase was observed in 2003, followed by a drop and stabilization in the following years. On the other hand, the state Conservation Units have been suffering greater impact from deforestation, in proportional terms.

In comparison between the groups, the Sustainable Use Conservation Units suffer greater proportional deforestation than those of Full Protection. In general, the annual

deforestation is greater in Conservation Units than in Indigenous Lands.

The 20 most deforested Protected Areas in the period of 2001 to 2009 (except for APAs and Indigenous Lands with restriction on use) are classified in Table 17. Among those that presented the greatest percentages of deforested area are the Mutu Florsu (32.7%), Rio Vermelho C Florsu (21.08%), and the Jaci Paraná Resex (19.88%). With regards to the Indigenous Lands, the proportion of deforestation was greatest in Maraiwatsede (26.56%), Rio Pindaré (17.46%), and Apinayé (10.60%).

### Chart 10. Recent Deforestation – SAD Data

The consolidated and geo-referenced data from Prodes referent to the deforestation that occurred in 2010 had not been provided as of the closing of this publication. Thus, we complement the information with the data from monthly monitoring of deforestation in the Brazilian Amazon undertaken by Imazon, using the System of Deforestation Alert (SAD). This system has been operating since April 2008.

Between August 2009 and January 2011, the accumulated deforestation totaled 2,345 km<sup>2</sup>. The deforestation in Protected Areas in the same period

totalled 382 km<sup>2</sup>,\* or rather, the equivalent to 16.3% of the total deforestation that occurred in the Brazilian Amazon. The Conservation Units were responsible for 77.7% (296.7 km<sup>2</sup>) of the total deforested in Protected Areas, while the Indigenous Lands held the remaining portion, 22.3% (85.3 km<sup>2</sup>) (Mariana Vedoveto).

Source: *Boletins Transparência Florestal da Amazônia Legal de Agosto de 2009 a Janeiro de 2011*. Authors: Hayashi, S., Souza Jr., C., Sales, M. & Veríssimo, A. 2010 ou 2009. [www.imazon.org.br](http://www.imazon.org.br)

\* Neither the date of creation of the Conservation Units nor the date of approval of the Indigenous Lands was considered.

**Table 17. Ranking of the Protected Areas with the greatest proportions of deforestation from 2001 to 2009 in relation to the total forested extension of the reserve (excluding the APAs)\***

Name	Area of forest in the Indigenous Lands	Deforested area from 2001 to 2009 (km <sup>2</sup> )	% deforested following creation	% accumulated deforestation
<b>CONSERVATION UNITS</b>				
Florsu Mutum	108	36	32.7	33.6
Florsu do Rio Vermelho (C)	199	74	21.1	37.2
Resex Jaci Paraná	2,046	412	19.9	20.1
Pes Serra Ricardo Franco	771	370	16,4	48.0
Resex Mata Grande	129	115	13.5	88.8
Pes Cristalino II	1.224	253	13.4	20.7
Flona do Bom Futuro	978	122	12.2	12.5
Fes do Antimary	685	87	12.2	12.7
Rebio do Gurupi	2,718	742	12.1	27.3
Flona de Itacaiúnas	1,377	199	9.1	14.4
<b>INDIGENOUS LANDS</b>				
Indigenous Land Maraiwatsede	1,446	1013	26.6	70.0
Indigenous Land Rio Pindaré	104	92	17.5	87.9
Indigenous Land Apinayé	361	156	10.6	43.1
Indigenous Land Lagoa Comprida	136	31	9.8	22.6
Indigenous Land Governador	290	52	9.4	18.1
Indigenous Land Igarapé do Caucho	122	21	9.3	17.3
Indigenous Land Manoá/Pium	242	26	6.9	10.7
Indigenous Land Urubu Branco	1,203	305	6.6	25.4
Indigenous Land Awá	1,156	365	6.0	31.5
Indigenous Land Geralda/Toco Preto	185	45	5.6	24.2

\* considering only the units with more than 100 km<sup>2</sup> of extension with forest

### Chart 11. Deforestation in the Environmental Protection Areas Deforestation in APAs

In 2009, the APAs totaled 181,817 km<sup>2</sup>, which corresponds to 15.5% of the total of Conservation Units in the Brazilian Amazon. This category of Conservation Units admits the permanence of rural properties and cities within it, justifying its separate analysis. In the Amazon, the majority of them were created in regions under great human pressure. As of July 2009, the total deforestation in the APAs of the region reached 26,674 km<sup>2</sup>, of which the vast majority (97%) occurred in the state Units and only 3% in the federal ones. The deforestation in APAs surpasses the total accumulated in the other Protected Areas, in the same period (up to

2009). The sum of deforestation in all the Protected Areas, including the APAs, reaches 52,513 km<sup>2</sup>.

In proportional terms, the most deforested as of 2009 are: The Igarapé São Francisco APA, with 68% of its area deforested, followed by the Lago do Amapá APA (67%), and the Lago de Santa Isabel APA (65%), all located in Acre. With regards to absolute area, the Baixada Ocidental Maranhense APA (MA) has the greatest deforested area, with 8,687.7 km<sup>2</sup>. In the next place appear the Reentrâncias Maranhenses APA (MA), with 6,035.9 km<sup>2</sup>; and the Triunfo do Xingu APA (PA), with 3,986.2 km<sup>2</sup> of deforested area. (Mariana Vedoveto)



In terms of deforested area after the creation (Table 18), the Conservation Units with greater deforested area are: The Rio Preto-Jacundá Florex with 684 km<sup>2</sup>; the Jaci Paraná Resex, with 407 km<sup>2</sup>; and the Gurupi Rebio,

with 329 km<sup>2</sup> of deforestation. With regards to the Indigenous Lands, the greatest deforested areas following approval were verified as being Maraiwatsede (384 km<sup>2</sup>); Xingu (259 km<sup>2</sup>), and Araribóia (128 km<sup>2</sup>).<sup>33</sup>

**Table 18. Ranking of the Protected Areas with the greatest absolute areas deforested following their creation/approval (excluding the APAs)\***

Name	Area of forest in the Indigenous Land	Deforested area following creation/approval (in km <sup>2</sup> )	% deforested following creation	% accumulated deforestation as of 2009
<b>CONSERVATION UNITS</b>				
Florex Rio Preto-Jacundá	8.283	684	8.26	8.89
Resex Jaci Paraná	2.046	407	19.88	20.13
Rebio do Gurupi	2.718	329	12.10	27.29
Flona do Jamanxim	13.026	318	2.44	9.37
Resex Chico Mendes	9.353	234	2.50	4.49
Pes Cristalino II	1.224	164	13.38	20.69
Pes Serra Ricardo Franco	771	126	16.36	47.99
Flona de Itacaiúnas	1.377	125	9.11	14.43
Flona de Altamira	7.631	123	1.62	1.64
Flona do Bom Futuro	978	119	12.21	12.52
<b>INDIGENOUS LANDS</b>				
Indigenous Land Maraiwatsede	1.446	384	26.56	70.07
PI Xingu	21.167	259	1.22	1.72
Indigenous Land Araribóia	3.957	128	3.23	5.57
Indigenous Land Alto Rio Guamá	2.868	122	4.26	31.07
Indigenous Land Yanomami	94.181	96	0.10	0.23
Indigenous Land Alto Turiaçu	5.317	88	1.66	7.12
Indigenous Land Alto Rio Negro	78.925	85	0.11	1.04
Indigenous Land Urubu Branco	1.203	79	6.59	25.39
Indigenous Land Uru-Eu-Wau-Wau	13.701	75	0.55	1.15
Indigenous Land Kayapó	28.097	74	0.26	0.45

<sup>33</sup> For more information on the pressures on each of the Indigenous Lands and the Conservation Units, access <http://www.socioambiental.org/uc/> or <http://pib.socioambiental.org/caracterizacao.php>

## Logging in Protected Areas

André Monteiro, Dalton Cardoso, Denis Conrado, Carlos Souza Jr and Adalberto Veríssimo

Illegal and predatory logging put strong pressure on the Protected Areas, mainly in areas of easy access by roads and navigable rivers (Barreto et al., 2005). If undertaken without management, logging severely affects biodiversity, interfering in the balance between species, animals, and vegetables. There are also negative impacts associated with accessing the trees selected for felling and log-skidding.

