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THE SUPPRESSION OF NATIVE VEGETATION AND THE INCREASE IN AGRICULTURAL ACTIVITY IN THE LEGAL AMAZON FROM 1985 TO 2024

A SUPRESSÃO DE VEGETAÇÃO NATIVA E O AUMENTO DA ATIVIDADE AGROPECUÁRIA NA AMAZÔNIA LEGAL DE 1985 A 2024

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ABSTRACT

Over the last four decades, the Legal Amazon has undergone intense transformations in land use and land cover, driven by the expansion of agricultural activities. This study aimed to quantify changes in land use in the region between 1985 and 2024, through temporal analyses based on data from the MapBiomas platform, and to correlate the identified patterns with the historical, institutional, and

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economic context described in the scientific literature. The results show a significant advance in agriculture and significant suppression of native vegetation, particularly during the period from 1995 to 2005, during the intensification of the agricultural frontier, associated with government policies of occupation and productive incentives adopted during the military government period. A relative reduction in deforestation was observed in phases marked by the strengthening of environmental policies, starting in 2005. It is concluded that the dynamics of land use in the Legal Amazon are strongly influenced by the political-institutional context, reinforcing the need for continuous public policies aimed at environmental preservation and management that integrates environmental development with sustainability.

Keywords: Land use and land cover; deforestation; environmental policies.

RESUMO

Nas últimas quatro décadas, a Amazônia Legal passou por intensas transformações no uso e cobertura do solo, impulsionadas pela expansão das atividades agropecuárias. Este trabalho teve como objetivo quantificar as alterações no uso da terra na região entre 1985 e 2024, por meio de análises temporais baseadas em dados da plataforma MapBiomas e correlacionar os padrões identificados com o contexto histórico, institucional e econômico descrito na literatura científica. Os resultados evidenciam avanço expressivo da agropecuária e significativa supressão de vegetação nativa, com destaque para os períodos de 1995 a 2005, durante intensificação da fronteira agrícola, associados a políticas governamentais de ocupação e incentivo produtivo adotadas no período do governo militar. Observou-se redução relativa do desmatamento em fases marcadas pelo fortalecimento de políticas ambientais, a partir de 2005. Conclui-se que a dinâmica do uso da terra na Amazônia Legal é fortemente influenciada pelo contexto político-institucional, reforçando a necessidade de políticas públicas contínuas voltadas à preservação ambiental e gestão que integre desenvolvimento ambiental à sustentabilidade.

Palavras-chave: Uso e cobertura de solo; desflorestamento; políticas ambientais.

1. INTRODUCTION

The Legal Amazon is understood as the region established by Law No. 1,806/1953 and updated by Complementary Law No. 31/1977, encompassing approximately 5.2 million km² and nine Brazilian states (Silva et al., 2020). It occupies most of the Brazilian territory, covering approximately 59% of the national area and encompassing not only the Amazon biome, but also portions of the Cerrado and the Pantanal. It corresponds to the largest

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continuous tropical forest on the planet, and stands out for its high ecological complexity, vast biodiversity of fauna and flora, and extensive hydrographic basins (Santos et al., 2021).

Regarding the suppression of native forests in the Legal Amazon, it is possible to identify two distinct phases. The first is characterized by the implementation of policies incentivizing deforestation, initiated during the military regime, notably the construction of large highways from the 1970s onwards, such as the BR-163, among other infrastructure projects that boosted the occupation of the region (Margarit, 2013; Barbosa et al., 2026). The second phase began in 2005, when policies aimed at controlling and reducing deforestation were instituted, such as the Action Plan for the Prevention and Control of Deforestation in the Legal Amazon (PPCDAm), the Soy Moratorium, and the monitoring carried out by the Project for Monitoring Deforestation in the Legal Amazon by Satellite (PRODES), among other initiatives (Nunes et al., 2024; INPE, 2023; Assunção, Gandour and Rocha, 2015).

