RADAR VERDE

BEEF TRANSPARENCY IN THE BRAZILIAN AMAZON

UNITED STATES OF AMERICA

Do Brazilian Amazon beef exporters to the United States enforce zero-deforestation policies?

2025

RADAR VERDE

1 Introduction

Brazilian beef exports to the U.S. showed modest growth from 2016 to 2019, followed by a sharp rise starting in 2020. Exports more than doubled in 2021 and continued climbing, reaching a record 271,826 tons in 2025—an eightfold increase over the decade (Figure 1). This increase resulted, in part, from the need to reduce food inflation in the US (USDA, 2022). One of the causes of global inflation has been the increased frequency and severity of weather extremes, which reduce food production, including in Australia, where the United States otherwise sourced beef (Appendix 1). Climate change raises meat prices in three main ways: by making it harder to grow feed for livestock, by reducing livestock productivity due to heat stress, and by increasing water (World Economic Forum, 2024).

However, the search for American food security through meat imports can lead to further deforestation in Brazil, aggravating climate risks and food insecurity. For example, based on 2024 data from SEEG, livestock farming is responsible for 71% of greenhouse gas emissions in Brazil, accounting for the sum of enteric digestion emissions (29%) and the potential land-use change and deforestation considering the sum of emissions from enteric digestion (29%) and land use change and deforestation potential associated with the activity (42%) (SEEG, 2024).

In this context, several U.S. entities are urging the country to block imports linked to deforestation. Specifically, in 2021, 40 entities supported the Forest Act 2021 bill with three pillars (McCarthy, 2021):

1. Ban products linked to illegal deforestation into the US, based on the Lacey Act, which prohibits unlawful timber and wildlife from entering the country. The Lacey Act helped reduce illegal timber imports into the United States by between 32% and 44% (Union of Concern Scientists, 2024).

2. Create the possibility for the US to prosecute people and organizations that engage in illegal deforestation.

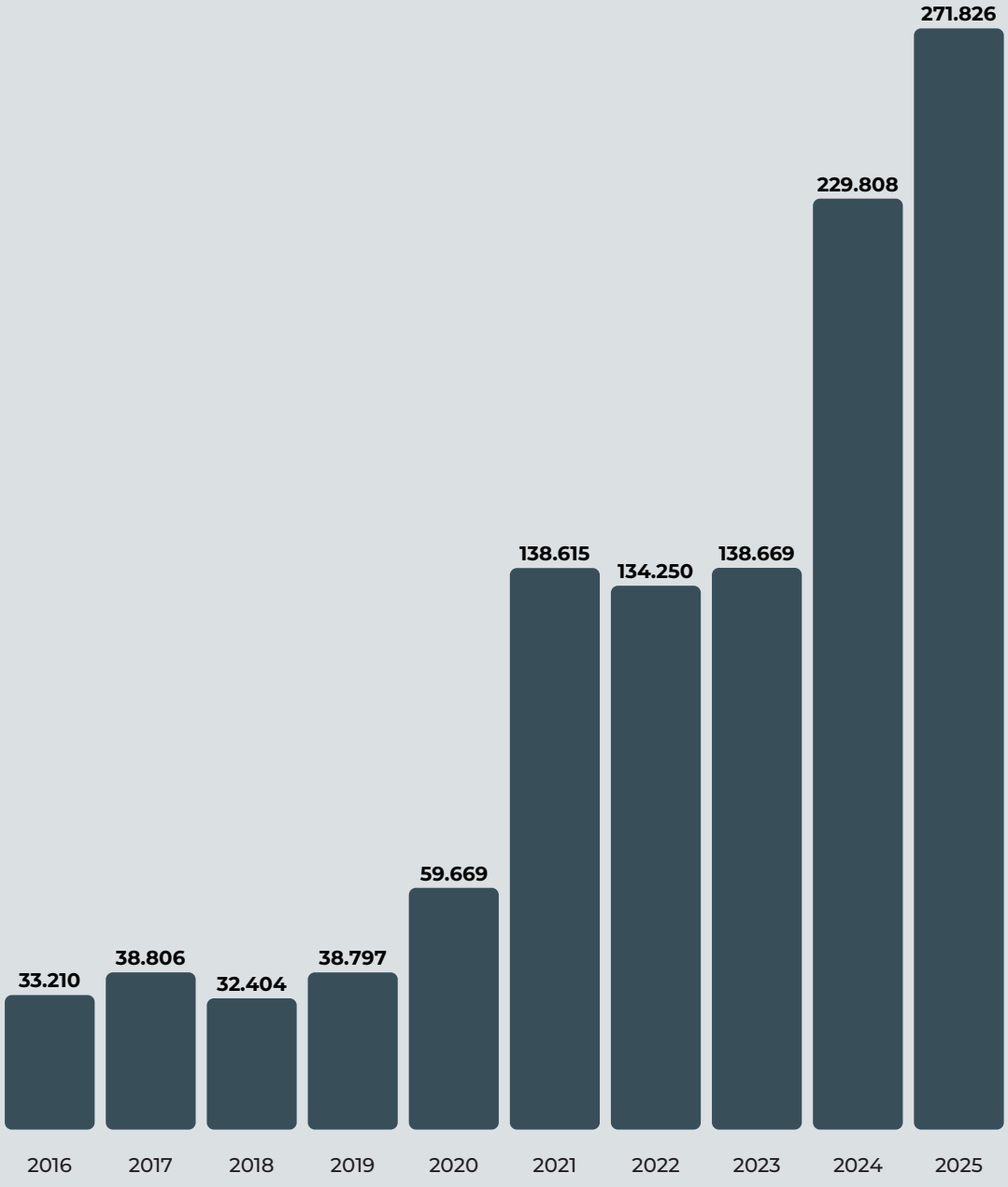
3. Create a fund to help countries move away from deforestation and create effective enforcement and conservation programs.