However, the greatest pressure, is in fact exerted by predatory extraction that has penetrated the Conservation Units and Indigenous Lands. In order to be legal, logging must be in harmony with the management plan and obtain a license from the environmental body. It is only possible in some Sustainable Use Conservation Units and Indigenous Lands. In Full Protection Conservation Units, logging is always illegal.

In order to monitor both the authorized extraction of timber (forestry management) and

extraction unauthorized (predatory and illegal) by the environmental body, Imazon developed the Logging monitoring system (SIMEX). With this system it is possible to identify whether logging occurs within the Indigenous Lands and Conservation Units. Currently, this analysis<sup>34</sup> is done only for the states of Pará and Mato Grosso, which are the most active fronts for timber extraction.

In Pará, according to the monitoring of logging by Imazon, between August 2007 and July 2008 approximately 521.63 km<sup>2</sup> (14% of the total) of the area affected by timber occurred in Protected Areas (Monteiro et al., 2009). In the following period – August 2008 to July 2009 – there was a significant drop in the area affected (60.72 km<sup>2</sup>) and in proportional terms (only 6% of the total affected area) in Pará (Monteiro et al., 2010) (Table 19).

**Table 19. Illegal logging in the States of Pará and Mato Grosso between August 2007 and July 2009**

Origin	Pará (km <sup>2</sup> )		Mato Grosso (km <sup>2</sup> )	
	August 2007 to July 2008	August 2008 to July 2009	August 2007 to July 2008	August 2008 to July 2009
Protected Areas	521.6	60.7	24.6	80.7
Settlements	484.4	103.3	9.2	0.8
Private Areas, returned or in dispute	2719.9	779.8	1216.6	459.8
<b>Total</b>	<b>3725.9</b>	<b>943.9</b>	<b>1250.4</b>	<b>541.2</b>

\* Fonte: Imazon/Simex.

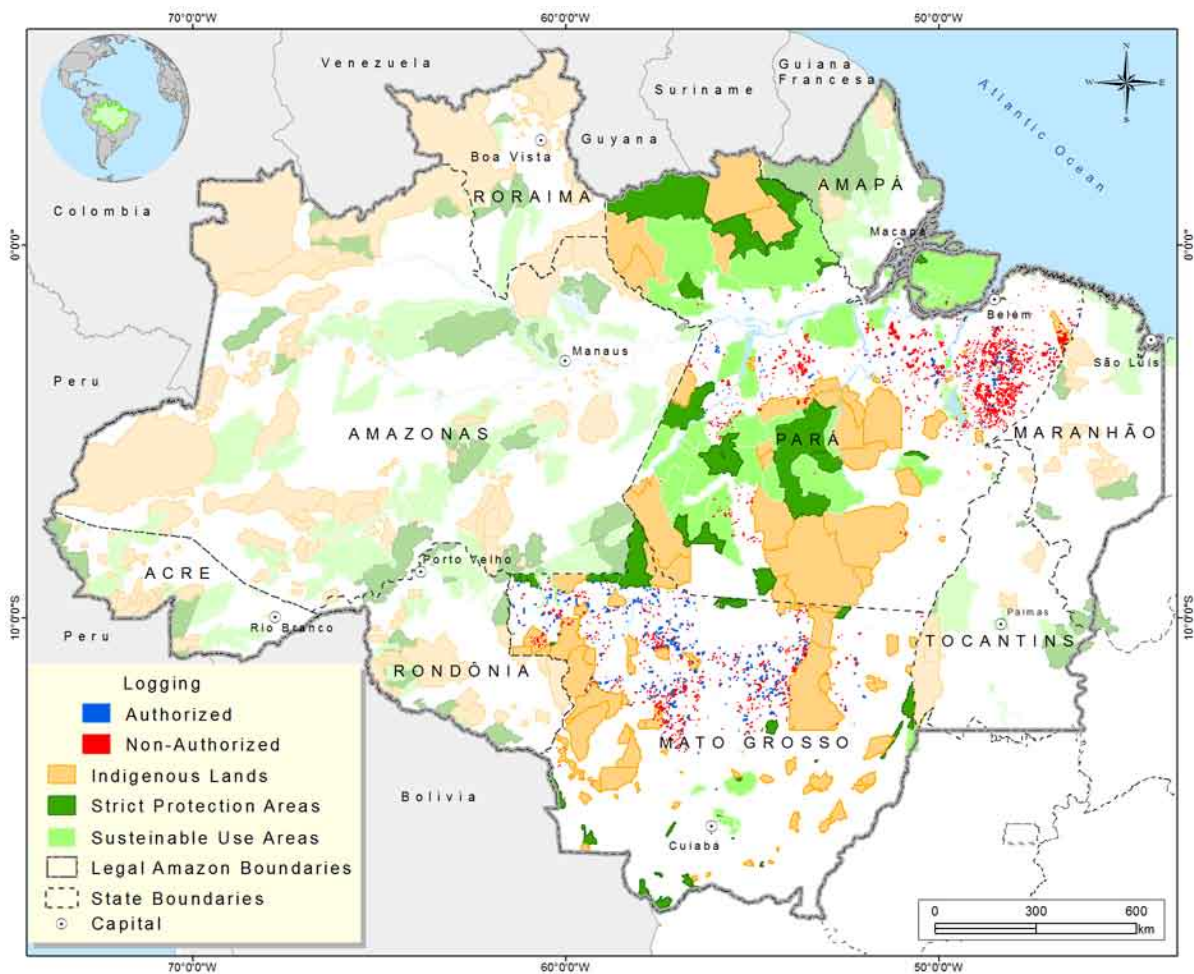
<sup>34</sup> This analysis is done based on the overlap of the boundaries of the Protected Areas with the NDFI – the Normalized Difference Fraction Index (Souza Jr. et al., 2005), originating from the LANDSAT satellite image. NDFI is an index that highlights the scars from the selective cutting of timber in the satellite images. The index varies from -1 to 1. The greater the damage in the forest canopy, lesser will be the NDFI value and vice-versa.

From August 2007 to July 2008, illegal logging in Protected Areas of Pará reached 521.63 km<sup>2</sup> of forests. Of this total, the majority (83%) was concentrated in Indigenous Lands, while the remaining portion (17%) was detected in Conservation Units. Among the areas most affected, the Alto Rio Guamá Indigenous Land was responsible for 56% (230.54 km<sup>2</sup>) of the total, followed by the Sarauá Indigenous Land (79.54 km<sup>2</sup>). Of the Conservation Units, the most affected were the Jamanxim (36.45 km<sup>2</sup>) and Caxiuanã (22.39 km<sup>2</sup>) Flonass.

From August 2008 to July 2009, illegal logging in Protected Areas in Pará fell to 60.72 km<sup>2</sup> of forest. Of this total, the vast majority (87%) occurred in Indigenous Lands, while 13% was observed in Conservation Units. The Alto Rio Guamá Indigenous Land was once again the most affected area with 47.27 km<sup>2</sup> of its area illegally logged. Among the Conservation Units, illegal logging occurred mainly in the Trairão Flona (5.50 km<sup>2</sup>).

In Mato Grosso, the area affected by illegal logging in Protected Areas corresponded

**Figure 15. Authorized timber harvesting (forestry management) and illegal logging between August 2007 and July 2009 in the States of Pará and Mato Grosso**



\* Fonte: Imazon/Simex.

to only 2% (24.59 km<sup>2</sup>) of the total between August 2007 and July 2008. However, in the following period – August 2008 to July 2009 – it increased both in absolute terms (80.65 km<sup>2</sup>) and proportional terms (7%) (Table 19 and Figure 15).

In Mato Grosso, illegal logging affected 24.59 km<sup>2</sup> of Protected Areas in the period from August 2007 to July 2008. The vast majority (83%) of this exploitation occurred in Indigenous Lands, while 17% was verified in Conservation Units. Among the Indigenous Lands, the most affected by illegal logging

were the Irantxe and Zoró Indigenous Lands. Among the most affected Conservation Units the Campos Amazônicos Parna and Serra de Ricardo Franco PES stand out.

There was an increase of illegal logging in Protected Areas in Mato Grosso in the most recent period (August 2008 to July 2009). The area exploited reached 80.65 km<sup>2</sup>. Of this total, the vast majority (95%) occurred in Indigenous Lands, and the most affected were the Aripuanã and the Zoró. Among the Conservation Units, the Guariba/Roosevelt RESEX was the one most affected.

