AMAZÔNIA 2030

Settlements in Focus: Combating Deforestation and Conservation in the Amazon

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About Amazon 2030

Amazon 2030 is an initiative by Brazilian researchers that seeks to develop an action plan for the sustainable development of the Brazilian Amazon. Our objective is to promote higher standards of economic and human development and to achieve the sustainable use of resources by 2030.

About Climate Policy Initiative

Climate Policy Initiative (CPI) is an organization with international expertise in finance and policy analysis. CPI has seven offices around the world. In Brazil, CPI has a partnership with the Pontifical Catholic University of Rio de Janeiro (PUC-RIO). CPI/PUC-RIO works to improve the effectiveness of public policies and sustainable finance in Brazil through evidence-based analysis and strategic partnerships with members of the government, civil society, the private sector and financial institutions.

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Introduction

The Amazon has 2,599 agrarian reform settlements,[1] which occupy 45% of the settled agrarian area in Brazil and are home to almost 400,000 families. Despite representing only 8% of the biome, the settled areas accounted for 24% of forest loss in the Amazon in 2023.

In this publication, researchers from Climate Policy Initiative/Pontifical Catholic University of Rio de Janeiro (CPI/PUC-RIO) analyze the high concentration of deforestation in a small group of settlements in the Amazon and argue that targeting public policies at these critical settlements could have a significant impact on reducing forest loss in the biome.

Between 2008 and 2023, the loss of forest cover in settled areas mirrored a trend observed in other areas of the Amazon biome. This suggests that similar factors influence deforestation both inside and outside agrarian reform areas. In addition, a significant portion of deforestation occurs through the removal of large areas of vegetation, a pattern that is not characteristic of small-scale farming.[2]

Large-scale clearing is cost prohibitive for settlers, most of whom live in vulnerable socio-economic conditions.[3,4] This evidence suggests that deforestation in the agrarian settlements is driven by external actors and broader dynamics, and not by the resident population.

A striking feature of deforestation in settlements is its high concentration: 5% of settlements are responsible for 65% of the deforested area. Year after year, the same settlements, situated in geographic proximity, are consistently responsible for the most deforested areas. Targeted action in these critical settlements could therefore have a significant impact on reducing deforestation.

1 This figure only considers settlements with georeferencing available in INCRA's Land Collection on 04/24/2024, 02/08/2024 or 04/28/2024 that are, even partially, within the borders of the Amazon biome according to the 2019 definition by the Brazilian Institute of Geography and Statistics (IBGE). As a reference, 86% of the 9,561 settlements that appeared on INCRA's list of projects on 28/04/2024 were considered to be georeferenced, a figure that totals 90% when considering municipalities with more than 50% of their territory in the Amazon biome.
2 Azevedo, Andrea et al. *Overview of Amazon Deforestation in 2016*. IPAM Amazônia, 2016. bit.ly/4hk9kKT.
3 Ferreira, Alípio. *Amazon Deforestation: Drivers, damages, and policies*. 2024. bit.ly/3NuQ0wQ.
4 Leite, Sérgio et al. *Impactos dos Assentamentos: Um Estudo sobre o Meio Rural Brasileiro*. São Paulo: Editora UNESP, 2004. bit.ly/3U7F6kj.

Given the high concentration of forest loss in settled areas, the National Institute for Colonization and Agrarian Reform (*Instituto Nacional de Colonização e Reforma Agrária* - INCRA*)* should adopt targeted policies to promote forest conservation. INCRA is responsible for implementing agrarian reform policies and managing public lands in Brazil. In the Amazon region, its operations are organized through 11 oversight units called regional superintendencies, three of which are located in the state of Pará and one in each of the other nine states of the biome.[5]

At the regional superintendency level, deforestation is also concentrated in a small number of settlements. For example, just five settlements account for 75% of deforestation in the Amazonas Superintendency. Furthermore, three of the eleven superintendencies make up 63% of deforestation in settled areas.

The concentration of forest loss in agrarian reform areas has significant implications. In the context of deforestation combat policy, targeted action in priority settlements can have significant effects and should be incorporated into the strategic plans of agencies such as the Ministry of the Environment and Climate Change (*Ministério do Meio Ambiente e Mudança do Clima* - MMA) and the Brazilian Institute for the Environment and Natural Resources (*Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais* - IBAMA).

In the context of national agrarian reform policy, this concentration represents an opportunity for INCRA to direct its efforts towards a specific group of superintendencies and settlements. A strategic intervention by the regional superintendencies could be essential to reducing deforestation in the agrarian reform areas of the Amazon, blending environmental conservation with the socio-economic development of these regions.

5 The regional superintendencies are decentralized bodies responsible for coordinating and executing INCRA's actions in the states. These units are responsible for managing activities related to planning, budgeting, IT, and administrative modernization within their jurisdiction. Additionally, they ensure the maintenance, reliability, updating, and dissemination of data from INCRA's rural property registry and information systems. Learn more at: INCRA. *Relatório de Gestão Exercício 2015.* 2015. bit.ly/3NCgnRt.

Agrarian Reform in the Amazon

Rural settlements are areas designated for agrarian reform, in which landless families are settled in the area with a goal of cultivating the land and improving living conditions.[6] They are an essential part of Brazil's strategy to improve land distribution and promote social justice.[7] The Amazon biome makes up 45% of the settled areas and 52% of the settlers in the country.[8]

The biome is currently home to 2,599 settlements, of which 79% are conventional and 19% environmentally differentiated (Table 1).[9,10,11] The environmentally differentiated settlements are larger in size per family. This is consistent with the need for larger areas to develop sustainable activities. This type of settlement contains includes most of the remaining primary vegetation forest in the settled area.

Table 1. Settlements in the Amazon Biome, 2024

	Conventional	Environmentally differentiated	Other	Total
Number of settlements	2,057	481	61	**2,599**
Total area (millions of hectares)	20.0	12.7	2.0	**34.7**
Number of settled families	290,261	84,680	10,865	**385,805**
Average of hectares per family	68.9	149.7	188.7	**90.0**
Remaining forest (millions of hectares)	6.6	11.0	0,9	**18.6**
Remaining forest per family (hectares)	21.9	118.0	81.2	**44.6**

Source: CPI/PUC-RIO with data from INCRA (2023-2024), PRODES/INPE (2024), and IBGE (2019), 2024

6 Chiavari, Joana, Cristina L. Lopes, and Julia N. de Araujo. P*anorama dos Direitos de Propriedade no Brasil Rural*. Rio de Janeiro: Climate Policy Initiative, 2021. bit.ly/PanoramaDireitosDePropriedade.
7 Souza, Maria Lucimar et al. *Assentamentos Rurais da Amazônia: Diretrizes para a Sustentabilidade*. Amazônia 2030, 2022. bit.ly/48kuowS.
8 IBGE. *Biomes of Brazil: shapefile, 2019*. 2019. Access date: September 16, 2020. bit.ly/4690QQH.
9 INCRA. *Assentamentos - Relação de Projetos*. 2024. Access date: September 23, 2024. bit.ly/3EjGUyv.
10 INCRA. *Acervo Fundiário. Assentamentos Brasil*. Access date: November 23, 2024. bit.ly/44ytbyD.
11 Conventional settlements are areas earmarked for family Agricultural production and have the same environmental requirements as private properties. Environmentally differentiated settlements, on the other hand, include forest conservation among their main objectives and favor agro-extractive production models. Conventional settlements include Settlement Projects and State Settlement Projects. Environmentally differentiated settlements include Agro-Extractivist Settlement Projects, Sustainable Development Projects and Forest Settlement Projects. The "Other" category includes Joint Settlement Projects, Directed Settlement Projects, Municipal Settlement Projects, Quilombola Settlement Projects, Rapid Settlement Projects, Cocoon Settlement Projects and Integrated Colonization Projects.