The project initially includes the following products: palm oil, soybeans, cocoa,

livestock, rubber, and timber. Livestock products are cited in the 2023 version of the Forest Act: In 2022, the United States imported beef and leather products from Brazil valued at about 1.1 billion dollars, and 95% of deforestation was illegal (US Congress - Forest Act: Section 2, paragraph 11, paragraphs A and B, 2023). Although the project has yet to be approved, assessing its potential impact in the context of increases in exports to the US is relevant.

In this technical note, we assess whether companies that own slaughterhouses licensed to export beef from the Brazilian Amazon to the United States comply with the trade specifications set forth in the most recent Forest Act proposal. Our assessment is based on the results of the 2025 Radar Verde evaluation, a tool that assesses the commitment of beef companies to zero deforestation policies. Radar Verde seeks evidence of companies adopting zero-deforestation policies to ensure that the beef they sell is not directly or indirectly associated with deforestation in the Amazon (Imazon & O Mundo Que Queremos, 2023).

Figure 1. Beef exports (ton/year) from Brazil to the US between 2016 and 2025.



Source: ABIEC, 2025.

2 The U.S. Forest Act and its potential to stop products associated with deforestation in the Amazon

The proposed Forest Act 2023 sets out the rules to prevent the purchase of specific agricultural commodities associated with deforestation, including the items below.

- Covered Commodities. The law includes products such as palm oil, soybeans, cocoa, cattle, and rubber. Companies that sell these products in the US must publicly disclose their due diligence systems and their supply chain information.

- Requirements for the companies. Companies must trace the origin of their products and confirm that they do not come from illegal deforestation. They must maintain and publicly update their monitoring data and enforce their policies annually. Companies that intend to market their products made entirely or partially from the covered commodities must publicly update information on the implementation of due diligence systems and their supply chain to facilitate third-party monitoring (US Congress – Forest Act: Section 3, Paragraph 4, paragraph C, 2023).

- Suppliers' policy requirements. Suppliers of the commodities must provide the following:

    - Measures to identify and ensure compliance with your policy;

    - Detailed data on the direct and indirect suppliers and supply chain traceability;

    - Data detailing the complete list of the direct and indirect suppliers and supply chain traceability information, including refineries, processing plants, farms and plantations, and their respective owners, entities, and farmers, maps and geolocations for the commodity;

    - Steps taken to prevent deforestation;

    - Measures to comply with local laws;

    - The policy and the data used to monitor and enforce it are publicly available and updated at least once a year.

- Public procurement preference for commodities not produced on land subject to (legal) deforestation. Suppliers who follow the rules mentioned get a special price benefit in public bidding for products covered by this policy. If a government agency is choosing who to buy from, the agency head must give a 10% price advantage to those who can show their products do not come from deforested areas. Essentially, the agency will treat their bid as 10% cheaper than it is, making their offer more competitive and boosting their chances of winning the contract.

