REPORT

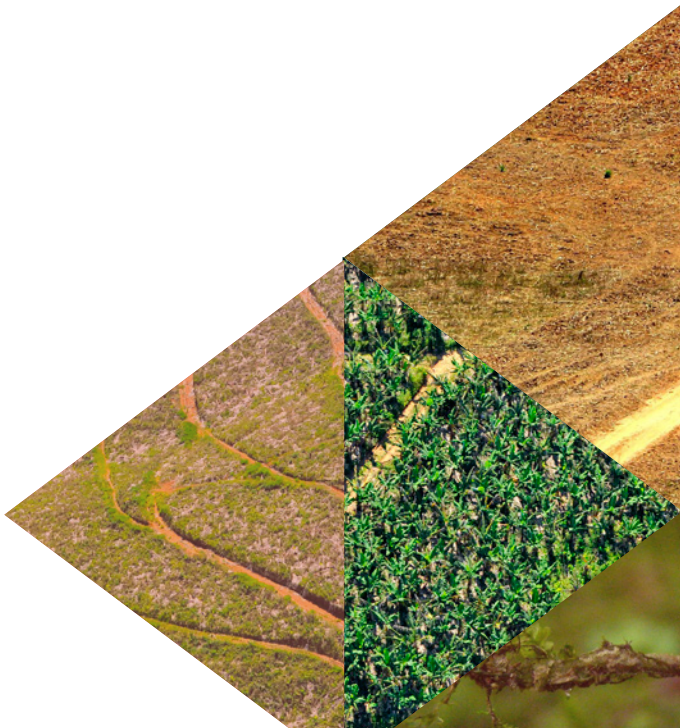
OMIDYAR NETWORK

CLIMATE POLICY INITIATIVE

EVOLUTION OF LAND RIGHTS IN RURAL BRAZIL

FRAMEWORKS FOR UNDERSTANDING, PATHWAYS FOR IMPROVEMENT

Authors
Rita Damasceno
Joana Chiavari
Cristina Leme Lopes



REPORT

OMIDYAR NETWORK

CLIMATE POLICY INITIATIVE

EVOLUTION OF LAND RIGHTS IN RURAL BRAZIL

FRAMEWORKS FOR UNDERSTANDING, PATHWAYS FOR IMPROVEMENT

Authors
Rita Damasceno
Joana Chiavari
Cristina Leme Lopes

Rio de Janeiro
April 2017

Authors
Rita Damasceno
Joana Chiavari
Cristina Leme Lopes

Editing and proofreading
Mariana Campos
Jennifer Roche

Graphic design and layout
Meyrele Nascimento
Sarakali Nobre

While Omidyar Network is pleased to sponsor this report, the conclusions, opinions, and points of view expressed in the report are those of the authors and do not necessarily represent the views of Omidyar Network.

ACKNOWLEDGMENT

The authors acknowledge the valuable contributions made by the participants of the workshops promoted by Climate Policy Initiative aiming at discussing land rights in Brazil: Ailton Dias (IEB); Alexandre Jabur (MPF/AM); Aloisio Melo (Ministério da Fazenda); Aluízio Solyno (SIG Fundiário - Pará); Ana Luisa Oliveira (ICV); Ana Paula Valdiones (ICV); Anselm Duchrow (GIZ); Bastiaan Reydon (Unicamp); Bettina Kupper (GIZ); Brenda Brito; Bruno Becker (Anoreg); Bruno Kono (Iterpa); Cárita da Silva Sampaio (SPU); Dário Cardoso Jr (Imazon); Deyvson Cabral (Federal Revenue Office); Diogo Lima (Intermat); Eduardo Ganzer (MDA); Eliane Moreira (MPE/PA); Erika de Paula (IPAM); Eulinda Lopes (Secretaria de Estado do Meio Ambiente – MT); Girólamo Treccani (UFPA); Heraldo Kiefer (IRIB); Ione Missae Nakamura (MPE/PA); Joaquim Belo (CNS); João Carneiro (SPU); João Daldegan (INCRA); José de Arimatéia Barbosa (Irib); José Heder Benatti (UFPA); Lúcia Andrade (Comissão Pró-Índio de São Paulo); Marcelo de Oliveira Nicolau (Ouvidoria Agrária); Marco Antônio Breves (Federal Revenue Office) Marco Antônio Delfino (MPF/MS); Mauro Lúcio Costa (Produtor rural); Mauro Pires (Terra Legal Program); Muryel Arantes (Ecam); Oscar Oliveira (INCRA); Osvaldo Stella Martins (IPAM); Otavio do Carmo Junior (MDA); Raíssa Ferreira (CLUA); Richard Torsiano (Consultor da FAO); Roberto Vizentin (UnB); Rogério Cabral (GIZ); Samuel Cardoso (SPU); Selma Helena Padinha (INCRA); Sérgio Lopes (Programa Terra Legal); Silvana Canuto Medeiros (INCRA); Taiguara Alencar (GIZ); Tarcísio Feitosa (MPE/PA); Thiago Marra (INCRA); Valmir Ortega (Consultor); Washington Luke (SPU); Wesley Pacheco (Ecam); and Wesley Sanches Lacerda (MPE/MT).

DESCRIPTION

Sector	Land Use, Land Rights
Region	Brazil
Keywords	Land Use, Land Rights, Brazilian Forest Code, Land Management, Land Regulation
Related CPI Reports	Insecure Land Rights in Brazil: Consequences for Rural Areas and Challenges for Improvement (2016), Key Issues for Property Rights in Brazil: Implications for the Forest Code (2016), Panorama of Property Rights in Rural Brazil: Legislation, Regularization and the Forest Code (2016)

Authors Contat	Joana Chiavari joana.chiavari@cpirio.org	Cristina Leme Lopes cristina.leme@cpirio.org
Media Contact	Mariana Campos mariana.campos@cpirio.org	

ABOUT CPI

Climate Policy Initiative (CPI) works to improve the most important energy and land use policies around the world, with a particular focus on finance. We support decision makers through in-depth analysis on what works and what does not. CPI's Brazil program partners with the Pontifical Catholic University of Rio de Janeiro and focuses on a Production and Protection approach to land use.

SUMMARY

LIST OF ABBREVIATIONS

ADA Environmental Statement Act (*Ato Declaratório Ambiental*)

APP Permanent Preservation Areas (*Área de Preservação Permanente*)

Cafir Rural Land Cadastre (*Cadastro de Imóveis Rurais*)

CAR Rural Environmental Registry (*Cadastro Ambiental Rural*)

Censipam Operational System for Protection of the Amazon (*Centro Gestor e Operacional do Sistema de Proteção da Amazônia*)

CNFP National Public Forest Registry (*Cadastro Nacional de Florestas Públicas*)

CNIR National Cadastre of Rural Properties (*Cadastro Nacional de Imóveis Rurais*)

CNJ National Council of Justice (*Conselho Nacional de Justiça*)

CPI Climate Policy Initiative

FCP Palmares Cultural Foundation (*Fundação Cultural Palmares*)

Funai National Indian Foundation (*Fundação Nacional do Índio*)

Ibama Brazilian Institute of Environment and Renewable Natural Resources (*Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis*)

IBGE Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística*)

ICMBio Chico Mendes Institute for Biodiversity Conservation (*Instituto Chico Mendes de Conservação da Biodiversidade*)

INCRA National Institute of Colonization and Land Reform (*Instituto Nacional de Colonização e Reforma Agrária*)

ITR Rural Land Tax (*Imposto sobre a Propriedade Territorial Rural*)

MDA Ministry of Agrarian Development (*Ministério do Desenvolvimento Agrário*)

MMA Ministry of the Environment (*Ministério do Meio Ambiente*)

MPOG Ministry of Planning (*Ministério do Planejamento, Orçamento e Gestão*)

NAPC/PUC-Rio Núcleo de Avaliação de Políticas Climáticas da PUC-Rio

RCID Identification and Delimitation Detailed Report (*Relatório Circunstanciado de Identificação e Delimitação de Terra Indígena*)

RGI Real Estate Registry (*Registro Geral de Imóveis*)

Sema Department of Environment (*Secretaria de Estado do Meio Ambiente*)

SFB Brazilian Forest Service (*Serviço Florestal Brasileiro*)

Sigef Land Management System (*Sistema de Gestão Fundiária*)

Sinter National System of Territorial Management (*Sistema Nacional de Gestão de Informações Territoriais*)

Sisterleg Terra Legal System

SNCR National System of Rural Cadastre (*Sistema Nacional de Cadastro Rural*)

SPU Federal Property Management Office (*Secretaria do Patrimônio da União*)

SRF Federal Revenue (*Secretaria da Receita Federal*)

TCU Federal Court of Accounts (*Tribunal de Contas da União*)

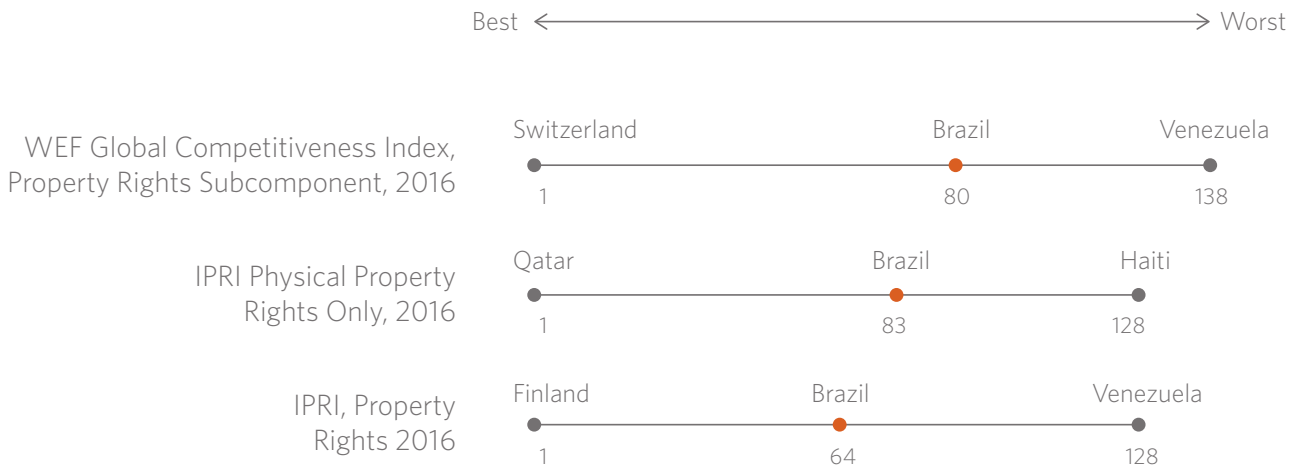
TI Indigenous Land (*Terra Indígena*)

EXECUTIVE SUMMARY

Brazil has an important role to play in addressing the global threats of climate change and food insecurity given its vast natural resources and role as a leading agricultural producer. Secure and well-defined rural property rights are an essential tool for effective natural resource management, as well as for economic growth. Today, however, Brazil lags behind much of the world in providing secure and well-defined property rights. In 2016, it ranked 64th on the International Property Rights Index (IPRI). It ranked even lower, at 80th, for secure property rights on the World Economic Forum's (WEF) Global Competitive Index (Figure 1).

Climate Policy Initiative (CPI) has conducted a series of studies, supported by the Omidyar Network, that take an in-depth look at the evolution of rural land rights in Brazil, the problems entrenched in the system as a result of this history, and the challenges posed by the current governing structure. The first published report in this series, "Insecure Land Rights in Brazil: Consequences for Rural Areas and Challenges for Improvement," looked at challenges and consequences of the current system. The second report, "Panorama of Property Rights in Rural Brazil: Legislation, Regularization and the Forest Code" (available only in Portuguese), analyzed the legislative framework around property rights and land regularization and identified areas for action. This final report, "Evolution of Land Rights in Rural Brazil: Frameworks for Understanding, Pathways for Improvement," summarizes the current rural land structure and the main challenges to improving land rights security. It analyzes the goals and activities of organizations working in Brazil to address the situation, provides a critical framework to understand the problems at hand, and maps recommendations for how to begin improving property rights in Brazil.

Figure 1: Brazil's World Ranking in International Property Rights



Note: The rankings in Figure 1 used a different number of countries in their analysis.

Sources: *World Economic Forum, 2016 and Property Rights Alliance, 2016*

CPI's analysis underscores the urgency needed to address this issue. Insecure land rights cause consequences that reverberate well beyond land management issues to impact land-related conflicts, deforestation, underdeveloped land rental markets, and inefficient investment decisions in properties.[1] Report 1 of this series of studies, "Insecure Land Rights in Brazil: Consequences for Rural Areas and Challenges for Improvement," discusses the issues highlighted here in detail:

Land-related conflicts. Despite Brazil's vast rural area and low population density, land-related conflicts are common. In 2016, the area in dispute totaled an estimated 21 million hectares.[2] Brazil leads the world ranking for killings of land and environmental defenders, with 50 killings out of a world total of 185 deaths in 2015. Brazil is followed by the Philippines (33) and Colombia (26).[3] Most of the murders took place in the Amazon states of Maranhão, Pará and Rondônia which has seen a surge in violence linked to large ranches and plantations taking over land where rural communities lack rights.

