Mapping the deforestation footprint of nations

Topic: Input-output impact analysis (Chair: Keiichiro Kanemoto, Research Institute for Humanity and Nature)
Author: Nguyen Tien Hoang
Co-Authors: Keiichiro Kanemoto

An unprecedented increase in the number of Amazon rainforest fires coupled with the pressure of economic development has become a major global concern at the turn of the new decade. Although the relationship between deforestation and global supply chains has been confirmed in the literature, how the spatial patterns of deforestation are embodied in international trade is still poorly understood. Using remote sensing data and multi-region input-output model, here we quantify and map the spatial-temporal changes in global deforestation footprints over 15 years (2001â€“2015) at a 30-m resolution. While obtaining net forest gains, China, India, and the G7 countries (except for Canada, in which forest cover area is decreasing) have increased the deforestation footprints outside their borders. We find that tropical countries (e.g., Brazil, Madagascar, Argentina, Indonesia, and CÃ´te d'Ivoire) majorly export forest-risk commodities (e.g., cattle, soybeans, coffee, cocoa, palm oil, and timber) to the G7 countries and China. Residents in the G7 countries drive an average loss of 1.4â€“16.1 trees or 25â€“152 m2 of forest yr-1 per capita through their consumption in 2015. We suggest that the zero-deforestation policies need to be reformed to improve transparent monitoring of the supply chain and promote effective public governance as a platform for developing private initiatives in the long term.