## The impact of roads in the Protected Areas

Julia Ribeiro, Carlos Souza Jr and Rodney Salomão

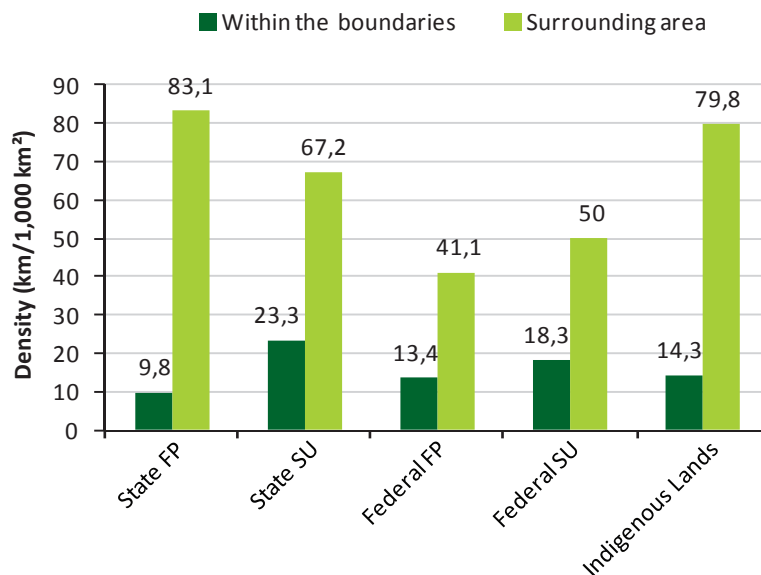
The unofficial roads define a new dynamic of occupation in the Amazon. The local players construct thousands of kilometers of these roads in public lands. These roads facilitate land-grabbing, deforestation, burning, and predatory logging, in addition to amplifying the conflicts over land possession (Souza *et al.*, 2005).

In order to evaluate the pressure exercised by unofficial roads, we established an index: Kilometer of road per 1,000 km<sup>2</sup> of Protected Areas. In 2007, the Protected Areas presented a total of 79.1 km of road for every 1,000 km<sup>2</sup> (FIGURE 16). In the Indigenous Lands, the index totaled 14.3 km of road / 1,000 km<sup>2</sup>. The State Sustainable Use Conservation Units presented

18.3 km of road / 1,000 km<sup>2</sup>, while the State Full Protection Units were cut by 13.4 km of road / 1,000 km<sup>2</sup>. The Federal Sustainable Use Units presented the greatest mileage of roads: 23.3 / 1,000 km<sup>2</sup>; whereas the Federal Full Protection Units presented 13.4 km of road. On average, the Protected Areas are occupied by 15.82 km of road / 1,000 km<sup>2</sup>.

The density of roads is significantly higher in the surrounding area (buffer zone = radius of 10 kilometers)<sup>35,36</sup> of the Protected Areas, being more significant in the area surrounding the Indigenous Lands and the State Full Protection Conservation Units (FIGURE 17). On the other hand, the density is significantly lower in the Federal Full Protection

**Figure 16. Density of roads in the Protected Areas in the Brazilian Amazon up to 2007**



<sup>35</sup> CONAMA Resolution No. 378 of 09/19/2006, instituted that the exploitation of forests and successor formations that involve management, or the suppression of forests or successor formations in rural properties is permitted in a zone of ten kilometers surrounding ILs, as long as geo-referenced information is provided beforehand to FUNAI.

<sup>36</sup> Resolution No. 428 of 12/17/2010 provides that, during a period of 5 years, counted as of the publication of this resolution, the licensing of undertakings of significant environmental impact must guarantee that said project will be located in a zone of 3 thousand meters distance from the Conservation Unit in a buffer zone.

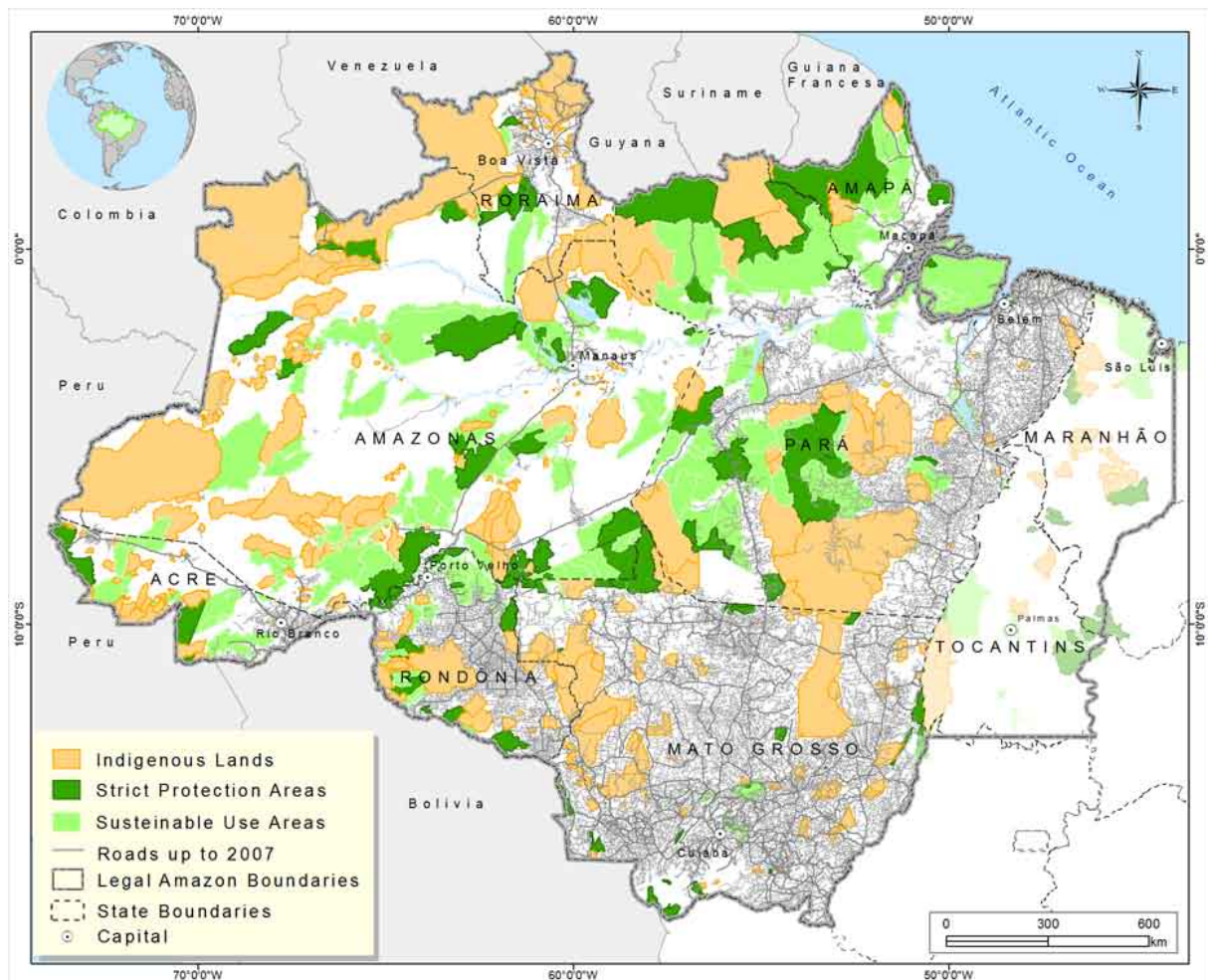


Units, as they are generally located in isolated regions or are surrounded by other Conservation Units and Indigenous Lands in the mosaics of Protected Areas (Figure 17).

In order to mitigate the advance and the impacts caused by the opening of unofficial roads,

it is recommended that the government prioritize the surveillance of the most critical locations; establish new Protected Areas, preferably in the mosaic system and in border areas with locations of open occupation; and invest in land regularization (Souza et al., 2005).