Deforestation in the Settlements

Targeted action in agrarian reform settlements is essential to combating deforestation in the Amazon. While the settled area only represents 8% of the biome, nearly a quarter of the forest loss in 2023 occurred within it; this is consistent with observations in, previous years. Since 2008, 28% of deforestation in the Amazon has occurred in settlements.[12]

Figure 1 demonstrates that deforestation inside and outside the settled areas follows similar trends. The rates of change in deforestation between 2009 and 2023 suggest that the same factors influence deforestation both inside and outside settled areas. Thus, national and regional policies to combat deforestation have an impact on forest loss in settled areas, even in the absence of specific actions aimed at these territories.

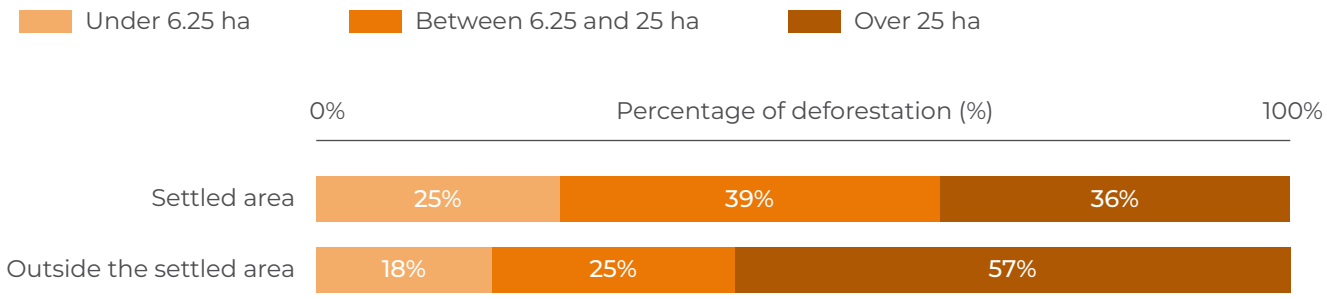
Figure 1. Deforestation in the Amazon Biome, 2008-2023

Source: CPI/PUC-RIO with data from PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024

12 INPE. *Terra Brasilis - Downloads*. nd. Access date: July 16, 2024. bit.ly/3L7iH27.

In addition, Figure 2 shows that three quarters of the vegetation loss in the settled area is the result of deforestation of areas larger than 6.25 hectares, with 36% accounting for deforestation of more than 25 hectares. This large-scale forest loss is further evidence that part of this deforestation may be propelled by external actors who are not direct beneficiaries of the national agrarian reform policy. After all, this pattern is not typical of family farming[13] and involves high costs,[14] incompatible with the socio-economic reality of the settled populations.[15] It is not by chance that this large-scale deforestation is more prevalent in the settlements that deforest the most in the biome.[16]

Figure 2. Deforested Area in the Amazon Biome, by Size of Deforested Area in 2023



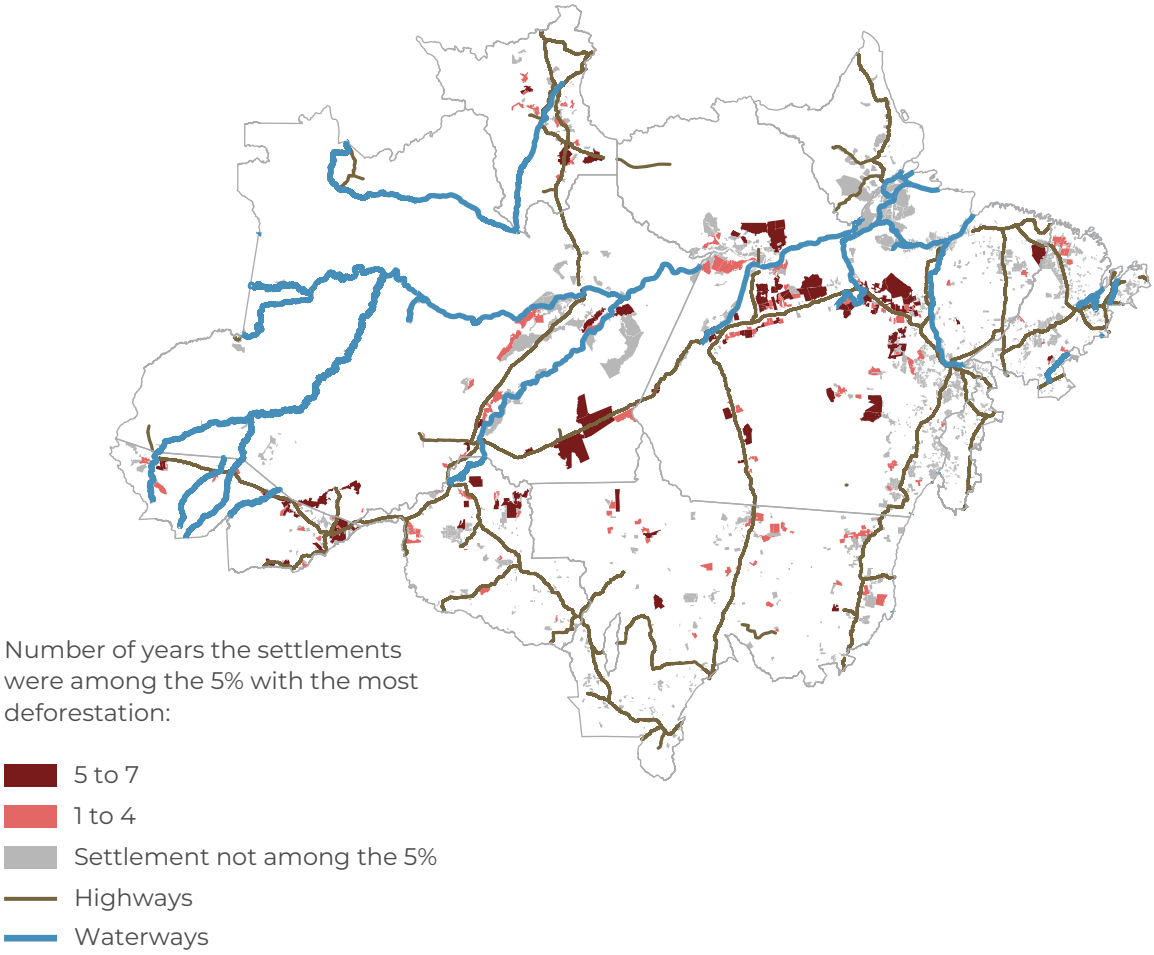
Source: CPI/PUC-RIO with data from PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024

Public policies aimed at protecting the forest in settled areas have the potential to significantly reduce the loss of native vegetation in the Amazon. **Between 2017 and 2023, just 5% of settlements accounted for 65% of deforestation in settled areas and 17% of vegetation loss in the biome**. As deforestation in these settled areas is concentrated, actions targeting a small number of critical settlements would have an effect on a significant portion of forest loss.

13 Azevedo, Andrea et al. *Overview of Deforestation in the Amazon*. IPAM Amazônia, 2016. bit.ly/4hk9kKT.
14 Ferreira, Alípio. Amazon Deforestation: Drivers, damages, and policies. 2024. bit.ly/3NuQ0wQ.
15 Leite, Sérgio et al. *Impactos dos Assentamentos: Um Estudo Sobre o Meio Rural Brasileiro*. São Paulo: Editora UNESP, 2004. bit.ly/3U7F6kj.
16 Mourão, João, Marcelo Sessim, and Priscila Souza. *Preserving the Amazon: Strategies to Reduce Deforestation in Rural Settlements*. Rio de Janeiro: Climate Policy Initiative, 2023. bit.ly/DeforestationSettlements.

