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## **Brazil's cerrado cannot be a sacrifice zone for the Amazon: Financial assistance and stricter laws are needed**

Cássio Cardoso Pereira, Stephannie Fernandes, Walisson Kenedy Siqueira, Daniel Negreiros, Geraldo Wilson Fernandes and Philip Martin Fearnside

Cássio Cardoso Pereira (cassiocardosopereira@gmail.com), Walisson Kenedy Siqueira, Daniel Negreiros, and Geraldo Wilson Fernandes are affiliated with the Knowledge Center for Biodiversity, in Belo Horizonte, Minas Gerais, Brazil. Stephannie Fernandes is affiliated with the Department of Global and Sociocultural Studies at Florida International University, in Miami, Florida, in the United States. Philip Martin Fearnside is affiliated with the National Institute for Research in Amazonia, in Manaus, Amazonas, Brazil.

In 1975, Robert Goodland and Howard Irwin suggested that “there is mounting pressure to exploit Amazonia; much of this pressure could and should be diverted to the contiguous Cerrado region” (Goodland and Irwin 1975, p. 37; see also Goodland and Irwin 1977). The idea was the Cerrado (central Brazilian savanna) would be what is known in Brazil as a *boi de piranha*, or the myth that one can throw a cow into a stream to be devoured by piranhas in order to allow one’s herd of cattle to safely ford the stream some distance away. The subsequent rampant devastation of the biodiverse Cerrado would lead Goodland to regret this suggestion.

Brazil’s 2023–2026 presidential administration of Luiz Inácio Lula da Silva has reduced deforestation rates in the Amazon after the disastrous environmental policies of Lula’s predecessor, Jair Bolsonaro, but clearing has increased in the neighboring Cerrado. The Brazilian Amazon, with an area two times larger than the Cerrado, lost 9064 square kilometers (km<sup>2</sup>) of forest in 2023, representing a 23% drop compared with the previous year, whereas the Cerrado had an increase of 3%, with annual clearing reaching an incredible 11,011 km<sup>2</sup> in 2023 (INPE 2024). The projections for 2024 indicate even greater loss: 12,000 km<sup>2</sup>. This frightening destruction in the Cerrado is due to historically lax environmental legislation, government policies stimulating agribusiness, and a lack of international support for environmental controls in the Cerrado. Only 8% of the original Cerrado area is protected in conservation units (Pereira and Fernandes 2022), and Brazil’s Forest Code requires a smaller percentage of private land to be protected in Cerrado (35% in areas adjacent to the Amazon and 20% in the rest of the Cerrado) than in the Amazon Forest, where 80% must be protected (Metzger et al. 2019). Soybeans and other products from areas being cleared in the Cerrado should not be accepted by countries that import these commodities.

Cerrado areas that have already been cleared also have tremendous impacts when pastureland is converted to soybeans. This rapidly advancing transformation occurs by ranchers selling their land to soy planters, after which the ranchers move to Amazonia and invest the proceeds in cheap forest land where they deforest much larger areas than the land they sold (Fearnside 2017). Each hectare of pasture converted to soy therefore has a greater impact than directly deforesting a hectare of Amazon Forest for soybeans, but the soy produced escapes import restrictions such as those planned in Europe.

The pressure on the Cerrado is, in part, mirroring the worldwide lack of cultural and political interest in conserving non forest ecosystems, such as old growth grasslands and savannas (Veldman et al. 2015). This disinterest threatens the Cerrado and other ecologically valuable non-forest ecosystems, such as the Carpentaria tropical savanna, the African miombo woodlands, the California chaparral and woodlands, the Succulent Karoo, the Southwest Australian Floristic Region, and the Cape Floristic Province (Myers et al. 2000). In addition to replacement of non-forest ecosystems by cropland and planted pasture, planted trees are a major threat in Africa, and in Brazil the “restoration” with planted trees in natural Cerrado areas that have up to 400 mostly herbaceous plant species per hectare in Chapada dos Veadeiros National Park is emblematic (Parr et al. 2024).

The ecosystem services of the Cerrado have immense economic importance, including its function as a giant water tower for South America, storing and regulating freshwater for the Amazon basin and beyond (Pereira and Fernandes 2022). Its vast underground carbon stocks help mitigate climate change (Veldman et al. 2015, Pereira et al. 2024). The Cerrado’s vegetation plays a vital role in regulating local climate, preventing soil erosion, and supporting scenic landscapes while attracting tourism. Critically, it sustains plants through pollination and fertilization. The economic value of these services is estimated in the billions of dollars annually.

We argue that the lack of international financial assistance for the Cerrado is unacceptable and that creation of a fund to preserve this ecosystem is urgent. Brazil must also act, as the country is shooting itself in the foot by neglecting this ecosystem. The loss of the Cerrado will have repercussions on the stability of the Amazon, on neighboring countries, and on agribusiness, which depends on Cerrado water. Failure to act now will also destabilize other ecosystems through the maintenance of water, energy, and food resources for the population and will disrupt global climate patterns, as well as harm regional economies. By reformulating laws to ensure stricter environmental protection and securing financial contributions, biodiversity conservation, climate change mitigation and maintenance of water resources can be achieved; see Figure 1.



**Figure 1.** Stricter laws and financial incentives are needed to keep the Cerrado standing. Photograph : Cássio Cardoso Pereira.

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