

Carbon Credit Brasil

Carbon Credit Brasil Serviços Financeiros Ltda

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CNPJ nº 52.044.255/0001-50

Deforestation Rates

This first theme of our report aims to consolidate information for obtaining carbon credits using voluntary projects based on reducing deforestation rates in the voluntary REDD+ market. The methodology involves creating a 10-year baseline, considering reliable and accredited sources in Brazil, to monitor and track deforestation rates.

The primary data source used was Terra Brasilis, which monitors deforestation rates in the country. The methodology consists of making estimates based on deforestation rates over a 10-year period.

Based on the established reference line, deforestation rates in the area of interest are determined, along with prevention actions or avoided deforestation. Additionally, monitoring actions are implemented to ensure the objectives are achieved.

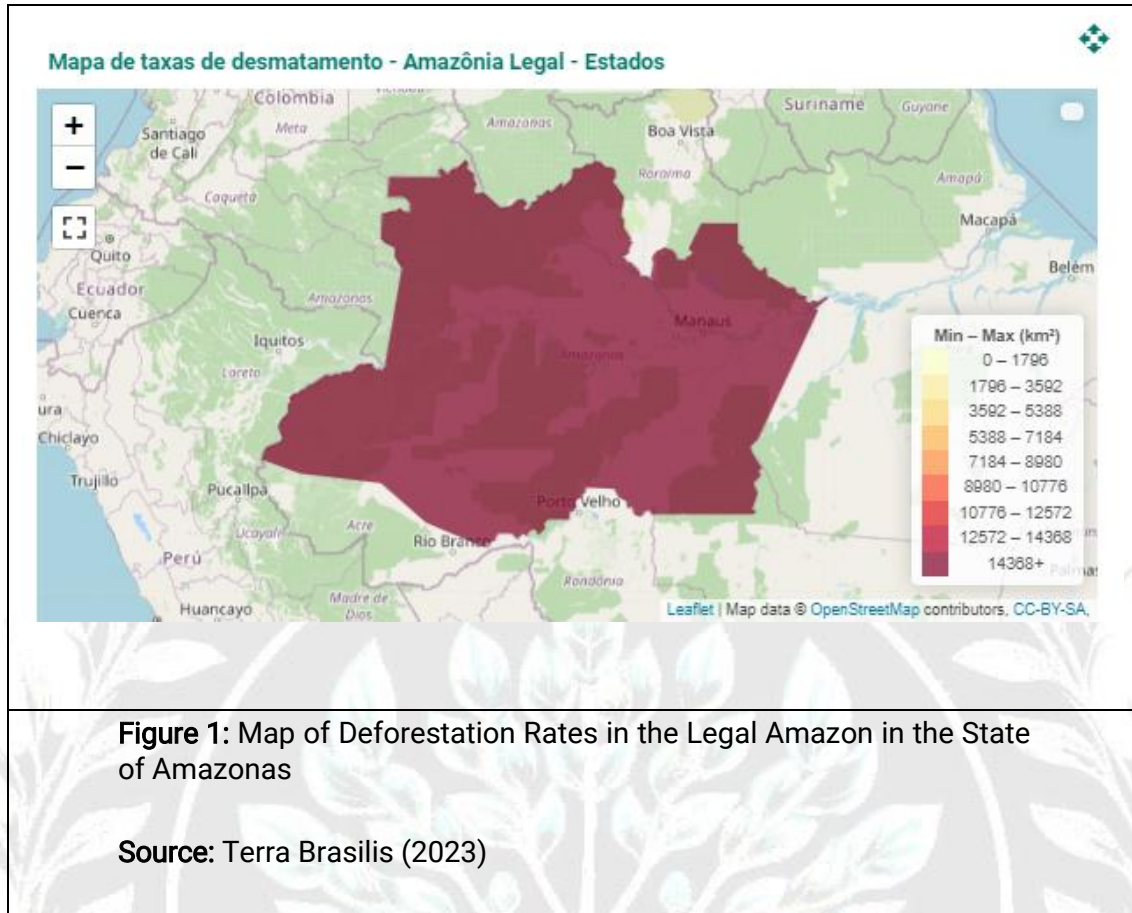
The area of interest is located in the Amazon Biome, in a forest type known as Open Ombrophilous Forest (Alluvial), according to the Brazilian Biomes Map - First Approximation (IBGE, 2004).

According to Terra Brasilis, from 2013 to 2023, there was a total deforestation of 14,369.00 km² in the State of Amazonas.

