

BRAZILIAN CERRADO

The Brazilian Cerrado, which covers over 200Mha, is the world's most biodiverse savannah. With more than 11,000 native plant species, as well as large sums of mammal, fish, bird, amphibian and reptile species, it is recognized as a global biodiversity hotspot^[1, 2]. The Cerrado plays an essential role in supporting Brazil's water cycle as the source of eight of the country's 12 river basins^[3, 4]. Pasture and large-scale agriculture have expanded rapidly across the region over the past four decades, rapidly transforming the Cerrado^[5]. Ongoing clearing may reduce precipitation and increase local temperatures, putting remaining vegetation, livelihoods and continued agricultural production in this region at risk^[6].

Drivers of deforestation

Cattle ranching 	The majority of cleared areas become pasture, but stocking rates on most pastures are low ^[8] . Expansion of pasture is also connected with land speculation and future transition to soy and other high-priced crops.
Large-scale agriculture 	Most soy produced in the Cerrado is used for animal feed, supplying both domestic and international markets ^[9] . Unlike in the cattle sector, productivity in the soy sector is generally high ^[10] . Cotton, maize, coffee and silviculture are other important crops.
Fires 	Fire is traditionally used in the Cerrado as a land management strategy, putting farmers at odds with environmental agencies which seek to limit fires around protected areas ^[11] .
Mining operations 	Increasingly a risk as measures that expand the area available to mining and that reduce the requirements for environmental assessments of new mines make their way through Brazil's legislative bodies ^[12, 13] .
Charcoal production 	For use in the steel industry, which has large mills in Minas Gerais ^[14] . Previously solely produced from native vegetation, now wood from eucalyptus plantations is also used ^[15] .

- Primary cause of forest loss and/or severe degradation
- Secondary cause of forest loss and/or severe degradation
- Less important cause of forest loss and/or severe degradation

Underlying causes

Underlying causes include weak public protection for natural vegetation, especially compared to the Amazon. Only 7.5% of the Cerrado falls in public protected areas^[16], and private landowners are only required to maintain 20-35% of their property under native vegetation under Brazil's Forest Code. The proximity of the Cerrado to international markets, including Europe, and to large national markets along the country's coast increases incentives to expand agriculture and ranching, and the importance of the region for production of steel and hydroelectric power. Land speculation is a significant additional cause of conversion, linked to the opportunity for a future transition to agriculture.

