

The Cerrado Crisis

Brazil's Deforestation Frontline

February 2024



Everyone knows the Amazon is in crisis. But next door, another ecological catastrophe is unfolding.

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Introduction

South of the world's largest rainforest lies the Cerrado savannah, dubbed the “upside-down forest”¹ for the sprawling roots which help its trees survive droughts and lock up carbon.

Like its neighbour the Amazon, it is being destroyed to feed the world's appetite for beef – and it is major financial institutions who are bankrolling the bulldozers.

Deforestation in the Amazon is falling, but in the Cerrado it rose to record levels last year – increasing by 43% from 2022.⁷⁴ New research by Global Witness reveals who is behind much of the destruction.

Using public data we investigated ranching in Brazil's cattle capital, Mato Grosso state, which straddles both Amazon and Cerrado biomes. In line with broader deforestation trends in the region, we found Cerrado clearances far outpaced those in the Amazon.

Brazil's three biggest meatpackers – JBS, Marfrig, and Minerva³ – play a key role in this environmental devastation. Global Witness found these global companies have considerable illegal deforestation in their supply chains.

A combined area of forest bigger than Chicago was felled within ranches supplying the beef firms with bovines across Mato Grosso – 99% of it illegally, through a lack of the permits required for deforestation under Brazilian law.⁴

Deforestation linked to the Brazilian trio was nearly five times greater in the Cerrado area of Mato Grosso than in its Amazon territory, where in the latter the companies have legal agreements for monitoring their supplies.⁵

One in three cows that the companies bought from the Cerrado within Mato Grosso came from farms with illegally deforested land. JBS was linked to the most farms with deforestation in both biomes.

All three companies dispute Global Witness' findings and said they are compliant with Brazilian law on deforestation and with their own individual supply chain agreements with Brazilian authorities.

Global Witness found that beef demand in both the UK and EU are playing a part in the region's deforestation. By analysing trade data, we found that over the past five years the UK imported an average of 1,756 tonnes per year of beef products from Mato Grosso state. Similarly, as of 2018 and 2019, at least 14 slaughterhouses owned by JBS, Marfrig, and Minerva in Mato Grosso have authorisation to export to EU countries.

This global trade of deforestation-linked beef is partly underpinned by western finance. Global Witness analysed commercially available market data and found major American, British and EU financial institutions are contributing to the widespread environmental abuses through their financial support.

Market juggernauts including Barclays, BNP Paribas, HSBC, ING Group, Merrill (formerly Merrill Lynch), and Santander have together underwritten billions of dollars in bonds that help the big beef firms borrow money and grow.

Financial heavyweights such as The Vanguard Group, BlackRock, Capital Research Global Investors, Fidelity Management & Research Company, T. Rowe Price Associates, AllianceBernstein, and Compass Group offer further support through owning shares in them.

Unlike its Amazon neighbour, the Cerrado is relatively unprotected by laws and voluntary agreements around the world.⁵³ Significantly, it currently falls outside the scope of the EU Deforestation Regulation (EUDR), the bloc’s ground-breaking law banning the trade in commodities produced on deforested land.

Global Witness’ research underscores the urgent need to address deforestation in the Cerrado, and hold accountable an industry that is driving the destruction of forests and other wooded lands crucial to the planet’s climate. Two-thirds of deforested land in the Amazon and Cerrado is used for cattle pasture, according to a 2020 study.⁶

The findings also provide fresh evidence that global financial centres must bring in mandatory due diligence checks against funding deforestation, and strengthen financial regulations to end their firms’ role in tropical forest destruction.

‘Upside-down forest’

The Cerrado forest savannah covers about one-fifth (22%) of Brazil’s territory⁷ and is home to some of the world’s greatest biodiversity, including over 6,000 tree species.⁸ It is nicknamed “the upside-down forest” because of the deep, extensive roots its plants use to survive seasonal droughts and fires.⁹ Such subterranean riches mean the savannah stores about five times more carbon in roots and soil than above ground.¹⁰



The Cerrado savannah in Chapada dos Veadeiros National Park, Goiás / GO, Brazil. *Global Witness*

In 2017, the Cerrado was said to hold [13.7 billion tonnes of carbon dioxide, which is more than China released in 2020](#).¹¹ However, large scale deforestation in recent years is likely to have significantly affected this storage.

The Cerrado's importance for the earth's climate cannot be overstated. The campaign group WWF has said that if this critical biome continues to be destroyed then the UN climate target of limiting global heating to 1.5C will be put out of reach.⁷⁵

The immense, dry, open-canopy woodland also has great social importance. Many Indigenous peoples and traditional communities live here or use its natural resources, including Quilombolas (descendants of runaway slaves) and Ribeirinhos (riverside dwellers).¹²

While the Brazilian Amazon's annual deforestation rate fell by half in 2023, the Cerrado's increased by 43%. Separate data from July 2021 to August 2022 had already shown deforestation was up by 25% from the previous 12 months, totalling 10,700 km².¹⁴ Of this, losses in Mato Grosso state accounted for 7%, or 740 km².

Cattle capital

Located in central-west Brazil, the state of Mato Grosso includes three significant biomes: Amazon rainforest in the north, with Cerrado forest savannah stretching to a southernmost section of Pantanal wetland.¹⁵

This ecological mosaic makes the state an ideal place to compare deforestation linked to the cattle trade in the Amazon and the Cerrado. The consequences of environmental devastation here have global implications for climate change and biodiversity conservation.



Mato Grosso has the largest cattle herd of any Brazilian state¹⁶ with some 32.8 million cows¹⁷, or nine per inhabitant.¹⁸ These bovine battalions mean Mato Grosso plays a crucial role in the global beef trade. The state is one of Brazil's biggest beef exporters.¹⁹ Exports in 2022 were worth a staggering \$2.75 billion²⁰, mostly going to China (\$1.9 billion²¹). The US and UK also proved lucrative foreign markets. Mato Grosso beef worth over \$66 million went to the US, and over \$15 millions' worth went to the UK.²²

With a cattle industry well-known to be driving deforestation in Brazil, and world buyers embroiled in this tainted trade, it is no coincidence that Mato Grosso also has Brazil's second highest level of tree cover loss according to the most recent Global Forest Watch data.²³

What we did

Global Witness developed a methodology for analysing data on deforestation, cattle movements and land boundaries to calculate the deforestation linked to cattle in Brazilian supply chains.

In this new investigation, we applied the same methodology to the supply chains of three of the country's largest meat companies, JBS, Marfrig and Minerva. In previous work²⁴ Global Witness showed that these companies bear significant responsibility for the destruction of Brazilian forests.

Our 2020 report [*Beef, Banks and the Brazilian Amazon used similar public data to expose*](#) how the meatpackers were failing to remove vast swathes of deforested Amazon land in Brazil's Pará state from their supply chains.²⁴ Local prosecutors would later confirm our findings.²⁵

In Mato Grosso, Global Witness traced movements of cattle to the three meatpackers' slaughterhouses using animal transport permits known as GTAs. These contain essential information that allows for public scrutiny of the beef companies' supply chains – including the cattle's origin, and the names of their buyer and seller.

Using public information from the Sanitary Agency of the State of Mato Grosso (INDEA)²⁶, we found out which cattle ranches provided animals to JBS, Marfrig and Minerva's slaughterhouses. Significant traffic of cattle occurred between January 2018 and July 2019, the time frame for which GTA records were available. We then used a state database of ranches²⁷ and deforestation information from Brazil's space research agency²⁸, both publicly available, to analyse whether there was evidence of trees being cut down on the ranches.

Next, Global Witness used official records on deforestation permits to see whether the deforestation recorded in these ranches was legal or not. This permit (called Autorização de Desmate in Mato Grosso²⁹ and Autorização de Supressão de Vegetação in Pará³⁰) is legally required for deforestation in any biome, whether on public and private land.³¹

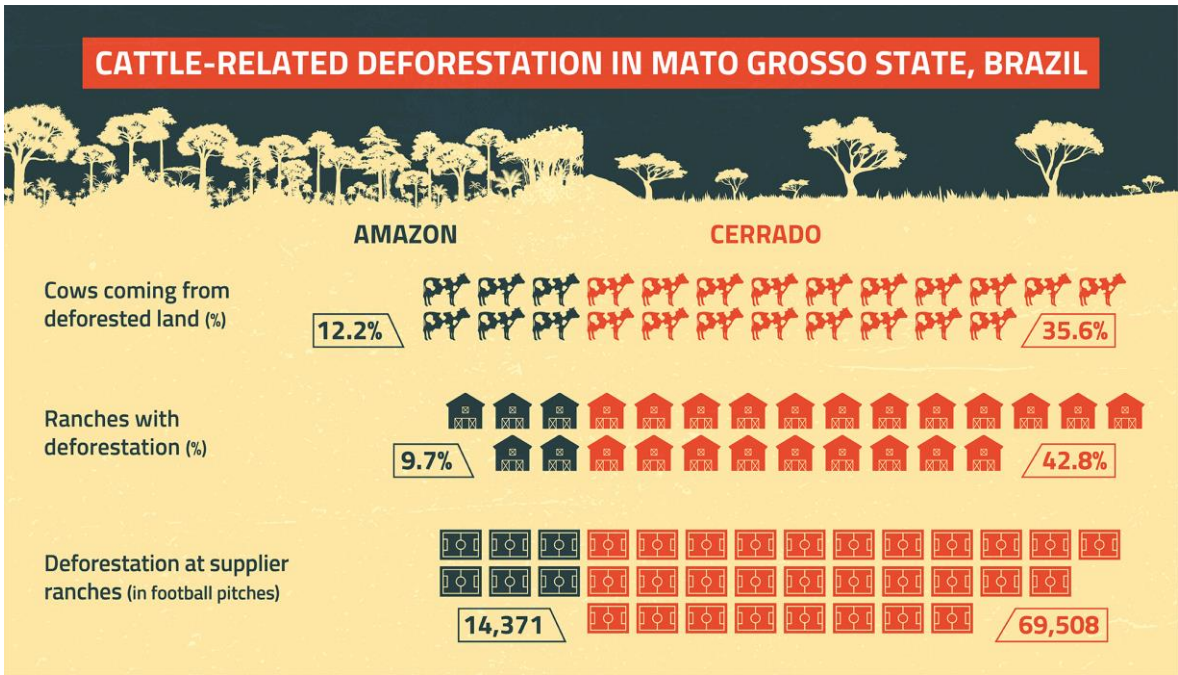
The body authorised to issue such permits in Mato Grosso is the state's environmental secretariat, SEMA.³² Using SEMA's online database³³, including its information on whether these ranches had an environmental recovery plan, Global Witness has for the first time applied our methodology in Pará to a large new dataset – in Mato Grosso state, Brazil's cattle capital.

Our findings reveal the seriousness of deforestation for ranching in the state’s Cerrado area. The biome was not covered in Public Prosecutors’ recently published first audits of the beef giants’ operations in the state³⁴, which dealt only with the meatpackers’ operations in the Amazon.

The results show a state-level audit system is urgently needed in all of Brazil’s forested states, for both the Cerrado and Amazon.

