The state of forest-risk supply chains

SUBSECTIONS

The Trase Yearbook presents new data and insights on the sustainability of global agricultural commodity supply chains linked to tropical deforestation. It is intended to help companies and governments to manage risk and target investments in sustainable production, while also supporting the wider sustainability community in assessing progress towards commitments and goals on reducing deforestation.

Trase data link agricultural commodity production to deforestation and other social and environmental impacts – and in turn to specific trading companies and consumer markets.

The Trase Yearbook 2020 provides a summary of Trase data and findings for a number of key export commodities: soy from Brazil, Argentina and Paraguay; palm oil from Indonesia; beef from Brazil and Paraguay; and chicken from Brazil. It highlights key trends and insights that help answer important questions about the sustainability of global commodity trade:

1. How is agricultural expansion linked to deforestation?
2. Who is buying forest-risk commodities and from where?
3. What are the greatest sources of deforestation risk in the supply chains of major commodity buyers?
4. What is the coverage of zero-deforestation commitments and what impacts are they having?

Trase data connect production localities to commodity traders and import markets at scale, making it possible to assess the market dominance and risk exposure of key buyers of forest-risk commodities. The data consistently show that the deforestation and emissions linked to the production and export of commodities are highly concentrated in specific regions, and among specific suppliers and products – demonstrating that targeted action in these areas can deliver disproportionate sustainability gains. Trase data can also uniquely track both the coverage of commitments across production regions, as well as the deforestation risk associated with committed and non-committed buyers. This is critical for identifying gaps and priorities and in helping to assess the effectiveness of zero-deforestation commitments.

KEY FINDINGS

01 Trends in commodity expansion and deforestation

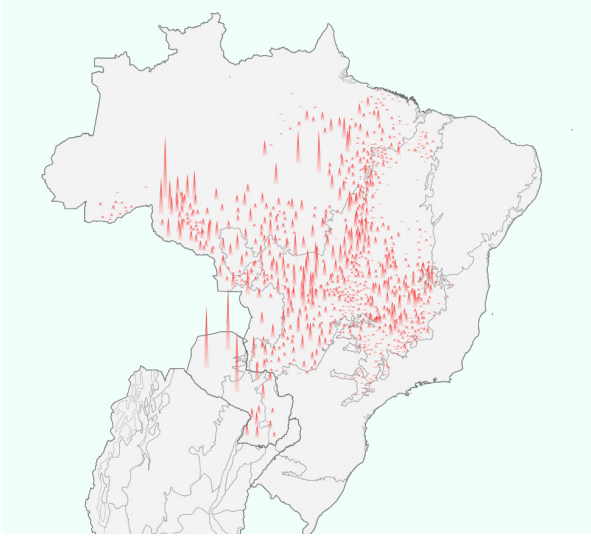
The value of cross-border trade in agricultural and forestry commodities increased threefold between 2000 and 2018, reaching US$1.5 trillion. Production and export of these commodities make a major contribution to the economies of many countries.

"Trase estimates that in 2018 the expansion of pastures was responsible for 81% of deforestation in the Brazilian Amazon, over 95% of the deforestation in the Paraguayan Chaco, and 54% in the Cerrado".

