



# Deforestation in Brazil's Cerrado

An overview of its causes  
and the corresponding  
socio-environmental  
impacts

MAP THE SYSTEM 2019  
AMANI INSTITUTE  
Debora Souza Batista  
Julia Norat





## Page of Contents

Introduction	2
Problem Landscape	3
Contributing Factors	4
Solutions Landscape	5
Gaps	6
Lever of change	7

2

3

4

5

6

6

7



# The Brazilian Cerrado

The Brazilian Cerrado covers over 2 million km<sup>2</sup> or 23% of the Brazilian territory. This region encompasses a wide range of landscapes and a great floristic diversity. It is estimated that around 5% of the world's biodiversity can be found at the Cerrado. As a result, it is considered one of the richest savannahs in the world and a biodiversity hotspot. The Brazilian Cerrado also plays a very important role in water conservation, partly due to its geographical position, located in plateau regions, which contributes to water distribution throughout the country. In addition, it hosts important aquifer recharge zones and watersheds. However, land-use in the Cerrado has provoked a massive conversion of native vegetation to agricultural and urban areas, severely compromising ecosystem functioning, ecological processes and biodiversity integrity. The Brazilian Cerrado has already lost more than 50% of its native vegetation and the deforestation rates are two to three times higher when comparing to the Amazon biome.



To be considered a hotspot the region must have high levels of endemism (species found nowhere on the world) and to be under threat ●



5% of the world's biodiversity and 30% of Brazil's species



Around 23% of the Brazilian territory is occupied by the Cerrado biome



The Cerrado has already lost 50% of its natural cover and only 8,4% is protected

Land-use and land-cover (LULC) changes in the Brazilian Cerrado have generated significant socio-environmental impacts. It has been based on deforestation and conversion of forest areas to agriculture for crop production or pasturelands. Only 8,4% of the Cerrado is effectively protected under the Brazilian protected areas regime (Law nº 9.985/2000), against 28,6% in the Amazon biome. From this total (8,4%), only 3,2% is fully protected (MMA, 2018), which means that in these areas' activities such as fishing, mining, oil and gas, housing and other destructive or extractive activities are strictly forbidden. In addition, deforestation and LULC in the Cerrado highly contributes to greenhouse gas emissions in Brazil. In 2015, the Cerrado region was responsible for 21% of the LULC emissions (SEEG, 2018).

## Problems associated with land-use change in the Brazilian Cerrado can be grouped into three main categories (MMA, 2012):

### Biological environment

- a) Loss of biodiversity and ecosystem services.
- b) Landscape modification and habitat fragmentation.
- c) Spread of invasive alien species.

### Physical environment

- a) Soil erosion.
- b) River siltation.
- c) Water, soil and air pollution.
- d) Degradation of headwaters regions.

### Social and economic order

- a) Migration of rural population to urban areas.
- b) Urban sprawl and illegal occupation of public lands.
- c) Traditional communities and indigenous people migration to urban areas, basically due to the deterioration of their traditional livelihoods.
- d) Loss of traditional knowledge associated with genetic resources.
- e) Underutilization of the Cerrado biodiversity once natural areas are converted to monoculture crops, such as soy, corn and cotton.

Silvia Laine Borges Lucio, from the University of Brasília (UnB) is researching sustainable agriculture at a *quilombo* (a traditional community created by mostly slave descendants, and that preserve the slave culture and history) in Jalapão, Tocantins state, Cerrado territory. She says the *quilombolas* can tell there has been significant change in the river water levels in the last years due to aggressive agribusiness activity in the region. "The *quilombolas* say the Jalapão will end up dry. The agribusiness came in, the water came out. The Cerrado is a "forest upside down", the roots are bigger than the treetops, which allow the water to enter the soil and be carried out to all of Brazil. When you plant soy crops, for example, it does not have the same structure, so it will not help the environment the same way", she says.