**Figure 17. Roads in Protected Areas in the Brazilian Amazon up to 2007**



## Mining in Protected Areas

Alicia Rolla and Cícero Cardoso Augusto

In September 2010 more than 30% of the Protected Areas in the Brazilian Amazon were under the impact of 11,691 mining processes,<sup>37</sup> among solicitations for research and authorized processes (Figure 18). The state Full Protection Conservation Units are the most affected, with 36% of their area under the impact of mining processes (Table 20). The Indigenous Lands have 37% of their area under impact from mining processes.

Of the total of the processes occurring, 1,338 are titled and 10,348 are processes known as “mining interests,” given that there is still no authorization granted (Table 21 and Figure 19). The Sustainable Use Conservation Units have the greatest quantity of active titles and mining interests. Among them, the requirements of mining prospecting, such as those that occur in the Paru Flota, which totals more than 400 of the total of 447 requirements

in state Units, and in the Jamanxim and Crepori Flonas, created in the mining reserve of the Middle Tapajós (Table 21).

In the Full Protection Conservation Units the exploitation of natural resources is not permitted, in such a way that the incident titled processes were either irregularly authorized or became irregular as of the creation of the protected area. The titles located in these areas are subject to cancellation (ISA, 2006).

The Federal Full Protection Conservation Units with the most active titles is the Mapinguari Parna (AM). The park has 49 titles, of which 9 are prospecting concessions (cassiterite) and 9 are mining prospects (gold), with the greater part authorized prior to the creation of the park, in 2008, and, mainly, in the area expanded in 2010 throughout the State of Rondônia.

The Grão Pará state Esex, created in 2006, currently has 54 active titles, 50 of which are

**Table 20. Mining process in the Protected Areas in the Brazilian Amazon in 2010 (km<sup>2</sup>)**

Category	No. of lands involved	No. of incident processes	Total extension of the lands involved	Extension covered by process	% of land with process
State SU	39	1,851	183,092	56,602	30.9
State FP	25	508	105,259	38,549	36.6
Federal SU	44	2,886	205,452	59,667	29
Federal FP	32	1,543	277,295	24,512	8.8
<b>Conservation Units</b>	<b>140</b>	<b>6,788</b>	<b>771,098</b>	<b>179,331</b>	<b>23.2</b>
<b>Indigenous Lands</b>	<b>151</b>	<b>4,903</b>	<b>751,781</b>	<b>303,217</b>	<b>40.3</b>
<b>Total</b>	<b>291</b>	<b>11,691</b>	<b>1,522,879</b>	<b>482,548</b>	<b>31.7</b>

<sup>37</sup> Analysis based on data from the Mining Registry obtained from the DNPM site, in September 2010, which presented 44,573 valid processes in the Brazilian Brazilian Amazon, with 12,616 titles and 31,957 interests.



Figure 18. Mining process in Protected Areas in the Brazilian Amazon

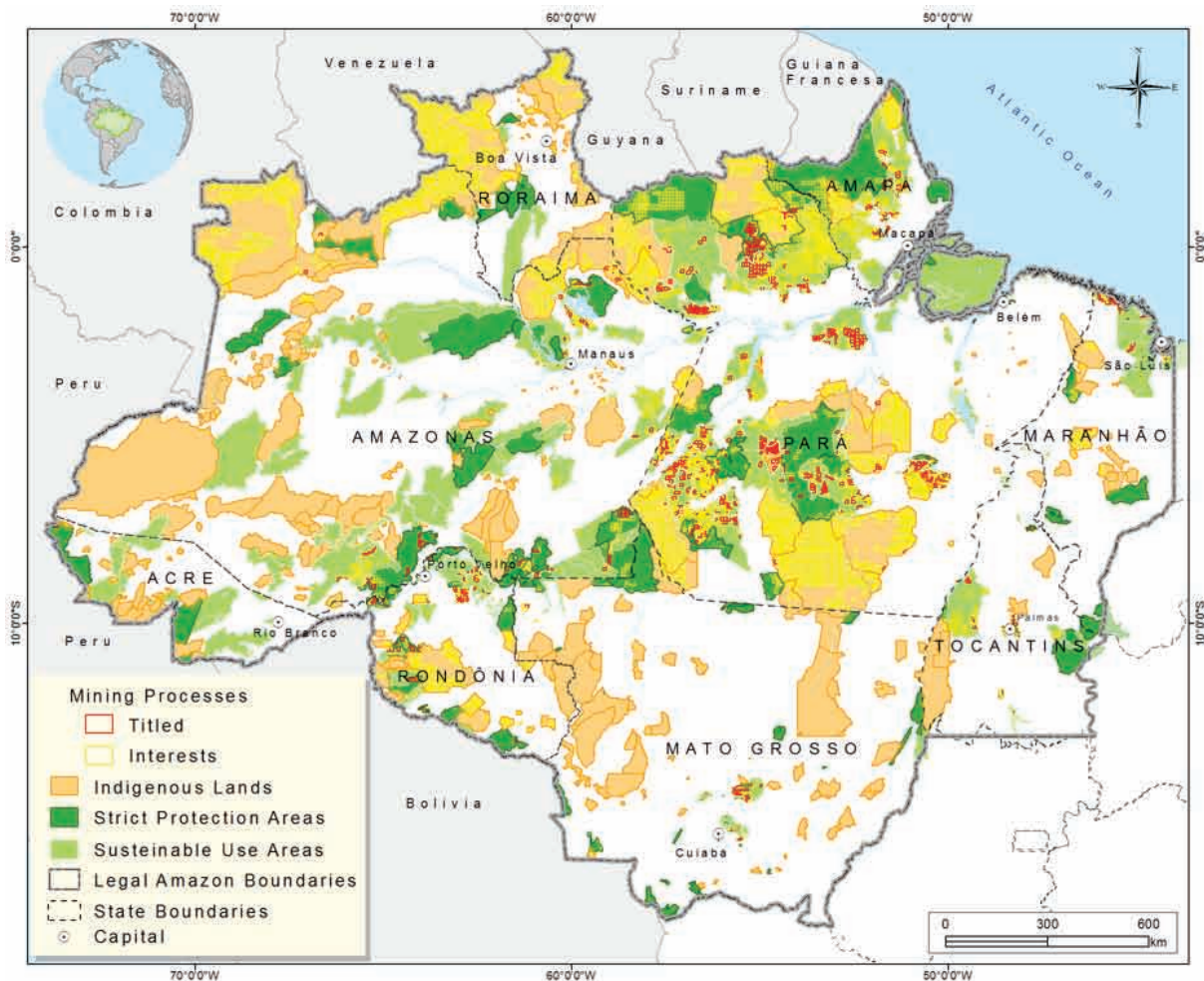
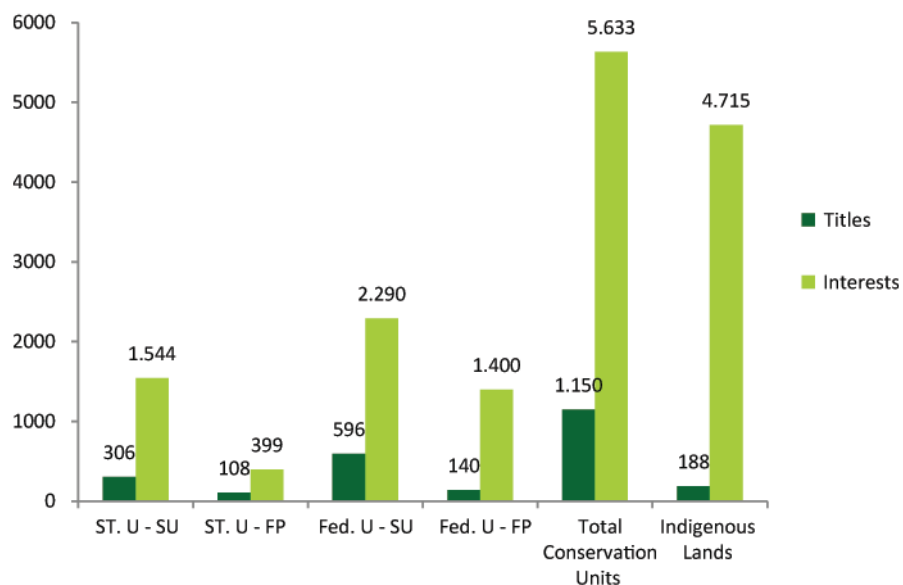