Deforestation. Monitoring and enforcing property rights in forests can be challenging due to their remote location and general inaccessibility. This leads to greater rights insecurity. While researchers are still working to understand what drives deforestation and how, there is a very large body of research literature associating deforestation to dysfunctional property rights, most of it focused on the Amazon.

Underdeveloped land rental markets. Concerns related to the risk of expropriation for land reform contribute for a very low rate of tenancy contracts in Brazil (at 3.3%, while, comparatively, Europe is at 33% and the United States is at almost 38%).[4] Uncertainty induces many landowners to avoid tenancy relations, even when they were profitable from a purely economic point of view. Given the high rates of demand for land for non-agricultural purposes in Brazil, increasing tenancy rates would promote a more efficient use of land.

Inefficient land use decisions. When property rights are insecure, land use choices become distorted by these circumstances. Landowners make decisions that differ from what they would likely choose in more secure or more traditional economic environments. For example, weak titles might lead farmers to change their choice of crops or to invest less in their property out of fear of losing their investment. In the case of Brazil, it has been shown that an increase in property rights uncertainty reduced natural pasture and unused land, and it increased cultivated pasture.[5] This happens because natural pasture can be seen as a signal of unproductive land, which increases the probability of a property being targeted for land reform.

1 Costa, 2016.

2 *Comissão Pastoral da Terra*, 2016.

3 Global Witness, 2016.

4 Assunção and Chiavari, 2014.

5 Alston and Mueller, 2010.

Reports 2 and 3 of this series show how Brazil's land rights problems can be traced largely to a highly complex and ineffective property rights system that has been driven by a long history of unclear and contradictory legislation and institutions governing property rights dating back to the 1500s. Many of the present day problems are embedded in concepts that were established in Brazil's land structure during colonization. Land occupation in Brazil has been disorderly, with limited control by the government, and inadequate separation between public and private lands.

Furthermore, the system in charge of governing these lands is needlessly complex. Multiple institutions at the federal, state, and municipal levels share responsibilities for governing land property rights. For example, just at the federal government level, 11 institutional bodies share oversight of different aspects of land rights and management. They are responsible for executing a wide range of tasks and services related to land management, including agriculture and land reform, environmental monitoring and protection, indigenous and *quilombola* community rights, and tax collection.

The institutional complexity, coupled with an intricate legislation, leads to bureaucratic, complex, and time-consuming procedures to demarcate and legalize land. This is the case for indigenous, *quilombola*, and protected areas as well as for farmers who want to regularize their possession of small land parcels. The requirement to register land in the official land registry as well as in multiple databases (cadastres) creates a burden for owners and possessors and complicates land management. The absence of a unique and comprehensive rural land cadastre that is connected with the official land registry presents a major problem, making it impossible to accurately identify the owner for a large percentage of land parcels in Brazil. For example, a detailed mapping of land organization in Pará revealed that it is impossible to know the legal status of property of 38% of the state.[6] This lack of an unified form of record keeping means there is no unique source of data that classifies all Brazil's territory and thus hampers the calculation of true estimates for all legally designated and recognized categories. The lack of data is in itself an obstacle to both better land organization and a more peaceful environment in rural areas.

On top of governance challenges, Brazil's vastness and geography make many areas difficult to access and monitor for both landowners and officials. This means that even property rights that have been recognized are often at risk. Throughout large areas of rural Brazil, particularly in the North and Northeast, the presence of authorities is weak due to underfunding and understaffing, which leads to lax enforcement of existing rights. Corruption of public officials who have control over how and when rights are protected further exacerbates insecurity. Historically marginalized groups, such as indigenous, *quilombola* or settlers, and protected areas continually face threats of land grabbing from large-scale farmers, miners, and loggers.

6 Brito & Cardoso Jr., 2015.

Current pressure for the country to secure the preservation of its natural resources have brought the issue of property rights front and center. The success of the new Forest Code depends on compliance by the owner or possessor of the land. More secure property rights allow for a better identification of environmental responsibility and therefore more successful implementation of the code. However, the application of the code to collective properties and possessions, such as indigenous and *quilombola* lands, settlements, and traditional populations, is unclear. In addition, the creation of yet another cadastre *(Cadastro Ambiental Rural* – CAR) without plans to integrate it with the other databases and registries present additional concerns that land grabbers could use CAR documents to legitimize land that was illegally grabbed or to try to mislead less-informed possessors.

Despite the complexity and challenges, a number of organizations and groups are working to improve land rights in Brazil. For this study CPI performed a stakeholder analysis of 60 organizations, their programs, and their beneficiaries across three states where conflict and insecurity around property rights are especially pronounced: Pará, Mato Grosso, and Mato Grosso do Sul. Analysis shows that while there are existing efforts, programs, and groups working on this issue, they remain fragmented with a predominance of interventions from the public sector, NGOs, and a few research institutions. There is a clear absence of the private sector which means that there may be missed opportunities to drive innovation and change in the area. This report highlights three groups of initiatives that represent important investments recently made in improving property rights: cadaster management and integration initiatives, the Terra Legal Program, and the SIG-Fundiário System. Even though these programs are in their initial stages and have not yet been thoroughly evaluated, they hold great promise to streamline processes and transparency on the supply side if they are able to coordinate efforts and implement their agenda.

The problem of insecure property rights is so multi-faceted and complex, and the consequences so widespread, that it is difficult for policymakers and stakeholders to know where to begin to make improvements. It is clear that profound changes will need to take place within Brazil's governance, enforcement, regulation, and knowledge in order to establish secure property rights for all citizens. Table 1 summarizes the most salient problems in rural land tenure and outlines policy recommendations to address these issues.

By pursuing these recommendations, which are detailed in this report, Brazil could unlock new economic opportunities, reduce land-conflicts, develop markets more fully, and improve the use and protection of the country's natural resources. Once property rights are secure, the nation's lands can be managed, developed, or protected to their fullest potential.

Table 1: Recommendations

	Problem	Policy Recommendation	Authority with Primary Responsibility*	Benefits	Potential Barriers to Implementation
GOVERNANCE	Complexity of legislation and processes make regularization slow	Streamline the processes of property rights regularization	Executive Branch	Faster regularization will encourage more citizens to secure land titles, contributing to efficient, long-term administration of land property rights	Institutional complexity, lack of political will and consensus, new legislative proposals that increase complexities/ barriers to regularization
GOVERNANCE	The lack of a unified, national registry introduces confusion and inefficiency	Centralize all rural cadastres under CNIR (Cadastro Nacional de Imóveis Rurais)	Executive Branch	Reduce redundancies, identify territorial overlaps, and generally improve effectiveness for managing properties throughout Brazil	Lack of political will, coordination among administrative bodies, lack of resources
ENFORCEMENT	Small-scale landholders, traditional populations, and indigenous groups are often vulnerable to invasions	Improve mechanisms and processes for monitoring and enforcing land rights for these categories	Executive Branch	Rural land rights protection will increase, helping to protect native lands and reduce conflict.	Lack of consensus, resources, and access to justice plus challenges accessing remote areas
ENFORCEMENT		Introduce innovation and technology to advance identification, monitoring and protection of existing rights	Executive Branch, partnerships with Private Sector	Increase registry compliance at lower costs, give more security to small landholders over their properties, and bring greater visibility to the problems traditional populations face	Lack of technology R & D currently focused on this issue and lack of consensus about priorities
ENFORCEMENT	Land grabbing cases can take years to resolve	Create explicit administrative procedures for faster cancellation of property titles of illegally grabbed lands	Executive and Judicial Branches	Could work as important deterrents to land grabbing activities and could help reduce lengthy court battles by reducing backlog	Lack of consensus on the legality of the procedures, political will at the state level
REGULATION	Lack of clarity about how the Forest Code applies to cases of collective property and possession	Pass specific rules to determine the application of the Forest Code	Executive Branch	Stronger enforcement of the Forest Code in these land categories	Lack of political will to plan and implement
KNOWLEDGE	Limited knowledge on the impact of ongoing efforts on land titling and other property rights related policies	Introduce meaningful and rigorous evaluations of current land titling and property rights programs and interventions	Academia, NGOs	Evidence gained about what does and does not work would improve design and effectiveness of future policies	Lack of resources and political will for implementation
KNOWLEDGE		Research the perspective of landholders to gain insights to how and why they value titling and what influences their demand	Academia, NGOs	Better knowledge of landholder perspective can inform the design of more effective procedures and policies	Lack of resources and strategies for effective research among landholders

** For a more detailed description of the specific agencies responsible for each recommendation, see Section 5 – Recommendations in this report.*

INTRODUCTION

Brazil's vast natural resources and thriving agricultural sector have contributed greatly to the nation's emergence as a world economic leader. The country is now in a strong position to respond to two of the world's most pressing issues: climate change and food insecurity. In fact, recent studies have shown that by improving the management of its natural resources, Brazil is well-positioned to simultaneously increase agricultural production while also improving environmental protection.[7]

Today, however, Brazil lags behind much of the world in providing secure and well-defined property rights. In 2016, it ranked 64th on the International Property Rights Index (IPRI). It ranked even lower, at 80th, for secure property rights on the World Economic Forum's (WEF) Global Competitive Index. Land rights insecurity is deeply entrenched in the country's history and has profound consequences for the country as a whole.[8]

This Climate Policy Initiative (CPI) analysis provides an in-depth look at the evolution of rural property rights in Brazil and the history that has shaped the complex situation the nation now faces. The problem of insecure property rights is so multi-faceted and complex that it is difficult for stakeholders and policymakers to know where to begin to make improvements; this paper provides a critical framework to understand the problems at hand and maps recommendations on where to begin. CPI identified four major areas of recommendations described in this analysis: governance, enforcement, regulation, and knowledge.

There are five sections to the discussion. Section 1 looks at the historic evolution of property rights in Brazil. Section 2 describes the current land structure with an explanation of the main land categories and the interaction between land rights and environmental protection with a focus on the Forest Code. Section 3 discusses four main challenges and barriers to improving land rights security. Section 4 presents an inventory of stakeholder actions and details three ongoing initiatives that have the potential to improve land organization and strengthen rural property rights. The paper culminates with Section 5, which outlines recommendations for improving rural property rights in Brazil.

1. THE EVOLUTION OF LAND RIGHTS IN BRAZIL

To understand the challenges that face Brazil today, it is crucial to understand how Brazil was settled and how land rights evolved over time. Many of the present day problems are embedded in concepts that were established in Brazil's land structure dating back as far as colonization. Land occupation in Brazil has been disorderly, with limited control by the government, and inadequate separation between public and private lands.

In the absence of a single land registry combining geographical and legal information about properties and possessions in Brazil, land policies have been

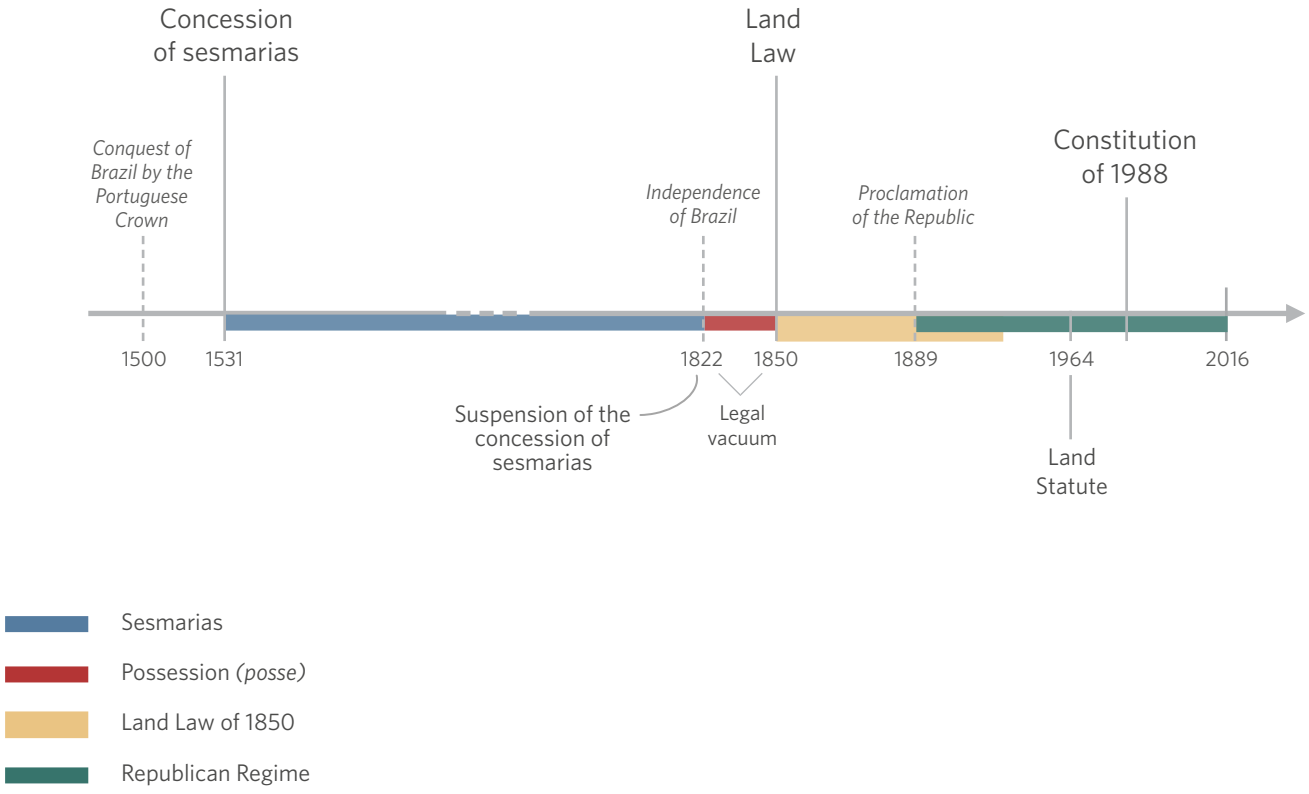
7 Assunção et al., 2013. Assunção and Chiavari, 2015.