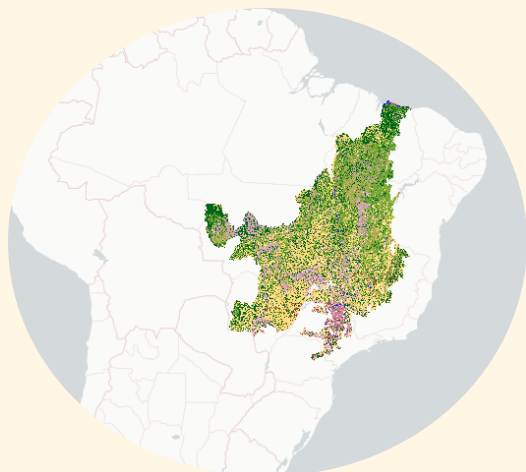


National land policies and strategies, especially in the 1970s, have driven land-use and land-cover changes in the Brazilian Cerrado. The Second National Development Plan (1974-1979) - PND II (acronym in Portuguese), elaborated during the military government, aimed at controlling the occupation of the national territory and integrating and opening up the central regions of the country. PND-II recognized agriculture's contribution to accelerate economic growth in the country and signalled Brazil's 'vocation' as a global food supplier. Under this Plan, the North and the Central-West regions were linked to promotion of agricultural production and provision of raw materials (MMA, 2015). The Program for the Development of the Cerrado - POLOCENTRO, created under the PND-II, aimed at promoting the development and modernization of agricultural activities in the Central-West region of Brazil.

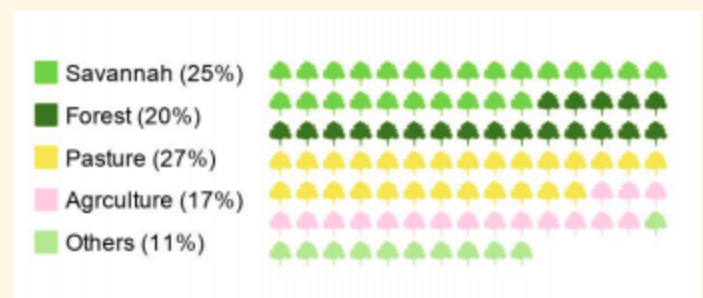
Therefore, it has fostered infrastructure investments (roads, transmission and distribution of energy, ports), improved resources allocation for agricultural research, provided technical assistance and tax incentives. It has been estimated that - during this program (POLOCENTRO) - about 2.5 million hectares of native vegetation were converted to agricultural and pasture lands. However, most of the credit provided under this program benefited large rural producers. About 50% of the financial resources went to producers with more than 2,000 hectares (Queiroz, 2009). POLOCENTRO was followed by the Japan-Brazilian Cerrado Development Program - PROCEDER, to be implemented in three phases - PRODECER I (1979), II (1985) and III (1995), respectively. The third phase is still in course. PROCEDER is a partnership between the Brazilian and Japanese governments and aimed at the production of agricultural export commodities in the Cerrado regions.

Currently, the Brazilian Cerrado plays a key role in supporting the growth of the country's economy, particularly due to agricultural production. It accounts for about 60% of the annual agricultural production in Brazil (soybean, corn, cotton and sugarcane). Brazil is now known as one of the main producers of grains, fibers, biofuels and beef. The consequences of such policies include a significant change in land use and land cover: 27% of the Brazilian Cerrado is covered by pasture lands and 17% by cropland (MapBiomass, 2017).

Thomas Ludewigs, a professor at University of Brasília (UnB), recalls an episode that occurred in Correntina city, Bahia, in 2017 in which over 12,000 people protested against a Japanese monoculture farm that was given a grant to take away up to 2/3 of the city's river water. "The citizens were fighting for their right to water access and were seen as criminals by the government", Ludewigs states.



## Land use in the Brazilian Cerrado



Source: MapBiomass, 2017



## Brazilian Government Efforts

Conservation efforts in Brazil gained ground in the 1980s. However, these efforts and investments were mainly concentrated in other biomes, such as the Amazon, Pantanal and Atlantic Forest, rather than the Brazilian Cerrado. The conversion of the native vegetation of the Cerrado was pointed out as a necessary cost to be paid in favor of the country's economic growth (Sawyer, 2008).

