



AN ANALYSIS OF EXISTING LAWS ON FOREST PROTECTION IN THE MAIN SOY PRODUCING COUNTRIES IN LATIN AMERICA

A just world that values and conserves nature.

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PREFACE

Legality first, or deforestation-free and sustainability first? In dialogue with our partners, with government and business alike this question often comes up. The Amsterdam Declaration Partnership of now seven countries chooses for the second. Legal compliance of course then is an important ingredient in combatting deforestation, but can it be seen as a "first step" as for example the European feed sector and Brazilian farmers associations have argued for the case of soy? Is it simple and quick enough to serve as a first step, given that:

- natural forests & habitats are not so easy to re-establish when gone
- given the urgency of the climate challenge, and
- the global call to halt deforestation by 2030

As this report will show, laws in Argentina, Brazil and Paraguay offer certain protection for forests, much less for many other ecosystems, and are not always well controlled. And, importantly, further expansion of soy and beef or other commercial agrocommodities, would still allow for about 110 million hectares of forests to be converted in the 3 countries together.

Does this legitimize a European focus on and investment in legality of production only, in the face of global climate change and biodiversity loss, or should (all) countries be stimulated and farmers supported to go straight for deforestation and conversion-free? We hope this report will be input in the dialogue for government, business and NGOs, especially in Europe, but also in producing countries.

This report belongs to series of three related reports. This report that investigates what legal compliance means for protecting forests and ecosystems in the main Latin American countries of origin for European soy: Brazil, Argentina and Paraguay. Our second report, a recent benchmark of soy standards, carried out for us by Profundo, helps guide European buyers and governments in their choice-making for measures to achieve deforestation free soy. Legal compliance is a part of responsible sourcing, self-evidently. The third report is a European Soy Monitor, commissioned by the Initiative for Sustainable Trade (IDH) and IUCN NL, reporting on the European consumption, import and trade, and the progress in responsible certification in the soy trade chain. The three reports are meant provide valuable input to companies, financial institutions, government representatives and NGOs who seek to step up their efforts in Europe and elsewhere.

SUMMARY AND MAIN CONCLUSIONS

This chapter presents the key findings on the Forest Laws and 'no deforestation' legislation of the three main soy producing countries in Latin-America, being Brazil, Paraguay and Argentina. In addition to the main conclusions the following issues are discussed:

- What is the approach in protection of forests and High Conservation Value areas: the Forest laws?
- Is deforestation legally allowed?
- Which ecosystems are covered by Law?
- Implementation year of the Law and cut-off dates;
- Level of enforcement;
- Trends in deforestation.

Main conclusions

Summarizing the analysis of existing laws on forest protection in Brazil, Paraguay and Argentina and the way these laws are interpreted, implemented and complied with, the following conclusions can be made:

1. The establishment of Forest Laws managed to reduce deforestation in certain regions in Paraguay, Brazil and Argentina in the last decades. However there is recently a worrying trend of increasing deforestation, especially in the Chaco and Cerrado ecoregions.
2. The Forest Laws provide a certain legal protection of forests. However complying with zero legal deforestation in these countries means that still 7 million hectares can be legally deforested in the Paraguayan Chaco. Numbers are even higher for Argentina and Brazil where respectively around 10,5 million ha and 88 (\pm error margin of 6 million ha) can still be legally deforested.
3. These numbers assume 100% legal compliance in the respective countries, which is at this moment far out of reach. Enforcement of the laws in the countries is weak, resulting in illegal deforestation of which the scale is unclear. Recent publications for Paraguay for example indicate that close to 20% of the (deforestation) in the Chaco is likely to be illegal.
4. If the aim is to achieve zero land use *conversion* of natural habitats, the impact of just striving for legality is even larger since legal protection of other natural habitats than forests is very limited in the countries.

This means that while European markets accept legally compliant soy (FEFAC) as being sufficiently responsible, as a consequence this can lead to the legal deforestation of about 110 million hectares of forest in Latin America in the coming decades. This does not include the conversion of other valuable natural habitats such as natural grasslands, savannas or wetlands. Furthermore, as the Profundo (2019) benchmark of soy standards shows, the level of assurance of FEFAC SSG compliant standards is not sufficiently reliable in all cases. So in sum, in reality the surface of natural habitats that can be converted for soy can be significantly higher than 110 million hectares mentioned under the current minimum ambition at the European level.

Approach in protection of forests & High Conservation Value Areas: The key elements of the Forest Laws

Argentina

The Forest Law sets minimum Standards for the Environmental Protection of Native Forests. The Law requires each province to develop a so-called OTBN map (Ordenamiento Territorial Bosques Nativos). The OTBN map is a land zoning map, designating certain areas to one of the following three categories:

- Category I (red): high conservation value. No land conversion is allowed
- Category II (yellow): medium conservation value. Some low-impact activities are allowed such as low intensive silvo-pastoral livestock systems or sustainable forest management.
- Category III (green): low conservation value. Areas may be partially or entirely transformed provided that legal criteria are complied with.

Brazil

The new Forest Code applies to rural properties and the protection and management of:

- Areas of Permanent Protection or APPs (such as slopes, mangroves, riparian areas). Riparian strips alongside any perennial and seasonal watercourse must maintain for example minimum widths from the edge of the channel;
- Legal reserves: portions of land that must be set aside in the native habitat). The size of a Legal Reserve depends on where the property is located and is defined by the Fiscal modules and its biome (for example in the "legal Amazon" the following percentage of forest is set aside as reserve: 35% in the Cerrado or 80% in the Forest part; outside the Amazon it is only 20%);
- Areas of restricted use (for example steep slopes, swamps or the Pantanal plains).

Paraguay

Law 422/3 "Forestry" is the main forestry law of Paraguay. In the last years, there have been partial derogations and Laws that regulated in greater detail some of the aspects under this general Forest Law. The main aspects are:

- The Law and its Regulations establish that 25% of forest on rural properties larger than 20 ha is left;
- Law 3001/06 stipulates that properties, where the obligation to maintain the legal reserve of natural forests has not been fulfilled before the entry into force of this law have to compensate this non-compliance by (i) reforestation or by (ii) certificates of environmental services of other properties in which natural forests have been certified above the legal obligation;
- In accordance with Law 294/93 and its regulations, all use of native forests requires an environmental impact assessment. This also counts for the change of 2 hectares or more in land use for productive purposes ("legal deforestation");
- For the Eastern Region only (so excluding the Chaco), Law 2524/04 prohibits the change of land use of natural forest surfaces;
- Additionally, the Law establishes the maintenance of protective forests (for watercourses, or as windbreaks and in areas with steep slopes) that are not counted as part of the natural forest reserves.

Note that all countries have, next to these Forest laws additional Laws and Regulations around for example the protection of natural parks or the protection of wetlands of international importance.

Trends in deforestation

The establishment of Forest Laws managed to reduce deforestation in for several regions in all three countries in the last decades. Measures implemented in recent years (2005-2012) have cut deforestation rates in the Amazon region for example by about 70%. This is, however, no guarantee. Also, there is recently a worrying trend of deforestation increases. For example, the decrease in deforestation in Argentina in the last 10 years shows for the first time an increase in 2017 compared to 2016. Also, deforestation rates in the Brazilian Amaz show a 13,7% increase in 2018 compared to the year before.

Argentina

According to the State of the Environment Report, 172,639 hectares disappeared in 2017 in Argentina compared with 155,851 ha in 2016. A trend of declining deforestation that had been going on for 10 years had stopped: deforestation has increased in 2017 compared to 2016.

Data from UMSEF (2010-2016) learn that total annual deforestation rates go down, but deforestation is still ongoing. Deforestation is in 2016 still above 10.000 ha per year in the following provinces: Chaco, Entre Rios, La Rioja, Salta, San Luis and Santiago del Estero. Based on the analysis of UMSEF from 2017, most of the annual loss of native forest took place in the so-called category II-yellow (Forest land: 44% and Other Forest Land: 30%) – and III-green (Forest Land: 43% and Other Forest Land: 23%). There is also substantial forest loss in the grey category (no category assigned).

Brazil

A combination of measures (i.e. stricter laws or the Moratorium) that have been implemented in recent years (2005-2012) have cut deforestation rates in the Amazon region by about 70%. However the average rate between 2013 and 2017 was 38% higher than in 2012. Data released in June 2018 by the federal government regarding deforestation in the Cerrado show that deforestation rates between 2016 and 2017 fell in comparison with 2015, but deforestation rates in 2017 were again higher than in 2016.

Recent numbers learn that deforestation of the Amazon rainforest reached recently, in 2018, its highest level in a decade, showing a 13.7% increase in deforestation from the same period in 2017. The states of Pará and Mato Grosso were the largest contributors to the deforestation increase.

Paraguay

According to the report from UN National Program REDD + Paraguay, the total deforested area in the country was 5.492.707 ha between 2000-2015. The average deforestation rate in the Eastern region was 63.383 hectares / year in that period, while this was 302.797 hectares / year for the Western region between 2000-2015.

The 'Zero deforestation Act' for the Eastern region managed to strongly reduce deforestation. The deforestation area measured in 2015 in the Alto Paraná Atlantic Forest was estimated at 14.426 ha / year.

Note that most soybean is cultivated in the Eastern region, but expansion possibilities exist for the Western Region (Chaco). Although there are other current limitations (such as storage infrastructure and transport logistics) to accelerate expansion in Chaco areas, around 22,000 hectares is already planted.

Is deforestation legally allowed?

Argentina

Category III areas (green) may be partially or entirely transformed provided that legal requirements, such as approval from the Land Use Change Plan and its corresponding Environmental Impact Assessment are complied with.

Brazil

The Forest Code allows legal deforestation on private properties, when conservation requirements are exceeded. For example: the native vegetation on a property in the Cerrado is 40%, while the legal requirement is only 35%, so that would allow for 5% deforestation.

Paraguay

The Zero Deforestation Law prohibits deforestation in the Eastern Region since 2004. Legal deforestation is possible in the remaining (western) part of the country, on the condition that legal requirements are met, such as implementing an EIA or meeting (a) the minimum percentage of 25% forest area on the rural property and (b) the presence of protective forests along e.g. watercourses.

An important conclusion is that deforestation is legally possible in all the three countries. There are indications what this may practically mean:

- The Western (Chaco) region of Paraguay still has 14 million hectares of native forest left (58% of the land area). Scenarios indicate a land use change of 4 million hectares in the Chaco, following the ambitions of the so-called Development Plan 2030. This will result in a remaining forest area of 10 million ha in the Chaco (or 41% of the land area). In case the Law (25% of forest area remaining + protection forest) would be strictly followed, a deforestation of roughly 7 million hectares is theoretically and legally possible.
- In Brazil, the surplus area, where legal deforestation is allowed on private properties is estimated to be 88 (±error margin of 6 Mha). This surplus area can also be used within the Compensation mechanism of the Forest Code.
- In Argentina, so-called Category III (green) areas may be partially or entirely transformed, provided legal criteria are followed. Based on data from 2016, the total surface area of category III (green) is estimated by UMSEF to be 10,538,339 ha, or 20% of the total native forest area (which is 53,654,545 ha) that is assigned to a category.

Note that these numbers do not include illegal deforestation. In that case, numbers would even be higher.

Level of enforcement under the Forest Laws

All three countries experience challenges to put their Forest Laws in practice, and to enforce requirements. Trends in deforestation learn that the level of enforcement is weak. Illegal logging and the encroachment of agriculture is for example mentioned as main reasons for the recent increase in deforestation in Brazil. Analysis about deforestation trends (2017) in Argentina learns that most of the annual loss of native forest took place in the so-called category II-yellow, and not in the green category. Important reasons for the lack of enforcement of the Laws are lack of capacity and budget.

Argentina

The current challenge is to put the Forest Law in practice. One of the main barriers in the implementation of the Law is the lower amount of funding made available than required by Law, as this funding is to be used for capacity building on national and local level (enforcement, monitoring). This funding is also to be used for supporting producers in conserving their native forests. A rough estimate for 2016 is that on average +/- USD9 per hectare was allocated to producers/land owner programs. In 2016, 95% of the financed plans was destined to private individuals and only 1% was destined to indigenous and peasant communities. Other challenges to implement the Forest Law and which are currently addressed include the development of guidelines, definitions or the level of detail of the OTBN maps (linking these for example to property level) or the improvement of monitoring systems. Due to inefficiencies and bureaucracy in procedures, lack of enforcement and transparency still result in illegal deforestation.

Brazil

Full compliance and enforcement of the Forest Law is slow. Initially one of the main barriers for regularization has been the completion of the CAR registration for environmental regularization. The deadline that all rural properties must be registered in the CAR has already been postponed four times so far and is now set on end of 2018. Based on latest data from (Florestal, 2018), the CAR registration now seems to be as good as complete. Now the CAR registration is complete, new barriers for further implementation of the Forest Law are the absence of proper regulation on important instruments and the delay in verification of the data submitted in the CAR registration due to lack of capacity with the State Environment Agencies.