8 Mueller, 2016.

promoted without precise knowledge of boundaries, resulting in territorial overlaps. For example, settlements have been created on top of protected areas, and private companies operate inside indigenous lands. This chaotic situation facilitated the illegal appropriation of public land by individuals, adding complexity and irregularity to the Brazilian land structure in rural areas.

The evolution of land rights in Brazil can be broken in four main periods of legislation that are represented in Figure 2: *sesmarias* (1500 to 1822); possession (*posse*) (1822 to 1850); Land Law of 1850 (1850 to 1889); and the Republic (1889 to present).[9] Each stage introduced new land strategies and policies, which will be described in the next sections.

Figure 2: Main Periods of Land Rights Legislation in Brazil



Source: *Chiavari et al., 2016*

(i) From colonization to Republic (1500 – 1889)

With the arrival of the Portuguese in 1500, Brazil, occupied for centuries by indigenous peoples, became part of the Portuguese Crown by right of conquest. The main institution for allocating land during most of the colonial period was the ***sesmaria***, which was a **grant of land from the Crown**. If the mandatory condition of making the land productive within five years was not fulfilled, the

9 Rocha et al., 2015.

lands would return to the king.[10] These returned lands became known as **vacant lands (*terras devolutas*)**.

The prolonged use of *sesmarias* ended up **restricting access to land** since lands were granted only to wealthy individuals. Poorer citizens, without any legal means to acquire land, started occupying plots on the edges of the large properties and far from population centers.[11] This initiated a process of **invasion and occupation of public lands (*posse*)** that still occurs today.

In 1822, a few months before its independence from Portugal, the government **suspended the concession of new *sesmarias***, but no other legal structure for acquiring land was implemented. This left a **legal vacuum** regarding land acquisition. In the institutional void that ensued, small and large landowners claimed a **massive amount of land possessions**, or *posses,* across the country.

Following **Brazil's independence**, it was necessary to establish **laws and institutions to reflect the new political and socio-economic moment.** Consolidation of the new country depended on land organization and strong government control of unexplored lands, where disorderly occupation was rapidly expanding.[12] At the same time, with the prospect of the abolition of slavery and increasing foreign immigration, the new government thought it was essential to limit the occupation of land by freed slaves and new immigrants so that they could serve as manpower in large farms.[13]

In this context of change, the government passed the **Land Law of 1850,** which established **purchase as the only means of acquiring virgin lands**. In an effort to organize the existing land structure, the law also established rules for the regularization of those holding land from *sesmarias*, as well as rules for the legitimization of previously existing peaceful possessions[14] when used for agriculture and residence. The law also **expanded the definition of vacant land to include all unexplored land**, not just the *sesmarias* that had been returned to the king.

(ii) From Republic to present (1889 to present)

The **First Republic** (1889 to 1930) can be best characterized by the **absence of an effective land policy**. There were few initiatives to colonize or settle small farmers. During this period, the practice of illegal appropriation of public land by private individuals continued without any public response, which contributed to the expansion of large unproductive farms.[15]

Significantly, the republic **transferred vacant lands to the states** where they were situated as part of the move toward a federative system. The federal government maintained control of border, military, and railway areas only. The

10 Silva, 1997.

11 Mattos Neto, 1988, apud Rocha et al., 2015; Nozoe, 2006.

12 Silva, 1996.

13 Zenha, 1952.

14 Peaceful possessions are those that have not been contested by third parties.

15 Silva, 1997.

Land Law remained in force, but with this transfer, the legislation related to public lands diversified. **Each state created its own law governing the vacant lands**, suited to the state's peculiarities, although the laws remained largely similar to the Land Law of 1850.

The **Revolution of 1930** marked a **new political period** in the country. The oligarchic state, mainly dominated by large landowners, was replaced by a centralized dictatorial state whose purpose was to promote industrialization, while also addressing social issues.[16] With concerns about social justice in rural areas in mind, the government promulgated a new Constitution in 1934 that stipulated that **property rights could not be exercised against the social or collective interest**. This was the first time that a Brazilian constitution stated that owning property was not an absolute right.

After 1937, the government promoted the "**March to the West**" as a means **to integrate large empty spaces of the north and center-west of the country through organized occupation**. The problem was that the vacant lands were not empty, as large tracts of land were already occupied by indigenous groups, possessors, cattle farmers, gold diggers, and rubber tappers, among others. This occupation often took place on lands already under some type of possession, which generated conflict and insecurity over property rights.[17]

In 1945, the opposition to the dictatorship gained strength and pressured the government to open up and to call elections. Democracy was reestablished and a new Constitution was enacted in 1946. The new constitution established **two innovative types of expropriation**: (i) **public interest** and (ii) **social interest**. This second type represented an effort to promote social reforms and to tackle the perverse consequences of Brazil's highly skewed distribution of land ownership; however, the new constitution conditioned expropriation to prior and fair compensation in cash, which in practice was unfeasible.[18]

Between 1950 and 1960, the **debate on land reform intensified**, gaining strength due to **social mobilization** around basic reforms and the **emergence of peasant movements**. Yet, **in 1964, a *coup d'etat* brought the military into power**. While the military recognized a need to implement agrarian reform and to solve rural social problems, they wanted to do so by using "law and order" tactics, which resulted in a violent repression of social movements.[19]

The first military government created conditions for land reform by establishing government bonds as a form of compensation for land expropriations. Moreover, it promulgated the **Land Statute of 1964**, which established a new series of legal requirements conditioning private property. These became known as the **"social function of property"**.[20] Still in force today, the "social function of property" is met when a property simultaneously meets the following four criteria:

16 Fausto, 2002.

17 Martins, 1996.

18 Silva, 1997.

19 Silva, 1997.

20 Silva, 1997.

a) promotes the welfare of the owners and the workers who toil on it, as well as their families;

b) maintains satisfactory levels of productivity;

c) assures the conservation of natural resources; and

d) observes the laws governing fair working relationships between those who own the land and those who cultivate it.

The Land Statute also defined **two new instruments for land reform**: **the expropriation of unproductive large estates** and the **progressive taxation of land**. With this new legislation, the country gained the legal instruments to implement land reform: they could take over unproductive farms and transfer that land to landless peasants who were then expected to make it productive. However, in practice, the reform produced limited results.

In the 1970s, the **expansionist policy gained momentum again**. Under the motto "Integrate to not give in," the military government encouraged the **occupation of the Amazon** through colonization projects. In 1970, it created the **National Institute of Colonization and Agrarian Reform (INCRA)** for implementing land reform and occupation and for settling thousands of families of landless workers from all over the country.[21] **Several settlements were created along the major federal roads in the Amazon**.[22] The settlers were expected to make land productive, and, in the process, forest was replaced by fields and cattle. Deforestation was encouraged because, according to various regulatory instructions from INCRA, productivity was directly proportional to the clearing of forested area.[23]

INCRA's inability to meet the growing demand for land, to grant land titles, and also to promote social welfare, education and health became clear soon after the implementation of the first settlements. **Settlements failed to provide promised services** such as transport, energy, and sanitation infrastructure. Therefore, the government decided to change the policy of occupation and instead encouraged **private colonization with an emphasis on large-scale farming**. However, due to the lack of infrastructure, and especially the ability to manage logistics, vast areas remained unproductive. This fact, coupled with a **large mass of landless rural workers, unassisted by the government, encouraged the invasion of property, causing violent clashes between workers and landowners**.[24] The occupation of the Amazon region also resulted in the invasion of indigenous territories and the massacre of thousands of indigenous families along with the widespread displacement of small leaseholders and traditional communities.[25]

21 Alston et al., 1999.

22 In Brazil, the term settlement is used specifically for areas of composed of multiple individual agriculture plots created by INCRA on lands that used to belong to only one owner or to the government. Each of these plots is assigned to a family without the means to acquire and maintain a rural property in other ways. The rural workers who received these plots are required to live on the plot and work it for their livelihoods, using exclusively family labor.

23 Benatti et al., 2008.

24 Alston et al., 1999.

25 Martins, 1996; Allegretti, 2008.

In 1985, mounting pressure from society that demanded the opening of the military regime and the holding of elections led to the appointment of a civilian to the presidency. The beginning of this presidency marked the **end of the military regime**. A constitutional assembly was convened to write a new democratic constitution for Brazil.

In 1988, the new Constitution was launched. Still in force, this document establishes important social guarantees, legislates over the social function of property, recognizes the original right of the indigenous people to the lands they occupied traditionally, recognizes *quilombola*[26] territories, and requires that the government establish and maintain specially protected conservation areas.

After the enactment of the Constitution of 1988, **new and important legislation was passed**. The legislation created rules on the registration and cadastre of rural properties; regulated rights over the use of land; and imposed restrictions on environmental protection, land reform, and allocation of public land.

The Constitution of 1988 also introduced **landmark environmental regulations**. It was the first constitution that specifically dealt with the protection of the environment, not only in a stand-alone chapter, but also throughout the constitutional text.[27] Therefore, for the first time, Constitutional environmental principles also informed branches of law such as the right to property.[28]

From this, it can be seen that the concerns about the environment and marginalized groups though extremely relevant, have only been seriously addressed by the nation starting in the late 20th century. By the time the government **created and expanded special areas** (indigenous lands, *quilombolas*, and protected areas), many **competing interests were already present in the chosen lands. This resulted in uncertainty and conflict over land due to different types of commonly overlapping property that persists today.**

2. RURAL LAND STRUCTURE TODAY

As Section 1 illustrates, land rights in Brazil today are marked by its history. Since colonization, Brazil has undergone major shifts of power and regimes. This changing trajectory, often steered by the elite, resulted in an unequal and patchwork approach to managing Brazil's land and securing land property rights. Unequal distribution of land has plagued Brazil and generated social movements. For long periods, production was given priority over preservation of the nation's natural resources. Against this backdrop of shifting property rights history, understanding the status of property rights today provides the critical foundation for identifying areas for improvement.

26 Communities founded originally by fugitive slaves.

27 Silva, 2004.

28 Benjamin, 2005.

(i) Land Categories

The current land structure of the country has resulted in a mosaic of land categories, each governed by its own laws and administered by different governing bodies with unique characteristics. Land occupation in rural areas, falls into two, legally recognized broader categories of ownership: public and private ownership. Table 2 summarizes the types of land occupation commonly found in Brazil and presents their type of ownership.

In public areas, land occupation takes on many forms. It ranges from settlements that were created with state-assistance, usually for land reform, to more traditional occupations like indigenous lands. In addition, a large percentage of public areas are considered protected lands and these have gained increased attention over the past few years. Finally, there are vast areas of public lands that have not been assigned or classified to any particular use and are commonly referred to as vacant lands, as outlined in Section 1.

In private areas, land occupation typically falls into three main types: private property, possession, and *quilombolas,* which are the only case of collective property in private lands. Possession includes tenancy agreements, such as lease and sharecropping, but it can also include any sort of informal occupation of private land. Protected areas may also be found in private areas.

Table 2: Recognized Types of Land Occupation in Rural Brazil

Types	Ownership	Description
Settlements (*Assentamentos*)	Public	Rural settlements created with state-assistance usually for land reform purposes.
Indigenous Land	Public	Portion of territory inhabited by indigenous peoples and used for their productive activities and necessary for their welfare and their physical and cultural reproduction.
Vacant Lands	Public	Public land not assigned to any specific use.
Possession (*Posse*)	Public/Private	In public lands: can be individual or collective. Collective refers to traditional populations (culturally differentiated groups). In private lands: includes tenancy agreements such as lease and sharecropping but can also include informal occupation of private land.
Protected Areas	Public/Private	Geographically defined space, in public or private lands, which is designated to achieve specific conservation objectives, such as maintenance of ecosystem services and preservation of existing biological heritage. Different classes of protected areas impose different levels of use restrictions.
Property	Public/Private	Land owned by legal entities (public or private) or individuals.
Quilombolas	Private	Territories of ethnic groups with their own historical trajectory, with a presumption of black ancestry linked to resistance to slavery.

