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Policies undermine Brazil's GHG goals

IN A BOLD move, Brazil has submitted to the 21st conference of the parties (COP21) in Paris an intended nationally determined contribution (INDC) to reduce by 2030 its greenhouse gas (GHG) emissions by 43% in relation to 2005. This target goes well beyond other developing countries and is above the pledge of the United States and not far from the proposal from the European Union, despite their greater historical responsibility. However, current policies and actions announced by Brazil are unlikely to be enough to meet the proposed GHG cuts from land-use change.

In order to meet its INDC, Brazil seems to assume that the end of illegal deforestation in the Amazon and the implementation of the market of environmental reserve quotas (CRA) are going to be enough to drastically reduce the country's total emissions from the land sector. But a close analysis of these policies shows otherwise.

Since 2012, farmers who do not have the required amount of Legal Reserve (mandatory private conservation area) can compensate by purchasing CRA offsets—titles to portions of forest located on properties that have more than the required Legal Reserve. In theory, this should limit the total deforestation, but there is a loophole. Depending on pending regulatory choices, the offset market could be flooded with 14 million hectares (Mha) of low-cost titles from private lands inside already protected areas and 38 Mha from Legal Reserves of small properties that are already protected by the Forest Code (1), meaning that no additional forests are saved. This allows farmers with forest debt to purchase cheap offsets while others can legally clear their own land.

Increased forest governance in the Amazon led to a substantial reduction in deforestation (2, 3). However, this biome still has 12 Mha of native forests that could be legally deforested (3) and 39 Mha of undesignated land (4) open for land grabbing and new settlement projects. The situation is particularly worrisome in the Cerrado biome—the most coveted region for agribusiness expansion—where 80% of the private property can be legally deforested. Deforestation in the Cerrado

currently contributes to 26% of emissions from land-use change and is expected to increase because the biome contains 40 Mha (of which 11 Mha are highly suitable for soybeans) that could be legally deforested (3, 5). Therefore, enforcement of the Forest Code unaccompanied by additional conservation policies, such as payment for ecosystem services and protected area expansion, is unlikely to curb emissions from deforestation to the levels promised by Brazil's INDC.

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TECHNICAL COMMENT ABSTRACTS

Comment on “Crystal structures of translocator protein (TSPO) and mutant mimic of a human polymorphism”

Jimin Wang

Li *et al.* (Reports, 30 January, p. 555) reported on a crystal structure for a translocator protein (TSPO) from *Rhodobacter sphaeroides* in which some of the electron density is modeled as a porphyrin. The analysis of the x-ray data discussed here suggests that this assignment is incorrect.

Full text at <http://dx.doi.org/10.1126/science.aab1432>

Response to Comment on “Crystal structures of translocator protein (TSPO) and mutant mimic of a human polymorphism”

Fei Li, Jian Liu, Yi Zheng, R. Michael Garavito, Shelagh Ferguson-Miller

Wang comments that the diffraction data for the structure of the A139T mutant of translocator protein TSPO from *Rhodobacter sphaeroides* should be used to 1.65 instead of 1.8 angstroms and that the density interpreted as porphyrin and monoolein is better fitted as polyethylene glycol. Although different practices of data processing exist, in this case they do not substantially influence the final map. Additional data are presented supporting the fit of a porphyrin and monooleins.

Full text at <http://dx.doi.org/10.1126/science.aab2595>