



## KEY POINTS FOR DECISION MAKERS

➤ **Some trade flows are exacerbating global land-use emissions.** Regions with the most emissions-intensive agriculture and land-use change are exporting vast quantities of commodities such as soy, maize, and beef (Brazil and Argentina), palm oil (Indonesia and Malaysia), and cocoa (Equatorial Africa), usually to much more industrialized countries in Europe as well as China and India.

➤ **Strategic and targeted trade adjustments might facilitate efforts to curb deforestation and reduce agricultural emissions.** Such adjustments—which would make emissions-intensive imports more expensive—could both encourage further efforts and prevent regions with high emissions from gaining an environmentally-destructive trade advantage.

# RESEARCH BRIEF

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## More than a quarter of global land-use emissions are tied to foods traded internationally

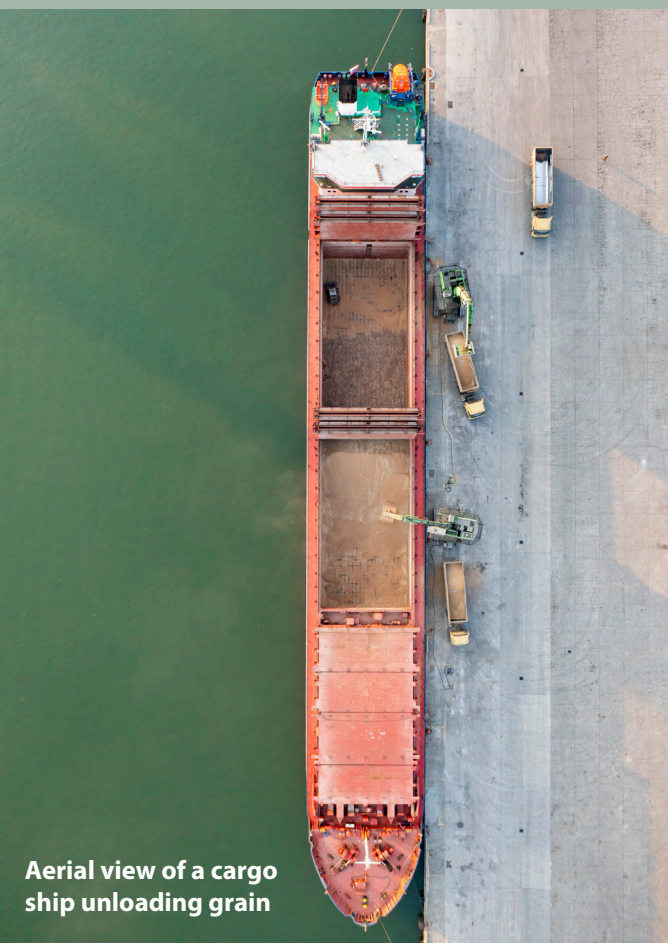
*In particular, substantial shares of the land-use change emissions in Brazil and Indonesia are related to products consumed in the U.S., Europe, Japan and China.*

Building upon a comprehensive accounting of land-use GHG emissions (i.e. from both agriculture and land-use change) published last year in *Nature*, we have analyzed the magnitude, sources, and trends of emissions embodied in agricultural products that were traded internationally between 2004 and 2017.

Trade in land-use emissions rose from 5.1 Gt CO<sub>2</sub>-eq in 2004 to 5.8 Gt CO<sub>2</sub>-eq in 2017, but the share of global emissions traded (27%) remained constant. More than three-quarters of these traded emissions were related to land-use change, with the top exporters including Brazil and Indonesia—where tropical deforestation remains a huge problem. Meanwhile, the largest net importers of emissions include China, the U.S., Japan, and Europe (see **Fig.**).

The nearly billion tons of CO<sub>2</sub>-eq exported on net by Brazil in 2017 represent 40% of that country's land-use emissions that year, and 56% of the exports (517 Mt CO<sub>2</sub>-eq) were related to soybeans. Similarly, Indonesian exports were 18% of its total emissions, and 42% of the exports were related to palm oil.

Our results thus highlight targeted opportunities for international cooperation to reduce land-use emissions.



