



Linking Land Tenure and Use for Shared Prosperity

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Brazilian Amazon Deforestation and land governance

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Abstract

This article's aim is to show that the main cause of deforestation in the Amazon rain forest is the lack of land governance. The deforestation occurs mainly because property rights are not clearly established, and occurs on land ruled directly or indirectly related to the state.

After making a literature review on the Amazon region deforestation causes it will show, with data from PRODES (published by IMAZON, IPAN and ISA), on deforestation for the Amazon region and for the states revealing the main landowners types in which deforestation occurs more frequently. With this data the article will show that most of the deforestation happens in land under different types of state control, making more evident that the need of land governance for the diminishing of the deforestation should start with state controlled land.

The concluding section will, start remarking that only with a more efficient land governance for the country, particularly for the Amazon region will make it possible to reduce the deforestation. Besides that the conclusions will show other important contributions that the participatory Land Governance will have on the better use of land, on the control of land ownership, mainly through the charging of land taxes.

Key Words: Deforestation, Property rights, Amazon Rain forest, Land Policies, Land Governance

1. Introduction

The deforestation of the Amazon rainforest has been debated on a number of different fronts, often superficially or steeped in ideology. Amongst the subjects most commented upon we find the debate that revolves around changes in the Forestry Code and the recent increase in the rates of deforestation. Firstly, it is necessary to identify clearly the process, then determine the causes and finally reflect on short, medium and long-term solutions.

It is undeniable that the strong command and control policies¹ and economic incentives² implemented in recent years have played a crucial part in reducing deforestation. As these depend on the direct intervention of the State, it is difficult for them to be maintained in the long run, mainly because the principal production-related agents of deforestation, ranging from livestock farming to the production of grain and ultimately the production of electricity, will persist, and lasting solutions must be found. The core aim of the present study is to demonstrate that the definitive solution to this problem must necessarily address the solution of the country's agrarian problems that mainly consist of the Brazilian State taking on, in conjunction with the nation, the effective governance over land ownership, particularly land under the control of the State.

Initially, the present article presents a brief description of the main causes of deforestation that have been identified in the literature on this topic. Then it will be shown how two problems that appear at the margins of the literature are, when brought together, the main drivers of deforestation: land speculation via the deforestation of land itself and the absence of agrarian governance. The fourth item analyzes historically the creation of the institutional framework that leads to the absence of regulation in the land market. Finally, in the last section, as well as arguing for the need for effective land property governance, the main implementation mechanisms and the benefits it will generate will be demonstrated.

2. Deforestation and its principal causes

According to the FAO (2010),

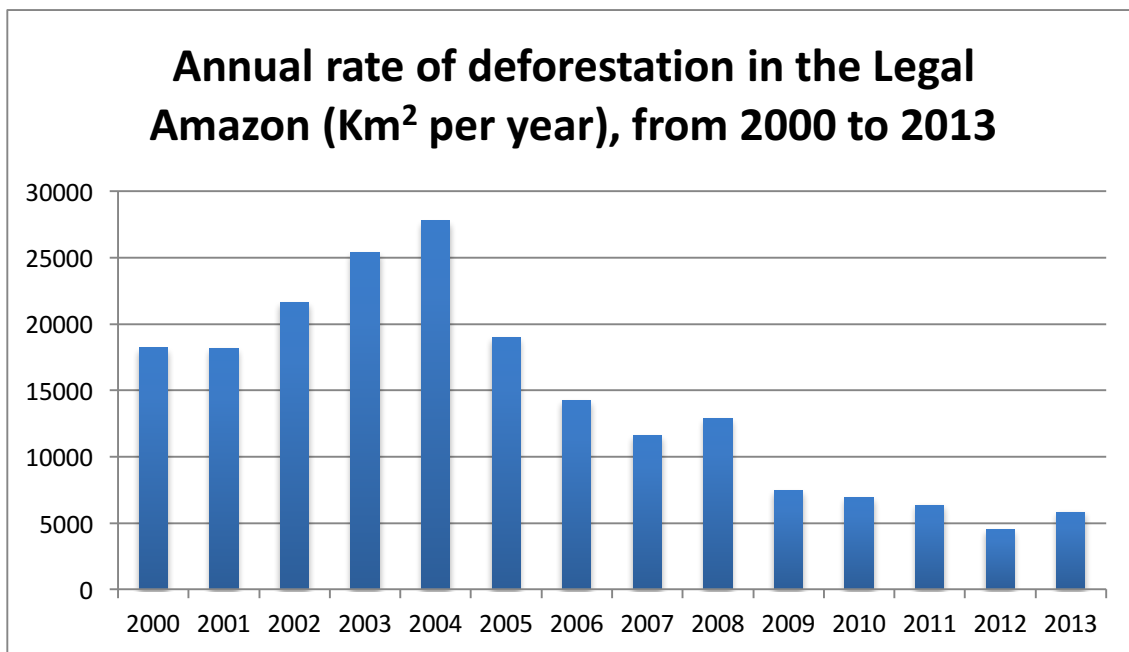
¹ The main Command and Control Policies, direct State interventions that change the behavior of the deforesters, were: a) the operations known as Curupira (2005) and Arco de Fogo (2008), to combat illegal timber extraction; b) decree 6321/07, which restricts the granting of bank loans and obliges owners in the municipality who are the biggest offenders of deforestation, to reregister; c) the creation of Conservation Units, adding a further 20 million hectares to the more than 80 million already in existence, totaling 273 units; d) certification of 87 Native Lands and approximately 18 million hectares; e) limited to agricultural products emanating from municipalities with highest rates of deforestation.