Table 3 shows the breakdown of area by land categories in Brazil's urban and rural areas. The lack of data availability hampers true estimates for all of the legally designated and recognized categories listed in Table 2. For example, data on possessions are not available since they occur informally. The "Other" category is calculated as the remainder of all other categories of land use including, for example, private land in rural areas that is non-agricultural in nature and vacant lands. It is also impossible to completely distinguish between public and private lands in the country, as several categories for which data are available include private and public properties, such as the case of protected areas. Mapping land categories as in Figure 3 is an even greater challenge because geographic data is only available for a more limited number of categories. For example, geographic data for private properties is not available. Thus, Figure 3 shows significant areas in white that are not classified, with greater predominance in the South where private property is more common.

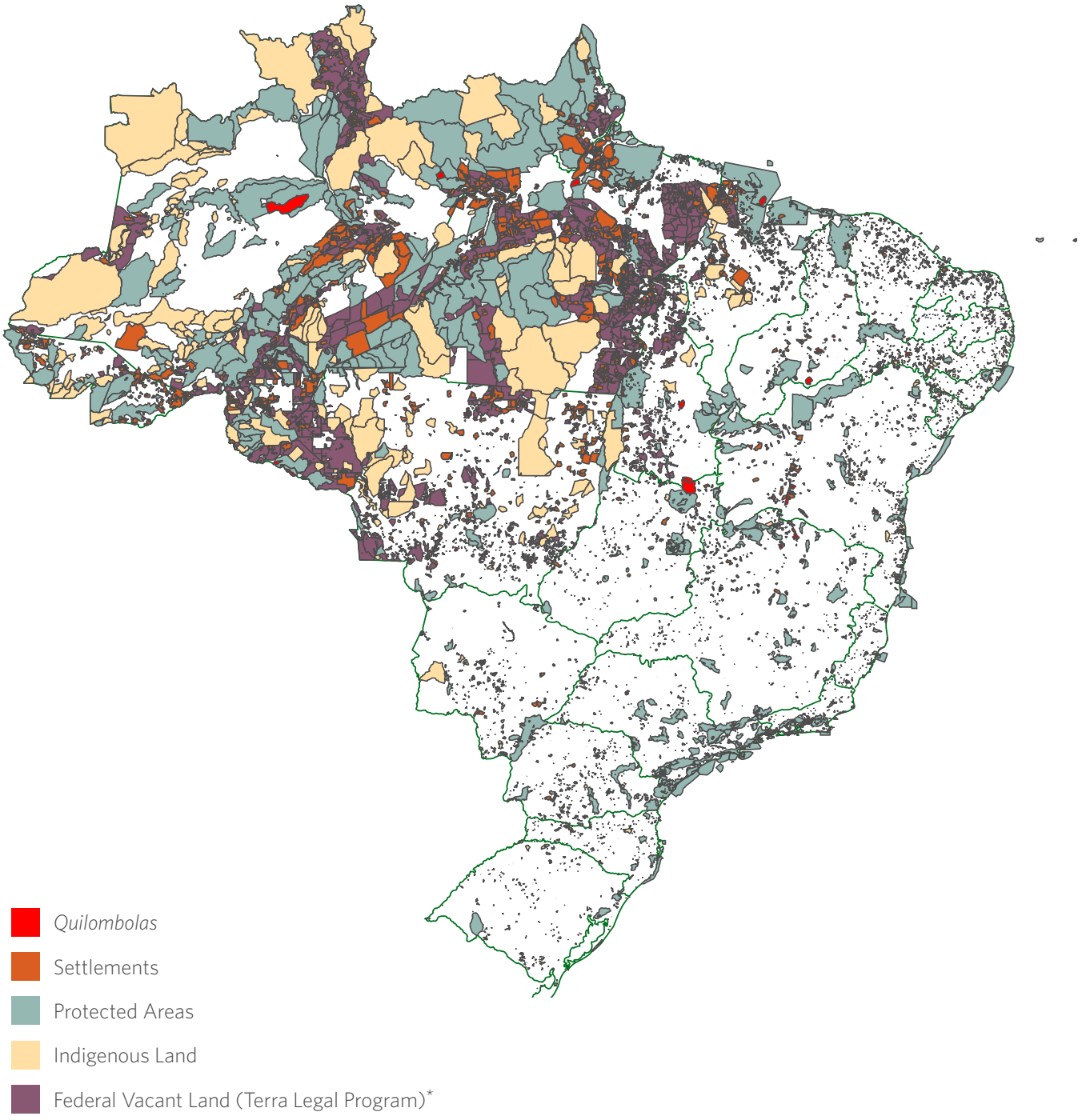
Table 3: Breakdown of Land Types by Area in Brazil

Type of Land	Million Hectares	Percent of Brazilian Territory	Source
Private for agricultural use	320.5	37.7%	IBGE, 2012 (data from Agriculture Census 2006)
Other	169.4	19.3%	CPI Calculation
Protected Areas	154.4	18.1%	MMA/CNUC, 2016
Indigenous	117.3	13.8%	ISA, 2017
Settlements	88.5	10.4%	INCRA, 2016
Urban	4.2	0.5%	IBGE 2016 (data from 2014)
Quilombola	1.4	0.2%	INCRA-DFQ, 2016

Note: *There is no unique source of data that classifies all of Brazil's territory. Estimates are compiled using the most current data from different organizations. The category "Other" was calculated as the remainder of all other categories of land use. Precise estimates are not available for most land categories.*

Table 3 shows a particular characteristic of the Brazilian rural land structure – nearly 50% of the lands in the country are estimated to be under public ownership (controlled by federal government, states, or municipalities). To give a perspective on the scale of land use, it is important to note that urban areas make up less than 1% of the area of the country. Public lands include a share of protected areas, indigenous lands, settlements and the vacant lands included in the "Other" category. This predominance of public land is particularly important in the north of the country, specifically in the Amazon, as can be seen in Figure 3. These public areas, where property rights insecurity is acute, are most susceptible to threats, invasions, and consequent conflict whereas private property is generally well consolidated. The most serious situations of land rights insecurity are faced by possessors and traditional populations and in the creation and maintenance of special areas. (Indigenous and *quilombola* groups often continue to face threats to their rights even after their lands have been fully demarcated and certified.)

Figure 3: Map of Land Categories in Brazil



Note: *Areas in white are not classified and they can correspond to any of the categories not listed in the map (e.g., private property, vacant lands, possession). Lack of geographic data on those categories does not allow for a complete mapping of land property in the country.*

*For more information on Terra Legal Program, see Section 4.

Source: *Chiavari et al., 2016*

Not only does northern Brazil have the largest amounts of public and vacant lands, but it is also an area where property rights insecurity interacts heavily with other problematic issues like the informal beef sector and deforestation. In northern Brazil, land occupation is mostly driven by cattle raising. In the Amazon, over 60% of deforested land is used as pasture while only 6% is used as cropland.[29] This sector suffers from high levels of informality and takes advantage of property rights insecurity to flourish.

(ii) Land Rights as a Cornerstone of Environmental Protection

Brazil's Forest Code governs the use and protection of native vegetation on rural lands and serves as an instrument employed by the government as it works to achieve more efficient land use and meet its climate goals. The Forest Code dates back to 1934 when it was first passed with the intention of regulating logging activities. In 1965, a more modern version was enacted that substantially increased forest protection. In 2012, following a strong national debate, the Forest Code that regulated private land use and management was revised. These changes spurred from the first serious attempts to enforce the 1964 code in the 1990s. For more than a decade, environmentalists and rural producers fought an intense battle over the code's content.[30] The Forest Code brings important considerations to the property rights discussion.

Obligations under the Forest Code

The Forest Code places restrictions on how landholders can use their land and how natural resources should be preserved. In particular, it establishes two specific instruments for forest conservation on private lands:

- **Permanent Preservation Areas** (Áreas *de Preservação Permanente* - APP) are areas of vegetation that have been designated for protection because they have been identified as critical to the preservation of essential ecosystem functions. The Forest Code requires that the vegetation in APPs be left intact. The code also sets APP restrictions along banks of rivers, springs, and lakes, mangroves, vereda (a type of wetland), hilltops, steep slopes, and sandbanks.
- The second protection rule of the Forest Code requires that rural landowners designate and maintain a percentage of their property area as **Legal Forest Reserve** (*Reserva Legal*). The goal is to preserve the remnants of native vegetation on rural lands and to conserve biodiversity. This protected percentage varies from 20 to 80% depending on the type of vegetation present and the property's geographical location in the country. In general, properties located within the *Amazônia Legal*[31] must conserve a much higher percentage of land as Legal Forest Reserve than properties outside of that region. On every Legal Forest Reserve, clear-cutting is prohibited and only sustainable forest management is allowed.

29 Almeida et al., 2016.

30 Chiavari and Lopes, 2015a.

31 *Amazônia Legal* is a political concept, created in 1953, for territorial and socio-economic planning purposes. It corresponds to the geographic space that covers the states of Acre, Amapá, Amazonas, Mato Grosso, Pará, Rondônia, Roraima, Tocantins and western Maranhão. *Amazônia Legal* not only contains the Brazilian Amazon biome, but also parts of the *Cerrado* and *Pantanal* biomes.

The Forest Code also adds a new *cadastre* to help ensure compliance with legislation. The **Rural Environmental Registry** (*Cadastro Ambiental Rural* – CAR) is a national, online public record that provides georeferenced data on rural properties' preserved areas. Registration in the CAR is mandatory for every parcel located in a rural area. To obtain certain benefits related to the management of the property, registration is required. Starting in 2018, registration will also be required for producers that apply for rural credit.

Interaction between the Forest Code and Property Rights

With the Forest Code dependent on the compliance of landholders, well-defined property rights have become increasingly important to Brazil's efforts to enhance the conservation of its native vegetation. More secure property rights allow for a better identification of environmental responsibility and therefore more successful implementation of the Forest Code. The code holds the owner or the possessor responsible for meeting the obligations imposed by law. Therefore, the definitions of land rights and land tenure are key to the effective enforcement of the code.

Challenges for the application of the Forest Code come in the lack of clarity about how the rules apply to cases of collective property and possession, such as indigenous and *quilombola* lands, settlements, and traditional populations. For example, the requirement of APP and Legal Forest Reserve in indigenous lands and protected areas is controversial since indigenous peoples have an autonomy guaranteed by the Constitution over their territories, and native vegetation in protected areas is already fully protected. Besides, for *quilombola* and traditional communities, registration in the CAR is done by an association that represents the community, and it is not clear how responsibility for compliance with the code will be shared among individual members. The success of the Forest Code also depends on how it will be applied to these vast special areas.

Beyond the application of the rules, the addition of another cadastre that was created without any plan of integration with existing cadastres also presents a challenge. CAR registration does not guarantee any sort of property rights over the parcel. The introduction of this new cadastre has raised concerns that it might place an additional burden on rural producers and that it might mislead less-informed possessors into thinking they have obtained a formal title for their land.

The fact that registration in CAR is fully self-reported is another source for concern. Given weak oversight, the cadastre might become a new source for fraud and land grabbing. Reports have already surfaced about the use of CAR documents to give legitimacy to land that was illegally grabbed. Activists also claim that in some areas large-scale farmers are using CAR documents to deceive traditional populations into thinking the land is already owned in an effort to drive them away.[32]

32 Barros and Barcelos, 2016.

BOX 1: IMPORTANT FEATURES OF LAND ORGANIZATION IN BRAZIL

- Vast areas of vacant lands
- Informal occupation of lands, i.e., possession (*posse*)
- Land reform settlements
- The concept of "social function of property"
- Public ownership of large areas
- Forest Code restrictions on the use of land

Yet, if Brazil can properly integrate CAR with other rural cadastres, it has potential to help define property rights in areas where territorial overlaps exist. It remains to be seen how the integration of CAR with other cadastres will occur.

Effective implementation of the new Forest Code is crucial for Brazil both for protection of its natural resources and to increase agriculture productivity, making it imperative that its implementation is discussed simultaneously with the property rights debate.[33] To prevent the creation of new legislative grey areas it is essential to define how the code applies to collective lands. Moreover, to avoid conflict and new territorial overlaps, the integration of CAR with other sources of land information is important.

3. CHALLENGES AND BARRIERS TO IMPROVING LAND RIGHTS SECURITY

CPI analysis identifies four main challenges and barriers to the improvement of land organization and securing property rights in Brazil that, if addressed, could accelerate the country's progress towards major improvements in its land management practices:

(i) Institutional complexity;

(ii) Absence of a unique and comprehensive rural land cadastre;

(iii) Bureaucratic, complex, and time-consuming procedures for land regularization; and

(iv) Weak enforcement of existing rights.

(i) Institutional Complexity

In Brazil, multiple institutions share responsibility for governing land property rights. This complex system lacks communication and coordination among its activities and does not have integration among its numerous databases.

The institutions in charge of land management are the executive offices at the federal, state, and municipal levels. They are responsible for executing a wide range of tasks and services related to land management, including agriculture

33 Chiavari and Lopes, 2015b.

and land reform, environmental monitoring and protection, indigenous and *quilombolas* community rights, and tax collection. The legislative branch of government enacts the property rights legislation while the judicial branch decides on land tenure conflicts. The land management system also includes notaries supervised by the judicial branch. Notaries are private entities but have received public delegations by the federal government to provide a public registry function.