In 2005, the Sustainable Cerrado Program (SCP) was created, through the Federal Decree nº 5.577/2005. Its main goal is to promote the conservation, restoration, and sustainable management of the ecosystems of the Brazilian Cerrado, as well as to recognize and protect the livelihood of the traditional and indigenous communities dependent upon Cerrado's biodiversity. The Brazilian Ministry of the Environment is the institution in charge of promoting the supervision and the institutional cooperation to ensure the Program's implementation. In addition, its implementation is supported by the World Bank through the Global Environment Facility (GEF). Under the Sustainable Cerrado Program, the Sustainable Cerrado Initiative was created to meet some of the objectives set by SCP. This Initiative led the mapping of land use and natural coverage of the Cerrado, which is crucial for promoting land use management and deforestation control.

In 2010, Brazilian federal government started working on the elaboration of sectoral plans to ensure the accomplishment of its voluntary national commitments presented under the United Nations Framework Convention on Climate Change (UNFCCC), during the 15th Conference of the Parties (COP 15). Therefore, the Action Plan for Deforestation Prevention and Control of Deforestation and Burning in the Cerrado (PPCerrado) was launched. It is linked to the Brazilian Policy on Climate Change and aims at contributing to the reduction of at least 40% of the Cerrado's deforestation rates by 2020. Considering the fact that the main source of GHG emissions in Brazil comes from deforestation and burning of natural vegetation, it is imperative that the PPCerrado is effectively implemented.

Within this context, it is important to highlight the Forest Investment Program (FIP) - supported by the Climate Investment Funds (CIF) - which aims to promote sustainable land use and forest management in the Brazilian Cerrado. This Program encompasses two thematic areas: (i) management and use of already anthropized areas and (ii) generation and management of forest information. Other institutional strategies to protect the Cerrado biome include the creation of protected areas and the maintenance of the Cerrado's Biosphere Reserve.

The Chico Mendes Institute for Biodiversity Conservation (ICMBio) is a federal agency linked to the Brazilian Ministry of the Environment. It was created in 2007 to manage, protect and monitor the Brazilian protected areas. ICMBio is the federal agency responsible for enforcing the law for preservation and conservation, as well as regulating the economic use of the natural resources in these areas. The Institute currently manages 62 Conservation Units (UC in Portuguese) at the Cerrado, which represents 8,4% of its full territory.



## Civil Society Initiatives

Civil society organizations and initiatives also play an important role in bringing effective solutions for the deforestation issue at the Cerrado. In 1992, during the United Nations Conference on Environment and Development (Earth Summit) that was held in Rio de Janeiro, the participant civil society organizations signed the Cerrados Treaty, a 12-action point plan to protect the Brazilian Cerrado. From that, the Rede do Cerrado (Cerrado Network) was created and to this day, over 50 organizations act together to conserve the biome and defend the traditional communities that rely on the Cerrado.

The Society, Population and Nature Institute (ISPN in the Portuguese acronym), is an independent research and documentation center that aims to widen scientific and technological knowledge to contribute to a more equal and just sustainable development and works with deforestation issues at the Cerrado.

In 2013, the Critical Ecosystem Partnership Fund (CEPF) chose the Brazilian Cerrado as a priority hotspot and allocated US\$8 million for conservation projects until 2021. The Fund currently supports 40 projects to help protect the Brazilian Cerrado territory.

In the 1990's, the World Wildlife Fund (WWF) set a strategy to decrease negative impact in production at the Brazilian Cerrado. In 2010, the organization created the Sertões Project, which aims to improve the production of food and energy while keeping the environmental, cultural and biological integrity of the Cerrado biome.

The Rede de Sementes do Cerrado (Cerrado's Seeds Network), created in 2004, works to articulate the collection and market for seeds of native species from the Cerrado. Gustavo Barros, who works at the organization and researches soil restoration, states the Cerrado is the price to pay for the Brazilian agribusiness commercial balance. "If you preserve the Amazon forest, for example, but don't change the production system, you will have to take the raw material from somewhere else. This place has been the Cerrado for over 50 years. (...) Soil restoration is incredible difficult and expensive, the work the [Cerrado's Seeds] Network does is the first step towards that. But without public policies that stop deforestation at Cerrado, the consequences for the environment and traditional communities will be soon and devastating". Barros says.





