

An aerial photograph of a dry, brown landscape with sparse, scrubby vegetation. A dirt road winds through the terrain. In the lower-left quadrant, a herd of white cattle is gathered around a small, simple wooden structure. The overall scene suggests a rural, agricultural setting in a semi-arid region.

 **RAPID RESPONSE** #1

[CATTLE]

**Monitoring
deforestation
in Brazilian
supply chains**

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Abbreviations

CAR	Cadastro Ambiental Rural / Rural Land Registry
CNPJ	Cadastro Nacional da Pessoa Jurídica / Brazilian National Registry of Legal Entities
DETER	Detecção de Desmatamento em Tempo Real / Deforestation Detection in Real Time
G4	Multilateral cattle agreement signed between major meatpackers and civil society
GTA	Guia de Trânsito Animal/Animal Transportation Documentation
IBAMA	Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis / Brazilian Institute of Environment and Renewable Natural Resources
INPE	Instituto Nacional de Pesquisas Espaciais / National Institute for Space Research MAPA: Ministério da Agricultura e Pecuária /Ministry of Agriculture, Livestock and Food Supply
MPF	Ministério Público Federal/Federal Public Prosecutor’s Office
PRODES	Projeto de Monitoramento do Desmatamento na Amazônia Legal por Satélite / Project for Monitoring Deforestation in the Legal Amazon by Satellite
SIE	Serviço de Inspeção Estadual/State Inspection of slaughterhouses
SIGEF	Sistema de Gestão Fundiária / Land Tenure Management System
SIF	Serviço de Inspeção Federal/Federal inspection of slaughterhouses
SNCI	Sistema Nacional de Certificação de Imóveis Rurais / National Rural Property Certification System
TAC	Termo de Ajustamento de Conduta / Conduct Adjustment Agreement

EXECUTIVE SUMMARY

Mighty Earth, in partnership with AidEnvironment, using data collected through the Do Pasto ao Prato initiative and with additional research from Repórter Brasil, launched the second phase of its Rapid Response program to monitor recent deforestation in cattle and soy supply chains in Brazil. The goal is to proactively halt deforestation in its early stages by urging companies to cease trading with farms involved in recent fires or clearance that are visually confirmed. By rapidly ending business with actors contributing to deforestation, we can avoid further environmental destruction and prevent hundreds of hectares of deforestation becoming thousands.

This first report focuses on cattle. It identifies five case studies by linking data from a sample of over 1,000 beef products found in Brazilian supermarkets – owned by Carrefour, Casino/Pão de Açúcar, Sendas/Assaí – to deforestation happening in direct and indirect cattle suppliers to slaughterhouses operated by the three largest meatpackers, JBS, Marfrig, and Minerva. It also provides available data on recent and total deforestation on the properties of cattle suppliers to slaughterhouses and retailers in Brazil. These reports will be published on a quarterly basis and will be used to pressure meatpackers and local and international retailers operating in Brazil to take action by sending a Rapid Response to stop the deforestation.

Between July and September 2023, a sample of 1,009 fresh, frozen and processed beef products was collected using the Do Pasto ao Prato mobile app in 71 Carrefour, Casino/Pão de Açúcar and Sendas/Assaí retail stores, in 27 cities across 11 Brazilian states. The report found links between these products and 64 slaughterhouses operating in 16 states. Of these slaughterhouses, 41 were owned by JBS, 13 by Marfrig, and five by Minerva.

Through an analysis of an available sample of Animal transportation documentation (GTA) data covering seven states in Brazil – Goiás, Minas Gerais, Mato Grosso, Mato Grosso do Sul, Pará, Rondônia, and Tocantins –, the report identified 15,427 direct cattle suppliers and 31,600 indirect cattle suppliers to 36 slaughterhouses, 27 of which were owned by JBS, six by Marfrig and three by Minerva.

Considering deforestation between 2009 and 2023, the analysis found that a total of 546,108 hectares of deforestation was identified in 12,494 farms. From 2017 to 2022, these farms were commercially linked to the 36 slaughterhouses identified and owned by JBS, Marfrig and Minerva. Of this deforestation, we found 183,971 hectares was caused by direct cattle suppliers and 362,137 hectares was caused by indirect suppliers. Some 61%, or 335,592 hectares, of the deforestation occurred in the Cerrado biome and 39%, or 210,516 hectares, in the Amazon biome. Of this total amount, some 94,258 hectares of deforestation caused by direct and indirect cattle suppliers of the three meatpackers JBS, Marfrig, and Minerva was recorded recently between 2021 and 2023 – noting that December 31, 2020, is the deforestation cut-off date set by the forthcoming EU Deforestation Regulation (EUDR).

The report also highlights five case studies covering a total of 2,109 hectares of very recent deforestation that took place in the Amazon and Cerrado between May and October 2023. This deforestation is associated to suppliers that have been commercially linked to JBS, Marfrig and Minerva-owned slaughterhouses who supplied the beef products identified in Carrefour, Casino/Pão de Açúcar and Sendas/Assaí stores in Brazil using the Do Pasto ao Prato app. These five farms

still contain 13,940 hectares of remaining natural vegetation that urgently needs to be protected. Mighty Earth contacted the meatpacking and retail groups identified as potentially connected to these five farms where forest fires or deforestation was detected. Carrefour and Sendas/Assaf replied, assuring us that they had suspended these five farms from their supplier list, while Marfrig and Minerva either did not identify the deforestation or could not find the supplier in their database. JBS and Casino/Pão de Açúcar did not respond to our inquiries about these cases.

We call on **Carrefour, Casino/Pão de Açúcar, Sendas/Assaf** and other retailers to immediately disclose on a public platform the volume and origin of their beef products – including details of the slaughterhouses, lists of direct and indirect farms, with the proportion of beef products sourced from a verified Zero Deforestation and Conversion (ZDC) supply chain. Additionally, we urge them to submit the deforestation cases to a public grievance mechanism and to suspend purchasing from slaughterhouses that directly or indirectly source from farms involved in native vegetation clearance. Urgent action is needed to suspend the 13 slaughterhouses identified in this report as the ones having the highest associated deforestation rates in the 2021-2023 period.

We call on **JBS, Marfrig, Minerva** and other meatpackers to immediately disclose on a public platform the volume and origin of cattle (list of direct and indirect farms with the proportion of cattle coming from ZDC farms) and to submit the deforestation cases to a public grievance mechanism to monitor the progress, engagement and suspension of each non-compliant farm. The 13 slaughterhouses identified in this report with the most deforestation should be suspended urgently and their direct and indirect business relationship with the farmers investigated.

INTRODUCTION

This Rapid Response report analyzes deforestation within the cattle supply chain in Brazil and, for the first time, links deforestation in the Amazon and Cerrado biomes to beef products found in major retail stores in Brazil. Indeed, over three quarters of the beef produced in Brazil (76%) is consumed domestically, and cattle ranching and soy expansion are the main drivers of deforestation.¹

Data recently collected (July-September 2023) through a mobile phone application known as Do Pasto ao Prato (DPaP), meaning “From Pasture to Plate”, and developed by the Stockholm Environment Institute, UCLouvain, and Global Canopy, is the starting point of the analysis.² The DPaP app allows consumers to scan and register information in retail stores in Brazil related to meat products. The information includes the type of product and its origin, represented by the meatpacker registration numbers that appear on seals such as those of the Federal Inspection of slaughterhouses (Serviço de Inspeção Federal, SIF), the State Inspection of slaughterhouses (Serviço de Inspeção Estadual, SIE) or the Brazilian National Registry of Legal Entities (Cadastro Nacional de Pessoa Jurídica, CNPJ). With these numbers, it is possible to map and locate the slaughterhouse where the meat product was processed.

In addition to data collection provided by consumers and users of the DPaP app – so-called citizen scientists – all over Brazil, Mighty Earth organized a network of volunteers and commissioned researchers. They visited supermarkets located in municipalities across five Brazilian regions. Data was collected in retail stores owned by Carrefour, Casino/Pão de Açúcar and Sendas/Assaí.

By first analyzing the data, we established the link between the meat products identified in the retail stores and meatpackers’ slaughterhouses. In a second phase, we listed a sample of properties that directly and indirectly supplied the identified slaughterhouses. The connection between the slaughterhouses and their direct and indirect suppliers was established using available data from the documents known as *Guia de Trânsito Animal* (GTA, Animal Transportation Documentation³). This GTA sample data used in the analysis covered suppliers to the three largest meatpackers - JBS, Marfrig, and Minerva Foods - operating in seven states in Brazil: Goiás, Minas Gerais, Mato Grosso, Mato Grosso do Sul, Pará, Rondônia and Tocantins.

In the final phase of our analysis, we plotted out deforestation data from January 2009 to October 2023 on the located properties that directly and indirectly supply the identified slaughterhouses. This completed the analysis cycle, highlighting the potential links between deforestation in cattleproducing properties, the identified slaughterhouses and the beef products found in the retail stores in Brazil.

This report also includes five case studies in the Amazon and Cerrado biomes in Brazil where deforestation was recently detected, from May to October 2023 on cattle ranches that may have directly or indirectly supplied slaughterhouses from which the retailers’ stores in Brazil sourced beef products. The case studies illustrate real-time deforestation within the cattle supply chain bringing “Before” and “After” high-resolution satellite imagery of the reported deforestation and data on compliance with Brazilian environmental regulations.

Prior to the release of each report, Mighty Earth shares the results with the identified companies to encourage them to act fast and take measures against market players in supply chains that contribute to deforestation, fires and land conversion in the Amazon and Cerrado.

1 Spers, E. E., Carvalho Burnier, P., and Lucchese-Cheung, T. (2021) *Beef Consumption Pattern in Brazil*, Meat and Nutrition, May 7, 2021

2 See: <https://www.dopastoaoprato.com.br/>

3 A mandatory document for cattle transfer between farms and slaughterhouses in Brazil, See Appendix 1 – Methodology

1. DATA COLLECTION AND PROCESSING

Beef products in retailers' stores in Brazil and linked slaughterhouses

During the three-month data collection period, consumers, volunteers and researchers scanned **1,009 beef products** registered in the Do Pasto ao Prato application. The products were identified in 71 stores owned by French-based retailers Carrefour and Casino/Pão de Açúcar groups and Brazilian retailer Sendas/Assaí in 11 states and 27 municipalities across Brazil (see Appendix 1 for a more details on the methodology).

The stores owned by the retail groups, where the samples of beef products were identified, were:

- **Carrefour:** Atacadão, Carrefour, Carrefour Express, Carrefour Hipermercado, and Sam's Club
- **Casino:** Pão de Açúcar, Minuto Pão de Açúcar, Mercado Extra and Mini Extra
- **Sendas:** Assaí, Assaí Atacadista

Table 1 summarizes the data distribution by state and retail group.

Table 1. Store location and number of beef products registered in the Do Pasto ao Prato (DPaP) app between July and September 2023 by state and retail group

States / Municipalities	Retailer Group			Total	
	# Stores	Carrefour	Casino		Sendas
Acre	1	4	-	-	4
Amazonas	2	16	-	27	43
Bahia	1	35	-	-	35
Ceará	15	50	79	82	211
Distrito Federal	3	54	12	22	88
Minas Gerais	1	7	-	-	7
Mato Grosso	2	64	-	22	86
Paraná	10	95	-	13	108
Rio de Janeiro	6	37	49	1	87
Rio Grande do Sul	1	65	-	-	65
São Paulo	29	88	126	61	275
Total	71	515	266	228	1,009

The sample of 1,009 scanned beef products was linked to **64 meatpackers operating slaughterhouses in 110 municipalities and 16 states.**

The analysis focused on Brazil's three largest meatpackers: JBS, Marfrig, and Minerva Foods. The GTA data sample, used to establish the link between slaughterhouses and their direct and indirect farm suppliers, is only available for seven states in Brazil: Goiás, Minas Gerais, Mato Grosso do Sul, Mato Grosso, Pará, Rondônia and Tocantins.

Table 2 provides the amount of beef products linked to slaughterhouses operated by the three meatpackers in these seven states by retail group. The slaughterhouses located outside the

seven states are included under 'other states'. This means, for instance, that within the sample of 1,009 beef products, we were able to link 66 of them identified in Carrefour stores to JBS slaughterhouses in Mato Grosso.

Table 2. Scanned beef products linked to JBS, Marfrig, and Minerva by state and other retailer group

States (slaughterhouses)	Carrefour				Casino				Sendas				Total
	JBS	Marfrig	Minerva	Other	JBS	Marfrig	Minerva	Other	JBS	Marfrig	Minerva	Other	
Goiás	18	15	4	2	-	4	3	1	38	6	2	-	93
Minas Gerais	5	1	-	8	5	-	-	2	1	-	-	-	22
Mato Grosso do Sul	78	1	-	14	29	6	-	-	40	-	-	5	173
Mato Grosso	66	18	-	12	24	33	-	9	41	4	-	-	207
Pará	11	-	-	1	1	-	-	5	12	-	-	-	30
Rondônia	11	-	3	8	9	1	2	-	16	-	-	1	51
Tocantins	4	-	-	3	4	-	3	2	2	-	-	-	18
Other states	83	1	-	148	23	19	3	78	27	-	-	33	415
Total	276	36	7	196	95	63	11	97	177	10	2	39	1,009
		515				266				228			1,009

Out of the 1,009 identified beef products, 548 (54%) were linked to JBS-owned slaughterhouses, 109 (11%) to Marfrig-owned slaughterhouses, and 20 (2%) to Minerva-owned slaughterhouses. The remaining 332 (33%) beef products were linked to slaughterhouses owned by other meatpackers. Of the sample of beef products, 594 (59%) are in one of the seven states covered by our GTA sample.