In this context, to understand the dynamics of changes in land use and land cover, it is essential to analyze the historical process and the factors that, over different decades, have influenced transformations in the regional landscape, correlating them with data from a mapping platform.

2. METHODOLOGY

The data used to quantify changes in land use and land cover were obtained from the MapBiomas Project platform, Collection 10 of the Annual Series of Land Cover and Land Use Maps of Brazil, accessed in October 2025. The database was consulted using the regional grouping “Legal Amazon,” available on the project's official platform.

Satellite images (rasters) corresponding to the period from 1985 to 2024 were analyzed, allowing for a temporal assessment of land use and land cover transformations. For comparative analysis purposes, the extracted quantitative and qualitative data made it possible

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to identify the expansion of agricultural activities and the patterns of native vegetation suppression throughout the study period.

The land use and land cover classification considered all categories available in MapBiomas for the selected region, namely: (1) Area with Natural Vegetation, (2) Livestock, (3) Agriculture, (4) Area without Vegetation, and (5) Water Body. The interpretation of these classes allowed for the evaluation of the conversion of natural areas into areas destined for agricultural production, as well as the spatial dynamics associated with this process.

In parallel, a brief literature review was conducted to contextualize the results, addressing the dynamics of native vegetation loss in the Legal Amazon, the expansion of agriculture, and the spatial relationship between deforestation and productive activities.

3. RESULTS AND DISCUSSION

The results obtained generated the following tables:

	Year									
Land Use and Land Cover	Hectares 1985	(%) 1985	Hectares 1995	(%) 1995	Hectares 2005	(%) 2005	Hectares 2015	(%) 2015	Hectares 2024	(%) 2024
Forest	438,941,654	87.6 %	420,773,179	83.9 %	394,532,195	78.7 %	383,619,527	76.5 %	369,988,058	73.8 %
Herbaceous and Shrubby Vegetation	26,731,938	5.3%	25,613,132	5.1%	26,195,801	5.2%	26,023,849	5.2%	25,491,812	5.1%
Agriculture	21,976,910	4.4%	40,746,361	8.1%	67,744,399	13.5 %	79,038,199	15.8 %	92,992,364	18.6 %
Water and Marine Environment	12,788,722	2.6%	13,289,019	2.7%	11,783,759	2.4%	11,552,497	2.3%	11,401,317	2.3%
Non-Vegeted Area	817,093	0.2%	839,499	0.2%	1,007,457	0.2%	1,030,062	0.2%	1,387,670	0.3%
Not Observed	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Table 2 – Overall change in land cover and land use in the Legal Amazon area. **Source:** author's own work.

	Year									
Land Use and Land Cover	Hectares 1985	(%) 1985	Hectares 1995	(%) 1995	Hectares 2005	(%) 2005	Hectares 2015	(%) 2015	Hectares 2024	(%) 2024
Forest Formation	357,719,165	71.36	345,006,405	68.83	323,903,912	64.62	315,573,539	62.96	304,378,057	60.72
Savanna Formation	40,412,265	8.06	35,908,646	7.16	31,339,665	6.25	28,741,472	5.73	26,704,306	5.33
Flooded Forest	40,104,656	8.00	39,137,536	7.81	38,573,350	7.70	38,592,703	7.70	38,182,719	7.62
Pasture	15,774,837	3.15	34,456,898	6.87	57,339,163	11.44	63,887,507	12.75	72,442,607	14.45
Flooded Field and Swampy Area	15,685,300	3.13	14,640,799	2.92	14,874,298	2.97	15,089,743	3.01	13,879,771	2,77