- Import declaration. One year after the law is enacted, importers must electronically declare that they have exercised due diligence to ensure that no commodities have been produced on illegally deforested land.

- Country evaluation. Within 180 days of the law's enactment, the US government should provide a list of countries without adequate protections against illegal deforestation. This list will consider factors such as deforestation trends, law enforcement capacity, and incidences of violence against indigenous and local communities. The list will be reevaluated at least every two years.

- Development of an action plan. Listed countries must develop an action plan with the US Trade Representative, focusing on preventing illegal deforestation, strengthening law enforcement capacity, implementing comprehensive monitoring, ensuring transparency, and sharing data related to land use and commodity supply chains. This draft will be published for public review and comment before finalization.

3 Do beef companies' policies in the Amazon meet the requirements of the proposed 2023 U.S. Forest Law?

Seven companies with 15 slaughterhouses operating in the Legal Amazon are licensed to export to the United States and have a average slaughter capacity of 11,270 head per day. These slaughterhouses are exposed to deforestation risk factors ranging from 144,000 hectares to more than two million hectares (Figure 2), areas equivalent to Los Angeles County and the state of New Jersey. The company most exposed to deforestation (2.8 million hectares) is Vale Grande Industria e Comercio de Alimentos S/A (Frialto), which has two slaughterhouses licensed to export to the United States in the Legal Amazon. Risk factors included (Barreto et al., 2023):

- Areas embargoed for illegal deforestation. Slaughterhouses that purchase cattle from these areas could face lawsuits and reputational damage. Without systems that prove the birth of livestock in areas without deforestation, companies are under suspicion of influencing forest destruction;

- Recent deforestation outside embargoed areas. Buying cattle from these areas, even if devastation has occurred in the past, can be seen as direct or indirect support for illegal deforestation, with more than 90% of the destruction being illegal. Ibama inspected only 1.3% of devastation alerts between 2019 and 2020 (Brown, 2022);

- Future risk of deforestation. Areas with a higher risk of deforestation between 2025 and 2027 should be a concern for beef companies. Without robust controls over origin, including indirect suppliers, they can be accused of contributing to future deforestation, affecting their ability to obtain financing and access markets.

In 2025, 93% of the slaughterhouses licensed to export beef to the United States had signed a settlement agreement (Conduct Adjustment Agreement -TAC) with the Federal Prosecutor's Office (MPF), committing to avoid sourcing cattle from farms associated with illegal deforestation. However, in 2025, none of these companies responded to Radar Verde regarding their deforestation control policies.

In this context, Radar Verde evaluated the companies' policies by analyzing their websites on the internet. Radar Verde found that the effectiveness of policies to prevent deforestation in 100% of slaughterhouses was low or very low, given disclosure of policy information about farms that directly and indirectly supply cattle.

Seventy-three percent of slaughterhouses demonstrated control over their direct suppliers, but none published audited control data over their indirect suppliers (Figure 2).

Four companies that owned eleven slaughterhouses had some control of the direct suppliers but failed to demonstrate robust and independent control over the indirect suppliers.

Figure 2. Performance of zero-deforestation policies of slaughterhouses that are licensed to export beef to the United States, according to Radar Verde 2025.