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Figure 1.



Aiming to establish a 10-year baseline of rate assessments, data was obtained from the Terra Brasilis website, providing a survey graph starting from 1998 to 2023, with markings only for the years 2013 to 2023.

Figure 2.

Filtros - Amazônia Legal / Estados / [Amazonas]
 / Ano / [2018, 2019, 2020, 2021, 2022, 2023, 2013, 2014, 2015, 2016, 2017]

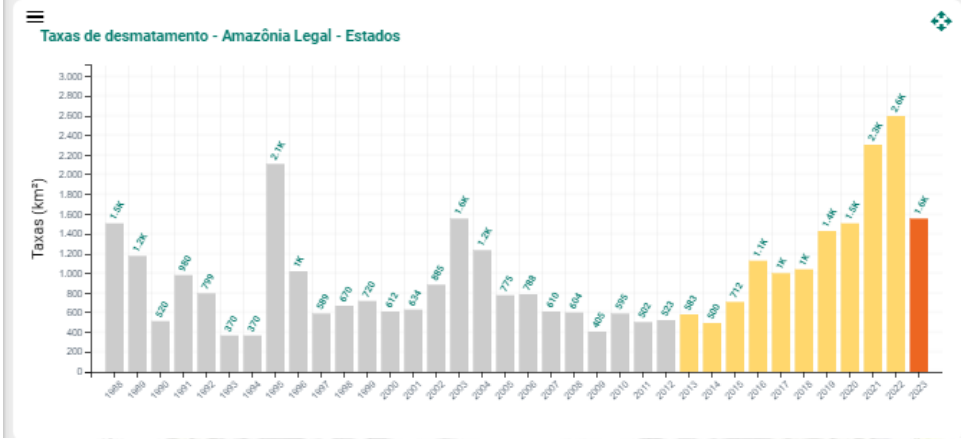


Figure 2: Timeline Graph with Deforestation Rates from 1988 to 2023

Source: Terra Brasilis (2023)

In the graph below, a more precise evaluation of the evolution of the deforestation rate in the study area over a 10-year period, from 2013 to 2023, can be observed.



Figure 2: Map of Deforestation Rates in the State of Amazonas from 2013 to 2023

Source: Terra Brasilis (2023)

According to the table below, during the period from 2013 to 2023 in the State of Amazonas, there was deforestation of 14,369 hectares, with the highest annual deforestation rates occurring in 2021 and 2022, increasing by 90.30% compared to the average.

Year	Area (km ²)	State
2023	1.553,00	Amazonas
2022	2.594,00	Amazonas
2021	2.306,00	Amazonas
2020	1.512,00	Amazonas
2019	1.434,00	Amazonas
2018	1.045,00	Amazonas
2017	1.001,00	Amazonas
2016	1.129,00	Amazonas
2015	712	Amazonas
2014	500	Amazonas
2013	583	Amazonas
Total	14.369,00	

Table 1: Annual Deforestation Rate in the State of Amazonas from 2013 to 2023

Source: Terra Brasilis (2023)

According to data from the Alerta Biomas platform, in the period from 2019 to 2023, the Amazon Biome experienced the greatest impact from deforestation, resulting in a total deforested area of 4,450,160.00 hectares. The period from 2021 to 2022 saw the highest occurrence of deforestation in the mentioned biome.

Table 2: Deforestation Impact in the Amazon Biome from 2019 to 2023

N	Nome	Área Total	Área 2019	Área 2020	Área 2021	Área 2022
1	Amazônia	4.450.160,20	773.845,84	886.486,43	1.114.325,99	1.204.844,21
2	Cerrado	3.367.459,15	410.456,48	640.919,40	514.566,44	665.080,69
3	Caatinga	545.745,86	14.198,33	68.359,24	116.203,88	143.634,75
4	Pantanal	159.503,10	17.212,54	26.159,98	30.336,81	32.944,41
5	Mata Atlântica	108.359,43	10.582,81	24.178,65	30.480,90	30.303,58
6	Pampa	9.081,03	625,72	1.284,15	2.432,11	3.135,53

Table 02: Polygon of the Area of Interest

Source: Hecta.Ai Green Technology (2024)



Figure 03: Polygon of the Area of Interest

Source: Hecta.Ai Green Technology (2024)