² Economic Incentive policies that use economic mechanisms (prices or otherwise) to incentivize or inhibit economic agents to reduce deforestation are as follows: a) operation Arco Verde (2008), and b) Special line of credit in the area of FNO, FNE and FCO for the recovery of degraded areas, reforestation, management and regularization in the Legal Amazon.

“Brazil has lost an average of 2.6 million hectares of forest per year over the last 10 years, compared with an annual loss of 2.9 million hectares in the 1990s; in Indonesia the losses were 500,000 hectares between 2000 and 2010 and 1.9 million hectares between 1990 and 2000.”

Graph 1 shows deforestation in Amazonia based on images produced by the PRODES satellite and it shows that the average annual deforestation between 2000 and 2013 was 14,315 km² per year, amounting to 200,416 km² (around 20 million hectares) in the period. The decrease in annual deforestation from 2004 (27,700 km²) to 2013 (5,891 km²) represents a substantial improvement but it is still a very high level of deforestation for a biome with the characteristics of the Amazon. This is a biome whose standing forest represents its greatest riches, given its high biodiversity, its importance for regulating the climate of the planet, its production of fresh water and a soil that is unsuited to agricultural pasture activities.

Graph 1. Deforestation in the Legal Amazon



SOURCE: PRODES (2014).

The question that remains is, how can we make an increase in the rates of deforestation inviable and more importantly, how do we significantly reduce them? Deforestation of the Amazon forest is a complex process with multiple drivers and has been the object of various theoretical and empirical studies³. Margulis (2000:9) states: “We do not believe that there is a single, principal force which drives or explains the deforestations in Amazonia. The causes are manifold and result from a sophisticated combination of diverse variables and factors”.

The main groups of variables that lead to deforestation, evident in Margulis (2000) and in the best part of the literature are:

- a) Benefits associated with the use of land in Amazonia, determined by agricultural prices, increase in the price of land, variation in the price of inputs, increase in the price of timber and the reduction in rural wages;
- b) Public policies and credit – the availability of cheap credit (FINAM, FNO) and fiscal incentives (SUDAM);
- c) Accessibility – the construction of highways and/or other works that facilitate access to the frontier areas;
- d) Macroeconomics – cycles of GDP growth, population growth.

Inasmuch as these four groups of variables have directly interfered with the deforestation of Amazonia, it may be said that, after the interventions of recent years and the crisis of 2008/2009, all have probably had positive impacts on deforestation, nevertheless deforestation has increased. On the other hand, even in the periods in which these variables are not growing, deforestation rose. This shows that there are other, more profound factors at work whose relative importance has not been highlighted.