SLAUGHTERHOUSES	SIF	UF	MUNICIPALITY	SLAUGHTER CAPACITY (HEAD/ DAY)	MAXIMUM DISTANCE FOR CATTLE PURCHASE (KM)	SIGNATORY OF THE FEDERAL PROSECUTORS SETTLEMENT AGREEMENT AGAINST DEFORESTATION (TAC)?	LEVEL OF COMMITMENT AGAINST DEFORESTATION			LEVEL OF EXPOSURE TO DEFORESTATION RISK (HECTARES)
							"DIRECT SUPPLIER (DIRECT FARMS)"	"INDIRECT SUPPLIER (INDIRECT FARMS)"	"OVERAL SCORE"	
Marfrig Global Foods S/A	2015	MT	Várzea Grande	250	360	YES	78	2.9	40.4	144,419
JBS S/A	3000	MT	Diamantino	800	350	YES	75.7	2.4	39.1	510,480
JBS S/A	3470	MT	Confresa	600	300	YES	75.7	2.4	39.1	1,286,292
JBS S/A	4333	RO	Vilhena	1,500	300	YES	75.7	2.4	39.1	527,251
JBS S/A	175	RO	São Miguel do Guaporé	700	340	YES	75.7	2.4	39.1	1,397,872
Minerva	2911	MT	Mirassol D'oeste	900	500	YES	74.4	2.9	38.6	437,496
Minerva	2500	MT	Paranatinga	500	300	YES	74.4	2.9	38.6	402,670
Minerva	1940	TO	Araguaína	840	400	YES	74.4	2.9	38.6	1,620,073
Minerva	791	RO	Rolim de Moura	340	340	YES	74.4	2.9	38.6	1,284,355
Vale Grande Industria e Comercio de Alimentos S/A (Frialto)	4490	MT	Matupá	400	350	YES	74.4	0	37.2	2,833,580
Vale Grande Industria e Comercio de Alimentos S/A (Frialto)	3405	RO	Ji-Paraná	1,500	330	YES	74.4	0	37.2	2,126,735
Agra Agroindustrial De Alimentos S/A	3941	MT	Rondonópolis	320	500	YES	68	0	34	256,537
Distriboi	4334	RO	Rolim de Moura	420	340	NO	0.3	0	0.2	1,338,144
FORTUNCERES S.A	3250	RO	Chupinguaia	1,500	300	YES	0	0	0	508,923
FORTUNCERES S.A	1751	MT	Tangará da Serra	700	400	YES	0	0	0	419,351

> 90	Very high policy effectiveness
70 - 89	High policy effectiveness
50 - 69	Intermediate policy effectiveness
30 - 49	Low policy effectiveness
0 - 29	Very low policy effectiveness

Source: Barreto et al., 2023; Radar Verde, 2025.

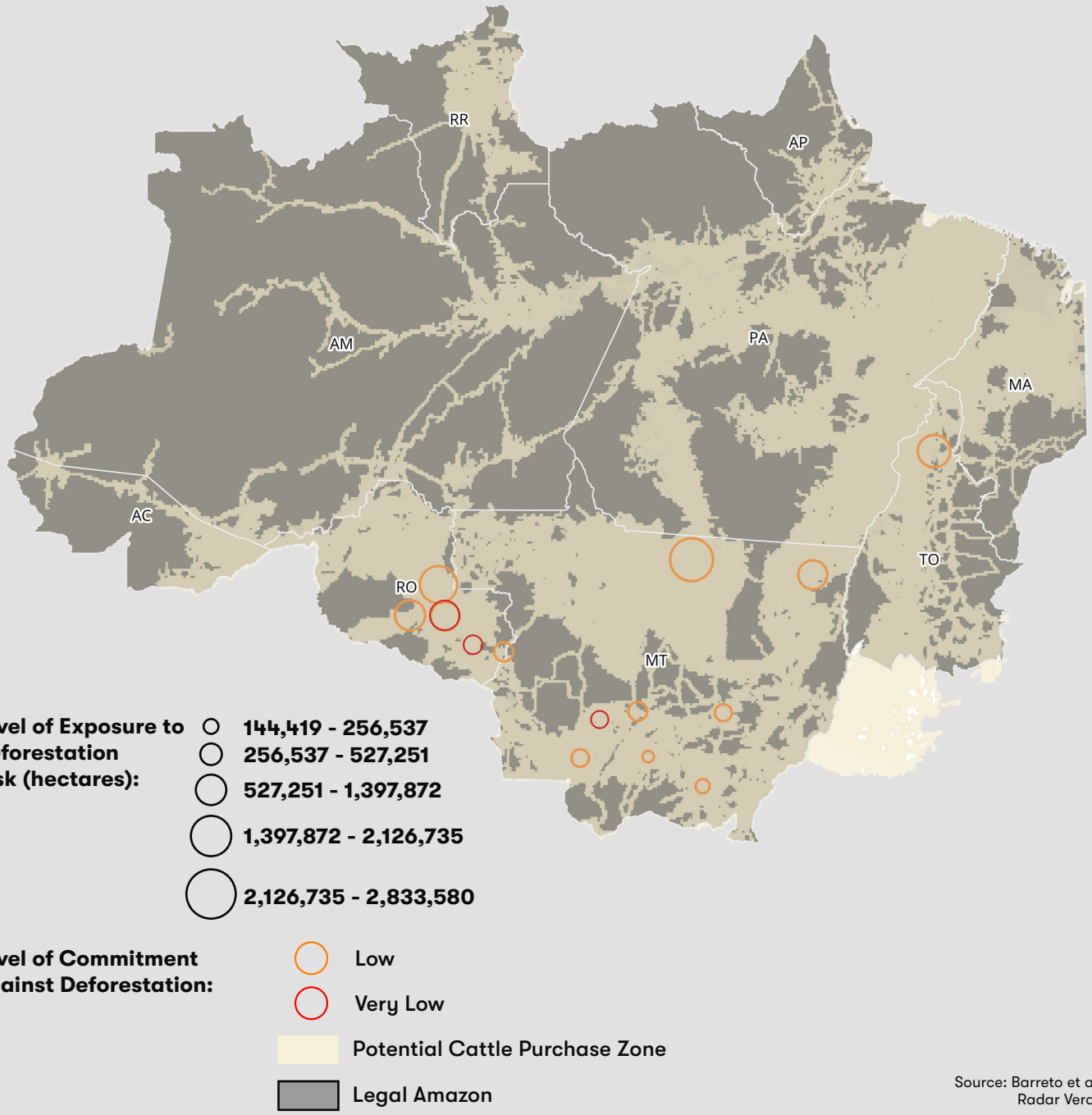
Figure 3 presents the spatial distribution of slaughterhouses operating within the Brazilian Legal Amazon, classified according to two dimensions: (i) exposure to deforestation risk and (ii) level of commitment to deforestation-free policies.