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River, Lake and Ocean	12.788.586	2,55	13.288.939	2,65	11.783.101	2,35	11.541.649	2,30	11.386.836	2,27
Countryside Training	10.264.685	2,05	10.191.310	2,03	10.538.531	2,10	10.154.599	2,03	10.829.899	2,16
Mosaic of Uses	4.675.237	0,93	2.487.387	0,50	1.848.961	0,37	1.334.680	0,27	3.525.378	0,70
Other Temporary Crops	1.068.784	0,21	1.508.194	0,30	1.908.273	0,38	2.550.397	0,51	2.149.591	0,43
Rocky outcrop	749.279	0,15	749.085	0,15	749.846	0,15	751.051	0,15	758.671	0,15
Mangrove	705.568	0,14	720.593	0,14	715.268	0,14	711.813	0,14	722.976	0,14
Other Non-Vegeted Areas	553.729	0,11	396.549	0,08	446.085	0,09	316.590	0,06	301.363	0,06
Soy	420.474	0,08	2.102.548	0,42	6.220.286	1,24	10.319.578	2,06	13.728.613	2,74
Urbanized Area	228.086	0,05	341.644	0,07	437.908	0,09	532.199	0,11	610.150	0,12
Apicum	31.837	0,01	31.147	0,01	32.346	0,01	27.673	0,01	22.687	0,00
Mining	29.687	0,01	91.092	0,02	114.273	0,02	172.794	0,03	467.942	0,09
Other Perennial Crops	15.366	0,00	6.631	0,00	4.278	0,00	4.378	0,00	9.040	0,00
Palm oil	14.809	0,00	55.932	0,01	81.091	0,02	199.051	0,04	241.833	0,05
Beach, Dune and Sand	5.590	0,00	10.214	0,00	9.191	0,00	8.479	0,00	8.145	0,00
Rice	3.967	0,00	12.189	0,00	15.890	0,00	73.153	0,01	101.060	0,02
Forestry	3.204	0,00	111.675	0,02	232.318	0,05	482.887	0,10	567.639	0,11
Herbaceous Coastal Vegetation	836	0,00	792	0,00	780	0,00	783	0,00	784	0,00
Cane	231	0,00	4.906	0,00	58.597	0,01	152.368	0,03	202.920	0,04
Aquaculture	136	0,00	80	0,00	657	0,00	10.849	0,00	14.481	0.00
Restinga Arbórea	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Photovoltaic Plant	0	0.00	0	0.00	0	0.00	0	0.00	72	0.00
Coffee	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Citrus	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Cotton	0	0.00	0	0.00	35,542	0.01	34,200	0.01	23,683	0.00
Not Observed	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00

Table 3 – Detailed changes in land cover and land use in the Legal Amazon area. **Source:** Author's own work.

A total suppression of 70,193,722 hectares of native vegetation was observed in the period from 1985 to 2024. The graph below illustrates the progressive reduction of these areas in relation to agriculture and livestock farming throughout the analyzed periods.

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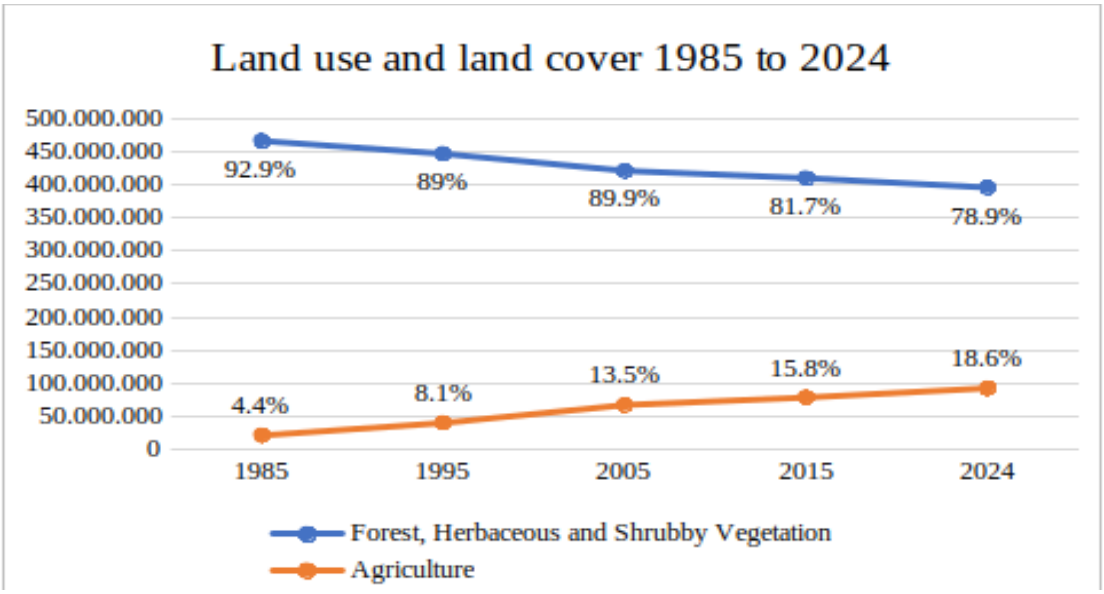