3. Deforestation in detail: in the states and by type of land access

Before discussing the causes and main steps to be taken with regard to deforestation, it is necessary to go deeper into its characteristics, in other words to find out in which states it is happening more intensely and if there have been any significant changes in incidence over recent periods. It can be seen from table 1 that the state with the highest incidence of deforestation is Pará, with a little more than 40% of the total deforestation of the Amazon region and an area of 2,037 km² cleared in 2013. However deforestation in the state of Pará, though higher, grew more slowly between 2012 and 2013, at 13%, while states like Mato Grosso and Rondônia exhibited the highest growth, at 38.3% and 29% respectively. However other states demonstrated

³For an in-depth review, see Soares Filho et al (2005).

significant reductions in deforestation: Amapá, Tocantins and Acre fell between 21% and 94%. The reason for these differences requires greater research and explanations.

Table 1. Deforestation of the Amazon forest per km² in different states in the northern region of Brazil -2012 and 2013.

State	Deforestation in 2012	% of total 2012	Deforestation in 2013	% of total 2013	variance %
AC	274	6.2	158	3.2	-42.4
AM	458	10.3	360	7.4	-21.4
AP	20	0.4	1	0.0	-94.4
MA	304	6.8	230	4.7	-24.4
MT	774	17.3	1,070	21.9	38.3
PA	1,794	40.2	2,037	41.8	13.6
RO	679	15.2	876	18.0	29.0
RR	108	2.4	116	2.4	7.4
TO	48	1.1	27	0.6	-43.9
Grand Total	4,459	100.0	4,875	100.0	9.3

Source: ISA/IMAZON/IPAM (2014)

However the information that is most important for the objectives of this study is the type of property (agrarian category) where the deforestation took place. Firstly it should be pointed out that the highest share of deforestation goes to the agrarian reform settlements with 28.7% of the total deforestation, a growth of 9.4% in the period. This is clearly down to the absence of a clear policy to limit deforestation in the agrarian reform settlement projects in Amazonia. Next come the areas for which no information exists, that may be public or private land, with 23% in 2013, a growth in area in the period of 16.8%. Deforestation on private property, although it dropped slightly in absolute numbers, appears in third place, accounting for over 20% of the deforestation, quite a significant percentage.

The categories of property that should be showing almost zero deforestation, on account of them being protected areas (environmental protection areas, Conservation Units, Native Lands), still appear, however, to have areas of deforestation, between 140 and 230 km² in each category, which is not insignificant. Except for the native lands, all demonstrated significant growth between 2012 and 2013, being higher in the environmental protection areas (a growth of over 42%).

This group of information is more than enough to show the need for greater control over the use and occupation of land in Amazonia. However if we were to add together all the agrarian categories associated with Brazilian states, excluding those that are clearly private, it can be

seen, as depicted in table 2, that 79.6 % of deforestation in 2013 occurred in lands directly controlled by the state. So an effective control over the different categories of public land is the decisive first step to reduce deforestation in the country.

Table 2. Deforestation by type of agrarian category - Amazonia - 2012 and 2013 - (in km²)

Agrarian Category	Deforestation in 2012	% of total 2012	Deforestation in 2013	% of total 2013	% 2013/2012
Environmental Protection Area	164	3.7	234	4.8	42.5
Settlement Projects	1,279	28.7	1,400	28.7	9.4
Private property (Rural Environment Registry (CAR) certified by INCRA)	1,041	23.3	994	20.4	-4.5
Areas without any information (unregistered public or private land)	960	21.5	1,121	23.0	16.8
Native Lands	174	3.9	148	3.0	-15.0
State public land	15	0.3	1	0.0	-94.4
Federal public land	540	12.1	664	13.6	23.0
State Conservation Units	119	2.7	142	2.9	19.7
Federal Conservation Units	167	3.7	170	3.5	1.9
Grand Total	4,459	100.0	4,875	100.0	9.3

Source: ISA, IMAZON, IPAM(2014)

4. Institutional Framework of agrarian regulation: why there is no effective registration system and why agrarian governance is non existent

This section analyzes historically the creation of the institutional framework in Brazil, which leads to the absence of land market regulation. It will be shown that many of the characteristics that causes this absence are inherited from the Brazilian State's historical ineptitude with regard to agrarian governance.

Prior to the Brazilian Land Law of 1850, the rules regarding the occupation of urban and rural soil were defined based upon the powers of the kings, the Church or the political and physical clout of the occupants. The Land Law should be understood in a more general context of laws

that placed restrictions on access to land in the whole colonized world⁴In keeping with the interests of landowners in the country, the Land Law made it possible to regularize possession⁵, the fruit of the occupation of vacant lands, which once again rendered unenviable the creation of a register. Put more directly, there always existed the possibility of regularization of possession arising from vacant land occupation. In addition to adverse possession (which establishes that the squatter may regularize his property after a number of years), the states themselves (mainly after the Republic was created) at some points in history granted property with or without titles. This is the basic mechanism which meant and still means that it has never been possible to establish an effective register, which would even permit the definition of vacant areas and assign them for use in various agrarian policies.