Paraguay

Paraguay's legal framework on the environment, protected areas and threatened and endangered species is sufficiently developed but the application and enforcement of the Law is weak.

Key underlying reasons mentioned are the very low capacity of implementing institutions to apply laws, the poor performance of prosecutors and judges in cases of deforestation and the limited capacity and budget on national level and on local level (e.g. for park rangers) to enforce and monitor the law.

Ecosystems covered

All three countries have elements of High Conservation Value (HCV) areas in the legislation (and are thus included in the Forest Laws) but an HCV assessment is not part of the Law. Without such an assessment, HCV areas are therefore only partly protected – in how far differs per country and per region. There is protection for HCV areas through various other laws. However, land conversion of ecosystems other than forests (savannas, wetlands) is regulated only to a limited extent. If the aim is to achieve zero land use conversion of natural habitats, the impact of just striving for legality is even larger since legal protection of other natural habitats than forests is very limited in the countries.

Argentina

Included in the definition of the Forest Laws are the native forests of primary origin, with no human intervention, and secondary forest formed after clearing, as well as those forests resulting from voluntary re-composition or restoration.

The OTBN maps covers natural forest areas. The maps do overlap with some HCV areas, but clearly not all HCV areas are covered by the OTBN maps. In some cases, there are other laws and provisions that protect HCVs. Argentina is for example a signatory of the RAMSAR Convention and those wetlands that are considered of international importance (so-called Ramsar sites) are legally protected through the Convention.

Brazil

The new Forest Law applies to rural properties and the protection and management of Areas of Permanent Protection (APP), Legal reserves and Areas of restricted use:

- APPs are protected areas, covered by native vegetation or not, with the environmental function to preserve water resources, landscapes, geological stability and biodiversity, facilitate genetic flows of fauna and flora, protect the soil, and ensure human wellbeing. Examples of APPs are riparian areas, springs, hilltops, mountain slopes, and mangroves;
- Legal reserves are native vegetation areas that ensure sustainable economic use of natural resources, support conservation and provision of ecological processes, and promote conservation of native fauna and flora;
- Areas of restricted use are for example swamps and Pantanal plains that require specific regimes of sustainable use. This category also includes areas with declivity between 25 and 45 degrees where deforestation is prohibited.

HCVs is not a concept integrated in the Forest law, but certain HCV areas are included, such as wetland areas under the APPs. There are other laws and provisions that protect HCVs (as e.g. on national parks), which are not included in his overview.

Paraguay

The Forest Law covers the protection of natural forest only. The Forest Law has requirements for protective forests (for watercourses, or as windbreaks and in areas with steep slopes), which are not part of the natural forest reserves. Beside this, there are limited additional laws that protect areas, such as Biosphere Reserves or Ramsar sites and Important Bird Areas. Protection of these areas is minimal.

Implementation year of the Law and cut-off dates

Argentina

The Forest Law was established at national level in 2007. Following this, the Law needed to be further translated into provincial law. Salta was one of the first provinces to implement the Forest Law, translated into Provincial Law 7543, in 2008. Other provinces followed later: La Pampa in 2011, Santa Fe in 2013, La Rioja in 2015 and Buenos Aires in 2016.

Argentina has no compensation component for rural properties to reforest areas that did not meet the requirements once the Law was established (establishment dates of OTBN maps differ per province). There is a compensation fund to manage the native forest on the property; access to these funds can be received when a plan is submitted and approved.

Brazil

The Forest Code in Brazil includes transitional rules for landholdings that do not comply with the Permanent Preservation Areas, Restricted Use Areas or Legal Reserves, if they were cleared for production before July

22, 2008. These rules allow for rural landholdings to start a process of compliance (through restoration and compensation in the case of Legal Reserves) by implementing an Environmental Regularization Program. The restoration must be completed in 20 years, with at least 10% of the total area rehabilitated every two years. When unauthorized removal of vegetation has occurred after July 22, 2008, the landowner will be fined and obligated to restore it.

There is an exception for small landowners. They are not required to reforest or compensate for those deficits from before 2008. According to the IBGE census in 2006, the family farms covered by the census accounted for 32% of the area of all agricultural establishments covered, occupying an aggregate area of 106.7 million ha.

Paraguay

The Forest Law has as legal requirement to set aside and protect 25% of all forested land that was present in 1986 on a given rural property since the establishment of this Regulation in 1986. Where the obligation to maintain the legal reserve of natural forests has not been fulfilled, one should compensate this non-compliance by:

- Reforesting 5% of the property or (which could be less than the original forest area during the establishment of the law);
- Reforesting the area to the forest area surface from 1986.

There are two options to comply with this obligation: (a) With certificates of environmental services of other properties in which natural forests have been certified above the legal obligation or (b) to reforest. There is no date before which you have to fulfill with the obligation, this is negotiated per property with the legal authority.

In addition, there is an obligation to reforest along water courses if not present (this law exists since 2007 and was reinforced in 2010).

The Zero Deforestation Law was enacted in 2004 for the Eastern Region and since then deforestation of native forests is prohibited. However, at the time the Law was enacted, some landowners already submitted their Environmental Management Plans and only those that already received approval could deforest based on their approved land use plan for 5 years – until 2009.

CHAPTER 1. BRAZIL

Main components of the Law on protecting forest and HCV areas

Brazil's new Forest Code (Law no. 12.651) has been in force since 2012 (WWF-Brazil, 2016). The Law is important for better forest governance.

The Rural Environmental Registry (CAR)

One of the main features of the new Forest Code is the Rural Environmental Registry (CAR). The CAR system is a mandatory national public environmental registry for the integration of environmental information of all rural properties. Registration of a rural property into the CAR can be accomplished directly through the Rural Environmental Registry System (SICAR) or through one of the integrated state systems. SICAR is part of the National Environmental Information System (SINIMA), operated by the Ministry of Environment. Implementation of the CAR is responsibility of the States (WWF-Brazil, 2016).

The CAR provides high-resolution satellite images and georeferenced information such as the location of the property, its borders, as well as the identification of (WWF-Brazil, 2016):

- Areas of Permanent Protection (APP);
- Legal reserves and;
- Areas of restricted use.

Properties with fewer than four fiscal modules (a property size) benefit from a simplified process for registration in the CAR (WWF-Brazil, 2016). Fiscal modules reflect the minimal area necessary in a given municipality for economic subsistence. They are measured in hectares and, depending on the municipality, a fiscal module can vary from 5 to 110 hectares (WWF-Brazil, 2016).

BOX: An approximation for the number of family farms in Brazil

Law 11.326 (2006) defines family farmers as follows: (1) they own no more than four tax modules; (2) their workforce consists mainly of family members; (3) their income derives predominantly from the family property; (4) the establishment is managed by the head of household or family (art. 3)

According to the IBGE census in 2006, the gross value of production by family farms in 2006 was R\$59.2 billion or 36.11% of total agricultural output. The family farms covered by the census accounted for 32% of the area of all agricultural establishments covered, occupying an aggregate area of 106.7 million ha (C.E. Guanzirolí, September 2013)

Areas of Restricted Use

- In the Pantanal and other wetlands, ecologically sustainable use is allowed, as long as technical recommendations of official research entities are taken into account and the removal of native vegetation is authorized by the State Environment Agency (WWF-Brazil, 2016).
- In areas with a slope between 25 and 45 degrees, the law allows sustainable forest management, agricultural, ranching and forestry activities, including the necessary physical infrastructure, as

long as best agronomic practices are applied. Conversion of new areas is not allowed, except in cases of public utility (WWF-Brazil, 2016).

Areas of Permanent Protection

All APPs should be maintained by the landowner or possessor, whether an individual or public or private entity. APPs are for example riparian areas, springs or slopes (see Table 2). The new Forest Code has established measures to protect these areas, such as for example (WWF-Brazil, 2016):

- “Riparian strips alongside any perennial and seasonal watercourse must maintain the following minimum widths from the edge of the channel: 30 meters for watercourses that are less than 10 meters wide, and up to 500m for watercourses that are greater than 600m wide.”
- “Areas along swamps and wetlands measured horizontally from the edge of the flooded area must maintain a minimum width of 50 meters.”

Legal Reserves

All rural properties must maintain a Legal Reserve area and register it in the CAR. The size of a Legal Reserve depends on where the property is located and is defined by the Fiscal modules and its biome (see Table 1). When deciding the location of Legal Reserves in rural properties, the landowner must consider various conditions, such as for example the areas of greatest importance for biodiversity conservation or the ecological economic zoning (WWF-Brazil, 2016).

The landowner or possessor must maintain the native vegetation cover on the Legal Reserve. Forest management and the collection of timber and non- timber forest products is permitted under certain conditions (e.g. consideration harvesting volumes) (WWF-Brazil, 2016).

Table 1: Legal reserve size requirements for different biomes in Brazil (WWF-Brazil, 2016)¹

Land use	Legal Amazon			Rest of Brazil
	Forest	Cerrado	Grasslands	
Legal reserve	80%	35%	20%	20%
Productive use	20%	65%	80%	80%

Note that the Forest Code allows legal deforestation on private properties when conservation requirements are exceeded. In the article from (B. Soares-Filho, 2014), this surplus area, where legal deforestation is allowed on private properties, is estimated to be 88ha (±error margin of 6 Mha).

Forest types and areas covered under the new Forest Law

The new Forest Law applies to rural properties² and the protection and management of:

- Areas of Permanent Protection (APP);
- Legal reserves and;
- Areas of restricted use.

¹ Further detail in terms of percentages in biomes enclaves (which are for example, forest islands in cerrado or savanna islands in the amazon and can entail legal contestation) can be found in the legislation itself. http://www.planalto.gov.br/ccivil_03/_Ato2011-2014/2012/Lei/L12651.htm

² Rural property: a continuous area intended for agriculture, ranching or forestry

HCVs is not a concept integrated in the Forest law, but certain HCV areas are included, such as wetland areas under the APPs.

Table 2: Description of APPs, Legal Reserves and Areas of restricted use

Name	Description
APPs	a protected area, covered by native vegetation or not, with the environmental function to preserve water resources, landscapes, geological stability and biodiversity, facilitate genetic flows of fauna and flora, protect the soil, and ensure human wellbeing. Examples of APPs are riparian areas, springs, hilltops, mountain slopes, and mangroves (WWF-Brazil, 2016).
Legal reserve ³	portions of land that must be set aside in native habitat, depending on property size and location. Legal Reserves ensure sustainable economic use of natural resources, support conservation and provision of ecological processes, and promote conservation of native fauna and flora (WWF-Brazil, 2016).
Areas of restricted use	For example: swamps and Pantanal plains that require specific regimes of sustainable use. This category also includes areas with declivity between 25° and 45° where deforestation is prohibited (WWF-Brazil, 2016).

Cut-off dates

The Forest Code includes transitional rules for landholdings that do not comply with the Permanent Preservation Areas, Restricted Use Areas or Legal Reserves, if they were cleared for production before July 22, 2008. These rules allow for rural landholdings to start a process of compliance by implementing an [Environmental Regularization Program - PRA](#) (Amaral, Reis, & Giudice, 2017).

Offenses committed before July 22, 2008

The new Forest Code establishes that there will be no legal action for offenses committed before July 22, 2008, with respect to the illegal removal of vegetation in APPs, Legal Reserve areas and AURs, provided that the landowner has registered his or her lands in the CAR and has signed and is fulfilling the Terms of Commitment (or PRA). Once the Terms of Commitment are signed or the landowner has enrolled in the PRA, penalties and fines are waived and redirected to the provision of conservation services, including improvement and recuperation of the quality of the environment and registration of consolidated areas, as defined in the PRA. If the landowner does not comply with the provisions identified in the Terms of Commitment, the penalties will be reinstated (WWF-Brazil, 2016).

Smallholders

Rural properties of fewer than four fiscal modules, of which native vegetation was cleared before July 22, 2008 and currently with an area of legal reserve smaller than what is required by law, are not required to reforest or compensate for those deficits (WWF-Brazil, 2016).

³ The new Forest Code allows APPs to be included in the calculation of Legal Reserve areas provided that (i) The APP does not include the conversion of new areas; (ii) the APP is currently under conservation or is in the process of restoration; and (iii) the landowner has enrolled the property in the CAR.

Offenses committed after July 22, 2008

When unauthorized removal of vegetation has occurred after July 22, 2008, the landowner will be fined and obligated to restore it (WWF-Brazil, 2016).

Is there a reforestation or compensation component?

The Environmental Regularization Program (PRA) is to be developed by the public sector to be followed by farmers with liabilities in order to comply with the Legal Reserve or Permanent Preservation Areas obligations of the Forest Code, taking into account the environmental conditions that are specific in each State (Amaral, Reis, & Giudice, 2017).

