Rural Environment Registry (CAR) and its influence on the dynamics of deforestation in the Legal Amazon[1]

Amazon Environmental Research Institute IPAM

Key Points:

CAR'S EFFECTS IN PARÁ AND MATO GROSSO

✓ **THE MAJOR PART OF THE DEFORESTATION,** in both states, still happens outside the properties which are part of CAR. Even though there is a trend of increase on the relative participation of deforestation in properties with CAR.

✓ **CAR, ALONE,** has not been effective to control the deforestation during years of analysis in all of the classes of analysis. CAR was associated to a decrease in deforestation rates in properties up to 4 rural modules, in the first years of its implementation in both states. For properties between 4 and 15 modules, CAR was associated to a decrease in deforestation rate in Pará state. For properties larger than 15 modules, the effect of CAR on deforestation is not so clear. The effect of CAR in deforestation reduction had decreased in small properties, in both states.

✓ **THE REDUCTION OF THE POLICY EFFECTIVE-NESS** can be as a result of lack of monitoring and accountability. The lack of monitoring and accountability suggests that there is a manager's dilemma between the severity of the fines in properties, which are part of CAR or to incentivize their enrollment. This can result in weakening the policy, causing a feeling of impunity.

✓ **CAR IS IN DANGER** of becoming a "safeguard" for producers' illegal actions, without generating the reduction in deforestation or the compliance with the forest code in regards to legal reserve. That is why it is important that the producer knows that he/she will be charged for his/her actions and that CAR is not a shield against impunity. There must be a link between the "role" of CAR and its actions on the ground, above all, to the compliance with the new Forest Code.

✓ **CAR DECOUPLED FROM OTHER POLICIES** and incentives has a limited effect. It is important to note that CAR is an instrument that must, not only identify and demand compliance of the producer(s) for their violation, but also to motivate and award producers who comply with the environmental role within the property. In this sense, CAR will be more effectiveif it is tied to public policies and markets that stimulate deforestation free agricultural supply chains and which are in compliance with the new Forest Code.

Introduction

On May 25th, 2012, after almost two years of discussions in Congress, a new version of the Brazilian Forest Code was approved (Law 12.651/2012). The new law reaffirmed important norms for forest conservation in all the Brazilian biomes. It also established innovative tools for the support of the forest activity and the monitoring of its implementation.[2] Among these innovative tools, is the Rural Environment Registry (CAR) (**FIGURE 1**). It is a public electronic registry, self-declaratory and mandatory to be applied to all of the rural properties in the country. Its function is to generate environmental information regarding rural properties, allowing for the "control, monitoring, environmental planning and economic planning and the fight against deforestation" in rural properties nationwide (Article 29, Law 12.651/2012; Decree 7.830/2012).

Among various restrictions and possible incentives to producers who are conditioned by CAR, there are: (i) to obtain licenses for the use of natural resources or alternative use of the land, (ii) to suspend fines applied by the environmental agencies[3], conditioned to the enrollment in PRA[4], (iii) emission of Environmental Reserve Quotas

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(Cotas de Reserva Ambiental – CRA) when applicable, and (iv) and be able to apply for agriculture credit from 2017. Besides these, in some states where CAR already exists, CAR is a prerequisite to fulfill some market demands and to gain some tax benefits. CAR can also be used as a tool to reduce social-environmental risk in activities related to different productive sectors (finance, industry and retail) and the recognition of actions, for the benefit of the environment protection, from the producers and townships. Keeping in mind the role of CAR in the implementation of the new Forest Code, the implementation and operation of CAR became one of the main subjects of discussion in the Environment Ministry and it is, in the case of the Amazon, the crucial strategy for the investments in the Amazon Fund (Fundo Amazônia) (COFA, 2013).

However, the concept of CAR did not begin with the approval of the new Forest Code. It is possible to identify its origin in the experience done by Mato Grosso state through the implementation, in 2000, of the Environmental Licensing System of Rural Properties (Licenciamento Ambiental de Propriedades Rurais – SLAPR). SLAPR was an initiative, at the time, financed by the Pilot Programme for the Protection of the Tropical Forests of Brazil (Proteção das Florestas Tropicais do Brasil – PPG7) and supported by the Environment Ministry. SLAPR gave a new use to the remote sensing and to the tools of geographical information system, playing an important role in the environmental management and control of the illegal deforestation in a given period[5]. In this sense, it served as basis for the creation, in 2008, of CAR in Pará and later, in 2009, in Mato Grosso. This initial registration was, however, less demanding from the legal point of view since it had a declaratory nature[6]. Just as SLAPR, the CAR established by the new Forest Code has three basic objectives: (1) to provide information about the compliance of the rural property with the land-use rules and limitations imposed by the new Forest Code; (2) to monitor, through satellite images, the forest dynamics in these establishments; and (3) to make property owners accountable for illegal environmental damages caused by them (see **FIGURE 2**).

From the beginning of CAR's implementation in Pará and in Mato Grosso from 2008 to 2012, deforestation rates have dropped significantly and constantly (68%) in the region[7]. Different studies have shown that command and control actions, the development of environmental protection

FIGURE 1. RURAL ENVIRONMENT REGISTRY (CAR) AND ITS CURRENT AND FUTURE CONNECTIONS (*)
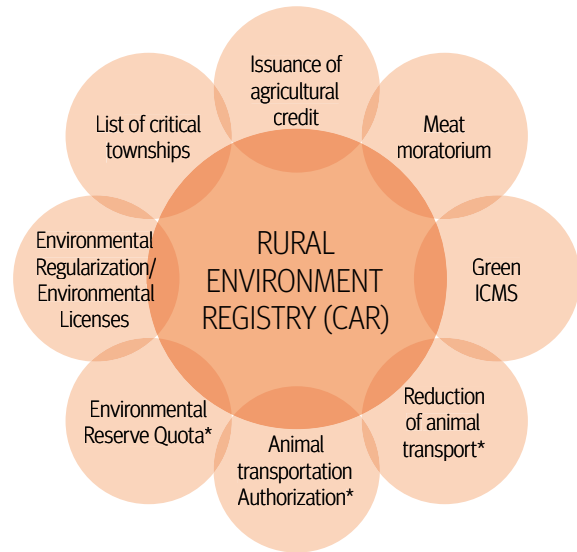
FIGURE 2. OPERATION'S PILLARS OF SLAPR AND CAR

[5] SLAPR's Evaluations in Mato Grosso can be found in Lima, 2005; Azevedo, 2009, Rajão et al, 2012 and Azevedo & Saito, 2013.