Until the Land Law, the registration of property was basically done with the Parish Land Registries, under the responsibility of the local vicar (law of 1822, with the demise of the *sesmarias*). This registry continued to be used for a long time after the proclamation of the Land Law. In 1864, a land law decree obliged all holders of land to register their possessions in the vicar's registry – however this was never enforced.

The Proclamation of the Republic in 1889, by passing to the states the rights over the vacant lands, generated the possibility that their representatives might transfer them via the granting of unregistered titles. This happened to a greater or lesser degree according to the state, but irrespective of this, it created yet another ambiguity over the granting of titles, which made the state registration of the land market difficult⁶.

The institutionalization of the Public Land Registry in 1900 is arguably the main step to the system that prevails today for registering property in registry offices. This ruling states that everyone must demarcate and register their rural or urban properties, though without any form of audit and without the existence of a registration. The State would also need to demarcate and register their (vacant) lands, which is impractical given that they are defined by process of

⁴As in Latin America, Australia and the USA.

⁵ i.e. transformation of possession into property through legal channels.

⁶ In spite of this, there has been a failed attempt at regulating property via the Torrens Registry (1891) in which squatters and owners would be able to obtain definitive title through an uncontested petition. On the other hand, the possibility of legalization of squatter's possession in 1895 and in 1922 (in respect of possession between 1895 and 1921) has the effect of creating the conditions for squatter's possession to persist and for land market regulation, as expressed in the Land Law of 1850, to be weakened.

elimination. The State itself therefore is acting illegally. This obligation has the effect of augmenting the possibility of fraud in the registration at public registry offices.

The proclamation of the Civil Code of 1916 created the inability to regulate the Brazilian land markets, whether by reaffirming the registry office as the institution of registration or by enabling public lands to be the object of adverse possession. In the words of Ligia Osório Silva (1996:324),

“with this, the framework for the transformation of the State into an owner like anyone else, was complete. And thus the doctrine of statute of limitation over vacant lands was sustained. In other words, the possibility of adverse possession of vacant lands”.

The Civil Code, therefore, through motives not necessarily linked to the interests of landowners, had the effect of establishing the great milestones in the institutionalization of land access in Brazil, by defining that the registration in property registries was required (sometimes it was also sufficient) to prove ownership. In a way the registration at the registry office gave an air of legality to the property without there being any mechanism to guarantee it⁷.