To give a sense of the complexity of the system, just at the level of the federal government, 11 institutional bodies share oversight of different aspects of land rights and management. The fuller scope of Brazil's land governance and respective duties are summarized in Box 2.

(ii) Absence of a Unique and Comprehensive Rural Land Cadastre

The absence of a unique and comprehensive rural land cadastre that is integrated or connected with the land registry presents a major problem; even today Brazil lacks a unique cadastre that encompasses the totality of the nation's territory. Moreover, there is a significant lack of coordination among the government bodies with responsibility in data and mapping and a lack of integration among the existing cadastres also working on different basemaps. This means that it is impossible to accurately identify the owner for a large percentage of land parcels in Brazil.[34] For example, a detailed mapping of land organization in Pará revealed that it is impossible to know the legal status of property of 38% of the state.[35]

As land use became legislated for different purposes by different laws and governments, separate cadastres were created to manage each attribute (see Box 3). This resulted in a multiplicity of rural cadastres, often requiring similar information, that are managed by different institutions with overlapping responsibilities. Thus, rural owners and possessors are required to record their land in different cadastres, often having to provide the same information several times to different institutions. Figure 4 shows the multiple institutions rural landholders need to go through to have their land fully regularized and access certain government programs and rural credit.

34 The land cadastres, besides identifying the geographic location of the asset and describing its physical characteristics can also specify other land attributes such as environmental characteristics, use of the soil, agriculture activities taking place as well as any improvements made and information for tax purposes such as the value of the asset. As such, the rural land cadastres serve different objectives such as the creation and land management, agricultural, environmental, social and tax policies.

35 Brito & Cardoso Jr., 2015.

BOX 2

Federal Government

Executive institutions/bodies:

- Presidency of Brazil – responsible for titling of indigenous land and creating protected areas.
- National Institute of Colonization and Land Reform (INCRA) – responsible for land reform, establishing rural settlements, maintaining the National System of Rural Cadastre (SNCR), managing public/federal lands, regularization and titling of *quilombolas*.
- Special Secretary for Family Agriculture and Agrarian Development – under the President's chief of staff. Responsible for land reform policies and land regularization in the Amazon biome. (Replaced the Ministry of Agrarian Development in May 2016).
- Ministry of the Environment (MMA) – responsible for forestry and environmental policies.
- Chico Mendes Institute for Biodiversity Conservation (ICMBio) – responsible for proposing, implementing, managing, protecting, inspecting, and monitoring federal protected areas, such as national parks and extractive reserves.
- Brazilian Forest Service (SFB) – responsible for public forest concessions, managing the National Public Forest Registry (CNFP), and implementing and managing the Rural Environmental Registry (CAR).
- Brazilian Institute of Environment and Renewable Natural Resources (IBAMA) – responsible for the environmental control, law enforcement, and licensing of the Brazilian forests.
- National Indian Foundation (FUNAI) – responsible for mapping out and protecting lands traditionally inhabited and used by indigenous peoples.
- Palmares Cultural Foundation (FCP) – responsible for recognizing and certifying *quilombolas* communities.
- Federal Property Management Office (SPU) – responsible for managing the federal properties, which includes vacant lands, federal floodplain areas, others.
- Federal Revenue – responsible for collecting the rural land tax (ITR) and maintaining the Rural Land Cadastre (Cafir).

Legislative branch: Competent to enact laws on property rights, agriculture, environment, land expropriation, and land reform.

Judicial branch: Decisions on land tenure conflicts concerning federal lands.

State Government

Executive institutions/bodies:

- Governor – responsible for creating state protected areas.
- State Land Institutes – responsible for establishing state rural settlements, managing public/state lands, regularization and titling of *quilombolas*.
- Environmental Agencies – responsible for proposing, implementing, managing, protecting, inspecting, and monitoring state protected areas. Also responsible for the environmental control, law enforcement, and licensing of rural activities.

Legislative branch: Competent to enact laws on environment protection.

Judicial branch: Decisions on land tenure conflicts concerning private properties and state lands.

Municipalities

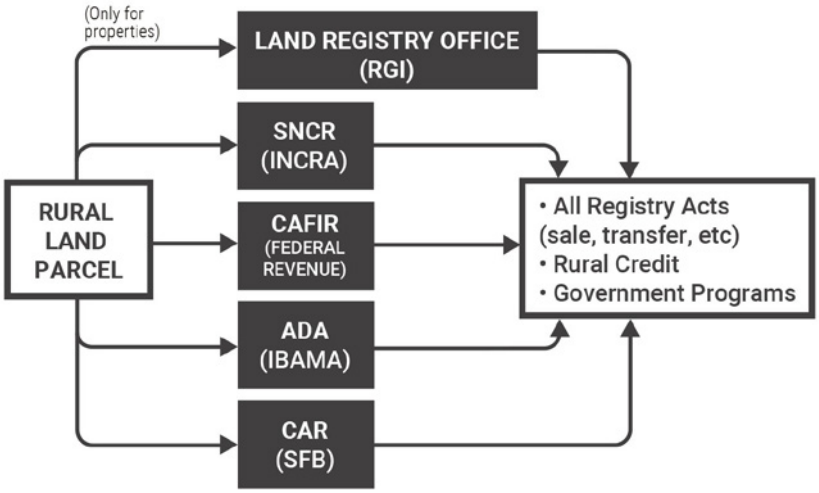
Executive institutions/bodies: Responsible for creating protected areas and establishing municipal rural settlements

Legislative branch: Competent to legislate only on issues of local interest, including environment and land use.

Notary Offices/ Land (or Real Estate) Registry Offices

Offices that are empowered by the public authorities to perform notarial and registry activities, including those relating to real property transactions. Under Brazilian law, a deed of sale must be witnessed and authorized by a public notary and then registered at the Land Registry/ Real Estate Registry (RGI).

Figure 4: Cadastre/Registry System for Rural Properties/Possessions



Source: *Chiavari et al., 2016*

BOX 3: CADASTRES

Rural Cadastres

The **National Rural Cadastre System** (**Sistema Nacional de Cadastro Rural - SNCR),** managed by INCRA, is a database of the geographic characteristics, the legal situation, and the conditions of use of the land in rural real estate assets for the purposes of land reform and agriculture planning. Enrollment in this cadastre is self-reported and must contain information about the plot of land, its use, and the people affiliated with it. This enrollment does not legitimate the owner's right of property to the declared land. However, the enrollment is essential for the owner to obtain rural credit and other benefits.

The **Rural Properties Cadastre** (**Cadastro de Imóveis Rurais - CAFIR)**, managed by the Federal Revenue Office (*Secretaria da Receita Federal* - SRF) was introduced to improve the collection of the rural land tax (*Imposto sobre a Propriedade Territorial Rural* - ITR), which is its main purpose.

The **Environmental Statement Act** (**Ato Declaratório Ambiental - ADA)** is a cadastre of the areas of environmental interest, controlled by the Brazilian Institute of Environment and Renewable Natural Resources (*Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais* - Ibama), for ITR exemption purposes.

The **Rural Environmental Registry (CAR)**, coordinated by the Brazilian Forest Service (*Serviço Florestal Brasileiro* - SFB), integrates environmental information of rural properties for control, monitoring and environmental purposes for economic planning in rural areas, and to serve as a tool for combating deforestation.

Public Land Cadastres

The Federal Property Management Office (*Secretaria do Patrimônio da União* - SPU) is the institution responsible for the management of the federal land assets, while each state has its own institute responsible for state lands. SPU assets include: indigenous land, federal protected areas, tidal lands, coastal areas, floodplain areas, islands, and rural lands demarcated by INCRA, among others.

Different institutions within the federal public administration co-manage different types of public land with SPU. For instance, the Ministry of Defense oversees large areas of public lands in the Amazon; INCRA is responsible for demarcating and assigning vacant land; and National Indian Foundation (*Fundação Nacional do Indio* – FUNAI) demarcates indigenous lands and the SFB manages large areas of national forest. Each of these organizations maintains its own administrative cadastre of the land under its jurisdiction, which leads to a total of eight coexisting cadastres recording different types of public lands, as shown in Table 4.

Table 4: Federal Land Cadastres

Type of Land	Managing Institution	Cadastre
Indigenous Lands	National Indian Foundation	Specific book in the Federal Property Management Office
Tidal Areas Coastal Areas Floodplain Areas	Federal Property Management Office	Sistema Integrado de Administração Patrimonial (SIAPA)
Public Forests	Brazilian Forest Service/ Ministry of Environment	Cadastro Geral de Florestas Públicas da União (CGFPU)
Environmental Protected Areas	ICMBio/ Ministry of Environment	Cadastro Nacional de Unidades de Conservação (CNUC)
Rural Reform Settlements	National Institute of Colonization and Agrarian Reform	Sistema de Informações dos Projetos da Reforma Agrária (SIPRA)
Terra Legal Program	SERFAL (Secretariat for Agrarian Development)	Terra Legal System (Sisterleg)
Military Areas	Ministry of Defense	OPUS System (Army)
Discriminated Vacant Land	National Institute of Colonization and Agrarian Reform	SPIUnet or SIAPA systems (controlled by SPU)

Source: *Chiavari et al., 2016*

Furthermore, none of the cadastres are integrated with the real estate registry. Moreover, the existing real estate registry is of poor quality despite its essential role to the existence and transfer of property rights. Large numbers of transactions are not registered due to time consuming and costly bureaucratic requirements, which include registry fees and taxes. For example, the World Bank's Land Governance Assessment Framework (LGAF) study estimates that in Pará and Piauí fewer than 50% of rural properties are formally registered.[36] Moreover, the entries for properties that have been registered often lack technical rigor in their specifications and can vary widely from the actual land they represent. This is particularly true for properties that were entered when the required technical rigor was low and precise measurement tools were lacking. In 2004, precision in these entries increased when the registry process began requiring georeferencing for all new entries, but the requirement is not yet completely effective, as the law gives smaller properties until 2023 to start fulfilling this requirement.

It is clear that a complex registration and cadastral system prevails in Brazil, comprised of the real estate registry, rural registries, and public land registries. Depending on the characteristics of a rural property and its legal situation, a landholder may be required to register the property in all of these systems or only in a portion of them. Some areas may be exempt from the whole system, as would be the case of vacant land not yet identified.

The weaknesses of the registry system have allowed the grabbing and the registration of false land titles, a phenomenon known as *grilagem,* to proliferate. The overall rate of land grabbing is not fully known, but in 1999, INCRA made its first and only consistent effort to locate each case of fraud and falsification of land ownership titles (*Livro Branco da Grilagem*). Across the country, the total land under suspicion of being illegally occupied at that time was approximately 100 million hectares; this is four times the area of the State of São Paulo or the total area of Colombia. In the North, the rate of land grabbing is especially concerning: 55 million of the 157 million hectares in the state of Amazonas are thought to have been appropriated illegally. Although these numbers have likely declined somewhat since some fraudulent documents were canceled after INCRA's 1999 study, the practice of land grabbing persists and is mostly undeterred. For example, in 2006, a survey showed another 30 million hectares grabbed in Pará, which equals 23% of the state's territory.[37] More recently, a 2015 pilot project to digitalize all land-related documents in the state of Pará showed that, in a particular municipality, 8 million hectares of land were registered when the total area of the municipality is only 997 thousand hectares.[38]

This lack of proper recordkeeping has led to frequent overlaps among different properties, often resulting in conflict. For example, the Indigenous Land *Manoki* in Mato Grosso has suffered from illegal deforestation by farmers and loggers for years. Recently, the Department of Environment of the State of Mato Grosso

36 For more information see http://go.worldbank.org/V97H6OMC50.

37 Costa, 2016.

38 Solyno, Aluizio. SIG-Fundiário Program. Presented at the Working Group on Rural Property Registers and Cadastres. June 15 2016. Rio de Janeiro.

(*Secretaria de Estado do Meio Ambiente* - SEMA) found that 54 private properties registered in the CAR are within the limits of *Manoki*. The farms inside the indigenous land have been receiving funding from public banks as well as government authorizations to remove vegetation.

(iii) Bureaucratic, Complex, and Time-Consuming Procedures

Procedures to demarcate and legalize land are often bureaucratic, complex, and time-consuming. This is the case for indigenous, *quilombola*, and protected areas but also for farmers who want to regularize their possession of small land parcels. For all of these land categories, CPI mapped the chain of processes required by law for obtaining land property rights. The complexity and challenges are clear (see Figure 5 for an example).

The flowchart in Figure 5 highlights the burden these processes add to the system, creating substantial backlogs across rural communities. For instance, the regularization of indigenous lands suffers from a large backlog. Currently, of the 705 indigenous lands, 114 are under consideration, 111 are waiting for demarcation, and 480 have completed their regularization process.[39] There are also 348 areas being claimed by indigenous communities where no process has started.[40] The same is true for *quilombola* communities: there are approximately 1,500 incomplete processes for titling *quilombola* lands currently listed in INCRA,[41] and some estimates suggest that at the current pace it may take INCRA more than 900 years to issue land titles to all the communities that have already been officially recognized.[42] Moreover, a study of regularization processes for private possessions in state lands in Pará showed that, at the current pace, the regularization of all land parcels that need titling in the state would take 39.5 years.[43]

Another symptomatic example of how regularization processes are burdensome and slow is the procedure required to expropriate and compensate private properties situated inside environmental protected areas. Even though steps have become less bureaucratic in recent years, the process is still extremely slow.[44] The Federal Court of Accounts (*Tribunal de Contas da União* – TCU) estimates that if the payment of compensations stays at the current pace, it will take 100 years to complete the expropriation of private land within protected areas.[45]

The regularization process also suffers from delays caused by a high level of judicialization with legal actions being common along the way, political control over some crucial decisions along the process, and limited institutional capacity of government bodies that often lack resources and staff. Additionally, frequent changes in legislation also affect the process, forcing adaptations in the existing procedures, which is often time consuming.