Table 3 shows the distribution of meat products by meatpackers and between the two groups of states, the seven states covered by our GTA data sample and the other states.

Table 3. Number of beef products linked to JBS, Marfrig and Minerva by state groups

Meatpackers	Seven states*	Other states	Total	
JBS	415	133	548	54%
Marfrig	89	20	109	11%
Minerva	17	3	20	2%
Other	73	259	332	33%
Total	594	415	1,009	100%
	59%	41%	100%	-

* States where GTA animal transportation data is available: Goiás, Minas Gerais, Mato Grosso, Mato Grosso do Sul, Pará, Rondônia, and Tocantins.

Considering only the slaughterhouses operated by JBS, Marfrig and Minerva in the seven states covered by our sample of GTA animal transportation data, the identified beef products are linked to a total of 36 slaughterhouses, 27 of which are operated by JBS, six by Marfrig, and three by Minerva (see Table 4).

Table 4. List of the 36 slaughterhouses operated by JBS, Marfrig and Minerva by municipality and state

JBS (27 slaughterhouses)				Marfrig (6 slaughterhouses)	
Municipality	State	Municipality	State	Municipality	State
Alta Floresta	MT	Marabá	PA	Bataguassu	MS
Anastácio	MS	Mozarlândia	GO	Chupinguaia	RO
Araguaína	TO	Naviraí	MS	Mineiros	GO
Araputanga	MT	Nova Andradina	MS	Paranatinga	MT
Barra do Garças	MT	Pedra Preta	MT	Pontes e Lacerda	MT
Campo Grande	MS	Pimenta Bueno	RO	Varzea Grande	MT
Colíder	MT	Pontes e Lacerda	MT		
Colorado D'Oeste	RO	Porto Velho	RO	Minerva (3 slaughterhouses)	
Confresa	MT	Redenção	PA	Municipality	State
Diamantino	MT	Santana do Araguaia	PA	Araguaína	TO
Goiânia	GO	São Miguel do Guaporé	RO	Palmeiras de Goiás	GO
Ituiutaba	MG	Senador Canedo	GO	Rolim de Moura	RO
Iturama	MG	Vilhena	RO		
Juara	MT				

2. DEFORESTATION ANALYSIS

Direct and indirect suppliers to the linked slaughterhouses

Our deforestation analysis considered a sample of direct and indirect cattle suppliers that have had trade relationships between 2017 and 2022 with the 36 listed slaughterhouses owned by JBS, Marfrig and Minerva (Table 4). From this supplier sample, we found that between 2009 and 2023, a total of 546,108 hectares of deforestation was linked to the 36 slaughterhouses, of which 183,971 hectares of deforestation was linked to direct suppliers and 362,137 hectares to indirect suppliers. About 39% of the deforestation (210,516 ha) occurred in the Amazon, and 61% (335,592 ha) in the Cerrado. Of the total, 94,258 hectares of deforestation by direct and indirect suppliers of the three main meatpackers, was recorded from 2021 onwards, and as such would not comply with the cut-off date of December 31, 2020, set by the forthcoming EU Deforestation Regulation (EUDR).

The location of direct and indirect suppliers was obtained by cross-referencing land tenure official registration data (Sistema de Gestão Fundiária, SIGEF) and the GTAs from 2017 and 2022. The sample of identified direct and indirect suppliers represents only a portion of meatpackers' suppliers; for example, JBS states that it has 50,000 direct suppliers and an unknown number of indirect suppliers⁴ - suggesting that deforestation associated to them may be even higher than we calculated. Our analysis included only slaughterhouses operated by JBS (including Friboi and excluding Seara), Marfrig (excluding BRF), and Minerva in the seven states covered by our GTA data sample.

We identified 15,427 direct suppliers (Figure 1) and 31,600 indirect suppliers (Figure 2) to the 36 slaughterhouses of the three meatpackers, with trade relationships occurring between 2017 and 2022. Once a farm was identified as a direct and/or indirect supplier, it was overlaid with deforestation data.

We found that 3,13,167 out of the 15,427 direct suppliers (20.5%) were linked to the 36 slaughterhouses where deforestation from 2009 to 2023 was recorded. We also found that 9,327 out of the 31,600 indirect suppliers (29.6%) were linked to the slaughterhouse where deforestation was found.

⁴ "Brazil's JBS launches fund to foster Amazon preservation," *Reuters*, Roberto Samora, September 23, 2020

Figure 1. Properties that directly supplied cattle to the 36 identified JBS, Marfrig and Minerva slaughterhouses

Prepared by AidEnvironment (2023) based on a sample of GTA records covering trade relationships that occurred between 2017 and 2022

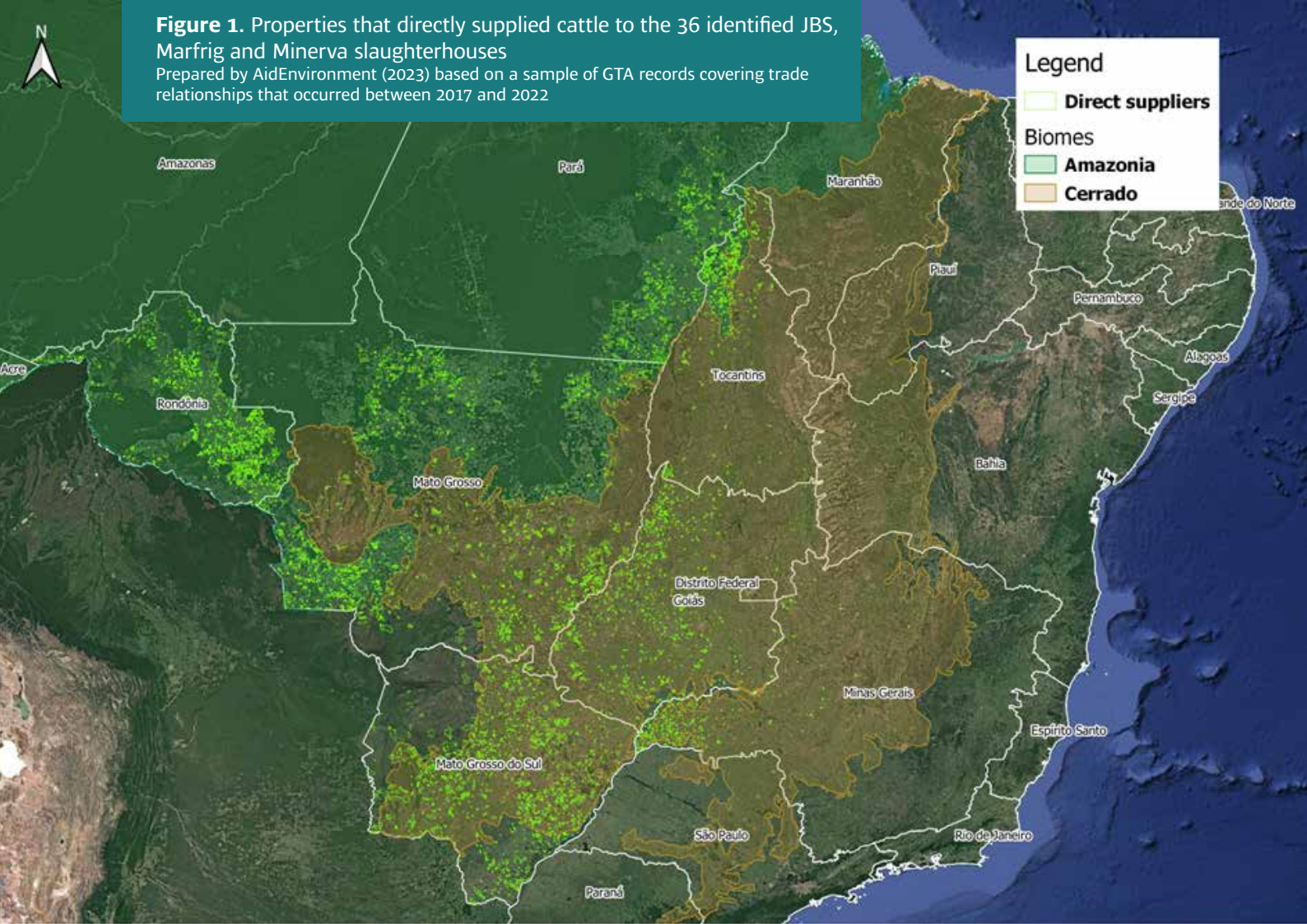
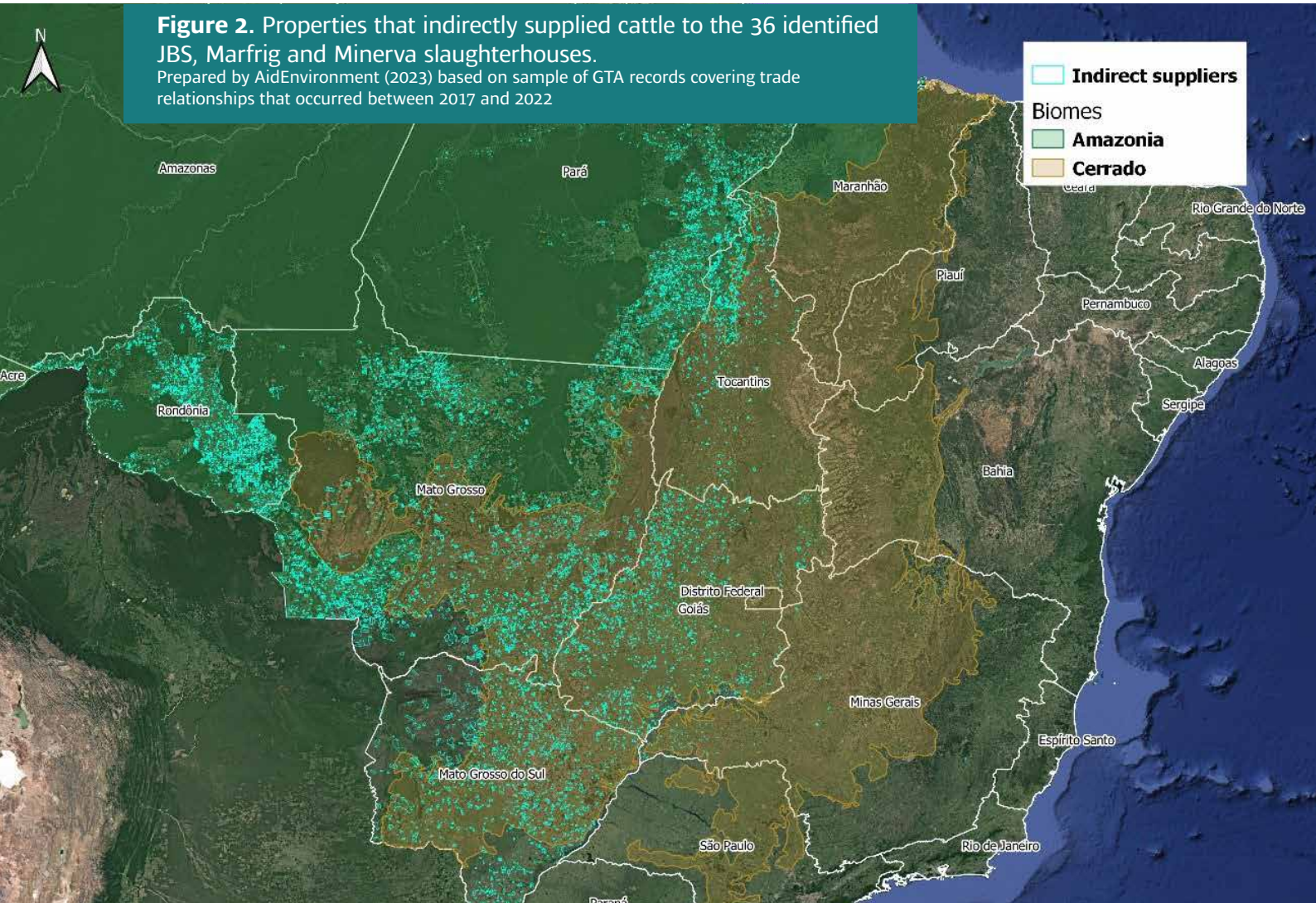


Figure 2. Properties that indirectly supplied cattle to the 36 identified JBS, Marfrig and Minerva slaughterhouses.

Prepared by AidEnvironment (2023) based on sample of GTA records covering trade relationships that occurred between 2017 and 2022



Once the direct and indirect suppliers of the listed slaughterhouses were identified, we overlaid the deforestation data with the polygons of the properties. The analysis considered two periods for calculating deforestation: 2009 (August 2008)⁵ and 2020, and between 2021 and 2023. This period was chosen with reference to important sectoral commitments made in 2009, notably after the publication of the Greenpeace report *Slaughtering the Amazon*. The first one, the Public Livestock Commitment (*Compromisso Público da Pecuária*, also known as G4), was signed that year by the four largest meatpackers (Marfrig, Minerva, JBS, and Bertin — later acquired by JBS). The second commitment is the Term of Adjustment of Conduct (*Termo de Ajustamento de Conduta*, TAC), created by the Federal Public Prosecutor’s Office (Ministério Público Federal, MPF) of the state of Pará in 2009 and later extended to other states of the Legal Amazon. It’s worth noting that retailers, represented by the Brazilian Supermarket Association (Abrás) and the largest retail chains such as Carrefour and Casino/Pão de Açúcar, have also publicly committed to eliminating deforestation from their supply chains in 2013.

