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Letters to the Editor
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Carbon Offsets and Amazonian Deforestation

Dear Editor,

Frumhoff and Stanley raise several relevant issues. Clearly, the multitude of issues surrounding carbon offsets under the Kyoto Protocol (1) could not be explained fully in our Policy Forum (2), which focused on the future environmental impacts of planned Amazonian infrastructure. How and if avoided deforestation will be included in the Clean Development Mechanism (CDM), defined in Article 12 of the Kyoto Protocol, is still under negotiation, with major decisions expected in July 2001. The way in which baseline deforestation rates would be defined remains an open question, with important implications both for the amount of credit obtainable and for the potential for perverse incentives (3). Requirements regarding certainty (4), permanence (the time over which carbon would be kept out of the atmosphere) (5), and various forms of leakage (effects of the project, such as displaced population or deforestation activity, outside of the project's physical or conceptual boundaries, often leading to negation of the intended mitigation results) (6) are key considerations.

In the Brazilian context, the suggestion by Frumhoff and Stanley that only historical deforestation rates should be allowed as a baseline implies that credit should be given to protect forest remnants in areas of Brazil that had already experienced heavy deforestation by 1990, whereas avoiding the opening of new frontiers should not gain credit. As our paper illustrates, however, it is vital to find ways to credit avoided deforestation in new frontiers as well. What makes *Avança Brasil* so damaging—and such a potentially important source of additional carbon emissions—is precisely that it would open vast tracts of virgin forest to deforestation, logging, and fire. The likely cost of failing to give credit for avoiding these impacts would be the transformation of our computer-generated scenarios into reality. Clearly the stakes are high.

Notably, the CDM is not the only means by which Brazil might obtain credit for avoiding deforestation. Were Brazil to join Annex B of the Protocol, the country's massive carbon emissions from deforestation in 1990 (7) guarantee that such emissions would be included in Brazil's assigned amount (under Article 3.7 of the Protocol). Thus, any reduction in future emissions below 1990 levels could be used for emissions trading (8, 9). Unlike Article 12, however, the eligibility of forests for these credits does not require further negotiation. By increasing deforestation, *Avança Brasil* would create a substantial opportunity cost by rendering such reductions inviable.

We disagree with Frumhoff and Stanley's suggestion that pointing out the very high potential financial and carbon value of avoided deforestation might play into the hands of private organizations and governments currently intent on barring credit for avoided deforestation under the CDM (e.g. 10). While we sympathize with the view of these organizations that the U.S. should be strongly pressured to reduce its burgeoning emissions from fossil fuels, we believe that carbon credits offer a potentially critical tool to help protect tropical forests—the rapid destruction of which is a massive source of emissions. Any realistic strategy to reduce global carbon emissions must incorporate viable and aggressive measures to slow tropical deforestation in addition to reductions in fossil fuel use.

We strongly believe that the carbon benefits of reducing deforestation should be included among projects eligible for crediting under the CDM. This is a widespread view among those concerned with environmental problems in Brazil (11). The Union of Concerned Scientists (UCS) has played a valuable role in pressing for recognition of the carbon value of forests and for strong controls under the CDM to assure that carbon benefits are real and that perverse incentives are avoided. We are both signatories of the UCS "Scientists' Statement" supporting these controls (12).

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References and Notes

1. *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, Doc. FCCC/CP/1997/7/Add1 (<http://www.unfccc.de>)(1997).
2. W. F. Laurance *et al.* *Science* **291**, 438 (2001).
3. R. T. Watson *et al.*, Eds., *IPCC Special Report on Land Use, Land-Use Change, and Forestry* (Cambridge Univ. Press, Cambridge, U.K., 2000).
4. P. M. Fearnside, *Biomass and Bioenergy* **18**, 457 (2000).
5. P. M. Fearnside, D. A. Lashof, P. Moura-Costa, *Mitig. Adapt. Strat. Global Change* **5**, 239 (2000).
6. P. M. Fearnside, *Biomass and Bioenergy* **16**, 171 (1999).

7. P. M. Fearnside, in *Global Climate Change and Tropical Ecosystems*, R. Lal, J. M. Kimble, B. A. Stewart, Eds. (CRC Press, Boca Raton, Florida, 2000), pp. 231-249.
8. P. M. Fearnside, in *Global Climate Change: Science, Policy, and Mitigation/Adaptation Strategies*. J. D. Kinsman, C. V. Mathai, M. Baer, E. Holt, M. Trexler, Eds. (Air & Waste Mgmt. Assoc., Sewickley, Penn., 1999), pp. 634-646.
9. P. M. Fearnside, *Ciência Hoje* **26(155)**, 41 (1999).
10. Greenpeace International, *Should Forests and Other Land-Use Change Activities be in the CDM?* (Greenpeace International, Amsterdam, Netherlands, 2000).
11. “Manifestação da sociedade civil brasileira sobre as relações entre florestas e mudanças climáticas e as expectativas para a COP-6, Belém, 24 de outubro de 2000.” <http://www.ipam.org.br/polamb/manbelem.htm> (2000).
12. “Scientists Call for Action on Forest Conservation in the Kyoto Protocol's Clean Development Mechanism.” <http://www.ucsusa.org/index.html> (2000).