Figure 3 shows all Amazon settlements and includes how many years each reached the 5% that deforested the most. Settlements with the most deforestation tend to be close to each other and in proximity to federal highways. The figure also illustrates that the same settlements make up the most loss of native vegetation over a several year period. Of the top 5% of the most deforested settlements in 2023, 49% were on this list at least five other times between 2017 and 2022. This is an indication that deforestation in the subsequent years also tends to be concentrated in these same settlements. Therefore, the development of specific action plans for these strategic regions must be a priority in order to promote Amazon conservation.

Figure 3. Settlements with the Most Deforestation in the Amazon Biome, 2017-2023



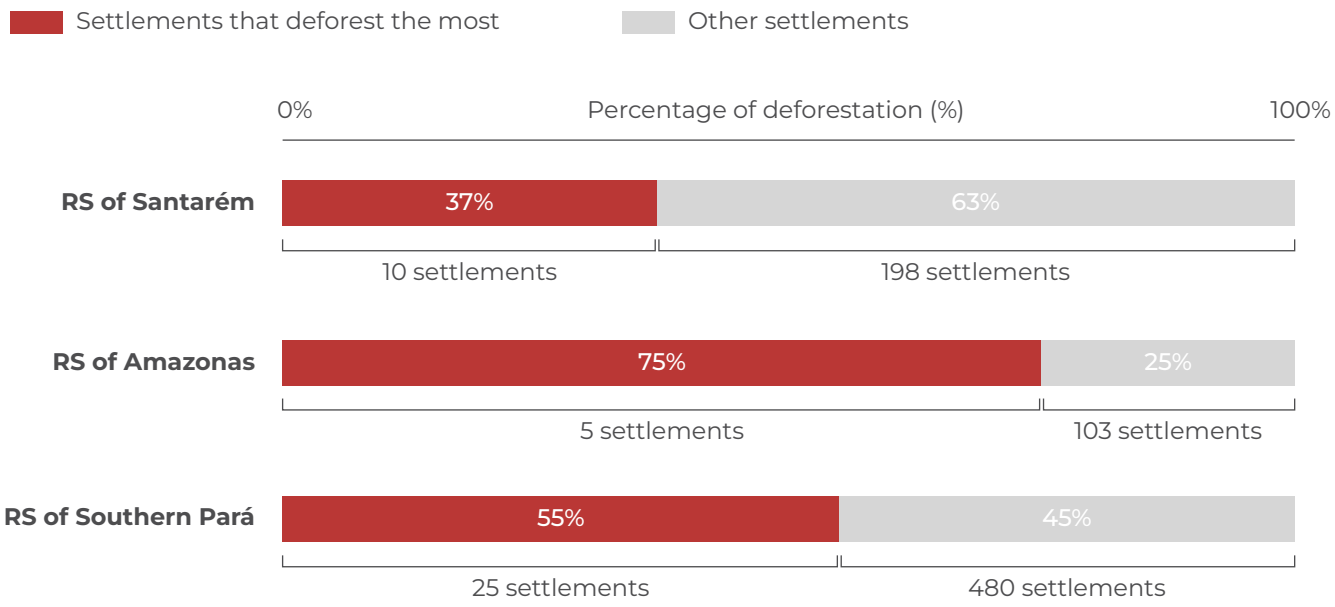
Source: CPI/PUC-RIO with data from PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024

The concentration of deforestation in settled areas has important implications for the various institutions working to conserve the Amazon, especially INCRA's regional superintendencies. As the body responsible for the territorial management of settlements in Brazil, INCRA plays a fundamental role in promoting the best land use practices in these areas. To organize its work, the institute operates through regional superintendencies. In the Amazon, there are eleven superintendencies, three in Pará and one in each of the other states in the biome.

Between 2017 and 2023, 63% of deforestation in settled areas occurred in three regional superintendencies: Santarém, Southern Pará, and Amazonas. In these three cases, most of the vegetation loss is concentrated in a small group of settlements (Figure 4).

In the Santarém Superintendency, 37% of deforestation occurred in just 10 Settlement Projects. The most striking is the Liberdade I Sustainable Development Project, which is responsible for 12% of forest loss in the superintendency (Appendix A). In the Amazonas Superintendency, just five of the 108 settlements account for 75% of deforestation, 46% of which is exclusively in the Rio Juma. Meanwhile, the in the Southern Pará Superintendency, which covers 505 settlements, just 25 settlements account for 55% of the total deforestation. In addition, 35% of forest loss in this superintendency is concentrated in four settlements: Tuerê, Rio Cururuí, Rio Gelado, and Pombal.

Figure 4. Concentration of Deforestation in Settlements in the Amazon Biome by Regional Superintendency (RS), 2017-2023



Source: CPI/PUC-RIO with data from PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024

In the case of these three superintendencies, a few settlements account for a significant portion of vegetation loss. The picture is similar in the other eight superintendencies, as detailed in Appendix A. The development of specific public policies for these critical settlements could therefore have a significant impact on deforestation in the biome.

Public Policy Guidelines

There are indications that deforestation in agrarian reform areas is not driven by the settled population. The size of the deforested polygons does not match the activities typically carried out by family farmers. Furthermore, deforestation within settlements follows a very similar trend to deforestation outside these areas, suggesting that external agents and broader dynamics may be driving the removal of vegetation.

Policies targeted at the Amazon's agrarian settlements could substantially reduce forest loss. Deforestation in these areas is concentrated; actions by the MMA and IBAMA focused on a small number of priority settlements can therefore have significant impacts on the biome.

In addition, INCRA's regional superintendencies play a fundamental role in forest conservation in the settled areas. Three of the eleven superintendencies face high rates of deforestation, accounting for 63% of the deforested area in these regions. These superintendencies should be prioritized and incorporate the local knowledge needed for targeted actions aimed at the small group of settlements that are most critical, ensuring greater effectiveness of the policies adopted.

Appendix A: Deforestation by Regional Superintendency

This section presents details of deforestation in the settled area of the Amazon by regional superintendency, showing the most deforested settlements.[17] Between 2017 and 2023, deforestation in the settled area of the Amazon was concentrated in the Superintendencies of Santarém, Amazonas and Southern Pará, accounting for 63% of deforestation in the region. In these three superintendencies, 5% of the settlements account for a disproportionate share of forest loss. This pattern is also seen in the other superintendencies analyzed.

Table A1 shows the deforestation recorded in each Amazon superintendency between 2017 and 2023, highlighting its contribution to forest loss in the settled area. The table also shows the percentage of forests in the settled area present in the superintendency in 2016.[18] If the forest were deforested at the same rate in all settlements, the two percentages shown in the table would coincide. Therefore, a higher share of deforestation than its 2016 percentage indicates that forest loss per hectare of forest was higher than the average for the settled areas in this superintendency. The superintendencies of southern Pará and Rondônia are worth highlighting: their share of deforestation is almost three times greater than their percentage of forest in 2016. Some superintendencies, however, may have a relevant portion of their forests in areas with little pressure from agricultural activities, as is the case with the Regional Superintendency of Amazonas.

17 The exceptions are the superintendencies of Amapá and Tocantins, which together account for less than 1% of deforestation in the settled area of the biome. The other regional superintendencies are presented according to their level of deforestation, with the one that showed the most deforestation—Regional Superintendency of Santarém—appearing first, and so on.