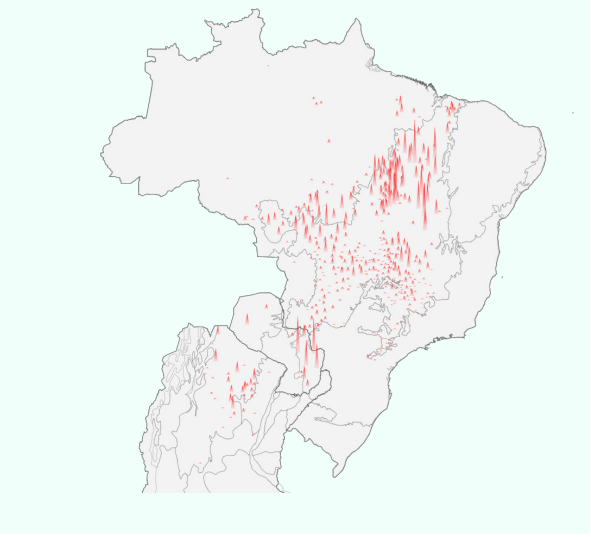
US $1.5 trillion

Value of cross-border trade in agricultural and forestry commodities in 2018

However, the rate of deforestation linked directly and indirectly to commodity expansion remains high and is even increasing in many parts of the tropics. Data released on Global Forest Watch in June 2020 recorded an increase of 2.8% in the loss of primary forest in 2019 compared to the previous year, and the third-highest rate since 2000; although reductions in deforestation were reported in some countries, including a three-year decline in Indonesia. A third of the total forest loss recorded in 2019 across the tropics was in Brazil. The emergence of new agricultural frontiers, including, for example, the expansion of palm oil plantations in West Papua and Colombia, and soy in the Gran Chaco, raises the prospectof further increases in deforestation in the coming years.



Pasture deforestation (ha) per production region (municipality in Brazil and department in Paraguay).



Soy deforestation (ha) per production region (department in Argentina, municipality in Brazil and department in Paraguay).

What is Trase? Trase is a science-based supply chain transparency initiative, built around an open-access information platform www.trase.earth. The vision of Trase is to empower companies, financial institutions, governments and civil society in the transition towards sustainable commodity production and consumption. Trase is revolutionising the transparency of global trade by connecting consumer markets to their impacts on the ground at scale.

To date, the work of Trase has centred on Latin America, and the biomes of the Amazon, the Cerrado, the Atlantic Forest and the Gran Chaco, where the expansion of cattle pasture and soy cropland is the main driver of deforestation. While annual deforestation rates have dropped across much of Latin America, the environmental impact of continued clearances grows as biomes diminish in size. One hectare of deforestation today represents a far greater loss than would have been the case a decade ago. In terms of hectares of deforestation per hectare of biome remaining, one hectare deforested in Latin America's Gran Chaco has 1.3 times the impact of the same loss in the Brazilian Cerrado and 6.5 times the impact of the same loss in the Amazon.