Graph 1- Land use and land cover in the Legal Amazon. **Source:** Author's own work.

The proportional loss of native vegetation in each interval was 3.9%, 5.1%, 2.2%, and 2.8%, respectively. In contrast, the advance of agricultural and livestock activities showed growth of 3.7%, 5.4%, 2.3%, and 2.8% in the same periods.

The results indicate that the highest peak of native vegetation suppression occurred between 1995 and 2005, coinciding with the period of greatest agricultural and livestock expansion, whose increase reached 5.4%. This correlation suggests a direct relationship between the intensification of agricultural activities and the increase in deforestation in the region.

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The images below demonstrate the change in land use and land cover in the Legal Amazon between 1985 and 2024.

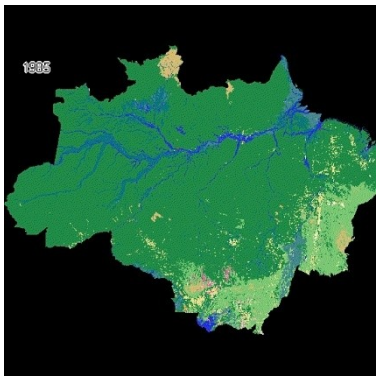

Figure 4 - Spatial map of 1985.

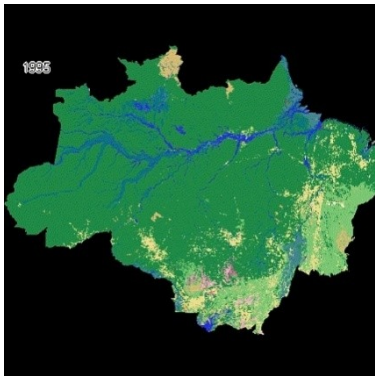

Figure 5 - Spatial map of 1995.

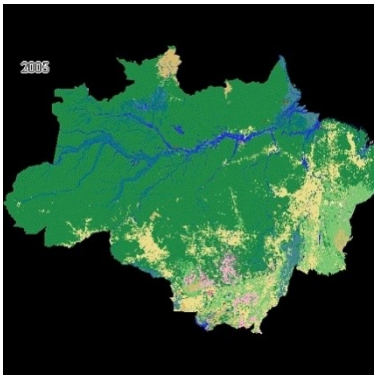

Figure 6 - Spatial map of 2005.

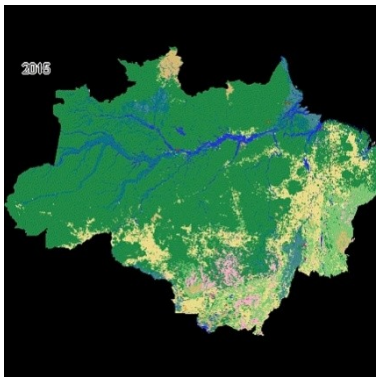

Figure 7 - Spatial map of 2015.

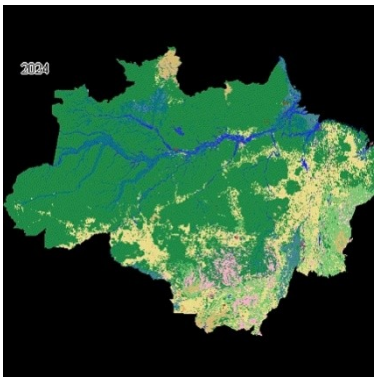

Figure 8 - Spatial map of 2024.