Landowners and possessors who do not have the required APPs and Legal Reserve areas set aside on their property are thus obligated to develop plans that describe how they will restore those areas or compensate for Legal Reserve areas. A formal plan describing how APPs and Legal Reserves will become compliant must be developed and submitted with the Terms of Commitment (a legal document) and a validated CAR registration. This plan will be part of the Terms of Commitment (PRA) with State Environment Agencies. There are additional components that need to be considered to ensure that rural properties comply with the law (WWF-Brazil, 2016).

Restoration of Permanent Preservation Area (APP)

Owners of APPs that have been converted before July 22, 2008 must restore the APP (WWF-Brazil, 2016). Compensation is not possible.

Options for restoration of APPs (Amaral, Reis, & Giudice, 2017)

Options for restoration of APPs	⇒	Natural regeneration
	⇒	Replanting with native species (it is allowed to plant up to 50% of the area with exotic species)

Reforestation must be completed within 20 years, with at least 10% of the total area rehabilitated every two years (WWF-Brazil, 2016).

Restoration or compensation of Legal reserves

Medium and large landowners and possessors (with areas larger than four fiscal modules⁴) who deforested more than what was allowed before July 22, 2008, are obligated to take action. There are different options (WWF-Brazil, 2016):

⁴ The size of a fiscal module is established by law and varies from one region to another. Fiscal modules reflect the minimal area necessary in a given municipality for economic subsistence. The fiscal module provides a parameter for the definition of the concept of family agriculture and for the public policies for this type of agriculture.

Regularization of legal reserve deficit

⇒ Regularization within the property

⇒ Natural regeneration

⇒ Restoration (exotic species may be introduced in some specific circumstances)

⇒ Compensation on another property ^(a)

⇒ Registration of an equivalent surplus area in the same biome, either held by the same property owner or acquired from a third party

⇒ Lease of an area in an environmental easement or Legal Reserve

⇒ Donation to the state or federal government of an area within a Conservation Unit (official protected area) that has a land title and is in the process of legal registration ^(b)

⇒ Acquisition of an Environmental Reserve Quota or so-called Forest Reserve Credits (CRA) ^(c)

(a) The areas used for Legal Reserve compensation must be located in the same biome; and in the same state but it is also possible to compensate in other states, as far as the areas used for compensation are identified as priority areas by the government. The property used for compensation should be registered in the CAR and covered by vegetation or in the process of natural regeneration or restoration. Only the surplus in Legal Reserve areas (the area that is above the percentage required by law for the region) may be used for compensation.

(b) Donation to the state or federal government of a property within Protected Areas: A set of Protected Areas created over the past years by the Brazilian government overlay with private lands. In that process, there was no financial compensation for several landowners due to lack of financial resources from the federal government. The Forest Code allows landowners with Legal Reserve liabilities to offset those by paying to landowners who had productive areas set aside for conservation as Protected Areas. The latter would then transfer the land ownership to the federal or state government environmental agencies.

(c) Forest Reserve Credits (CRAs) are instruments created by the Brazilian Forest Code to allow for Legal Reserve offsetting between rural properties.

If compensation is considered outside the state of the rural property's location, the law requires the Federal government and the states to indicate priority areas for compensation. These [Priority Conservation Areas](#) are officially identified by the Ministry of the Environment (WWF-Brazil, 2016) and are areas with specific greater values in terms of conservation, such as e.g. areas with threatened species, or areas with specific value for water, carbon storage, social and cultural aspects etc (Machado, 2018).

Areas of Restricted use

Compensation or restoration mechanisms are not further defined in the Forest Law (Machado, 2018).

The total area of native vegetation to be restored in Brazil is estimated to range between 20 and 22 million hectares, being 78% liabilities in Legal Reserve and 22% deficits in Permanent Protection Areas (IPAM, Brazil's Forest Code Assessment 2010-2016, 2017).

Recent changes in the Forest Law:

The approval of the new Forest Code, was the result of an intense debate and negotiation process in society and in the National Congress (WWF-Brazil, 2016):

- Brazil's new Forest Code (Law no. 12.651) has been in force since May 25, 2012, with important regulations approved in 2014 and others under development (WWF-Brazil, 2016).
- **By December 31, 2018:** All rural properties must be registered in the CAR. Properties with liabilities must commit to the Environmental Regularization Program (PRA), (Amaral, Reis, & Giudice, 2017).
- Unfortunately, this date has been postponed four times so far, what shows lack of enforcement (Machado, 2018).
- **Specific date defined by each Brazilian State** for signing the Term of Commitment: Properties with unresolved compliance issues must develop a plan to restore degraded and altered areas, define the compliance mechanism and sign the Term of Commitment (Amaral, Reis, & Giudice, 2017)
- **By May 28, 2033:** Achieve full compliance with Forest Code requirements (Amaral, Reis, & Giudice, 2017)

Enforcement mechanism

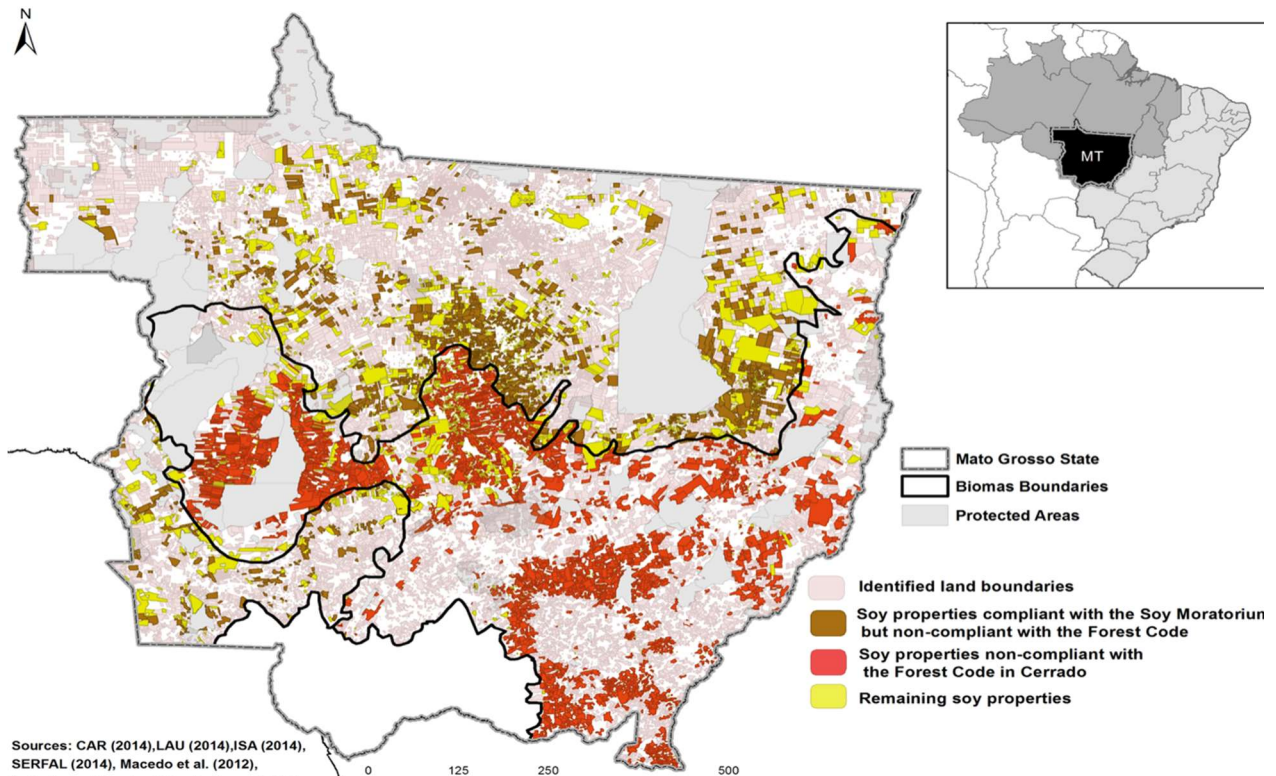
Based on information in the CAR, the SICAR constitutes a strategic database to control, monitor and combat the destruction of forests and other forms of native vegetation in the country and to facilitate environmental and economic planning for rural properties. Data provided by the CAR will help to identify deficits with respect to the areas legally required to be conserved, monitor areas under restoration and, in general, contribute to the environmental management capacity of the country (WWF-Brazil, 2016).

Progress in implementation

About 4 million properties currently do not have sufficient land set aside as Legal Reserve areas according an article from 2014 (B. Soares-Filho, 2014). The total deficit in Legal Reserves and APPs corresponds to at least 21 million hectares, of which about 78%, or about 16.4 million hectares, are Legal Reserve deficits (B. Soares-Filho, 2014).

(Amaral, Reis, & Giudice, 2017) mentions that, despite high levels of registration in the CAR, full compliance with the Forest Code is slow. Research from (Azevedo, Stabile, & Reis, 2015) indicates that a large number of farms did not comply with the Forest Code in 2014. Figure 1 shows a map of soy producing properties in the state of Mato Grosso. 82% of the sampled properties had zero deforestation after July 2008, due to the existence of the Soy Moratorium. However, of these properties, 62% did not comply with Forest Code Legal Reserve requirements (Azevedo, Stabile, & Reis, 2015).

Map 1: Soy producing properties of the State of Mato Grosso (Azevedo, Stabile, & Reis, 2015)



Issues in implementation and enforcement

(IPAM, Brazil's Forest Code Assessment 2010-2016, 2017) and (WWF-Brazil, 2016) mention the following issues that hamper the process of implementation of the Forest Code:

- The Rural Environmental Registry (CAR), which is the first measure required by the Code for an effective implementation, has been facing several problems. Despite the official deadlines for registration in the CAR and for environmental regularization, the regularization process has not occurred quickly (Amaral, Reis, & Giudice, 2017).

Up to December 31, 2018, 5.5 million rural properties have been registered, totaling an area of 470,997,484 hectares inserted in the database of the system. CAR registration seems to be as good as complete.

CAR registration in numbers, based on December 2018, (Florestal, 2018)



- In general, the State Environmental Agencies, responsible for CAR implementation, do not have sufficient financial and technical capacity to deal with the volume of properties that will need to be validated after CAR registration. In particular, there is a need for quality control of registered land given that the accuracy of the information submitted by landowners is not currently assessed in a robust way (WWF-Brazil, 2016).
- Land tenure insecurity complicates implementation of the Forest Code. CAR does not have the objective of land titling, which is the remit of government land tenure agencies. Nonetheless, it is important that information about land ownership be shared during CAR registration in order to guarantee legal tenure security in the market for offsets of Legal Reserve deficits (WWF-Brazil, 2016).
- Another problem with the implementation of the Code is the refusal of the public sector to release data that should be publicly accessible. In spite of the CAR data that was made public in November 2016, the lack of complete transparency in the SICAR database hinders social accountability;
- The absence of proper regulation on important instruments is also a substantial issue in the implementation of the Code. For example, the lack of regulations on Environmental reserve quotas prevents the conservation of Legal Reserve surpluses and, consequently, blocks an attractive option for regularization of environmental liabilities.

- Finally, it is essential for the Federal Government, together with the State authorities, municipalities, civil society, and market institutions, to develop a coordinated and staged implementation plan for the Forest Code, which enables full transparency of data and information related to the process.

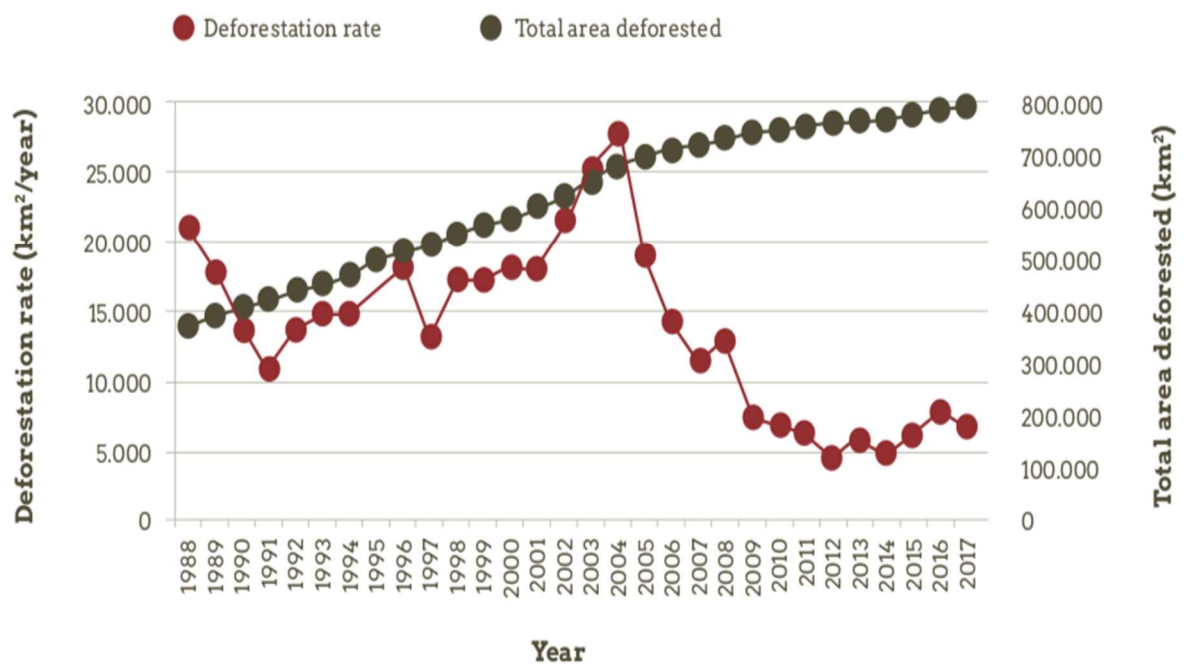
Are upcoming changes expected under the Forest Law?

