

Tocantins, Brazil



Jurisdictional indicators brief

State area:	277,721 km ² (3.26% of Brazil)
Original forest area:	39,853 km ²
Current forest area (2019):	9,964 km ² (3.6% of Tocantins)
Yearly deforestation (2019)	23 km ²
Yearly deforestation rate (2019)	0.23%
Interannual deforestation change (2018-2019)	-8%
Accumulated deforestation (2001-2019):	1,800 km ²
Protected conservation areas:	38,548 km ² (13.9% of Tocantins)
Carbon stocks (2015):	62 millions tons (above ground biomass)
Representative crops (2018):	Sugarcane (3,106,492 tons); Soybean (2,667,936 tons); Rice (659,809 tons)
Value of agricultural production (2016):	\$1,152,935,462 USD
More on jurisdictional sustainability	State of jurisdictional sustainability

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Forest and people

In 2019, the estimated area of tropical forest in the state of Tocantins was 9,964 km², equivalent to 3.6% of the state's total area, and to 0.3% of the tropical forest remaining in the nine states of the Brazilian legal Amazon. The total accumulated forest lost during the period 2001-2019 was 1,800 km², equivalent to 16.1% of the forest area remaining in 2001. Tocantins concentrated about 0.2% of the carbon reserves stored in the biomass of the Brazilian tropical forest (about 62 mt C as of 2019).

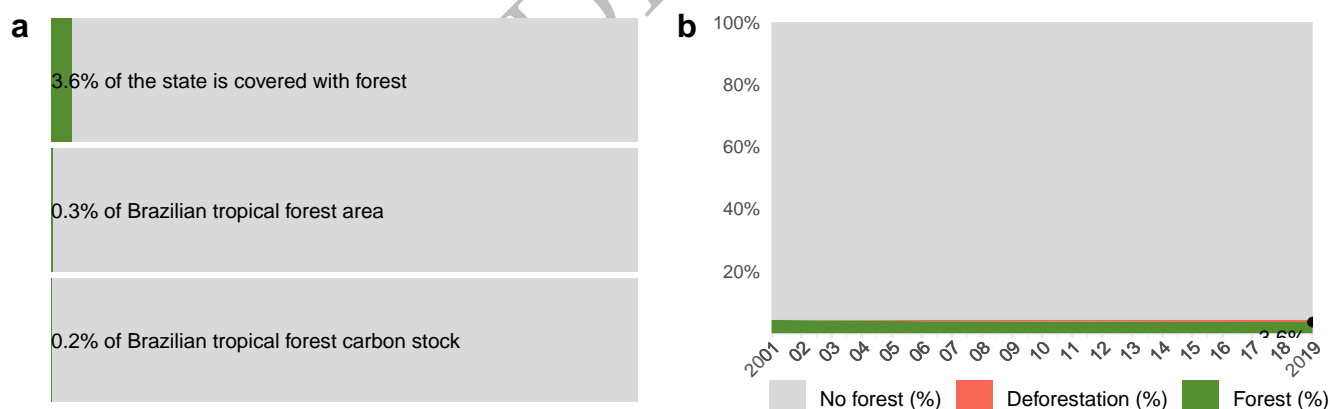


Figure 1: a) forest share and b) transition of forest to deforestation over the last years

There were 1.6 million people living in Tocantins as of 2020, distributed in 19 municipalities, with 0.3 million people living in the capital city of Palmas. The state has formally designated conservation areas and indigenous territories, which respectively represent 14% and 9% of the state. There were an estimated 12,842 indigenous people living in the state in 2010 (see Figure 2).