As shown in Figures 4 to 8, the highest rates of native vegetation suppression are observed in the eastern and southern portions of the region. According to MapBiomas (2025), which provides the historical series of changes in land use and land cover between 1985 and 2024, the states with the highest proportion of native vegetation in the Amazon are: Amapá (95%), Roraima (94%), Amazonas (93%) and Acre (85%). On the other hand, the states with the lowest proportion of native vegetation are Rondônia (60%), Mato Grosso (62%), Tocantins (65%) and Maranhão (67%).

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Dynamics of Native Vegetation Loss

Several factors contributed to the intensification of deforestation in the Legal Amazon, especially between the 1990s and 2000s. According to Fearnside (2005), the main cause of native vegetation suppression during this period is associated with the expansion of cattle ranching, which became the largest driver of forest conversion due to the economic value of areas converted into pastures and the growing demand for meat. The author also highlights the advance of mechanized agriculture, particularly soybean farming, whose expansion was driven by favorable market conditions and the increased integration of the region into global export chains.

Another determining factor involves the opening and improvement of roads, which expanded access to previously remote areas, facilitating the entry of ranchers, farmers, and loggers. Furthermore, rural credit policies, tax incentives, and weaknesses in environmental oversight contributed to the acceleration of forest conversion. Logging also played a significant role, serving as an initial stage of degradation that frequently precedes total deforestation (Fearnside, 2005).

The BR-163 highway, which connects Cuiabá-MT to Santarém-PA, begun in 1970, was the main highway most historically associated with the advance of deforestation. The objective of its creation was to integrate the national territory and populate a space considered a "demographic void," planned during the period when the military was in government. Several colonization projects were implemented along the highway, attracting thousands of migrants, mainly from the Southern Region of the country. This resulted in local reorganization, replacing forest with agricultural activity and the emergence of several urban centers. This process has led to the development of agribusiness and the detriment of family farming, in addition to the occurrence of frequent land conflicts and environmental impacts (Margarit, 2013).

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Other highways strongly associated with deforestation are the BR-230 (Trans-Amazonian Highway), BR-364, and BR-319. Access to land, timber transport, and agricultural expansion act as vectors for deforestation. Furthermore, the presence of these important highways facilitates the flow of production, increasing the expectation of land appreciation and thus stimulating occupation, land grabbing, and the opening of new areas, generating the "fishbone" effect, that is, the emergence of secondary roads into the interior of the forests, as well as enabling the movement of animals for extensive cattle ranching. That said, it is observed that approximately 95% of deforestation occurred within a few kilometers of a road or waterway, demonstrating the intense effect of accessibility on forest losses (Barber, et al. 2014), and that 30% of the fire outbreaks in the Amazon in recent years occurred in areas influenced by major highways, such as BR-163, BR-230 (Transamazônica) and BR-319, highlighting the correlation between infrastructure and forest loss (Soares, 2024).

The BR-319 highway, which connects Manaus-AM to Porto Velho-RO, is also classified as a "deforestation arc," which has also shown high rates of accumulated deforestation over the last few decades (Barbosa, et al. 2026). Despite the current damage, the reconstruction or improvement of this highway may still drive further deforestation and climate change, according to the modeled scenario for future periods. Simulating a scenario where the highway is paved and reconstructed starting in 2025, using high spatial resolution modeling, deforestation could increase by approximately 60% by 2100 compared to the scenario without the construction. In these areas of Western Amazonia, there are currently large areas of intact forest, and when projecting their deforestation, results were obtained showing alterations in the energy and evapotranspiration balance, associating the increase in air temperature in the affected areas with changes in precipitation, with increased rainfall over deforested zones and possible reductions in adjacent remaining forest areas (Santos, 2025).