Our report also highlights the period after 2021 for two reasons: First because in 2020, Imaflora and the Public Prosecutor’s Office launched the Monitoring Protocol for Cattle Suppliers in the Amazon (*Protocolo de Monitoramento de Fornecedores de Gado na Amazônia*, known as Beef on Track or *Boi na Linha*), which gathers all existing commitments with the aim of harmonizing their implementation by the signatories.⁶ Second, because December 31, 2020, is the cut-off date proposed by the European Union in its regulation against imported deforestation.

We used a combination of data from PRODES, run by the National Institute for Space Research (Instituto Nacional de Pesquisas Espaciais, INPE) and MapBiomas Alerta (MapBiomas) to assess deforestation for these two periods, as shown in Table 5.

Table 5. Time period and data sources used for the deforestation analysis

Timeline		Source	Details
August 2008	July 2020	PRODES 2009 - 2021	This shows deforestation between August 2008 and December 2020 in a sample of direct and indirect suppliers
August 2020	December 2020	MapBiomas Alerta	
January 2021	July 2021	MapBiomas Alerta	Identified deforestation will show non-compliance with the EUDR (from 31 December 2020) in a sample of direct and indirect suppliers
August 2021	July 2022	PRODES 2022	
August 2022	August 2023	MapBiomas Alerta	

Table 6 (below) summarizes the hectares of deforestation potentially linked to the 36 listed JBS, Marfrig and Minerva slaughterhouses.

This calculation reveals that the beef products identified in 27 Carrefour, Casino/Pão de Açúcar and Sendas/Assaí stores over a three-month period came from slaughterhouses with commercial links to properties involved in the deforestation of at least a total of **546,108 hectares in the Cerrado and Amazon regions**.

⁵ PRODES 2009 data are annual and correspond to a 12-month period starting in August 2008.
⁶ https://www.beefontrack.org/wp-content/uploads/2022/10/1653923455-protocolo_monitoramento_gado_a4_40p_ingles_1.1_-_060-8767_v2.pdf

Table 6. Deforestation (hectares) potentially linked to the 36 listed slaughterhouses operated by the three leading meatpackers

Slaughterhouses	Deforestation in a sample of direct suppliers			Deforestation in a sample of indirect suppliers		
	2009-2020	2021-2023*	Total (ha)	2009-2020	2021-2023*	Total (ha)
JBS (27 slaughterhouses)	116,321	26,935	143,256	248,114	56,543	304,657
Marfrig (6 slaughterhouses)**	22,862	5,720	28,582	71,436	14,425	85,861
Minerva (3 slaughterhouses)**	27,187	3,263	30,450	71,789	21,253	93,042
Total (without overlapping)***	152,450	31,521	183,971	299,400	62,737	362,137

(*) Non-complying with the EUDR cut-off date of December 31, 2020.

(**) Since January 2019, the Marfrig slaughterhouse in Paranatinga in Mato Grosso state has been operated by Minerva.

(***) For the calculation of the total deforestation (without overlapping), duplicated deforestation data in properties supplying more than one slaughterhouse were removed.

Within the full list of slaughterhouses, Mighty Earth decided to focus even more on the slaughterhouses with the greatest current and likely future negative impacts on forests. We identified the slaughterhouses linked to the suppliers with the highest recent deforestation rate – we found more than 2,000 hectares of deforestation for their direct farms since the end of 2020, and more than 2,500 hectares for their indirect suppliers.

Of the 36 slaughterhouses, 13 have the highest levels of embedded deforestation (see Table 7) and their meatpackers need to take urgent action on the farms. Retailers Carrefour, Casino/Pão de Açúcar and Sendas/Assaí must investigate, suspend, engage and ultimately blacklist these meatpackers and their direct and indirect suppliers connected to recent deforestation. No more deforestation can be tolerated.

Table 7. Prioritization of the 13 most impactful slaughterhouses that should be suspended to pressure them to investigate further and blacklist their direct and indirect cattle farmers linked to deforestation

Meatpacker	Slaughterhouse	State	2021-2023 deforestation (ha)	
			Direct suppliers	Indirect suppliers
JBS	Alta Floresta	MT	3,386	5,029
JBS	Barra do Garças	MT	1,642	5,467
JBS	Campo Grande	MS	1951	3015
JBS	Confresa	MT	1455	2522
JBS	Marabá	PA	<1000	3399
JBS	Pimenta Bueno	RO	4880	6409
JBS	Porto Velho	RO	<1000	3350
JBS	Redenção	PA	<1000	3870
JBS	São Miguel do Guaporé	RO	3432	5184
JBS	Vilhena	RO	2092	3895
Marfrig	Chupinguaia	RO	3891	10103
Minerva	Paranatinga**	MT	<1000	3299
Minerva	Rolim de Moura	RO	1254	14670

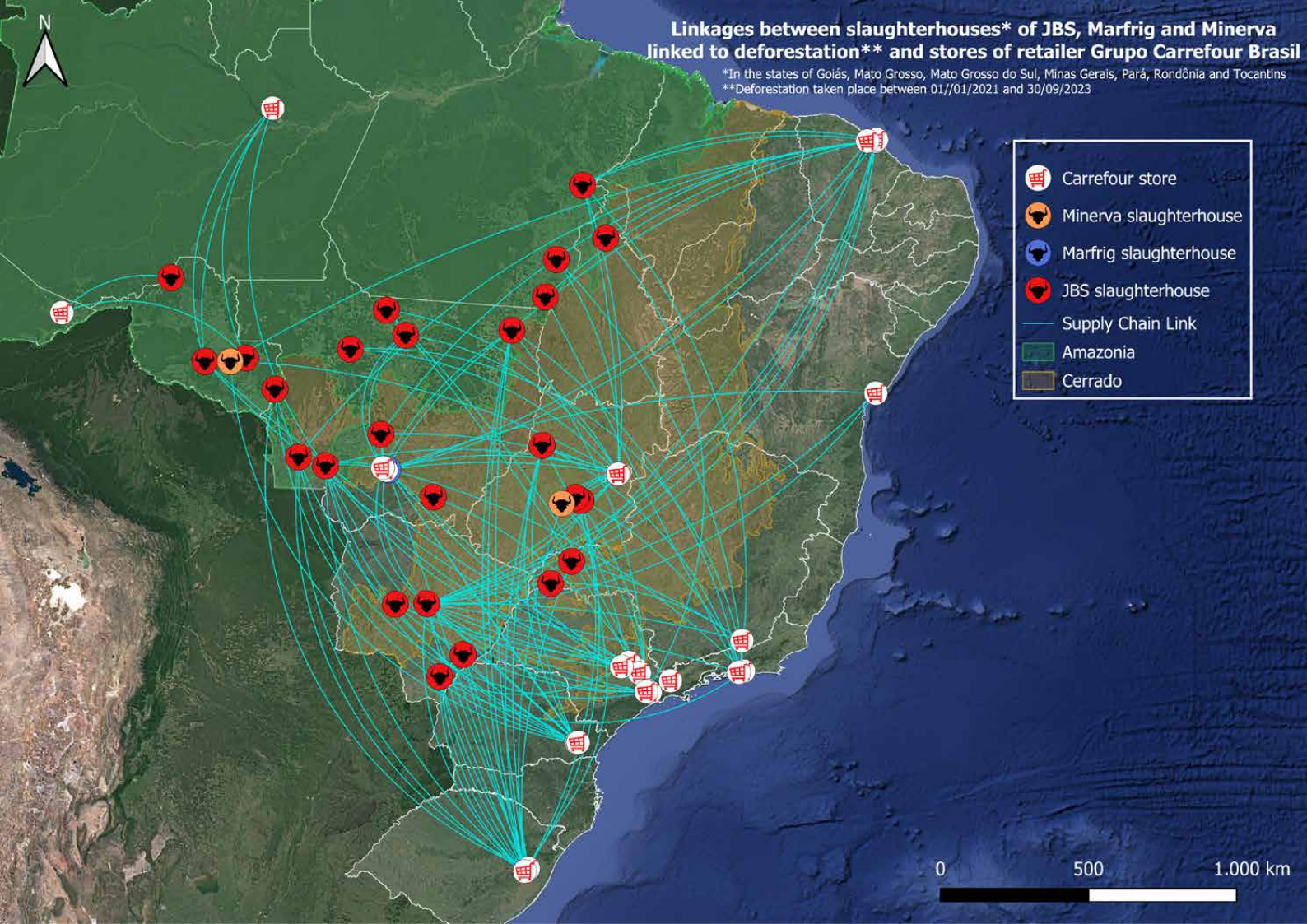
Analysis of origin of the total deforestation indicates that 61% took place in the Cerrado biome and 39% in the Amazon biome (see Table 8 below).

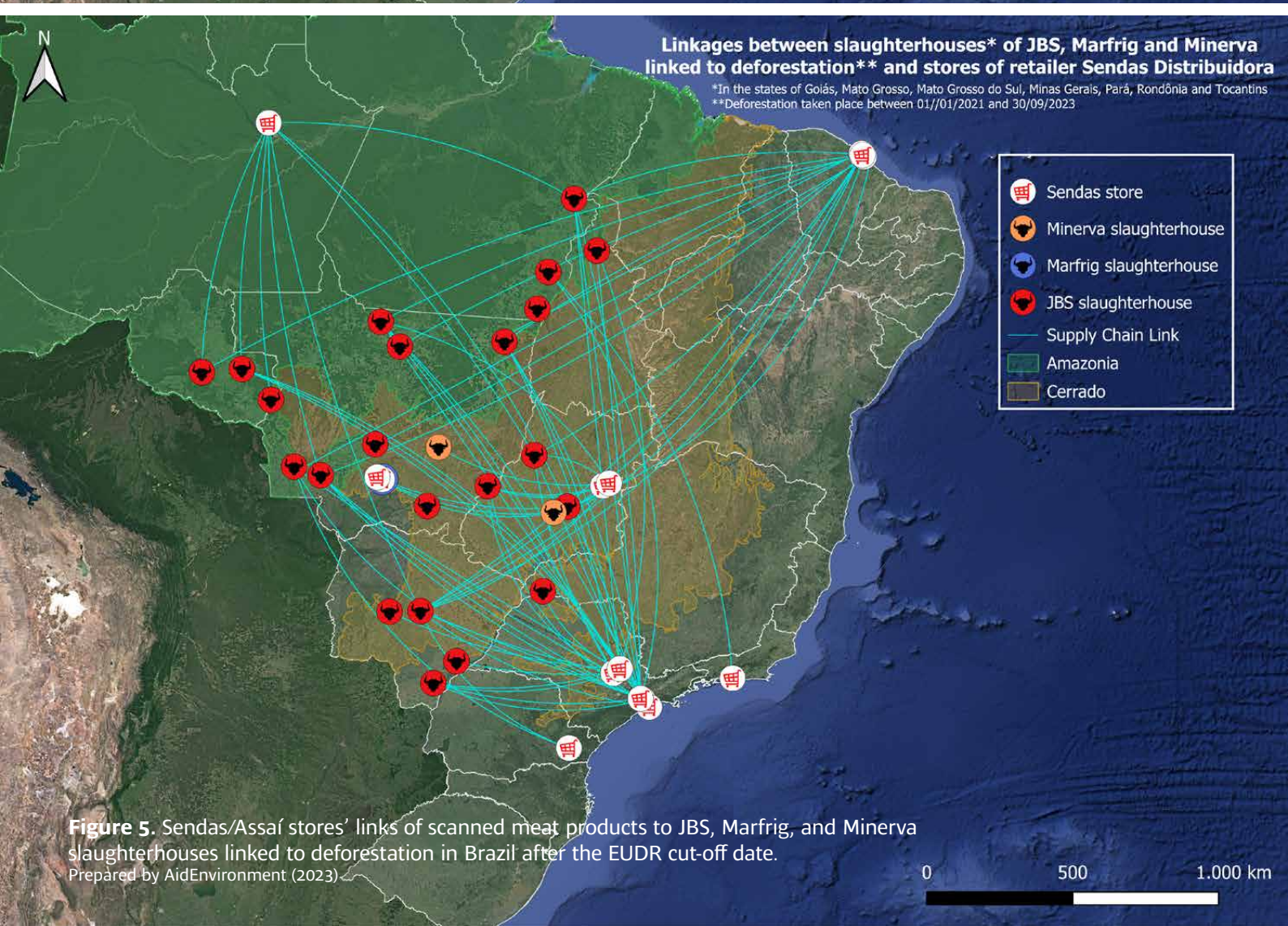
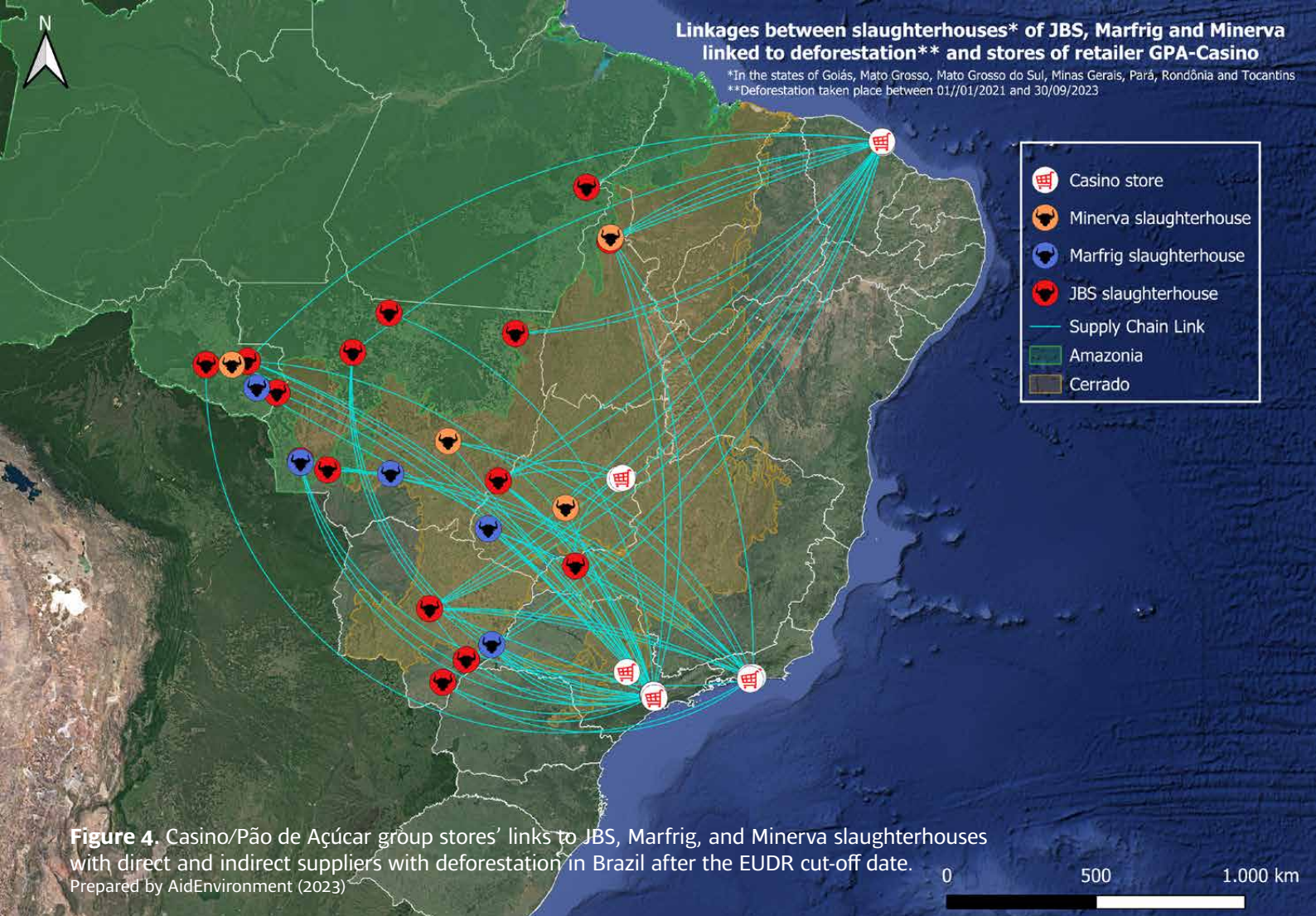
Table 8. Deforestation potentially linked to direct and indirect suppliers to the listed JBS, Marfrig, and Minerva slaughterhouses by biome