[6] Although in both states CAR is declaratory from a legal point of view, in MT, CAR's release goes through a prior analysis and review of the degraded APPs through satellite images. Only after the producer recognizes these areas with his/her signature in Conduct Adjustment Agreement (Termo de Ajuste de Conduta – TAC), CAR is released. In Pará's case, the release is online and immediate. The validation comes later, in the license phase.

[7] In 2013 there was an increase in the deforestation of the Amazon Biome. For more information, look up "The increase in the Amazon deforestation in 2013: an exception to the rule or out of control?" prepared by IPAM, IMAZOn and ISA. Available on http://bit.ly/IPAM-P736.

Aerial view of a farm in Mato Grosso.

areas and private sector initiatives were crucial for this to occur[8]. To answer this question, the current edition of the "Amazon Highlights" brings the summary of the results of the study done by the Amazon Environmental Research Institute (IPAM) in cooperation with the Federal University of Minas Gerais (UFMG). This study analysis how the implementation of CAR affected the dynamics of deforestation in Mato Grosso and Pará states, between the years of 2008 and 2012. More specifically, the study: (1) evaluated CAR's effect regarding deforestation; (2) identified the main motivations from different institutions (government, municipality and producers) to support and join CAR; and finally (3) raised the main challenges for the implementation of CAR in the Amazon and the country.

To reach the objectives above, the deforestation dynamics of 49,669 rural properties, located in the Brazilian Amazon (Pará and Mato Grosso)[9], which were enrolled in CAR, were analyzed. The deforestation data was taken from PRODES/INPE in the period from 2008 to 2012. This allowed for the identification of annual deforestation occurrences in each of the properties included in the study. To analyze the effect of CAR, the properties were divided in two groups. In the "CAR group", there were properties which had already registered for the CAR, so even if it had not yet been validated or approved, the property was considered under the effect of the policy. In order to have a base for comparison, we chose as the "control group", the properties (of a known perimeter) that, in a specific year, were still not registered in CAR. Therefore, according to the analysis, the properties were classified as part of the CAR group or the control group. In other words, a property that had its CAR protocoled in 2010, and taken into account the deforestation of 2009, was considered as the control group, however, moving to the CAR group from 2010 onwards. From the comparison of these two groups, it was possible to quantify the deforestation in each of them between 2008 and 2012. Taking into consideration the reduced number of properties in CAR in 2008, and in the control group in 2012 for Mato Grosso, as a precaution, the analysis in this state was restricted to 2009 to 2011 (**BOX 1**).

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8 In reference to the role of the protection areas, refer to Soares Filho, Moutinho *et al.* (2012) and for the impact on the command and control actions, refer to Hargrave and Kis-Katos (2013).

9 No caso dos dados de Mato Grosso, utilizou-se o ano em que foi feito o protocolo do CAR. Já no caso do Pará, para as propriedades que tinham CAR provisório, consideramos a data de protocolo, enquanto que, para as propriedades com CAR definitivo, usamos a data de aprovação do CAR.

Aerial view of a farm in Mato Grosso.

Also, to assure the quality of the statistical analysis, a substantial number of properties were excluded from the analysis. The first exclusion was for properties with an area smaller than 10 hectares. This measure was necessary due to the low accuracy in the size of the deforestation, via Prodes, for areas with less than 6.5 hectares. The properties with an accumulated deforestation above 95% of their area were also excluded from the sample (only after they reached the 95%); eliminating the possibility of the deforestation rate being influenced by the absence of forest in a specific group of properties. Properties under the effect of other land (INCRA) and environmental policies were also excluded, as to avoid possible interferences in CAR's measures of isolated effect on deforestation.[10] Among the properties influenced by activities of land regularization were excluded those in INCRA's rural settlements and also properties certified by INCRA. In the specific case of Mato Grosso, there were also excluded properties, which began the process of licensing (LAU) before the creation of CAR's instrument.[11] The exclusion removed 56.12% of the data from Pará, however the analysis was run on 19,191 CAR properties, occupying an area of 13.1 million hectares. In Mato Grosso, 55.86% of the data were excluded, but the analysis was run in 3,548 of CAR properties occupying 3.3 million hectares (in Mato Grosso state, the statistical analysis, were only taking into account, properties located in the Amazon Biome).

Other than the exclusions, the properties were categorized according to their size class (small, medium and large) as to separate the effect of other public policies and the social-economical profile from the properties in the deforestation dynamic. The size classes were up to four fiscal modules, from four to 15 modules and higher than 15 modules, respectively.[12] The properties were analyzed in a yearly basis, to separate the effect of CAR on the incidence of factors that vary with time (i.e. the price of agriculture commodities and IBAMA's control and command operations). All these exclusions allowed that the control group had properties with similar profile

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[10] As bases utilizadas como referência para políticas fundiárias foram: Terra Legal (http://mapas.mda.gov.br/i3geo/datadownload.htm) e Propriedades Privadas do INCRA (http://acervofundiario.incra.gov.br/i3geo/datadownload.htm), ambas acessadas em 10/09/2013.

[11] A metodologia de limpeza da base está disponível em: http://bit.ly/1gUKnEK

[12] A Lei 8.629/1993 define essas categorias de tamanho de propriedade.

One of the Staff from SEMA-MT analyzing the processes for the environmental regularization of the rural properties.

as the ones in the CAR group, isolating the effect of the registration in the analyzed years.[13]

The statistical treatment applied to the data was binomial approximated by the Poisson model. It was also investigated if the deforestation inside CAR was illegal or was legal (with the authorization by the State Environmental Agency), or with the possibility to become legal (without authorization, but within the legal limits imposed by the forest code). It was not possible to gain access to the complete data related to the authorization of the legal deforestation in the states[14], however, according to information by the state environmental secretariats, the number of deforestation authorizations has declined and would not be sufficient to justify the deforestation within CAR. The level of deforestation with the possibility to become legal, had also a limited role in the results presented here, since only 12% and 8% of the deforestation inside Pará's

and Mato Grosso's CAR, respectively, occurred inside the limits imposed by the percentage of the legal reserve. Furthermore, a sensitivity test of the statistical model was run. This was done by withdrawing from the database all of the deforestation with the possibility to become legal which occurred inside CAR and a similar result, to the one presented here, was obtained. This data shows that the majority of the deforestation inside CAR was illegal.