Taken together, these structural, economic, and institutional processes acted simultaneously, creating conditions for the rapid expansion of the agricultural frontier and

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resulting in the highest rates of deforestation recorded between 1995 and 2005 in the Legal Amazon.

It is observed that in this degradation process, the native vegetation most affected were the Forest Formation and the Savanna Formation, with 10.64% and 2.73%, respectively. The other vegetation types experienced suppression of around 0%.

The trend of these data, of forest loss, is predictable considering the large volume and prevalence of forests in the territory. The main forms of degradation in this area are considered to be illegal logging, edge effects (alterations near arable areas), severe droughts, and fire, with approximately 38% of the area still suffering from these conditions. This degradation goes beyond the damage to the climate, such as greenhouse gas emissions even greater than deforestation and loss of biodiversity. There is also a socioeconomic impact, affecting income, food, health, quality of life, and culture of the local population. Agriculture contributes to this degradation, altering fragmented areas amidst arable fields that generate edge effects and the use of fire in the activity (Lapola et al., 2023).

The Amazonian savanna areas have also suffered from the continued expansion of the agricultural frontier, occurrences of uncontrolled fires, and increased infrastructure. These areas do not experience the same intense deforestation as forests, but they are more vulnerable to high conversion rates for livestock/agricultural activities. Because they are seen as "more easily cultivated," they have been suffering for several years from elimination for rural activities such as pastures for cattle and buffalo, forest plantations such as eucalyptus and acacia, or crops of soy, rice, etc. (Carvalho et al., 2025; Barbosa et al., 2007; Carvalho et al., 5019).

It is a fact that public policies have never extended to supporting or prioritizing the conservation of Amazonian savannas. The Native Vegetation Protection Law, responsible for establishing the minimum percentage of each private property that must maintain "legal reserves," erroneously classifies Amazonian savannas as cerrado (Brazilian savanna), applying a percentage of 35% of the property as a protected area for legal reserves, while in

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forest areas, the percentage of 80% is applied. It should be observed that these areas ecologically do not constitute cerrado or forest areas, but rather a unique, complex, and heterogeneous ecosystem belonging to the Amazon. Therefore, the legislation itself does not adequately consider this ecosystem. Furthermore, Brazilian legislation allows for the compensation of Amazonian savanna areas with legal reserves located in other ecosystems of the same biome, such as floodplain forests, which increases the risks to the conservation of these savannas, as they are more attractive to agricultural expansion than forest areas. All of this is currently reflected in the high existential threat to these areas (Carvalho et al., 2025; Brazil, 2012; Brazil, 2012; Federal Senate, 2023).

Research conducted by Lapola et al. (2023) proposes the creation of a monitoring system for degradation, similar to the idea of "smart cities," which would utilize updated knowledge, relying on technologies and sensors to collect useful data, resulting in improved environmental quality. Furthermore, it also indicates the prevention and suppression of illegal logging and the more systematic control of fire use in agriculture.

Agricultural Expansion

The area dedicated to agriculture increased as follows in the following periods: from 1985 to 1995 by 3.7%, from 1996 to 2005 by 5.4%, from 2006 to 2015 by 2.3%, and from 2016 to 2024 by 2.8%.

The period between 1985 and 2005 comprised the highest rates of deforestation, associated with different political, economic, and institutional dynamics over time. This dynamic was driven by public programs that offered funding and incentives for migration and productive development in previous decades, directly influencing the conversion of forests into pastures and productive areas (Gulinelli et al., 2024).

Regarding these factors, it is worth highlighting that, during the military regime, especially during the government of Ernesto Geisel (1974–1979), Brazilian land policy was

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strongly guided by the principle of the social function of rural property, established by the Land Statute (Law No. 4,504/1964). According to this legislation, rural property should fulfill its social function through adequate economic exploitation, rational use of the soil, and observance of labor standards, under penalty of expropriation for agrarian reform purposes (Brazil, 1964).