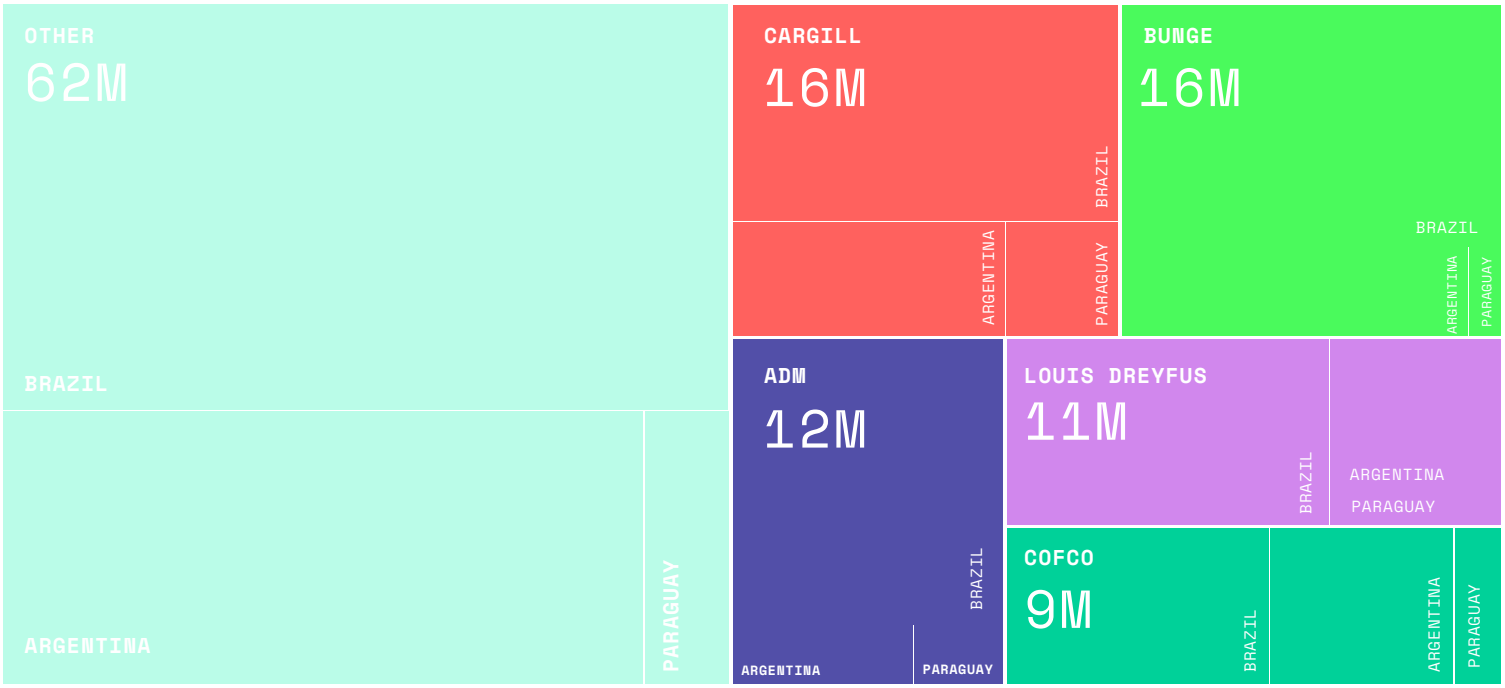
2.8%

increase in the loss of primary forest in 2019 globally

Pasture is by far the main land use to occupy newly deforested land in Latin America within five years of clearance. Trase estimates that in 2018 the expansion of pastures was responsible for 81% of deforestation in the Brazilian Amazon, over 95% of the deforestation in the Paraguayan Chaco, and 54% in the Cerrado.

However, while the majority of soy expansion is into former pasture, analyses by the Trase team show that for every hectare of soy expansion into pasture there is at least one hectare of new deforestation for pasture. This dynamic suggests that crop expansion – and soy expansion in particular – is playing a key, indirect role in driving deforestation in Latin America via the displacement of cattle pasture. This is despite the success of the Soy Moratorium in the Amazon in significantly reducing direct conversion of forest since 2008.

FOREST FIRES IN THE AMAZON STATE OF RONDONIA IN 2019 CREDIT: © VICTOR MORIYAMA / GREENPEACE



The ABCD companies and COFCO traded more than 50% of soy exports from Argentina, Brazil and Paraguay in 2018.

02 Commodity traders and markets

52%

Share of soy exports from Argentina, Brazil and Paraguay imported by China in 2018

At least half of all exports are concentrated in the hands of the top five exporters of each of the forest-risk commodities assessed in the 2020 Trase Yearbook. This level of dominance rises to over 70% of trade for exports of meat from Brazil and Paraguay, and palm oil for Indonesia. Trading companies that dominate commodity exports are typically associated with the majority of deforestation risk. This high level of market concentration – in contrast to the much larger number of producers, manufacturers and retailers – means this small group of trading companies is in a strong position to leverage system-wide change in supply chain sustainability.

China continues to pull ahead of the European Union as the main market for key forest-risk commodities: soy, beef and palm oil. In 2018 China imported 52% of all soy exported from Argentina, Brazil and Paraguay, including 68% of all exported Brazilian soy. By comparison, while the EU remains the main market for Argentinian and Paraguayan soy, its market share of Brazilian soy exports has fallen steadily from 2009, when it was the main export market for Brazilian soy, to only 15% in 2018. In 2017 China imported 36% of Brazil's total beef exports. Its Brazilian beef imports increased 62% between 2015 and 2019. By contrast, in 2017 the EU accounted for only 7% of Brazil's beef exports. In 2019 China overtook the EU to become the second-largest importer of Indonesian palm oil.