[https://plataforma.alerta.mapbiomas.org/mapa?monthRange\[0\]=2019-01&monthRange\[1\]=2024-02&sources\[0\]=All&territoryType=all&authorization=all&embargoed=all&locationType=alert_code&activeBaseMap=7&map=-14.288794%2C-54.290447%2C4](https://plataforma.alerta.mapbiomas.org/mapa?monthRange[0]=2019-01&monthRange[1]=2024-02&sources[0]=All&territoryType=all&authorization=all&embargoed=all&locationType=alert_code&activeBaseMap=7&map=-14.288794%2C-54.290447%2C4)

Desmatamento no Brasil em 2022

Para mais informações acesse: alerta.mapbiomas.org

Área desmatada nos biomas ha

A AMAZÔNIA	1.192.635
B CAATINGA	140.637
C CERRADO	659.670
D MATA ATLÂNTICA	30.012
E PAMPA	3.087
F PANTANAL	31.211
BRASIL	2.057.251

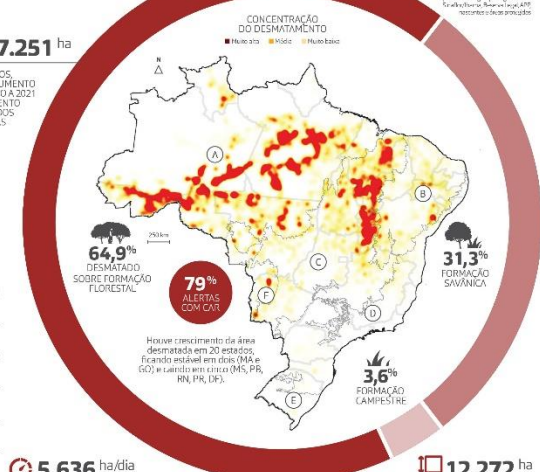


2.057.251 ha

DESMATADOS: 23,3% DE AUMENTO EM RELAÇÃO A 2021 E CRESCIMENTO EM CINCO DOS SEIS BIOMAS

76.193 alertas IDENTIFICADOS, REFINADOS E VALIDADOS NO PAÍS

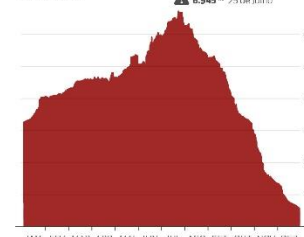
99,7% ALERTAS COM INDÍCIOS DE ILEGALIDADE