The shaded area delineates the boundaries of the Legal Amazon, while lighter zones indicate potential cattle sourcing regions. Each slaughterhouse is represented by a circle, with its size proportional to the estimated exposure to deforestation risk, measured in hectares. Circles denote facilities with low or very low levels of commitment to anti-deforestation policies.

The spatial patterns reveal clusters of high deforestation risk in major cattle-producing states, particularly Rondônia and Mato Grosso. In these regions, slaughterhouses exhibit both elevated exposure to deforestation risk and limited adoption of deforestation-free commitments, underscoring critical governance gaps in supply chain sustainability.

This visualization functions as a decision-support instrument, enabling stakeholders to assess relative risk exposure and prioritize procurement from slaughterhouses that combine lower deforestation risk with stronger environmental governance. The figure thereby contributes to evidence-based strategies to mitigate deforestation within cattle supply chains in the Legal Amazon.

Figure 3. Slaughterhouses licensed to export to the US: Potential cattle purchase zone, the level of exposure to deforestation risk and the level of commitment against deforestation.



Source: Barreto et al., 2023; Radar Verde, 2025.

4 Recommendations

Approval of the U.S. Forest Act of 2023 would be a meaningful step toward limiting imports linked to illegal deforestation and encouraging more sustainable agricultural practices in Brazil, where nearly 75% of emissions stem from agriculture and land-use change (SEEG, 2024). Its implementation could contribute to climate risk mitigation and enhance global food security. However, under current practices, many Brazilian beef companies would fall short of full compliance. If the United States were to approve the United States Forest Act of 2023, Brazilian beef companies would not be fully compliant.

Some beef companies demonstrate that they verify that the farms directly supplying cattle are deforestation-free. However, none demonstrate robust control of indirect supplier farms – they do not publish independently audited results of their control initiatives. Others do not show any commitment against deforestation. The US proposal rightly requires proof that cattle buyers track indirect supplier farms. This control is essential, given the significant deforestation on these farms (Barreto et al., 2023).

Regardless of the Forest Act's approval, Americans and Brazilians would benefit from an end to legal or illegal deforestation. Food security and lower prices depends on forest conservation, which mitigates climate risks. As one of Brazil's leading importers of beef, US companies and the US government could consider the following recommendations:

- Buy beef from slaughterhouses that buy cattle from regions with low deforestation risk;
- Purchase beef exclusively from companies that adopt zero-deforestation policies that cover direct and indirect supplier farms;
- Prioritize companies that demonstrate the best performance of their zero deforestation policies through independent audits, as adopted by Radar Verde;
- Urge that state and federal governments in Brazil disseminate information on the tracing of the origin of cattle (e.g., animal transit guides - GTAs) along with environmental information on farms (Rural Environmental Registry - CAR and Environmental Recovery Plans - PRA, legal deforestation licenses etc). In this way, companies will be able to monitor compliance with zero deforestation policies more easily;

- The Forest Act should include the prohibition of importing from newly deforested areas, even legally. In addition to being essential to discourage deforestation, in 2012, Brazil already granted amnesty for illegal deforestation, which encouraged more forest destruction (Sant'Anna & Costa, 2021)and the expectation of new amnesties.