18 The forest cover of each settlement was calculated by subtracting the area of the settlement from its non-forest areas, water areas and accumulated deforestation up to the reference year.

Table A1. Deforestation in the Amazon Biome by Regional Superintendency, 2017-2023

Regional Superintendency (RS)	Deforestation (km²)	Deforestation (%)	Forest 2016 (ha)	Forest 2016 (%)
RS of Santarém	6,203	31.5%	29,295,323	21.8%
RS of Amazonas	3,518	17.8%	44,047,797	32.8%
RS of Southern Pará	2,797	14.2%	6,716,871	5.0%
RS of Rondônia	1,826	9.3%	4,395,132	3.3%
RS of Acre	1,737	8.8%	7,274,237	5.4%
RS of Mato Grosso	1,409	7.1%	8,803,209	6.6%
RS of Roraima	953	4.8%	5,580,605	4.2%
RS of Maranhão	651	3.3%	4,565,173	3.4%
RS of Pará	506	2.6%	15,351,871	11.4%
RS of Amapá	77	0.4%	7,204,130	5.4%
RS of Tocantins	40	0.2%	1,136,068	0.8%

Source: CPI/PUC-RIO with data PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024

One hundred and thirty projects, making up 5% of the settlements in the Amazon, accounted for 65% of deforestation in the settled areas of the biome. Table A2 shows the 10 most deforested settlements in the biome between 2017 and 2023. Together, they accounted for 24% of forest loss in the settled areas - despite only comprising 10% of the forest stock in the biome's settlements in 2016. However, there are still more than 1.5 million hectares of native forest vegetation in these projects, which suggests that deforestation will remain high for many years to come.

Table A2. Ten Settlements with the Most Deforestation in the Amazon Biome, 2017-2023

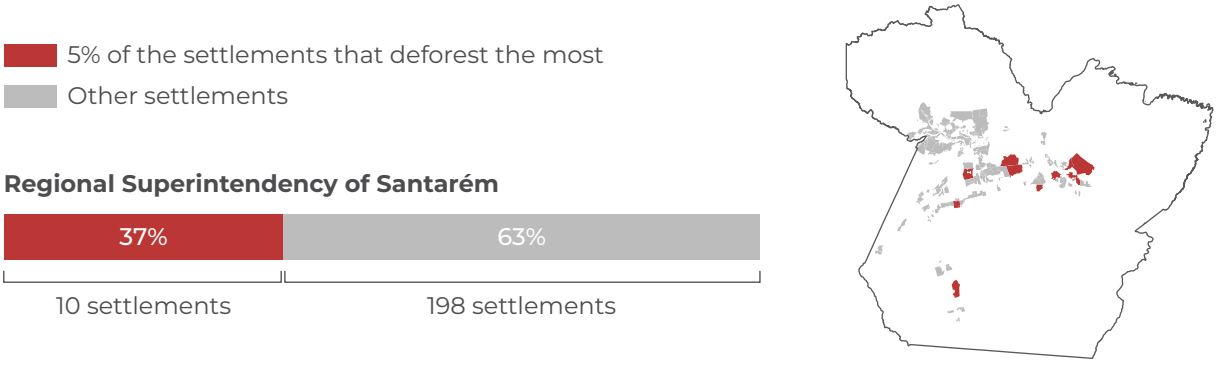
Settlement	Municipality	Area (ha)	Deforestation (km²)	Deforestation (%)	Forest 2016 (ha)	Forest 2016 (%)
Rio Juma	Apuí (AM)	670,012	160,181	8%	330,690	3%
Liberdade I	Portel (PA)	446,786	71,767	4%	337,808	2%
Jequitibá	Candeias do Jamari (RO)	135,095	46,964	2%	61,690	1%
Acari	Novo Aripuana (AM)	223,597	32,189	2%	153,867	1%
Antimary	Boca do Acre (AM)	228,956	31,138	2%	178,965	1%
Ademir Fredericce	Medicilândia (PA)	233,061	25,458	1%	193,716	1%
Rio Cururu	Pacajá (PA)	78,349	25,170	1%	37,392	0%
Monte	Boca do Acre (AM)	114,292	24,770	1%	24,153	0%
Anaua	Rorainópolis (RR)	234,545	24,410	1%	115,217	1%
Surubim	Medicilândia (PA)	203,059	22,659	1%	86,782	1%
Total		**2,567,753**	**464,707**	**24%**	**1,520,281**	**10%**

Source: CPI/PUC-RIO with data from PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024

Regional Superintendency of Santarém

The regional superintendency with the most deforestation in the Amazon is Santarém in Pará, where there are 208 land reform settlements. Between 2017 and 2023, 31% of all forest loss in settled areas occurred in this superintendency. Deforestation in this superintendency is concentrated in just 10 settlements, responsible for 37% of deforestation in the superintendency (Figure A1).

Figure A1. Settlements with the Most Deforestation in the Santarém Regional Superintendency, 2017-2023



Source: CPI/PUC-RIO with data from PRODES/INPA (2024), INCRA (2023-2024), and IBGE (2019), 2024

Table A3 shows the 10 most deforested settlements in the Santarém Superintendency. Among them, the Liberdade I Sustainable Development Project stands out. With an area of approximately 450,000 hectares, it is one of the largest settlements in the region and is located in the municipality of Portel, where 12% of all forest loss occurred in the settled area under the supervision of this superintendency. With almost 340,000 hectares of forest remaining, deforestation in this settlement could remain high for some time.

Table A3. Settlements with the Most Deforestation in the Santarém Regional Superintendency, 2017-2023

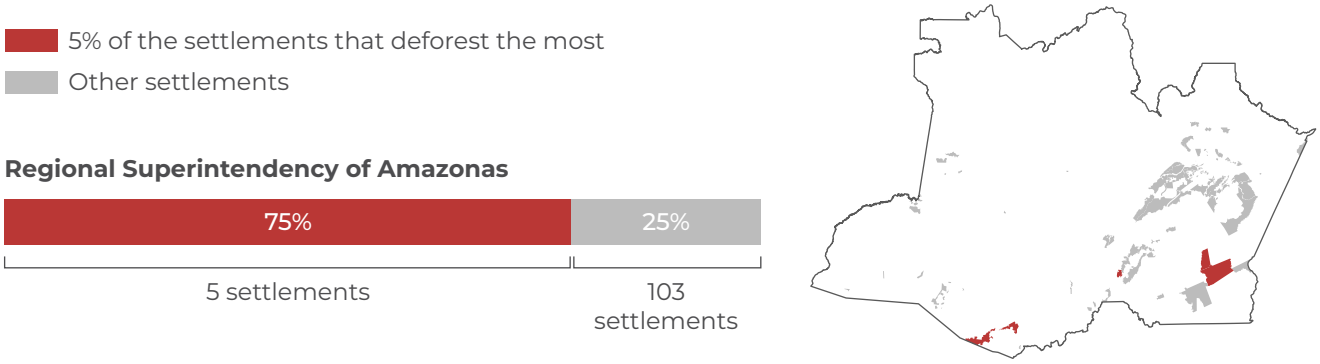
Settlement	Municipality	Area (ha)	Deforestation (km²)	Deforestation (%)	Forest 2016 (ha)	Forest 2016 (%)
Liberdade I	Portel	446,786	71,767	11.6%	337,808	9.8%
Ademir Fredericce	Medicilândia	233,061	25,458	4.1%	193,716	5.2%
Surubim	Medicilândia	203,059	22,659	3.7%	86,782	2.6%
Terra Nossa	Altamira	149,818	19,017	3.1%	84,404	2.5%
Moju I E II	Mojuí dos Campos	134,936	18,874	3.0%	90,460	2.6%
Itatá	Altamira	52,374	15,459	2.5%	31,470	1.1%
Terra para Paz	Pacajá	64,004	14,016	2.3%	42,917	1.4%
Paraíso	Rurópolis	64,613	13,626	2.2%	43,946	1.4%
Bom Jardim	Pacajá	95,189	13,279	2.1%	21,459	0.8%
Pilão Poente II	Anapu	83,991	13,032	2.1%	28,774	1.0%
Total		**1,527,832**	**227,186**	**36.6%**	**961,738**	**28.4%**

Source: CPI/PUC-RIO based on data from PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024

Regional Superintendency of Amazonas

The Amazonas superintendency has 108 settlements, in which 18% of forest loss occurred in the settled area of the biome. Between 2017 and 2023, 75% of this forest loss occurred in 5% of the settlements (Figure A2). These settlements are close to the southeast and southwest regions of the state, where deforestation has been greatest.