Finally, in order to understand the motivations for CAR's adoption in the states, as well as the social subjacent dynamics to the quantitative results, 33 interviews were done (19 in Mato Grosso and 14 in Pará) with State Government officials, IBAMA's supervisors, small and medium size property owners and their union representatives and non-governmental organizations.

The main results of the study are presented in the next sections. Prior to the presentation of the results, a brief CAR history will be introduced. This Bulletin is finalized with the lessons learned and recommendations that can be useful for the effective implementation of CAR in the national level.

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13 We used the methodology proposed by Ferraro and Pattanayak (2006) for the evaluation of the environmental policies.

14 According to the Instituto Centro Vida (ICV), the authorizations given by SEMA in the years of 2010 and 2011 were, respectively, 10 and 110 km2, which were between 1 to 10% of the deforestation done in the state.

Motivations for car's implementation, a brief history

The discussions about CAR began in Pará, in late 2006, during the decentralization process of forest management. This decentralization process transferred the environmental responsibilities, previously assigned to the federal government (IBAMA), to the states; its official recognition, as an administrative tool, was granted by the Decree 1.148, on July 2008. Even though the annual deforestation rate in the Amazon had begun to decline in 2005, the years of 2007 and 2008 were still marked by a high deforestation rate (on average, 12,281 km2 per year). This was partially a consequence of not having information regarding rural properties in the region, which made governance at a regional and state level an even bigger challenge. To solve this problem, CAR was initially thought of as a declaratory document and with a fast clearance, but that could gather information for each of the rural properties in the state. From this registration, all the licenses needed for the developing and activity (deforestation, forest management and others) could be released after the specific analysis. This allowed what was called, at that time, LAR (Rural Environmental License – Licença Ambiental Rural). The idea was "to fill the state of Pará with documented people (with social security and tax identification number – CPF and CNPJ)", as mentioned by the Secretary for the Environment, at the time. This would make it possible to connect the identified deforestation by PRODES[15] (the system for monitoring Amazon deforestation by the National Institute for Space Research [Instituto Nacional de Pesquisas Espacias – INPE]) to people and companies, finding who was responsible for the deforestation.

At the same time, a CAR prototype appeared in Mato Grosso with the objective to speed up the environmental regularization process. Even though the state has a licensing system that, since 2000, issued the Single Environmental License (LAU), this system had become excessively slow and bureaucratic. At the same time, part of the rural sector of the state noticed the need to begin a process of regularization, to ensure access to credit and to the growing – and environmentally more demanding – commodities market. To deal with this slow process, as well as the immediate demand from the environmental liability due to deficit in Legal Reserve areas, the government of the state approved, in December 2008, Supplementary Bill of Law 343, known as "Legal MT". With this new law, the process of environmental regularization was divided in two phases: to receive the registration (CAR), which was geared to the regularization of the permanent preservation areas; and LAU, aiming at the licensing process, in which was also included the regularization of the legal reserve.

Even thought there were these differences, in both states, the decision to join CAR, occurred in response to the growing pressure from the federal government, non-governmental organizations (NGOs) and later, the agribusiness multinationals for the reduction of the deforestation in the Amazon biome. In the governmental area, there was an increase in the scale of command actions and control done by IBAMA and linked to the Prevention Plan and Deforestation Control in the Legal Amazon. At the same time, with the presidential decree 6.321 from December 2007, which instituted the figure of Critical Municipalities of deforestation, vetoed the credit approval, by federal agencies, for ranching and farming in those municipalities. Therefore, a black list of the greatest deforesters' municipalities emerged. This credit restriction was subsequently expanded for the Legal Amazon with the resolution from the Central Bank 3.545/2008. This resolution required that producers presented a "license, certificate, or any other similar evidence of environmental regularity" for the concession of bank credit. The pressure to adhere to CAR was reinforced, also by the Ordinance 103/2009 of the Ministry of Environment, which established, as a condition to be removed from the "Critical Municipalities list", that the municipalities should have the Rural Environment Registry (CAR) in 80% of its territory, excluding the indigenous land, in addition to reducing the deforestation to less than 40 km². Additionally, the municipality should have the deforestation smaller or equal to 60% of the average registered deforestation in the two previous years.

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[15] For more details about PRODES http://www.obt.inpe.br/prodes/index.php

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Aerial view of a farm in Mato Grosso.

During the same period, large agricultural companies in the Brazilian and International market became a target for campaigns ran by Environmental NGOs (Greenpeace, 2005). As a consequence of these campaigns, international buyers of Brazilian commodities started to see a high reputational risk, if they purchased products from the Legal Amazon. As a consequence, large companies in the soy and livestock sector reacted to these pressures and the moratorium of soy and beef were instituted in 2006 and 2009, respectively. The moratorium demanded the commitment from large buyers from these sectors to only purchase products coming from areas free from deforestation during the moratorium period. In addition, after the signature of the Conduct Adjustment Terms (Termo de Ajuste de Conduta – TAC), imposed by the prosecutor to Pará's slaughterhouses in 2009 and in Mato Grosso in 2010, it became mandatory that the producer showed and environmental license to be able to sell, and CAR is the first step to receive this type of license.

As a consequence of what was described above, CAR became, for different reasons, essential for the economic and government agents in these two states. For many municipalities, CAR implementation with the participation of NGOs, and later, with the Amazon Fund (Fundo Amazônia), was essential so that many municipalities could be removed from the "Critical Municipalities" list of deforesters, thus improving the local economy.[16] On the other hand, the medium and large size producers, sought CAR with the objective of obtaining bank loans with low interest rates and to commercialize their products with signatory companies of TACs, issued by the Prosecutor. Thus, in the last few years, CAR stopped being an instrument focused, exclusively, in the environmental sustainability, to become the main piece for economical sustainability of the municipalities and of the private sector in the region. It is only after the changes in context, as mentioned above, are considered that one can understand why an instrument such as CAR has been adopted massively by rural producers in both states (**BOX 1**).

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16 Due to high deforestation rates, Mato Grosso and Pará had, in 2011, 31% and 32%, respectively, of their areas composed of critical municipalities (MMA, 2014).