39 ISA, 2017.

40 Cimi, 2016.

41 INCRA-DFQ, 2016.

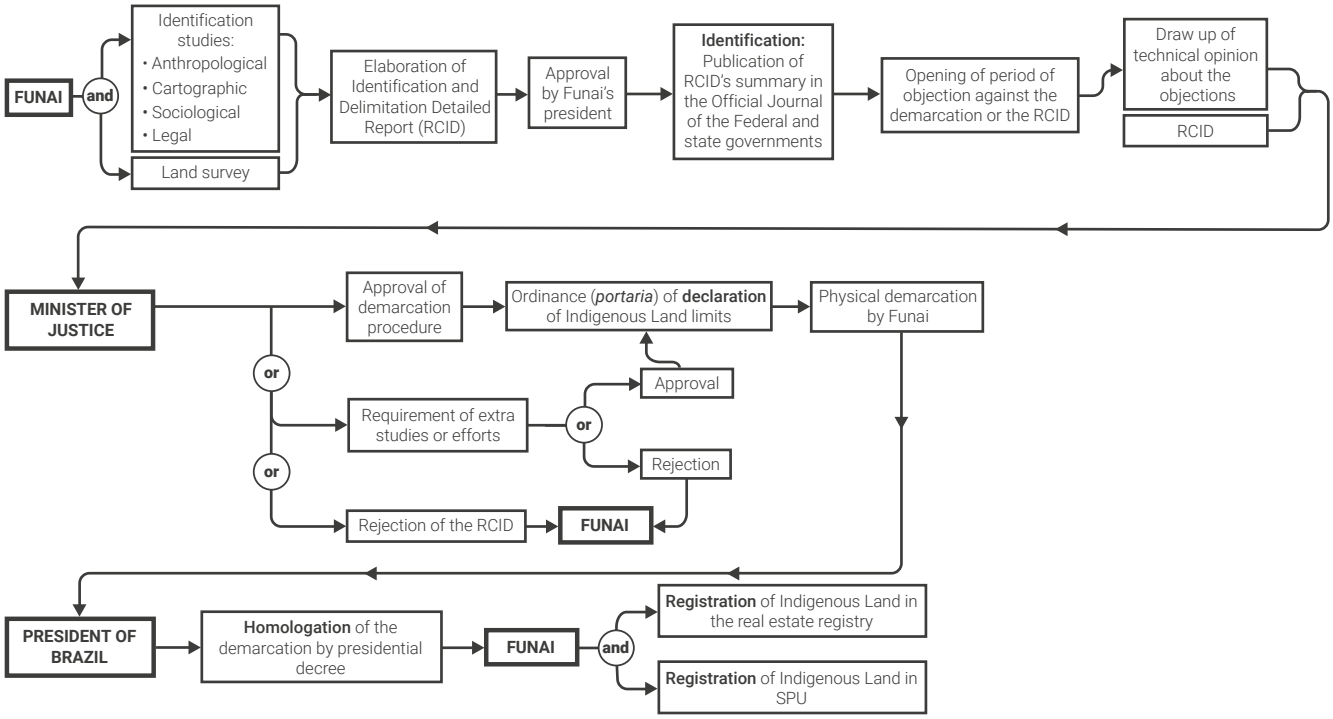
42 ISA, 2016.

43 Brito & Cardoso Jr., 2015.

44 New legislation from 2009 (IN ICMBio no 2/2009).

45 TCU, 2013.

Figure 5: Regularization Procedures for Indigenous Areas



Source: *Chiavari et al., 2016*

This profound complexity affects all land categories and fosters irregular behaviors and practices that introduce more problems for securing land rights. For example, the TCU's review of the process to create settlements concluded that 30% of all of the program's beneficiaries were not actually eligible to receive land parcels in the settlements. Ineligible recipients included public servants, elected politicians, individuals with incomes higher than three minimum wages, minors, and 37,000 deceased people.[46] Because of these and other irregularities, the TCU launched a precautionary suspension of the whole rural reform program in 2016.

(iv) Weak Enforcement of Existing Rights

Brazil's vastness and geography make large areas difficult to access and monitor for both landowners and officials. Throughout large areas of rural Brazil, particularly in the North and Northeast, the presence of authorities is limited, which leads to lax enforcement of existing property rights. This situation is exacerbated by a lack of means and staff, but also because of the corruption of public officials who have control over how and when rights are enforced.

Because of this weak enforcement, land rights that have been legally confirmed still face threats to their standing. These threats are more acute for historically

46 TCU, 2016.

marginalized groups such as indigenous, *quilombola,* and settlers, as well as for protected areas where large-scale farmers, miners, and loggers threaten the security of the area and its inhabitants. For example, the indigenous land Roosevelt, located between Rondônia e Mato Grosso, despite being legally recognized, has suffered invasions from illegal miners since the 1950s. Today, it still has over 500 miners illegally extracting diamonds.[47]

In the case of settlements, most families do not possess a definitive title to their land and as a result are especially vulnerable to the actions of loggers and farmers. Given the lack of infrastructure and government support, many settlers end up abandoning or selling their properties to large farmers.[48] The settlement *Esperança* in Anapu, Pará, where land activist Sister Dorothy Stang was murdered 10 years ago in a case that received international attention, still suffers from constant invasions by loggers and land grabbers. In 2015, several activists who denounced illegal logging had to be relocated to another area after receiving death threats.[49]

Moreover, large infrastructure projects for hydroelectric production, construction of roads, and the installation of transmission lines represent a strong threat to land rights of indigenous and traditional communities.

4. PATHWAYS FOR IMPROVEMENT

Although a number of organizations have worked at various levels to solve the challenges of insecure property rights, little analysis about the scope, actions, and opportunities of these efforts has been undertaken. Without a clear picture of efforts underway to secure land rights, charting a pathway to improvement is difficult.

To this end, CPI performed a stakeholder analysis of 60 organizations, their programs, and their beneficiaries across three states where conflict and insecurity around property rights are especially pronounced: Pará, Mato Grosso, and Mato Grosso do Sul. Table 5 shows a breakdown of the organizations studied by type. Several of the organizations focus on multiple states or at the national level, in addition to the three states identified. The list includes public and non-governmental (NGO) institutions. NGOs have a significant presence and they include a mix of research-focused organizations and on-the-ground groups. Unions / Group Representation describes a diverse list of organizations that includes unions and institutions that aggregate the interests of particular groups such as indigenous populations, farmers, rural workers, and real estate registers. Private sector actors are included in this category in the form of producer groups, though the mapping did not identify specific service providers or companies that are directly involved in innovating in the area of property rights.[50]

47 ISA, 2016.

48 Benatti et al., 2008.

49 Borges and Nossa, 2016.

50 One private venture, Terras, has been working on providing services to facilitate registration in the CAR, but they do not currently have a model specifically aimed at property rights.

Table 5: Number of Organizations Working on Land Rights by Type in Pará, Mato Grosso, and Mato Grosso do Sul

Nongovernmental Organizations (NGO)	17
Federal Government Institutions / Bodies*	12
Unions / Group Representation (*Associação de Classe*)**	11
State Government Institutions	8
Universities	5
Social Movements	3
Federal / State Prosecutors	2
International Cooperation	1
Group Combining Public and Private Institutions	1
Total Number of Organizations	**60**

** Includes: Operational System for Protection of the Amazon (Censipam), National Council of Justice, FUNAI, INCRA, ICMBio, National Agrarian Ombudsman, Terra Legal Program, Federal Revenue Office, SFB, SPU, TCU*

***Includes private sector advocate groups like producer associations*

Apart from the governmental bodies, many of these organizations became involved in land rights through activism on behalf of certain groups. For instance, groups working with indigenous rights or representing small farmers often support the demarcation and monitoring of lands since this is a major issue in their communities.

Table 5 also shows that the majority of organizations working on land rights are public. Executive offices at the federal and state levels are the primary institutions in charge of land management, which makes them a key player in the field. They are responsible for executing a wide range of tasks and services related to land management, including agriculture and land reform, environmental monitoring and protection, indigenous and *quilombola* community rights, and tax collection. The legislative branch of government enacts property rights legislation while the judicial branch decides on land tenure conflicts.

In terms of theme focus, 17 organizations work with only one land category and the rest focus on two or more land types.

This field work shows that efforts related to land rights in rural areas are quite fragmented, with a predominance of interventions from the public sector, NGOs, and a few research institutions. CPI analysis indicates an absence of several types of initiatives. First, few efforts promote a change in behavior by producers, possessors, or communities on the demand side. Rather, most efforts target changes in rules and procedures. Information about what the populations in these areas want in terms of property rights is generally missing. No organization seems to be addressing pressing questions such as whether possessors value titling or what can be done to increase their interest and compliance in regularization.

A second important oversight the analysis reveals is that the improvement of property rights enforcement receives little attention. As described in

Section 3, even after land rights are formally attributed their protection faces strong threats, particularly in more remote areas.

Lastly, the absence of the private sector means that there may be missed opportunities to drive innovation and change in the area. Even though, sole private intervention in an issue that depends so closely on public legislation and enforcement is not very feasible, partnerships between the private sector and government bodies, particularly in the adaptation of technology solutions to advance identification, monitoring and protection of existing rights could be successful.

As expected, the public sector features some of the most prominent efforts for modernization of the land governance system. Two groups of initiatives in particular represent the largest investments the government has made in improving property rights: cadastre management and integration efforts and the *Terra Legal* program. Even though these programs are in their initial stages and have not yet been thoroughly evaluated, they hold great promise to streamline processes and transparency on the supply side if they are able to coordinate efforts and implement their agenda. Another initiative of reference is the SIG-Fundiário system that was developed as pilot in Pará to organize information held on land parcels by different institutions. This program has been developed by academia with financing from international cooperation but will need public support for scale up.

(i) Cadastre Management and Integration

The problem of cadastre multiplicity, lack of communication between existing cadastres, and inaccuracy of the registry is well known to the government officials and all entities involved in the property rights discussion. Some of the main bodies with responsibilities for the cadastres, namely INCRA and the Federal Revenue, are leading efforts for modernizing their management. Two of these cadaster management programs, CNIR (*Cadastro Nacional de Imóveis Rurais)* and Sinter (*Sistema Nacional de Gestão de Informações Territoriais)*, will integrate information from different rural cadastres, which could help to solve conflict and overlaps between different types of land. The other program, Federal Property Management Office's (SPU) unified system, will centralize and modernize the management of public federal lands.

CNIR

Managed together by INCRA and the Federal Revenue, the National Cadastre of Rural Properties (CNIR) was introduced by a 2001 law and will first integrate the databases of SNCR and CAFIR, and at a later stage, integrate the databases of federal and state public institutions.

This integration will bring about benefits for the identification and documentation of public lands and will be a useful tool for land regularization and reform. It can also help in the regularization of traditional lands that overlap private land and in the reduction of conflict, in general. However, these

benefits can only be achieved if the different public institutions cooperate in the integration of data.[51]

CNIR's implementation started at the end of 2015. Since it is at an early stage, many doubts remain about how this integration will be achieved and whether it will actually replace the existing cadastres. Strong cooperation between the institutions that coordinate the different cadastres will be essential.

Sinter

A May 2016 decree introduced the National System of Territorial Management (Sinter) with the objective of integrating in one unique database registry, cadastre, tax, and geospacial information from all urban and rural assets in Brazil. Sinter will not be a new cadastre; it aims to integrate the existing cadastres that, in turn, will continue to exist independently. The Federal Revenue will manage it.

The barriers to the implementation and success of this new system are huge. First, the public registries and cadastres have important gaps in coverage and quality. Second, there is no obligation by the public administration bodies to join Sinter, which means very strong coordination and political will be necessary to make it happen. Third, integrating cadastres that follow different standards for the management of geospatial data might prove difficult. Finally, the development and operation of such a system will require significant resources.

As of now, and given its recent launch, there is no clear schedule for the implementation of this system.

Federal Property Management Office's (SPU) unified system

In 2012, the SPU launched a program for management modernization that includes the implementation of a unified system for management of federal land assets. Besides the cadastre, it will include a module of cartography with georeferenced information of all federal lands. This system will allow for the central management of federal property.

The unified system, expected to be fully deployed by the end of 2017, represents a major step forward for effective public land management at the federal level. However, for complete success, the system will need to include all of the land assets of the Union, be updated regularly, have a process to ensure the information is accurate, and gain full participation from all the relevant institutions within the federal public administration. As of now, there is not enough public information to know how the implementation of the new system is progressing and if the 2017 deadline will be met.