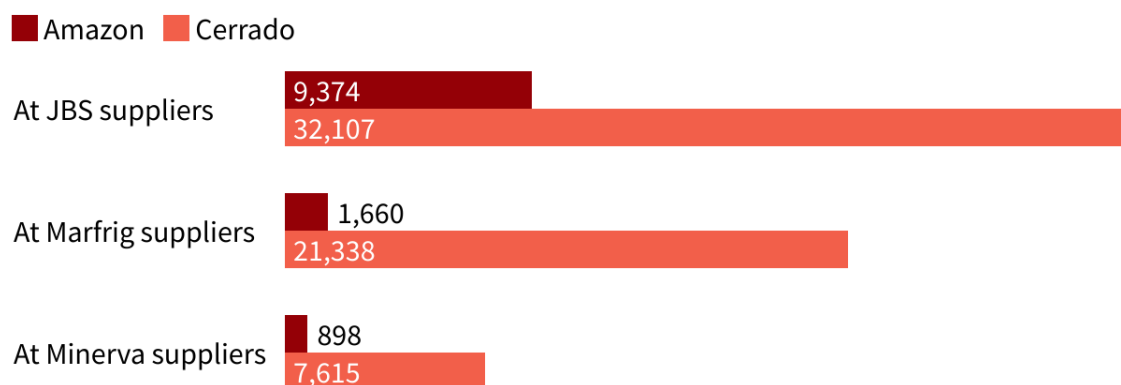
What we found

The following charts compare deforestation in the supply chains of the three big beef companies within Mato Grosso’s Amazon and Cerrado regions.



Cerrado deforestation far exceeded Amazon deforestation for all beef giants

Forest loss (in hectares) at Mato Grosso cattle farms supplying JBS, Marfrig and Minerva was nearly five times greater in the Cerrado than in the Amazon.

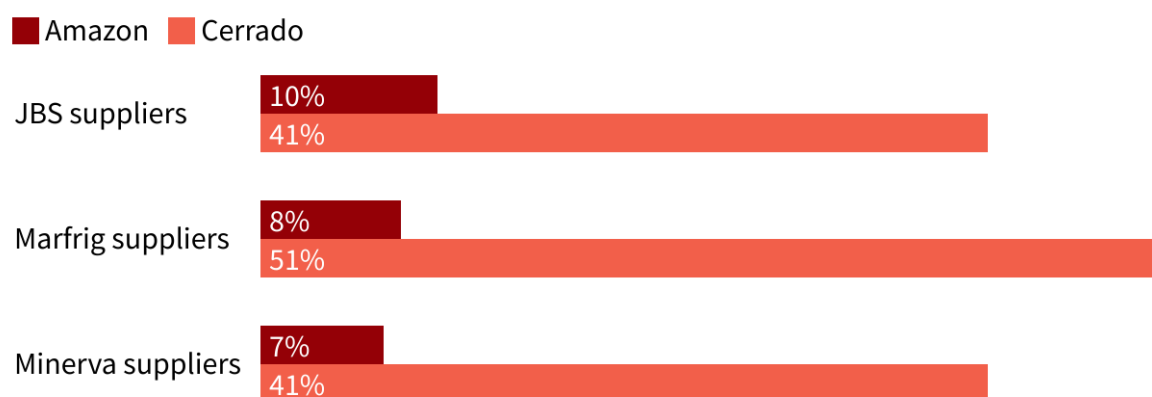


Deforestation identified in a ranch after 22 July 2008; Cattle farms recorded as supplying JBS, Minerva and Marfrig between January 2018 and September 2019. Note: the beef firms purchased from a pool of the same ranches over the supply period (thus aggregate figures vary to the sums of figures for each company).

Source: Global Witness

Cerrado cattle ranches were four times more likely to contain deforested land than Amazon cattle ranches

43% of Cerrado cattle farms supplying JBS, Marfrig and Minerva in Mato Grosso contained deforested land, compared to 10% of Amazon cattle farms.



Deforestation identified in a ranch after 22 July 2008; Cattle farms recorded as supplying JBS, Minerva and Marfrig between January 2018 and September 2019. Note: the beef firms purchased from a pool of the same ranches over the supply period (thus aggregate figures vary to the sums of figures for each company).

Source: Global Witness

A Global Witness analysis of deforestation in ranches supplying cattle to the big three meatpackers shows that almost all clearances were unauthorised. That is, deforestation was undertaken without a legally required permit.

JBS, Marfrig, and Minerva, all major exporters to the EU³⁵, may not be able export without such permits for much longer. The [EU Deforestation-free products Regulation \(EUDR\)](#)³⁶ will soon prohibit the import of products such as beef and leather that are produced on illegally deforested land in the Cerrado, because they do not comply with Brazilian law (see box ‘The EUDR and the Cerrado’).³⁷

Similar legislation in the UK, the [Environment Act 2021](#)³⁸, introduced provisions to restrict forest risk commodities that are produced illegally under the producer country’s laws.³⁹ The British government’s 2023 Environmental Improvement Plan states these provisions will be implemented through secondary legislation “at the earliest opportunity”.⁴⁰

The EUDR and the Cerrado

The [EU Deforestation-free products Regulation \(EUDR\)](#)⁴¹ aims to minimise the EU’s contribution to deforestation and forest degradation worldwide. The regulation, which “enters into application” on 30 December 2024 (or 30 June 2025 for small businesses)⁴², requires operators and traders who want to trade agricultural products⁴³ in the EU market to prove that they are both ‘deforestation-free’ (produced on land that was not subject to deforestation after 31 December 2020) and legal (compliant with all relevant applicable laws in force in the country of production).⁴⁴

The EUDR currently covers products related to the clearing of forest ecosystems by using the Food and Agriculture Organisation (FAO) definition of forest.⁴⁵ This means that large areas of the Cerrado⁴⁶ are currently excluded from the EUDR definition of ‘forest’⁴⁷ and ‘deforestation-free’⁴⁸.

However, the EUDR also requires companies to comply with legislation in the country of production⁴⁹, including local environmental laws and forest-related rules⁵⁰, regardless of the 31 December 2020 cut-off date. This could mean illegalities in the clearance of land for cattle ranching in the Cerrado puts products such as beef and leather at high risk of being prevented from entering the EU market once the EUDR enters into application. Our investigation found one in three cows from the Cerrado region in Mato Grosso were connected to illegal deforestation.

The first of the upcoming reviews of the EUDR will assess whether to expand its scope beyond forest to ‘other wooded land’⁵¹, and Global Witness will be pushing for the integration of the Cerrado biome fully in the law. If we’re successful, companies could be restricted from putting products on the EU market that are linked to Cerrado deforestation, regardless of whether the deforestation was legal or not under Brazilian law.

Virtually all deforestation in the beef firms' supply chains was illegal

Deforestation, nearly always without a legally required permit, was detected at cattle farms supplying JBS, Minerva and Marfrig in Mato Grosso.

■ % illegal deforestation



Deforestation identified in a ranch after 22 July 2008; Cattle farms recorded as supplying JBS, Minerva and Marfrig between January 2018 and September 2019

Source: Global Witness

There is significant demand for Brazilian beef in both domestic and export markets. In 2020, Brazil exported nearly twice as much beef from the Cerrado as it did from the Amazon.⁵² Now Global Witness research shows that the deforestation footprint of beef from the Cerrado dwarfs that of the Amazon. In fact, each cow the beef giants purchased from Mato Grosso can be linked to an average 1,132 m² (0.11 hectares) of deforestation in the Cerrado, compared to an average 85 m² (0.01 hectares) in the Amazon.

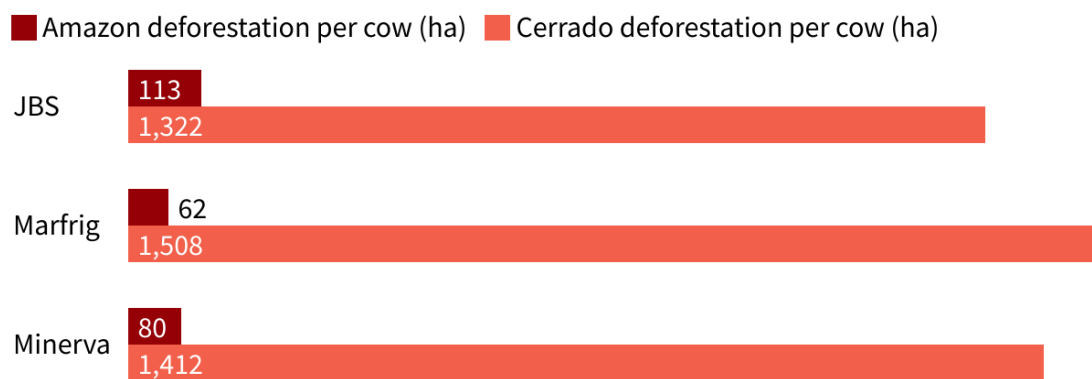
Global Witness' analysis of Brazilian customs data found significant export of refrigerated and frozen beef from Mato Grosso state to the UK.⁷⁷ In 2018 and 2019, the years for which GTAs were analysed in this report, exports of these products to the UK were 1,269 tonnes and 1,690 tonnes, respectively. In the years after, as deforestation in the Cerrado continued to rise, exports to the UK remained relatively stable, hitting 1,771 tonnes in 2023.

Further analysis using commercially available trade data revealed the mass of beef exported to the UK from Mato Grosso by the three companies analysed in this report.⁷⁸ From 2018 to 2023, the UK imported 2,223 tonnes from JBS, 1,743 tonnes from Marfrig and 683 tonnes from Minerva. Combined, that suggests that these three companies were responsible for almost half of all the beef sent to the UK from Mato Grosso state during this six year period.⁷⁹

Analysis of certification data obtained through Freedom of Information laws in Brazil also revealed that during the 2018 and 2019, the years for which GTAs were analysed in this report, EU countries were able to import beef from 14 slaughterhouses in Mato Grosso state – seven owned by JBS, four by Minerva and three by Marfrig.⁸⁰ When the EUDR is fully in force, such imports to the EU should be illegal due to the lack of the required permits proving the legality of the associated forest clearances.

Cerrado cattle’s deforestation footprint dwarfed that of Amazon cattle

Deforestation for each cow that JBS, Marfrig and Minerva bought from Mato Grosso was 1,132 square meters in the Cerrado and 85 square metres in the Amazon.



Deforestation identified in a ranch after 22 July 2008; Cattle farms recorded as supplying JBS, Minerva and Marfrig between January 2018 and September 2019. Note: the beef firms purchased from a pool of the same ranches over the supply period (thus aggregate figures vary to the sums of figures for each company).

Source: Global Witness

In response to our findings, JBS refuted our analysis and said that Global Witness used different criteria from that of Brazil’s federal prosecutors who monitor their activity “resulting in misleading conclusions”. The company said that only 482 out of the 611 farms analysed by Global Witness were on the companies’ supplier database, and that all cattle purchases from these farms were legally compliant between 2008 and 2019. Of these farms, however, 88 farms have since been restricted from selling to the company due to non-compliance even before Global Witness contacted the company about the findings of this report. The remaining 394 farms are still legally compliant, it said.

