

Mapping the deforestation risk of Brazilian beef exports

New data on Trase maps Brazilian beef, offal, and live cattle exports for 2015–2017, showing the links to deforestation. This brief describes that trade, identifying the major markets served by Brazil's US\$6 billion beef export industry, and highlighting the link between these exports and 65,000–75,000 hectares of deforestation per year. These data are freely available on trase.earth

Brazil is the world's biggest exporter of beef products, exporting around 1.4 million tonnes per year to retailers and manufacturers around the world. While this trade worth almost US\$ 6 billion is important for the Brazilian economy, it has come at a price for the country's forests, local and traditional peoples and biodiversity.

In the Amazon and Cerrado regions – two of Brazil's most important regions both for biodiversity and social diversities – two-thirds of deforestation is for cattle pasture. Overall, an estimated 260,000 – 580,000 hectares of forest are lost to the expansion of cattle ranching each year.

Because of this clearance – plus the gases cattle emit when digesting grass – the cattle sector is responsible for around half of Brazil's greenhouse gas emissions, making it a significant contributor to the country's climate impact. The sector is also associated with cases of land conflict, slave labour and displacement of traditional communities.

While these impacts have long been associated with cattle ranching, the complex nature of cattle supply chains has made it difficult to directly link deforestation and other impacts to companies and consumer markets.

Main importers of Brazilian beef and live cattle (2017)