(ii) Terra Legal Program

The second major initiative from the Federal Government designed to contribute to land organization is the Terra Legal program. It was launched in 2009 with the goal of simplifying and speeding the procedures for regularization of individual

51 Paixão et al., 2013.

possessions in federal vacant lands in the Amazon region. (This covers the states of Acre, Amapá, Amazonas, Maranhão, Mato Grosso, Pará, Rondônia, Roraima, and Tocantins.)

Terra Legal aims to bring 60 million hectares of federal public lands into regularization by issuing property titles to small farmers and municipalities with areas or municipalities located in federal lands. The program was launched with a five-year commitment that was extended in 2014 for an additional three years. It is still not clear what will happen to the program after 2017.

Terra Legal had a slow start as illustrated in Figure 6 and, although titling increased significantly beginning in 2012 and reaching a maximum of 10,123 in 2014, the program still faces difficulties, and the titling process is happening at a slower pace than planned. In 2015 titling slowed down again as a consequence of a TCU ruling that identified irregularities in title issuing to beneficiaries that did not comply with the program's requirements (Box 4) and a change of the minister in charge of the Ministry of Environment that created a period of instability.[52]

The inability of the government to determine the exact location of vacant public lands necessitated a lengthy identification process as a first step and this delayed titling. Georeferencing soon became a priority, and Terra Legal launched the largest effort in the federal government's history to identify and map the public lands in the Amazon. Up until 2009, INCRA had only georeferenced four million hectares of public federal land. By April 2016, thanks to Terra Legal's efforts that made a plan for georeferencing large areas under the program's scope and devoted large part of its resources to hiring firms to carry out this task, this number jumped to almost 35 million hectares. Georeferencing played an essential role as it enabled officials to identify possible overlaps with other land categories and confirm that the claims were not located in indigenous areas, public forests, protected areas, tidal areas, or on lands reserved for military administration.[53]

Improvements

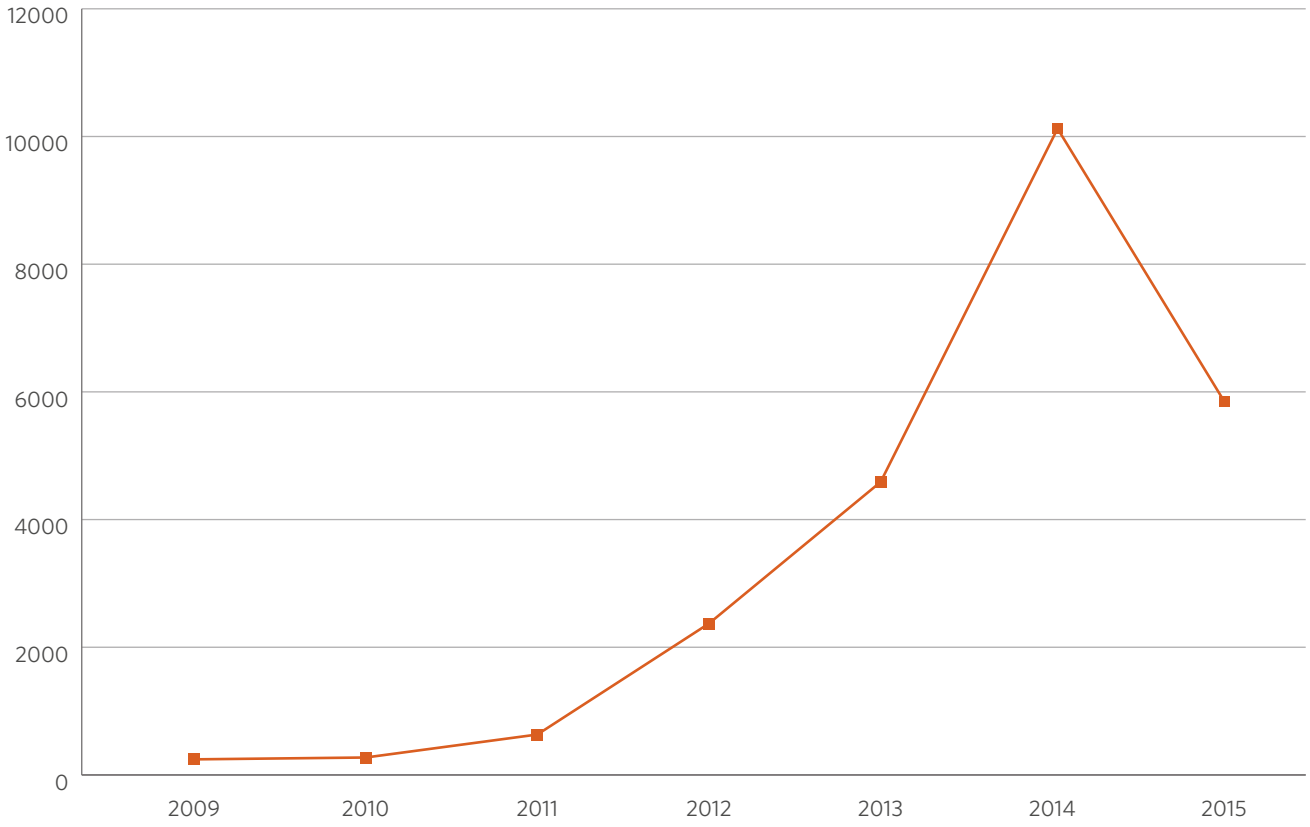
Terra Legal has had to overcome several challenges along the way, which in turn has altered its procedures for regularization. In essence, the problems of poor land organization in Brazil, such as the lack of a complete cadastre or limited knowledge of the exact location of federal lands, have plagued the government and impacted its ability to streamline and increase titling as well.

Before regularization can be fully initiated, Terra Legal must consult with all other institutions that have interests in federal lands. Before 2013, those consultations were done through the mail that took months to answer and caused huge delays in the process. In September 2013, after about four years of consultations by mail, the Technical Board for Regularization of Federal Public

52 TCU, 2015. The ruling also criticized the low achievement rates of the program and its inability to meet its initial goals.

53 MDA, 2016b.

Figure 6: Total Titles Issued by Terra Legal by Year (2009 to 2015)



Source: *MDA, 2016a*

BOX 4: REQUIREMENTS FOR POSSESSORS TO BENEFIT FROM TERRA LEGAL

- Size of occupied parcel inferior to 15 fiscal modules or 1500 ha; [54]
- Brazilian citizenship;
- Does not own property anywhere in the country;
- Has not benefited from agrarian reform or other land regularization programs (except for situations allowed by INCRA);
- Parcel constitutes the main source of income;
- Not working in public agencies that manage federal and state lands (including holding a political office); and
- Land occupation must have happened before December 2004 (not necessarily by the applicant).

54 A fiscal module (*módulo fiscal*) is a unit of land measure, expressed in hectares, created for tax purposes. The fiscal modules range from five to 110 hectares, according to the municipality.

Lands in the Amazon (*Câmara Técnica de Destinação e Regularização de Terras Públicas Federais na Amazônia Legal*) was instituted.[55] The Technical Board served as a forum to discuss the destination of federal lands in the Amazon, making the process faster and improving decision-making. Since then, more than 50 million hectares have been evaluated by the board. Of those, 34.7 million became regularized and 12.9 million were dedicated to other purposes, such as the creation of environmental protected areas and indigenous lands.

The program also faced operational difficulties so it had to improve processes and find new technological solutions. Some of the changes included the decentralization of certain competences to local offices; the development of the Land Management System (*Sistema de Gestão Fundiária* - SIGEF) that is now used by INCRA to manage all georeferenced data; and the use of field actions, known as *mutirões*, that consist of installing temporary offices in priority areas for two weeks at a time and simultaneously providing registrations in Terra Legal and in the CAR to make titling faster.

Challenges

Despite these efforts some challenges remain. Terra Legal does not have any system for collection of the fees related to the issuance of titles.[56] Moreover, there is no way to track those who are not paying.[57] The situation has not yet been resolved, but the program is testing a new system that will allow for payment and control through an agreement with the Bank of Brazil. A common criticism of the program, however, has been that the prices it charges for land are much lower than those charged by INCRA in its settlements and/or by the market.[58]

Other common criticisms of the program include its lack of a means to follow-up on rejected applications, a lack of clarity about when the government can and should take back property, and what should be done in cases of non-compliance of titled parcels where the title should be terminated, e.g., failure to comply with environmental and labor legislation.

(iii) SIG-Fundiário System

The SIG-Fundiário is a pilot project for the creation of a comprehensive database that integrates in one place land, agricultural, and environmental information from the public entities that keep records on land such as the Real Estate Registry, CAR, INCRA, the State Institute of Land, and the Terra Legal Program. The database includes scans of all paper documents associated with each parcel of land filed at contributing institutions. The system also includes maps based

55 Eight institutions are represented at this board: Special Secretary for Family Agriculture and Agrarian Development, INCRA, Chico Mendes Institute for Biodiversity Conservation (ICMBio), Brazilian Forest Service (*Serviço Florestal Brasileiro* - SFB), Ministry of Planning (*Ministério de Planejamento, Orçamento e Gestão* - MPOG), Funai, Management Center of the System for Protection of the Amazon (*Centro Gestor do Sistema de Proteção da Amazônia* - Censipam) e Ministry of the Environment (*Ministério do Meio Ambiente* - MMA).

56 The rules of the program state that regularization of parcels with less than one fiscal module is free but those larger have to pay a value per hectare.

57 Brito and Barreto, 2011; Tribunal Contas da União, 2015.

58 Brito and Cardoso Jr., 2015.

on the information contained in the documents. This pilot project only covers six municipalities in the state of Pará.[59]

Pará's State Prosecutor's Office *(Ministério Público Estadual do Pará)* launched the project in 2012 to create a less burdensome way for gathering information about each parcel of land when resolving conflicts. A group within the Federal University of Pará manages the project and received 1 million USD from the Ford Foundation for the pilot phase.

The intended benefits are the ability to compare information from various databases in one single place, highlighting possible contradictions and discrepancies, and establishing the dynamics of a given property, constituting its chain of ownership. The system also documents the use of territory and provides greater safety and precision in the definition of the physical and spatial boundaries of public and private lands.

It is important to understand that the system is not intended to automatically identify a solution to conflicts and the overlap of land categories. It is merely an informative tool to be used by the judicial system and other decision makers.

Because this system is still a pilot project, it is not yet available for use. Several of the institutions that provide documents for the registry have yet to officially sanction their participation. Also, the project's expansion to the whole state of Pará has not been confirmed, and the resources required for such a state level expansion would be considerable. The SIG-Fundiário team calculates that, to cover the whole state, 100 professional geoprocessors would be needed for a period of four years. Despite these challenges, an agreement has already been reached for an extension of the project to the state of Maranhão with financing from the state government and the Ford Foundation.

5. RECOMMENDATIONS

This CPI report traces the evolution of rural property rights in Brazil that gave way to the complex and challenging system of land rights in rural Brazil today. The report aims to present a framework for understanding the root causes of these challenges and to identify pathways toward improvement. Many organizations have already initiated important efforts to improve the situation, which were highlighted in Section 4 of this report.

Given the complexity and pervasiveness of Brazil's property rights problems, solutions will need to target the local, state, and national levels and should involve as many different actors as possible. Forums that bring together key stakeholders in a neutral space to present new evidence, spur dialogue on critical topics, encourage the exchange of information, and fortify collaborations across sectors are necessary.

CPI recommends the following next steps and focus areas for advancing progress on this critical challenge.

59 Municipalities include: Acará, Concórdia do Pará, Tailândia, Moju, Mocajuba and Tomé-Açu.

Governance

Governance measures need to be implemented by the executive branch of government at the federal and state levels and will require a considerable amount of coordination.

RESPONSIBLE

Executive Branch at the Federal Level:
- FUNAI
- ICMBio
- Palmares Cultural Foundation
- INCRA
- President's Office
- Federal Property Management Office

1. Streamline the processes of property rights regularization. Unify and simplify the legal framework currently in place. The complexity of processes and the difficulty in understanding what legislation prevails make regularization slow and can even discourage individuals from looking for it in the first place. CPI particularly recommends prioritize making the regularization process faster and simpler for small farmers (possessions) and traditional and indigenous populations. *Benefits: Faster regularization will encourage more citizens to secure land titles, contributing to efficient, long-term administration of land property rights.*

RESPONSIBLE

Executive Branch at the Federal Level:
- INCRA
- Federal Revenue Office
- Brazilian Forest Service
- Federal Property Management Office
- Land Registry Offices

2. Centralize the different rural cadastres under CNIR. The lack of a unified, national registry introduces confusion and inefficiency throughout the nation. Because CNIR represents an integration effort of two main government agencies, CPI identifies it as the cadastre in the strongest position to integrate all other cadastres, including CAR and SPU information and registries. The use of a common basemap is also recommended as a means to promote coordination and facilitate future database integration efforts. *Benefits: Reduce redundancies, identify territorial overlaps, produce comparable data, and generally improve effectiveness for managing properties throughout Brazil.*

Enforcement

The executive branches of government, both at the federal and state levels, also play a crucial in improving the enforcement of existing rights. Involvement of the judicial branch will also be necessary in resolving land grabbling.