Figure A2. Settlements with the Most Deforestation in the Amazonas Regional Superintendency, 2017-2023



Source: CPI/PUC-RIO with data from PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024

Table A4 shows the five settlements with the most deforestation in the Amazonas Superintendency. It also shows the settlement with the most deforestation in the country, the Rio Juma settlement. This settlement accounted for 8% of forest loss in the settled area of the biome and 46% of deforestation in the superintendency. The Rio Juma may also continue to be one of the main deforestation hotspots in the biome, as it is home to more than 330,000 hectares of forest.

Table A4. Settlements with the Most Deforestation in the Amazonas Regional Superintendency, 2017-2023

Settlement	Municipality	Area (ha)	Deforestation (km²)	Deforestation (%)	Forest 2016 (ha)	Forest 2016 (%)
Rio Juma	Apuí	670,012	160,181	45.5%	330,690	7.8%
Acari	Novo Aripuanã	223,597	32,189	9.1%	153,867	3.0%
Antimary	Boca do Acre	228,956	31,138	8.9%	178,965	3.3%
Monte	Boca do Acre	114,292	24,770	7.0%	24,153	0.8%
Realidade	Humaitá	43,459	16,387	4.7%	25,138	0.7%
Total		**1,280,316**	**264,665**	**75.2%**	**712,813**	**15.5%**

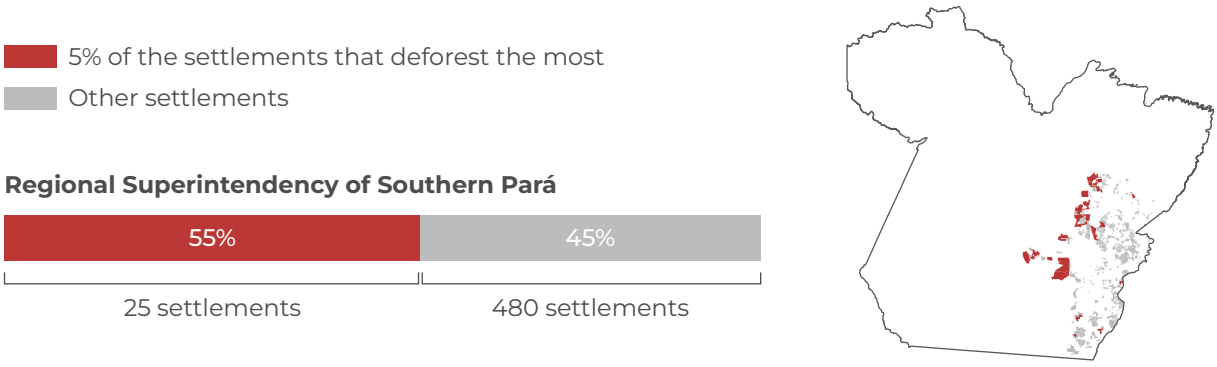
Source: CPI/PUC-RIO with data from PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024

The other settlements that lead deforestation in the superintendency also account for a significant percentage of forest loss in the settled areas. The Acari and the Antimary Agro-Extractive Settlement Project together accounted for 18% of deforestation in the superintendency.

Regional Superintendency of Southern Pará

The Superintendency of Southern Pará has 505 settlements, in which 14% of forest loss occurred in the settled areas of the biome. Between 2017 and 2023, the 25 settlements that lost the most vegetation account for 55% of deforestation in the superintendency. These settlements are larger than the others and are closer to the central region of the state, where there is less prevalence of consolidated areas.

Figure A3. Settlements with the Most Deforestation in the Southern Pará Regional Superintendency, 2017-2023



Source: CPI/PUC-RIO with data from PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024

Table A5 shows the 25 settlements with the most deforestation in the Southern Pará Superintendency. This group includes the Rio Cururuí, Tuerê, Rio Gelado and Pombal settlement projects. Together, they account for 29% of the superintendency's forest loss. Actions targeting these four projects could have a significant impact on deforestation in the region.

Table A5. Settlements with the Most Deforestation in the Southern Pará Regional Superintendency, 2017-2023

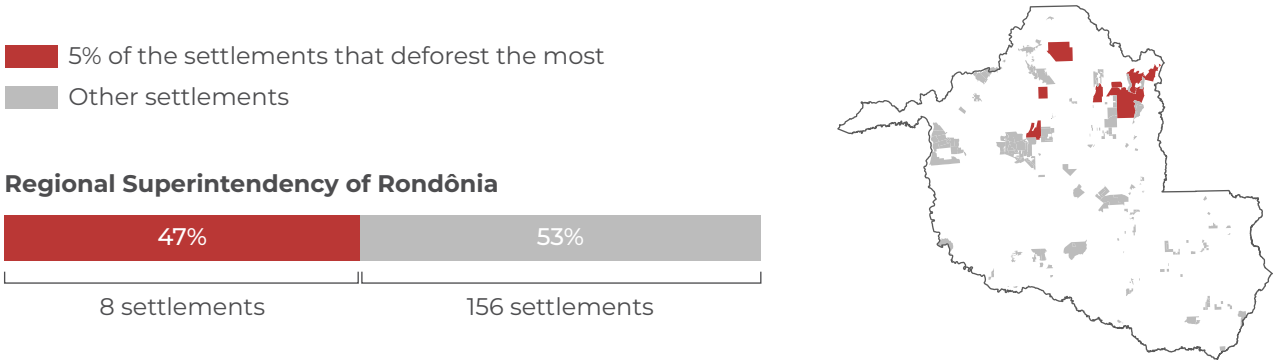
Settlement	Municipality	Area (ha)	Deforestation (km²)	Deforestation (%)	Forest 2016 (ha)	Forest 2016 (%)
Rio Cururuí	Pacajá	78,349	25,170	9.0%	37,392	6.5%
Tuerê	Novo Repartimento	140,390	20,590	7.4%	25,536	4.8%
Rio Gelado	Novo Repartimento	167,069	18,209	6.5%	43,679	6.4%
Pombal	São Félix do Xingu	90,840	18,058	6.5%	20,916	4.1%
Colônia São José do Xingu	São Félix do Xingu	68,658	5,260	1.9%	10,428	1.6%
Nova Vida II	Pacajá	26,987	5,051	1.8%	8,788	1.4%
Montes Belos	Pacajá	32,651	4,660	1.7%	7,985	1.3%
Escalada do Norte Juliana	Rio Maria	14,502	4,400	1.6%	2,455	0.7%
Raio de Sol II	Pacajá	13,298	4,331	1.5%	5,977	1.1%
Tucumã	Tucumã	392,972	4,238	1.5%	28,102	3.4%
Ararandeua	Goianésia do Pará	15,268	3,991	1.4%	3,083	0.7%
Sudoeste	São Félix do Xingu	38,111	3,701	1.3%	5,245	0.9%
Belauto	São Félix do Xingu	25,245	3,663	1.3%	4,911	0.9%
Rio Bandeira	Pacajá	11,171	3,410	1.2%	5,309	0.9%
Jahú	Santa Maria das Barreiras	23,450	3,382	1.2%	15,900	2.0%
Cinturão Verde I e II	Itupiranga	82,329	3,231	1.2%	12,680	1.7%
Barra Mansa	São Félix do Xingu	18,170	3,085	1.1%	5,128	0.9%
Bela Vista do Pacajá	Pacajá	64,150	3,063	1.1%	18,573	2.3%
Raio de Sol	Pacajá	7,578	2,983	1.1%	2,841	0.6%
Serra Verde	Santa Maria das Barreiras	12,734	2,707	1.0%	4,159	0.7%
Arataú II	Pacajá	27,250	2,676	1.0%	14,008	1.7%
Rio da Esquerda	Itupiranga	39,644	2,635	0.9%	6,048	0.9%
Conceição	Santa Maria das Barreiras	36,252	2,191	0.8%	4,183	0.7%
Bom Jesus III	Tucuruí	8,641	1,841	0.7%	1,954	0.4%
Arapari	São Félix do Xingu	14,483	1,824	0.7%	1,831	0.4%
Total		**1,450,194**	**154,350**	**55.2%**	**297,110**	**47.0%**