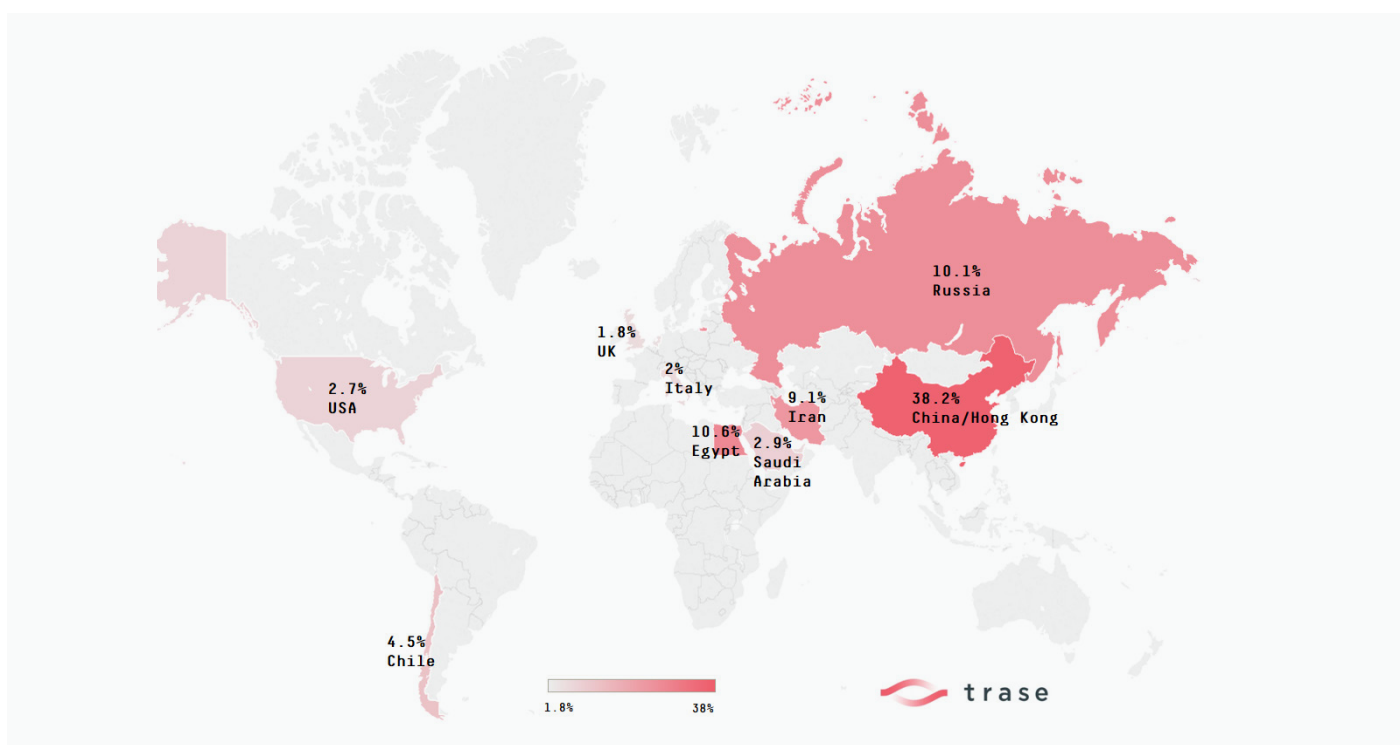




PHOTO: DANIEL BELTRA / GREENPEACE

New Trase data changes that, bringing unprecedented transparency to Brazil's exports of beef, highlighting the deforestation and other risks that buyers are exposed to. The new data maps the supply chains of Brazilian beef and live cattle exports from the municipalities where cattle are raised through to the importing countries – and identifies 210,000 hectares of deforestation linked to those exports between 2015–2017. This is the loss of an area larger than London in just three years.

Importantly, these deforestation figures are broken down, revealing the deforestation risk that each exporter, importer, and consumer country is exposed to – that is to say, the estimated area of deforestation (in hectares) which is associated with each buyer (see box 'How does Trase work?'). Using this data, international buyers of Brazilian beef can estimate their exposure to deforestation in their sourcing regions and identify priorities and options for action.

Where possible, the new data include indirect suppliers – the farms where cattle were raised, rather than simply the last property they came from before being sent either to a slaughterhouse or for live export (the direct supplier). These indirect suppliers make up an important but previously invisible part of the supply chain and represent a major breakthrough in the work of Trase.

EXPORT MARKETS AND DEFORESTATION RISK

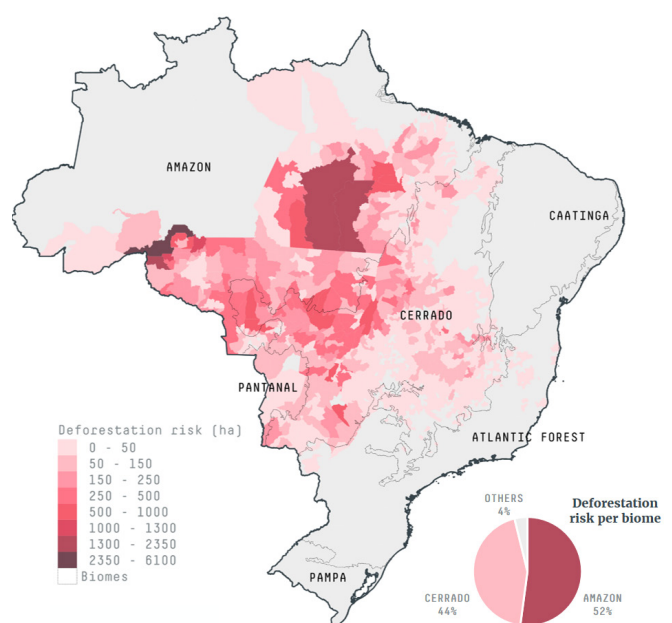
Trase maps exports of Brazilian beef products to 150 international markets, via thousands of importing

companies. The largest of these markets in 2017 were Hong Kong and mainland China, which together accounted for 38% of Brazilian beef exports by volume.

The deforestation risk linked to exported beef varies depending on where in Brazil the cattle were raised. Trase data can be used to identify these impacts for buyers across different supply chains. For example, imports to Hong Kong (23% of Brazilian beef exports) were associated with a significantly higher deforestation risk per tonne than imports to mainland China (15%). This is because significantly more of Hong Kong's beef imports come from the Amazon, while mainland China's imports come more from further south in Brazil, from states such as São Paulo, Minas Gerais, and Mato Grosso do Sul.