The application of this principle was operationalized by the National Institute for Colonization and Agrarian Reform (INCRA), created in 1970, which intensified the inspection of lands considered unproductive. In the context of the Geisel government, this action occurred in an articulated manner within a national strategy of territorial integration and economic development, especially focused on the Legal Amazon. In practice, the logic that maintaining land ownership was linked to demonstrating productivity became consolidated, encouraging rural landowners to convert areas of native vegetation into areas for agricultural use (Ianni, 1979; Martins, 1997).

Beyond the legal framework, government programs such as the National Integration Program (PIN) and the Amazon Agricultural and Agromineral Hubs Program (POLAMAZÔNIA), established in 1974, reinforced this process by stimulating the economic occupation of the Amazon region, the opening of productive areas, and the expansion of infrastructure (Silva, 2025; Becker, 2005). In this context, standing forest came to be frequently interpreted as synonymous with unproductivity, while deforestation, especially for the implementation of extensive livestock farming, became a mechanism for legitimizing land ownership (Fearnside, 2001).

Thus, although no specific policy was created during the Geisel administration that explicitly mandated making the land productive, the application of the principle of the social function of property by INCRA, associated with territorial occupation programs, acted as a strong indirect incentive for the suppression of native vegetation, contributing to the advance of the agricultural frontier in the Legal Amazon.

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From 2006 to 2015, a reduction in the rate of agricultural expansion to 2.3% was observed, coinciding with the strengthening of environmental policies and instruments to control deforestation, such as the Soy Moratorium in 2006. This initiative, agreed upon between producers and socio-environmental organizations, prohibited the purchase of soy originating from deforested areas after a defined baseline date, contributing to a lower increase in deforestation directly associated with agriculture in new territories. The renewal of the moratorium in 2016 also demonstrates the importance of voluntary governance mechanisms in moderating pressures on the forest (Costa, 2021).

Another policy that was important in reducing deforestation in the Legal Amazon was the Action Plan for the Prevention and Control of Deforestation in the Legal Amazon (PPCDAm), launched in 2004, which is among the main public policies that contributed to the reduction of deforestation rates in the region. At the beginning of its implementation, when deforestation reached approximately 27,800 km² in 2004, the PPCDAm began to integrate measures of inspection, satellite monitoring, and protection of large forest areas through the expansion of conservation units and indigenous lands, creating legal barriers to the advance of agricultural activities and irregular occupation. These actions, combined with penalties, credit restrictions for offenders, and support for field inspections, were fundamental in reducing deforestation rates to approximately 11,700 km² in 2007, representing a decrease of approximately 58% in this initial period. Furthermore, between 2008 and 2012, deforestation continued to decline, reaching record levels of approximately 4,600 km², despite the growth of agricultural production in the Amazon. The scientific literature indicates that this reduction was mainly due to integrated command-and-control actions promoted by the PPCDAm, demonstrating that robust environmental policies and effective enforcement can significantly mitigate forest suppression even in the face of economic pressures (Nunes et al., 2024).

In addition to the PPCDAm, which structured integrated actions of satellite monitoring, environmental enforcement, land use planning, and the creation of protected areas, configuring a command and control model widely recognized by the scientific literature

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as a determining factor in the sharp decline in deforestation between 2004 and 2012 (Brazil, 2004; Nepstad et al., 2014; Nunes et al., 2024), there was also the creation and expansion of Conservation Units and Indigenous Lands, which played a strategic role in establishing legal barriers to the advance of the agricultural frontier. Studies indicate that these areas have shown significantly lower deforestation rates when compared to unprotected areas, contributing structurally to containing forest degradation in the Legal Amazon (Brazil, 2007; Nepstad et al., 2014).

In parallel, the strengthening of INPE's satellite monitoring systems, especially PRODES and DETER, enabled continuous and near real-time detection of deforestation, providing technical support for faster and more effective enforcement actions. The literature highlights that the systematic use of these tools has reduced environmental impunity and increased the State's capacity to respond to illegal activities of native vegetation suppression (INPE, 2023; Nunes et al., 2024).