BOX 1

## X-RAY OF CAR IN MATO GROSSO AND PARÁ

Number of properties registered in CAR in Pará and in Mato Grosso
(last CAR submitted on July 3rd, 2012 in Mato Grosso and up to February 27th, 2013 in Pará)
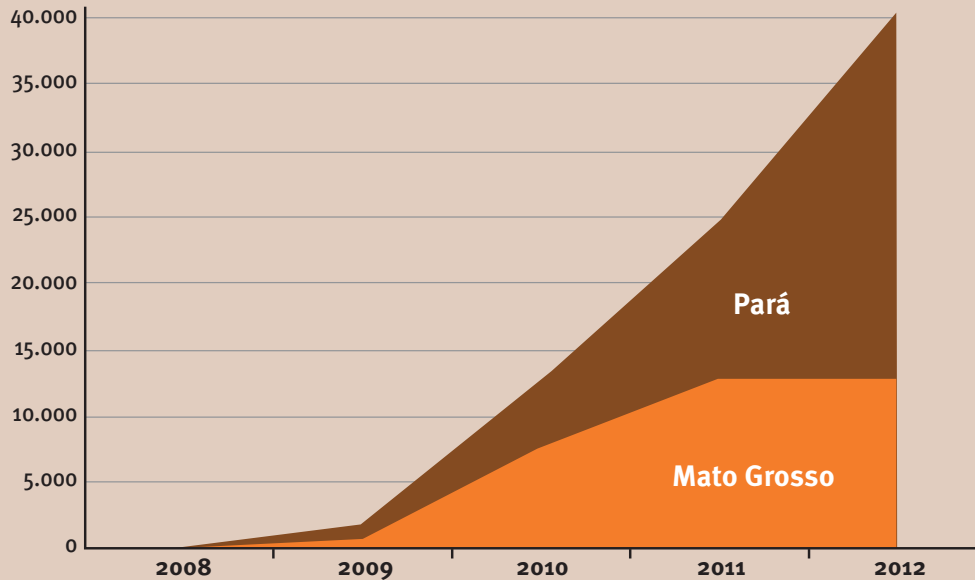
Number of properties registered in the period from 2008 to 2013 in rural modules and the percentage or this in relation to the area and number of properties
(according to the Farm Census from IBGE in 2006 and the last CAR submitted on July 3rd, 2012 in Mato Grosso and up to February 27th, 2013 in Pará)

Legend:
- Up to 4 Fiscal Modules
- From 4 to 15 Fiscal Modules
- More than 15 Fiscal Modules
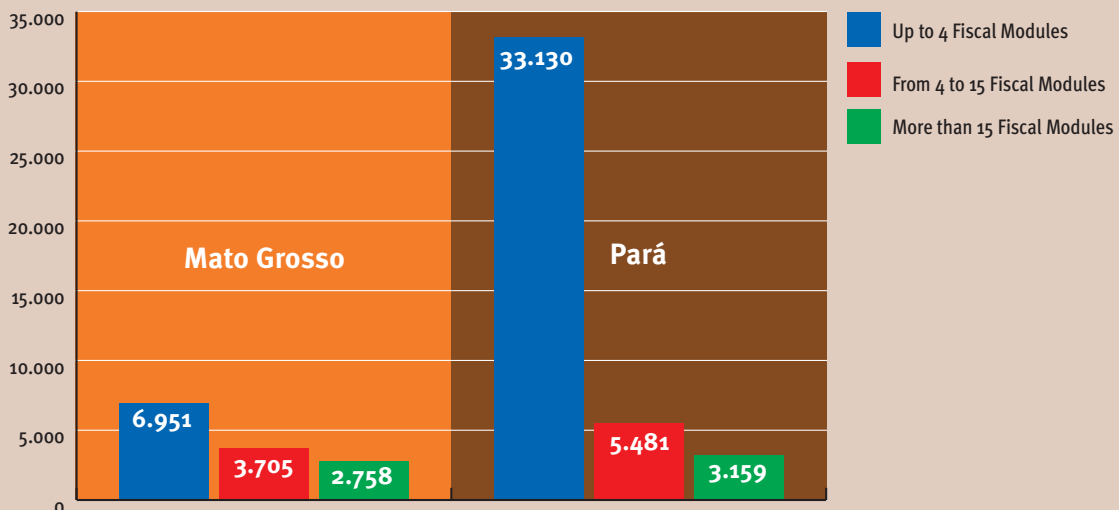
	MT	PA
Percentage of properties with CAR in the state *(calculation base: IBGE – farm census 2006)*	15,09	18,17
Percentage of state's area with CAR	32,84	24,99

MAPS OF THE STUDY AREAS AND WHERE THE STATISTICAL ANALYSIS WERE CALCULATED

Maps with colored dots presents all the registered properties in the period of study, separated by size and taken away the overlapping between them. In blue, they are the small ones, in red, the medium size ones and in green are the large properties (above 15 FM) in Pará as well as in MT (Amazon Biome).

Mato Grosso

Pará
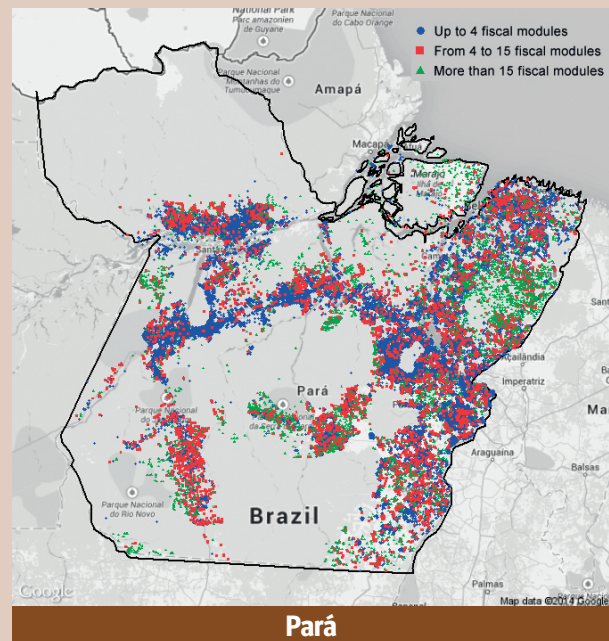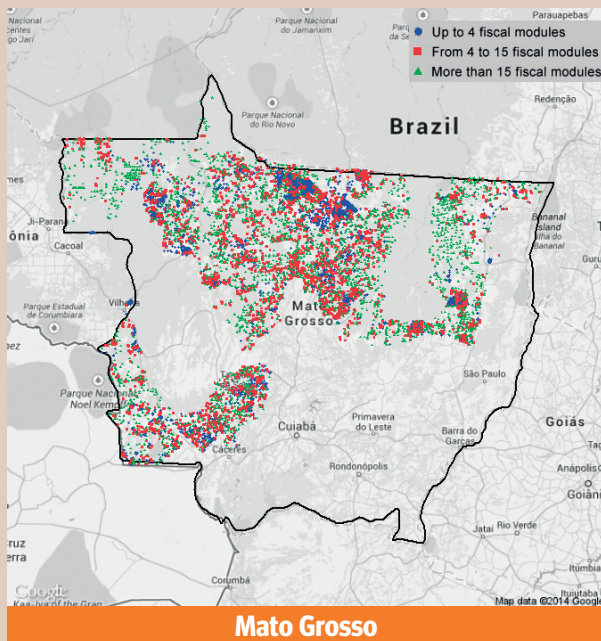
Kernel Maps showing CAR's density in space. The spots in red, means the existence of more quantities of properties with CAR, considering a 50 km radius.