Biomes	Deforestation (ha) between 2009 - 2023			
	Direct suppliers	Indirect suppliers	Total	
Amazon	71,275	139,241	210,516	39%
Cerrado	112,696	222,896	335,592	61%
Total	183,971	362,137	546,108	100%
	34%	66%	100%	-

The maps below (Figures 3, 4 and 5) illustrate the links between the retailers’ stores where beef products were identified and the slaughterhouses, where we detected deforestation occurring between 2021 and 2023 in a sample of direct and indirect suppliers. For Brazil’s three main retailers, commercial relationships between stores and slaughterhouses are not defined according to geographic location. The risk of being associated with deforestation therefore appears to be systemic.

Figure 3. Carrefour stores’ links to JBS, Marfrig, and Minerva slaughterhouses with direct and indirect suppliers with deforestation in Brazil after the EUDR cut-off date. Prepared by AidEnvironment (2023).





3. CASE STUDIES

Recent deforestation in slaughterhouses' suppliers

The Rapid Response reports aim to highlight very recent cases of deforestation, with the possibility of a strong market response to prevent further deforestation on these farms.

Considering the potential direct and indirect suppliers of the 36 slaughterhouses linked to beef products identified in 71 Carrefour, Casino/Pão de Açúcar and Sendas/Assaí stores across Brazil, we calculated very recent deforestation not yet covered by MapBiomas Alertas data.

We reviewed recent deforestation activity in direct and indirect suppliers to identify potential case studies. The analysis first considered deforestation alerts from Brazil's real-time deforestation monitoring system in the Amazon and Cerrado biomes for the months of September and October 2023. Deforestation alerts were then visually confirmed for the selected case studies, and the hectares of cleared native vegetation were calculated using high-resolution Planet satellite imagery.⁷

The following pages provide details on five selected case studies, including their supply chain links and “before and after” satellite imagery. The selection of this case was based on criteria that allow us to illustrate the recent, diverse and systemic aspect of native vegetation conversion in Brazil. They involve fire and deforestation events potentially linked to the country's leading beef processing and retail companies. We also prioritized both the Amazon and Cerrado's biomes, as well as direct and indirect cattle suppliers with important native vegetation at risk on their rural properties. We found 2,109 hectares of recent deforestation linked to these five case studies. We also calculated 13,940 hectares of remaining native vegetation on these five properties that are likely at imminent risk of being converted to cattle pasture.

Table 9. Summary of five selected case studies linking deforestation to direct and indirect suppliers to slaughterhouses and retail stores

Property	Municipality, state	Meatpacker	Linked retailer	Biome	Deforestation (ha)	Tons of CO ₂ ⁸	Fire alerts	Remaining vegetation (ha)
Fazenda Água Parada	Nova Esperança do Piriá, Pará	JBS	Carrefour Casino Sendas	Amazon	83	47,071	44	2,053
Fazenda Sararé	Conquista d'Oeste, Mato Grosso	JBS Marfrig	Carrefour Casino Sendas	Amazon	79	35,464	35	3,893
Fazenda Boiúna	Lagoa da Confusão, Tocantins	JBS Minerva	Carrefour Casino Sendas	Cerrado	200	9,995	-	1,754
Fazenda Santa Terezinha	Santa Terezinha, Mato Grosso	JBS	Carrefour Casino Sendas	Amazon	1,489	683,168	-	5,650
Fazenda Laranjeira	Pimienta Bueno, Rondônia	JBS Marfrig Minerva	Carrefour Casino Sendas	Amazon	258	115,819	30	590
Total					2,109	891,517	109	13,940

⁷ Planet Analytic Imagery And Archive, see: <https://www.planet.com/products/planet-imagery/>

⁸ The calculation of CO₂ emissions refers to the “above-ground carbon emissions” according to the cleared vegetation type(s) [Source: Nogueira et al. (2015). *Carbon stock loss from deforestation through 2013 in Brazilian Amazonia*]. The tons of CO₂ emissions are calculated per type of vegetation times the ratio of molecular weight of carbon dioxide to carbon (44/12) times the number of hectares cleared.

3.1. Fazenda Água Parada – Nova Esperança do Piriá, Pará

Property: **FAZENDA AGUA PARADA** Amazon biome

Nova Esperança do Piriá, Pará ▪ **Coordinates property:** -2.8207, -47.3484 ▪ **Area property (ha):** 9,503

CAR: PA-1504950-0788980641424E68A042B007DA4A202A ▪ **SIGEF/SNCI:** 510550238681

Ownership and other linked properties

Ownership: LUIZ CARLOS DA SILVEIRA BUENO

Cleared area

83 hectares ▪ **47,071 tons of CO2** ▪ **44 fire alerts**

Clearance Coordinates: -2.7974, -47.3585 ▪ **Clearance period:** May to Oct 2023

Inside Forest Code's protected areas: No

Type of vegetation: Ombrophilous Dense Forest ▪ **Priority for biodiversity conservation:** Very high

Remaining native vegetation : 2,053 ha

Indigenous territories (overlapping or bordering): -

Environmental fines and embargoes

Embargoes:
No Luiz Carlos da Silveira Bueno is partner, manager, president or legal representative of the following companies: Fazenda Boa Vista Ltda (Paragominas-PA), Frigorífico Extremo Norte Industrial Ltda (Castanhal-PA), Brasnor Agropecuaria S/A (Nova Esperança do Piriá-PA) and the finance companies Saint Godrics Participações Ltda (Belém-PA), Vermont Empreendimentos e Participações Holding S/A (São Paulo-SP), Montpellier Empreendimentos e Participações S/A (Santana de Parnaíba-SP), LVV Empreendimentos e Participações Holding Ltda (São Paulo-SP), Metropolis Holding Ltda (Belém-PA), VSB Empreendimentos Holding Ltda (Santana de Parnaíba-SP), Wedderburn Participações Ltda (Paragominas-PA), Fairbanks Participações Holding Ltda (São Paulo-SP), Delu Participações Ltda (São Paulo-SP) and SB Securitizadora de Créditos S/A (Cotia/SP).⁹

Environmental fines:
No In Paragominas-PA: Fazenda Capitania (1,565 ha) and Fazenda Fernão Dias (930 ha); in Ipixuna do Pará-PA: Fazenda Porteira II (1,357 ha); in Viseu-PA: Fazenda Santa Rosa (1,579); in Inhangapi-PA: Fazenda Porto Vila Pernambuco (94 ha).¹⁰

Supply chain links



⁹ Companies listed in <https://cruzagrafos.abraji.org.br/graph/#node/2c64a3c1-0842-5d92-b297-9c482e32b629> (Luiz Carlos Bueno's CPF number: 534.034.018-04)

¹⁰ CAR and Sigef information (Luiz Carlos Bueno's CPF number: 534.034.018-04)



May 2023

Source: Imagery ©2023 Planet Labs Inc.



October 2023

Source: Imagery ©2023 Planet Labs Inc.

Slaughterhouse	Retail group	Supermarket name - Municipality
JBS Marabá (SIF 457)	Casino	Pão de Açúcar – Fortaleza
		Sam's Club – Fortaleza
	Carrefour	Atacadão – Fortaleza
		Atacadão - Rio de Janeiro
		Sam's Club – Brasília
		Atacadão - Brasília
	Sendas	Assaí Atacadão e Varejo - Sao Bernardo do Campo
		Assaí Atacadista – Limeira
		Assaí Atacadista - São Paulo
		Assaí Atacadista – Fortaleza
		Assaí Atacadista - Manaus



Beef product with SIF code 457 (JBS Marabá slaughterhouse), identified by the Do Pasto ao Prato app on September 29, 2023, in an Atacadão store (Carrefour Group) in the city of São Paulo, Brazil

3.2. Fazenda Sararé – Conquista d’Oeste, Mato Grosso

Property: **FAZENDA SARARÉ** Amazon biome

Conquista d’Oeste, Mato Grosso ▪ **Property coordinates:** -14.7281, -59.3400 ▪ **Property area (ha):** 7,585
CAR: MT-5103361-314E93F5437942388435640DFF1C1302, MT-5103361-7A3EA5B11042458185F62C5A4C29234C
SIGEF/SNCI: 9510997196768, 9020711117915

Ownership and other linked properties

Ownership: SAPE AGROPECUARIA LTDA / Gustavo Carvalho Júnior / Pedro João Martins Carvalho ▪ **Company group:** Sapé Agropecuária is linked to 7 other companies through Oscar Martinez Filho (partner and manager of Sapé Agropecuária): Planalto Reflorest e Comercialização de Prod Agr (Piraquara - PR, wood species farming) and 6 other companies related to real estate development (in São Paulo and Paraná). Pedro João Martins Carvalho is linked to Agropecuária Bom Jesus (established in June 2022 in Pontes e Lacerda - MT) and no company linked to Gustavo Carvalho Júnior was found. ▪ **Linked properties:** Sapé Agropecuária - in Conquista d’Oeste (MT): Fazenda Sararé - área 2 (2,500 ha), Fazenda Sararé (12,700 ha). Gustavo Carvalho Júnior - in Vila Bela da Santíssima Trindade (MT): Fazenda Bela Vista (880 ha); in Cáceres (MT): Fazenda Trindade (1,660 ha), Fazenda Bicho Bravo (unknown area). Pedro João Martins Carvalho - In Pontes e Lacerda (MT): Fazenda São Pedro do Guaporé (4,750 ha), Fazenda Vista Alegre (432 ha), Fazenda São Pedro (unknown area), other linked properties in Rondônia.