Marfrig refuted Global Witness’ findings on a number of technical grounds, including questioning the deforestation database which Global Witness used, and said that insufficient information was provided by Global Witness for the company to cross-reference all of our findings. It said that its own internal monitoring systems are in line with federal Brazilian law and that its cattle purchasing operations are audited by a third party. In 2023, for the eleventh consecutive year, it said this resulted in the company achieving 100% compliance with Brazilian law. In a statement the company said: “We emphasize that Marfrig is strongly committed to conciliate its operations with sustainability, especially the conservation of Brazilian biomes, constantly developing and applying technologies to mitigate risks, permanently engaging suppliers and ensuring transparency for all stakeholders.”

In both JBS’ and Marfrig’s communication with Global Witness, the companies suggested that we have used different criteria than public prosecutors in Brazil who monitor the companies’ deforestation activity. Global Witness accepts that we used a slightly more stringent process in our methodology for identifying small cases of deforestation within cattle farms than that of the public prosecutor, but

believes the difference this made to our overall findings is minimal. This is the only small difference in our approach to that of the public prosecutor, and we believe it makes our work more robust.

In a statement, Minerva did not directly address Global Witness’s findings but sent details of its environmental and traceability commitments.

The company said its monitoring of direct suppliers “guarantees” its production chain “is free of illegal deforestation, labour practices similar to slavery or child labour, overlaps with protected areas, or environmental embargoes.” No evidence was presented to dispute our research. Minerva also said it blocks suppliers found to violate its policies and commitments.



Cattle grazing in a prohibited area in Ibama, Aripuana in Mato Grosso state, Brazil. Bruno Kelly / Greenpeace

The evidence that Global Witness has identified is one of a failure of diligence around supply chains. Global Witness does not suggest that JBS, Marfrig or Minerva have authorised or commissioned the deforestation of any land from any of the farms or ranches that supply animals to them. However, the companies are in a position to influence change of practice on the ground, and to curb illegal deforestation.

Commitment issues

Stopping deforestation is a challenge for Brazilian authorities. In the Cerrado there is little protection⁵³ compared to that provided by zero-deforestation agreements in the Amazon which many meatpackers have committed to.

This discrepancy has implications for the planet’s climate. A 2018 study showed two major supply chain agreements that had dramatically reduced deforestation in the Brazilian Amazon resulted in ‘spillover’ effects of increased deforestation and native plant loss in the neighbouring Cerrado savannah.⁵⁴

JBS, Marfrig and Minerva are signatories to one of these agreements, the legally binding Terms of Adjustment of Conduct (TAC) covering beef, which bans sales from properties with illegal deforestation.⁵⁵ The first such deal was created by state prosecutors in Pará in 2009, then extended to the rest of the Amazon.⁵⁶

The beef giants have also signed the G4 Cattle Agreement with Greenpeace. The voluntary policies, created after pressure from the environmental group, block them from buying animals from farms within the Amazon with any kind of deforestation, even if it was legal, and commit them to set up systems to monitor deforestation risk in their supplies.⁵⁷

In addition, Marfrig and JBS signed legal agreements with state prosecutors in Mato Grosso in 2010⁵⁸ and 2013⁵⁹ respectively. Our analysis suggests that these agreements are adding some protection to the Amazon when compared to the Cerrado. By contrast, the three beef firms have only made voluntary commitments concerning the world’s largest savannah. While Minerva stated in 2021 that it has been monitoring its direct suppliers across the biome^{60,61}, JBS promises zero illegal deforestation in its Cerrado supply chains by 2025⁶², and Marfrig full traceability of all Brazilian biomes by 2025.⁶³ Previous Global Witness reports cast doubt on these non-binding promises, showing the meatpackers have repeatedly failed to live up to their word.⁶⁴

Investigations from Global Witness²⁴ and others⁷⁶ have repeatedly shown that monitoring is not enough. Deforestation has to stop. The state prosecutor in Mato Grosso, and their counterparts in other states, must follow Pará’s lead and require legal commitments, backed up by fines for non-compliance, from the climate-wrecking cattle giants to stop deforestation, across both the Amazon and the Cerrado.

Bond villains

Big banks and investment outfits such as Barclays, BNP Paribas, HSBC, ING Group, Merrill Lynch, and Santander are contributing to the vast deforestation of climate critical forests in Brazil by collectively underwriting billions of dollars’ worth of bonds in recent years for the three big beef firms driving the destruction providing working business capital.⁶⁵

For example, JBS in 2019 issued bonds worth \$1.25 billion which were underwritten by major financial institutions including Barclays Capital. There followed another \$1 billion in bonds issued by JBS two years later, which Barclays Capital also underwrote, together with Santander Investment Securities and others.



Shares and bonds

Buying a share means an investor owns part of a company and receives a portion of its profits, as well as voting rights and influence over corporate decision making. Underwriting a bond is different to owning shares in a company. When an investor buys a bond, it is essentially lending money to the issuer in exchange for periodic interest payments and the return of the bond's face value when it matures.

Underwriters act as intermediaries between the bond issuer and the investor purchasing that security. The underwriter helps to set the bond's face value, length and interest rate. They play a crucial role in helping investors determine if a business is creditworthy. The underwriter takes responsibility for reselling the bonds on the open market, making profit in the process.

By underwriting bonds for JBS, Marfrig and Minerva, the major American, European and British financiers together facilitated greater access to finance for the meatpacking giants and, in doing so, helped market them – despite their exposure to deforestation – positively to potential investors.

Many of the global banks and financial institutions listed above as performing these duties are members of the Net Zero Banking Alliance, in which they commit to achieving net zero greenhouse gas emissions by 2050.⁶⁶

Global Witness believes JBS, Marfrig and Minerva should not be receiving additional financing while they're causing deforestation - in the Cerrado, in the Amazon, or anywhere. Doing so fails to properly convey to would-be investors the seriousness of the environmental abuses riddling their supply chains.

Instead, by helping the Brazilian beef giants secure vital finance, the bond underwriters together provided them with a lifeline to keep fuelling land clearances in Mato Grosso and beyond. We view the EU, US and UK financiers – whatever their pledges towards the environment – as collectively contributing to reputation laundering through their financial role that in effect promoted a product linked to deforestation.

ING told Global Witness it had toughened its policies since issuing Marfrig's 2019 "sustainable transition" bond, to combat deforestation and promote traceability. It said it does not currently issue bonds for the three meatpackers' Brazilian entities, or provide bond issuance or any financial services for their holding companies.

Barclays, BNP Paribas, Merrill Lynch and Santander declined to comment.

In response to our findings HSBC said it could not discuss clients due to confidentiality rules, including confirming whether a client is indeed theirs, but that the bank "does not knowingly provide financial services to high-risk customers involved directly in or sourcing from suppliers involved in deforestation...of primary tropical forest."

Slash and earn

Drawing on information from financial data provider Refinitiv,⁶⁷ Global Witness can disclose that as of October 2023:

- > American, British and EU investment companies, namely The Vanguard Group, Capital Research Global Investors, Fidelity Management & Research Company, and BlackRock, but also Dimensional Fund Advisors, and Union Investment Privatfonds, among others, owned shares worth more than \$885.5 million in JBS.
- > American, British and EU investment companies, namely the US outfits The Vanguard Group, BlackRock, and California State Teachers Retirement System (CalSTRS), owned shares worth more than \$53 million in Marfrig.
- > American, British and EU investment companies, namely AllianceBernstein, T. Rowe Price Associates, Compass Group, BlackRock, and Lingohr & Partner Asset Management, owned shares worth nearly \$211.2 million in Minerva.

Many of the financial institutions named above are members of industry-led initiatives that include commitments to reduce or eliminate their portfolios' exposure to deforestation, like the United Nations-convened Net Zero Banking Alliance⁶⁸ and the Net Zero Asset Managers Initiative (NZAM).⁶⁹ This does not seem to have inhibited them from owning shares in deforesting beef companies. Indeed rather than exit beef company ownership some like Vanguard – the world's largest asset manager after BlackRock⁷⁰ – have chosen to exit the NZAM green initiative in December 2022.⁷¹

This mixed track record shows why regulation – rather than voluntary initiatives – in global financial centres like the EU, UK and USA is needed to require mandatory due diligence for financing of deforestation in supply chains. Without this, banks and investor companies are failing to screen out deforestation and are contributing to the destruction of tropical rainforests.

When asked for comment, BlackRock said it holds a minority stake in all three meatpackers for its clients. The asset manager highlighted that its significant holdings in investment portfolios restrict its ability to exclude specific companies. It reported ongoing engagement with the Brazilian firms on deforestation risks, and voting against or abstaining from their management proposals in 2023 due to governance concerns.

Union Investment Privatfonds told Global Witness it took a “critical view” of JBS and had already sold its shares in the company prior to contact by Global Witness. Marfrig shareholder CalSTRS said it monitors its portfolio and collaborates with companies to mitigate “risks”.

AllianceBernstein declined to comment and referred questions to Minerva. A spokesperson for Capital Group referred questions to JBS. Dimensional Fund Advisors, Fidelity, and T. Rowe Price Associates acknowledged Global Witness's request for comment but have yet to formally respond at the time of writing. The remaining shareholders named above did not reply.

What we need

In light of our findings:

- > Global protections are needed for the Cerrado. These must include full inclusion in the EU Deforestation Regulation (EUDR), with a cut-off date no later than 31 December 2020.
- > Financial backers of JBS, Marfrig and Minerva must use their influence to demand measurable and transparent improvements, and cease to provide lending and underwriting services until each company can demonstrate deforestation-free supply chains in Mato Grosso and beyond.
- > Key financial centres – including the US, UK, EU, and China – must legislate for mandatory due diligence for the financing of deforestation and strengthen financial regulations to prevent the bankrolling of companies that cause tropical deforestation.
- > JBS, Marfrig and Minerva must fully implement their legal agreements covering the Amazon and end deforestation in their supply chains, publishing their supply chain audits for Mato Grosso both in the Amazon and Cerrado.
- > Federal prosecutors must extend the Amazon no deforestation legal agreements, such as the harmonised protocol, to the Cerrado.
- > Mato Grosso government and all state governments hosting cattle must allow public access for GTAs and implement a traceability system to allow for public scrutiny of beef company supply chains.

Methodology

a. Deforestation analysis

The first stage was to find ranches with deforestation that supply the three meatpackers' slaughterhouses in the Brazilian state of Mato Grosso.

Global Witness obtained cattle transport permits (GTAs) for the years 2018 to 2019 from the website of the [Sanitary Agency of the State of Mato Grosso](#) (Instituto de Defesa Agropecuária de Mato Grosso – INDEA) to identify the cattle suppliers to JBS, Marfrig and Minerva over the period January 2018 to September 2019.

The Federal Government requires these documents for sanitary control as cattle are transported around the country. They show movements of cattle from ranch to ranch, or from farm to slaughterhouse.

Legal research commissioned by Global Witness has uncovered some court precedents in Brazil which have expressly declared the GTA a public document.⁷² In 2015, the Federal Prosecutor's Office in Pará recommended GTA information be fully disclosed, stating that "broad access to data from cattle transport permits is an essential tool for the implementation of the principle of environmental

information with regard to the livestock chain, as it will allow citizens and organised civil society, with much greater accuracy, to control the environmental implications that arise from this activity.”⁷³

The data were filtered based on the information in the GTAs that specified the cattle’s destination as slaughterhouses owned by JBS, Marfrig and Minerva. The filtering was done for the period January 2018 and September 2019.