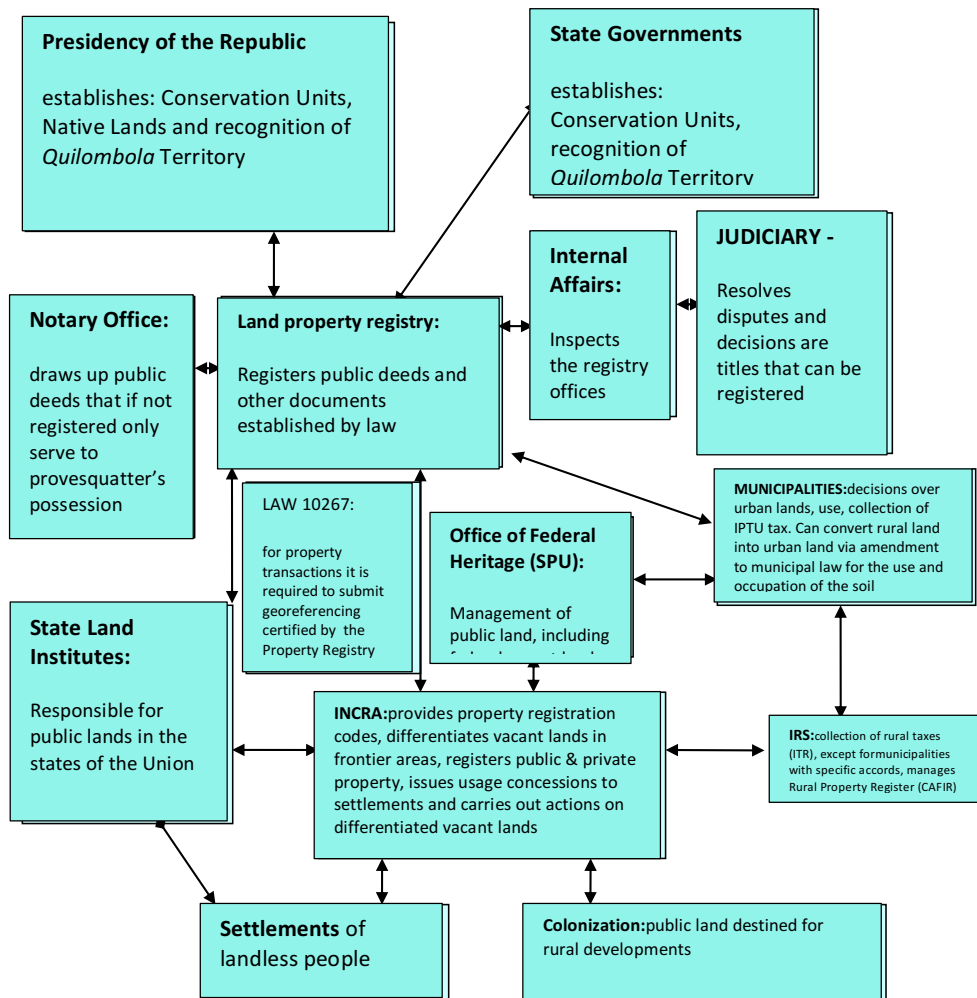
The big institutional innovation in the area of Agrarian Policy and Administration in Brazil is the Land Statute of 1964, whose rules and concepts continue to be valid to the present day. Therefore, to guide the implementation of agrarian and agricultural policy, the Statute of 1964 created the Rural Property Registration⁸. All private or public property should be registered, including squatter's possession. The owners should provide information on the situation of documentation and use of land (used to estimate productivity) in order to facilitate agrarian reform. INCRA, created in 1970, became responsible for the management of the National System of Rural Cadastre (SNCR), which maintained the Rural Property Registration. Once the property was registered, INCRA would issue a Rural Property Registration Certificate (CCIR) required for any type of land transaction. Squatters registered by INCRA also received the CCIR

⁷The most common irregularities are the granting of titles for nonexistent or vacant properties and the superimposition of various areas, i.e. various owners having title over the same land. When this occurs, it is said that the land has 'floors': for every owner with an irregular title in that area, an extra floor is added. The federal government is taking a decisive step in the regulation of the rural and urban land market by implementing, not without some difficulty, Law 10267/2001 in which the registry offices are obliged, whenever there is a change in property, to transfer it to INCRA on a plan with its boundaries in map form (latitude and longitude).

⁸ As the 1967 registration and subsequent re-registrations were for fiscal purposes (ITR) based on the declarations of the landowners and were not audited, this is not very reliable as was shown in the study by Sabato (2003), based on information arising from Decree 558/98. Other recent attempts to integrate the cadastres of the various public agencies in order to improve the quality of information, have failed on account of the absence of political will and of an agency that is prepared to take on the role of carrying out agrarian governance in the country.

and would have to pay the Rural Property Tax, though the value of these taxes has always been kept at a low level. The Land Statute once again maintained legitimacy of possession, thereby permitting entitlement to informally occupied public lands.

Diagram 1. Institutions responsible for Land Administration System in Brazil 2014



Source: Prevailing legislation and Reydon (2014), with alterations.

Diagram 1 aims to summarize, from a schematic point of view, the interrelationships between agencies in the Agrarian Administration system in Brazil. One can see that there are no links

between INCRA and the municipalities, causing many agrarian problems in the linkage between rural and urban lands. Moreover, there is no single institution that centralizes the registration and provides a link with the Judiciary bodies responsible for property entitlement. It does not appear in the chart, but a large part of agrarian problems in Brazil, both rural and urban, when not resolved in the administrative domain, end up in court, and this, as there are a lot of cases in the various courts, ends up taking years to process, meaning that land-related cases, whether rural or urban, are tried as *faits accomplis*.

