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Pricing carbon insufficient to save tropical forests from deforestation

Putting a price on carbon emissions from deforestation is unlikely to prevent tropical forests being cleared for palm oil production, according to a recent study. Additional measures should be included in climate policies to protect forests from increasing global demands, such as biofuels.

Including carbon emissions from deforestation in climate negotiations is seen as a way to reduce emissions and preserve forests in the tropics. At the same time, demand for land to grow biofuels is likely to increase as the shift from the use of fossil fuels to renewable sources of energy continues.

Palm oil plantations, which are used for bioenergy production, have been a major force behind deforestation in Southeast Asia. In order to meet future demand for bioenergy, it is likely that oil palm plantations will expand with the greatest potential for expansion in the Amazon and Congo river basins. Whether incentives to preserve forests will be sufficient to counterbalance the demand for land for bioenergy production remains a key question.

In this study, the researchers modelled the conditions under which a landowner would decide whether to clear forest and establish a palm oil plantation, or let the forest stand. If the landowner stands to gain after paying for emissions associated with clearing the forest (through cap-and-trade or a carbon tax) and for the costs of bioenergy production, then the landowner will choose to clear the forest.

In contrast to previous studies that suggest deforestation in the tropics can be reduced at very low carbon prices, this study suggests that in almost all cases it is more profitable to clear forests for palm oil production, even when the carbon price on emissions from deforestation is taken into account.

The results are not due to the carbon price being too low. Landowners anticipate gains in the future because they expect carbon prices to rise over time. This means that landowners can pay a relatively low price for carbon emissions from deforestation now and profit from a greater willingness to pay for bioenergy in the future as climate policy is strengthened and carbon and energy prices rise. As a consequence, the value of land will also rise. A higher carbon price will not only increase the cost of forest clearing but also the revenues from doing so.

Raising carbon prices alone is therefore not sufficient to prevent deforestation, unless they reach the level that makes alternative renewable energy sources for transport competitive. The researchers suggest that technological advances and choices in the transport sector will have more impact on the profitability of deforestation for palm oil plantations. If alternative sustainable energy sources for transport, such as solar-based hydrogen power, became cheaper, and at a scale that allows it to set the price for transport, the willingness to pay for palm oil would be reduced. Nevertheless, it is anticipated that there will still be a demand for liquid fuels for long-range transport and aviation, which are hard to electrify.

Other protection measures will be needed to preserve forests, in addition to a price on carbon emissions from deforestation. For example, additional payments could be made for ecosystem services other than carbon storage.

Source: Persson, U.M. and Azar, C. (2010). Preserving the World's Tropical Forests - A Price on Carbon May Not Do. *Environmental Science and Technology*. 44:210-215.

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