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SUMMARY FOR DECISION MAKERS

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Economic and environmental impacts of PPCerrado policy using the Brazilian Land Use Model (BLUM)

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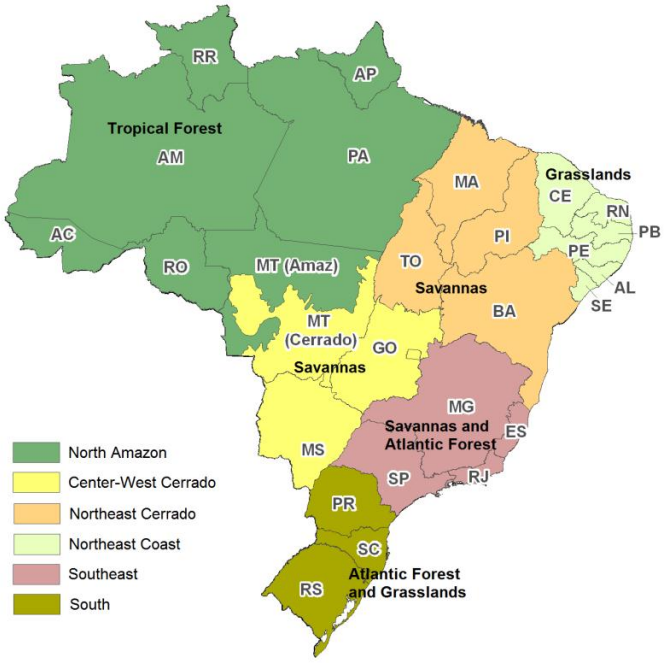


The main objective of the Brazilian Climate Change National Policy (Law n. 12.187/2009), regulated by the Decree 7.390 launched in December of 2010, is to reduce Green House Gas (GHG) emissions, mainly targeting deforestation rates in the Amazon and Cerrado biomes. Regarding the Cerrado biome, the Brazilian Environmental Ministry launched the PPCerrado as an action plan to prevent and control deforestation.

The most relevant action presented in the PPCerrado is the creation of new protected areas within the Cerrado biome. The potential protected areas were demarcated according to their importance in terms of biodiversity: 18.5 million hectares (ha) with high priority for conservation; 31.2 million ha with very high and 43.2 million ha with extremely high priority for conservation. The Cerrado biome is the most important agricultural frontier in Brazil, and the creation of publicly protected areas means a reduction in the amount of land available and suitable for agricultural expansion. For this reason, the present study aims to evaluate the environmental and socio-economic impacts of creating new protected areas in the Brazilian Cerrado biome.

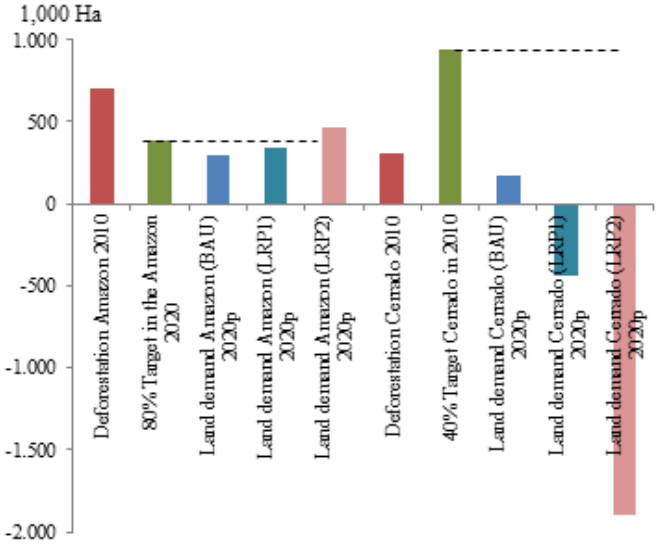
To do this, we simulated three scenarios: considering non-creation of protected areas (BAU or business as usual scenario); considering only those areas with extremely high priority for conservation (LRP1 scenario); and considering all areas with priority for conservation according to the PPCerrado policy (LRP2 scenario).

The simulation showed that the creation of protected areas in the Cerrado biome leads to a re-allocation of both crop (corn, soybeans, cotton, rice, dry beans and sugarcane) and livestock production in 2020, decreasing in the Cerrado

biome and increasing in the Atlantic Forest (South), Amazon biome (North Amazon) and Caatinga biome (Northeast Coast). Additionally, the proposed policy has negative socio-economic impacts, increasing commodity prices and decreasing the production of all products simulated. On the other hand, land is used with higher technologies, especially regarding livestock production. Intensification of pastureland is expected to some degree, which causes a less negative impact on crop production due to the substitution of pasture by cropland.

Figure 1 presents the results when considering additional land for agricultural expansion until 2020 for the three scenarios, as well as the deforestation target in 2020 (according to the Decree 7.390) and the observed deforestation rate in 2010 for both the Legal Amazon and Cerrado biome.

Figure 1. Deforestation rate in 2010, annualized land demand and deforestation target in 2020.



The alternative scenarios (LRP1 and LRP2) were simulated reducing total land available for agriculture in the regions located in the Cerrado biome. In the BAU scenario, there are 43.5 million hectares available and suitable for agriculture, while in the LRP1 and LRP2 scenarios this area decreased to 27.2 and 3.3 million hectares, respectively.

In the BAU and LRP1 scenarios, both the Legal Amazon and the Cerrado biome will comply with the deforestation target for 2020. However, the LRP1 scenario will require re-allocation of the deforestation to the Legal Amazon, in addition to a much higher level of pasture intensification mainly in the Cerrado and Atlantic Forest biomes, compared to the BAU scenario. Land demand in the Legal Amazon in 2020 for the LRP1 scenario will be 524 thousand hectares more than in the BAU one. However, in LRP1, the pasture area needs to decrease 8.3 million hectares in all biomes, with the exception of the Legal Amazon, where pasture increases 393 thousand hectares.

The LRP2 scenario showed much more re-allocation to the Amazon when total agricultural land was reduced in the Cerrado biome. First, the deforestation target will not be complied with in the Legal Amazon, increasing the deforestation rate in 18%, compared to the BAU scenario. Secondly, pasture area must be reduced in 22.6 million hectares in all biomes, except in the Legal Amazon, where it will be increased by 1.3 million hectares, comparing the LRP2 and BAU scenarios in 2020.

There are three key analyses to be considered for policymaking. The first is the leakage effect over more carbon rich biomes such as the Legal Amazon, reallocating agricultural production as a result of creating protected areas in the Cerrado. The second is the high investments for beef production intensification, which will only happen through agricultural subsidies and policy incentives. Finally, in addition to the environmental impacts of the PPCerrado policy, socio-economic impacts might also be taken into account. Both alternative scenarios resulted in production reduction in all commodities analyzed, along with higher prices compared to the BAU scenario. Macroeconomic impact policies, such as inflation, also need to be considered by policymakers.

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