Mato Grosso

Pará
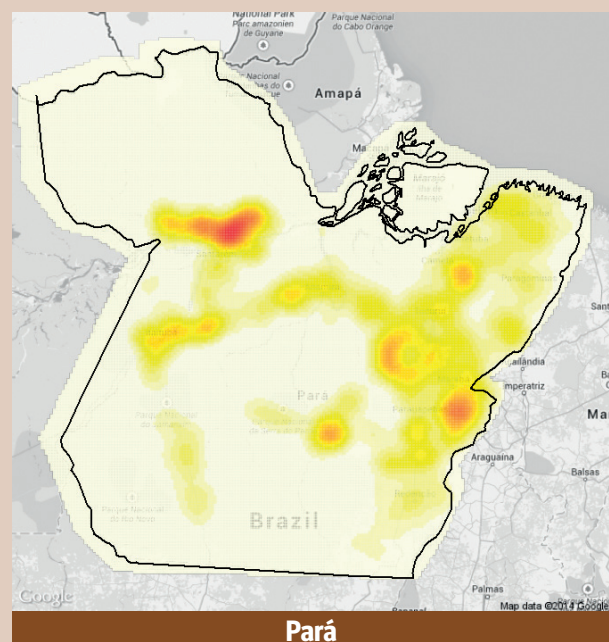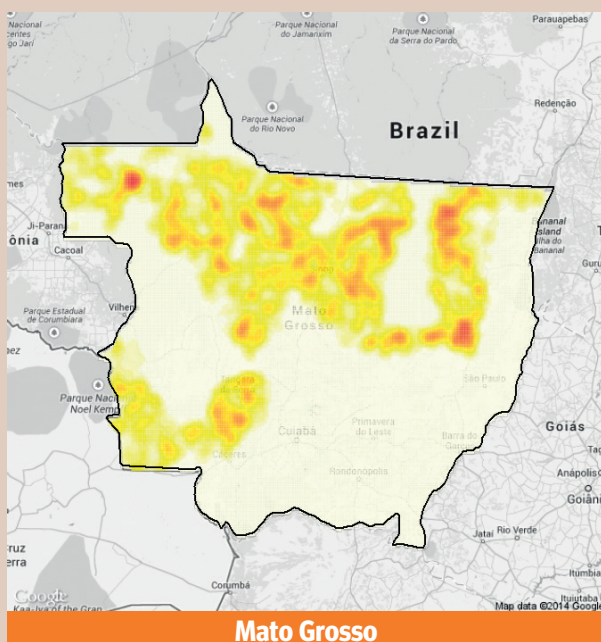
CAR's effect on the Amazon Deforestation

In general, it was not possible to observe systematic effect of deforestation reduction, in all property size classes, due to the "entrance" of the rural properties in CAR. On one hand, CAR had a significant effect in the deforestation reduction, especially in small and medium size properties; that is, up to four fiscal modules in both states and between four and fifteen modules in Pará state (**TABLE 2**). On the other hand, CAR's effect was not noticeable in reducing deforestation in large properties (above 15 FM), regardless of the state.

Small properties (up to four FM), in particular, reduced, significantly, the forest clearance after they became part of CAR, in Mato Grosso (2009 and 2010), as well as in Pará (2008 to 2011). The reduction on the chances for deforestation to happen was also observed in properties with 4-15 FM in Pará and in all the years analyzed, indicating a good level of effectiveness for this size of property. The results also suggest that in the first few years of CAR's implementation policy, the small producers, reduced the deforestation after they applied for CAR, probably due to the fact that they felt more exposed to the monitoring by the State; this was confirmed by the results of various interviews done with rural producers and Union representatives. However, it's worthy highlighting that the deforestation reduction post-CAR could be related to the increase of the deforestation prior to the registration. Different rural producers and environmental organizations' staff, reported, for example, that many producers considered that CAR could "freeze" the current state of land management, taking into consideration its potential as a monitoring instrument. Therefore, the strategy used by landowners, seems to be to deforest part of the remaining vegetation, hoping that this forest clearance could become legalized when CAR was granted.[17] As a consequence, the increase in deforestation observed in the properties used as the control group in this study (**TABLE 2**), can be as a result of this strategy, which, by inference and comparison, gives the impression that the strong drop in deforestation could be due to the admission of these properties in CAR.

The positive effect of CAR regarding the deforestation's reduction was not, however, consistent among the property size classes and among the states. The medium-size properties (four to fifteen FM), for example in Mato Grosso, had a distinct result with the significant increase in deforestation after the admission in CAR, with the exception of 2010 when there was a small reduction in comparison to the control group. On the other hand, the large properties, bigger than 15 FM, presented in almost all analyzes years an increase in deforestation after the admission in CAR in both states (**TABLE 2**). In the case of small properties, the CAR effect in the reduction of deforestation decreased throughout time, which made CAR and the control group show statistically similar results in the last year of analysis (**FIGURE 3**). In the case of Pará, this trend is more noticeable; it's possible to observe the gradual reduction in the difference between CAR and the control group between 2009 and 2012 (**FIGURE 3**). This suggests that in both states, CAR seems to lose, with time, the ability to restrain the deforestation inside small properties.