By implementing these recommendations, companies and the American government would strengthen forest protection and, consequently, the mitigation of climate extremes. Furthermore, combating deforestation would encourage a more productive use of degraded pastures in the country, as has already occurred (Veríssimo et al., 2022). In this way, they would also contribute to increasing the food security potential for both countries.

5 References

ABIEC. (2025). Beef exports from Brazil. Available at: https://www.abiec.com.br/exportacoes/

American Congress. (2021). H.R.5508 - FOREST Act of 2021. Available at: https://www.congress.gov/bill/117th-congress/house-bill/5508/text

American Congress. (2023). S.3371 - FOREST Act of 2023. Available at: https://www.congress.gov/bill/118th-congress/senate-bill/3371/text

BARRERA, Adriana; GARRISON, Cassandra. Mexico to open sterile fly plant to combat screwworm in 2026. Reuters, 7 jul. 2025. Available at: <https://www.reuters.com/world/americas/mexico-open-sterile-fly-plant-combat-screwworm-2026-2025-07-07/>. Accessed on: January 15, 2026.

BARRETO, P., PEREIRA, R., ROCHA, A., TRIGUEIRO, C. (2023). The beef supply chain continues to contribute to deforestation in the Amazon. Imazon, Belém. Available at: https://imazon.org.br/publicacoes/the-beef-supply-chain-continues-to-contribute-to-deforestation-in-the-amazon-2/

BRAZIL. (2005). Terra do Meio, indigenous land. Available at: https://www.camara.leg.br/noticias/72457-saiba-mais-sobre-a-terra-do-meio/

BRAZIL. (2017). Official news: The US government suspends all beef imports from Brazil. Available at: https://agenciabrasil.ebc.com.br/internacional/noticia/2017-06/governo-americano-suspende-todas-importacoes-de-carne-fresca-do-brasil

BRAZIL (2020). US buys fresh beef from Brazil again. Available at: https://www.gov.br/pt-br/noticias/agricultura-e-pecuaria/2020/02/eua-voltam-a-comprar-carne-in-natura-do-brasil

BRASIL (2023). Federal Government institutes National Program for the Conversion of Degraded Pastures. Ministry of Agriculture and Livestock. Available at: https://www.gov.br/agricultura/pt-br/assuntos/noticias/governo-federal-institui-programa-nacional-de-conversao-de-pastagens-degradadas

BROWN, S. (2022). Government Inaction sees 98% of deforestation alerts go unpunished in Brazil. Available at: https://news.mongabay.com/2022/05/governmet-inaction-sees-98-of-deforestation-alerts-go-unpunished-in-brazil/

CNA. (2016). Opening of the US to Brazilian beef. Available at: https://cnabrasil.org.br/noticias/abertura-dos-eua-para-carne-bovina-brasileira-in-natura-credencia--busca-por-novos-mercados-diz-cna

GARRISON, Cassandra. Mexico agriculture secretary says still no date for restarting cattle exports to U.S. Reuters, October 29, 2025. Available at: <https://www.reuters.com/world/americas/mexico-agriculture-secretary-says-still-no-date-restarting--cattle-exports-us-2025-10-29/>. Accessed on: January 15, 2026.

G1. (2017). News: Trump announces US withdrawal from the Paris Agreement on climate change. Available at: https://g1.globo.com/natureza/noticia/trump-anuncia--saida-dos-eua-do-acordo-de-paris-sobre-mudancas-climaticas.ghtml

G1. (2021). News: US officially rejoins the Paris Agreement on climate. Available at: https://g1.globo.com/mundo/noticia/2021/02/19/eua-voltam-oficialmente-ao-acordo-de-paris-sobre-o-clima.ghtml

MCCARTHY, J. (2021) What is the Foresct Act? Everything you need to know about the US bill to combat deforestation. Global Citizen. Available at: https://www.globalcitizen.org/en/content/what-is-the-forest-act/

MPF. Consultation of the terms of adjustment of conduct of the Federal Public Prosecutor's Office. Available at: http://www.transparencia.mpf.mp.br/conteudo/atividade-fim/termos-de-ajustamento-de-conduta#:~:text=O%20termo%20de%20ajustamento%20de,os%20TACs%20firmados%20pelo%20MPF.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA). Study: heat, not lack of precipitation, is driving western U.S. droughts. Climate.gov, Nov. 12, 2024. Available at: <https://www.climate.gov/news-features/feed/study-heat-not-lack-precipitation-driving-western-us-droughts>. Accessed on: January 15, 2026.