Figure 19. Mining process in Protected Areas in the Brazilian Amazon in 2010



**Table 21. Mining process in the Protected Areas in the Brazilian Amazon, per phase, in 2010**

Incident processes		State Units		Federal Units		Conservation Units total	Indigenous Lands	General Total
		SU	FP	SU	FP			
Titles	Research authorization	287	101	502	113	1,003	178	1,181
	Mining Concession	6	4	74	9	93	5	98
	Open mine concession	1	-	2	17	20	-	20
	Licensing	9	-	2	1	12	-	12
	Mining requirement	3	3	16	-	22	5	27
	<b>Total</b>	<b>306</b>	<b>108</b>	<b>596</b>	<b>140</b>	<b>1,150</b>	<b>188</b>	<b>1,338</b>
Interests	Open mine requirement	442	9	1,667	941	3,059	65	3,124
	Licensing requirement	1	-	10	1	12	4	16
	Research requirement	943	366	480	395	2,184	4,404	6,588
	Extraction registration requirement	-	-	1	-	1	-	1
	Availability	158	24	132	63	377	242	619
	<b>Total</b>	<b>1,544</b>	<b>399</b>	<b>2,290</b>	<b>1,400</b>	<b>5,633</b>	<b>4,715</b>	<b>10,348</b>
<b>General Total</b>		<b>1,926</b>	<b>567</b>	<b>2,984</b>	<b>1,713</b>	<b>7,190</b>	<b>5,321</b>	<b>12,511</b>

research and mining authorizations for aluminum for the Rio Tinto Development Company. Today, 34 Full Protection Conservation Units have a total of 248 active titles.

In the case of the Indigenous Lands, the Federal Constitution of 1988 determines that the exploitation of the subsoil of these territories can only be done in function of the approval of the National Congress, with the affected indigenous communities being heard. This determination must be regulated by Law (ISA, 2005), which did not occur as of December 2010. In this way, there is a Legal project in proceedings in a Special Commission in the Chamber of Deputies (Lower House of Congress). In the vacuum of the law, the Xipaya Indigenous Land has the greatest number

of active processes: 82 research authorizations, all prior to identification of the area.

Among the Sustainable Use Conservation Units, the Carajás Flona has the most active titles: 83. Summed to the other 78 requirements of research and areas available, the titles occupy practically 100% of the Conservation Units. Among the state Sustainable Use Units, the Amapá and Paru Flotas stand out, with 130 and 78 active titles, respectively.

Although subject to mineral exploitation in some categories, the main attribute of a Sustainable Use Conservation Unit is environmental protection. However, some Flonas have practically 100% of their areas under mining interest (Table 22).

**Table 22. Relation of the Conservation Units and Indigenous Lands with the greatest proportion of their areas under mining activity\***

Category	Name	No. of processes	Area (km <sup>2</sup> )	Area included in the process (km <sup>2</sup> )	% Area included in the process
State Sustainable Use Unit	RDS Canumã	9	180	106	58,8
	Flota do Rio Urubu	2	272	73	27,0
	RDS do Alcobaça	11	307	102	33,3
	Flota de Manicoré	5	838	278	33,1
	Flotade Maués	43	4.145	2.956	71,3
	Flota do Iriri	23	4.420	956	21,6
	Flota de Faro	39	6.324	2.067	32,7
Federal Sustainable Use Unit	Flona de Itacaiúnas	36	1.377	1.375	99,9
	Flona de Carajás	162	3.973	3.959	99,6
	Flona do Tapirapé-Aquiri	53	1.981	1.973	99,6
	Flona do Jamarí	51	2.209	1.617	73,2
	Flona do Amazonas	11	18.503	11.658	63,0
	Flona de Mulata	33	2.189	1.318	60,2
	Flona de Saracá-Taquera	88	4.434	2.464	55,6
Federal Full Protection Unit	Esec do Jari	59	2.243	1.649	73,5
	Rebio do Tapirapé	28	1.008	339	33,7
	Rebio Nascentes da Serra do Cachimbo	25	3.447	995	28,9
	Parna da Serra do Pardo	24	4.481	1.017	22,7
	Esec de Caracaraí	2	864	149	17,3
	Parna do Mapinguari	414	17.974	3.029	16,9
	Esec de Cuniã	123	1.845	286	15,5
State Full Protection Unit	PES da Serra do Aracá	2	18.609	12.727	68,4
	Rebio Maicuru	178	11.611	7.236	62,3
	PES Serra dos Martírios/Andorinhas	10	245	131	53,4
	PES Nhamundá	6	566	297	52,5
	PES Serra dos Reis	4	369	158	42,8
	PES de Guajará-Mirim	13	2.224	877	39,4
	Esec do Grão-Pará	216	42.219	14.725	34,9
Indigenous Land	Indigenous Land Ponta da Serra	4	153	153	100,0
	Indigenous Land Barata/Livramento	8	129	129	100,0
	Indigenous Land Araçá	11	515	514	99,8
	Indigenous Land Xikrin do Cateté	128	4.382	4.354	99,4
	Indigenous Land Rio Omerê	9	263	261	99,2
	Indigenous Land Boqueirão	4	165	163	98,5
	Indigenous Land Parakanã	47	3.520	3.407	96,8
<b>Total</b>		<b>4.159</b>	<b>332.293</b>	<b>167.272</b>	<b>50,3</b>

\* Somente terras com mais de 100 km<sup>2</sup> de extensão.

## Formal threats against the Protected Areas in the Brazilian Amazon

### Alterations and proposals for altering Protected Areas

Elis Araújo and Paulo Barreto

A study by Imazon<sup>38</sup> conducted in 2010 analyzed 37 formal proposals for altering 48 Protected Areas in the Amazon: 35 state Conservation Units, 16 federal Conservation Units, and 7 Indigenous Lands. The majority (68%) of the initiatives occurred between 2005 and 2010.

The alterations were proposed by means of legislative project – laws or decrees, legal projects, or decrees in proceedings – (in 69% of the studied Protected Areas); ZSEE (Socioeconomic-Ecological Zoning) of the State of Rondônia<sup>39</sup> (25%); judicial action (19%); executive decree (4%); and ordinance (4%).<sup>40</sup> As of July 15, 2010, 24 proposals (65% of the total) were concluded and 13 were unconcluded. Of the concluded cases, 7% resulted in the maintaining of the original size of the Protected Areas (114,124 km<sup>2</sup>), while 93% resulted in their suppression (loss of legal protection), for a total of 49,506 km<sup>2</sup> (Table 23).

The maintenance of the original boundaries of Protected Areas occurred via the Judiciary in actions that challenged the demarcation of two previously approved Indigenous Lands: The Yanomami Indigenous Land and the Raposa Serra do Sol Indigenous Land.

The legislative bills totaled 22,601 km<sup>2</sup> or 46% of the total area suppressed. Of these legislative bills, 82% were state-level. Rondônia was the State with the most altered Protected Areas (21), with 7 Conservation Units reduced and another 14 extinguished. Next appears Mato Grosso with 4 state Conservation Units reduced.

The suppressions undertaken were motivated by titles of possession or properties (including INCRA settlements) previous and subsequent to the creation of the Conservation Unit or the approval of the Indigenous Land; infrastructure projects (such as the construction of roads); agricultural and ranching projects; among others. In addition, only two of the 48 Protected Areas studied had their land situation totally regularized; among the Conservation Units, 29 did not have a council and 35 did not have a management plan.

At the end of our research (July 15, 2010), 29 Protected Areas had been altered and 18 were awaiting the conclusion of legislative bills and judicial actions over the situation of 86,538 km<sup>2</sup>. The majority (89%) of the cases in limbo depends on eight legislative bills in proceedings in the Chamber and in the Senate, which threaten 84,641 km<sup>2</sup> of 15 Protected Areas. The State of Pará has the greatest number (13) of Protected Areas threatened with alteration, with 2 Indigenous Lands and 11 federal Conservation Units.

<sup>38</sup> This section was based on Araújo, E. & Barreto, P. 2010. Ameaças formais contra as Áreas Protegidas na Amazônia. Estado da Amazônia n.16. Belém: Imazon, 6p. Available at: <http://bit.ly/cQvLma>.

<sup>39</sup> The ZSEE of Rondônia has been highlighted in this study because, although established by law, it was not the letter of this law that determined the alterations in the state Conservation Units and, rather, the interpretation that state Executive Branch gave to it.