The deforestation, which happened in properties with CAR, can be explained by the increase in the "tiny added deforestation". It is a gradual increase in the productive area of the property through small forest conversions. In this sense, besides the dynamic fragmentation of the deforestation and the border effect already noted in other studies[18]; the analysis suggests that the producers noticed that IBAMA and SEMAs ignored small deforestation, therefore, they feel safer to clear the forest, even after they have been registered. This suggests that most of the deforestation inside CAR is done under the expectation of impunity from the (wrong) notion that small deforestation cannot be captured by the control agencies. However, other than the small deforestations, it was possible to observe, inside CAR, illegal forest clearances greater than 300 ha (i.e. in properties with less than 80% of Legal Reserve) in Mato Grosso (municipalities of São José do Xingu, Nova Ubiratã and São Félix do Ara-

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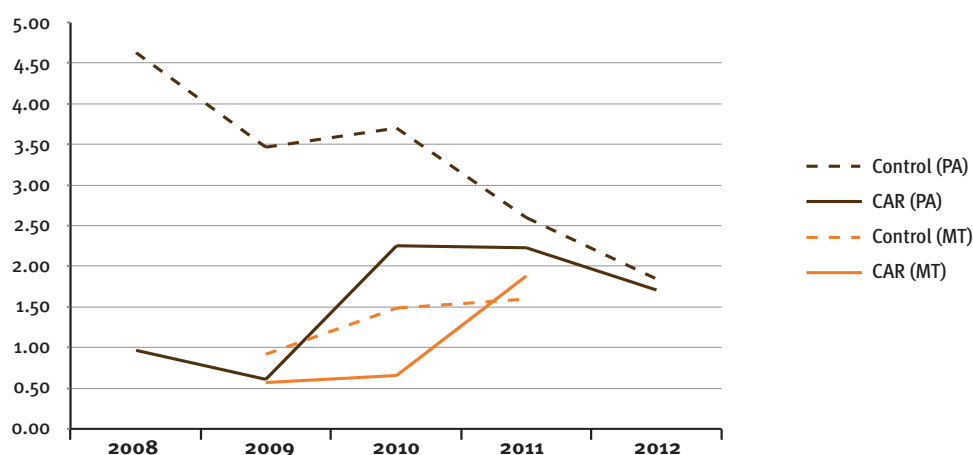**17** The New Forest Code establishes that only the deforestation, which took place up to July 22nd, 2008, will be considered "consolidated areas" and can be benefited by amnesty and flexible instruments proposed by the Code (Article 3, IV). Regardless of that, the producers who were interviewed showed lack of knowledge in regards to this distinction.

18 As an example, Broadbent, *et al.*, 2008.

TABLE 2. AVERAGE (ESTIMATED) CHANCE OF DEFORESTATION PER 100 HECTARES IN PROPERTIES INSIDE CAR AND IN THE CONTROL GROUP BY SIZE OF PROPERTIES AND YEAR, AND P VALUE, WHICH REFERS TO THE HIPOTHESIS TEST IN COMPARASION TO THE AVERAGE BETWEEN THE TWO GROUPS.

Property Size	Year	Estimated Deforestation (for every 100 ha)		CAR's effect on deforestation (= CAR/control – 1)	P Value H_o: before = after
		Control (before CAR)	CAR (after CAR)		
Mato Grosso (2009-2011)					
Up to 4 FM	2009	0.9181	0.5672	-38,22%	0,0219
	2010	1.4875	0.6573	-55,81%	0,0000
	2011	1.5926	1.8840	+18,30%	**0,2360**
4 – 15 FM	2009	0.2343	0.6956	+196,92%	0,0000
	2010	0.9121	0.7397	-18,90%	0,0000
	2011	0.4001	0.5355	+33,82%	0,0344
Above 15 FM	2009	0.0963	0.0045	-95,32%	0,0000
	2010	0.0767	0.1430	+86,40%	0,0000
	2011	0.0286	0.2233	+680,80%	0,0000
Pará (2008-2012)					
Up to 4 FM	2008	4,6271	0,9634	-79,18%	0,0000
	2009	3,4608	0,6092	-82,40%	0,0000
	2010	3,6995	2,5204	-31,87%	0,0000
	2011	2,5954	2,2255	-14,25%	0,0000
	2012	1,8443	1,7089	-7,34%	**0,0856**
4 – 15 FM	2008	2,9286	0,0140	-99,52%	0,0000
	2009	1,9721	1,8905	-4,14%	**0,0706**
	2010	1,3719	0,9220	-32,79%	0,0000
	2011	0,7244	0,6166	-14,88%	0,0000
	2012	0,7658	0,4537	-40,76%	0,0000
Above 15 FM	2008	0,9308	1,7530	+88,33%	0,0000
	2009	0,3980	0,5064	+27,24%	0,0000
	2010	0,3172	0,5628	+77,43%	0,0000
	2011	0,1464	0,2285	+56,06%	0,0000
	2012	0,0227	0,1920	+747,37%	0,0000

FIGURE 3 . ESTIMATE ON THE DEFORESTATION (FOR EVERY 100 HA) IN PROPERTIES UP TO 4 FISCAL MODULES IN PARÁ AND IN MATO GROSSO

CAR and licensing processes on a desk in Mato Grosso's SEMA office.

guaia), and Pará (municipalities of Santana do Araguaia, Ulianópolis, Moju, São Félix do Xigu, Bannach, Almeirim and Cumaru do Norte). Even though large deforestations have become less common throughout the years, the existence of these large deforestations indicate that some producers still believe that the environmental agencies are incapable monitoring and punishing effectively these illegal deforestations.

However, other than the small deforestations, it was possible to observe, inside CAR, illegal forest clearances greater than 300 ha (i.e. in properties with less than 80% of Legal Reserve) in Mato Grosso (municipalities of São José do Xingu, Nova Ubiratã and São Félix do Araguaia), and Pará (municipalities of Santana do Araguaia, Ulianópolis, Moju, São Félix do Xigu, Bannach, Almeirim and Cumaru do Norte). Even though large deforestations have become less common throughout the years, the existence of these large deforestations indicate that some producers still believe that the environmental agencies are incapable monitoring and punishing effectively these illegal deforestations.