## ◦ Lack of political will to implement policies to avoid and combat deforestation in the Cerrado biome

Brazil has long a tradition of non-compliance with environmental regulations. For instance, the Brazilian Forest Code, an important law for regulating land use within both private and public properties, in its last review (2012), forgave rural producers debt related to illegal deforestation. It has decreased the total area to be restored from nearly 50 million hectares to 21 million hectares (Soares-Filho et al, 2014). Even after the Forest Code review in 2012, the Brazilian Cerrado remains with a significant environmental debt, accounting for 5 million hectares that are in need of restoration.

The National Plan for the Recovery of Native Vegetation, launched in 2017, committed with the restoration of at least 12 million hectares until 2030. This commitment is aligned with the Brazilian Nationally Determined Contribution, under the Paris Agreement. However, to date, there is no official data on the number of hectares that have been restored.

## ◦ Lack of more stricter policies or agreements to prevent deforestation in the Cerrado biome

A successful example of international agreement to combat deforestation was the Brazil's Soy Moratorium. Major soybeans traders agreed on not to buy soy cultivated on lands that have been illegally deforested in the Brazilian Amazon. It has led to an increase in production and land productivity without opening up new areas. Considering that about 63% of the soy produced in the Cerrado is exported, it is imperative that related international agreements are adopted to stop illegal deforestation in the Brazilian Cerrado.

## ◦ Poor knowledge on the Cerrado's sociobiodiversity

The Brazilian Cerrado has a rich biodiversity, which includes more than 11.000 vascular plant species. However, many of these species nutritional, medicinal or industrial potential are poorly studied. In addition, a wide variety of traditional communities are dependant upon the existing natural resources within this biome. These communities are holders of traditional knowledge associated with genetic resources, but they still don't have the necessary recognition of their important role in contributing to biodiversity conservation.

- Land tenure issues and conflicting or contradictory policies

The Brazilian Land Statute requires that all properties keep satisfactory levels of productivity, under penalty of expropriation for land reform. In order to prove productivity within the property, farmers are likely to clear forested areas to protect their land rights. In addition, unclear land tenure can lead to deforestation. Those who want to claim property rights have a higher chance of being successful if they demonstrate that the area is being productively used. Thus, deforestation is used as a tool to prove that the land is productive.

- Lack of an integrated spatial planning

Integrated spatial planning is a powerful tool for integrating conservation efforts into development planning. As a development strategy, it analyzes the potentialities, main needs and issues of each area, setting areas that should be protected and promoting land use zoning for infrastructure, agriculture, residential, industry and others spatial aptitudes. However, there is no integrated spatial planning for the Cerrado biome, which leads to a disorderly occupation of the territory and an increase in deforestation rates.



- Strengthen institutional capacity at federal and local levels for effective environmental enforcement and compliance. It includes (i) providing sufficient human and financial resources in order to ensure institutions are operating efficiently; (ii) timely investigating environmental contraventions, undertaking effective responses and sanctioning those who are against the law; (iii) creating partnerships with civil society organisations to increase chances of timely accomplishing Brazil's commitments.
- Review and create new policies to prevent deforestation in the Cerrado. Lobby and advocacy initiatives can boost it.
- International commodities traders agree on not to buy products from illegally deforested areas.
- Review of conflicting or contradictory policies and provide a clear definition on the requirements for a property to be considered productive. This definition should mention that native vegetation protection is also a means of keeping the property productive, once it is providing ecosystem services for the society as a whole.
- Promote an integrated spatial planning for the Cerrado biome, indicating areas that should be strictly preserved and areas in which industry, agriculture, infrastructure and residential activities can take place.
- Conduct research to assess the fully potential of the Cerrado's biodiversity.
- Recognize the value of Cerrado's sociobiodiversity, including the traditional knowledge.
- Protect traditional people's livelihoods.
- Environmental education and awareness.