Cleared area

79 hectares ▪ **35,464 tons of CO2** ▪ **35 fire alerts**

Clearance coordinates: -59.3387, -14.7220 ▪ **Clearance period:** Jul to Sep 2023

Inside Forest Code’s protected areas: Yes ▪ 79 ha inside declared Legal Reserve

Type of vegetation: Savanna transition ▪ **Priority for biodiversity conservation:** No

Remaining native vegetation : 3,893 ha

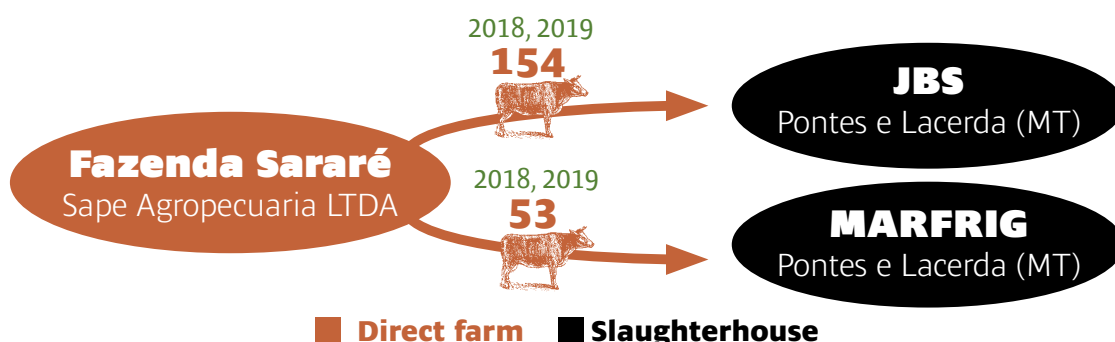
Indigenous territories (overlapping or bordering): Bordering Sararé Indigenous Territory

Environmental fines and embargoes

Embargoes: Yes (other links) Pedro João Martins Carvalho has 2 embargoes issued in 2022: 1 in a property in Pontes e Lacerda (MT) and 1 embargo of 155 ha in Fazenda Santa Maria, in Conquista d’Oeste (MT). Gustavo Carvalho Junior has 3 embargoes, all in Fazenda Taquaruçu in Conquista d’Oeste, between 2021 and 2022.

Environmental fines: Yes (BRL 182,484) Sapé Agropecuária incurred 2 environmental fines (BRL 2,084): 1 in 1999 in Várzea Grande (MT) due to inadequate transport of wood products; 1 in 1998 in Pontes e Lacerda (MT) due to inadequate transport of wood products. Pedro João Martins Carvalho incurred 4 environmental fines: 1 for illegal clearance of 36 ha in a property in Pontes e Lacerda (MT) in 2019 (BRL 180,400), 2 for illegal clearance at Fazenda Santa Maria in 2020 and 1 for illegal clearance at Fazenda Bom Jesus in 2022, both in Conquista d’Oeste.¹¹

Supply chain links

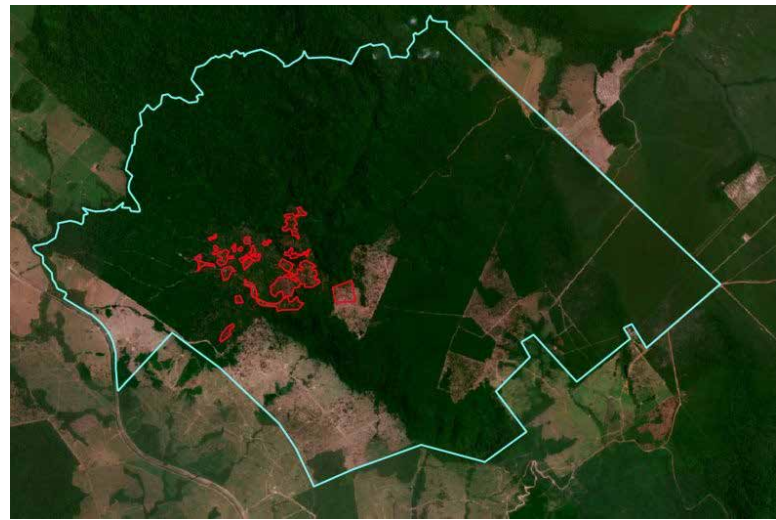


¹¹ Process number at Sema-MT: 279043/2020, 275860/2020 and 32091/2022



May 2023

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October 2023

Source: Imagery ©2023 Planet Labs Inc.

Slaughterhouse	Retailer group	Supermarket name – Municipality
JBS Pontes e Lacerda (SIF 51)	Casino	Pão de Açúcar - São Paulo
		Atacadão - Fortaleza
	Carrefour	Atacadão - Taboão Da Serra
		Carrefour - Porto Alegre
		Atacadão – Alvorada
	Sendas	Assai Atacadista – Limeira
		Assai Atacadista – Curitiba
Assai Atacadista - São Paulo		
Marfrig Pontes e Lacerda (SIF 1900)	Casino	Assai Atacadista – Fortaleza
		Pão de Açúcar – Niteroi
		Pão de Açúcar – Piracicaba
		Pão de Açúcar - São Paulo



Beef product with SIF code 51 (slaughterhouse JBS in Pontes e Lacerda), identified using the Do Pasto ao Prato app on March 24, 2023, in a Pão de Açúcar (Casino Group) store, in the city of São Paulo in Brazil.

3.3. Fazenda Boiúna - Lagoa da Confusão, Tocantins

Property: **FAZENDA Boiúna** Cerrado biome

Lagoa da Confusão, Tocantins ▪ **Property coordinates:** -10.7900, -49.5605 ▪ **Property area (ha):** 4,028

CAR: TO-1711902-F52B9840A6D24634ACE5BA7928106F45 ▪ **SIGEF/SNCI:** 9240320012957

Ownership and other linked properties

Ownership: DU GREGORIO AGROPECUARIA LTDA ▪ **Linked properties:** In Riachinho (TO): Fazenda São Paulo I (1,056 ha) and Fazenda Berra Boi (3,748 ha) in the name of Arquimedes Picolotto, owner of DU Gregorio Agropecuaria Ltda, and Fazenda Fortaleza (4,830 ha).

Cleared area

200 hectares ▪ **9,995 tons of CO2** ▪ **0 fire alerts**

Clearance coordinates: -10.8164 -49.5649 ▪ **period:** Sep to Oct 2023

Inside Forest Code's protected areas: No

Type of vegetation: Wooded Savanna ▪ **Priority for biodiversity conservation:** Very high

Remaining native vegetation : 1,754 ha

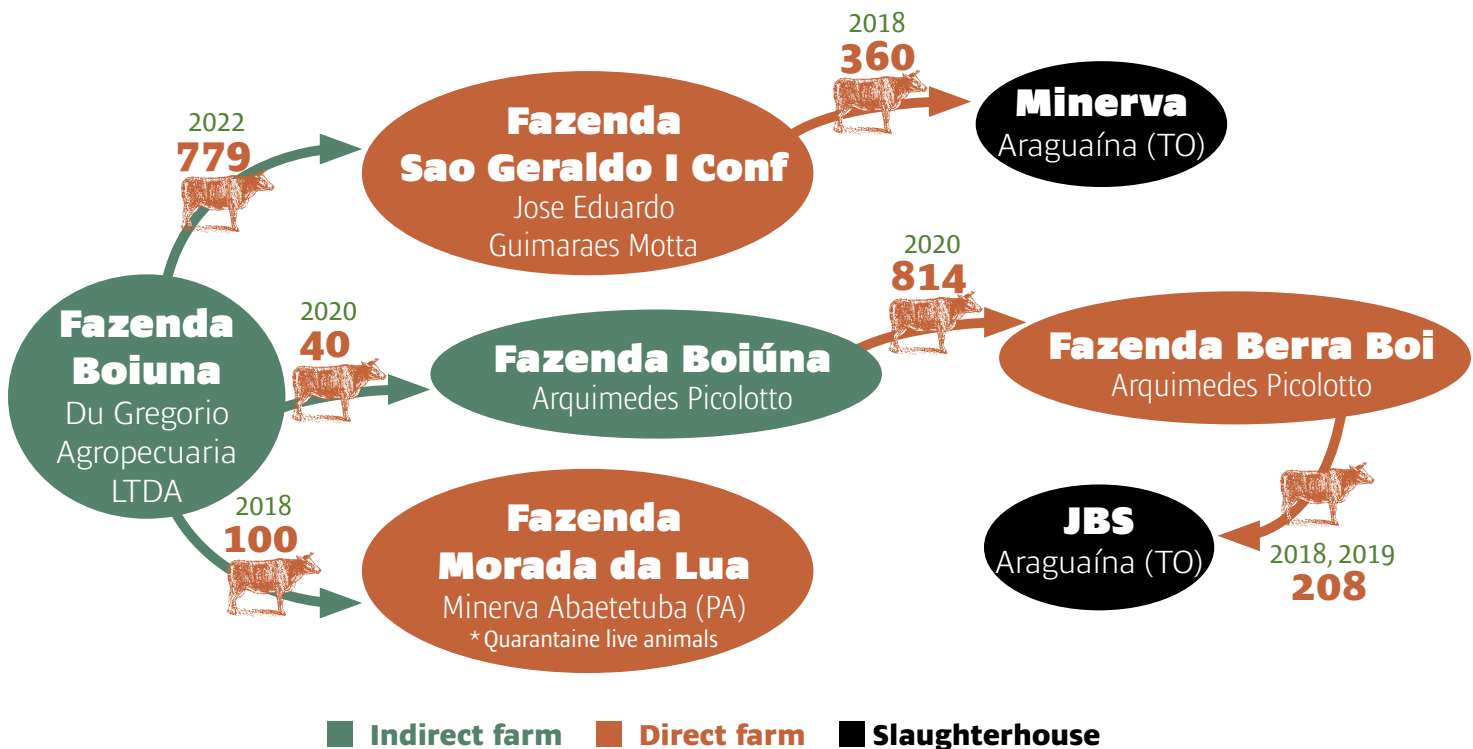
Indigenous territories (overlapping or bordering): -

Environmental fines and embargoes

Embargoes: -
No

Environmental fines: Yes (BRL 1,700¹²) 1 environmental fine in 2004 for unauthorized clearing of 16,662 ha of native Cerrado vegetation.

Supply chain links



12 Ibama, Organizações, Dados Abertos, Fiscalização - auto de infração See: <https://dadosabertos.ibama.gov.br/dataset/fiscalizacao-auto-de-infracao>



May 2023

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October 2023

Source: Imagery ©2023 Planet Labs Inc.

Slaughterhouse	Retailer group	Supermarket name – Municipality
JBS Araguaína (SIF 4001)	Casino	Pão de Açúcar – Fortaleza
		Galeria Pão de Açúcar Buena Vista - Fortaleza
		Pão de Açúcar – Fortaleza
	Carrefour	Pão de Açúcar – Fortaleza
		Carrefour - Sao Paulo
	Atacadão - Fortaleza Aeroporto	
Sendas	Assai Atacadista – Limeira	
	Assai Atacadista - Sao Paulo	
Minerva Araguaína (SIF 1940)	Casino	Pão de Açúcar - Sao Paulo
		Pão de Açúcar - Sao Paulo
		Pão de Açúcar - Niteroi

3.4. Fazenda Santa Terezinha – Santa Terezinha, Mato Grosso

Property: **FAZENDA SANTA TEREZINHA / FAZENDA SANTA TEREZINHA II** Amazon biome

Santa Terezinha, Mato Grosso ▪ **Property coordinates:** -10.4255, -50.7114 ▪ **Property area (ha):** 108,527

CAR: MT-5107776-A11D28E108134A128843CF1EE8AFDCBC (current ownership)¹³

SIGEF/SNCI: 9011800031405

Ownership and other linked properties

Ownership: ARMANDO CONDE / MARCIA LABA DOS REIS SILVA AND LUIZ CARLOS DA SILVA. Marcia and Luiz Carlos have an authorization to clear 940 hectares at Fazenda Santa Terezinha II, but the authorized area does not match the actual cleared area. ▪ **Company group:** Armando Conde¹⁴ is president and partner of the companies Mineradora Roncador S/A and Conde Desenvolvimento Imobiliário Ltda, both located in Couto de Magalhães-TO. Conde is also president of civil society in São Paulo and Mato Grosso, including the Associação Educacional Beneficente Rosalia Iannini Conde, located in Fazenda Santa Terezinha (Santa Terezinha-MT). No companies linked to Marcia dos Reis Silva and Luiz Carlos Da Silva. ▪ **Linked properties:** -In Couto Magalhães (TO): Fazenda Cocal (119 ha) registered in the name of Mineradora Roncador S/A. No properties linked to Marcia dos Reis Silva and Luiz Carlos Da Silva.