Aerial view of a cargo ship unloading grain



## BRIEF PREPARED BY

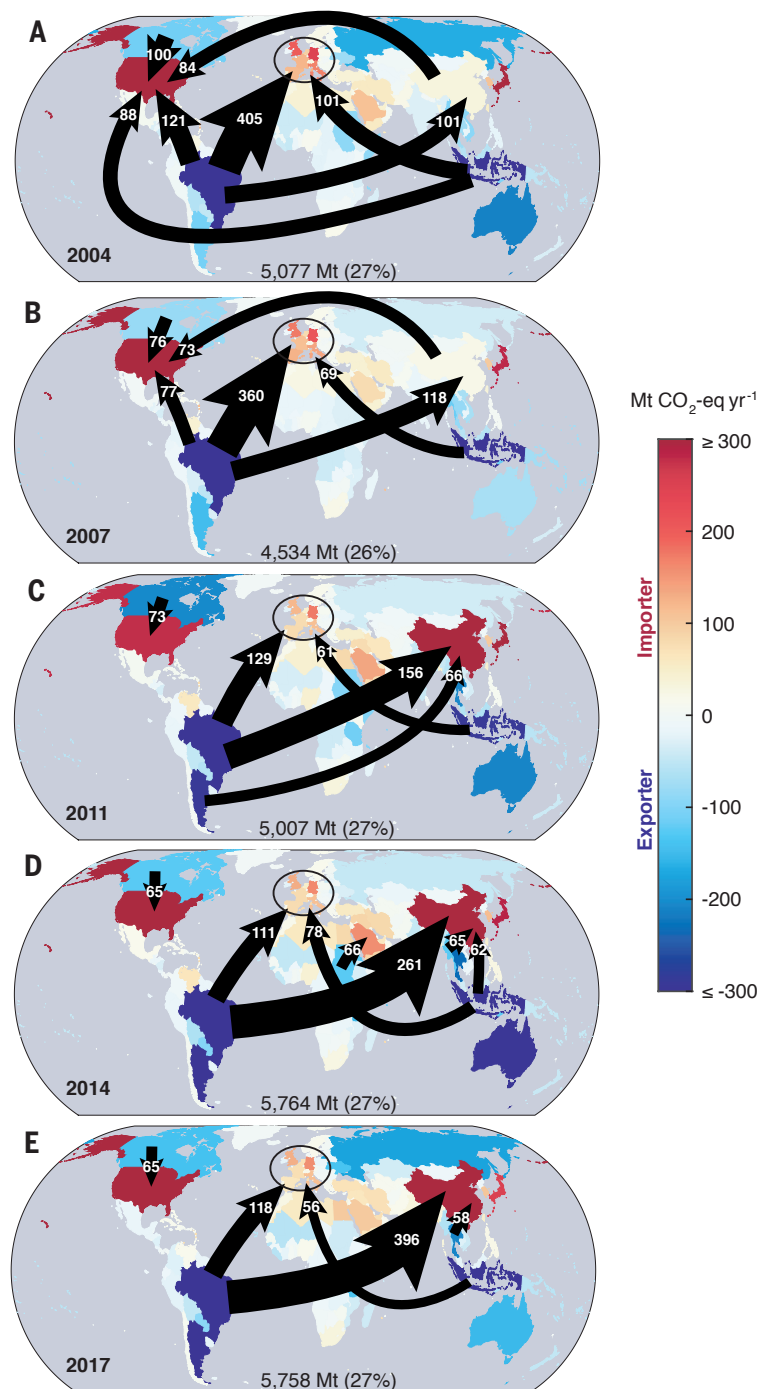


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**Largest interregional fluxes of land-use emissions embodied in trade 2004-2017.** Arrows show the largest transfers of embodied emissions each year (in millions of tons of CO<sub>2</sub>-eq emissions). Shading reflects the magnitude of net imports (red) or net exports (blue). Brazil and Indonesia have the largest exports throughout the period, dominated by land-use change emissions and being imported by the U.S., Europe, and increasingly China. Numbers at the bottom of each map indicate total global trade and the share of global emissions traded each year.



Soybeans being unloaded from a ship

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