In 2017, exports to Hong Kong were linked to 27% of all export-associated deforestation risk (18,000 hectares), while exports to China were linked to 7% of deforestation risk (4,700 hectares). Russia, although only the fourth biggest importer in 2017, had the third highest deforestation risk, with 10,000 hectares.

Beef deforestation risk per municipality (2017)



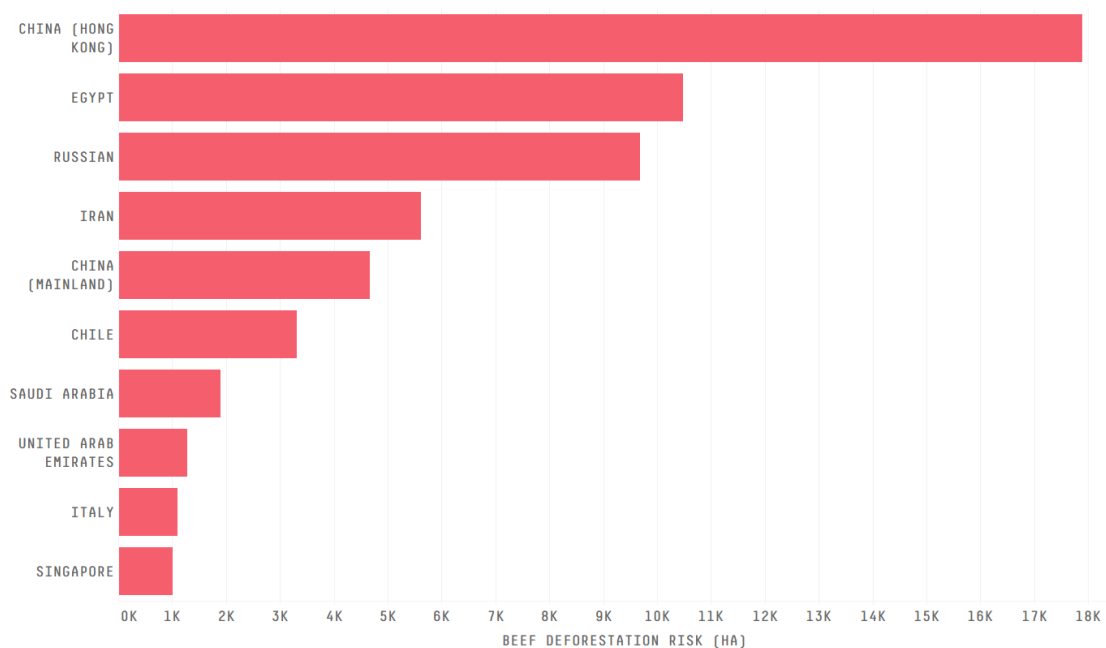
New risks from the EU-Mercosur treaty?

At the end of June 2019, the European Union (EU) signed a free-trade agreement with the Mercosur trading bloc: Brazil, Argentina, Uruguay and Paraguay. This included a commitment to increase beef imports from the region by more than one-third (an additional 99,000 tonnes/year). Brazil today supplies more than half of all Mercosur's beef exports to the EU (around 100,000 tonnes), so the agreement is expected to boost Brazilian beef exports. Trase data can be used to scan the potential deforestation risks linked to this trade.