Cleared area

1,489 hectares ▪ **683,168 tons of CO2** ▪ **0 fire alert**

Clearance coordinates: -10.4255, -50.7153 ▪ **Clearance period:** Jul to Sep 2023

Inside Forest Code's protected areas: No

Type of vegetation: Lowland Semi Deciduous Seasonal Forest

Priority for biodiversity conservation: Very high

Remaining native vegetation : 5,650 ha

Indigenous territories (overlapping or bordering): -

Environmental fines and embargoes

Embargoes: 1 embargo in 2007 for the implementation of allotment projects without the relevant environmental license in Petropolis RJ in the name of Armando Conde.
Yes (other link)

Environmental fines: 3 environmental fines in the municipality of Petropolis-RJ : 1 in 2007 for the destruction of forest that is considered a permanent preservation area. , 1 in 2007 for setting up a residential allotment without the relevant environmental license, and 1 in 2008 for failing to comply to the embargo by continuing with residential allotment works without the relevant environmental licenses in the name of Armando Conde.
Yes (other link)
(BRL 945,000)

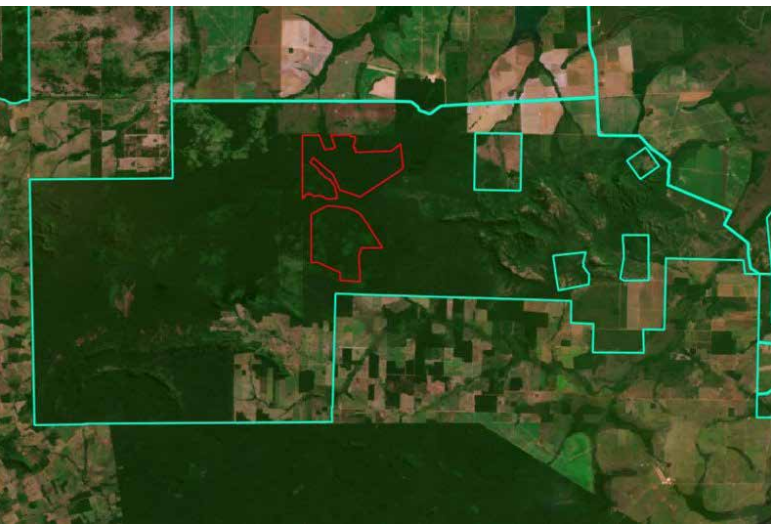
Supply chain links



¹³ According to Sema-MT this CAR is registered in the name of Marcia Laba dos Reis Silva and Luiz Carlos da Silva

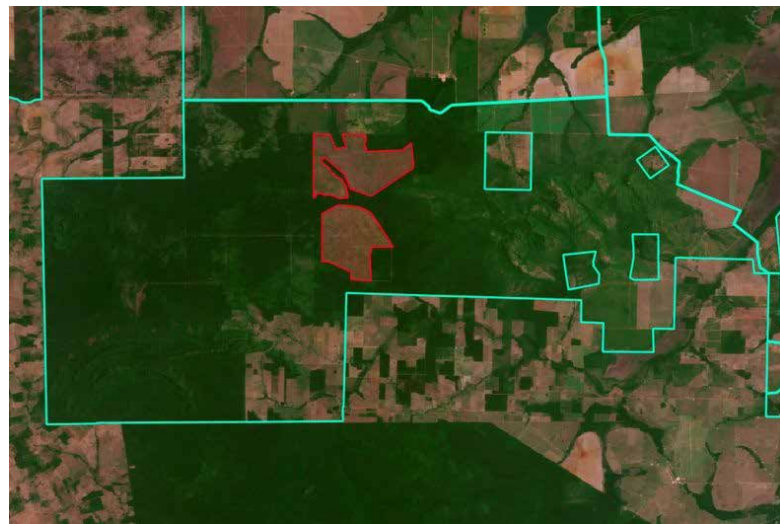
¹⁴ Companies listed in Cruzagrafos, see: (CPF number: 003.253.688-72)<https://cruzagrafos.abraji.org.br/graph/#no-de/7e273153-ae29-5702-9a4e-5f2d77fcd27a> (CPF number: 003.253.688-72)

Slaughterhouse	Retailer group	Supermarket name – Municipality
JBS Confresa (SIF 3470)	Casino	Pão de Açúcar – Fortaleza
		Pão de Açúcar – Fortaleza
		Pão de Açúcar – Niteroi
	Carrefour	Atacadão - Várzea Grande
		Atacadão – Curitiba
		Atacadão - Taboão Da Serra
		Atacadão - Rio De Janeiro
		Atacadão – Caucaia
		Atacadão - Várzea Grande
		Atacadão - Porto Alegre
		Atacadão – Alvorada
	Sendas	Carrefour - Porto Alegre
		Assaí Atacadista – Fortaleza
		Assaí Atacadista - Fortaleza
		Assaí Atacadista – Limeira
Assaí Atacadista – São Paulo		



May 2023

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October 2023

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Beef products with SIF code 3470 (slaughterhouse of JBS in Confresa), identified using the Do Pasto ao Prato app on October 6, 2023, in an Atacadão (Carrefour Group) store, in the city of São Paulo, Brazil.

3.5. Fazenda Laranjeira – Pimenta Bueno, Rondônia

Property: **LARANJEIRA** Amazon biome

Pimenta Bueno, Rondônia ▪ **Property coordinates:** -12.2405, -60.4297 ▪ **Property area (ha):** 1,978

CAR: RO-1100189-E77DFACA3D4748CA883580294621C10B ▪ **SIGEF/SNCI:** 10740361029

Ownership and other linked properties

Ownership: NILTON DIAS DOS SANTOS ▪ **Linked properties :** There is a small property (88 ha) within the “Gleba Novo Destino (Incra)” in Urupá (RO). In the SIGEF database, another 8 properties in Pimenta Bueno (RO): Lote 29B – Gleba 06 (55 ha), Lote 28R – Gleba 06 (50 ha), Lote 13 – Gleba 08 (100 ha), Lote 14 – Gleba 08 (86 ha) and Lote 15 – Gleba 08 (87 ha) – all in the PIC Gy-Paraná – Setor Abaitará. Lot 1C – Gleba 06 (493 ha), Lot 04 – Glebas lotes 04 e 05-A (102 ha), and Lot 03 – Glebas lotes 04 e 05-A (136 ha) – All located in Setor Barão de Melgaço, Gleba Corumbiara. Please note that it is not possible to verify CAR declarants in Rondônia.

Cleared area

258 hectares ▪ **115,819 tons of CO2** ▪ **30 fire alerts**

Clearance coordinates: -12.2500, 60.4170 ▪ **Clearance period:** Aug to Sep 2023

Inside Forest Code’s protected areas: Yes - 258 ha inside declared Legal Reserve

Type of vegetation: Savanna transition ▪ **Priority for biodiversity conservation:** No

Remaining native vegetation : 590 ha

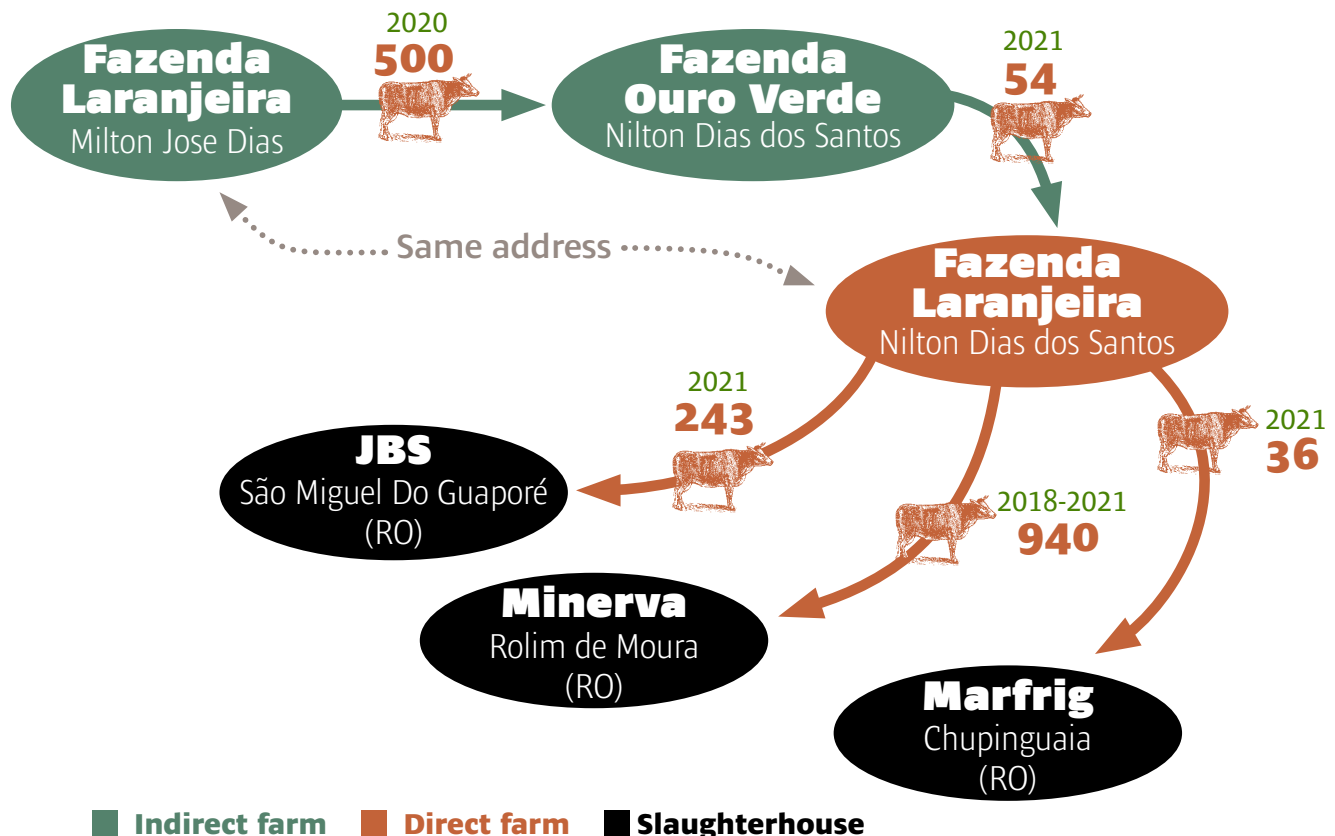
Indigenous territories (overlapping or bordering): -

Environmental fines and embargoes

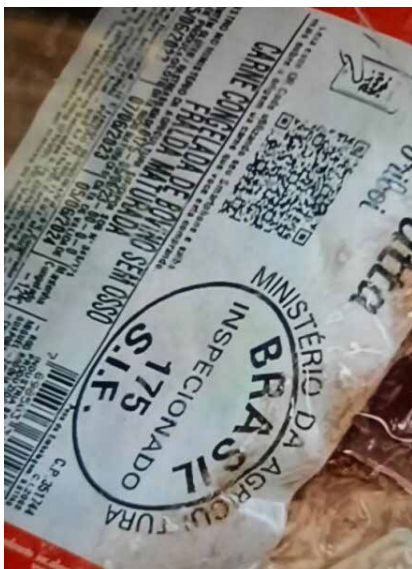
Embargoes: No -

Environmental fines: No -

Supply chain links



Slaughterhouse	Retailer group	Supermarket name (Municipality)
Marfrig Chupinguaia (SIF 3250)	Casino	Pão de Açúcar - São Paulo
Minerva Rolim de Moura (SIF 791)	Casino	Pão de Açúcar - São Paulo
	Carrefour	Carrefour Hipermercado - Curitiba
		Carrefour Hipermercado - Fortaleza
JBS São Miguel do Guaporé (SIF 175)	Casino	Carrefour - Brasília
	Carrefour	Pão de Açúcar - Niterói
		Atacadão - Limeira
		Carrefour Hipermercados - Manaus
		Carrefour - Manaus
	Sendas	Atacadão - Manaus
Assaí Atacadista - Fortaleza		
		Assaí Atacadista - Manaus



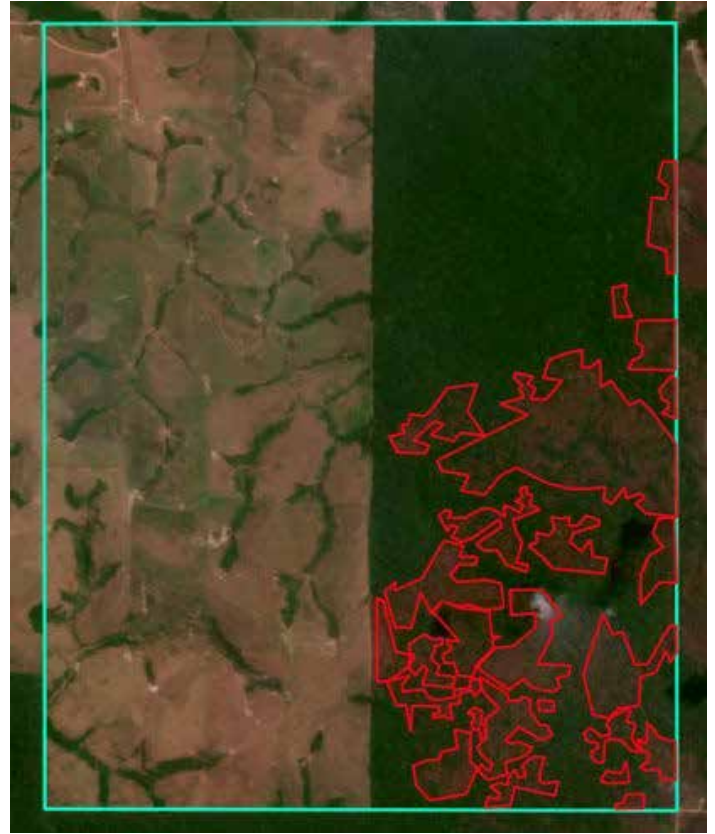
Beef products with SIF code 175 (slaughterhouse of JBS in São Miguel do Guaporé), identified via the Do Pasto ao Prato app in Carrefour and Atacadão stores in the city of Manaus, in Brazil

Beef product SIF code 175 (the slaughterhouse of JBS in São Miguel do Guaporé) identified using the Do Pasto ao Prato app in an Assaí store in the city of Fortaleza (Ceara) in Brazil



May 2023

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October 2023

Source: Imagery ©2023 Planet Labs Inc.