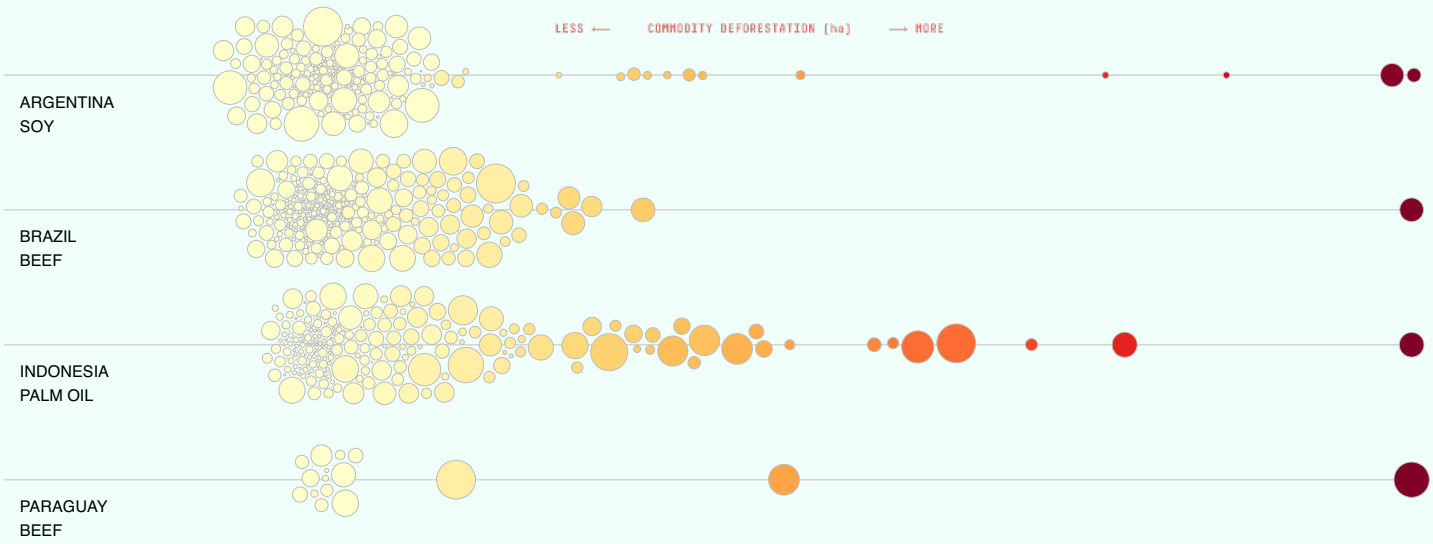
Over the last decade deforestation exposure has been greater for European soy imports than for Chinese soy imports. The EU remains the second-largest export market for forest-risk commodities after China. On average, over the period 2009–2018 the EU's exposure to deforestation risk per thousand tonnes of Brazilian soy imported (1.5 ha/kt) was double that of China (0.75 ha/kt). This is because the EU's imports are more often sourced from deforestation frontiers in the Amazon and the Cerrado. The same pattern holds in the case of imported Argentinian soy, but is reversed in the case of Brazilian beef, where China's relative deforestation risk exposure (59 ha/kt) is double that of the EU (27 ha/kt).

How does Trase assess deforestation risk in commodity supply chains? Trase generates indicators of "deforestation risk" using localised data on commodity production, sourcing patterns and deforestation. This indicator, measured in terms of hectares, assesses a company's – or importing country's – exposure to the risk that the commodity it is sourcing is associated with deforestation in the region where it was produced. For each producing region, Trase estimates the share of local output that is purchased by each company or importing country. It then assigns risk in each area proportionally to each buyer. For example, in the case of Brazilían soy, a firm that buys 20% of a municipality's soy gets 20% of the municipality's deforestation risk associated with soy. To allow comparisons between actors that source very different volumes, a relative measure of deforestation risk is hectares per tonne of exports. Trase assesses the deforestation risk directly associated with commodity expansion, and includes the clearance of native vegetation in all biomes where data is available.

It is important to emphasise that this measure estimates the risk that a commodity buyer (company or country) is exposed to deforestation in its supply chain, based on the jurisdictions it is sourcing from. Trase does not directly attribute responsibility for deforestation to specific companies, as data on precise sourcing patterns back to individual farms are not publicly available. Among other data sources, Trase uses information publicly disclosed by companies in its supply chain mapping. As company sourcing data become more transparent, Trase can adjust its estimates of risk exposure so as to reflect progress being made by more progressive companies.