<sup>40</sup> The sum of the percentages does not equal 100 because some Protected Areas presented more than one type of proposal of alteration.

**Table 23. 48 attempts of suppression of the Protected Areas in the Brazilian Amazon up to July 2010**

Legal Instrument	Result of the initiative in km <sup>2</sup>			Total
	Maintenance	Non-definition	Suppression	
Legislative Project	0	54,557	22,601	77,158
Judicial action	96,650	1,240	0	97,890
Legislative Project and action	17,475	23,006	0	40,481
Ordinance	0	0	3,091	3,091
Ordinance and Legislative Project	0	7,735	2,065	9,800
Executive Decree	0	0	9,700	9,700
ZSEE	0	0	12,050	12,050
<b>Total</b>	<b>114,124</b>	<b>86,538</b>	<b>49,506</b>	<b>250,169</b>
<b>Total of Protected Areas</b>	<b>2</b>	<b>18</b>	<b>29</b>	<b>48</b>

### The shutdown of the Conservation Units in Rondônia<sup>41</sup>

Silvia de Melo Futada

With the advance in the process of installation of the Hydroelectric Plant in Jirau, in Porto Velho, there were exchanges of the territories

of Conservation Units between the state and federal levels with repeals of state Conservation Units and the incorporation of their territories into the Mapinguari PARNA and Cuniã ESEC. After this, on July 20, 2010, the Legislative Assembly of Rondônia repealed another six Conservation Units, totaling more than 9,730 km<sup>2</sup> (Table 24).

**Table 24. Synthesis of territorial alterations in the state system of the Protected Areas in Rondônia in 2010**

Conservation Unit	Original size	Action	Modifying Law
FLORSU Rio Roosevelt	27.860	Revocation of law	Complementary Law No. 584 of 07/19/2010
FLOREX Laranjeiras	30.688	Revocation of law	Complementary Law No. 585 of 07/19/2010
FLORSU Rio Mequéns	425.844	Revocation of law	Complementary Law No. 586 of 07/19/2010
PES Candeias	8.985	Revocation of law	Complementary Law No. 587 of 07/19/2010
PES Serra dos Parecis	38.950	Revocation of law	Complementary Law No. 588 of 07/19/2010
FLORSU Rio São Domingos	267.375	Revocation of law	Complementary Law No. 589 of 07/19/2010
Rio Vermelho (D) State Reserve	173.843	Revocation of law	Complementary Law No. 587 of 07/19/2010
FLORSU Rio Madeira (A)	63.812	Revocation of law and incorporation of its territory into the Ecological Station Cuniã (federal)	Complementary Law No. 581 of 06/30/2010

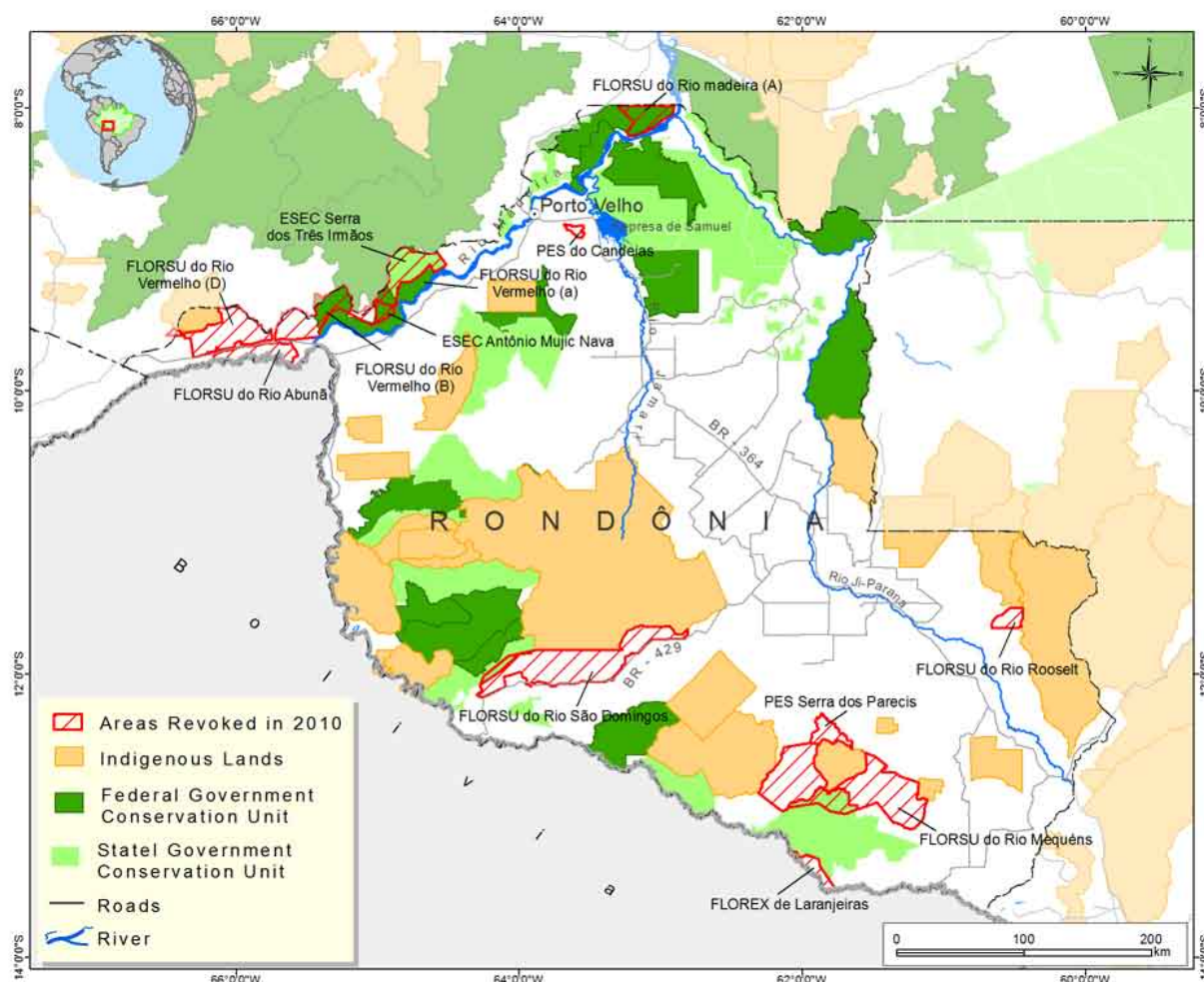
cont./

<sup>41</sup> Source: <http://www.socioambiental.org/nsa/detalhe?id=3135>.



Conservation Unit	Original size	Action	Modifying Law
FLORSU Rio Vermelho (A)	38.688	Revocation of law and incorporation of its territory into the Mapiunguari National Park	Complementary Law No. 581 of 06/30/2010 and Federal Law No. 12.249 of 06/11/2010
FLORSU Rio Vermelho (B)	152.000	Revocation of law and partial incorporation (54.023 ha) of its territory into the Mapiunguari National Park	Complementary Law No. 581 of 06/30/2010 and Federal Law No. 12.249 of 06/11/2010
State ESEC Antonio Mujica Nava	18.281	Revocation of law and incorporation of its territory into the Mapiunguari National Park	Complementary Law No. 581 of 06/30/2010 and Federal Law No. 12.249 of 06/11/2010
State ESEC Serra dos Três Irmãos	99.813	Revocation of law and partial (14.801 ha) incorporation of its territory into the Mapiunguari National Park	Complementary Law No. 581 of 06/30/2010 and Federal Law No. 12.249 of 06/11/2010
APA Rio Pardo and FLOTA Rio Pardo	144.417	Created on the territory that was previously part of Flona Bom Futuro. The exact limits of each protected area will be drawn by the state Executive Department, in a multidisciplinary committee.	Complementary Law No. 581 of 06/30/2010

Figure 20. State Conservation Units revoked in Rondônia in 2010



The two parks, the three forests, and the state reserve repealed on this date (Figure 20) were created in 1990, in the context of the Agricultural and Ranching and Forestry Plan of Rondônia (Planaflo). The creation of this and other state Protected Areas was a condition for the disbursement of the loan from the World Bank to Planaflo. However, none of the said units went on to be effectively implemented.