The most important issues are (Machado, 2018):

- The real start of PRA implementation: Implementation depends on no further postponement of the date for CAR registration and also the issue of State's PRA regulatory instruments;
- The issue of a federal decree for the Forest Reserve Credits (CRA).

Trends in deforestation

Figure 1: Total area deforested and deforestation rates in the Brazilian Amazon (IPAM, A Pathway to Zero Deforestation in the Brazilian Amazon, 2017)



Source: Satellite Monitoring Project for the Amazon Forest (PRODES) (INPE/PRODES 2017)

Figure 2: Trends in forest loss in selected Brazilian States, based on information from (Global-Forest-Watch, 2018).

State	Total selected area	Loss with >30% canopy density		
		2011-2013	2013-2015	2015-2017
Mato Grosso	90,461,942 ha	1,107,515 ha	923,918 ha	1,804,625 ha
Amazonas	156,639,957 ha	375,452 ha	429,240 ha	968,202 ha
Rondonia	23,637,608 ha	394,232 ha	434,338 ha	709,962 ha
Acre	15,273,296 ha	152,257 ha	162,657 ha	222,469 ha

Measures implemented in recent years (2005-2012) have cut deforestation rates in the Amazon region by about 70%. The average rate between 2013 and 2017 was 38% higher than in 2012, the year with the lowest rate recorded (IPAM, A Pathway to Zero Deforestation in the Brazilian Amazon, 2017).

Deforestation of the Amazon rainforest reached recently, in 2018, its highest level in a decade. Satellite images for the 12 months through the end of July 2018 showed that 7,900 square kilometers of forest were cleared in the Amazon. That was a 13.7% increase from the same period in 2017 (but in comparison: this number was more than 27,000 square km in 2004). The states of Pará and Mato Grosso were the largest contributors to the deforestation increase (Texeira, 2018).

Data released in June 2018 by the federal government regarding deforestation in the Cerrado show that between 2016 and 2017, Brazil's second largest biome lost 14,185 km² of native vegetation, or 6,777 km² in the first year and 7,408 km² in the second. The deforestation rate fell in relation to 2015, when 11,881 km² were deforested (IPAM, Deforestation rate in the Brazilian savanna fell in the last two years, 2018).

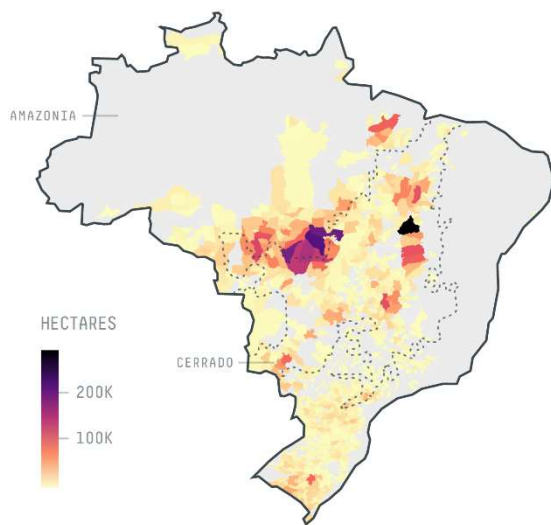
Trends in soy expansion

Soy expansion in Brazil was initially concentrated in the subtropical regions of southern Brazil, but in the 70s soy expanded rapidly into other regions, especially into the Cerrado where soy expansion continues until this day.

Figure 4: Soy expansion, 2005-2016 (Trase.Earth, 2018)

Soy expansion, 2005-2016

Most recent soy expansion has been in the Cerrado



CHAPTER 2. PARAGUAY

Main components of the Law on protecting forest and HCV areas

In Paraguay environmental protection is foreseen in the constitution (principally articles 7,8 and 38) and forests are protected by the terms of the constitutional provisions. Paraguay has also signed the main international treaties on environmental issues and they have a hierarchy superior to that of other laws (Article 137, Constitution) (IDEA, 2018).

Law 422/3 "Forestry" is the first forestry law (from 1973) and, also, the first environmental law of Paraguay. Originally, it covered not only the regulation of forests and forest lands, but also hunting, fishing and the establishment of protected areas. At present - after some partial derogations and Laws that regulated in greater detail some of the mentioned aspects - the Law regulates the rational use of forests and forest lands, prohibiting their devastation and establishing that they cannot be used without authorization from the enforcement authority (IDEA, 2018).

Natural forest areas

The Law and its Regulations establish that 25% of the forest present in 1986 on rural properties larger than 20 ha has to be left (Walcott, Thorley, Kapos, Miles, & Wo, 2015). If those forests have already been eliminated before the entry into force of this legal provision in 1986, they must reforest 5% of the property or the total forest area from 1986. These legal reserves of natural forests are the same for the entire country; the fragility of the different biomes is not taken into account (IDEA, 2018).

Law 3001/06 on environmental services stipulates that properties, where the obligation to maintain the legal reserve of natural forests has not been fulfilled before the entry into force of this law, can compensate this non-compliance in two ways (IDEA, 2018), see section on 'cut-off date'.

The maintenance of natural forests is not exempt from taxes. In the case of forest plantations (or cultivated "forests"), the law establishes some subsidies and tax exemptions (IDEA, 2018).

In accordance with Law 294/93 and its regulations (Decree 453/13, text according to Decree 954/13), the use of native forests requires an environmental impact assessment (EIA) for properties of more than 500 hectares dedicated to agriculture and livestock in the Eastern Region or more than 2000 ha in the Western or Chaco region⁵ (IDEA, 2018).

Any change in land use of 2 hectares or more for productive purposes ("legal deforestation") must do an EIA, irrespective of the size of the property (IDEA, 2018).

In the case of reforestations or "forest cultivation", the management plan itself (which must consider the environmental variable) is sufficient, except when it concerns monocultures of 1,000 hectares or more that do require an environmental impact evaluation (IDEA, 2018).

Natural forest areas - Eastern region only

In the Eastern Region, Law 2524/04, known as the "zero- deforestation law", was enacted in late 2004 and prohibits the change of land use of natural forest surfaces. This Law has recently been extended until December 31, (2020)

⁵ As laid down in Decree 954/13 (that changed partially Decree 453/13)

Productive forests

Additionally, the Law (Laws 422/73, 3239/07 and 4241/10) establishes the maintenance of protective forests, as for example along watercourses, or as windbreaks and in areas with steep slopes that are not counted as part of the natural forest reserves) (IDEA, 2018).

This Law and the obligation to reforest along water courses already exists implicitly since 1973 but is made explicit since 2007. Since the enactment of the regulatory Decree of Law 4241/10 (2010), the width of the strip of protective forests along water channels is related to the width of the channel (IDEA, 2018).

All the legal norms mentioned above apply to privately owned land.

Other HCV areas - protected areas and species

There is no specific law that protects HCV areas (Molas, 2018). There are, however, various laws on protected areas and species. There is for example legislation regulating Protected Areas (Áreas Protegidas), the protection of biodiversity and threatened and endangered species. The general framework includes Act No 1561 on the environment and several other, more specific, acts, such as Act No 96 on wildlife, Act No 3239 of 2007 on the water resources of Paraguay (NEPCON, August 2017).

National Parks belong to the State and that which is not yet state property should become so in the future. There are also protected areas under private ownership, but they are not the majority. The law that regulates the national system of protected wild areas is Law 352/94 (Áreas Silvestre Protegidas) (IDEA, 2018). Paraguay has also ratified and adopted most conventions on protected areas, fauna and flora⁶ (NEPCON, August 2017).

Wetlands

The Congress recognized in 1994 the Convention on Wetlands of International Importance (Law No. 350). Besides, there is national legislation that protects wetlands in general. Authorities have to further decide which activities are allowed, and which ones could harm the ecosystem. The Ministry of Environment and Sustainable Development (MADES), through its General Directorate for the Protection and Conservation of Water Resources, protects wetlands and manages the management thereof for the purpose of conservation (Molas, 2018).

Forest types and areas where deforestation is not allowed

- The Forest Law has Regulations for natural forest areas only;
- The Forest Law has requirements for protective forests (for watercourses, or as windbreaks and in areas with steep slopes), which are not part of the natural forest reserves;

⁶ by means of the following acts: Act No 253 of 1993 on biological diversity (Ley No 253 de 1993 sobre la diversidad biológica), Act No 350 of 1994 on wetlands of international importance (Ley No 350 de 1994 sobre los humedales de importancia internacional), Act No 758 of 1979 on nature protection and wildlife (Ley No 758 de 1979 sobre la protección de la flora, de la fauna, y de las bellezas escénicas), Act No 112 establishing and preserving the natural reserve in the Mbaracayu forest and the Jeuiji river basin (Ley No 112 para establecer y conservar la reserva natural del bosque del Mbaracayu y la cuenca que lo rodea del río Jeuiji), Act No 1314 on migratory species of wild animals (Ley No 1314 sobre las especies migratorias de animales silvestres), Act No 555 of 1995 on water fauna in rivers in the border area (Ley No 555 de 1995 sobre la fauna acuática en los cursos de los ríos limítrofes), (NEPCON, August 2017).

- Beside this, there are additional laws that protect areas: the national territory under protection is 61,000 Km² in a total of 38 protected areas. There is also one Biosphere Reserve and 4 Ramsar sites and 57 Important Bird Areas (IBA) which cover 3,3 million ha 8,4% of the total area (NEPCON, August 2017);
- Paraguay has 22 wetland regions of which 6 have been recognized as Ramsar sites. However protection and regulation is very limited.

Is there a cut-off date and if yes, which one?

The Forest Law has as legal requirement to set aside and protect 25% of all forested land that was present in 1986 on a given rural property since the establishment of this Regulation in 1986. Where the obligation to maintain the legal reserve of natural forests has not been fulfilled, one should compensate this non-compliance by:

- Reforesting 5% of the property or;
- Reforesting the area to the forest area surface from 1986.

There are two options to comply with this obligation:

- With certificates of environmental services of other properties in which natural forests have been certified above the legal obligation;
- The alternative is to reforest. Decree 7031/17 allows that reforestation is to be carried out with a minimum of 40% of native species.

There is also an obligation to reforest productive forests along water courses.

There is no date before which you have to fulfill with the obligation, this is negotiated per property with the legal authority, when they decide to act upon it as part of the renewal of the environmental license.

Eastern Region: 2004

The Zero Deforestation Law was enacted in 2004 for the Eastern Region and since then deforestation of native forests is prohibited. However, at the time the Law was enacted, some landowners already submitted their Environmental Management Plans and only those that already received approval could deforest within a land use plan for 5 years – until 2009 (Molas, 2018).

Is there a reforestation or compensation component?

Compensation

The Forest Law has a compensation component for those lands that do not meet the required 25% of legal reserve on their rural property.

Reforestation

In the case of forest plantations (or cultivated "forests"), the law establishes subsidies and tax exemptions (**Law 536/95** and its amendments). In practice, subsidies have rarely been granted and only tax exemptions apply. Additionally, to promote reforestation, **Law 4890/13** (2013) created the formal right of forest surface that allows to separate the ownership of the land from that of the trees and allows the constitution of a

guarantee right over them. Theoretically, this should facilitate credits for reforestation. In practice, it is a law still little used (IDEA, 2018).

Recent changes in the Forest Law

The Forest Law itself is not changed and exists already since 1973. In the last years, there have been partial derogations and Laws that regulated in greater detail some of the aspects under the general Forest Law, such as Decree 453/13 or Law 4890/13 (both from 2013).

Another example is the protection of watercourses with protective forests. This obligation already existed since Law 422/73 (1973) but came into force with Law 3239/07 (2007). Law 4241/10 (2010) "reinforced" that obligation but allowed the width of these protective forests to be reduced. Since the enactment of the regulatory Decree of Law 4241/10, the width of the strip of protective forests is related to the width of the channel (before it was defined to for example 100 m in the Chaco), (IDEA, 2018).

Law No. 2524/04 on zero deforestation is currently in force in the Eastern region and has recently been extended to the December 31, 2020.

Are upcoming changes expected under the Forest Law?

No – at least no large ones.