Source: CPI/PUC-RIO with data from PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024

Regional Superintendency of Rondônia

The Rondônia Superintendency, which accounts for 9% of deforestation in the settled area, also has a high concentration of deforestation. Between 2017 and 2023, more than 47% of vegetation loss occurred in just eight of its 164 settlements (Figure A4). Six of the eight are located in the municipalities of Machadinho do Oeste and Candeias do Jamari; this also demonstrates a need for targeted action.

Figure A4. Settlements with the Most Deforestation in the Rondônia Regional Superintendency, 2017-2023



Source: CPI/PUC-RIO with data from PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024

Table A6 shows the eight settlements with the most deforestation in the Rondônia Superintendency. More than a quarter of deforestation in this superintendency occurs in the Jequitibá Forest Settlement Project, which accounts for a 2% of forest loss in the settled areas. In addition, the Machadinho, Santa Cruz and Lajes settlements have the highest rates of deforestation, respectively; the three together account for 12% of forest loss in the superintendency.

Table A6. Settlements with the Most Deforestation in the Regional Superintendency of Rondônia, 2017-2023

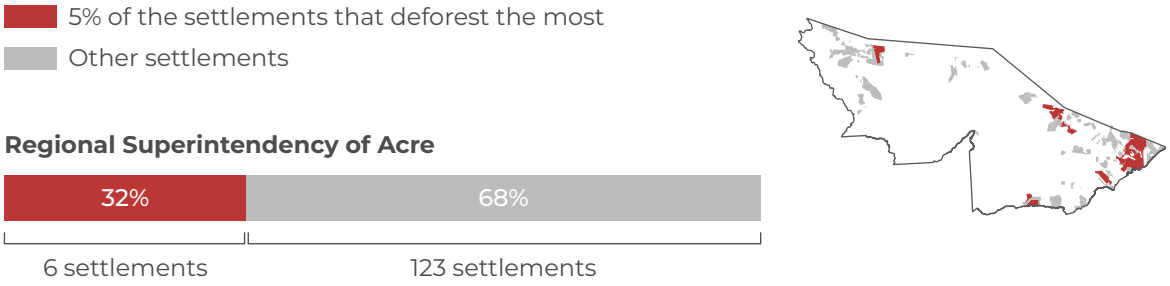
Settlement	Municipality	Area (ha)	Deforestation (km²)	Deforestation (%)	Forest 2016 (ha)	Forest 2016 (%)
Jequitibá	Candeias do Jamari	135,095	46,964	25.7%	61,690	17.3%
Machadinho	Machadinho do Oeste	215,145	7,855	4.3%	84,869	14.8%
Santa Cruz	Ariquemes	55,906	7,226	4.0%	10,234	2.8%
Lajes	Machadinho do Oeste	63,044	6,797	3.7%	12,880	3.1%
Belo Horizonte	Machadinho do Oeste	18,258	4,708	2.6%	3,827	1.4%
Santa Maria II	Machadinho do Oeste	38,655	4,568	2.5%	11,449	2.6%
Cujubim	Cujubim	42,502	4,311	2.4%	5,107	1.5%
Rio Preto do Candeias	Candeias do Jamari	34,208	3,955	2.2%	8,268	1.9%
Total		**602,813**	**86,384**	**47.3%**	**198,324**	**45.3%**

Source: CPI/PUC-RIO with data from PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024

Regional Superintendency of Acre

The Acre Superintendency accounts for 9% of forest loss in the settled area. Between 2017 and 2023, just six of its 129 settlements accounted for 32% of deforestation (Figure A5). It is worth noting that, despite some geographical proximity, all of its settlements are in different municipalities.

Figure A5. Settlements with the Most Deforestation in the Acre Regional Superintendency, 2017-2023



Source: CPI/PUC-RIO with data from PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024

Table A7 shows the six settlements with the most deforestation in the Acre Superintendency. Roughly 20% of deforestation in this superintendency is associated with three projects: the Pedro Peixoto Directed Settlement Project and the Remanso and Santa Quitéria settlements. All six settlements are considered environmentally differentiated and should therefore encourage the conservation of the Amazon rainforest.

Table A7. Settlements with the Most Deforestation in the Acre Regional Superintendency, 2017-2023

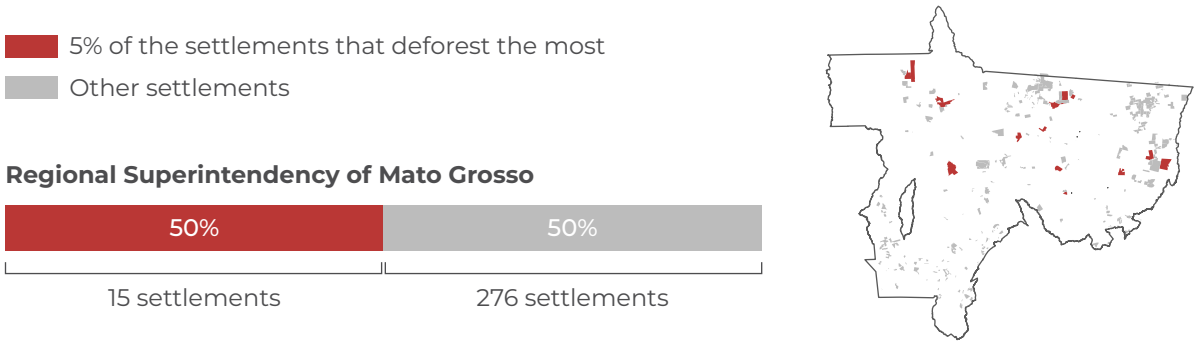
Settlement	Municipality	Area (ha)	Deforestation (km²)	Deforestation (%)	Forest 2016 (ha)	Forest 2016 (%)
Pedro Peixoto	Acrelândia	304,346	13,165	7.6%	63,905	7.4%
Remanso	Capixaba	44,878	11,508	6.6%	21,791	3.2%
Santa Quitéria	Assis Brasil	44,948	9,877	5.7%	20,973	3.0%
Boa Esperança	Sena Madureira	78,604	8,233	4.7%	24,082	3.1%
Santa Luzia	Cruzeiro do Sul	59,389	6,694	3.9%	26,885	3.2%
Riozinho	Sena Madureira	31,346	6,324	3.6%	22,214	2.7%
Total		**563,511**	**55,802**	**32.1%**	**179,850**	**22.7%**

Source: CPI/PUC-RIO with data from PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024

Regional Superintendency of Mato Grosso

The Mato Grosso Superintendency accounts for 7% of forest loss in the settled area. Between 2017 and 2023, half of the deforestation in the superintendency occurred in just 15 of its 291 settlements (Figure A6).