The aim of this was to ensure only these cattle would be considered in the analysis and not others that may not have been slaughtered at the premises of the three beef companies.

Additionally, Global Witness only analysed GTAs with the status “in transit” and “arrived at destination”, excluding those with the status “cancelled”. Cancelled GTAs are when a GTA was issued but then subsequently cancelled, thus indicating the cattle never went to the slaughterhouse.

From GTAs were also extracted, for each rural property, the numbers of animals sold to the company.

Global Witness then downloaded ranch boundaries from a publicly available website of Mato Grosso state’s environmental agency, [SEMA](#).

SICAR is a rural environmental property registry that requires cattle ranchers to upload information including the ranch’s size, owner, and shapefile.

We then matched the SICAR data with the GTA data. This was done through an automatic process which matched GTA and SICAR data using the following information:

- The CPF/CNPJ (unique tax code for individuals/companies in Brazil) of the rancher/company in the GTA and SICAR.
- The name of the ranches on the GTA and SICAR.
- The name of the ranch owners on the GTA and SICAR.

The selection concerned the ranches which lacked names (of farms and ranchers), or had differences in identity information between the GTA and SICAR.

To avoid double counting, we identified any ranches where multiple geometric boundaries for the same area were present in the data. In instances where there were duplicate boundaries, the more recent of the two (presumably created after the first sale to slaughterhouses) was excluded from the supplier list.

To avoid the risk that any changes in the ranch's land registry (CAR or Rural Environmental Registry) boundaries over the period JBS, Minerva and/or Marfrig purchased animals from them may have either been removed or included deforestation within the meatpackers’ direct suppliers’ ranch boundaries, we used the CAR boundary for the year of purchase (2018 or 2019).

For rural properties for which we could not find CAR boundaries for the year of purchase, we used the boundary from our database whose date was closest to the year of purchase.

In the list of final results, the year of the CAR layer used is listed for each rural property.

Global Witness then obtained official Amazon and Cerrado [deforestation data](#) from the Brazilian government's National Institute for Space Research (INPE-PRODES). We overlaid the deforestation data with the land boundaries of the ranches that supplied the three beef companies over the period January 2018 to September 2019.

Once this was done, we checked the deforestation polygons to see if the beef companies had complied with their agreements with Mato Grosso state prosecutors.

The criteria used for this process were:

- Deforestation identified in a ranch after 22 July 2008 – the date that the prosecutors' agreement and the Brazilian Forest code contemplates.
- Deforestation in a ranch that exceeded 6.27 hectares (ha), meaning the sum of all deforestation polygons in the period analysed needed to be greater than or equal to 6.27 ha.
- Deforestation that preceded the date of purchase on the GTA.

b. Illegality analysis

The second stage was to determine whether deforestation within the ranches was legal or not.

Global Witness accessed publicly available deforestation permits from Mato Grosso's relevant state entity, the Environmental Secretariat (SEMA).

This was done to see if the deforestation identified in the ranches had the legally required permit or not.

This permit (called Autorização de Desmate) is required for rural producers that want to conduct deforestation in their property under Article 26 of Brazil's Forest Code – the country's main forest law.

Under Chapter 5 of the law, titled "Of vegetation suppression for alternative use of land", Article 26 states:

"The suppression of native vegetation for the alternative use of land, both on public and private land, depends on the property being registered in the Environmental Rural Registry (CAR) mentioned in article 29, and on prior authorisation from the competent state organ."

The competent state organ in Mato Grosso authorised to issue such permits is the Environmental Secretariat (SEMA).

The term native vegetation is defined in Article 1, Paragraph A1 of the law as "forests and other forms of native vegetation."

Additionally, Brazil has a Federal Decree on infractions related to the environment, Article 43 of which makes it an administrative infraction (not a crime) to: "Destroy, damage forests, or other forms of vegetation [...] without authorisation from the competent authority."

Thus, if no authorisation for deforestation is granted, this is considered an infraction under this law. (Criminal offences against the environment are found in Law 9,605, from Article 38 onwards.)

The SEMA Mato Grosso state permits layer can be downloaded via this [link](#).

The permits layer contains information including:

- The CAR ID of the rural property.
- The date the permit was issued.
- The boundaries of the area for which deforestation was allowed.

Having previously identified ranches with deforestation by overlaying official Amazon and Cerrado deforestation polygon data from INPE-PRODES with the land boundaries of ranches that supplied the beef companies over the period January 2018 to September 2019, Global Witness then overlaid the SEMA deforestation permits layer to analyse the legality of deforestation within the ranches.

We filtered the data using the ID numbers of the ranches to focus on ranches identified to have deforestation (which also included the ranches that were previously excluded due to duplications of the rural property boundary geometries).

We considered any deforestation polygon that overlapped with a deforestation permit polygon as indicating authorised, or legal, deforestation. Any deforestation polygon that did not overlap with a deforestation permit polygon was considered to indicate unauthorised, or illegal, deforestation.

Based on this analysis, Global Witness calculated the overall amount of deforestation, legal and illegal, for each of the three beef companies' supply chains.

Nowhere do we make the claim that the owners of the ranches were responsible for any illegal deforestation detected.

The only claim is that illegal deforestation happened within the boundaries of the relevant ranches, contrary to the beef companies' agreements with Mato Grosso state prosecutors or Brazilian law, as referenced in the report.

Finally, Global Witness overlaid the supplier layer with the Environmental Recovery Plan layer (PRA). The PRA layer can be downloaded [here](#).

PRA is a tool that can be used to rectify an environmental liability.

The PRA layer includes the following information:

- The CAR ID of the rural property.
- The date the permit was issued.
- The validity date of the plan (i.e. the date until when the recovery plan needs to be concluded)
- The boundaries of the rural property.

As a result of this analysis, Global Witness concluded that none of the deforestation ranches signed a PRA prior to the date they sold cattle to slaughterhouses.

Annex

a. Summary of deforestation analysis results

Deforestation calculated from 22 July 2008.

Data on suppliers and cattle transfers covers the period January 2018 to September 2019.

Note: the beef firms purchased from a pool of the same ranches over the period January 2018 to September 2019 (thus aggregate figures vary to the sum of figures for each company).

i. Overall

Biome	Suppliers	Suppliers linked to deforestation	% suppliers linked to deforestation	Cattle	Cattle linked to deforestation	% cattle linked to deforestation	Deforestation (ha)	Illegal deforestation (ha)	% illegal deforestation
Amazon	3,205	312	10%	1,211,837	148,137	12%	10,261	10,205	99.5%
Cerrado	1,226	525	43%	438,260	156,081	36%	49,629	49,116	99.0%

ii. By meatpacker

JBS

Biome	Suppliers	Suppliers linked to deforestation	% suppliers linked to deforestation	Cattle	Cattle linked to deforestation	% cattle linked to deforestation	Deforestation (ha)	Illegal deforestation (ha)	% illegal deforestation
Amazon	2,742	281	10%	831,107	119,357	14%	9,374	9,324	99.5%
Cerrado	803	330	41%	242,806	81,062	33%	32,107	31,619	98.5%

Marfrig

Biome	Suppliers	Suppliers linked to deforestation	% suppliers linked to	Cattle	Cattle linked to deforestation	% cattle linked to deforestation	Deforestation (ha)	Illegal deforestation (ha)	% illegal deforestation
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			deforestation						
Amazon	628	50	8%	268,361	19,074	7%	1660	1655	99.7%
Cerrado	445	227	51%	141,537	56,852	40%	21,338	21,314	99.9%

Minerva

Biome	Suppliers	Suppliers linked to deforestation	% suppliers linked to deforestation	Cattle	Cattle linked to deforestation	% cattle linked to deforestation	Deforestation (ha)	Illegal deforestation (ha)	% illegal deforestation
Amazon	280	19	7%	112,369	9,706	9%	898	898	100%
Cerrado	234	97	41%	53,917	18,167	34%	7,615	7,602	99.8%

b. Financial data

i. Shareholders

Refinitiv data, dated 12 October 2023, listing the Brazilian meatpacking companies' top three American, British and EU shareholders.

JBS

Top three American shareholders

Shareholder name	Value of ordinary shares (million \$)
The Vanguard Group, Inc.	162.39
Capital Research Global Investors	158.26
Fidelity Management & Research Company	94.63

Top three British shareholders

Shareholder name	Value of ordinary shares (million \$)
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BlackRock Advisors (UK) Limited	14.28
Dimensional Fund Advisors, Ltd.	5.88
BlackRock Investment Management (UK) Ltd.	4.67

Top three EU shareholders

Shareholder name	Value of ordinary shares (million \$)
BlackRock Asset Management Deutschland AG	19.15
Union Investment Privatfonds GmbH	3.46
Amundi Asset Management, SAS	1.71

Marfrig

Top three American shareholders

Shareholder name	Value of ordinary shares (million \$)
The Vanguard Group, Inc.	14.56
California State Teachers Retirement System	8.86
BlackRock Institutional Trust Company, N.A.	7.44

Top three British shareholders

Shareholder name	Value of ordinary shares (million \$)
BlackRock Advisors (UK)	1.49
State Street Global Advisors (UK)	0.45
BlackRock Investment Management (UK)	0.31

Top three EU shareholders

Shareholder name	Value of ordinary shares (million \$)
LähiTapiola Varainhoito Oy	0.74
AcomeA SGR S.p.A.	0.26
State Street Global Advisors Ireland Limited	0.23

Minerva

Top three American shareholders

Shareholder name	Value of ordinary shares (million \$)
AllianceBernstein L.P.	67.6
T. Rowe Price Associates, Inc.	53.2
Compass Group, L.L.C.	42.47

Top three British shareholders

Shareholder name	Value of ordinary shares (million \$)
BlackRock Advisors (UK) Limited	1.35
Dimensional Fund Advisors, Ltd.	0.37
Amundi (UK)	0.1

Top three EU shareholders

Shareholder name	Value of ordinary shares (million \$)
Lingohr & Partner Asset Management GmbH	1.02
LähiTapiola Varainhoito Oy	0.46
Fideuram Asset Management (Ireland) dac	0.13

ii. Bond underwriters

Refinitiv data, dated 12 October 2023, lists the American, British and EU banks and financial institutions that have collectively underwritten the three Brazilian meatpacking companies' bonds since 2017.