The Socioeconomic and Ecological Zoning of the State of Rondônia (ZSEE), published in 2000 (State Complementary Law No. 233/2000), ignored the existence of these state Conservation Units. The shutdown only crystalized a process installed in fact for years.

### Indigenous Lands on the agenda at the National Congress

Ana Paula Caldeira Souto Maior

The National Congress, with the power to legislate on indigenous rights, has been reflecting the dissatisfaction of sectors mainly opposed to the demarcation of the Indigenous Lands. In recent years the proposals in the Chamber and the Senate have increased which seek to alter the form in which the demarcation is undertaken by the executive branch, submitting them to the approval of Congress, and halting the ordinances of the Ministry of Justice and the decrees from the President of the Republic, who respectively declared them to be of indigenous possession and approved the demarcation of the lands.

These proposals are fated to archiving, as they seek to alter rights considered fundamental – in the case of the proposals for alteration of the Constitution – or by being unconstitutional – in the case of the proposals for alteration of infra-constitutional laws.

In the case of the proposals in which the Legislature seeks to exercise the control of acts practiced by the Executive, these tend toward non-approval by being acts relative to the demarcation of Indigenous Lands considered administrative and non-normative acts, and thus out of the control of the Legislature. Despite the small chance of approval, the parliamentarians proposed such alterations in order to attend to their electoral and financial bases and to politically strengthen their alliances. The indigenous and support organizations, on the other hand, constantly articulate with parliamentarians favorable to the maintenance of indigenous rights.

Of these proposals, those that envisage authorizing the exploitation of water resources in Indigenous Lands present greater potential for harm, be that for the generation of energy or for the construction of commercial waterways. Despite there being a gap, in terms of specific legislation in what is said with regards to the conditions under which there can be exploitation of water resources, Congress approved, in record time and without previous consultation with the affected populations, the construction of the Belo Monte Hydroelectric Dam on the Xingu River and has another five proposals in proceedings for the approval of hydroelectric dams and commercial waterways – three of these located in Roraima affecting the Yanomami and Raposa Serra do Sol Indigenous Lands. The pressure for exploitation of the hydro energy potential in the Amazon coming from the executive power is great. In the absence of previous consultation and legislation that guides the authorization by Congress, the tendency is toward the creation of conflicts that may intensify in the future.

The exploitation of mineral resources in Indigenous Lands is the object of a proposal from 1996 that, mobilized by the mineral



sector, returned to proceedings in 2007, but was interrupted in the face of articulation from the indigenous movement. These articulations made the National Commission on Indigenist Policy (CNPI) promote a consultation with the indigenous peoples for the creation of a new Statute of the Indigenous Peoples (EPI) demanding that the themes referring to indigenous rights be regulated, including those relative to the exploitation of mineral resources in the subsoil of Indigenous Lands. Despite a small advance in the proceedings of the new Statute, the two legislative proposals have been halted and are expected to return to proceedings in 2011.

Also cause for concern are the proposals for complementary law that intend to define that which is “relevant public interest of the Federal Government,” and that provide exceptions to the right of permanent possession of the land and rights of exclusive use by the indigenous peoples. Three proposals underway in Congress that instead of establishing a procedure that defines with supporting arguments what constitutes the “relevant interest of the Union,” in cases of acts that will affect Indigenous Lands declare, in a generic and random manner, that the construction of roads, railways, and other types of projects are of relevant interest to the Federal Government.

On a positive note, a proposal was presented for the creation of the National Council of Indigenist Policy, which is composed equally by indigenous representatives, indigenists, and the government, with consultative and deliberative power over public policies focused

on the indigenous peoples. The issuance of the Statute of the Indigenous Peoples, which was held up for more than a decade in the Lower House in Congress, may also be positive if the contents of the CNPI proposal were approved, which provides for, in addition to the regulation of the use of water and mineral resources, the regulation of the police power of FUNAI and the payment for environmental services.

### Responsibility for environmental crimes in Protected Areas

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Elis Araújo and Brenda Brito

Studies by Imazon in 2009 revealed that the impunity of environmental offenders predominated in administrative and penal processes in the federal level.<sup>42</sup> The impunity results from the delay in the conclusion of the processes and the low fulfilling of the sentence. Several initiatives exist on course to change this situation, but the majority of the cases are recent and their results, incipient.

The analysis of the 34 biggest cases of fines applied for environmental infractions in Protected Areas of Pará indicated various deficiencies in the punishment of offenders by IBAMA: As of March 2008, only 3% of these cases had been concluded; 3% were in the administrative action phase; and 24% were in the appeals phase (administrative or judicial). The majority (70%) were still in the analysis phase prior to approval (confirmation) by the executive manager, with the possibility of appeals at other levels.<sup>43</sup> IBAMA has even missed the

<sup>42</sup> Barreto, P.; Mesquita, M. 2009. Como prevenir e punir infrações ambientais em áreas protegidas na Amazônia? Belém: Imazon. 52 p. Available at: [http://www.imazon.org.br/novo2008/publicacoes\\_ler.php?idpub=3638](http://www.imazon.org.br/novo2008/publicacoes_ler.php?idpub=3638); e Barreto, P.; Araújo, E. & Brito, B. 2009. A Impunidade de Crimes Ambientais em Áreas Protegidas Federais na Amazônia. Belém: Imazon. 55 p. Available at: <http://www.imazon.org.br/novo2008/arquivosdb/ImpunidadeAreasProtegidas.pdf>

<sup>43</sup> As of July 2008, depending on the amount of the fine, the accused party may present resources of defense in up to four instances. Currently, the accused party may appeal for up to two instances, according to IBAMA Regulatory No. 14/2009. In addition, at any moment the administrative fine may be challenged judicially.

legal deadline for approval of all the cases that passed through this phase.<sup>44</sup>

The delay in the conclusion of the cases is associated with several factors. In 2008, for example, the deficit of prosecutors in IBAMA in the Brazilian Amazon was 54%<sup>45</sup> and in Pará, 33%. This scarcity is aggravated by the underutilization of the prosecutors' time. As of May 2008, the prosecutors were expected to evaluate all the acts prior to approval, even those whose defense arguments were only token.<sup>46</sup> These cases reflect the generalized impunity of offenders of federal regulations, as only 10% of the fines emitted by the federal surveillance bodies are collected. Among these bodies, IBAMA is the national champion of uncollected fines, with 11.8 billion or 58% of the total.<sup>47</sup>

The analysis of 51 environmental crime cases underway in the Federal Justice of Pará also showed deficiencies in the punishment of environmental crimes: Two thirds were in proceedings; in 16% the statute of limitations had taken effect<sup>48</sup> and 4% resulted in acquittal through lack of evidence. Only 14% of the cases led to some type of punishment. Of these, 4% of the deals had been fulfilled by the accused to avoid the suit (penal transaction) or to suspend it (conditional suspension of the case), and 10%

of the offenders fulfilled the penalties.

The delay in the judicial processes already begins as of the communication of the crime to the Federal Police of the MPF, which favors the prescription of the crimes. In the investigation phase, the delay is related to the functions accumulated by the police marshal. In the Judiciary, the delay is due to the complex registration routines that consume up to 73% of the total processing time (mainly the use of letters rogatory<sup>49</sup>). The sum of the measures of all the phases, from the pre-investigation period (from the moment in which the crime occurs up to the moment of its communication to the Federal Police or the MPF), revealed that one case of environmental crime takes approximately six years to be judged by the Judiciary.

Several measures are on course for improving environmental responsibility. In the administrative scope, the change in the rules undertaken in May 2009 to ascertain environmental infractions is highlighted, with an increase in the number of judging authorities and a decrease in the levels of appeals.<sup>50</sup> The Judiciary is undertaking procedural virtualization<sup>51</sup> (an electronic judicial procedure, accessible via internet) and specialization of federal courts in environmental matters.<sup>52</sup>

<sup>44</sup> Deadlines established in accordance with the Environmental Crime Law (Law No. 9.605/1998) and through IBAMA Regulatory Instruction No. 08/2003.

<sup>45</sup> According to ordinance No. 956/2008 of the Federal General Prosecutor's Office (PGF), only 22 of the 48 prosecutors necessary existed.

<sup>46</sup> Vulcanis, A. Electronic publication [personal message]. Message received by <marilia@amazon.org.br> on April 17, 2009.