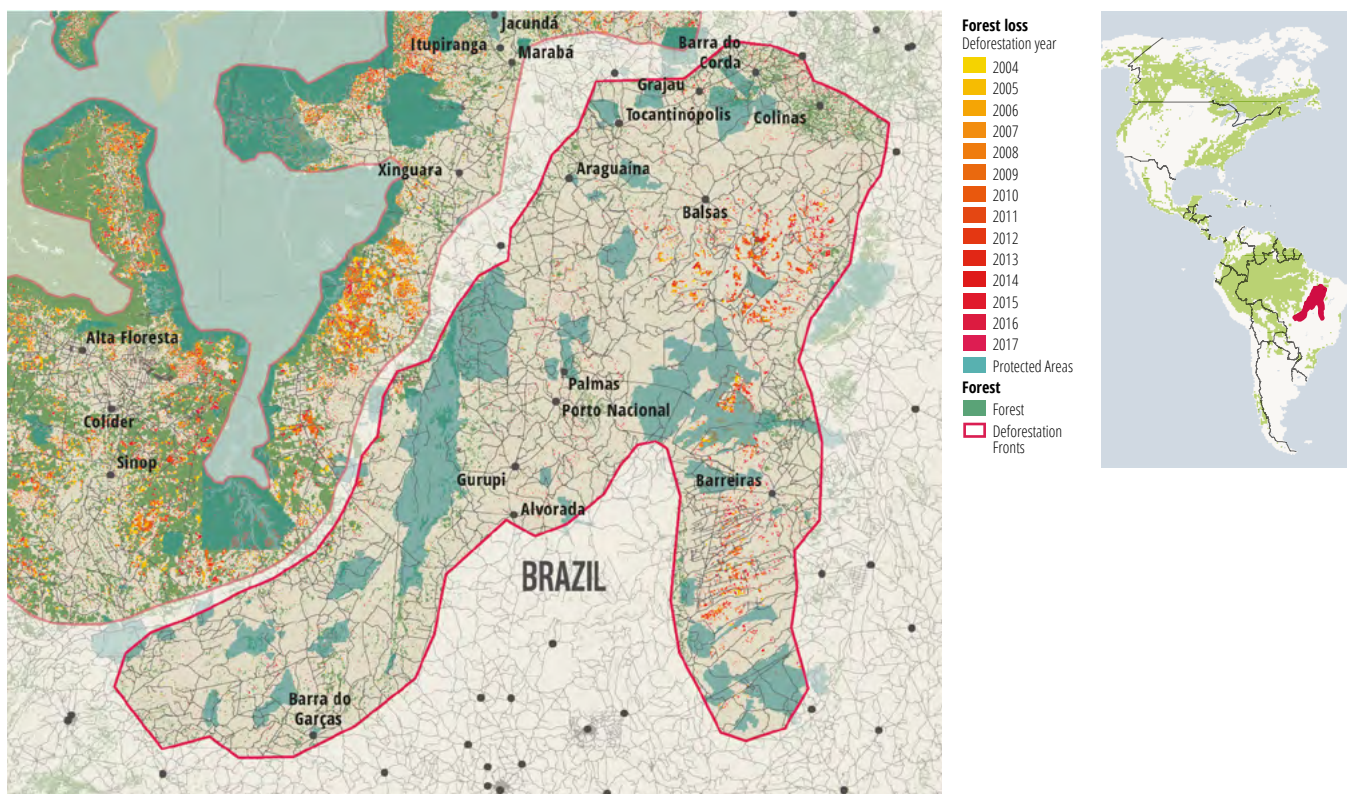
Countries, region	Brazil, Cerrado
Forest type	Dry forests, gallery forests, woody savannah, grasslands
Total area	71.7Mha
Forest area in 2018	5.6Mha of forests (7.8% of total deforestation front area) when looking only at forest estimates based on a global assessment; 46.9Mha (65.0% of total deforestation front area) when looking at all natural ecosystems based on INPE ^[7] *
Forest loss 2004-2017	3.0Mha of forests (32.8% of forest area in 2000) when looking only at estimates from Terra-i; 9.6Mha (16.9% of all natural ecosystems area in 2000) based on INPE ^[7] (*)
Location of deforestation	Throughout, but mostly concentrated in Matopiba (northern region) and Mato Grosso state
Total forest core area in 2018	0.4Mha (7.7% of forests in 2018) when looking only at forest estimates based on a global assessment
Fragmented forests 2000-2018	0.3M ha (3.5% of forest area in 2000) when looking only at forest estimates based on a global assessment
Accumulated burned area, 2002-2019	3.7Mha (40.5% of forest area in 2000) when looking only at forest estimates based on a global assessment
Deforestation trend	Decreased between the early 2000s and the late 2000s but has recently ticked up
Future trends	Trends to persistent deforestation

* Note: Estimates from national sources are considered here instead of Terra-I estimates.

Key responses

Protected areas	Protected areas cover about 210,000 ha; the majority of these are "sustainable use" protected areas, in which certain extractive activities are permitted ^[17] .
Recognition of IPLCs	Indigenous reserves cover nearly 100,000 ha of the Cerrado (about 5%) ^[17] .
Land-use zoning	The Forest Code specifies a certain portion of each property must be set aside for conservation; the national environmental registry allows landowners to plan these set-asides and declare them to environmental agencies ^[18, 19] .
Deforestation monitoring	Official annual monitoring of vegetation loss was recently launched ^[20] , allowing for the assessment of overall clearing trends and deforestation trends on individual properties when overlaid on the national environmental registry.
Traceability of supply	Some soy companies are moving toward mapping their suppliers and assessing their land use ^[21] . In late 2017, more than 70 companies (soy and meat producers and traders) signed the Cerrado Manifesto to prevent further destruction of natural vegetation in the Cerrado ^[22] .
REDD+ projects	National REDD+ strategy could be integrated into public Cerrado protection policies by creating incentives for retaining and restoring Cerrado vegetation ^[8] .

- Deployment at wider scale
- Actively used and expanding
- Project-specific, experimental



Main outcomes

The Cerrado has long been Brazil's environmental "sacrifice zone"^[23], due to the relatively weak protections it is afforded under the Forest Code and the protected areas system. As a result, most deforestation and conversion in the Cerrado is permissible under law^[9]. Private sector initiatives to monitor soybean and cattle producers have not materialized^[24].

Recommended future actions

- Expand protected areas to at least 17% of the minimum called for under the Convention on Biological Diversity (CBD)^[25].
- Reduce deforestation on private properties with market initiatives for sustainable production and through payments for environmental services (PES)^[25, 26].
- Expand technical assistance to incentivize productivity in the cattle sector^[27].

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