They include:

- Barclays Capital (part of British bank Barclays)
- BNP Paribas Securities (part of France's BNP Paribas)
- HSBC Securities (USA) (part of British bank HSBC Holdings)
- ING Financial Markets (part of the Dutch ING Group)
- Merrill Lynch, Pierce, Fenner & Smith (formerly Merrill Lynch)
- Santander Investment Securities (part of Spain's Banco Santander)

Example 1: JBS

JBS issued bonds worth \$1.25 billion on 6 August 2019. The listed underwriters are:

- BARCLAYS CAPITAL INC (Joint Lead Manager)
- BMO CAPITAL MARKETS CORP (Joint Lead Manager)
- RBC CAPITAL MARKETS LLC (Joint Lead Manager)
- RABO SECURITIES USA INC (Co-manager)
- REGIONS SECURITIES LLC (Co-manager)
- TRUIST SECURITIES INC (Co-manager)
- U S BANCORP INVESTMENTS INC (Co-manager)
- BARCLAYS CAPITAL INC (Bookrunner Lead Left)
- BMO CAPITAL MARKETS CORP (Bookrunner)
- RBC CAPITAL MARKETS LLC (Bookrunner)

Example 2: Marfrig (May 2019)

Marfrig issued bonds worth \$1 billion on 14 May 2019. The listed underwriters are:

- BANCO BRADESCO BBI SA (Joint Lead Manager)
- BB SECURITIES LTD (Joint Lead Manager)
- BNP PARIBAS SECURITIES CORP (Joint Lead Manager)
- BTG PACTUAL HOLDING SA (Joint Lead Manager)
- HSBC SECURITIES (USA) INC (Joint Lead Manager)
- NOMURA SECURITIES INTERNATIONAL INC (Joint Lead Manager)
- SANTANDER INVESTMENT SECURITIES INC (Joint Lead Manager)

Example 3: Marfrig (August 2019)

Marfrig issued “self-labeled green bond[s]” worth \$500 million on 6 August 2019. The listed underwriters are:

- BANCO BRADESCO BBI SA (Joint Lead Manager)
- BB SECURITIES LTD (Joint Lead Manager)
- BNP PARIBAS SECURITIES CORP (Joint Lead Manager)
- BTG PACTUAL HOLDING SA (Joint Lead Manager)
- HSBC SECURITIES (USA) INC (Joint Lead Manager)
- ING FINANCIAL MARKETS LLC (Joint Lead Manager)
- NOMURA SECURITIES INTERNATIONAL INC (Joint Lead Manager)
- RABO SECURITIES USA INC (Joint Lead Manager)
- SANTANDER INVESTMENT SECURITIES INC (Joint Lead Manager)
- XP INVESTMENTS US LLC (Joint Lead Manager)

Example 4: Minerva

Minerva issued bonds worth \$500 million on 19 December 2017. The listed underwriters are:

- BANCO BRADESCO BBI SA (Joint Lead Manager)
- BB SECURITIES LTD (Joint Lead Manager)
- HSBC SECURITIES (USA) INC (Joint Lead Manager)
- ITAU BBA USA SECURITIES INC (Joint Lead Manager)
- MERRILL LYNCH PIERCE FENNER & SMITH INC (Joint Lead Manager)

Endnotes

- ¹ Royal Geographical Society, 'The Upside Down Forest', November 2017, available at: <https://www.rgs.org/schools/teaching-resources/the-upside-down-forest/> (accessed on 12 October 2023).
- ² Dou, Y., da Silva, R.F.B., Yang, H. and Liu, J. (2018) 'Spillover effect offsets the conservation effort in the Amazon', *Journal of Geographical Sciences*, 28, 1715-1732. Available at: <https://doi.org/10.1007/s11442-018-1539-0> (accessed on 22 October 2023).
- ³ Chain Reaction Research, 'JBS, Marfrig, and Minerva: Material Financial Risk from Deforestation in Beef Supply Chains', December 2020, available at: <https://chainreactionresearch.com/wp-content/uploads/2020/12/JBS-Marfrig-and-Minerva-Material-financial-risk-from-deforestation-in-beef-supply-chains-4.pdf> (accessed on 9 October 2023). Page 1, paragraph 1 states: "JBS, Marfrig, and Minerva are the largest meat processors in Brazil, dominating beef processing and exports."
- ⁴ JBS, Minerva and Marfrig's supply chains were connected to a total 59,890 hectares (ha) of deforestation from Mato Grosso suppliers, of which 59,321 ha was illegal, according to Global Witness' analysis. Land area of Chicago recorded as 591 km² (59,100 ha) in Duis, P. and Schallhorn, C. 'Chicago', *Encyclopedia Britannica*, 15 October 2023, available at: <https://www.britannica.com/place/Chicago> (accessed on 16 October 2023).
- ⁵ As detailed in section 'Commitment issues'.
- ⁶ Zu Ermgassen, E. K., Godar, J., Lathuillière, M. J., Löfgren, P., Gardner, T., Vasconcelos, A., and Meyfroidt, P. (2020) 'The origin, supply chain, and deforestation risk of Brazil's beef exports', *Proceedings of the National Academy of Sciences*, 117(50), 31770-31779. Available at: <https://doi.org/10.1073/pnas.2003270117> (accessed on 8 October 2023). Paragraph 6 states: "Two-thirds of cleared land in the Amazon and Cerrado biomes have been converted to cattle pasture (16), making the Brazilian cattle sector responsible for one-fifth of all emissions from commodity-driven deforestation across the entire tropics (17)."
- ⁷ Ministério do Meio Ambiente e Mudança do Clima, 'O Bioma Cerrado', no date, available at: <https://antigo.mma.gov.br/biomas/cerrado.html> (accessed on 7 October 2023). Paragraph 1 states: "O Cerrado é o segundo maior bioma da América do Sul, ocupando uma área de 2.036.448 km², cerca de 22% do território nacional."
- ⁸ Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio), 'BIODIVERSIDADE DO CERRADO', no date, available at: <https://www.icmbio.gov.br/cbc/conservacao-da-biodiversidade/biodiversidade.html> (accessed on 7 October 2023). Paragraph 2 states: "O Cerrado é uma das regiões de maior biodiversidade do mundo, e estima-se que possua mais de 6 mil espécies de árvores e 800 espécies de aves (MMA, 2002)."
- ⁹ Royal Geographical Society, 'The Upside Down Forest', November 2017, available at: <https://www.rgs.org/schools/teaching-resources/the-upside-down-forest/> (accessed on 12 October 2023).

¹⁰ Terra, M., Nunes, M., Souza, C., Ferreira, G., do Prado-Junior, J., Rezende, V., Maciel, R., Mantovani, V., Rodrigues, A., Morais, V., Scolforo, J. and de Mello, J. (2023) 'The inverted forest: Aboveground and notably large belowground carbon stocks and their drivers in Brazilian savannas', *Science of The Total Environment*, 867: 161320, available at: <https://doi.org/10.1016/j.scitotenv.2022.161320> (accessed on 22 October 2023). Section 'Highlights' states: "The Cerrado have ca. five times greater carbon in belowground (roots+soil) stocks."

¹¹ Cerrado Manifesto, 'The Future of the Cerrado in the Hands of the Market: Deforestation and Native Vegetation Conversion must be Stopped', 11 September 2017, available at: http://d3nehc6yl9qzo4.cloudfront.net/downloads/cerradoconversionzero_sept2017_2.pdf (accessed on 7 October 2023). Paragraph 3 states: "The Cerrado stores the equivalent of 13.7 billion tons of carbon dioxide (CO₂), and the greenhouse gas emissions resulting from native vegetation conversion will impede Brazil's international commitments under the climate and biodiversity conventions."

Figure for China's national annual greenhouse gas emissions stated as 12.30 GtCO₂e in 2020 in: World Resources Institute (WRI), 'Climate Watch Historical GHG Emissions', 2022, Washington, DC: World Resources Institute. Data available at: <https://www.climatewatchdata.org/ghg-emissions> (accessed on 7 October 2023).

¹² David, M., da Silva, C.J., Alcântara, L.C.S. and Sguarezi, S.B. (2020) 'Traditional knowledge in communities in the Mato Grosso cerrado: a bibliometric study', *Biodiversity*, 19 (2). Available at: <https://periodicoscientificos.ufmt.br/ojs/index.php/biodiversidade/article/view/10411> (accessed on 9 October 2023). Section 'INTRODUÇÃO' states: "O Cerrado é o segundo maior bioma brasileiro em extensão e a savana mais rica em biodiversidade do mundo. Com alto grau de endemismo, o bioma abriga mais de 11 mil espécies de plantas nativas já catalogadas. Além da importância ambiental, do Cerrado depende a sobrevivência de diferentes populações, como indígenas, quilombolas, ribeirinhos, babaçueiros, dentre outras comunidades tradicionais que compõem o patrimônio histórico e cultural brasileiro, e detêm um conhecimento tradicional de sua biodiversidade (MMA, 2018)."

¹³ Folha de S.Paulo, 'Desmatamento no cerrado cresce 83% em maio; acumulado é recorde', 7 June 2023, available at: <https://www1.folha.uol.com.br/ambiente/2023/06/desmatamento-no-cerrado-tem-novo-recorde-e-cresce-83-em-maio.shtml> (accessed on 7 October 2023). Paragraph 1 states: "Enquanto o desmatamento na Amazônia vem caindo, no cerrado ele bateu novo recorde. Nos cinco primeiros meses de 2023, foram registrados 3.532 km² de destruição no cerrado, 35% a mais que o visto no mesmo período do ano anterior."

¹⁴ Instituto Nacional de Pesquisas Espaciais (INPE), 'A área de vegetação nativa suprimida no bioma Cerrado no ano de 2022 foi de 10.688,73km²', Technical note, 8 November 2022, available at: https://www.gov.br/inpe/pt-br/assuntos/ultimas-noticias/2022_1108_NotaTecnica_ProdesCerrado_2022_final_rev.pdf (accessed on 7 October 2023). Page 1, paragraph 1 states: O Instituto Nacional de Pesquisas Espaciais (INPE), unidade vinculada ao Ministério de Ciência, Tecnologia e Inovações (MCTI), concluiu o apeamento da supressão de vegetação nativa no bioma Cerrado. O valor mapeado foi de 10.688,73 km² de supressão de vegetação nativa no período de agosto de 2021 a julho de 2022. Esse valor representa um aumento de

25,29% em relação ao valor apurado pelo PRODES 2021 que foi de 8.531,44 km² para o bioma Cerrado.” The same page contains a data table, ‘Tabela 1. Área de vegetação nativa suprimida no bioma Cerrado em 2022 em cada Estado’, states that Mato Grosso state lost 742.12km², or 6.94%, of its native vegetation in the Cerrado biome in 2022.

¹⁵ Lathuilliere, M., Johnson, M., Galford, G. and Couto, E. (2014) ‘Environmental footprints show China and Europe’s evolving resource appropriation for soybean production in Mato Grosso, Brazil’, *Environmental Research Letters*, 9. 074001. <https://iopscience.iop.org/article/10.1088/1748-9326/9/7/074001> (Accessed 9 October 2023).

¹⁶ Agência de Notícias - IBGE, ‘Em 2021, o rebanho bovino bateu recorde e chegou a 224,6 milhões de cabeças’, 22 September 2022, available at: <https://agenciadenoticias.ibge.gov.br/agencia-noticias/2012-agencia-de-noticias/noticias/34983-em-2021-o-rebanho-bovino-bateu-recorde-e-chegou-a-224-6-milhoes-de-cabecas> (accessed on 7 October 2023). Subheading ‘Rebanho bovino bate recorde em 2021 e chega a 224,6 milhões de cabeças’, paragraph 3 states when discussing cattle herd figures in Brazil: “Mato Grosso, como em 2020, foi líder no ranking estadual, com 32,4 milhões de cabeças, ou 14,4% do efetivo nacional.”