NOBERTO, C. (2023, December 16). The United States wants to invest more in the green economy in Brazil, says Amcham. CNN Brasil. Available at: https://www.cnnbrasil.com.br/economia/macroeconomia/estados-unidos-querem-investir-mais-em--economia-verde-no-brasil-diz-amcham/

PEEL, Derrell. U.S. beef imports falling. Beef Magazine, June 21, 2021. Available at: <https://www.beefmagazine.com/market-news/u-s-beef-imports-falling>. Accessed on: January 15, 2026.

RADAR VERDE. (2025). Results of meatpacking plants. Available at: https://radarverde.org.br/pesquisa-2025/

Sant'Anna, A. A., & Costa, L. (2021). Environmental regulation and bail outs under weak state capacity: Deforestation in the Brazilian Amazon. Ecological Economics, 186, 107071. https://doi.org/10.1016/J.ECOLECON.2021.107071

SEEG. (2024). Overview of greenhouse gas emissions and removals in Brazil. Available at: seeg.eco.br/infograficos

THORNTON, Philip; NELSON, Gerald; MAYBERRY, Dianne; HERRERO, Mario. Impacts of heat stress on global cattle production during the 21st century: a modelling study. The Lancet Planetary Health, v. 6, n. 3, p. e192-e201, 2022. DOI: 10.1016/S2542-5196(22)-00002-X. Available at: <https://doi.org/10.1016/S2542-5196(22)00002-X>. Accessed on: January 15, 2026.

TRASE. (2024). U.S. Forest Law: Lack of Progress Leaves Forests at Risk. Available at: https://trase.earth/insights/us-forest-act-lack-of-progress-leaves-forests-at-risk

TSAI, D., POTENZA, R., QUINTANA, G., CARDOSO, M. C., SILVA, F. B. E, GRACES, I., COLUNA, I., CARVALHO, K., ZIMBRES, B., SILVA, C., SILVA-JUNIOR, C. H., SOUZA, E., SHIMBO, J., ALENCAR, A., ANGELO, C., HERSCHMANN, S., & ARAÚJO, S. (2023). Analysis of greenhouse gas emissions and their implications for Brazil's Climate Goals – 1970 – 2020. Available at: https://oc.eco.br/wp-content/uploads/2023/11/Relatorio-SEEG_gases-estufa_2023FINAL.pdf

UNION OF CONCERNED SCIENTISTS. (2024). The Effectiveness of the Lacey Act in reducing the import of illegal timber. Available at: https://docs.house.gov/meetings/II/II13/20240214/116787/HHRG-118-II13-20240214-SD004.pdf

UNITED STATES. Department of Agriculture. Livestock and Poultry Outlook: Thursday, February 15, 2024 (2024 Agricultural Outlook Forum). Washington, DC: World Agricultural Outlook Board, 2024. Available at: <https://www.usda.gov/sites/default/files/documents/2024AOF-livestock-poultry-outlook.pdf>. Accessed on: January 15, 2026.

UNITED STATES. Department of Agriculture. Economic Research Service. Livestock, Dairy, and Poultry Outlook: December 2022. (LDP-M-342). Washington, DC, 15 dec. 2022. Available at: <https://ers.usda.gov/sites/default/files/_laserfiche/outlooks/105496/LDP-M-342.pdf>. Accessed on: January 15, 2026.

UNITED STATES. Department of Agriculture. Economic Research Service. Livestock, Dairy, and Poultry Outlook: March 2023. (LDP-M-345). Washington, DC, March 14, 2023. Available at: <https://ers.usda.gov/sites/default/files/_laserfiche/outlooks/106119/LDP-M-345.pdf?v=22898>. Accessed on: January 15, 2026.

UNITED STATES. Department of Agriculture. Foreign Agricultural Service. Australia: Livestock and Products Annual—Continued Drought to Reduce Australian Beef Production and Exports in 2020. Canberra, September 6, 2019. (GAIN Report Number: AS1914). Available at: <https://apps.fas.usda.gov/newgainapi/api/report/downloadreportbyfilename?filename=Livestock+and+Products+Annual_Canberra_Australia_9-6-2019.pdf>. Accessed on: January 15, 2026.