The world's increasing appetite for beef is driving up deforestation. The Brazilian cattle sector is estimated to account for one fifth of all deforestation linked to commodity expansion across the tropics. Exports of Brazilian beef increased fivefold between 2000 and 2019, with China being the main buyer in recent years. Brazilian beef accounted for 44% of all China's beef imports by volume in 2019. As demand rises in China and other markets such as the EU and the US, the lifting of bans on Brazilian beef imports from certain regions, slaughterhouses or on certain products, means that production for export increasingly comes from deforestation frontier regions – which until now have typically supplied the domestic market. Cattle farming is the main driver of deforestation elsewhere in South America, including in Paraguay, which has experienced some of the highest rates of deforestation in the world. Paraguayan beef exports (734 ha/kt) are associated with over nine times the deforestation risk of beef exports from the Brazilian Amazon (80 ha/kt).

The carbon footprint of imports of Brazilian soy is six times larger per tonne for Spain than for China. Trase data have made possible a new generation of life-cycle footprint analyses for individual buyers of agricultural commodities. Differences in sourcing patterns and links to deforestation frontiers mean that Spain is the country with the most emission-intensive footprint of all major buyers of Brazilian soy. Spanish imports are associated with 1.23 tCO2-eq of emissions per tonne of soy, compared to less than 0.2 tCO2-eq per tonne for China (the biggest soy buyer). The other importers with the most emission-intensive footprints are Saudia Arabia, Japan, Portugal and Germany.



Deforestation risk associated with exports is highly concentrated in a handful of frontier production regions

03

Hotspots of deforestation and risk exposure

1%

Share of the 2,308 soy-producing municipalities in Brazil accounting for more than half of thesoy deforestation risk associated with its exports in 2018

More than half the deforestation linked to traded agricultural commodities is concentrated in less than 5% of producing localities, which Trase uniquely identifies. In the case of Brazilian soy, less than 1% of the 2,308 municipalities producing soy accounted for more than half of the soy deforestation risk associated with exports in 2018. The concentration of deforestation risk is similar for Brazilian beef in 2017 (more than half in 2% of 2,803 producer municipalities), Argentinian soy in 2018 (2% of 205 soy-producing departments) and Indonesian palm oil in 2015 (6% of 249 producer districts).

x1000

The deforestation footprint of Brazilian beef exports is 1,000 times that of Brazilian chicken exports

Sourcing commodities from deforestation frontiers can increase their carbon footprint nearly tenfold. Trase data show that the carbon emissions associated with commodities produced in the 10% of regions experiencing the most deforestation are many times higher than the average levels in the case of exports of Brazilian beef (775%), Brazilian soy (940%) and Indonesian palm oil (630%).

Soy from Matopiba, the main deforestation frontier in the Brazilian Cerrado, makes up less than 10% of exports to the EU and China, but accounts for morethan 66% of their deforestation risk. The soy exported by Brazil in 2018 alone was associated with a deforestation risk of 50,000 ha, 88% of which was linked to soy produced in Matopiba.

Emissions per tonne of soy exports from Matopiba were six times higher than the national average. Only 9% of China's imports and 7% of the EU's imports were sourced from Matopiba, but these small shares were responsible for 77% and 61% of the two markets' deforestation risk exposure, respectively.

734 ha/kt

Paraguayan beef exports were associated with over nine times the deforestation risk of beef exports from the Brazilian Amazon (80 ha/kt) in 2018

Around 20% of the soy imported by the EU and 21% of the soy imported by China in 2018 from the Brazilian state of Mato Grosso likely came from farms involved in illegal deforestation. Nearly all – roughly 95% of the 380,000 ha of deforestation that took place on farms producing soy in Brazil's largest soy-producing state between 2012 and 2017 – was illegal. Just 400 large farms – 2% of all soy-producing farms in the state – accounted for 80% of the total illegal deforestation linked to soy production.

Live cattle exports from Brazil are linked to five times more deforestation than fresh meat exports. Live cattle exports from Brazil (mainly from Pará state) to major halal markets such as Turkey, Lebanon, Jordan and Iraq are associated with nearly five times more deforestation risk per tonne than other cattle products the country exports (fresh, frozen and processed beef, and offal).