Figure A6. Settlements with the Most Deforestation in the Mato Grosso Regional Superintendency, 2017-2023



Source: CPI/PUC-RIO with data from PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024

Table A8 shows the fifteen settlements with the most deforestation in the Mato Grosso Superintendency. These include the Nova Contriguaçu, Tibagi and Japuranã settlements, which together account for more than 18% of deforestation in the superintendency. It is worth noting that these figures do not include deforestation in Cerrado areas, as this study only considers the loss of primary forest vegetation in the Amazon.

Table A8. Settlements with the Most Deforestation in the Mato Grosso Regional Superintendency, 2017-2023

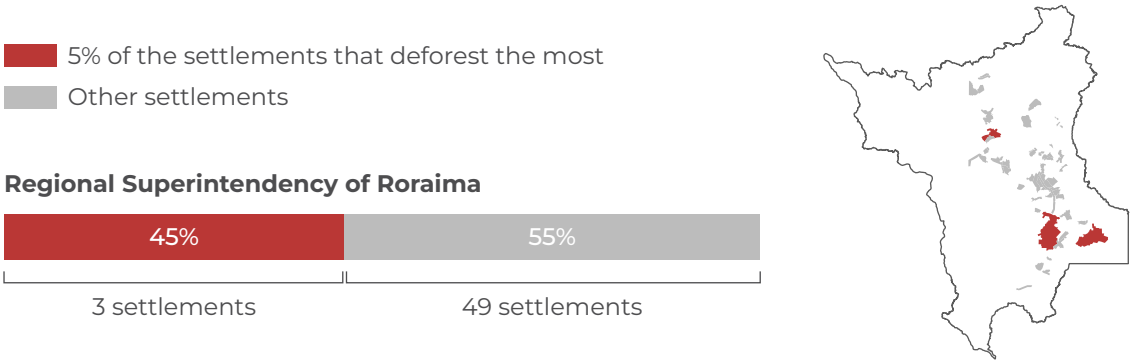
Settlement	Municipality	Area (ha)	Deforestation (km²)	Deforestation (%)	Forest 2016 (ha)	Forest 2016 (%)
Nova Cotriguacu	Cotriguacu	100,032	12,919	9.2%	14,568	2.2%
Tibagi	Brasnorte	110,755	6,484	4.6%	29,464	2.9%
Japuranã	Nova Bandeirantes	63,007	5,910	4.2%	12,171	1.4%
Japuranoman	Nova Bandeirantes	32,060	4,699	3.3%	4,981	0.8%
Boa Esperança I, II e III	Nova Ubiratã	32,052	4,240	3.0%	4,808	0.7%
Keno	Cláudia	22,381	4,231	3.0%	8,249	1.0%
Rio Jatobá	Paranatinga	9,287	4,136	2.9%	2,277	0.5%
São José União	Peixoto de Azevedo	60,415	3,943	2.8%	9,704	1.1%
Colniza-I	Colniza	44,109	3,900	2.8%	5,582	0.8%
Bordolândia	Bom Jesus do Araguaia	56,405	3,545	2.5%	14,321	1.4%
Cachimbo	Peixoto de Azevedo	52,280	3,484	2.5%	8,795	1.0%
Wesley Manoel dos Santos	Sinop	38,301	3,453	2.4%	4,255	0.6%
Pingos D'água	Querência	38,822	3,448	2.4%	3,032	0.5%
Vida Nova	Jangada	16,128	3,083	2.2%	6,035	0.7%
Santo Antônio da Mata Azul	Novo Santo Antônio	107,280	2,874	2.0%	87,295	7.2%
Total		**783,315**	**70,350**	**49.9%**	**215,537**	**22.7%**

Source: CPI/PUC-RIO with data from PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024

Regional Superintendency of Roraima

The Roraima Superintendency accounts for 5% of forest loss in the Amazon's settled areas. Between 2017 and 2023, three of its 52 settlements accounted for 45% of deforestation in the superintendency (Figure A7).

Figure A7. Settlements with the Most Deforestation in the Roraima Regional Superintendency, 2017-2023



Source: CPI/PUC-RIO based on data from PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024

Table A9 shows the fifteen settlements with the most deforestation in the Roraima Superintendency. Among the projects with the largest deforested areas, the Anauá settlement is associated with more than a quarter of the deforestation in the superintendency. The other two settlements, Jatapu and Samaúma, also show significant percentages, adding up to more than 19% loss of native vegetation.

Table A9. Settlements with the Most Deforestation in the Roraima Regional Superintendency, 2017-2023

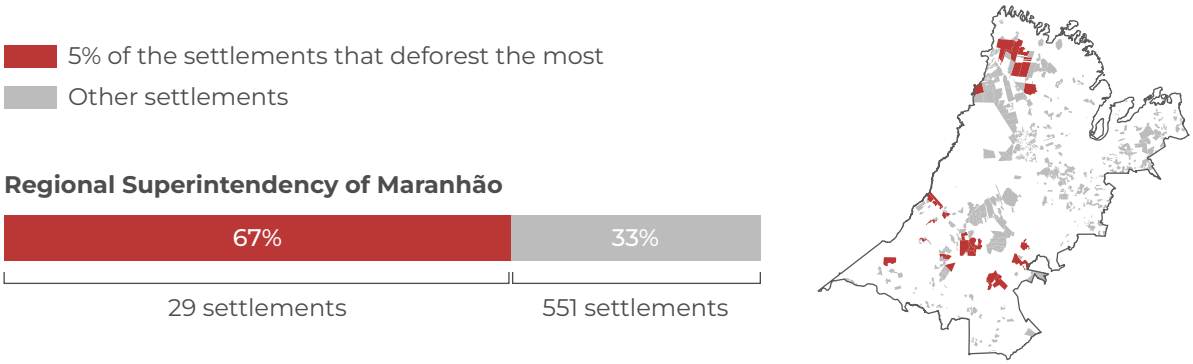
Settlement	Municipality	Area (ha)	Deforestation (km²)	Deforestation (%)	Forest 2016 (ha)	Forest 2016 (%)
Anauá	Rorainópolis	234,545	24,410	25.6%	115,217	17.5%
Jatapu	Caroebe	164,564	10,508	11.0%	74,996	10.7%
Samaúma	Mucajaí	49,436	7,730	8.1%	18,654	3.3%
Total		**448,545**	**42,648**	**44.8%**	**208,866**	**31.5%**

Source: CPI/PUC-RIO with data from PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024

Regional Superintendency of Maranhão

The Maranhão Superintendency accounts for 3% of forest loss in the Amazon's settled areas. Between 2017 and 2023, 29 of its 580 settlements accounted for 67% of deforestation in the superintendency (Figure A8).

Figure A8. Settlements with the Most Deforestation in the Maranhão Regional Superintendency, 2017-2023



Source: CPI/PUC-RIO with data from PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024

Table A10 shows the 29 settlements with the most deforestation in the Maranhão Superintendency. Of particular note, is the Citema Sustainable Development Project, in the municipality of Arame, which accounts for 8.5% of forest loss in the superintendency.