UNITED STATES. Department of Agriculture. Foreign Agricultural Service. Canada: Livestock and Products Annual. Ottawa, 8 set. 2021. (Report Number: CA2021-0049). Available at: <https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Livestock+and+Products+Annual_Ottawa_Canada_09-01-2021.pdf>. Accessed on: January 15, 2026.

USA. (2021). North American Forest Bill (Forest Act 2021). Available at: https://www.congress.gov/bill/117th-congress/senate-bill/2950

USDA. (2022). Monthly US beef import volumes from Brazil hit record highs in early 2022. Available at: https://www.ers.usda.gov/data-products/chart-gallery/gallery/chart-detail/?chartId=103669

US EMBASSY. (2020). News from the US embassy: FSIS stops the suspension of exports of fresh beef from Brazil to the US. Available at: https://br.usembassy.gov/pt/33221/

US EMBASSY. (2021). News from the US embassy: US rejoins the Paris agreement. Available at: https://br.usembassy.gov/pt/eua-voltam-oficialmente-ao-acordo-de-paris/

VERÍSSIMO, B., ASSUNÇÃO, J., & BARRETO, P. (2022). The Amazon Paradox. Available at: https://amazonia2030.org.br/wp-content/uploads/2023/05/ParadoxoAmazonia_AMZ2030.pdf

WALENDORFF, R. (2023). Brazil seeks partners to recover degraded pasturelands. Valor International. Available at: https://valorinternational.globo.com/agribusiness/news/2023/08/03/brazil-seeks-partners-to-recover-degraded-pasturelands.ghtml

WILLIAMS, A. Park; COOK, Benjamin I.; SMERDON, Jason E. Large contribution from

anthropogenic warming to an emerging North American megadrought. Science, v. 368, n. 6488, p. 314-318, 2020. DOI: 10.1126/science.aaz9600. Disponível em: <https://doi.org/10.1126/science.aaz9600>. January 15, 2026.

WILLIAMS, A. Park; COOK, Benjamin I.; SMERDON, Jason E. Rapid intensification of the emerging southwestern North American megadrought in 2020–2021. Nature Climate Change, v. 12, n. 3, p. 232-234, 2022. DOI: 10.1038/s41558-022-01290-z. Disponível em: <https://doi.org/10.1038/s41558-022-01290-z>. January 15, 2026.

Clique ou toque aqui para inserir o texto.WORLD ECONOMIC FORUM. (2024). How climate change impacts food supply chains and what it means for consumers. Available at: https://www.weforum.org/agenda/2024/01/food-system-impact-of-climate-change/

WWF. (2024) Forest Act 21. Available at: https://www.worldwildlife.org/pages/forest-act#:~:text=What%20is%20the%20FOREST%20Act,and%20accountable%20global%20supply%20chains.

Appendix 1 The role of climate change on the availability of beef in the USA

U.S.A. beef availability has tightened in part because drought and extreme heat reduce pasture/forage, raise feed costs, and accelerate herd liquidation—shrinking the breeding base and slowing rebuilding (U.S. Department of Agriculture [USDA], Economic Research Service [ERS], 2022; USDA ERS, 2023; USDA, 2024). Evidence indicates that warming-driven atmospheric "evaporative demand" has become a major driver of western U.S. drought severity; for the 2020–2022 western drought, evaporative demand accounted for a majority of severity relative to precipitation deficits (National Oceanic and Atmospheric Administration [NOAA] Climate.gov, 2024). Heat stress also directly reduces cattle productivity and profitability (e.g., via impacts on intake, growth, reproduction), which can further constrain output and raise costs (Thornton et al., 2022). On the import side, climate-related herd cycles in exporting countries (e.g., drought-driven liquidation of stocks followed by multi-year rebuilding) can reduce exportable surplus, and animal-health disruptions (e.g., Mexico's screwworm outbreak and border restrictions) can further constrain regional cattle flows (Peel, 2021; Reuters, 2025a, 2025b; USDA Foreign Agricultural Service [FAS], 2019; USDA FAS, 2021).

RADAR VERDE

BEEF TRANSPARENCY IN THE BRAZILIAN AMAZON