This scenario of growing levels of deforestation inside CAR indicates the need for a more efficient monitoring process of the registered properties in both states. Unfortunately it was not possible to acquire official data

regarding the number of properties which received fines and that had CAR. In any case, State officials, who were interviewed in both states, suggested that the government, due to a lack of staff and infrastructure, does not monitor and enforce the regulations related to illegal deforestation in a systematic way, even though they are registered in CAR. In addition, it was observed among the public managers at the State and Municipal levels, that giving fines to illegal deforesters registered in CAR would discourage those whom are not, to register for CAR. This seems to be the case in the Anapú's region, in Pará, where the notifications for deforestation by IBAMA to registered property owners seems to have reduced the desire, by the property owners, to register their land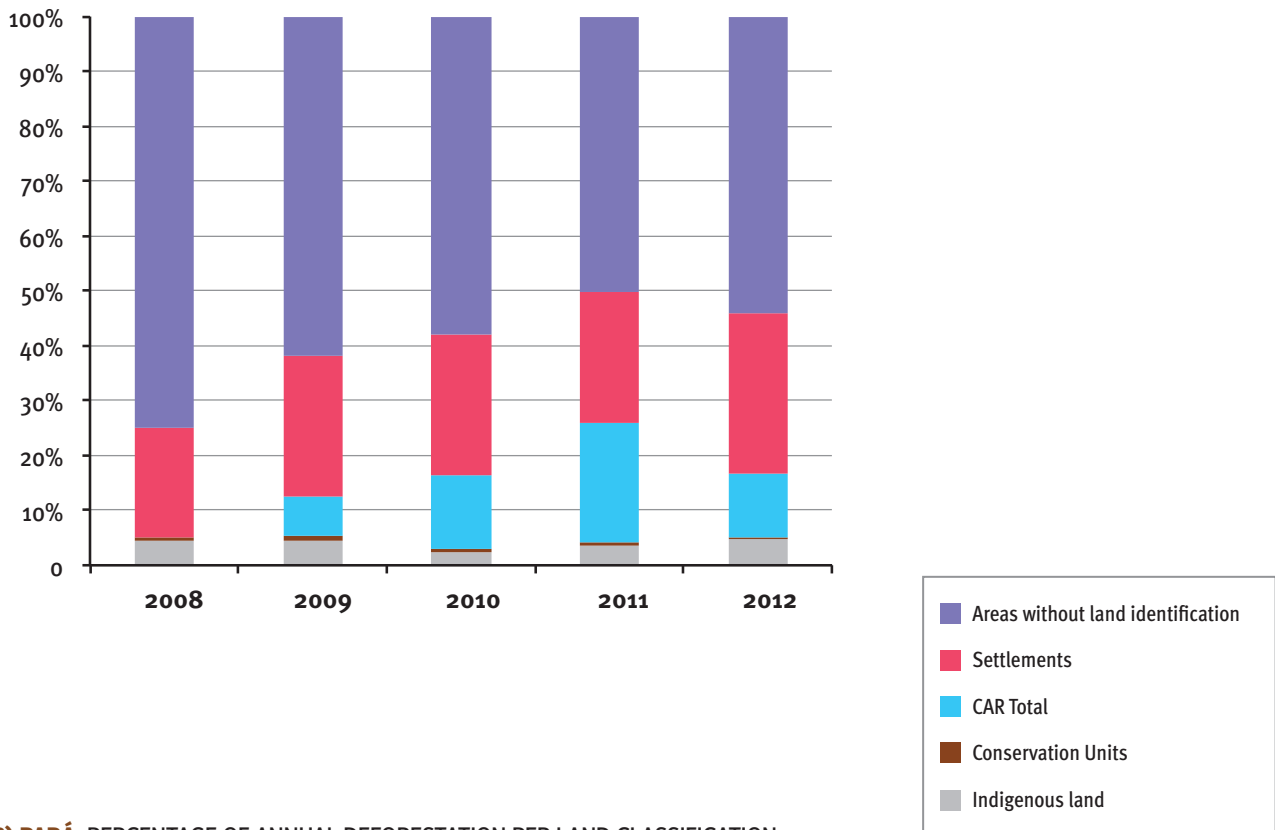 in CAR. However, we should emphasize that the deforestation inside CAR corresponds only to a small portion of the total area deforested in both states. In general, in Pará, as well as in Mato Grosso, the largest part of the deforestation occurred in areas without land identification (**FIGURE 4**).

The deforestation of properties included in the "CAR group", corresponded, between 2008 and 2013, to 6.83% in Pará and 14.02% in Mato Grosso of each state's total (**FIGURE 4**). Furthermore, only 19.4% and 9.2% of the properties included in CAR, in Pará and Mato Grosso, respectively, deforested in the period analyzed.
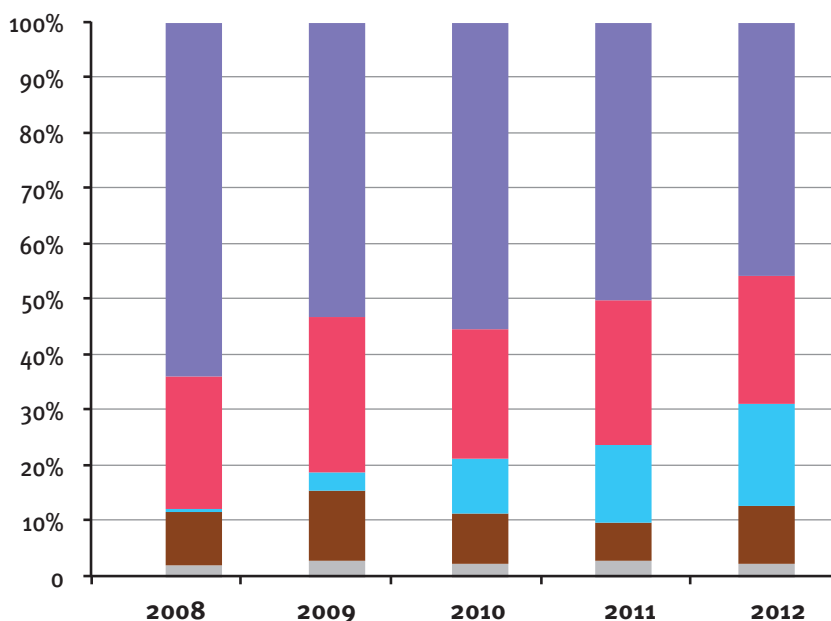
It is worth mentioning that while in all the other categories the total proportion of deforestation has been maintained or decreased, there was an increase inside CAR in both states (**FIGURE 4**). Since the absence of deforestation inside CAR is expected, unless there is an authorization to do so, this is an alarming number even if percentagewise it is inferior as of the other categories. The dynamics such as this one, suggest that the lack of monitoring and systematic accountability of the deforestation, associated to the dilemma that the State and Municipal managers have to deal with, may weaken the role of CAR in those states, turning it into just a certificate, without any concrete role for environmental governance.