Enforcement mechanism

Responsible organizations

- The recently created Ministry of Environment and Sustainable Development (MADES) is responsible for applying the laws of environmental impact assessment, environmental services, deforestation and protected areas and for the environmental provisions of the Forestry Law (IDEA, 2018);
- INFONA, the National Forestry Institute, is in charge of applying the forest laws in everything that does not fall within the competence of the MADES (IDEA, 2018).

Enforcement

Finally, as regards environmental criminal legislation (mainly, Law 716/96 and Penal Code), carrying out works or activities without an environmental license or without complying with it is a crime. Pollution of water, soil or air, processing waste illegally or damaging protected areas are also crimes. Deforesting illegally causing serious damage to the ecosystem is a crime. All these punishable acts are of public criminal action and are investigated and prosecuted by the Public Ministry. There are, however, no specific legal rules for environmental damage caused by citizens (IDEA, 2018).

Level of enforcement

Paraguay's legal framework on the environment, protected areas and threatened and endangered species is sufficiently developed (Dam, An analysis of sustainable land use in the Chaco region (Paraguay), 2015). However, the application and enforcement of the Law is problematic, due to for example:

- The very low capacity of implementing institutions to apply laws, mainly because of the very low budget they have (on average, both the MADES and the INFONA have assignments equivalent to 0.06%, each, of the total General Budget of the Nation. Many times, its limited capacity to apply environmental and forestry law depends on international cooperation, such as large programs from UNDP, USAID or the World Bank (IDEA, 2018).
- In 2012-2013 there have been 175 registered complaints in the departments of the Paraguayan Chaco in relation to the transgression of Law 716/96. Also (INECIP-Paraguay, 2016) concludes that the amount of personnel and infrastructure available to the Public Prosecutor's Office is insufficient for an effective criminal prosecution of punishable offense. So far no one has been convicted for illegal deforestation yet (IDEA, 2018).
- Limited capacity (and budget) is also mentioned in the article from (BENÍTEZ, 2018), mentioning about the limited number of park rangers in the country which have to control national parks and reserves. Also, the Institution of the National Parks, part of the Ministry of the Environment in charge of dealing with all environmental complaints at the national level, has only 12 auditors throughout the country to fulfill this function. (Connectas, 2018) mentions that just eight rangers, several of them with no other resources than their own bikes, must take care of 75,000 hectares that make the San Rafael Reserve (Caazapá-Itapúa) and Ñacunday National Park (Alto Paraná).
- (Paraguay.com, 12 April, 2016) Also mentions about the poor performance of prosecutors and judges in cases of deforestation.
- According to (NEPCON, August 2017), there is a risk that the existing laws relating to protected sites and species are not upheld consistently by all entities and often ignored and are not enforced by relevant authorities.

Trends in deforestation

Indications legal deforestation trends

The Western region of Paraguay (Chaco) still has 14 million hectares of native forest left (58% of the land area), while in the Eastern region 2,5 million ha is remaining. Scenarios indicate a land use change of 4 million hectares in the Chaco, following the ambitions of the so-called Development Plan 2030-with the ambition to position Paraguay as the fifth largest exporter of beef. This will result in a remaining forest area of 10 million ha in the Chaco (or 41% of the land area) (Agronegocios, 2017) if all is done according to Law.

In case the Law (25% of forest area remaining + protection forest), would be followed ("legality scenario"), a deforestation of roughly 7 million hectares is theoretically possible⁷.

Forest loss can be substantially higher when illegal deforestation is taken into account as well.

Recent deforestation rates:

According to the report from UN National Program REDD + Paraguay, the average deforestation rate in the Eastern (Oriental) region was 63.383 hectares / year between 2000 and 2015, while the deforestation rate was 302.797 hectares / year in the Western (Chaco) region for that period (IP, 2016).

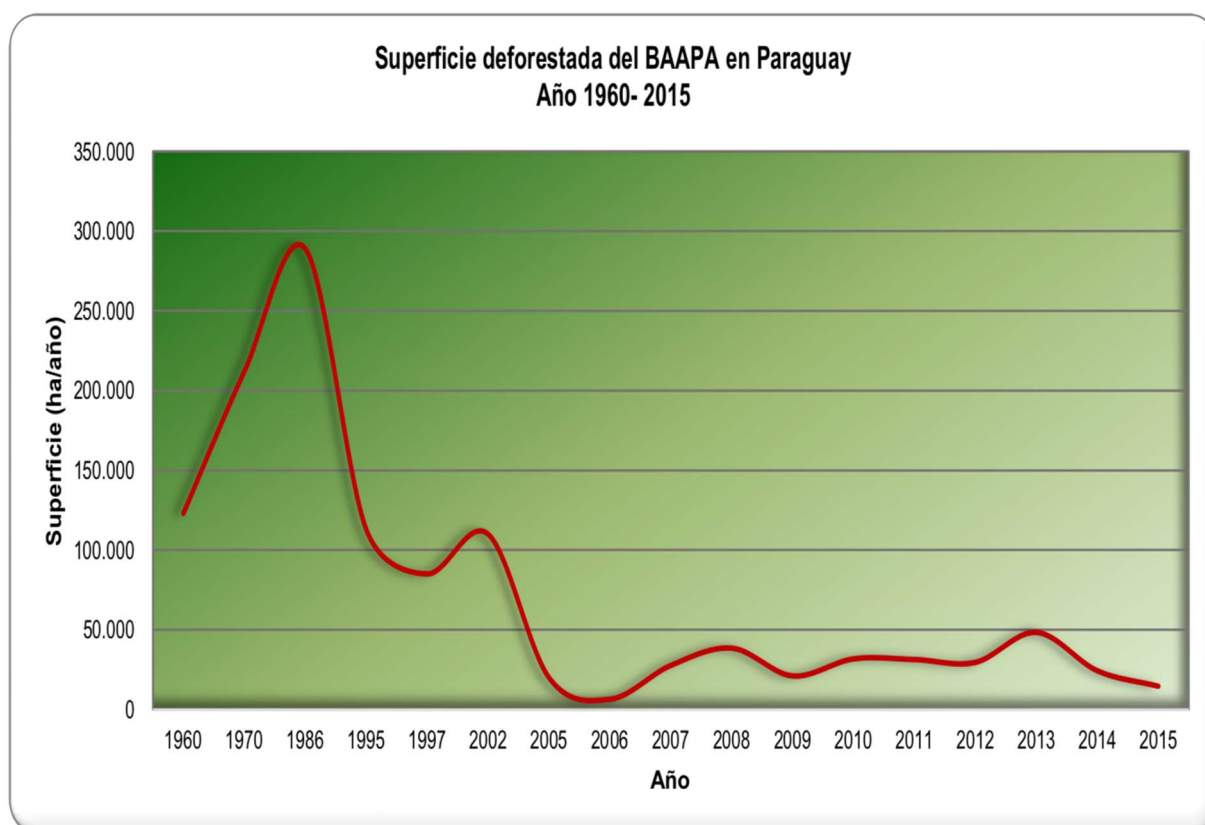
⁷ 41% = 10 million ha, 1% = 0,244 ha * 25% = 6,0985 ha remaining + an indication for protection forests. (Medina-Britos, 2016) mentions a possible horizon for forest Transformation from up to 7 million hectares next Decade.

Table 3: Deforestation rates on country level Paraguay (*average annual deforestation rate measured over period 2000-2015), (IP, 2016)

Period	Surface area (ha)	Deforestation rate (ha/year)
Changes 2000-2005	1.277.106,14	212.851,02
Changes 2005-2011	2.573.191,38	428.865,23
Changes 2011-2013	969.206,56	484.603,28
Changes 2013-2015	673.202,92	336.601,46
Total	5.492.707,00	366.180,47*

The 'Zero deforestation Act' for the Eastern region managed to strongly reduce deforestation but did not bring deforestation to zero (based on 2015), see also **Error! Reference source not found.** The deforestation area measured in 2015 was 14.426 ha / year (WWF-Paraguay, 2016).

Figure 5: Deforested area Alto Paraná Atlantic Forest (BAAPA) in Paraguay between 1960-2015, (WWF-Paraguay, 2016)



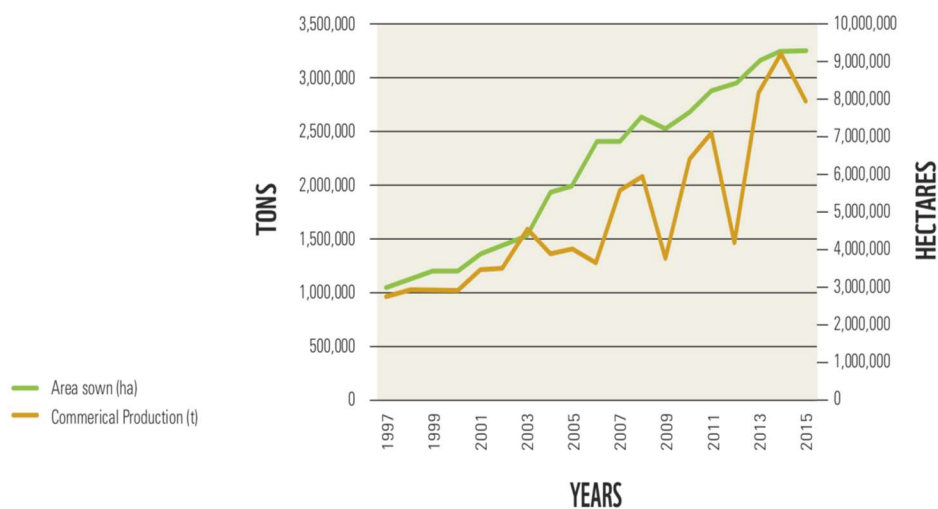
For the Gran Chaco Americano:

232,000 ha, 286,742 ha, 268,084 ha and 236,869 ha were deforested in 2010, 2011, 2012 and 2013, respectively in Paraguay (Guyra-Paraguay, 2018).

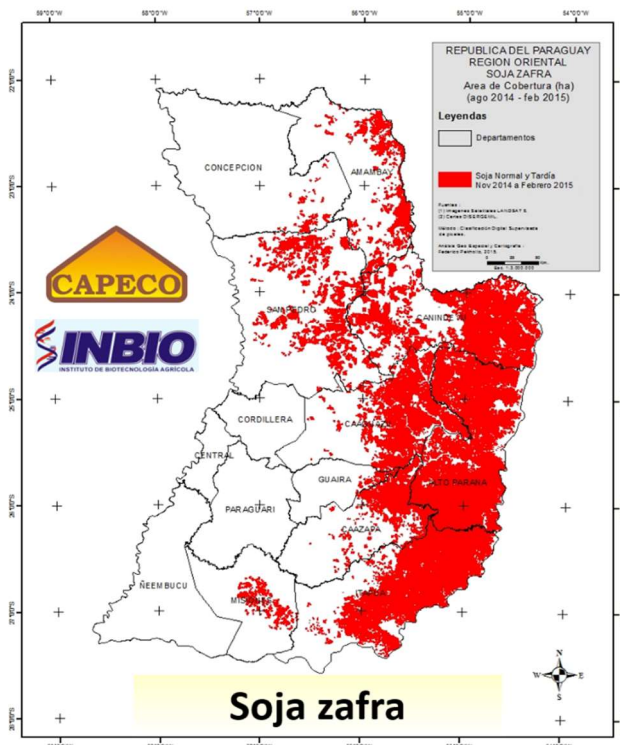
Trends in soy expansion

The Agricultural/Livestock Census reported in 1991 the cultivation of 552,657 ha of soybean, with a production of 1,032,676 tons. The 2013 harvest estimated the planting of 3,157,600 ha and the production of approximately 9,367,298 t, which means that in just over 2 decades, the planting area increased 5.7 times, while production increased 9 times. (WWF, 2016)

Figure 6: Evolution of area's planting and production of soy (source: CAPECO), (WWF, 2016)

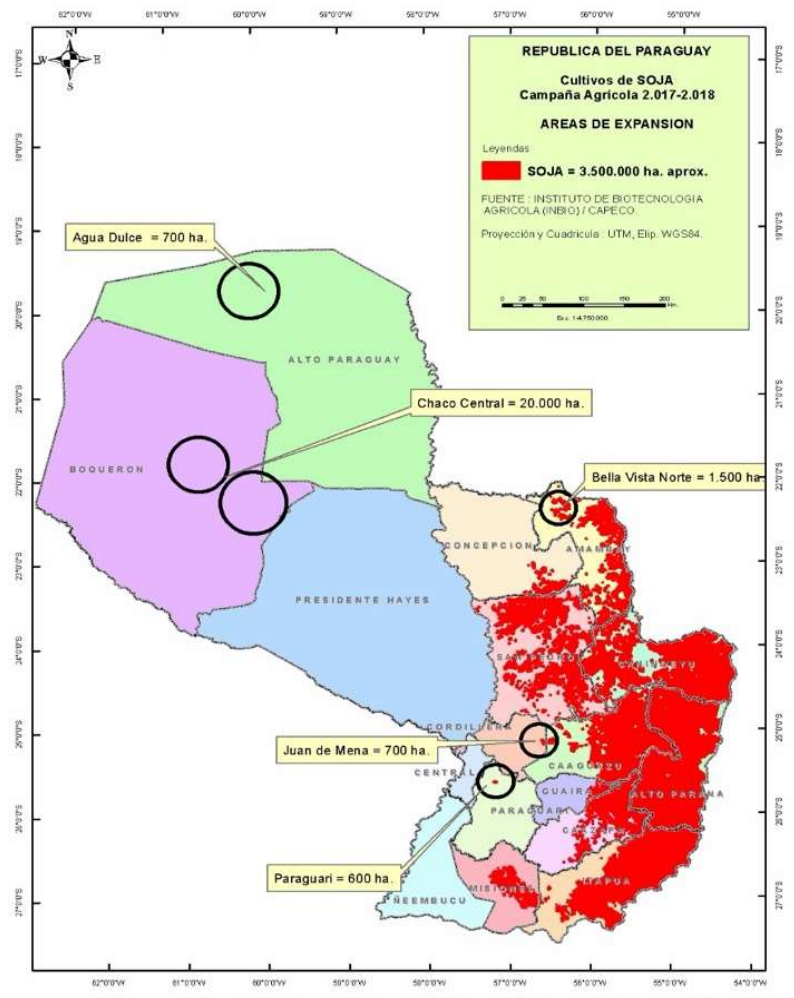


Map 2: Soybean harvest area Paraguay August 2014 - February 2015 (CAPECO, 2018).