Soy exports from the Argentinian Chaco have remained steady, even as a protracted drought has significantly reduced exports from elsewhere in the country. Argentinian soy exports fell almost 50% in 2016–2018, to 27.6 million tonnes, linked to a protracted drought and a decrease in the area under soy crops. However, exports from the Argentinian Chaco – the main frontier of soy expansion and deforestation – remained unchanged. Exports across the country rebounded in 2019 to 55 Mt, but how much came from the Chaco is not yet known.

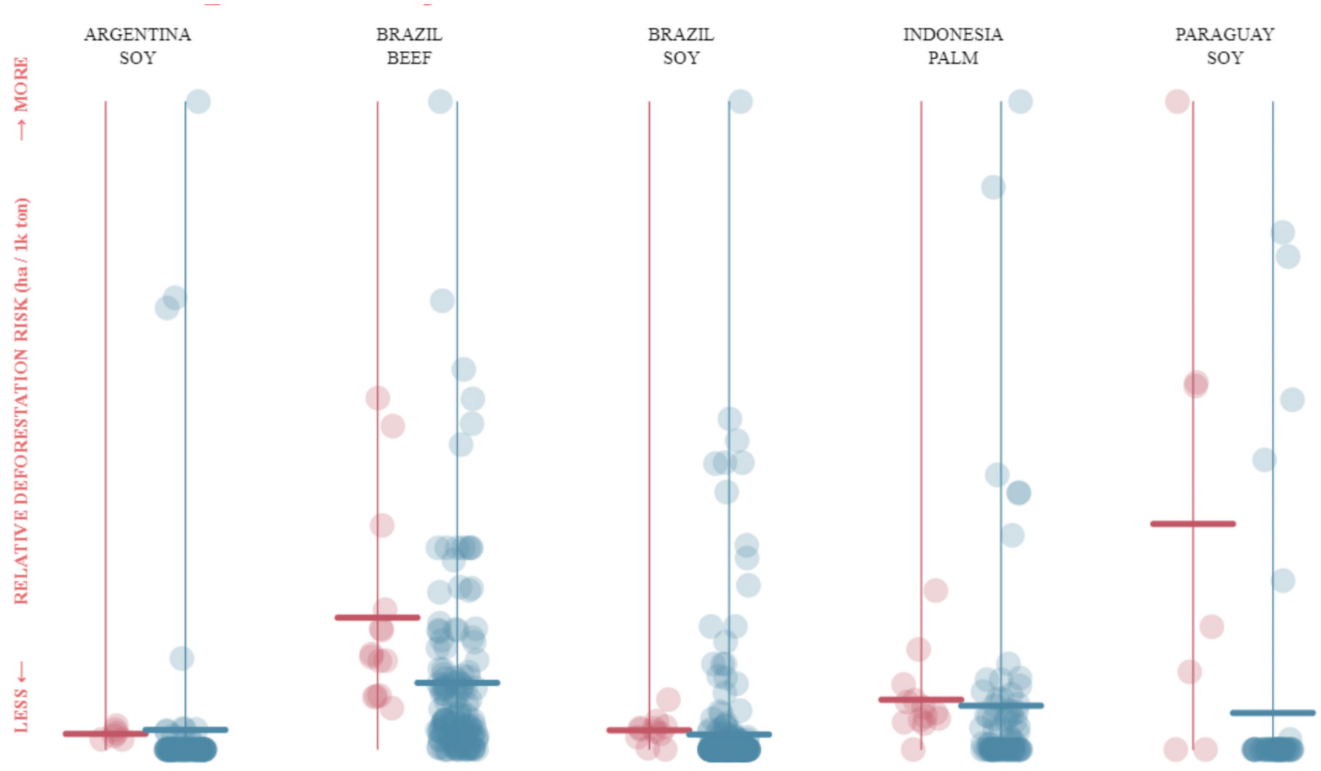
What is Trase's unique contribution to understanding commodity supply chains?
Trase has developed an entirely new approach to mapping agricultural supply chains that combines customs, shipping, tax, logistics and other data to connect regions of production,via trading companies to countries of import, for an entire sector such as Brazilian soy or Indonesian palm oil exports. This provides a wall-to-wall map of the central stages of a supply chain, connecting buyers and investors to specific production regions. By combining these high-resolution supply chain maps with new, spatially explicit assessments of commodity-driven deforestation and other sustainability indicators, Trase is able to link markets to impacts in unprecedented detail.