RESPONSIBLE

Public Prosecutor's Office

Executive Branch at the Federal Level:
- Federal Revenue Office
- Monitoring units of FUNAI, INCRA, ICMBio
- Federal Police

3. Improve mechanisms and processes for monitoring and enforcing land rights for specific groups. Small-scale landholders, traditional populations, and indigenous groups are often more vulnerable to invasions due to their location in less accessible areas and/or limited access to justice and other protection mechanisms. *Benefits: By enhancing processes and oversight, rural land rights protection will increase, helping to protect native lands and reduce conflict.*

RESPONSIBLE

Public Prosecutor's Office

Executive Branch at the Federal Level:
- Federal Revenue Office
- Monitoring units of FUNAI, INCRA, ICMBio
- Federal Police

4. Take advantage of innovation and technology to advance identification, monitoring, and protection of existing rights. The use of new technologies, such as georeferencing, satellite imagery, drones, mobile phones and apps, and the engagement of local populations in using these tools would allow landholders to take greater ownership of their rights. *Benefits: The use of new technologies could also help increase registry compliance at lower costs, give more security to small landholders over their properties, and bring greater visibility to the problems traditional populations face.*

RESPONSIBLE

Public Prosecutor's Office

Executive Branch at State Level:
- State Land Institutes

Judicial Branch:
- State Courts
- National Council of Justice

5. **Create explicit administrative procedures for cancelling the property titles of lands illegally grabbed.** When land grabbing suspicions arise, decades-long judicial battles might follow before the land can be reintegrated as public property. *Benefits: Faster cancellation procedures could work as important deterrents to land grabbing activities and could help reduce lengthy court battles by reducing backlog.*

Regulation

The development of regulations that allow for a clear application of the Forest Code legislation to all land categories is also a responsibility of the bodies under the executive branch of government.

RESPONSIBLE

Executive Branch at the Federal Level:
- President's Office
- Ministry of Environment
- FUNAI
- INCRA

6. **Pass new regulations that clarify and address how the Forest Code should apply to cases of collective property and possessions, such as settlements, indigenous, and protected lands.** Important challenges for the application of the Forest Code come in the lack of clarity about how the rules apply to cases of collective property and possession, which represent a vast area of the country. *Benefits: Stronger enforcement of the Forest Code in these land categories which are fundamental for environmental protection.*

Knowledge

In the creation of knowledge, primary responsibility falls on academia and research-oriented NGOs. Partnership with federal, state, and local government agencies is important since they usually have access to the best data and their own small research groups.

RESPONSIBLE
- Academia
- NGOs

7. **Introduce meaningful and rigorous evaluations of current land titling and property rights programs and interventions.** Despite investment in land titling and property rights improvements, the impact of these efforts lacks evidence. The culture of evaluation is still absent from most of Brazil's public policies, including property rights. *Benefits: Gaining evidence about what does and does not work would improve the design and effectiveness of future policies.*

RESPONSIBLE
- Academia
- NGOs

8. **Research the perspective of landholders to gain insights to how and why they value titling and what influences their demand.** Without an understanding of what drives landholder behavior and demand, policymakers must guess at best practices. *Benefits: Better knowledge of landholder perspective can inform the design of more effective procedures and policies.*

REFERENCES

Allegretti, Mary. 2008. *A construção social de políticas públicas. Chico Mendes e o movimento dos seringueiros*. Desenvolvimento e meio ambiente, UFPR, 18, 39-59.

Almeida, Cláudio Aparecido; Alexandre Camargo Coutinho; Júlio César Esquerdo; Marcos Adami; Adriano Venturieri; Cesar Guerreiro Diniz; Nadine Dessay; Laurent Durieux and Alessandra Rodrigues Gomes. 2016. *High spatial resolution land use and land cover mapping of the Brazilian Legal Amazon in 2008 using Landsat-5/TM and MODIS data.* Acta Amazonica, 46 (3), 291-302.

Alston, Lee J.; Gary D. Libecap and Bernardo Mueller. 1999. *Titles, conflicts, and land use: The development of property rights and land reform on the Brazilian Amazon frontier.* University of Michigan Press.

Assunção, Juliano and Joana Chiavari. 2015. *Towards Efficient Land Use in Brazil.* The New Climate Economy. https://goo.gl/hd2NQF. Accessed on: October 3, 2016.

Assunção, Juliano; Clarissa Gandour; Pedro Hemsley; Romero Rocha and Dimitri Szerman. 2013. *Production and Protection: A first look at key challenges in Brazil.* Climate Policy Initiative. http://goo.gl/ZFA7gx. Accessed on: October 7, 2016.

Barros, Ciro and Iuri Barcelos. 2016. *Especial Amazônia em Disputa. Crime e grilagem com uso do CAR*. https://goo.gl/iHF2zb. Accessed on: August 9, 2016.

Benatti, José Heder; Edna Castro; Thomas Hurtienne; Roberto Santos and Roselene Portela. 2008. *Questão fundiária e sucessão da terra na fronteira Oeste da Amazônia.* Novos Cadernos NAEA. 11(2), 85-122.

Benjamin, Antônio Herman. 2005. *O meio ambiente na Constituição Federal de 1988*. In: Kishi, Sandra; Solange Teles da Silva; Inês Soares (Organizers). *Desafios do Direito Ambiental no Século XXI. Estudos em homenagem a Paulo Affonso Leme Machado.* São Paulo: Malheiros, 363-398.

Borges, André and Leonencio Nossa. 2016. *Terra Bruta. Mortes camufladas.* Estadão. São Paulo, 13 jul. 2016. https://goo.gl/9tN91W. Accessed on: July 20, 2016.

Brito, Brenda and Dário Cardoso Jr. 2015. *Regularização fundiária no Pará: afinal qual é o problema?* Instituto do Homem e Meio Ambiente da Amazônia - Imazon.

Brito, Brenda and Paulo Barreto. 2011. *A regularização fundiária avançou na Amazônia?: Dois anos do Programa Terra Legal.* Instituto do Homem e Meio Ambiente da Amazônia - Imazon.

Chiavari, Joana and Cristina L. Lopes. 2015a. *Brazil's New Forest Code – Part I: How to navigate the complexity.* Policy Brief. Climate Policy Initiative. https://goo.gl/gxLFlt. Accessed on: August 1, 2016.

Chiavari, Joana and Cristina L. Lopes. 2015b. *Brazil's New Forest Code – Part II: Paths and challenges to compliance.* Policy Brief. Climate Policy Initiative. https://goo.gl/7UZZN9. Accessed on: August 1, 2016.

Chiavari, Joana and Cristina L. Lopes. 2016. *Os Caminhos para a Regularização Ambiental: decifrando o novo código florestal*. In: Silva, Ana Paula M. da; Henrique R. Marques and Regina H. Sambuichi. (Organizers) *Mudanças no código florestal brasileiro: desafios para a implementação da nova lei*. Rio de Janeiro: Ipea, 21-44.

Chiavari, Joana; Cristina L. Lopes; Daniela Marques; Luiza Antonaccio and Natália Braga. 2016. *Panorama dos direitos de propriedade no Brasil rural: legislação, gestão fundiária e Código Florestal*. Climate Policy Iniative. https://goo.gl/uamO88.

Cimi - Conselho Indigenista Missionário. 2016. *Violência contra os povos indígenas no Brasil - Dados de 2015*. https://goo.gl/cb1YMF. Accessed on: September 16, 2016.

Coelho, Elizabeth. 2004. *O novo cenário do campo indigenista: tensões e conflitos*. Revista Políticas Públicas, 8(1), 27-41.

Comissão Pastoral da Terra. 2016. *Conflitos no Campo Brasil 2015*. https://goo.gl/o7nvfY. Accessed on: July 7, 2016.

Costa, Rita Damasceno. 2016. Insecure Land Rights in Brazil: Consequences for Rural Areas and Challenges for Improvement. Climate Policy Initiative. https://goo.gl/NbjRdE. Accessed on September 20, 2016.

Fausto, Boris. 2002. *História do Brasil*. 10th edition. São Paulo: Edusp.

Global Witness. 2016. *On Dangerous Ground.* https://www.globalwitness.org/en/campaigns/environmental-activists/dangerous-ground/. Accessed on: September 22, 2016.

IBGE - Instituto Brasileiro de Geografia e Estatística. 2012. *Censo Agropecuário 2006. Segunda Apuração. Brasil, Grandes Regiões e Unidades da Federação.* Rio de Janeiro: IBGE.

IBGE - Instituto Brasileiro de Geografia e Estatística. 2016. Mudanças na Cobertura e Uso da Terra. 2000-2010-2012-2014. Rio de Janeiro: IBGE.

INCRA - Instituto Nacional de Colonização e Reforma Agrária. 2016. *Painel dos Assentamentos. Informações gerais sobre os assentamentos da reforma agrária.* Brasília: Incra. https://goo.gl/2YfSTb. Accessed on: September 29, 2016.

INCRA-DFQ - Instituto Nacional de Colonização e Reforma Agrária. Diretoria de Ordenamento da Estrutura Fundiária. 2016. *Dados Gerais - Quilombolas.* Brasília: Incra. Disponível em: https://goo.gl/M8WkT7. Accessed on: March 7, 2017.

ISA – Instituto Socioambiental. 2015. *Impactos da PEC 215/2000 sobre os povos indígenas, populações tradicionais e o meio ambiente*. https://goo.gl/6PySZG. Accessed on: July 19, 2016.

ISA – Instituto Socioambiental. 2016a. *O que o governo Dilma fez (e não fez) pelos territórios quilombolas?* https://goo.gl/ktK0S2. Accessed on: August 4, 2016.

ISA – Instituto Socioambiental. 2016b. *Por que não minerar em terras indígenas?* https://goo.gl/dP6DPe. Accessed on: August 4, 2016.

ISA – Instituto Socioambiental. 2017. *Povos Indígenas no Brasil. Terras Indígenas. Demarcações. Situação jurídica das TIs no Brasil hoje*. https://goo.gl/JMjLfz. Accessed on: March 7, 2017.

Martins, José de Souza. 1996. *O tempo da fronteira: retorno à controvérsia sobre o tempo histórico da frente de expansão e da frente pioneira.* Tempo Social. Revista Sociológica. São Paulo: USP, 25-70.

MDA - Ministério do Desenvolvimento Agrário. Secretaria Extraordinária de Regularização Fundiária na Amazônia Legal – Serfal. 2016a. *Painel Fundiário Programa Terra Legal*. Brasília: June 17, 2016.

MDA - Ministério do Desenvolvimento Agrário. Secretaria Extraordinária de Regularização Fundiária na Amazônia Legal – Serfal. 2016b. *Terra Legal Amazônia: Relatório de Desempenho de 2015 a abril de 2016*. Brasília: May 2, 2016.

MMA/CNUC - Ministério do Meio Ambiente / Cadastro Nacional de Unidades de Conservação. 2016. *Dados consolidados*. Brasília. https://goo.gl/HKauU5. Accessed on: September 29, 2016.

Mueller, Bernardo. 2016. *Key Issues for Property Rights in Brazil: Implications for the Forest Code.* Climate Policy Initiative. https://goo.gl/Rnbrzg. Accessed on: June 2, 2016.

Nozoe, Nelson. 2006. *Sesmarias e apossamento de terras no Brasil colônia*. Revista Economia, Brasília, 7(3), 587-605.

Paixão, Silvane; Sue Nichols and Andrea Carneiro. 2013. *Estudo das necessidades dos usuários do cadastro nacional de imóveis rurais (CNIR)*. Revista Brasileira de Cartografia (online), 2, 253-264.

Property Rights Alliance. 2016. *The International Property Rights Index 2016*. https://goo.gl/dSU8Qz. Accessed on: March 10, 2017.

Rocha, Ibraim; Girolamo Treccani; José Heder Benatti; Lilian Haber and Rogério Chaves. 2015. *Manual de direito agrário constitucional: Lições de direito agroambiental*. 2nd edition. Belo Horizonte: Fórum.

Silva, José Afonso. 2004. *Direito Ambiental Constitucional*. 5th edition. São Paulo: Malheiros.

Silva, Ligia O. 1996. *Terras devolutas e latifúndio: efeitos da lei de 1850*. Campinas: Unicamp, 1996, p. 75.

Silva, Ligia O. 1997. *As leis agrárias e o latifúndio improdutivo*. Revista São Paulo em Perspectiva, 11(2), 15-25.

TCU - Tribunal de Contas da União. 2013. Acórdão: 3.101/2013. TC nº 034.496/2012-2. Brasília.

TCU - Tribunal de Contas da União. 2015. Acórdão: 627/2015. TC nº 015.859/2014-2. Brasília.

TCU - Tribunal de Contas da União. 2016. Acórdão:775/2016. TC nº 000.517/2016. Brasília.

World Economic Forum. 2016. *The Global Competitiveness Report 2016–2017*. https://goo.gl/nuvrq0. Accessed on: March 10, 2017.

Zenha, Edmundo. 1952. *Terras Devolutas – A Lei nº 601, de 1850*. Revista de Direito Administrativo. Rio de Janeiro: FGV, 28, 432-446.