Last years, new expansion areas of soybean in the eastern region have developed in areas that were traditionally livestock areas such as the departments of Misiones, Paraguari, San Pedro and part of the Department of Caazapá. Currently the greatest potential for expansion exists in the Western Region (Chaco), where seeding materials adapted to the climatic conditions of this region are being developed. Although there are other current limitations (such as storage infrastructure and transport logistics) to accelerate expansion in Chaco areas, around 22,000 hectares is already planted.

Map 3: Expansion areas soy based on cultivation year 2017/2018 (source: INBIO/CAPECOO, received from (Molas, 2018).



CHAPTER 3. ARGENTINA

Main components of the Forest Law

Law No. 26.331 of Minimum Standards for the Environmental Protection of Native Forests⁸ (the Forest Law) was enacted in December 2007. It establishes minimum environmental protection standards for the enrichment, restoration, conservation, use and sustainable management of native forests and the environmental services that they provide (UMSEF, March 2017).

Territorial Planning of Native Forests (OTBN)

The Forest Law requires each province to approve in a participated way a set of Territorial Planning of Native Forests ('Ordenamento Territorial Bosques Nativos', OTBN). No deforestation can be authorized unless such OTBN has been approved. The OTBN must include zoning to designate areas as belonging to one of the following categories: red, yellow or green.

Category	Description and activities allowed:
Category I (red)	High conservation value (no deforestation allowed): one can develop the following activities: scientific research, activities that enhance conservation and protection, and the establishment of core areas and areas of restricted use under the Act of Protected Areas.
Category II (yellow)	Medium conservation value (sustainable use, research, tourism is allowed). This category allows activities of low impact, as for example the sustainable management of native forests or low-intensive silvo-pastoral livestock systems.
Category III (green)	Low conservation value (deforestation and productive activities allowed): the area may be partially or entirely transformed, provided legal criteria are followed. A Land Use Change Plan (PCUS) is required to request for authorization to conduct clearing of native forests.

Salta was one of the first provinces to implement the Forest Law, translated into Provincial Law 7543, in 2008. Other provinces translated the Forest Law later into Provincial Law: La Pampa in 2011, Santa Fe in 2013, La Rioja in 2015 and Buenos Aires in 2016 (UMSEF, March 2017).

Management and/or Land Use Change Plans

According to the Forest Law, any legal intervention in native forests must be subject to a Conservation or Sustainable Management Plan. When there is the intention to convert a native forest, approval of a Land Use Change (PCUS) Plan and its corresponding Environmental Impact Assessment is required from the local Authorities (SAyDS, 2017):

- Conservation plans could be presented for any of the three categories. This is voluntary but required for access to compensation by Law.
- Sustainable Management plans could be presented for yellow and green. This is voluntary but required for access to compensation by Law.
- PCUS plans are only possible for the green category. They cannot receive funding.

⁸ In Spanish: Presupuestos Mínimos de Protección Ambiental de Bosques Nativos

Funding mechanisms

Funding mechanisms are part of the Forest Law. Its budget is defined by Law and distributed by the Federal Council of Environment to (SAyDS, 2017):

- National Fund for Conservation and Enrichment of Native Forests ⁹
- The National Program for the Protection of Native Forests ¹⁰
- Program for the Management and Conservation of Native Forests¹¹
- Financial assistance for the realization of the OTBN

Forest types and areas where deforestation is not allowed:

Law 26.331 defines Native Forest as (SAyDS, 2017): *“those natural forest ecosystems composed predominantly of mature native tree species, with diverse associated species of flora and fauna, in conjunction with the environment that surrounds them -surface, subsoil, atmosphere, climate, water resources-, conforming an interdependent web with its own characteristics and multiple functions, which in their natural state give the system a condition of dynamic equilibrium that provides diverse environmental services to society, in addition to the various natural resources with the possibility of economic use”.*

Included in the definition are the native forests of primary origin, with no human intervention, and secondary forest formed after clearing, as well as those forests resulting from voluntary re-composition or restoration (Mascotena, 2018). Guidelines are developed to define in more detail which areas fall under the definition of native forests, and which ones don't.

The OTBN maps on Provincial level cover mostly forested areas. However, there are still forest areas that do not fall in any of the three categories of the OTBNs, a.o. due to differences in mapping used and this needs to be further aligned. In all cases, native forests fall theoretically under the forest law, also when not (yet) part of the OTBN maps (Ambiente, 2012).

HCV areas

For developing the OTBN maps, the national authority, the Secretariat for the Environment and Sustainable Development (SAyDS) defined 10 Sustainability Assurance Criteria ¹². However, the provinces didn't use all of them when developing the OTBN maps. The OTBN maps therefore do include HCV areas but the whole concept and criteria defined by HCV Network is not used. In some cases, there are other laws and provisions that protect HCVs (e.g. indigenous reserves or national parks laws) but they are not the result of a comprehensive analysis of HCVs (Mascotena, 2018).

⁹ In Spanish: Fondo Nacional para el Enriquecimiento y Conservación de Bosques Nativos

¹⁰ In Spanish: Programa Nacional de protección de bosques nativos

¹¹ In Spanish: Programa experimental de manejo y conservación de bosques nativos

¹² The 10 Criteria were: (1) Minimum Habitat Area (critical mass of surface to assure value); (2) Link with other natural ecosystems;(3) Link with protected areas and regional integration; (4) Existence of outstanding biological values (the most similar to HCVN criteria); (5) Connectivity in between eco-regions; (6) Conservation status; (7) Forestry potential; (8) Agriculture Sustainability Potential; (9) Watershed conservation potential and (10) Value of forests for indigenous and small holder communities

Peatlands

In Argentina, "turberas" (peatlands) are only found in the province of Tierra del Fuego (Southern part of Argentina). They are protected by the RAMSAR Convention (IUCN, 2010).

Wetlands

Following the definition of Wetlands International, there are around 60 million hectares of wetlands in Argentina. There is no specific national Law in Argentina to protect the wetlands¹³. However, Argentina is a signatory of the RAMSAR Convention and those wetlands that are considered of international importance (so-called Ramsar sites) are legally protected through the Convention. Argentina currently has 23 sites designated as Ramsar Site with a total area of 5,687,651 hectares¹⁴ (RAMSAR-Convention, 2018).

A comparison between OTBN maps and RTRS (HCV maps)

The Argentinean Chaco region has 23 million hectares of potential HCV areas (according to Fundación Vida Silvestre Argentina) that were not even included in any legislation map (no categorization for any kind of restriction), 6.15 million hectares that were categorized as "green" (conversion allowed), 15.76 million "yellow" (where deforestation is not allowed but cattle management yes) and 5.3 million that were categorized "red" (zero allowance).

The figure and tables below show a comparison between the OTBN maps (based on Law) and the RTRS classification maps, based on information from Fundación Vida Silvestre Argentina, (Mascotena, 2018).

Figure 7: Comparison between legal OTBN maps and RTRS mapping, from Fundación Vida Silvestre Argentina (Mascotena, 2018)

Chaco	Hectares			
	Total bioma	Forest Law	Not Classified	
Forests	30.871.874	4.011.157	8.031.087	26%
		13.530.064		
		5.299.566		
Other HCVAs	19.408.000	1.333.152	14.985.936	77%
		2.228.549		
		860.363		
Total	50.279.874	5.344.309	23.017.023	46%
		15.758.613		
		6.159.929		

Category	Hectares			
	RTRS	Forest Law	Difference	
Restricted	5.545.520	5.344.309	201.211	4%
Semi-restricted	17.387.653	15.758.613	1.629.040	10%
Without restr.	7.861.511	6.159.929	1.701.582	28%

Note that the RTRS maps are limitedly used at this moment (Mascotena, 2018).

¹³ In 2012, a process was initiated to promote a first draft Law on minimum budgets for the protection and rational and sustainable use of wetlands in Argentina. However, at the end the Law did not achieve sufficient support (Mascotena, 2018).

¹⁴ Meaning that more than 90% (54.3 / 60 million ha) of wetlands, in the broader classification have no legal protection (some are protected by being within other protected environments) (Mascotena, 2018).

Is there a cut-off date and if yes, which one?

For analyzing deforestation in Argentina, one has to take account of the enactment of the Law and the different establishment dates of the Law on provincial level, ranging from 2008 (Salta) to 2016 (Buenos Aires).

Is there a reforestation or compensation component?

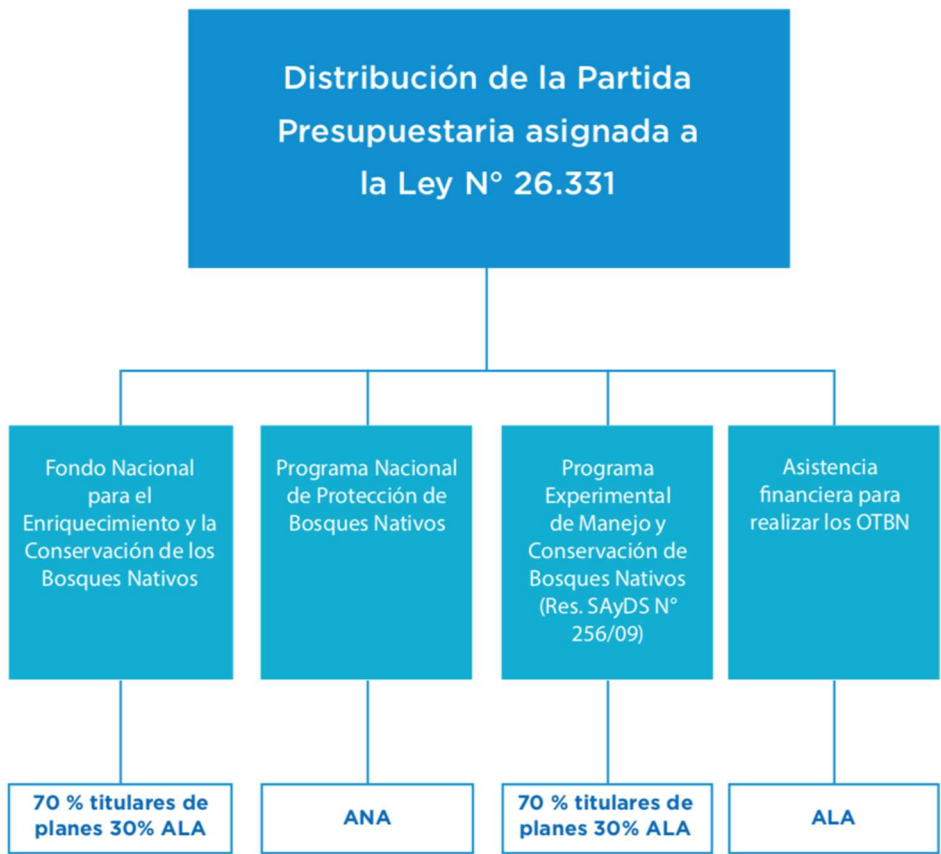
Law 26.331 allocates resources to provinces for a.o. the restoration and conservation of forests through the National Program for Native Forests and the National Program for Enrichment and Conservation of Native Forests. A rough estimation is that +/- USD40 million was allocated in total between 2010 and 2016 (SAyDS, 2017).

Distribution of Funds

According to Law, the annual budget may not be less than 0.3% of the national budget and 2% of the total withholdings on exports of primary and secondary products from agriculture, livestock and forestry, corresponding to the previous year of the year under consideration (MAyDS, 29 June 2018).