Table A10. Settlements with the Most Deforestation in the Maranhão Regional Superintendency, 2017-2023

Settlement	Municipality	Area (ha)	Deforestation (km²)	Deforestation (%)	Forest 2016 (ha)	Forest 2016 (%)
Citema	Arame	23,206	5,553	8.5%	6,966	1.9%
Pedra Preta/Morro dos Garrotes	Arame	29,583	3,064	4.7%	7,105	1.6%
Bom Pastor	Cândido Mendes	58,324	2,285	3.5%	6,540	1.4%
Brasilândia	Buriticupu	11,158	2,012	3.1%	1,914	0.6%
Passo Livre	Bom Jardim	5,603	2,012	3.1%	1,006	0.5%
Tabocão	Buriticupu	10,369	1,858	2.9%	2,206	0.6%
Gurupi	Itinga do Maranhão	12,562	1,839	2.8%	2,895	0.7%

Table A10 continues in the next page.

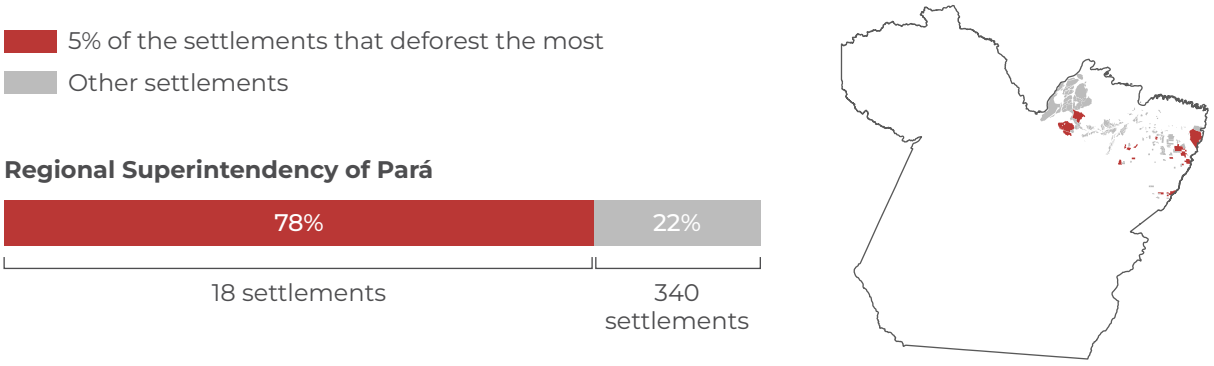
Settlement	Municipality	Area (ha)	Deforestation (km²)	Deforestation (%)	Forest 2016 (ha)	Forest 2016 (%)
Santa Helena	Cândido Mendes	88,590	1,771	2.7%	10,898	1.9%
Citusa/Viamão	Arame	30,171	1,662	2.6%	5,140	1.0%
Rio Doce	Turilândia	34,144	1,660	2.6%	5,952	1.2%
07 de Maio	Buriticupu	13,730	1,521	2.3%	1,672	0.5%
Temasa	Arame	7,131	1,317	2.0%	2,981	0.7%
Sulnorbraz/ Agroterra	Marajá do Sena	14,927	1,316	2.0%	10,337	1.8%
11 de junho	Bom Jesus das Selvas	9,166	1,265	1.9%	1,167	0.4%
Açaí	Açailândia	23,372	1,227	1.9%	852	0.3%
Florestal/ Maracassumé	Governador Nunes Freire	47,961	1,135	1.7%	10,604	1.8%
Oziel II	Itinga do Maranhão	4,634	1,075	1.7%	1,984	0.5%
Roseli Nunes/ Bananeiras	Bom Jesus das Selvas	6,266	1,037	1.6%	514	0.2%
Horizonte Azul	Itinga do Maranhão	1,942	1,007	1.5%	574	0.2%
Cikel	Amarante do Maranhão	12,848	987	1.5%	360	0.2%
Itamataré / Colone	Centro Novo do Maranhão	24,697	985	1.5%	3,161	0.6%
Alta Floresta I	Bom Jesus das Selvas	6,003	945	1.5%	572	0.2%
Terra Livre	Bom Jardim	3,342	912	1.4%	1,027	0.3%
Nascente do Rio Azul	Bom Jardim	4,850	909	1.4%	658	0.2%
Mapisa	Bom Jesus das Selvas	9,209	905	1.4%	898	0.3%
Buriti/ Rio Bonito	Bom Jesus das Selvas	32,656	840	1.3%	2,116	0.5%
Francisco Romão	Açailândia	4,185	837	1.3%	87	0.1%
Fênix	Itinga do Maranhão	9,428	800	1.2%	1,112	0.3%
Califórnia/ Diamantina	Buriticupu	5,180	775	1.2%	811	0.2%
Total		**545,239**	**43,514**	**66.9%**	**92,109**	**20.8%**

Source: CPI/PUC-RIO with data from PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024

Regional Superintendency of Pará

The Pará Superintendency accounts for 3% of forest loss in the Amazon's settled areas. Between 2017 and 2023, 18 of its 358 settlements accounted for 78% of deforestation in the superintendency (Figure A9).

Figure A9. Settlements with the Most Deforestation in the Pará Regional Superintendency, 2017-2023



Source: CPI/PUC-RIO based on data from PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024

Table A11 shows the 18 settlements with the most deforestation in the Pará Superintendency. Forest loss is highly concentrated in the Cidapar settlement, in the municipality of Cachoeira do Piriá, where 41% of deforestation in the superintendency occurred between 2017 and 2023.

Table A11. Settlements with the Most Deforestation in the Pará Regional Superintendency, 2017-2023

Settlement	Municipality	Area (ha)	Deforestation (km²)	Deforestation (%)	Forest 2016 (ha)	Forest 2016 (%)
Cidapar	Cachoeira do Piriá	232,483	20,951	41.4%	76,634	4.4%
Vale Do Moju	Moju	20,676	2,494	4.9%	4,777	0.3%
Luiz Inácio	Paragominas	34,581	2,387	4.7%	10,334	0.6%
Ilha Grande do Laguna	Melgaço	177,091	1,680	3.3%	160,332	7.4%
Arapuã Simeira	Nova Esperança do Piriá	69,571	1,599	3.2%	7,149	0.4%
Ilha Grande - Pacajaí	Portel	37,034	1,477	2.9%	25,309	1.2%
Floresta Gurupi I	Ulianópolis	39,830	1,338	2.6%	6,032	0.3%
PE Borba Gato	Tailândia	8,544	1,227	2.4%	3,447	0.2%
Calmaria II	Moju	12,923	898	1.8%	3,069	0.2%
Calmaria I	Acará	9,342	804	1.6%	3,123	0.2%
Paragonorte	Paragominas	32,357	727	1.4%	2,522	0.1%
Olho D'água II	Moju	8,212	702	1.4%	4,692	0.2%
Ilha dos Macacos	Breves	129,817	604	1.2%	115,645	5.3%
Alta Floresta	Paragominas	4,018	580	1.1%	817	0.1%
Paragominas/ Faiscão	Ulianópolis	13,032	554	1.1%	612	0.1%
Vale do Ariacaua	São Domingos do Capim	8,610	503	1.0%	1,528	0.1%
Nova Vida	Paragominas	3,982	409	0.8%	1,409	0.1%
Del Rey	Nova Esperança do Piriá	8,769	366	0.7%	834	0.1%
Total		**850,872**	**39,301**	**77.6%**	**428,265**	**21.3%**

Source: CPI/PUC-RIO with data from PRODES/INPE (2024), INCRA (2023-2024), and IBGE (2019), 2024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