See also: Instituto de Defesa Agropecuária de Mato Grosso (INDEA/MT), ‘Pecuária de MT quebra novo recorde e rebanho atinge 32,7 milhões de cabeças’, 3 February 2022, available at: <https://www.indea.mt.gov.br/-/18851655-pecuaria-de-mt-quebra-novo-recorde-e-rebanho-atinge-32-7-milhoes-de-cabecas> (accessed on 7 October 2023). Paragraph 1 states: “No período de um ano, o rebanho bovino de Mato Grosso teve aumento em 1,624 milhão de cabeças e agora totaliza 32.788.192 de cabeças. Este é um novo recorde para o estado de Mato Grosso, campeão na atividade pecuária no país. Levando em conta a estimativa populacional do IBGE para Mato Grosso em 2021, são 9 bois a cada um habitante.”

¹⁷ Instituto de Defesa Agropecuária de Mato Grosso (INDEA/MT), ‘Pecuária de MT quebra novo recorde e rebanho atinge 32,7 milhões de cabeças’, 3 February 2022, available at: <https://www.indea.mt.gov.br/-/18851655-pecuaria-de-mt-quebra-novo-recorde-e-rebanho-atinge-32-7-milhoes-de-cabecas> (accessed on 7 October 2023). Paragraph 1 states: “No período de um ano, o rebanho bovino de Mato Grosso teve aumento em 1,624 milhão de cabeças e agora totaliza 32.788.192 de cabeças. Este é um novo recorde para o estado de Mato Grosso, campeão na atividade pecuária no país. Levando em conta a estimativa populacional do IBGE para Mato Grosso em 2021, são 9 bois a cada um habitante.”

¹⁸ Ibid.

¹⁹ MercoPress, ‘Brazil planning beef exports of three million tons by 2030’, 15 February 2023. Available at: <https://en.mercopress.com/2023/02/15/brazil-planning-beef-exports-of-three-million-tons-by-2030> (accessed on 7 October 2023). Paragraph 9 states: “Mato Grosso, São Paulo and Goiás appear at the top ranking states responsible for beef exports, according to Abiec data.”

²⁰ Ministério do Desenvolvimento, Indústria, Comércio e Serviços, ‘Comex Stat’, no date, available at: <http://comexstat.mdic.gov.br/pt/geral> (accessed on 8 October 2023). Apply the following settings to

the data portal before clicking ‘Consultar’ to see the statistics: Tipo de operação: Exportação; Ano inicial: 2022; Ano final: 2022; Mês inicial: Janeiro; Mês final: Dezembro; Detalhar por mês: unchecked; Filtros: UF do Produto, Subposição (SH6); UF do Produto: Mato Grosso; Subposição (SH6): 020230 - Carnes de bovino, desossadas, congeladas; 020130 – Carnes de bovino, desossadas, frescas ou refrigeradas: Cesta: checked; Detalhamento: UF do Produto, Subposição (SH6); \$ Valores: Valor FOB (US\$).

²¹ Ministério do Desenvolvimento, Indústria, Comércio e Serviços, ‘Comex Stat’, no date, available at: <http://comexstat.mdic.gov.br/pt/geral> (accessed on 8 October 2023). Apply the following settings to the data portal before clicking ‘Consultar’ to see the statistics: Tipo de operação: Exportação; Ano inicial: 2022; Ano final: 2022; Mês inicial: Janeiro; Mês final: Dezembro; Detalhar por mês: unchecked; Filtros: UF do Produto, Subposição (SH6), País; UF do Produto: Mato Grosso; Subposição (SH6): 020230 - Carnes de bovino, desossadas, congeladas; 020130 – Carnes de bovino, desossadas, frescas ou refrigeradas: Cesta: checked; País: China, Reino Unido, Estados Unidos; Detalhamento: UF do Produto, Subposição (SH6), País; \$ Valores: Valor FOB (US\$).

²² Ibid.

²³ Global Forest Watch, ‘Location of tree cover loss in Brazil’, no date. Available at: <https://www.globalforestwatch.org/dashboards/country/BRA/?category=undefined> (accessed on 7 October 2023).

²⁴ Global Witness, ‘Beef, Banks and the Brazilian Amazon’, 2 December 2020, available at: <https://www.globalwitness.org/en/campaigns/forests/beef-banks-and-brazilian-amazon/> (accessed on 8 October 2023). Paragraph 4 of the landing page hosting the weblink through which the report can be downloaded states: “Fresh evidence shows that major Brazilian meat traders JBS, Marfrig and Minerva are failing to remove vast swathes of deforested Amazon land from their supply chains, which flawed audits by DNV-GL and Grant Thornton did not identify.”

²⁵ Global Witness, ‘Global Witness calls on financiers to stop bankrolling rainforest beef, after official audit reflects our findings about JBS’, 14 March 2023, available at: <https://www.globalwitness.org/en/campaigns/forests/global-witness-calls-financiers-stop-bankrolling-rainforest-beef/> (accessed on 9 October 2023). Section ‘Global Witness investigations have supported prosecutors on the ground in the Amazon state of Pará’ states: “After sharing our findings with prosecutors in Pará, they carried out an official audit of JBS’s cattle purchases between 2018 and mid-2019, confirming the audit findings of our report [...] As a result of these failures, prosecutors took the unprecedented step of fining JBS almost US\$1 million. A new agreement was then signed obliging JBS to adopt more stringent controls when checking for non-compliant ranches, mirroring recommendations made in Global Witness’ report.

²⁶ Instituto de Defesa Agropecuária de Mato Grosso (INDEA), ‘INDEA’, no date, available at: <https://www.indea.mt.gov.br/> (accessed on 27 October 2023). This system has now been updated and can be found here : <https://sistemas.indea.mt.gov.br/SIA/form.jsp?sys=SCA&action=openform&formID=467&align=0&mode=-1&goto=-1&filter=&scrolling=no>

²⁷ Secretaria de Estado de Meio Ambiente do Mato Grosso (SEMA), ‘Geoportal SEMA’, no date, available at: <https://geoportal.sema.mt.gov.br/> (accessed on 27 October 2023).

²⁸ Instituto Nacional de Pesquisas Espaciais (INPE) ‘TerraBrasilis: Downloads’, no date, available at: <http://terrabrasilis.dpi.inpe.br/downloads/> (accessed on 27 October 2023).

²⁹ MT.gov.br, ‘Obter Autorização para Desmate’, no date, available at: <https://portal.mt.gov.br/app/catalog/meio-ambiente-e-clima/obter-autorizacao-para-desmate> (accessed on 8 October 2023).

³⁰ Global Witness, ‘Beef, Banks and the Brazilian Amazon’, 2 December 2020, available at: <https://www.globalwitness.org/en/campaigns/forests/beef-banks-and-brazilian-amazon/> (accessed on 8 October 2023). Section ‘What we did’ states: “This permit (called Autorização de Supressão de Vegetação) is required for rural producers that want to deforest in their property under Brazil’s Forest Code - its main forest law.”

³¹ Brazilian Forest Code (Law 12651/2012), 25 May 2012, available at: https://www.planalto.gov.br/ccivil_03/_ato2011-2014/2012/lei/l12651.htm (accessed on 22 October 2023). Chapter 5 (CAPÍTULO V), Article 26 states: “A supressão de vegetação nativa para uso alternativo do solo, tanto de domínio público como de domínio privado, dependerá do cadastramento do imóvel no CAR, de que trata o art. 29, e de prévia autorização do órgão estadual competente do Sisnama.”

³² MT.gov.br, ‘Obter Autorização para Desmate’, no date, available at: <https://portal.mt.gov.br/app/catalog/meio-ambiente-e-clima/obter-autorizacao-para-desmate> (accessed on 8 October 2023).

³³ Secretaria de Estado de Meio Ambiente do Mato Grosso (SEMA) ‘GEOPORTAL SEMA-MT’, no date, available at: <https://geoportal.sema.mt.gov.br> (accessed on 22 October 2023). The deforestation permit data layer is available by selecting the following option on the drop-down menu ‘Camadas disponíveis’: GEOPORTAL > AUTORIZAÇÕES > Autorização para Desmatamento - AD.

³⁴ Ministério Público Federal, ‘Apresentação dos Resultados do 1º Ciclo Unificado de Auditorias na Cadeia Pecuária na Amazônia Legal’, 26 October 2023, available at: https://www.mpf.mp.br/pa/sala-de-imprensa/documentos/2023/resultados_1o_ciclo_unificado_auditorias_pecuaria_amazonia.pdf (accessed on 22 October 2023).

³⁵ Chain Reaction Research, ‘JBS, Marfrig, and Minerva Unlikely Compliant with Upcoming EU Deforestation Law’, November 2022, available at: <https://chainreactionresearch.com/wp-content/uploads/2022/11/JBS-Marfrig-and-Minerva-Unlikely-Compliant-with-Upcoming-EU-Deforestation-Law-1.pdf> (accessed on 31 October 2023). Section ‘JBS, Marfrig, and Minerva most impacted by EU Deforestation Law’ on page 2 states: “Three key meatpackers, JBS, Marfrig, and Minerva, are major exporters to the EU and dominate the Brazilian cattle industry and the production of beef and bovine leather products.”

³⁶ Regulation (EU) 2023/1115 of the European Parliament and of the Council of 31 May 2023 on the making available on the Union market and the export from the Union of certain commodities and

products associated with deforestation and forest degradation and repealing Regulation (EU) No 995/2010 [2023] OJ L150/206. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023R1115> (accessed on 27 October 2023).

³⁷ Article 3 of the regulation states: “Relevant commodities and relevant products shall not be placed or made available on the market or exported, unless all the following conditions are fulfilled:

“(a) they are deforestation-free;

“(b) they have been produced in accordance with the relevant legislation of the country of production; and

“(c) they are covered by a due diligence statement.”

See page 17 of Regulation (EU) 2023/1115 of the European Parliament and of the Council of 31 May 2023 on the making available on the Union market and the export from the Union of certain commodities and products associated with deforestation and forest degradation and repealing Regulation (EU) No 995/2010 [2023] OJ L150/206. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023R1115> (accessed on 27 October 2023).

³⁸ Great Britain. Environment Act 2021, available at: <https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted> (accessed on 31 October 2023).

³⁹ Great Britain. Department for Environment, Food & Rural Affairs (DEFRA) ‘Tackling illegal deforestation in UK supply chains’, 3 December 2021, available at: <https://www.gov.uk/government/consultations/tackling-illegal-deforestation-in-uk-supply-chains> (accessed on 31 October 2023). Section ‘Consultation description’ states: “The Environment Act will make it illegal for large businesses in the UK to use forest risk commodities produced on land illegally occupied or used.

“Secondary legislation is needed to implement these Environment Act provisions, and we are seeking views to inform the design of this legislation and accompanying guidance.”

⁴⁰ Great Britain. H.M. Government (2023) ‘Environmental Improvement Plan 2023’, available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1168372/environmental-improvement-plan-2023.pdf (accessed on 31 October 2023).