The distribution of the Fund is shown in figure 7.

Figure 8: Distribution of the Budget Law 26.331 (SAyDS, 2017)



1. National Fund for Conservation and Enrichment of Native Forests

The National Fund for Conservation and Enrichment of Native Forests is used for:

- 30% for institutional strengthening of the Local Application Authorities, specifically for the monitoring of native forests in each jurisdiction and the implementation of technical and financial assistance programs for small producers, indigenous communities and / or peasants; and
- 70% to compensate holders of native forests that present Sustainable Management Plans (PM), Conservation Plans (PC) or Projects under Formulation (PF), provided these are authorized by the Local Application Authority.

A total of \$ 427,446,955 (11,461,310 US\$) was allocated to strengthening the management and control capacities of the provinces between 2010 and 2016.

2. The National Program of Protection of Native Forests

In order to comply with the objectives, set forth in the regulation, the Ministry of Environment and Sustainable Development, through the Forestry Department, carries out the UNDP Project ARG 12/013 "Support for the Implementation of the National Program for the Protection of Native Forests". The goal is to contribute to the conservation and sustainable management of native forests by strengthening the actions of the national enforcement authority (SAyDS, 2017).

A total budget of over USD 9 million was allocated to the Program between 2013 and 2016 (SAyDS, 2017).

3. Program for the Management and Conservation of Native Forests (on property level)

From the funding, 30% is allocated for the Local Application Authority to be used for monitoring, enforcement or for the development of cattle management programs. The other 70% of the Funding is destined for private owners that have (voluntarily) submitted a conservation (PC) or management plan (PM) (Mascotena, 2018). Between 2010 and 2016, +/- USD 100 million were used to compensate 4.500 PC and PM plans among 3.000 beneficiaries. From the total 53 million hectares declared at OTBNs in that period, only 10% had PC or PM plans¹⁵ (SAyDS, 2017).

Figure 9 shows the number of operative annual plans that have been financed in the period 2010-2016, distinguishing between management plans (PM), conservation plans (PC) and plans under formulation (PF), (SAyDS, 2017).

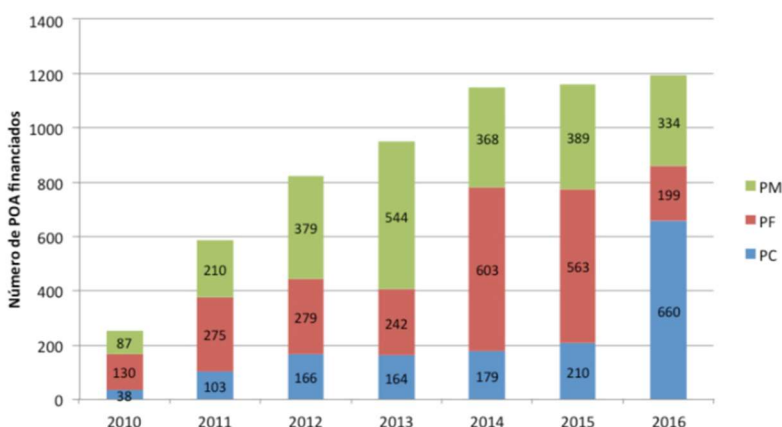


Figure 9: Operative annual plans financed from 2010-2016 (SAyDS, 2017)

¹⁵ PF plans (intermittent plans as first phase to PC or PM plans) add other 10% but aren't secured in time.

Beneficiaries of the plans:

Between 2010-2016 (at national level), only 2% of the plans have been granted to indigenous and peasant communities, while the remaining 87% have been granted to private beneficiaries (individuals and companies). During 2016, this difference has become larger, since 95% of the financed plans were for individuals and only 1% was allocated to indigenous and peasant communities (SAyDS, 2017).

Recent changes in the Forest Law

The Law (article 68) states that every five years after the approval by each province there should be a review process of the OTBN. It is not allowed in the Law to change classifications to a Category with less protection (SAyDS, 2017).

According to the five years rule there should be already several provinces under review, but in practice this is not happening according to planned (Mascotena, 2018).

Implementation and enforcement mechanism

Responsibilities and enforcement mechanisms

- The national authority of application is the Secretary of Environment and Sustainable Development (SAyDS) and ANA in particular.
- The Provincial government is responsible for enforcement of the Forest Law. The primary responsibility for the administration of native forests and verification procedures for activities in the field lies at the Local Application Authorities in the Province. They need to develop for example monitoring and information systems (Dam, An analysis of sustainable land use in the Chaco region (Paraguay), 2015).
- The SAyDS and the local implementing authorities work together in the Native Forest Commission of the Federal Council of the Environment, (SAyDS, 2017).
- On national level, the 'Unidad de Manejo del Sistema de Evaluación Forestal (UMSEF)' is established within SayDS. UMSEF performs the monitoring of native forests loss on national level (Dam, An analysis of sustainable land use in the Chaco region (Paraguay), 2015).

Level of enforcement

The current challenge is to put the Forest Law in practice (budgets, registration, control mechanisms, restoration, etc.).

- One of the main barriers in the implementation of the Law is the lack of financial input. The financial proposal for 2019 is for example to allocate just 595 million pesos (around 16 million US\$ or 13,9 million Euros) for the protection of 53,645,545 hectares of native forest in Argentina, which represents only 4.75% of what is stipulated by the Law of Forests (Rocha, 2018). This limited budget impacts on the effective implementation of the Law as funding is meant for capacity building on local and on national level, for example to strengthen monitoring and enforcement. Next to that, funding is allocated to producers to enable them to conserve their native forests. According to (Mascotena, 2018), in total USD11 million were allocated to producers/land owners programs in 2016, for a total of 1,14 million hectares; which results in just +/- USD9 per hectare.
- Other challenges to implement the Forest Law that have been worked on in the last years for further improvement include for example the development of guidelines, definitions or the level of detail of the OTBN maps (linking this to the national monitoring of native forests or linking these to property level), (Ambiente, 2012), (SAyDS, 2017).

- Another challenge is the inefficiency in bureaucratic procedures, see also box 1 as example.
- Related to this, is the lack of enforcement, transparency and clear procedures which results in illegal logging as shown for example by the news story from Tartagal in Salta (REDAF, 2009)

Box 1: An example of bureaucratic inefficiencies in Salta, Argentina

In Salta, a producer should obtain a PCUS (Land Use Change Permission) to clear its 'green' area, according to the provincial authorities. According to the legal resolution, this process should last 65 days since started by the producer. In reality, the process takes more than 2 years due to "inefficiencies". Therefore, the producers often do not wait for the procedure or do not even start it and clear the land to then have the authority intervention and fix the situation after the illegal deforestation happened. The worst-case scenario is a fine to pay and some restrictions. The province is working to improve this procedure (in terms of time and in terms of transparency).

Are upcoming changes expected under the Forest Law?

The Secretary is allocating budget to improve the OTBN future processes and focusing the efforts in the improvement of the Law implementation and not intending to change it (Mascotena, 2018)

Trends in deforestation

According to the State of the Environment Report, 172,639 hectares or 0.38% of the forests disappeared in 2017 in Argentina. In 2016, the clearings had dropped to 155,851 ha and a trend that had been going on for 10 years had stopped: deforestation has increased in 2017 (Rocha, 2018).

Table 4 shows the loss of forest land and other forest land for those provinces that are monitored by UMSEF in the last years until 2016. The trends learn that:

- Total annual deforestation rates go down, but deforestation is still ongoing;
- Deforestation is in 2016 still above 10.000 ha per year in the following provinces: Chaco, Entre Rios, La Rioja, Salta, San Luis and Santiago del Estero.

Table 4: loss of forest land* ('tierras forestales') and other forest land** ('Otras Tierras Forestales') per period in ha. Only for year 2016, the amount of forest land alone is also provided between brackets (UMSEF, March 2017).

Province	2007	2008-2011	2012-2013	2014	2015	2016
Catamarca	9.571	12.163	6.873	272	664	3.184 (1.440)
Chaco	71.552	110.889	107.145	19.350	22.797	28.756 (27.130)
Córdoba	31.255	39.936	5.048	2.038	679	350 (192)
Corrientes	1.137	4.111	1.480	990	600	0 (0)
Entre Rios	42.856	51.987	23.166	5.853	5866	2.370 (2.082)
Formosa	44.737	129.603	96.776	25.476	19.324	21.531 (17.490)
Jujuy	1.826	14.843	9.082	1.492	3.143	623 (623)
La Pampa	2.643	3.164	1.504	8.040	5.357	3.890 (2.405)
La Rioja	6.289	25.683	17.571	7.298	10.893	14.242 (828)
Misiones	16.989	21.406	5.614	1.011	969	1.001 (890)
Salta	204.697	236.246	213.326	57.396	39.635	21.202 (20.006)
San Juan	0	79	765	0	0	0 (0)

San Luis	30.751	79.151	25.268	9.462	10.502	12.358 (1.707)
Santa Fe	9.580	11.692	5397	1.958	1.700	539 (290)
Santiago del Estero	247.479	453.551	172.058	48.623	34.974	26.256 (23.870)
Tucumán	6.871	18467	14.187	1330	844	171 (155)
Total	728.233	1.212.971	705.260	190.589	157.947	136.473

★★ Other Forest land includes also forest with trees of 3 to 7 height and palm trees (covered under the Forest Law). OTF also includes more open forest areas that are not covered under the Forest Law.

Figure 10: development of the annual percentage of loss of native forest in the forest regions that were analyzed (TF = tierras forestales = forest land, OTF = otras tierras forestales = other forest land), (UMSEF, March 2017)

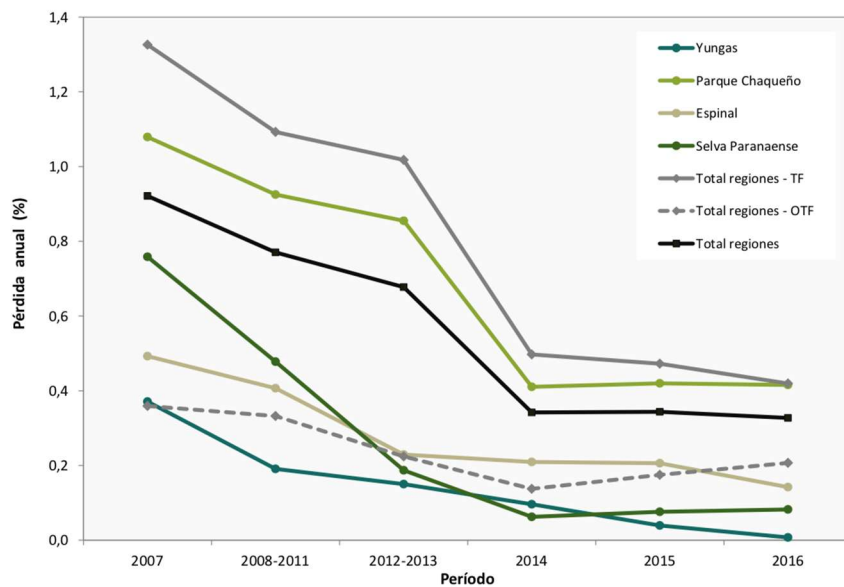
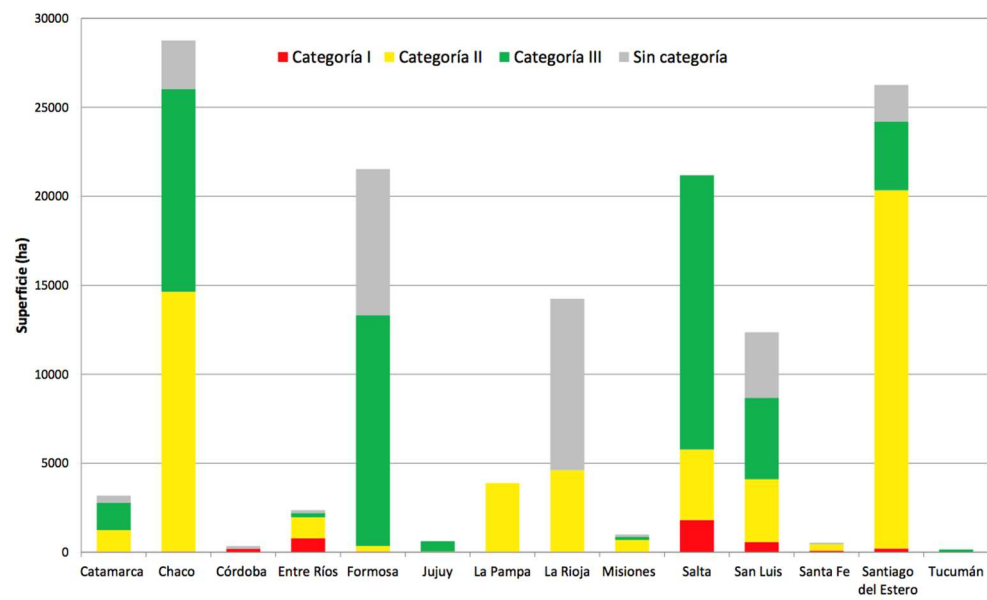


Figura 6. Evolución del porcentaje anual de pérdida de bosque nativo en las regiones forestales analizadas.

