

Future Emissions from Tropical Deforestation under Carbon Prices or Restrictive Policies

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Abstract

Reducing tropical deforestation is considered to be a large and low-cost potential strategy for mitigating climate change. Yet previous efforts to forecast the impact of forest conservation policies were hampered by crude available data on historical forest loss. Here we project tropical deforestation from 2016-2050 using 18 million satellite-based observations of annual forest loss, information on topography, accessibility, protected status, and potential agricultural revenue, and a robust observed inverted-U-shaped trajectory of forest cover loss with respect to remaining forest cover. We project that without new forest conservation policies 289 million hectares of tropical forest will be cleared from 2016-2050, releasing 169 GtCO₂ to the atmosphere. Applying a carbon price of \$20/tCO₂ (\$50/tCO₂) in tropical countries would avoid 41 GtCO₂ (77 GtCO₂) from 2016-2050. By comparison, applying restrictive anti-deforestation policies as effective as those in the Brazilian Amazon post-2004 would avoid 58 GtCO₂ from 2016-2050.