Fires on August 22, 2023

Source: European Union –EO Browser Copernicus Sentinel data 2023

RIGHT OF REPLY REGARDING THE CASE STUDIES

Table 10: Companies' replies

	Case 1	Case 2	Case 3	Case 4	Case 5	Confirmed deforestation?	Confirmed commercial relationship?
	1 CAR number	2 CAR numbers	1 CAR number	1 CAR number	1 CAR number		
	Fazenda Água Parada (PA)	Fazenda Sararé (MT)	Fazenda Boiúna (TO)	Fazenda Santa Terezinha (MT)	Fazenda Laranjeira (RO)		
Carrefour	Temporarily/permanently suspended	Temporarily/permanently suspended	Temporarily/permanently suspended	Temporarily/permanently suspended	Temporarily/permanently suspended	Yes, for two farms	Two are not suppliers, two were suspended
Casino	Stated will not reply	Stated will not reply	Stated will not reply	Stated will not reply	Stated will not reply	Stated will not reply	Stated will not reply
Assaf	Blocked	Blocked	Blocked	Blocked	Blocked	Did not specify	No longer existing
JBS	Did not reply	Did not reply	Did not reply	Did not reply	Did not reply	Did not reply	Did not reply
Minerva	Not concerned	Not concerned	Not a supplier	Not concerned	Did not identify deforestation	No	Yes, with one of them, in 2021
Marfrig	Not concerned	Did not identify deforestation	Not concerned	Not concerned	Did not identify deforestation	No	Yes, the last one occurred in 2020 and 2021

Right of Reply

Below are responses from key retailers and meatpackers to questions from Mighty Earth about their links and commercial relationship to the five case studies above. The full company responses are available [here](#).

Retailers

Carrefour said:

“Thank you for sharing with Carrefour this alert regarding potential deforestation cases in our beef supply chain in Brazil. According to our internal processes, as soon as we received your alert on the 16th of November, we integrated it into our alert mechanism and we immediately launched an investigation.

Thanks to the identification number of the farms, we have come to the following preliminary findings. Among the 6 farms listed:

- 2 farms are not part of our sourcing database;
- 2 farms are confirmed as non-compliant with our policy and were already blocked from our supplies;
- 2 show signs of alert (fires) but without confirmation of non-compliance at this stage.

Based on these findings, Carrefour confirms the suspension of all the listed farms from its supplies, either permanently or temporarily until compliance is proven. We will report on the progress made on these further investigations, and use the findings to improve our sourcing processes.”

Assaí said:

“Assaí is committed to eliminate deforestation and the conversion of native vegetation in its supply chains, to promote the protection of native biomes and the Brazilian cultural heritage, and to boost respect for the International Declaration of Human Rights and the rights and way of life of indigenous peoples, traditional communities, and workers.

Since 2016, we have a Social and Environmental Beef Purchasing Policy that sets forth a specific process for new suppliers to be approved and ensures the monitoring of the chain, besides meeting the criteria in it.

All meatpackers and processors must be approved and compliant with the Group’s social and environmental commitments, by providing evidence showing their compliance and adherence. Since 2020, in order to establish commercial relations with Assaí, all meat packers are required to adopt the criteria of the so-called “Beef on Track” (“Boi na Linha”) protocol and to provide evidence that they are compliant with current legislation.

We require everyone to be committed that their chain process is:

- Free of deforestation and conversion of native vegetation
- Free of conditions similar to slave/ child labor
- Free of environmental embargoes because of deforestation
- Free of invasions of indigenous lands and Quilombo territories
- Free of invasions in areas of environmental conservation
- Registered with CAR (Rural Environmental) Registry and environmental permit, if applicable

In our Annual and Sustainability Report you may find additional and detailed information regarding how we address, monitor and potentially block specific cases of native vegetation clearance.

In addition, Assaí has already blocked the five cases (and their CARs) mentioned and does not have any commercial relations with any of them.”

Casino/Pão de Açúcar said:

“As you know, the Casino Group has been sued, notably by Mighty Earth, for an alleged breach of its “duty of vigilance” under French law.

The Casino Group vigorously contests these allegations, and in particular the methodology used by certain associations to attempt to demonstrate any breach of its obligations.

As a legal dispute is currently underway concerning the very subject of your alert, initiated by Mighty Earth, the Group naturally intends to reserve its explanations for the ongoing legal proceedings.

This does not in any way prevent this alert from being taken into account and processed by our teams and we invite you to send us the CAR numbers of the farms needed to carry out the checks, using our alert whistleblowing system: contact75vgl@deontologue.com.”

Meatpackers

Marfrig said:

“Marfrig follows the Monitoring Protocol for Cattle Suppliers in the Amazon, which is the protocol that rules the livestock sector and signed with the Federal Prosecutor’s Office, applied “to any company in the beef sector that operates in or acquires raw materials from the Legal Amazon”, and therefore uses the INPE-PRODES Legal Amazon database to monitor deforested areas. This protocol considers the bases of polygons indicated by INPE-PRODES Amazônia Legal for monitoring deforested areas as deforestation.

Therefore, considering that the INPE-PRODES Legal Amazon database was last updated in November 2023, there are no deforestation areas with PRODES deforestation polygons on the properties mentioned.

The second CAR cited (MT-5103361-7A3EA5B11042458185F62C5A4C29234C) does not refer to the Sararé farm as mentioned by Mighty Earth. (. . .)

The last purchases of animals from the properties illustrated above occurred in 2020 and 2021. Marfrig has developed and maintains a supplier monitoring platform that uses a satellite georeferencing and geomonitoring system to monitor the production processes and socio-environmental practices of all Marfrig’s suppliers, who must strictly comply with the criteria and good practices established in the policy. The tool monitors all the farms that supply animals to Marfrig’s processing plants on a daily basis. The system cross-references georeferenced data and agricultural documents with official public information to identify potential non-compliance with situations such as deforestation, embargoed areas, conservation units, indigenous and Quilombola territories and any work relationship in degrading or forced conditions. When non-compliance is identified, the property is immediately blocked and no new purchases are made.

Our geomonitoring system uses analyses prior to each new negotiation of animals for slaughter, so that information on producers and properties must be up-to-date and adherent to the commitments made by the company in order to be released for supply. And the entire history is stored in a database. This is a fundamental and non-negotiable practice at Marfrig.

We would also like to emphasize that in all the purchases of animals for slaughter at Marfrig, both properties mentioned were adhering to the commitments in force on the slaughter dates.

The properties mentioned in the report were supplied to Marfrig and the last slaughter of animals that took place with Fazenda Laranjeira, registered in the name of Nilton Dias dos Santos, supplied animals for slaughter at the Chupinguaia-RO unit for the last time in 2021. Now Fazenda Sararé, registered in the name of Sapé Agropecuária, supplied animals for slaughter at the Pontes e Lacerda-MT unit for the last time in 2020.

Once again, Marfrig reiterates that its satellite geomonitoring system uses previous analyses to each new negotiation of animals for slaughter, so that the information on producers and properties must be up-to-date and adherent to the commitments made by the company.

Once more, we would also like to emphasize that in all the slaughtering dates, the properties mentioned were in compliance with Marfrig's commitments. All historical documentation is archived and verifiable.

Our policy is clear and explicit in stating that any non-compliance with the law or our internal guidelines can be reported through our grievance mechanism which is available to the entire internal and external community. As such, both complaints relating to human rights and environmental issues can be received through our mechanism which can be accessed through the following channels: phone: 0800 223 1000; e-mail: compliance@marfrig.com.br; and/or website: <https://marfrig.com.br/pt/compliance/helpline>"

Minerva said:

"(...) Socio-environmental monitoring guarantees that Minerva Foods does not buy cattle from properties with: i. illegally deforested areas; ii. properties with environmental embargoes (for Brazil); iii. properties that overlap with indigenous lands and/or traditional communities and conservation units; iv. properties associated with the use of slavery-like labor. In other words, this means that Minerva Foods' production chain is free of illegal deforestation, labor practices similar to slavery or child labor, overlaps with protected areas, or environmental embargoes. Any non-compliance with socio-environmental criteria results in the supplier being blocked until the situation is rectified.

The monitoring system undergoes an annual audit, with the Company achieving excellent results. Minerva Foods has maintained its outstanding performance in third-party audits supervised by the Federal Prosecutor's Office, the most important and reliable tool for socio-environmental verification in the Brazilian production chain. (...) The Company achieved 100% compliance in the audit of the Public Livestock Commitment, which was signed in 2009 and audited by BDO RCS Auditores Independentes, for yet another year. (...)

Initiatives in relation to indirect suppliers

We were among the first to test Visipec, a complementary traceability tool for mapping indirect suppliers in the Amazon. (...) In 2021, the company partnered with Niceplanet Geotecnologia and released the SMGeo Prospec app, which offers Brazilian rural producers the opportunity to verify their supply chain compliance. (...) The Company is currently using these two tools to map and conduct a risk analysis of its direct suppliers and possible indirect suppliers in order to understand its supply chain and the supply scenario in which it operates.

Efforts are being made to track the supply chain at all levels, however, it is important to recognize that achieving full traceability goes beyond industry initiatives, requiring the participation of other stakeholders including government, ranchers, retailers, the community, and others.

Recently, we achieved yet another recognition and won second place in the European Sustainable Food Awards 2023, in the Pioneering in Sustainability category. (...)
Minerva Foods is an active participant in the Global Roundtable for Sustainable Beef (GRSB). (...)
In addition, the Company is a member of the Sustainable Livestock Working Group (GTPS) (...).
The Company is a member of the Sustainability Committee formed by the Brazilian Association of Meat Exporting Industries (ABIEC), as well as a participant in the Investor Alliance for Emerging Markets and the Working Group of Indirect Suppliers (GTFI).

Information on Fazenda Laranjeira (Pimenta Bueno, Rondônia)

With respect to Fazenda Laranjeira (Pimenta Bueno/RO), a careful search was conducted within the Minerva Foods registration database using the name of the property, municipality and state of location. The property found based on the data provided in the Minerva Foods registration system underwent a detailed socio-environmental monitoring analysis and no restrictions were found when the Company last commercialized with the property in 2021.

Information on Fazenda Boiuna (Lagoa da Conspiração, Tocantins):

With respect to Fazenda Boiuna (Lagoa da Confusao/TO), a careful search of the Minerva Foods registration database was conducted using the property name, municipality and state of location. There is no record of this property in the Minerva Foods registration system and therefore there has been no commercialization with this entity.

Minerva Foods maintains its commitment to transparency

Minerva Foods has a long history of transparency in disclosing information about its ESG agenda. For the past 11 years, the Company has reported on its progress annually through its Sustainability Report and continues to develop new ways to present the best sustainability content to its stakeholders. (...) Learn more about our operations and ESG initiatives on the Minerva Foods website and in our Sustainability Reports at: <https://minervafoods.com/compromissos-com-asustentabilidade/>

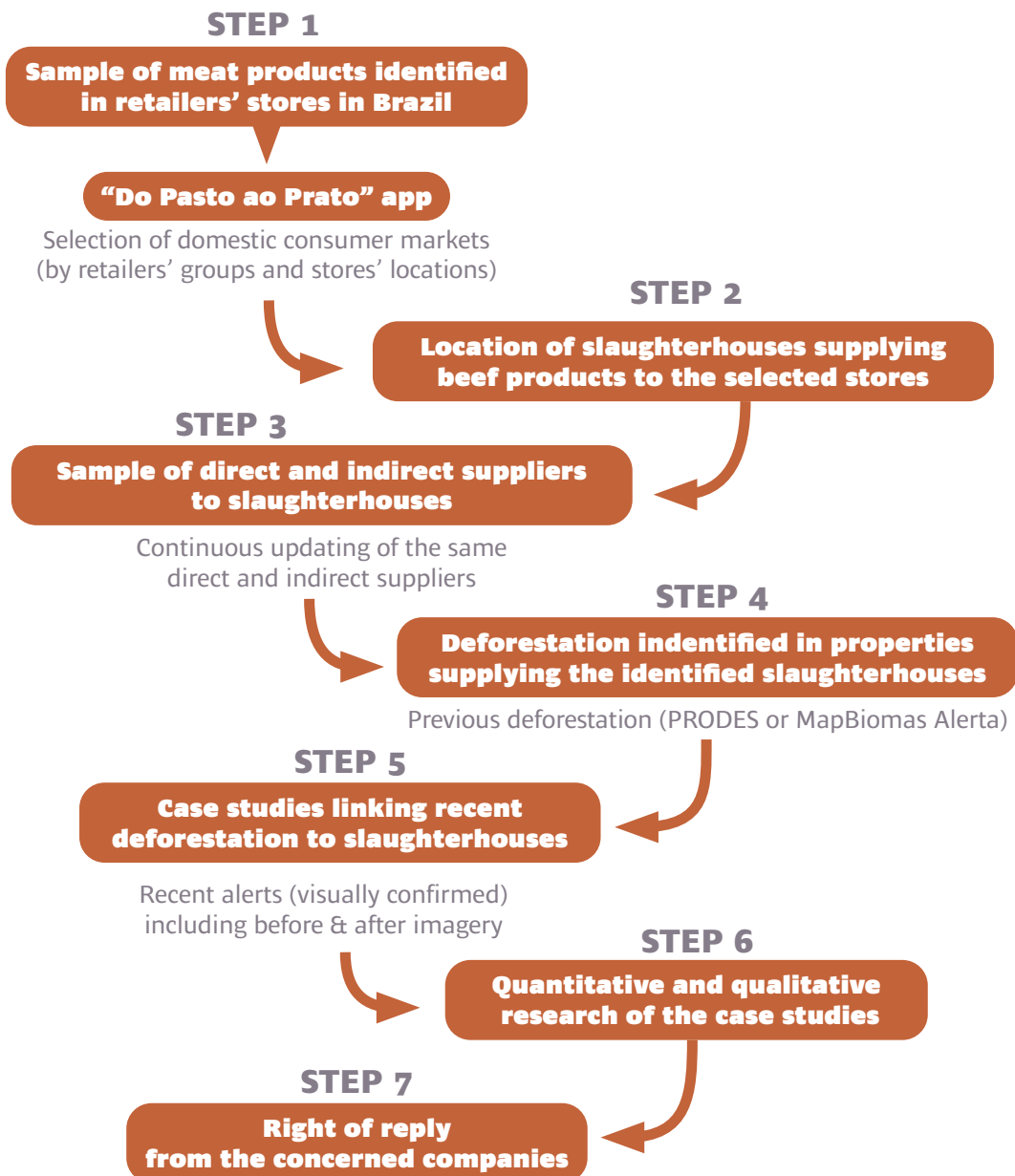
JBS

The company did not reply to questions on the five case studies from Mighty Earth.