Another relevant instrument was the adoption of restrictions on rural credit in the Legal Amazon, formalized by Resolution No. 3,545/2008 of the Central Bank of Brazil, which conditioned access to financing on proof of environmental regularity of rural properties. This measure reduced the economic viability of activities associated with illegal deforestation, functioning as an indirect mechanism of environmental control complementary to enforcement actions (BACEN, 2008; Assunção, Gandour and Rocha, 2015).

In the regulatory framework, the National Policy on Climate Change (PNMC), established by Law No. 12,187/2009, consolidated the fight against deforestation as a central axis of the Brazilian strategy for mitigating greenhouse gas emissions, recognizing forest suppression as the country's main source of emissions at the time. The policy reinforced the role of the Legal Amazon in the national and international climate agenda (Brazil, 2009).

Finally, the Brazilian Forest Code (Law No. 12,651/2012) introduced instruments such as the Rural Environmental Registry (CAR) and sought to regularize environmental liabilities, establishing legal limits on the conversion of native vegetation. Although its effects are

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subject to debate, the legislation has influenced the recent dynamics of land use in the Amazon, especially with regard to the formal control of forest degradation (Brazil, 2012; Nunes et al., 2024).

Finally, from 2016 to 2024, the 2.8% growth in the area used for agriculture reflects a moderate resumption of expansion, partly caused by changes in the political and institutional context that influence environmental oversight and economic incentives for land use. Pressures for the relaxation of environmental regulations and the role of agribusiness in the Brazilian economy may contribute to this resumption, although control policies persist in several areas. Analysis of recent land use trends and environmental policies indicates that these combined elements shape the current dynamics of land use in the Legal Amazon. Correlated with the increasing data in this period is the recent enactment of Law No. 12.709/2024, which imposes restrictions on companies that adhere to the Soy Moratorium, a voluntary agreement that prohibits the commercialization of soy from areas deforested after 2008. This initiative is consistent with provisions of the Forest Code, which establish limits on the conversion of areas with native vegetation, especially on smaller rural properties.

However, by restricting tax incentives to companies that are signatories to the pact, the new law weakens commitments aimed at zero deforestation and signals a setback in environmental conservation strategies. Furthermore, the measure reflects political pressures linked to rural sectors and adds to other proposals that seek to make the Forest Code more flexible, highlighting the clash between short-term economic interests and the need to protect the Amazonian biome (Gulinelli, 2024).

4. FINAL CONSIDERATIONS

Quantitative analysis of land use and land cover in the Legal Amazon between 1985 and 2024 revealed a significant suppression of native vegetation, directly associated with the expansion of agricultural activities. Throughout the analyzed period, the conversion of forest

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and savanna areas into pastures and crops constituted the main driver of regional landscape transformation, particularly between 1995 and 2005, when the highest rates of native vegetation loss were observed, driven by economic incentives, territorial occupation policies, infrastructure expansion, and weaknesses in environmental enforcement. The results also highlight the high vulnerability of Amazonian savanna formations, historically underprotected by the Brazilian legal framework, which favors their conversion to agricultural activities and increases the risks to the conservation of unique ecosystems within the Amazonian biome.

From 2006 onwards, there was a relative slowdown in this process, related to the implementation of command-and-control public policies, such as the PPCDAm (Action Plan for Prevention and Control of Deforestation in the Amazon), the strengthening of environmental monitoring, and the adoption of regulatory and economic instruments aimed at curbing deforestation. However, between 2016 and 2024, the data indicate a moderate resumption of agricultural expansion, reflecting changes in the political-institutional context and pressures for the relaxation of environmental regulations.

It is concluded that the dynamics of land use and land cover in the Legal Amazon are a result of the interaction between economic, political, and institutional factors, reinforcing the need for continuous, integrated, and territorially specific public policies. Strengthening enforcement, environmental monitoring, and governance instruments is fundamental to containing new cycles of native vegetation suppression and promoting an environmentally sustainable development model for the region, reconciling agricultural production and native vegetation conservation.

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