Therefore the big problem with deforestation in Amazonia is associated with the absence of agrarian governance in the country, resulting from the historical process of the construction of a legal and institutional framework that is inadequate to this end. Only with the construction of an institution whose goal is agrarian governance and the adaptation of the apposite legal framework in Brazil will we see the reduction of deforestation and adequate use of the soil in the country.

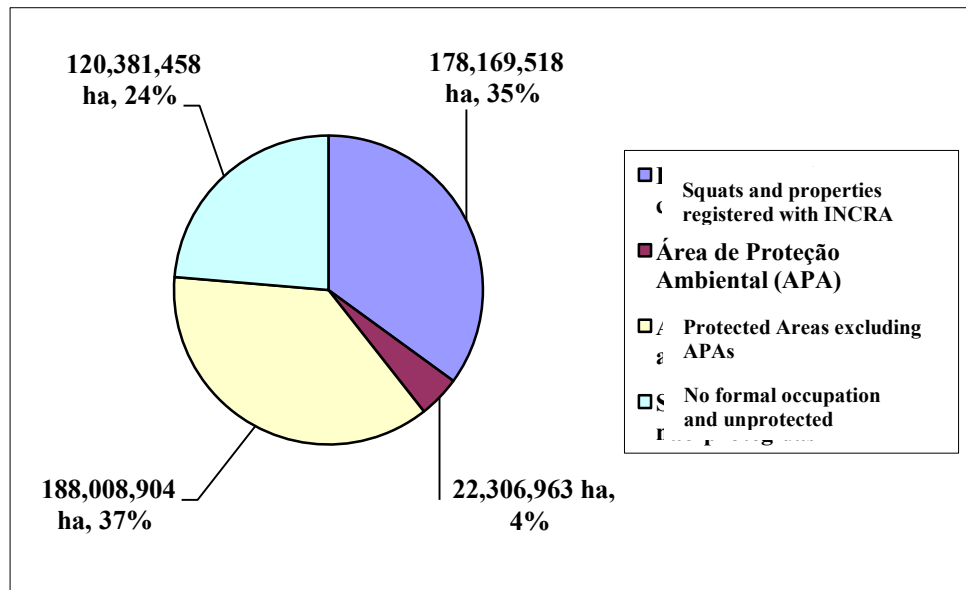
5. Land appropriation in Amazonia and the insecurity of property rights

The practice of appropriation can be witnessed with the absence of registration and an effective regulation of land property in Brazil and particularly in Amazonia. Existing registration data, based on the declarations of landowners registered with INCRA, show that in 2003, 35% of the 509 million hectares of land in the Legal Amazon were occupied under the right of private possession, either as registered property or as possession. On the other hand, the recent process of creating Federal or State reserves of different types means that today 42% of the Legal Amazon is under some form of protection; approximately half of this area was Native Land and the other half Conservation Units of various types. The remaining 24% did not belong to any of these categories and therefore is technically considered to be unallocated public land (Figure 1).

However the situation is more complex and uncertain than these numbers suggest. Much of the Protected Areas is physically occupied by private users whose claims to occupation may or may not be valid, depending upon the complex legislation presented. The large area described as private by the registration system is also questionable. Of the 178 million hectares declared as private property, 100 million hectares may be based on fraudulent documentation. A further 42 million hectares of this area are classified based on registry declarations as possession, which may or may not be capable of agrarian regularization, again depending on the circumstances of

size, history and location⁹. Accordingly 30% of the area could be legally uncertain and/or contested.

Figure 1. Agrarian situation in the Legal Amazon from data in the National System of Rural Cadastre (2003) and Protected Areas (2006).



Source: World Bank (2011)

The Brazilian State is so aware of its inability to regulate the use of land, mainly as it does not have a Cadastre, that it was obliged to take the following concrete actions to reduce deforestation in the Amazonia and increase agrarian governance, albeit on an emergency basis without addressing the problem at its source:

- a) It established Law 11952/09 regularizing possessions of up to 400 ha at no cost and selling possessions of between 401 and 1,500 ha (the squatters have to be able to prove they have lived on the land since 2004).
- b) Creation of numerous environmental protection areas (APA) in the form of Conservation Units (based on Law 9985 of July 2000) for the protection of the margins of the main highways under construction in the Amazon region, in order to avoid appropriation and deforestation.

⁹There are all types and sizes of squatters in the INCRA cadastre, both small holders with less than 200 ha and those with over 1,000 ha.