Trase data are unique in being able to map the subnational origin of supply chains and assess the risks associated with commodity buyers. Trase data have consistently shown that while companies and countries often source commodities from many places – their so-called supply sheds – the majority of their supply typically comes from a relatively smallsubset, and the majority of the deforestation linked to their supply from a smaller subset still. In this way, Trase data can uniquely highlight strategic entry points for change, demonstrating how sourcing, investment and campaigning decisions can be much more impactful by focusing on specific regions and companies.

The deforestation footprint of Brazilian chicken exports is 1,000 times smaller than that of Brazilian beef exports. Brazil is the largest exporter of chicken meat in the world (in 2018 producing 12.86 Mt of meat, from around 5.7 billion head of chicken). The Brazilian chicken industry consumes three times as much soy for feed as the total soy exports from Brazil to the Netherlands, Europe's largest importer of soy.

However, because chicken are fed on soy from areas without recent deforestation, the deforestation footprint of Brazilian ś chicken exports is 1,000 times less than that of beef exports, per tonne of meat. Nevertheless, chemical waste and run-off from chicken farms remain major sustainability concerns.

RIO JARÍ, BRAZIL CREDIT: © DANIEL BELTRÁ / GREENPEACE



The average deforestation risk (ha/kt) of trading companies with (red) and without (blue) deforestation commitments.

04 Coverage and effectiveness of zero deforestation commitments

Zero

None of the companies exporting beef from Paraguay in 2018 has a public zero-deforestation commitment

Zero-deforestation commitments by commodity traders are critical for sustainable trade, but the majority of exports of important forest-risk commodities like beef are still not covered by a commitment. Nearly half of the exports of Brazilian soy in 2018 and two thirds of the exports of Brazilian beef in 2017 were handled by companies that do not have an applicable zero-deforestation commitment. The share was 80% in the case of beef raised in the Cerrado. None of the companies exporting beef from Paraguay in 2018 have a public zero-deforestation commitment.

Zero-deforestation commitments have yet to have a discernible impact on commodity-related deforestation linked to soy and beef expansion in any of the Latin American countries covered in the 2020 Trase Yearbook. The unique sector-wide perspective provided by Trase data shows that - as yet - there is no marked difference between the levels of deforestation risk associated with traders of the featured commodities that have made zero-deforestation commitments, compared to those that have not. Time-series data to conduct the same assessment of exports of Indonesian palm oil are not currently available through Trase.

81%

Share of palm oil exports from Indonesia in 2018 covered by some level of zero-deforestation commitment

The Paraguayan cattle industry is driving some of the worst deforestation seenanywhere in the world, but none of the traders in beef exports has a zero-deforestation commitment. In 2018, 70% of Paraguay's beef exports came from the Chaco biome and were associated with 238,000 ha of deforestation risk. This equates to a relative risk of 734 ha per 1000 tonnes of meat – far higher than for beef exports from Brazil, whether from the Cerrado (55 ha/kt) or the Amazon (80 ha/kt). Although cattle deforestation in the Chaco has slowed significantly in recent years, due in part to increased government enforcement and monitoring, there are signs it could soon accelerate again.

Many companies in the Indonesian palm oil sector have strong zero-deforestation commitments, but linking companies to ongoing deforestation remains hugely challenging. More than 80% of palm oil exports from Indonesia in 2018 were covered by some level of zero-deforestation commitment made by the trading company. The main exporting companies publish data about the mills they source from - providing a level of transparency that few other agricultural commodity sectors around the world can match. However, the fact that palm oil traders source from hundreds of smaller companies that own mills and plantations, while hundreds of thousands of independent smallholders are involved in production, creates a traceability challenge. This means that many of the largest exporters remain exposed to high levels of deforestation risk.

PALM OIL MILL IN NORTH SUMATRA CREDIT: AURIGA NUSANTARA

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