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Trading Forests: Quantifying the Contribution of Global Commodity Markets to Tropical Deforestation and Associated Carbon Emissions

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With the recognition that the drivers of tropical deforestation have become increasingly commercialized and globalized, the focus in the forest conservation policy debate is broadening to also include demand-side measures. There is emerging evidence that demand-side interventions can contribute to reducing deforestation in the tropics, as shown for instance by the Brazilian Soy Moratorium or regulations targeting trade in illegal tropical timber. However, to exploit the full potential of demand-side interventions we need a better understanding of how and where global supply-chains link consumers of forest-risk commodities across the world to forest destruction in tropical countries.

To that end, here we map the link between deforestation for four commodities (beef, soybeans, palm oil, and wood products) in seven case countries (Argentina, Bolivia, Brazil, Paraguay, Indonesia, Malaysia, and Papua New Guinea) to consumer countries across the world, through international trade. We do this by calculating footprints in terms of deforestation and associated carbon emissions for each commodity in each case country, linking this to a trade flow analysis that accounts for processing and re-exports in international supply-chains. The analysis covers the period 2000-2011.

Although few, the studied countries comprise a large share of the internationally traded volumes of the analyzed commodities: 83% of beef and 99% of soybean exports from Latin America, 97% of global palm oil exports, and roughly half of (official) tropical wood products trade.

We find that roughly a third of tropical deforestation and associated carbon emissions (3.1 Mha and 1.6 GtCO2) in 2011 can be attributed to production our four case commodities in our seven case countries. On average a third of this deforestation was embodied in agricultural exports, mainly to the EU and China. However, in all countries but Bolivia and Brazil, export markets are dominant drivers of forest clearing for our case commodities. If one excludes Brazilian beef, just over half of deforestation attributed to our case commodities was embodied in exports. The share of emissions that was embodied in exported commodities increased between 2000 and 2009 for every country in our study except Bolivia and Malaysia.

Our results illustrate the increasingly important role of forest-risk commodity consumption in promoting tropical deforestation. This indicates that supply-side measures and national-scale conservation policies alone, such as payments for reduced deforestation through an international REDD mechanism, may not be effective in the long-term if the rising demand for forest-risk commodities is not addressed. Demand-side measures are therefore considered as a necessary complement to successfully reduce global deforestation in general and deforestation footprints of agricultural commodities in particular.