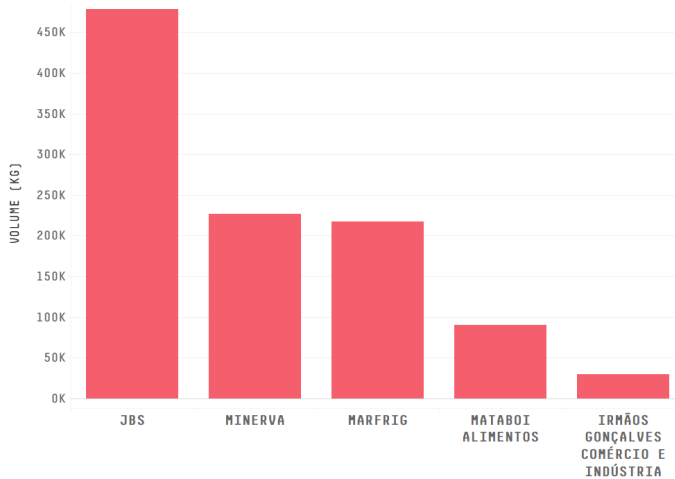
The EU currently sources cattle from many regions in Brazil, with the greatest quantities coming from the Pampas in the far south, the southern Cerrado savannah and around the Amazon-Cerrado transition zone in the west. Between 2015 and 2017, EU beef imports were linked to 2,900–3,600 hectares of deforestation risk each year.

As the Brazil-EU beef trade grows, Trase's data, updated annually, offer a powerful way to monitor the sources of beef exports from Brazil to the EU, and any change in the deforestation risk that EU companies and consumers are exposed to.

Deforestation risk: main importers of Brazilian beef and live cattle (2017)



Top 5 beef and live cattle exporters in Brazil (2017)



By identifying the origins of exported beef and other cattle products, the Trase data also allows us to compare the deforestation linked to exports and to the domestic market. Overall, export markets purchase 19% of Brazil's beef, shouldering 13–14% of deforestation risk.

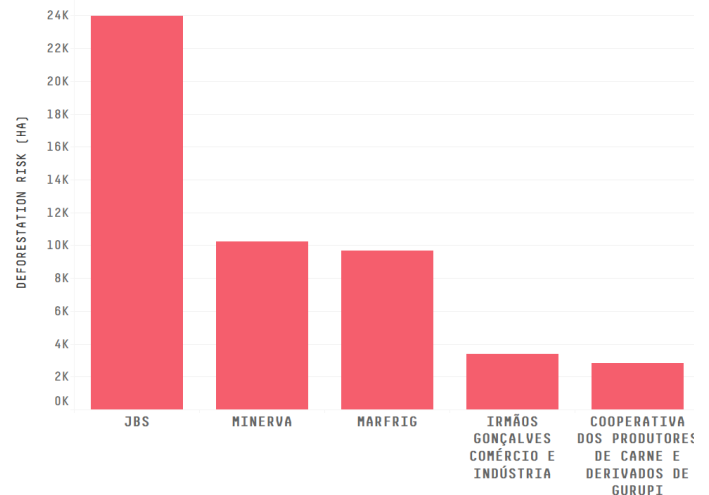
The domestic market buys 81% of Brazil's beef and is linked to 85–86% of cattle-related deforestation. This is chiefly because a disproportionately large share of beef raised in the Amazon, where per-tonne deforestation risks are high, feeds into the domestic market. These figures confirm that action is needed by multiple players – slaughterhouses, retailers, government, traders, and consumer markets abroad – to tackle deforestation in the cattle sector.

EXPORTING COMPANIES AND THEIR DEFORESTATION COMMITMENTS

The Trase Brazilian beef data also maps the supply chains and quantifies deforestation risk for the 200 companies exporting beef and live cattle from Brazil.

The world's largest meat-packing company, the Brazilian firm JBS, is the biggest exporter of Brazilian beef, with 29% of total export volumes in 2017. It accounted for

Deforestation risk of the top 5 beef exporters in Brazil (2017)



an even larger, and above average share of the total deforestation risk for beef product exports in 2017: 36% (24,000 ha). This is because JBS exports a large share of beef from the Amazon, operating slaughterhouses in the Amazon states of Mato Grosso, Rondônia, Pará, and Acre.

The second largest exporter, Minerva, in 2017 handled 15.8% of exports and was associated with 15.5% of export-associated deforestation risk (10,200 ha).

Marfrig, the third largest exporter, saw its export share increase from 12% to 15% between 2015–2017 and was associated with 10–15% of deforestation risk over that period.