- c) It created the Rural Environment Registration (CAR), under the auspices of the Forestry Code, to oblige owners to georeference their properties to try and identify the properties and their respective Legal Reserves;

The clearest evidence of the Brazilian State's inability to provide effective governance of the land market is the publication of Directive 558/99, applicable to all Brazilian territory and not just the Legal Amazon. With this directive, INCRA imposed on all owners of property with over 10,000 hectares the need to submit documentary proof. Of the 3,065 owners called upon, only 1,438 (46.9%) appeared, meaning that 1,627 properties had their registration canceled, amounting to 46 million ha¹⁰. In addition, 53% of the area of these properties lies in the states of the northern region of Brazil, mostly in the Amazon forest. In the state of Amazonas alone, according to Lima (2002), the equivalent of 48.5 million hectares of property, registered with the respective land registry offices at the start of 2000, were canceled in 14 districts. There have also been academic studies, like the one by Araújo et al(2008), that have evidenced from municipal data that the largely insecure property rights, as in Amazonia, have had a positive impact on deforestation.

6. Deforestation and land speculation

It is our understanding that the deforestation of Amazonia is a product of the continuation of the traditional form of expansion of the agricultural frontiers in Brazil which generally occurs by way of the following steps: the occupation of virgin land (private or public), the legal extraction of timber, the introduction of livestock farming¹¹ and, finally, the development of a more modern forms of agriculture. These economic activities exercise the role of generating income and legitimizing the occupation of the new owners in the short term, almost without the need for any resources¹². In the long term, the lands either remain under more intensive livestock farming or, if the demand exists, they will be converted to grain or another economic activity.

¹⁰See Sabatto (2003) for further details.

¹¹ Reydon and Romeiro (2000) show that the main driver of conversion to agriculture is, on the one hand, the existence of a lot of vacant land that can be appropriated, combined with the possibility of introducing agricultural farming, at low cost, turning deforestation into an unbeatable capital appreciation strategy.

¹² It is these occupiers that frequently make use of slave labor.

The most important factor is that there is an expectation that there will be demand for this land¹³, to be used at some future point in time, meaning that its price is significantly increased. The closer the land is physically to the regions that permit productive use, the higher the price. The appreciation in the value of these lands will occur as these expectations increase.

In the studies conducted by Margulis (2000 and 2003), and in the literature already cited, the question of land speculation appears, but it is usually associated with increases in land price. However, the increase in land price does not necessarily mean that a speculation process is underway. In this regard, the price of land in the northern region, roughly speaking, tracks the movement in land price in the rest of the country and does not generate substantial speculative gains.

Land speculation which, as this article proposes, is the driving force of the deforestation of the Amazon forest, occurs in a far more microeconomic way and is associated with the actual occupation of land, and can be seen very clearly in the field research. In reality, what happens is that anybody who acquires or occupies the land that includes forest, has a clear understanding that his land, his investment, will grow in value with the deforestation process. Table 1¹⁴ shows initially that the price of forested land ranges, in the different states, from R\$108 in Acre to R\$546 in Mato Grosso. Here it can also be seen how the least deforested states have the lowest land prices, while the states of Mato Grosso, Pará and Rondônia have the highest prices.

The most important conclusion to be drawn from the table is that in all the states, deforestation always raises the value of property substantially, and in these states, on average, deforestation increased the value of land more than fourfold. This happens because the price of land is still essentially the product of expectations of productive gains arising from the associated agricultural activity and in deforested areas it can be used immediately without the costs involved in clearing the forest.

In the most extreme case, in Acre, deforestation multiplies this value more than 14 times, while in the state of Amazonas, the multiple is almost 10 times. Very few investments have such high returns as these.

¹³ This arises as a result of the increase in the price of an arroba of beef cattle, soy or even the announcement that the country is to be the largest producer of alcohol in the world. In recent periods, these factors have converged, making demand for land, and its price, grow even more, putting ever more pressure on deforestation.

¹⁴ The Agra FNP methodology is to collect average prices inhomogeneous regions in the cited states using a non-uniform terminology. To forest we add so-called forest, forests that are easy to access and those that are difficult to access. For pasture land we use formed pasture (easy and difficult access), formed high-maintenance pasture and formed low-maintenance pasture.