Section ‘Tackle illegal deforestation in our supply chains’ on page 170 states: “The Environment Act introduced new provisions to make it illegal for larger businesses operating in the UK to use key commodities that have been grown on land that is illegally occupied or used.

“We will now operationalise these provisions through secondary legislation. Businesses in scope will also be required to undertake a due diligence exercise on their supply chains, and to publicly report on this exercise every year, or risk fines and other civil sanctions. The government has committed to implementing these regulations at the earliest opportunity.”

⁴¹ Regulation (EU) 2023/1115 of the European Parliament and of the Council of 31 May 2023 on the making available on the Union market and the export from the Union of certain commodities and products associated with deforestation and forest degradation and repealing Regulation (EU) No 995/2010 [2023] OJ L150/206. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023R1115> (accessed on 27 October 2023).

⁴² European Commission, ‘Deforestation: Overview’, no date, available at: https://environment.ec.europa.eu/topics/forests/deforestation_en (accessed on 30 October 2023). Section ‘Timeline’ states that the “Regulation enters into application” on 30 December 2024, and that the “Regulation enters into application for Micro and Small undertakings” on 30 June 2025.

⁴³ These are: cattle, soy, palm oil, coffee, cocoa, rubber, and timber, and a list of derived products.

⁴⁴ Article 3 of the regulation states: “Relevant commodities and relevant products shall not be placed or made available on the market or exported, unless all the following conditions are fulfilled:

“(a) they are deforestation-free;

“(b) they have been produced in accordance with the relevant legislation of the country of production; and

“(c) they are covered by a due diligence statement.”

See page 17 of Regulation (EU) 2023/1115 of the European Parliament and of the Council of 31 May 2023 on the making available on the Union market and the export from the Union of certain commodities and products associated with deforestation and forest degradation and repealing Regulation (EU) No 995/2010 [2023] OJ L150/206. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023R1115> (accessed on 27 October 2023).

⁴⁵ ‘Forest’ means land spanning more than 0.5 hectares with trees higher than five metres and a canopy cover of more than 10%, or trees able to reach those thresholds in situ, excluding land that is predominantly under agricultural or urban land use. See definition of ‘forest’ in section ‘1 FOREST EXTENT AND CHANGES’ subheading ‘1a EXTENT OF FOREST AND OTHER WOODED LAND’ on page 4 of: Food and Agriculture Organization of the United Nations (FAO) ‘Global Forest Resources Assessment 2020: Terms and Conditions’, *Forest Resources Assessment Working Paper 188*, 2018, FAO: Rome, Italy. Available at: <https://www.fao.org/3/I8661EN/i8661en.pdf> (accessed on 31 October 2023).

⁴⁶ Ecosia, ‘Why Ecosia and other businesses are calling for “other wooded lands” to be included in the EU’s proposed regulation for deforestation-free commodities’, 2 December 2022, available at: <https://blog.ecosia.org/open-letter-eu-woodlands/#:~:text=Adding%20%E2%80%9Cother%20wooded%20lands%E2%80%9D%20would%20make%20the%20regulation%20easier%20to,fall%20outside%20during%20other%20seasons> (accessed on 31 October 2023). In the open letter to EU Ministers, Members of Parliament and the Commission, Ecosia and a self-described “host of environmental-focused businesses”, including Patagonia, state: “[S]ome areas of the Cerrado could be categorized as forest depending on the season and fall outside during other seasons. None of the existing monitoring systems are able to

differentiate between forest and non-forest in the Cerrado biome and thus it will become difficult for operators sourcing from the Cerrado or similar forest-mosaic landscapes such as African savannah areas to adhere with the regulation.”

⁴⁷ Trase, ‘EU urged to widen deforestation law’, 7 June 2022, available at:

<https://insights.trase.earth/insights/eu-urged-to-widen-deforestation-law-as-ecosystems-left-at-risk/> (accessed on 31 October 2023). Section ‘Highlighting the coverage gaps’ states: “Trase’s research shows that limiting the draft EU regulation to forests would leave three quarters of the Cerrado (79 million hectares) [...] unprotected.”

⁴⁸ Trase, ‘EU urged to widen deforestation law’, 7 June 2022, available at:

<https://insights.trase.earth/insights/eu-urged-to-widen-deforestation-law-as-ecosystems-left-at-risk/> (accessed on 31 October 2023). Section ‘The EU sources soy and beef from regions with major deforestation risk’ states: “The Cerrado is at particular risk because its lands are suitable for farming and the majority of it is not protected under local laws. Trase finds that 82% of land converted from native vegetation to agricultural use in 2015-2020 would not be covered by the proposed regulation. The danger is that the EU regulation will displace land conversion onto unprotected areas.”

⁴⁹ Article 3 of the regulation states: “Relevant commodities and relevant products shall not be placed or made available on the market or exported, unless all the following conditions are fulfilled:

“(a) they are deforestation-free;

“(b) they have been produced in accordance with the relevant legislation of the country of production; and

“(c) they are covered by a due diligence statement.”

See page 17 of Regulation (EU) 2023/1115 of the European Parliament and of the Council of 31 May 2023 on the making available on the Union market and the export from the Union of certain commodities and products associated with deforestation and forest degradation and repealing Regulation (EU) No 995/2010 [2023] OJ L150/206. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023R1115> (accessed on 27 October 2023).

⁵⁰ Article 2 of the regulation states: “(40) ‘relevant legislation of the country of production’ means the laws applicable in the country of production concerning the legal status of the area of production in terms of:

“(a) land use rights;

“(b) environmental protection;

“(c) forest-related rules, including forest management and biodiversity conservation, where directly related to wood harvesting;

“(d) third parties’ rights;

“(e) labour rights;

“(f) human rights protected under international law;

“(g) the principle of free, prior and informed consent (FPIC), including as set out in the UN Declaration on the Rights of Indigenous Peoples;

“(h) tax, anti-corruption, trade and customs regulations.”

See page 17 of Regulation (EU) 2023/1115 of the European Parliament and of the Council of 31 May 2023 on the making available on the Union market and the export from the Union of certain commodities and products associated with deforestation and forest degradation and repealing Regulation (EU) No 995/2010 [2023] OJ L150/206. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023R1115> (accessed on 27 October 2023).

⁵¹ Fern, ‘What is the EU Regulation on deforestation-free products and why should you care?’, 2023, available at:

https://www.fern.org/fileadmin/uploads/fern/Documents/2023/What_is_the_EU_Regulation_on_deforestation_free_products_and_why_should_you_care.pdf (accessed on 22 October 2023). Section ‘Future changes to the scope’ (page 2) states: “Within one year of coming into force, the EU will assess whether the scope should be expanded from forests to “forests and other wooded land”.”

⁵² Zu Ermgassen, E.K., Godar, J., Lathuillière, M.J., Löfgren, P., Gardner, T., Vasconcelos, A. and Meyfroidt, P. (2020) ‘The origin, supply chain, and deforestation risk of Brazil’s beef exports’, *Proceedings of the National Academy of Sciences*, 117(50), pp.31770-31779. Available at: <https://www.pnas.org/doi/10.1073/pnas.2003270117> (accessed on 17 October 2023).

⁵³ Chaves, M.E.D., Mataveli, G., zu Ermgassen, E., Aragão, R., Adami, M. and Sanches, L. (2023) ‘Reverse the Cerrado’s neglect’, *Nature Sustainability*, 6. pp.1028-1029, available at: <https://www.nature.com/articles/s41893-023-01182-w> (accessed on 22 October 2023).

⁵⁴ Dou, Y., da Silva, R.F.B., Yang, H. and Liu, J. (2018) ‘Spillover effect offsets the conservation effort in the Amazon’, *Journal of Geographical Sciences*, 28, 1715-1732. Available at: <https://doi.org/10.1007/s11442-018-1539-0> (accessed on 22 October 2023). The abstract states: “Our results indicate that the supply-chain agreements have significantly reduced deforestation by half compared to projections within the sending system (i.e., Pará State in the Amazon, which exports soybeans and other agricultural products), but at the cost of increasing deforestation in the spillover system (i.e., a 6.6 time increase in Tocantins State of the Cerrado, where deforestation was affected by interactions between the Amazon and other places).”

⁵⁵ Gibbs, H., Munger, J., L’Roe, J., Barreto, P., Pereira, R., Christie, M., Amaral, T. and Walker, N. (2015) ‘Did Ranchers and Slaughterhouses Respond to Zero-Deforestation Agreements in the Brazilian Amazon?’, *Conservation Letters*, 9:1. pp.32-42. Available at: <https://doi.org/10.1111/conl.12175> (accessed on 22 October 2023). Section ‘Introduction’ states: “[I]ndividual meatpacking companies in Pará began signing the legally binding Terms of Adjustment of Conduct (“MPF-TAC”) agreements in July 2009 to stop purchasing from properties with illegal deforestation (Ministério Público Federal

2009, 2013a, 2013b). These agreements have since been replicated in other Amazonian States—Acre, Rondônia, Amazonas and Mato Grosso—and now include two-thirds of the federally inspected slaughterhouses (SIFs) in the Legal Amazon.”

⁵⁶ Levy, A., Cammelli, F., Munger, J., Gibbs, H. and Garrett, R. (2023) ‘Deforestation in the Brazilian Amazon could be halved by scaling up the implementation of zero-deforestation cattle commitments’, *Global Environmental Change*, 80. pp. 102671. Available at:

<https://doi.org/10.1016/j.gloenvcha.2023.102671> (accessed on 22 October 2023). Section ‘1.

Introduction’ states: “Termo de Ajustamento de Conduta (Term of Adjustment of Conduct, henceforth referred to as TAC) has been signed by companies across the Legal Amazon region (Cammelli et al., 2022). TAC was created by the Federal Public Prosecutors’ Office (Ministério Público Federal, henceforth MPF) of the state of Pará in 2009, before spreading to the rest of the Amazon.”

⁵⁷ Gibbs, H., Munger, J., L’Roe, J., Barreto, P., Pereira, R., Christie, M., Amaral, T. and Walker, N. (2015) ‘Did Ranchers and Slaughterhouses Respond to Zero-Deforestation Agreements in the Brazilian Amazon?’, *Conservation Letters*, 9:1. pp.32-42. Available at: <https://doi.org/10.1111/conl.12175> (accessed on 22 October 2023). Section ‘Introduction’ states: “In October 2009, Brazil’s largest meatpacking companies, Marfrig, Minerva, JBS, and Bertin (the latter was subsequently purchased by JBS), also signed the “G4” zero-deforestation agreement with Greenpeace in response to high-profile campaigning that leveraged pressure from retailers and brands concerned about the reputational risks of being associated with deforestation (Greenpeace International 2009b) [...] The MPF-TAC agreements emphasize avoiding illegal deforestation as defined by the Brazilian Forest Code, which stipulates that 80% of a property’s forest area must be reserved as a set-aside across much of the Brazilian Amazon biome (Ministério Público Federal 2013a, 2013b). The G4 agreement goes farther and prohibits any clearing, even if within the legal limit [...] Under the G4 agreement, JBS, Marfrig, and Minerva committed to set up monitoring systems to manage deforestation risk in their individual supply chains.”