Estados e municípios com maior desmatamento no país ha

MATO GROSSO	189.880
AMAZONAS	194.485
PARÁ	456.702
APUL	61.036
ALBERTINA	61.446
LABREA	62.420

Desmatamento mensal no Brasil ha

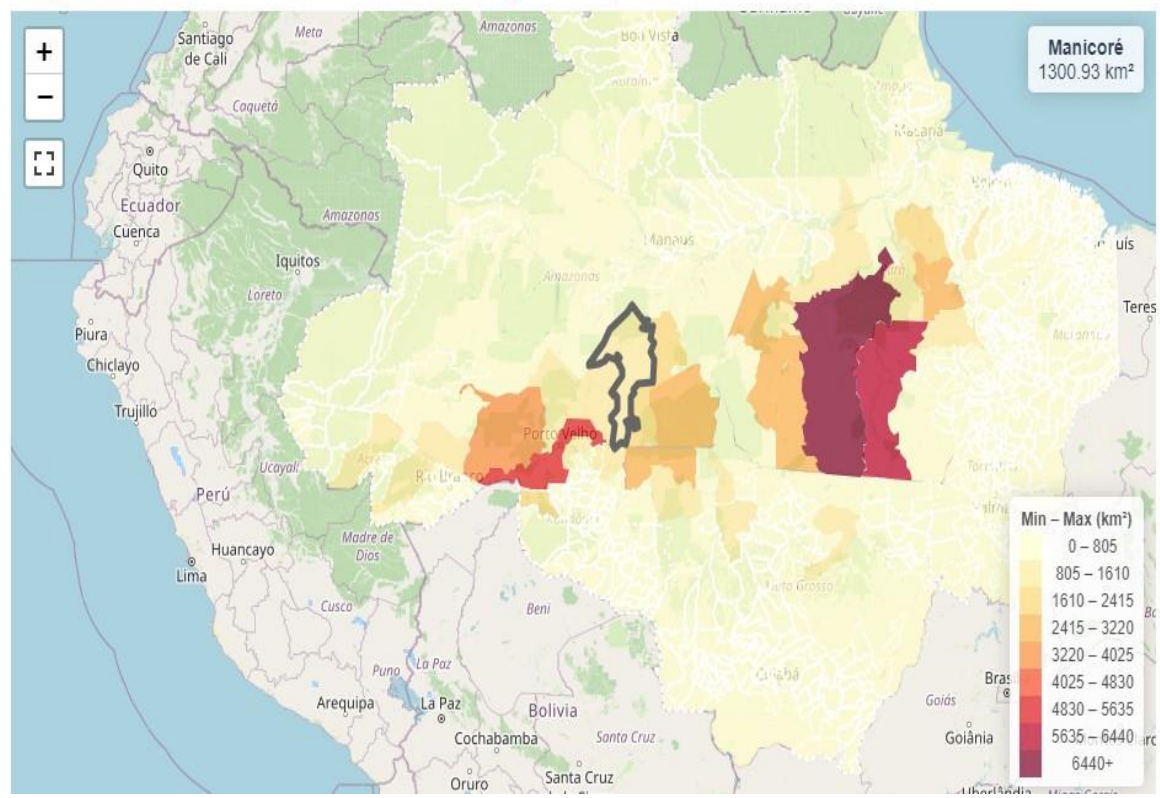


5.636 ha/dia VISUALIZAÇÃO MÉDIA DO DESMATAMENTO

12.272 ha TAMANHO DO MAIOR ALERTA SENDO A MÉDIA DE 27 ha

Data Analysis for REED Carbon Credits

Mapa de incrementos de desmatamento - Amazônia Legal - Municípios



https://terrabrasilis.dpi.inpe.br/app/dashboard/deforestation/biomes/legal_amazon/rates

Description

This map is an alarming indicator of deforestation in the Legal Amazon, revealing that Manicoré is the most impacted municipality, with 1300.93 km² of forest lost. The color gradations, from green to red, illustrate the severity of deforestation, highlighting the critical need for preservation initiatives in Manicoré to combat environmental loss and protect the region's essential biodiversity.

Analysis of Additionality for the Lagoa Grande Conservation Project

Project Context: The Lagoa Grande property showcases rich biodiversity, with Dense Ombrophilous Forest and Hydromorphic Fields within its 38,900.26 hectares.

Basis for Additionality: Additionality is demonstrated by the fact that without the project, deforestation and forest degradation would continue in Manicoré, as illustrated by the previously recorded high levels of deforestation in the region.

Evidence of Additionality: Project documents, such as biomass analyses and studies on the carbon sequestration capacity of the vegetation, indicate that the proposed sustainable management and conservation practices are innovative and necessary to maintain the environmental protection of the locality.

The existence of advanced technology for monitoring and managing the property's natural resources, such as the Planet satellite constellation and Hecta processing technology, suggests that the project employs a conservation approach that did not previously exist.

Baseline and Project Analysis

Baseline Scenario:

The baseline scenario for the Lagoa Grande property can be described as the continuation of the current land use without management practices or the conservation project, leading to ongoing deforestation and biodiversity loss.

This scenario would be characterized by a trend of increasing deforestation according to data and information from local authorities, given the legal authorizations for human intervention in the region and forest degradation, with negative impacts on the region's carbon sequestration capacity, contributing to worsening climate change.

Project Scenario:

With the project, it is expected that sustainable management and conservation practices will be implemented, leading to the preservation of

biodiversity and increased carbon sequestration, as well as a positive contribution to combating climate change.

The results of satellite image analysis and field data show the carbon sequestration potential of the property, and thus, the projected emissions in the baseline scenario would be reduced with the implementation of the project.

Conclusion

- Analyses suggest that the project in Lagoa Grande offers additional benefits in terms of conservation and carbon sequestration that would not occur in the baseline scenario.
- The estimated annual carbon sequestration, when compared with the baseline scenario, demonstrates that the project will result in a significant reduction in carbon emissions.
- The preservation of the forest ecosystems of the Lagoa Grande property plays a critical role in mitigating climate change and maintaining biodiversity, reinforcing the project's additionality.
- This analysis provides a detailed view of the conservation project's contribution to the environmental and economic sustainability of Manicoré and the Amazon biome as a whole, offering a clear evaluation of additionality and impact.

The focus areas have been subjected to ecological restoration techniques aimed at revitalizing native biodiversity and stabilizing the ecosystem.