<sup>47</sup> See more details at: Cabral, O. "Calote bilionário." *Veja Magazine*. Available at: <[http://veja.abril.com.br/180209/p\\_062.shtml](http://veja.abril.com.br/180209/p_062.shtml)>. Access on February 25, 2009.

<sup>48</sup> The statute of limitations takes effect when the State does not observe the legal deadlines for initiating and concluding the penal process, as well as applying the penalty.

<sup>49</sup> Letter rogatory is the means by which a judge requests another in a different jurisdiction to undertake procedural acts in relation to the parts of the processes – such as citing and interrogating a defendant, subpoenaing and hearing witnesses – which fall under their scope of performance.

<sup>50</sup> See Federal Decree No. 6514/2008 and Law No. 11941/2009 and IBAMA Regulatory Instruction No. 14 of May 15, 2009.

<sup>51</sup> CNJ (National Council of Justice). 2008. "Projudi completa um ano de funcionamento no Rio Grande do Norte." News Item from March 17, 2008. Available at: <[http://www.cnj.gov.br/index.php?option=com\\_content&task=view&id=3857&Itemid=167](http://www.cnj.gov.br/index.php?option=com_content&task=view&id=3857&Itemid=167)> Accessed on May 19, 2008.

<sup>52</sup> Resolution of the Council of Federal Justice No. 102 of April 14, 2010.

The majority of these measures are recent and will be implemented gradually, with results in the mid- to long-term. Therefore, it is fundamental to invest in the prevention of environmental crimes. For example, the measures taken by the federal government to contain the increase in deforestation in the Amazon as of the end of 2007 must be maintained: 1) the restriction

of credit on property over 400 hectares without environmental license and without title throughout the entire Amazonian biome; 2) the increase in surveillance actions; 3) the co-liability of anyone buying products originating from areas affected by illegal deforestation, a process that has been successfully employed against illegal ranching in Pará.<sup>53</sup>

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<sup>53</sup> See Barreto, P.; Silva, D. 2009. "Os desafios para uma pecuária mais sustentável na Amazônia." *O Estado da Amazônia* n. 14. Belém: Imazon, 6p. Available at: [http://www.imazon.org.br/novo2008/publicacoes\\_ler.php?idpub=3663](http://www.imazon.org.br/novo2008/publicacoes_ler.php?idpub=3663)

## Conclusion

There has been great progress in the creation of Conservation Units in the Brazilian Amazon in recent years. For the period from 2007 to 2010, however, there was a reduction in the quantity of Conservation Units in relation to the period from 2003 to 2006. In addition to the large portions of areas converted in Conservation Units these territories have been created in strategic areas for the conservation of species, ecosystems, and traditional populations; for blocking of illegal activities, landscape planning, and development of sustainable forestry activities. In relation to the Indigenous Lands, their demarcation and approval occurs in slower stages. Although large part of the indigenous territories has already been officially recognized in the Brazilian Amazon, there are still large areas to be approved, in addition to conflicts with other economic activities and diverse interests.

The management and pressure indicators demonstrate that the great challenge is to invest in the implementation and surveillance of the Protected Areas. In the case of the Conservation Units, it is necessary to increase the number of concluded management plans and management councils, as well as to reinforce and qualify the low number of workers placed in the Conservation Units of Brazilian Amazon.

The Protected Areas are not immune to threats. Deforestation, roads, mining, logging, and the attempt to repeal some areas are examples of direct impacts on Protected Areas. Other factors, such as hunting, land-grabbing, agriculture and livestock, fragmentation, and the potential indirect impacts generated by infrastructure projects were not covered, but also present serious threats over these locations, indicating that the pressure on the Protected Areas is greater than that presented in the present project.

In order to guarantee the integrity of the Protected Areas, it is important to curb the irregular uses and occupations as well as deforestation, by means of local surveillance and remote sensing monitoring, guaranteeing the local populations their exclusive rights. The environmental bodies (federal and state) and the Public Prosecution Service may contribute to the surveillance and monitoring through investment in new technological resources in order to increase the efficiency and transparency of their actions, allied with a program of auditing, instruction, and training of their staff.

The scarcity of human resources and insufficiency of financial resources will be the great challenges in the coming years for the consolidation of the Protected Areas of the Amazon. Programs such as the PPG7 and the ARPA are fundamental for the consolidation of the Protected Areas. The sources of financing of Protected Areas must be amplified and the mechanisms of transference of resources must be transparent, guaranteeing the coherent allocation of what is collected, not only to

the management bodies, but also in such a way as to strengthen sustainable initiatives and productive chains that involve the traditional knowledge of the involved communities. Other sources of financing, such as the Environmental Compensation Fund, and the initiatives of international cooperation, are key tools for ensuring the future of the Conservation Units and the Indigenous Lands as instruments of conserving the Amazon Rainforest. In order to optimize the investments and the efforts involved, it is still necessary take on the challenge of creating Protected Areas in a participatory manner and consolidate plans for territorial management of the Conservation Units and Indigenous Lands, with focus on a shared socioenvironmental agenda.

## Methods

For the history of creation of Conservation Units and Indigenous Lands and evaluation of their current situation, the Conservation Units created as of December 2010 and the indigenous areas in all the phases of the recognition process were considered. The federal and state Conservation Units were considered, with the exception of the RPPNs. The Municipal Units and Quilombola Territories were excluded from the analyses due to the difficulty in obtaining cartographic data on these areas.

The monitoring of the creation, implementation, management, and status of the Conservation Units of the Brazilian Amazon is mainly done by the daily reading of the official union press *Diário Oficial da União* and similar publications of the States in the Brazilian Amazon (with the exception of Amapá, which does not have an online official press). This survey includes research and projects developed in Conservation Units, physical and historical characteristics of these areas, exploitation of resources, conflicts, and published news items. The information is archived in the System of Protected Areas, developed by ISA. The perimeter of the lands described in the official creation or recognition documents was released on the official cartographic base in the scale of 1:250,000.

For an analysis of the area effectively protected in the Amazon under Conservation Units and Indigenous Lands, we subtracted the overlapped areas a hierarchy of: The precedence of the Indigenous Lands as originating territories, followed by the precedence of the Full Protection Conservation Units over the Sustainable Use Areas, and, finally, the precedence of the federal government over the state. In this manner, all the areas overlapping Indigenous Lands were considered as being Indigenous Lands, and so forth. In order to obtain the percentage of the protected territory, the ocean areas were not considered.

For the analysis of management, an effort was made to validate the collected information and to detail the current state of formation and performance of the management councils, development of management plans, and number of workers employed in the Conservation Units of the Brazilian Amazon, through a consultation held together with all the managing bodies (OEMAs and ICMBio) in July 2010. The information on the System of Protected Areas was submitted for correction, updating, and detailing of the unpublished data by the official press and was updated as of December 2010. The OEMAs of the States of Amazonas, Amapá, Acre, Maranhão, Mato Grosso, Pará, Roraima, and Tocantins responded to the letters sent.

For the analyses of deforestation in the Conservation Units, we utilized the deforested areas mapped by Prodes/INPE, for the years from 1997 to 2009, in the Amazon biome. The data on deforestation were crossed with the map of Protected Areas of the Brazilian Amazon. Two analyses were performed: One on deforestation accumulated in what are today Protected Areas, and the other in which the deforestation occurring prior to the creation of the Protected Areas was discounted.

In this case, for the Indigenous Lands we considered the date of approval as the framework. The analysis utilized the configuration of the Conservation Units and Indigenous Lands in December of 2010 and, thus, the diverse reductions that occurred in the state Conservation Units were not considered, nor were the Conservation Units repealed in the State of Rondônia, which detained the largest indexes of deforestation. The proportions of deforestation utilized the forest area of the Protected Areas that is the object of mapping by Prodes/INPE. The APASs were excluded from the analyses because the present dynamics of private deforestation and occupation. The ranking considered only the Protected Areas with an area of forest greater than 100 km<sup>2</sup>.

For the analyses of the density of roads in the Protected Areas and their surrounding area (a radius of 10 kilometers from the boundaries of the Unit), the data on official roads and unofficial roads, mapped by Imazon for the year 2007, were used. For the analysis the Amazon Biome was considered, with the exception of Tocantins and Maranhão, and parts of the States of Rondônia and Mato Grosso.



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Cristalino State Park, Mato Grosso, Brazil. Photo: Araquém Alcântara, march, 2007.