⁵⁸ Ministerio Publico Federal - Procuradoria Da Republica Em Mato Grosso, ‘TERMO DE AJUSTAMENTO DE CONDUTA. Ref.: Procedimento Administrativo N°. 1.20.000.000391/2007-07’, 11 May 2010 [archived] available at: <https://web.archive.org/web/20220126152725/> https://beefontrack.org/public/media/arquivos/1597413430-tac_mt_-_marfrig.pdf (accessed on 8 October 2023).

⁵⁹ Ministerio Publico Federal - Procuradoria Da Republica Em Mato Grosso, ‘TERMO DE AJUSTE DE CONDUTA’, 20 March 2013 [archived] available at: <https://web.archive.org/web/20220125134039/> https://www.beefontrack.org/public/media/arquivos/1597413358-tac_mt_-_jbs.pdf (accessed 8 October 2023).

⁶⁰ Minerva Foods, ‘Minerva Foods é a primeira empresa do setor a integrar ferramenta para avaliação de fornecedores indiretos em seu sistema de monitoramento da cadeia’, 17 September 2021, available at: <https://minervafoods.com/noticias/minerva-foods-e-a-primeira-empresa-do-setor-a-integrar-ferramenta-para-avaliacao-de-fornecedores-indiretos-em-seu-sistema-de-monitoramento-da-cadeia/> (accessed on 8 October 2023). Last paragraph states: “Atualmente, a Minerva Foods monitora mais de 14 milhões de hectares com tecnologia de mapeamento geográfico de fornecedores

em todos os biomas brasileiros e no Paraguai. A empresa é também pioneira no país a ter 100% dos fornecedores diretos monitorados por meio de mapas georreferenciados na Amazônia, no Cerrado, no Pantanal e na Mata Atlântica, incluindo os produtores de ciclo completo – que produzem desde o nascimento do bezerro à produção industrial. Com isso, a Companhia pode garantir que as compras de gado sejam realizadas em fazendas monitoradas, assegurando que os fornecedores estejam de acordo com rigorosos critérios socioambientais.”

⁶¹ Minerva doesn’t release any specific data for monitoring suppliers in the Cerrado. See: Chain Reaction Research, ‘JBS, Marfrig, and Minerva Unlikely Compliant with Upcoming EU Deforestation Law’, November 2022, available at: <https://chainreactionresearch.com/wp-content/uploads/2022/11/JBS-Marfrig-and-Minerva-Unlikely-Compliant-with-Upcoming-EU-Deforestation-Law-1.pdf> (accessed on 8 October 2023).

⁶² JBS, ‘JBS antecipa em cinco anos meta de desmatamento ilegal zero para Cerrado, Pantanal, Mata Atlântica e Caatinga’, no date, available at: <https://static.poder360.com.br/2021/06/desmatamento-jbs-meta-2025-30jun2021.pdf> (accessed on 8 October 2023). Paragraph 3 states: “A JBS... antecipou de 2030 para 2025 sua meta de desmatamento ilegal zero para os fornecedores de seus fornecedores no Cerrado, no Pantanal, na Mata Atlântica e na Caatinga, mesmo compromisso já estabelecido para a Amazônia. Trata-se da meta mais abrangente e desafiadora entre as empresas de proteína do país, ao contemplar o monitoramento de fornecedores para todos os biomas em que a empresa opera, e a que tem prazo mais curto.”

⁶³ ‘Marfrig (MRF3) antecipa sua meta de rastreabilidade na pecuária para 2025 durante a COP28’, available at: <https://www.moneytimes.com.br/marfrig-mrf3-antecipa-sua-meta-de-rastreabilidade-na-pecuaria-para-2025-durante-a-cop28/> (accessed on 19 February 2024). See: “A Marfrig já é uma referência global em ESG. Somos a empresa do setor de proteína animal mais bem avaliada em diversos rankings de sustentabilidade, resultado do nosso forte compromisso e entregas efetivas em mais de três anos do Programa Verde+. Nosso objetivo é acelerar ainda mais a nossa plataforma e atingir 100% de rastreabilidade da cadeia de valor até 2025, em todos os biomas brasileiros, antecipando em cinco anos a nossa meta”, diz Paulo Pianez, diretor de Sustentabilidade e Comunicação da Marfrig.”

⁶⁴ For example, see: Global Witness, ‘Cash Cow’, 23 June 2023, available at: <https://www.globalwitness.org/en/campaigns/forests/cash-cow/> (accessed on 22 October 2023). Section ‘Summary’ states: “In Brazil, research has shown 70% of the felled Amazon is now populated by cattle, with Brazilian meat company JBS – reportedly the world’s largest - the top buyer. The beef giant was also at COP26, signing high level no deforestation commitments and claiming it has zero tolerance for it. It did not mention that, weeks earlier, an audit of its supply chain by Brazilian prosecutors in one Amazon state had caught it buying over one-third of its cattle from ranches responsible for illegal deforestation.

“This corroborated the findings of a previous Global Witness report [*Beef, Banks and the Brazilian Amazon*] which exposed how JBS had bought cattle from 327 ranches containing tens of thousands of football fields worth of illegal deforestation, contrary to its legal no deforestation obligations with the prosecutors.

“This investigation now finds that in the wake of the above international pledges, JBS continued buying from 144 of the same ranches in the Amazon state of Pará that were exposed in our previous report, once again failing to comply with its legal agreements with the prosecutors (JBS denied these claims).”

See also: Global Witness, ‘Beef, Banks and the Brazilian Amazon’, 2 December 2020, available at: <https://www.globalwitness.org/en/campaigns/forests/beef-banks-and-brazilian-amazon/> (accessed on 8 October 2023).

⁶⁵ Refinitiv, ‘Refinitiv’, no date, available at: <https://www.refinitiv.com/en> (accessed on 9 October 2023).

⁶⁶ United Nations Environment Program, ‘Our Members: Net Zero Banking Alliance’, no date, available at: <https://www.unepfi.org/net-zero-banking/members/> (accessed on 16 October 2023).

⁶⁷ Refinitiv, ‘Refinitiv’, no date, available at: <https://www.refinitiv.com/en> (accessed on 9 October 2023).

⁶⁸ United Nations Environment Program, ‘Our Members: Net Zero Banking Alliance’, no date, available at: <https://www.unepfi.org/net-zero-banking/members/> (accessed on 16 October 2023).

⁶⁹ The Net Zero Asset Managers Initiative, ‘Signatories’, no date, available at: <https://www.netzeroassetmanagers.org/signatories/> (accessed on 17 October 2023).

⁷⁰ Corporate Adviser, ‘Top 20 asset managers worldwide ranked’, 17 October 2022, available at: <https://corporate-adviser.com/top-20-asset-managers-worldwide-ranked/> (accessed on 16 October 2023).

⁷¹ Global Witness, ‘Cash, Cattle and the Gran Chaco’, 30 March 2023, available at: <https://www.globalwitness.org/en/campaigns/forests/cash-cattle-and-the-gran-chaco> (accessed on 16 October 2023).

⁷² Global Witness ‘Beef, Banks and the Brazilian Amazon’, 2 December 2020, available at: <https://www.globalwitness.org/en/campaigns/forests/beef-banks-and-brazilian-amazon/> (accessed on 8 October 2023). Methodology section ‘Extracts of the legal arguments for the public accessibility of the cattle transport permits commissioned from legal experts’, part ‘2. Regarding the public character of the GTA’ (page 39) states: “There are some court precedents in Brazil which have expressly declared the GTA a public document, including one recent manifestation by Supreme Court’s Minister Edson Fachin”.

The manifestation by Supreme Court Minister Edson Fachin mentioned: STF. Inq. 2593, Relator(a): Min. EDSON FACHIN, Tribunal Pleno, julgado em 01/12/2016, ACÓRDÃO ELETRÔNICO DJe-168 DIVULG 31-07-2017 PUBLIC 01-08-2017

⁷³ Ministério Público Federal no Pará, ‘RECOMENDACÃO N°74/2015’, 13 November 2015, available at: https://reporterbrasil.org.br/wp-content/uploads/2023/05/MPF_Recomendacao_ADEPARA_2015.pdf

(accessed on 8 October 2023). Page 6 states: “CONSIDERANDO que o amplo acesso aos dados de Guias de Transporte Animal é instrumento imprescindível para a concretização do princípio da informação ambiental no que tange à cadeia da pecuária, já que permitirá aos cidadãos e à sociedade civil organizada, com muito mais acuidade, controlar as implicações ambientais que decorrem dessa atividade.”

⁷⁴ Ministério do Meio Ambiente e Mudança do Clima, ‘Área sob alertas de desmatamento na Amazônia cai 50% em 2023’, available at: <https://www.gov.br/mma/pt-br/area-sob-alertas-de-desmatamento-na-amazonia-cai-50-em-2023> (accessed 29 January 2023) and reported in the Financial Times, <https://www.ft.com/content/3156a1f8-8b9e-4ae3-b77c-53d293d72f4c> (accessed 29 January 2023)

⁷⁵ WWF, no date, available at: <https://www.worldwildlife.org/places/cerrado> (accessed 29 January 2024). It states: ‘The region also locks up a massive amount of carbon, as its small trees have deep root systems. About 70% of the biomass of this “upside-down forest” is underground, and recent studies suggest it may hold about 118 tons of carbon per acre. If destruction of the Cerrado is not stopped, the global commitment to cap global warming at 1.5 degrees Celsius will become unattainable.’

⁷⁶ Unearthed, ‘Analysis: Do the meat industry’s promises on deforestation add up?’ <https://unearthed.greenpeace.org/2022/07/04/analysis-do-the-meat-industrys-promises-on-deforestation-add-up/> (accessed 29 January 2024)

⁷⁷ Brazilian government official trade data, ‘Exportação e Importação Geral’ <http://comexstat.mdic.gov.br/pt/geral> (accessed 29 January 2024). Export data from Mato Grosso state to the United Kingdom was taken for the period January 2018 to October 2023. Apply the following settings to the data portal before clicking ‘Consultar’ to see the statistics: Tipo de operação: Exportação; Ano inicial: 2018; Ano final: 2023; Mês inicial: Janeiro; Mês final: Dezembro; Detalhar por mês: unchecked; Filtros: UF do Produto, Subposição (SH6), País; UF do Produto: Mato Grosso; Subposição (SH6): 020230 - Carnes de bovino, desossadas, congeladas; 020130 – Carnes de bovino, desossadas, frescas ou refrigeradas; Cesta: checked; País: Reino Unido; Detalhamento: UF do Produto, Subposição (SH6), País; \$ Valores: Valor FOB (US\$).

⁷⁸ Commercial trade data was analysed for beef exports from Mato Grosso state to the UK for the period 2018 to 2023.

⁷⁹ The customs data for exports from Mato Grosso state described in ⁷⁷ was summed for the six year period, totalling 4,648,626 kg, as was the trade data in ⁷⁸ totalling 10,047,292 kg. The approximate proportion of these three companies’ exports out of the total of Mato Grosso state’s for those years was therefore calculated as 46.3%

⁸⁰ Freedom of Information laws in Brazil were used to obtain data related to individual slaughterhouses in Mato Grosso state, including whether those slaughterhouses export to EU countries.