Around two-thirds of Brazilian beef exports are handled by these three companies – JBS, Minerva and Marfrig – all of which have signed the G4 agreement, a commitment to eliminate deforestation from their supply chains in the Amazon biome. Despite this, Trase's data suggest these companies' exports were linked to 140,000 ha of deforestation between 2015 and 2017.

Although these companies have taken steps to monitor their direct suppliers, and so in theory can avoid farms associated with deforestation, none so far monitors its indirect suppliers, who make up the bulk of their

supply chain. Trase reveals the previously unquantified risks associated with each company's cattle exports by accounting for their indirect suppliers where possible and by taking a landscape approach to measuring their deforestation risk (i.e. calculating deforestation risk at the municipal-level).

Trase data also suggest that 45–54% of these companies' deforestation risk comes from sourcing cattle outside of the Amazon, from the Cerrado where native vegetation is also being converted to pasture. By only covering the Amazon, the G4 agreement does not go far enough to eliminate deforestation and shield downstream companies from deforestation risk.

A POWERFUL NEW TOOL TO ADDRESS BEEF-RELATED DEFORESTATION

The new Trase data represent a major advance in our understanding of trade in one of the world's major deforestation-risk agricultural commodities. As the world's appetite for beef grows, Trase can help to identify the key companies and countries that can drive improvements in the sustainability of these global supply chains.

For companies involved in the Brazilian beef trade, as well as potential investors, Trase can be a powerful tool to identify hotspots of sustainability risk in company supply chains, and regions where they should focus engagement in pursuit of zero-deforestation targets.



PHOTO: DANIEL BELTRA / GREENPEACE

Governments can use this information to track the deforestation linked to the sourcing by their country. Some governments, like the seven signatories of the Amsterdam Declarations – Germany, Denmark, Norway, France, Netherlands, the UK, and Italy – for instance, have made zero deforestation commitments and can use Trase data to look for improvements in their supply chains.

Civil society organisations and journalists can use the data to promote more sustainable production, and to monitor progress on sustainability commitments of different sectors, targeting the biggest culprits more effectively and identifying progress.

HOW DOES TRASE WORK?

Like all Trase datasets, the Brazilian beef product analyses customs declarations alongside many other sources of complementary data. The exports mapped by Trase are based on customs declarations covering almost US\$6 billion worth of annual exports of beef, offal, and live cattle.

These data were linked back to specific slaughter facilities by triangulating the information in the customs data against data on companies' assets, companies' subsidiary relationships, and official lists of slaughterhouse export permissions.

Once the slaughterhouse was identified, the municipalities where the cattle originated were mapped using one of two methods: For 50.4% of exports, records of cattle movements between properties were used; these data include indirect suppliers – properties who don't sell to the slaughterhouse directly (they may, for example, sell calves to another farm which raises them before slaughter).

For a further 49.2% of exports from slaughterhouses where animal movement records were not available (mostly related to slaughter in the states of São Paulo, Goiás, and Rondônia), data on the origin of cattle slaughtered in each state's export-approved slaughterhouses were used instead. These show the municipalities where the cattle originated but don't capture indirect suppliers.

The maps of the origin of each shipment were then linked to deforestation data to calculate their "deforestation risk", the area of cattle-related deforestation (in hectares) associated with their production, based on the municipalities of origin and the proportion of production exported per municipality.

Cattle-related deforestation was calculated for each municipality by intersecting annual high-resolution maps of pasture expansion and deforestation in the Amazon, Cerrado and Atlantic Forest biomes with statistics on cattle production per municipality. Deforestation was counted as cattle-related if pasture was detected on the deforested land within five years (excluding pasture that became soy cropland within that period).

Trase data is open-access and freely available for download at www.trase.earth/data.

The Trase Infobrief series illustrates some of the key insights around commodity trade and supply chain sustainability that are made possible by Trase. Explore the data yourself at trase.earth

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