APPENDIX 1 - METHODOLOGY

The methodology for the Cattle Rapid Response program is divided into **seven** main steps:

Figure 1. Summary of the Cattle Rapid Response program



Step 1. In-store beef products scanning using the Do pasto ao prato app

Consumers, volunteers and commissioned data collectors used the *Do Pasto ao Prato* (DPaP) app to scan and record information about beef products found during a three-month period (in this case from June 28 to October 7, 2023) in the retail stores of the three leading retail groups in Brazil - Carrefour, Casino/Pão de Açúcar and Sendas/Assaí -, located in municipalities in five Brazilian regions that were previously defined according to their population and presence of the retailers. In some cases, photos were taken. The data is transmitted to the DPaP database. The municipalities are as follows: Manaus/state of Amazonas and Belém/state of Pará, in the Northern region; Teresina/state of Piauí and Fortaleza/state of Ceará, in the Northeast region; Curitiba/state of Paraná and Porto Alegre/state of Rio Grande do Sul, in the Southern region; São Paulo/state of São Paulo and Rio de Janeiro/state of Rio de Janeiro, in the Southeast region; Cuiabá/state of Mato Grosso and Brasília/Federal District, in the Center-West region.

Using the DPaP app, data collectors registered the supermarket locations, and the slaughterhouse registration numbers on the beef products – such as the SIF (*Serviço de Inspeção Federal*), the SIE (*Serviço de Inspeção Estadual*) or the CNPJ (Cadastro Nacional de Pessoa Jurídica) codes, among others. With the “research version”, data collectors also recorded the beef’s production data. Whenever possible, pictures of the identified products were taken. The objective was to identify the full range of origins of the different fresh, frozen and processed beef products. This data was added to the DPaP regular database and was processed and analyzed using the same methods and criteria.

The DPaP app links the sanitary codes (SIF, SIE or other) or the tax code (CNPJ) associated with a slaughterhouse to the specific establishment the user is located. Leveraging the user’s location data, the app generates a list of nearby retail stores, allowing the user to select the one he or she is currently in. Following this selection, the application securely stores information about the slaughterhouses that supply products to the selected store in its database.

Step 2. Mighty Earth and DPaP share the data from the app in an Excel file with AidEnvironment, which contains a sample of the identified products found in the retailers’ stores with the following data:

DATETIME
PLATFORM
REF_NUMBER
REGISTERED
REQUEST_INCLUSION
STATE_TYPE_OF_REF
SUPERMARKET
TYPE_OF_MEET
TYPE_OF_REF
UNI_ID
Cnpj
SIF Code
APP_VERSION
LOCATION_OF_SUPERMARKET
PONTUACAO_SUSTENTABILIDADE
SUPERMARKET_NAME
TYPES_OF_PLACE
LAT
LON
BUSINESS_STATUS
FORMATTED_ADDRESS
STORE_LAT
STORE_LNG
NAME
RATING
TYPES
USER_RATINGS_TOTAL
MUNICIPALITY
STATE
WEBSITE
PRICE_LEVEL
REGIAO
SUPERMERCADO_GRUPO
CARNE_TIPO
PRODUTO
SOURCE
HOLDER

CNPJ and SIF Code: Entries without a CNPJ or a SIF code are removed because, without this information, it is impossible to trace the origin (slaughterhouse) of the beef product. All entries with a CNPJ or a SIF code have been retained.

All retained entries have associated “DATETIME”, “CNPJ”, “SIF Code”, “FORMATTED_ADDRESS”, “NAME”, “MUNICIPALITY”, “STATE”, and “HOLDER” data.

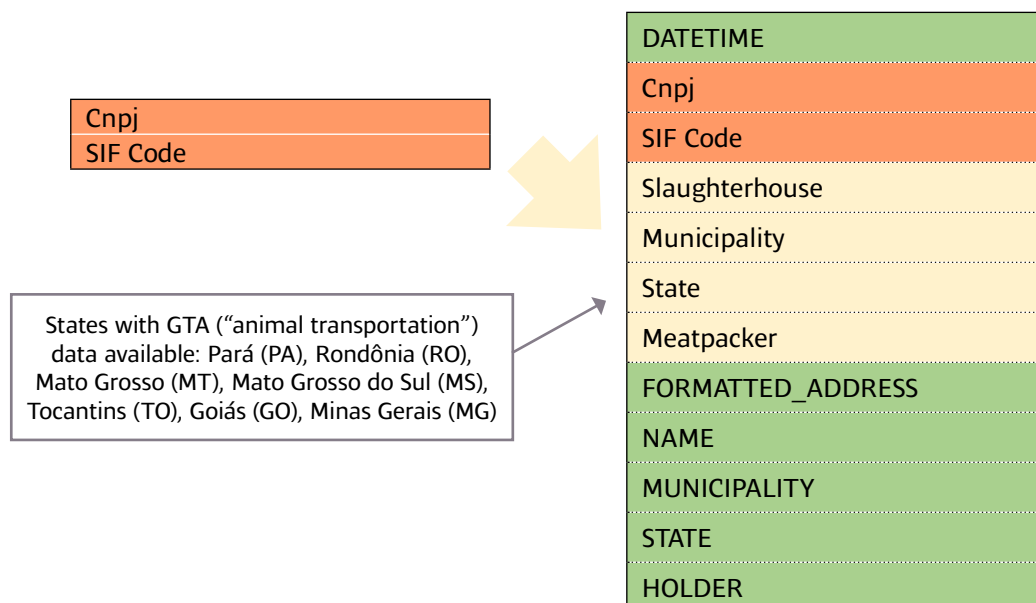


DATETIME
Cnpj
SIF Code
FORMATTED_ADDRESS
NAME
MUNICIPALITY
STATE
HOLDER

Step 3. Identification of slaughterhouses using SIF Codes

From the list of CNPJ and SIF codes, the slaughterhouse is identified using as a reference the official registration data of the Inspection Federal Service (Serviço de Inspeção federal – SIF) linked to the Brazilian Ministry of Agriculture. Through the SIF database, using either the SIF code or the CNPJ, it is possible to identify the operator, the municipality, and the state of the slaughterhouses. Considering the list of identified slaughterhouses, their location (municipality, state), and their operators, we selected only those linked to JBS, Marfrig, and Minerva Foods in seven states (Pará, Rondônia, Mato Grosso, Mato Grosso do Sul, Tocantins, Goiás, Minas Gerais). According to the companies, JBS operates 32 slaughterhouses in Brazil, Marfrig, 10, and Minerva Foods nine.

The selection of operators and states is based on the available data on the animal transportation documentation (Guia de Trânsito Animal, GTA) in AidEnvironment’s internal database. Only entries linked to one of the three meatpackers’ slaughterhouses, in one of the seven states, are retained in this step.



Step 4. Identification of the properties that directly or indirectly supply cattle to the selected slaughterhouses

Identifying these suppliers is possible through overlaying a sample of GTA the data available for suppliers located in the seven previously mentioned Brazilian states with the official land tenure registration systems called SIGEF and SNCI. The available GTA data is only a sample because the number of GTA records we have access to does not cover the entire Brazilian territory and does not include all GTA records. Our sample includes data for only seven states and the period 2017-2022. It does not cover the entire meatpackers’ supply chain.

We cannot estimate what the exact proportion that the sample represents. In this report, we have only included the reference to JBS’ publicly available data on its direct suppliers. Minerva¹⁵ reports more than 6,000 suppliers across Brazil, Marfrig reports 15,000 direct suppliers¹⁶ registered in the Amazon biome and estimates to have a potential total of 25,000 indirect suppliers¹⁷ in the Amazon biome alone. Because the data released by the meatpackers is not accurate (it may be outdated, some only cover direct suppliers, some only cover the Amazon biome, etc.), it is difficult to calculate the proportional coverage of the direct and indirect suppliers we found compared to the total meatpackers’ suppliers. Furthermore, our sample only included the 36 slaughterhouses linked to the beef products found in the visited stores. The most recent and available GTA data were used to merge the SIGEF and SNCI records. The

15 Minerva Foods (2020) Sustainability Report, Minerva Foods: São Paulo, Brazil

16 Marfrig (2020) Landscape Protection Plan of Marfrig, Marfrig: São Paulo, Brazil

17 Marfrig (2020) Landscape Protection Plan of Marfrig, Marfrig: São Paulo, Brazil

states included are Mato Grosso, Mato Grosso do Sul, Goiás, Minas Gerais, Rondônia, Pará and Tocantins. Only the direct (first tier) and indirect (second tier) suppliers to the targeted slaughterhouses were extracted from the GTA sample used. Once a supply relationship has been established (regardless of the year in which it was identified from 2017), we consider that farm to be a direct or indirect supplier. We update this database annually using the most recent GTA and CAR data.

Step 5. Overlay official deforestation data from PRODES with properties identified as direct and indirect suppliers to the targeted slaughterhouses

Once the supply chain link is established between the farm and the slaughterhouse (starting in 2018), regardless of the year the cattle were transferred, the AidEnvironment database recognizes it as a supplier and deforestation data across years can be overlaid.

If PRODES data does not cover the deforestation period, MapBiomias Alerta deforestation data is used. An intersection between the deforestation data and the supplier data is performed to include only deforestation within the property boundaries. If we need to calculate deforestation cases that occurred from January 2021 (considering that the deforestation cut-off date of the EUDR is December 31, 2020) and given that the PRODES data cannot be broken down by month, we use MapBiomias Alerta data instead.

PRODES 2009 covers the period from August 2008 to July 2009. PRODES 2021 also includes the Mapbiomas alertas from January 2021 to July 2021, since it does not cover the January-July period of that year.

Timeline		Source	Details
August 2008	July 2020	PRODES 2009 - 2021	This data covers deforestation that occurred between August 2008 and December 2020 in a sample of direct and indirect suppliers to the listed slaughterhouses
August 2020	December 2020	Mapbiomas Alerta	
January 2021	July 2021	Mapbiomas Alerta	Identified deforestation indicates a non-compliance with the EUDR cut-off date (from December 31, 2020) in a sample of direct and indirect suppliers to the listed slaughterhouses
August 2021	July 2022	Prodes 2022	
August 2022	August 2023	Mapbiomas Alerta	

The identified properties may directly supply one slaughterhouse and indirectly supply a different one or even supply more than one slaughterhouse; therefore, the simple totals may include a supplier more than once. To avoid double counting, a “total without overlapping” is calculated by removing repeated deforestation data from properties that directly and indirectly supply more than one slaughterhouse. From the second report onwards (expected for March 2024), PRODES 2023 deforestation data will be included (covering the period between August 2022 and July 2023). However, since PRODES data cannot be broken by month, MapBiomias Alerta data will continue to be used to cover the EUDR cut-off date, i.e. from December 31, 2020.

Step 6. Quantitative and qualitative case study research

Five case studies were selected to illustrate the links between recent deforestation in properties that supply slaughterhouses and the origin of beef products sampled in the retail stores. Recent deforestation data from DETER deforestation alerts covering September and October 2023 is overlaid on properties that directly and indirectly supply the selected slaughterhouses. Once the case study is selected, satellite imagery visually confirms the deforestation alert, and the actual deforestation is calculated using GIS.

The criteria used to select the case studies are based on a range of information, including the

amount of recent deforestation and of remaining native vegetation, proximity to indigenous territories, illegality of deforestation, and a variety of direct and indirect suppliers to the targeted slaughterhouses.

Each case study includes quantitative and qualitative data on the farm and ownership, supply chain links to the targeted slaughterhouses, and a “before and after” imagery to show evidence of the reported deforestation.

Step 7 : Right of reply for the concerned companies

Meatpackers who have had commercial relationships since 2018 with the selected farms identified by GTAs receive a letter from Mighty Earth requesting they provide a right of reply on the identified cases. Retailers who have sold beef products originating from the affected slaughterhouses also receive a right of reply before the report is released. Responses are published in the same report and as an attached file.

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