It should be borne in mind that these owners, in addition to the increase in net worth occasioned by deforestation, also make gains from the sale of timber (in Cotriguaçu, in Mato Grosso, net returns in the order of R\$2,400 per hectare are estimated) and also from its subsequent economic use (if this is due to livestock farming, it will generate additional net revenue of over R\$120 per hectare per year¹⁵). Therefore the best catalyst of deforestation is the combination of gains from the appreciation of the land, its conversion from forest to productive land, associated with gains from timber and livestock farming, established in subsequent periods.

Table 1. AVERAGE PRICES OF FOREST AND PASTURE LAND – states comprising Amazonia- in R\$ per hectare in 2008

STATES	Forest R\$/ha	Pasture R\$/ha	Variance%
Acre	108.00	1571.80	1455.4
Amapá	141.00	800.00	567.4
Amazonas	132.43	1243.91	939.3
Pará	457.73	1509.40	329.8
Rondônia	358.50	1762.50	491.6
Mato Grosso	546.13	2083.69	381.5
<i>Average NORTH</i>	<i>416.53</i>	<i>1832.39</i>	<i>439.9</i>

SOURCE: AgraFND (2009)

This process of acquisition and deforestation, which is already extremely profitable in private areas, is becoming much more lucrative in vacant lands which, according to estimates¹⁶, represents 42% of the total area of Amazonia, where the majority of deforestation takes place. This means that on appropriating vacant lands, the gains from timber, livestock farming and the appreciation of the land are multiplied as the land in itself did not need to be acquired, simply usurped from the public property¹⁷.

¹⁵See Margulis (2003).

¹⁶ Estimates by Shiqui (2007) show that 42% of land in Amazonia is vacant land.

¹⁷ Perhaps some expense incurred on hired thugs, weapons and the legal and illegal costs of regularizing the area.

7. The need for land governance¹⁸ as a prerequisite for the reduction in deforestation

Agriculture in Brazil is exemplary, with growth in food production, supply of energy and foreign currency earnings, greater inclusion internationally, amongst others. Nevertheless, the security associated with land ownership remains a big problem, particularly in Amazonia. The solution to this requires adequate, participative agrarian governance, according to FAO (2007) and Deininger et al (2010), amongst others.

The benefit to be obtained from an adequate system of land management depends on the clear identification of registered properties and a simple, effective mechanism to obtain the information and keep it up-to-date. This process needs to be started without depending on title information or other forms of formal documentation that can be used whenever property disputes arise.

Only with the effective governance of the land, particularly the creation of a modern, self-perpetuating register will it be possible to:

- a) Guarantee the rights of private property for different ends: business, leasing, credit guarantees, for the granting of payments for environmental services, amongst others;
- b) Identify public land and guarantee its adequate use for: creation of reserves, settlements or colonization;
- c) Establish other agrarian policies with greater security: agrarian reform, agrarian credit, taxation of land;
- d) Regulate the land purchase processes to: limit access to foreign stakeholders, owners who already have a lot of land or other owners;
- e) Zone the use of land– establish and regulate by imposing limits through Zoning, agricultural and livestock production in specific regions. Establish protected areas and prohibition of deforestation;
- f) Regulate the processes of conversion of agricultural land into urban land and therefore establish a register for the collection of taxes on property (IPTU and ITR);

Agrarian governance will not resolve the problem of deforestation in Amazonia, but it is a prerequisite for addressing the problem. As for the vacant lands, registration, by permitting the

¹⁸FAO (2008:9) operates with an adequate definition of agrarian governance: “We shall adopt as the starting point the conceptual definition proposed by the FAO in its recent analysis on this topic: ‘Governance is the system of values, policies and institutions by which a society manages its economic, political and social affairs through its interactions within and between the state, civil society and the private sector. Land governance concerns the rules, processes and organizations through which decisions are made about access to land and its use, the manner in which the decisions are implemented and the way that competing interests in land are managed’.”

State to identify and control them will make inappropriate private appropriation and deforestation very difficult. It will also make it possible to use these vacant lands in the execution of agrarian policy in Brazil, through organized colonization, agrarian reform and others.

On private land, effective, participative governance will, based on knowledge of the actual situation, allow for a discussion of priorities for use and adequate enforcement, planning and regulation of soil use. Moreover, through zoning and other compulsory tools, it will prevent deforestation and will certainly limit land speculation, which is the main cause of deforestation.

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