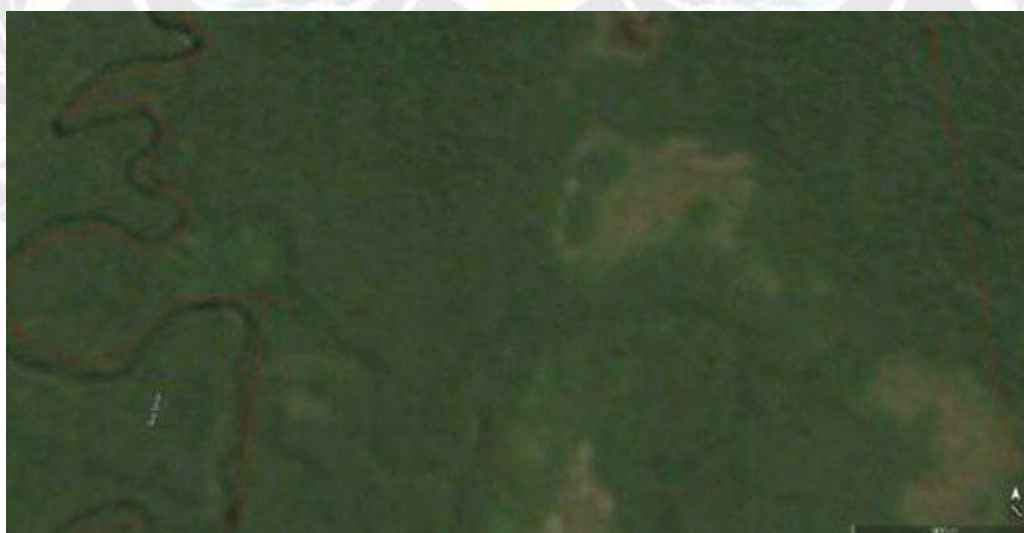


Figure 01: Degraded area (project start)



Figure 02: Area in recovery (during the project)

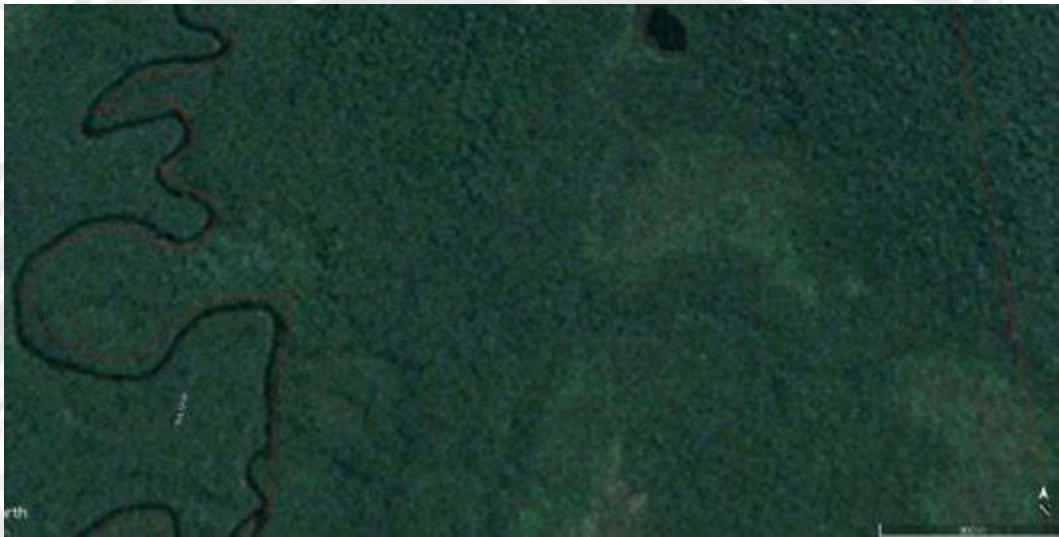


Figure 03: Current area (most recent project image)

Analysis of Progression Images

The attached images illustrate the chronological sequence of biome recovery. A gradual improvement in vegetation cover is observed, with previously deforested areas now showing significantly higher foliage density. The restoration of natural drainage patterns and the recovery of water bodies are visible, demonstrating the effectiveness of the Green Method Project in restoring vital ecological functions.

Results and Discussion

Since the implementation of the "Green Method," a reduction in surface runoff has been noted, indicating an improvement in soil quality and water retention. The recovery of the biome has also contributed to erosion mitigation and increased

biodiversity. The landscape, which previously showed clear signs of degradation, now presents an ecosystem in the process of healing and balance.