FIGURE 4. THE PROPORTION OF THE DEFORESTATION IN MATO GROSSO (AMAZON BIOME) (A) AND PARÁ (B) IN RELATION TO LAND CLASSIFICATION. THE CAR CATEGORY IS COMPOSED OF PRIVATE PROPERTIES OF ALL SIZES, NOT CONSIDERING THE ONES IN SETTLEMENTS; THESE ARE PART OF A SEPARATE LAND CATEGORY.

A) MATO GROSSO: PERCENTAGE OF ANNUAL DEFORESTATION PER LAND CLASSIFICATION

Legend:
- Areas without land identification
- Settlements
- CAR Total
- Conservation Units
- Indigenous land

B) PARÁ: PERCENTAGE OF ANNUAL DEFORESTATION PER LAND CLASSIFICATION

Lessons and challenges for the National CAR

From the analysis of CAR's effect on the deforestation dynamics in Pará and Mato Grosso, an alarming situation was disclosed: on one hand, we must emphasize CAR's success in these states, as in terms of the number of producers which have already joined the system, as well as in the reduction of deforestation in small and medium size properties during the first few years of this policy; on the other hand, the lack of a clear effect of CAR in large properties and the loss of the positive effect in the last few years, indicates that this success can be limited and short lived. This contradiction illustrated from the analysis presented here has to be taken into consideration during the debate about this subject, since CAR is a key piece for the implementation of the new Forest Code. Therefore, it's not unrealistic to conclude that the situation observed in Pará and in Mato Grosso could be replicated in the other states throughout the national territory. Having this in mind, below are three fundamental recommendations for the implementation of CAR, not only for the Amazon but also for the other states of Brazil.

TO RESTRUCTURE THE BENEFITS OF CAR IN PUBLIC MANAGEMENT

The admission of the rural producers in CAR has been crucial for the mayors to remove their municipalities from the critical list of deforestation. However, after admission to CAR, it seems that there is no concern regarding subsequent deforestation in the registered properties. This position is reinforced when Article 78-A, of the new Forest Code, is analyzed. This subsection went through an important modification by Congress in the conversion of MP 571/2012 to a law (Law 12.727/2012).

In this process, a portion of the original text was removed. It read: "the financial institutions will give credit to the properties that not only are registered in CAR but also *prove their regularity according to the Law*". This deletion would allow for producers who are registered but that deforest illegally (or who have not met the demands of the Forest Code) to have access to agricultural subsidized credit, which is one of the main benefits offered today by the government. Regarding this matter, it is important to strengthen this instrument of public policy by allowing the inclusion of indicators of the legality level inside CAR (e.g. percentage of properties registered that illegally deforested each year) as part of the criteria for the concessions of credit benefits and others and for the exclusion of municipalities in the deforestation list. This way, the positive incentives would be based not only on the quantity of CAR granted but would also be tied to the non-existence of deforestation in the properties registered in CAR.

UNIVERSALIZE MONITORING AND ACCOUNTABILITY

One of CAR's main promises since its creation is the possibility to universalize the control of deforestation, since it drastically reduced the cost related to monitoring and accountability. However, as seen in previous sections, this vision has not materialized yet in Mato Grosso and Pará. To solve this problem, the Ministry of Environment had proposed the development of mechanisms inside the National CAR which are capable of indicating, in an automatic way, who is responsible for the deforestation (land owner). For the system "to deliver fines by mail" to be effective, there are legal issues, related to the materiality proof and the person responsible for the deforestation, that need clarification. In other words, the Executive and Judicial Power must come to a relative consensus regarding the steps to be followed to: a) prove the existence of deforestation, b) connect that to the responsible person and c) proceed to the punishment, all these, without the need to collect field information.

After the implementation of this system, it is expected to have a surge in the number of administrative processes, civil and criminal lawsuits, related to illegal deforestation. In this case, it is possible that the processing time for these processes and lawsuits increases. As a consequence, there can be a sensation of relative impunity. Therefore, it is recommended that the warning mechanisms, especially for the small deforestation cases (without previous violation), should be implemented. Warnings should be sent before the formal fines and other legal measures. This procedure

could reinforce the feeling, to the producers, of being watched. And the consequence would be that the impetus for deforesting would decrease. In any case, the ideal situation would be that all the illegal deforestation inside CAR were "noted" from the warning until the embargo. Otherwise, we would have an extended instrument, without effectiveness.

TO LINK CAR'S DEFORESTATION TO THE SUSTAINABLE VALUE CHAINS

The simple registration of the rural producers cannot guarantee the commercial benefits related to CAR. Even without putting into effect the commitments signed by the Terms of Conduct Adjustment (Termos de Ajuste de Conduta – TAC), or reducing to zero the illegal deforestation, rural producers can already have access to market and subsidized agricultural credit, only with CAR. To revert this situation, there is a need to: a) use as a purchase criteria, for meat and soy from the industry and retailers, CAR with zero illegal deforestation; b) using as a pre-requisite for public

and private finance concessions the non-existence of illegal deforestation inside the property , as well as compliance with the Forest Code.

For Brazilian society as a whole it is important to have transparency related to deforestation data (including the authorizations) in CAR. This will increase awareness and trust by buyers throughout the supply chains. If this system is used by the market, there will be a smaller risk of contamination by the productive chains with illegal deforestation, as well as a lower reputational risk for large national and international buyers. This will happen because this public and transparent data will allow buyers to select producers with a better environmental profile, and will help avoiding the purchase of products sourced from illegally deforested areas.

Most importantly, the producer who has been in compliance with the Forest Code, will be more visible and with real chances to recognized and benefited by his/her sustainable practices.

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Aerial view of a farm in Mato Grosso.

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