Figure 10 learns that the annual loss of forest land (TF) is going down, while the annual loss of other forest land has been slightly increasing since 2014. The annual forest loss in the Parque Chaqueño is constant since 2014.

Based on the analysis of (UMSEF, March 2017), most of the annual loss of native forest took place in the so-called category II-yellow (TF: 44% and OTF: 30%) – and III-green (TF:43% and OTF:23%). There is also substantial forest loss in the grey category (no category assigned), (UMSEF, March 2017)

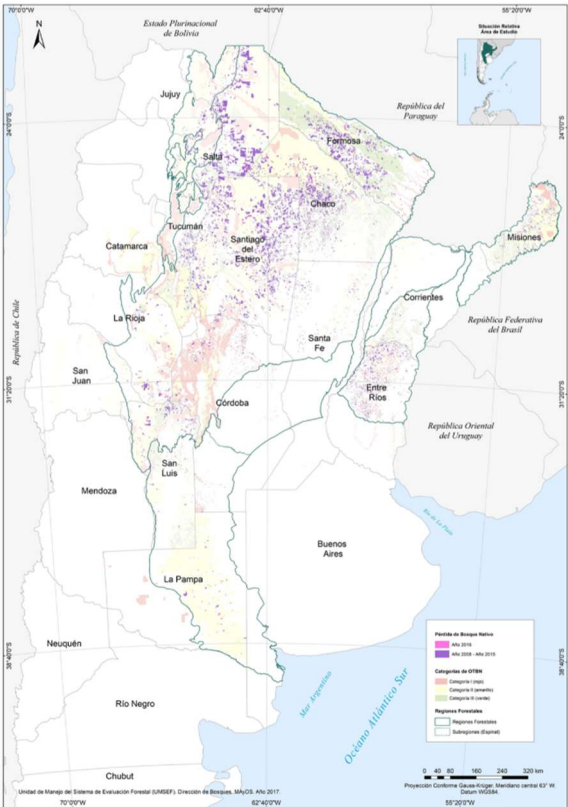
Figure11: Loss of forest land (TF) and other forest land (OTF) per category of the OBTN per province, based on the year 2016.



For the Gran Chaco Americano:

30,454 ha, 43,717 ha, 235,601 ha and 222,475 ha were deforested in 2010, 2011 and 2012 respectively in Argentina (Guyra-Paraguay, 2018).

Figure12: Loss of native forests in 2008-2015 and in 2016, within the different categories (UMSEF, March 2017).



Trends in soy expansion

Figure 13: Seeded area soy and its expansion in Argentina from 1971 to 2000 (received from (Mascotena, 2018), maps are from INTA).

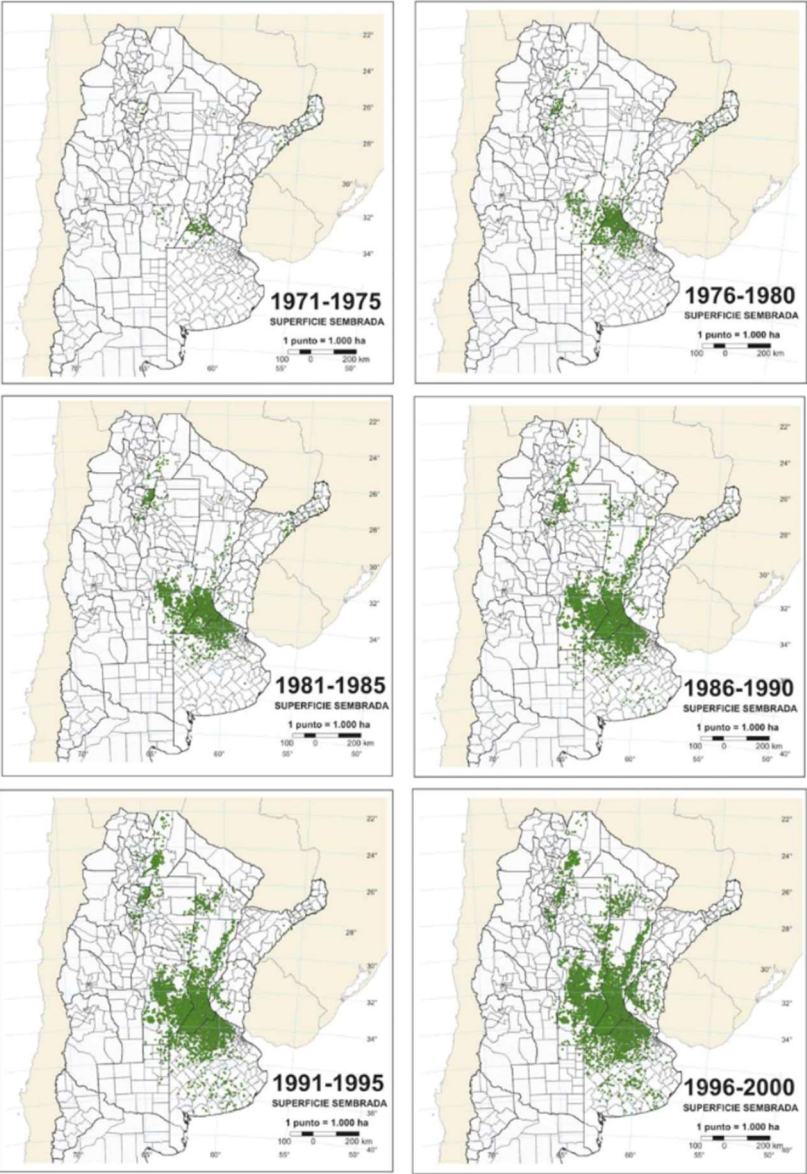


Figure 14: Seeded area soy in 2009/2010 and in 2015/2016 from (Agroindustria, 2018)

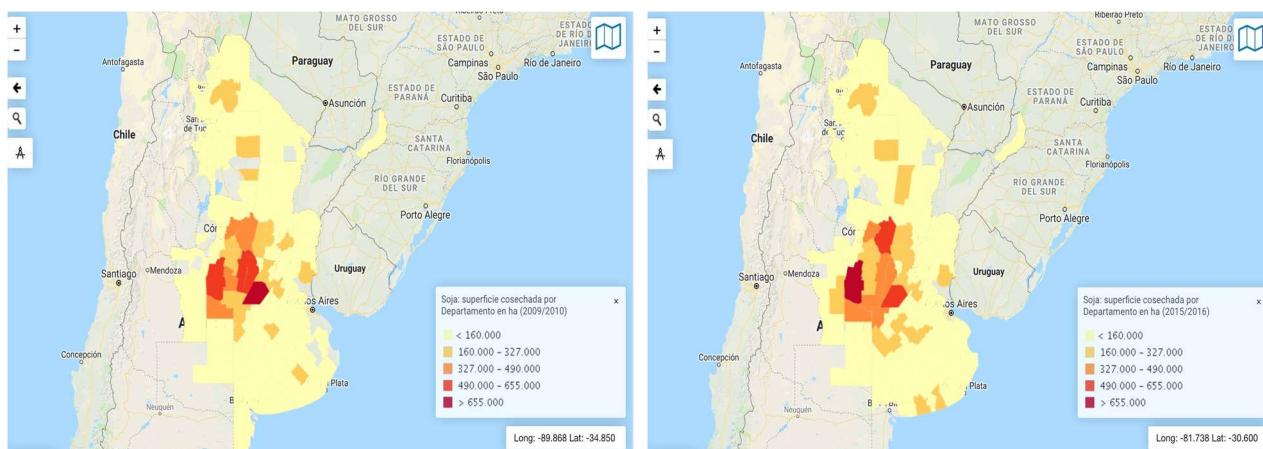


Figure 15: Surface area of native forest assigned to a category for each jurisdiction (SAyDS, 2017)

Tabla 1. Superficie de bosque nativo por categoría de conservación declarada por cada jurisdicción.

Provincia	Total	Categoría de conservación					
		Rojo (I)		Amarillo (II)		Verde (III)	
		ha	%	ha	%	ha	%
Buenos Aires	969.943	63.886	7	716.379	74	189.678	19
Catamarca	2.433.682	587.123	24	1.543.593	63	302.966	13
Chaco	4.920.000	288.038	6	3.100.387	63	1.531.575	31
Chubut	1.052.171	419.351	40	613.324	58	19.496	2
Córdoba	2.923.985	2.393.791	82	530.194	18	0	0
Corrientes	770.319	63.840	8	292.251	38	414.228	54
Entre Ríos	1.861.328	345.498	19	1.070.543	58	445.287	23
Formosa	4.387.269	409.872	9	719.772	16	3.257.625	75
Jujuy	1.208.943	213.152	18	832.334	69	163.457	13
La Pampa	3.343.376	150.619	5	2.516.128	75	676.629	20
La Rioja	1.030.821	307.401	30	684.642	66	38.778	4
Mendoza	2.034.188	82.613	4	1.800.595	89	150.980	7
Misiones	1.638.147	223.468	14	967.192	59	447.487	27
Neuquén	543.917	192.686	35	347.672	64	3.559	1
Río Negro	478.900	181.900	38	252.700	53	44.300	9
Salta	8.280.162	1.294.778	16	5.393.018	65	1.592.366	19
San Juan	1.494.533	70.206	5	1.386.429	93	37.898	2
San Luis	3.152.630	526.962	17	1.887.363	60	738.305	23
Santa Cruz	523.818	180.569	34	343.249	66	0	0
Santa Fe	1.853.791	663.520	36	1.190.271	64	0	0
Sgo. del Estero	7.108.203	972.658	14	5.836.563	82	298.982	4
Tierra del Fuego	733.907	311.707	42	401.918	55	20.282	3
Tucumán	910.512	526.638	58	219.413	24	164.461	18
Total	53.654.545	10.470.276	19	32.645.930	61	10.538.339	20

Based on data from 2016, the total surface area of category III (green) is estimated by UMSEF to be 10,538,339 ha, or 20% of the total native forest area (which is 53,654,545 ha) that is assigned to a category (SAyDS, 2017).

FINAL REMARKS

Based on this analysis of existing laws on forest protection in Brazil, Paraguay and Argentina and the way these laws are interpreted, implemented and complied with, it is clear that to achieve legally produced soy in these countries is not easy. Although the establishment of Forest Laws managed to reduce deforestation in certain regions, more recently deforestation rates have come up again. Plus under these laws still about 110 million hectares of forest in Latin America can be legally deforested in the coming decades. This report only briefly touched on the topic of weak legal enforcement, therefore to understand the full potential impact of this more research would be needed. Also if the aim is to achieve zero land use *conversion* of natural habitats, the impact of just striving for legality is larger since legal protection of other natural habitats than forests is limited in the countries. Numbers on the size of these ecosystems and potential hectares of habitat loss are not widely available.

The European feed industry currently sees legal compliance as a first step. We recognize that several efforts to achieve legal compliance e.g. in Brazil make important contributions to the protection of natural habitats. While IUCN considers to be an important element for responsible production, it is not suitable as a “first step” alone since –as legality his report shows- it still offers rooms for large scale conversion of natural habitats.

Striving for deforestation/conversion free supply chains is a clear goal that many stakeholders can and do unite behind across borders and it is a priority in face of climate change and biodiversity loss. It is also much easier to monitor “no conversion commitments” on distance through satellite imaging than monitoring legal compliance on distance.

This report underlines that legality is in any case not enough for the global and European climate challenge. A level playing field is needed by a European legal framework that allows for production and import only of commodities that have not contributed to deforestation/conversion. We would like to stress that although this report focuses on Latin-America that legality and sustainability norms are important for soy production in any geography, including Europe and the US.

Producers understandably ask for support to conserve more natural habitat than legally obliged. Therefore, in addition to setting a European Legal Framework, it remains a top priority to attain diverse forms of support at landscape level, especially for High Carbons Stocks/ High Conservation Value Areas in priority areas for biodiversity conservation.

ABBREVIATIONS

APP	Areas of Permanent Protection
CAR	Rural Environmental Registry
CRA	Forest Reserve Credits
EIA	Environmental Impact Assessment
HCV	High Conservation Value
INFONA	National Forestry Institute
MADES	Ministry of Environment and Sustainable Development
OTF	Other Forest Land
OTBN	Territorial Planning of Native Forests
PCUS	Land Use Change Plan/Permission
PC	Conservation Plan
PF	Projects under Formulation
PM	Sustainable Management Plans
PARA	Environmental Regularization Program
SAyDS	Secretariat for the Environment and Sustainable Development
SICAR	Rural Environmental Registry System
TF	Forest land
UMSEF	Forestry Evaluation System Management Unit

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