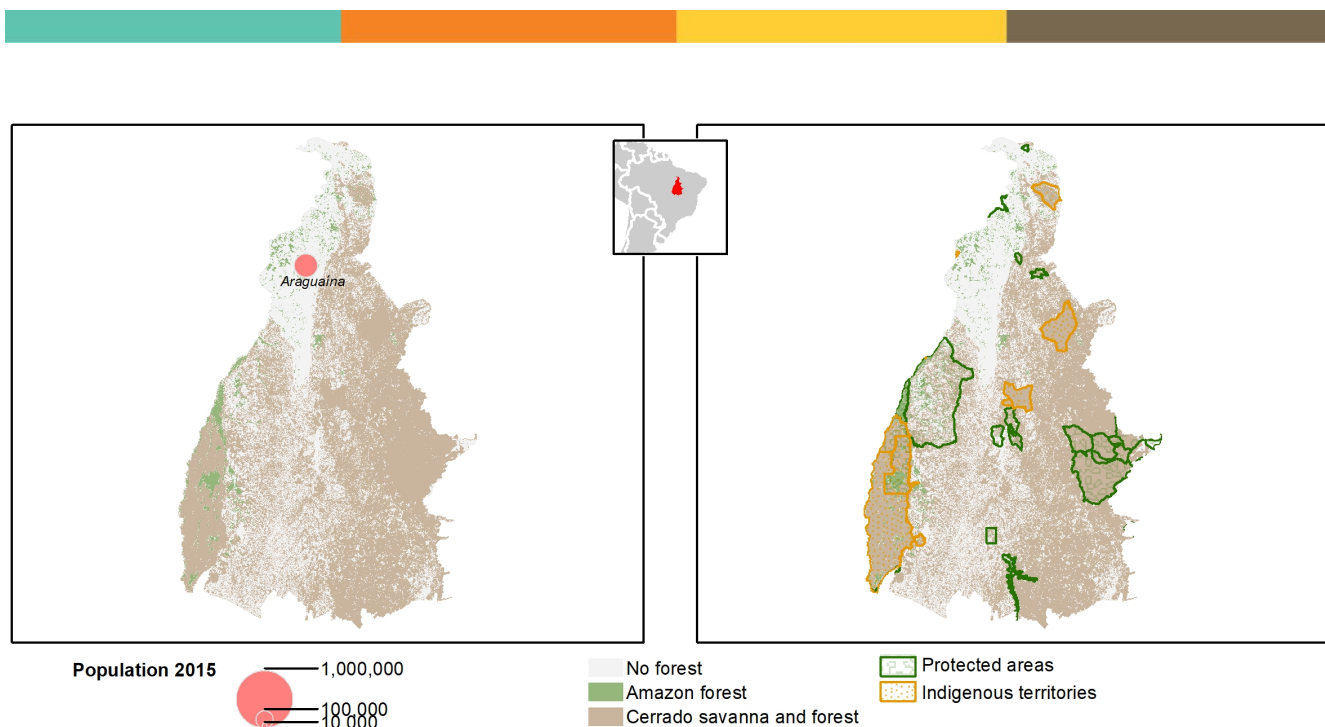


Figure 2: Map of most populated places (> 40,000 people) and indigenous and protected areas in Tocantins

Deforestation

The state of Tocantins has reduced its yearly deforestation area consistently over the last twenty years, a trend that corresponds as well with its limited remaining tropical Amazon forest. The analysis of deforestation in Cerrado (2018), which represents 98% of the state area (see Figure 3). After the peaks of 2008 where 107 km² of forest loss were recorded, deforestation has been under 100 km². In 2019 the smallest figure of yearly deforestation was recorded in the state with 23 km², representing an interannual reduction of -8%. Tocantins concentrated less than 0.23% of the total deforestation in the legal Amazon in 2019. The deforestation rate in the state in 2019 (0.23%) was about the below the average of the nine Brazilian Amazon states (0.43%).

The state's current deforestation is 91% below the reference baseline 1996-2005, and 86% below the reference baseline 1996-2015.

52% of the deforestation is located in the five most affected municipalities in the state (see Figure 4). The municipality of Piraquê consistently registered the largest loss of tropical forest over the last years, reaching a maximum of 15 km² lost in 2002. In 2019 the deforestation in Piraquê was 3 km².

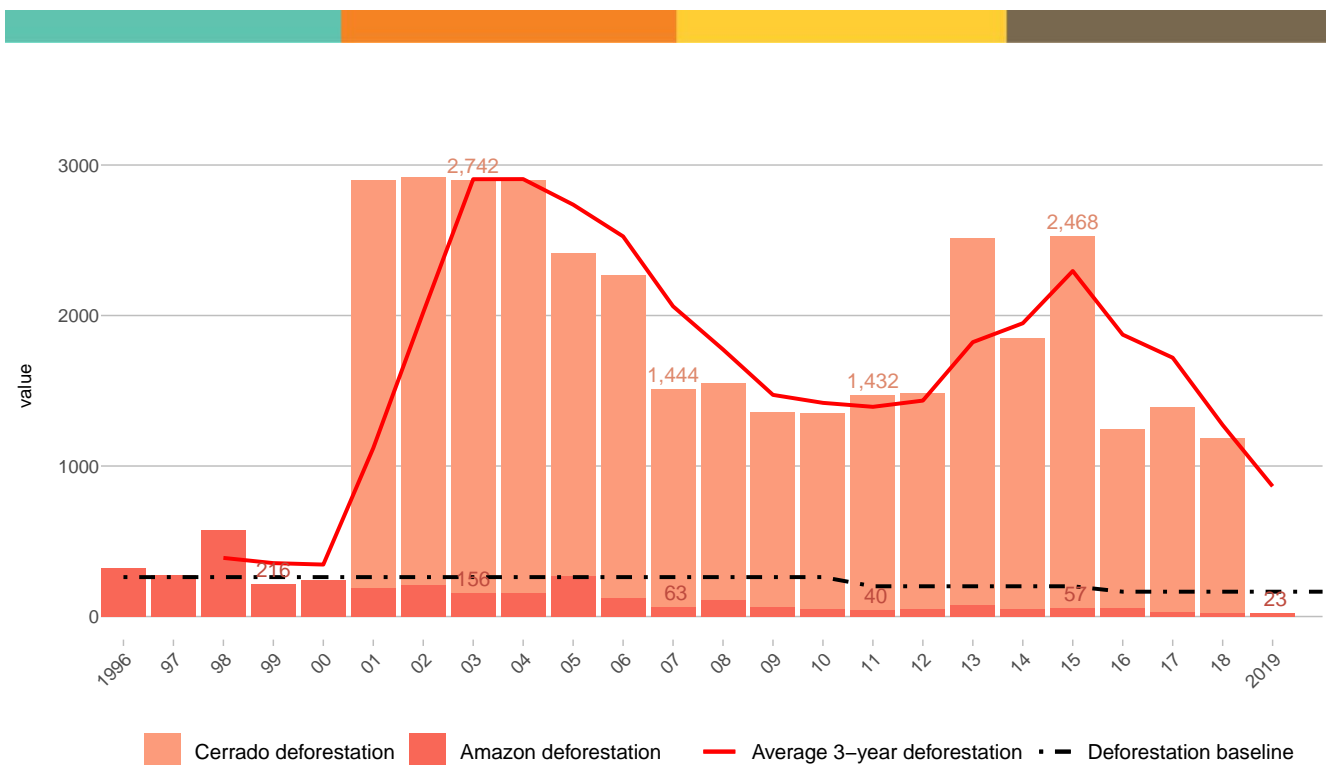


Figure 3: Yearly deforestation (km^2) and deforestation baseline

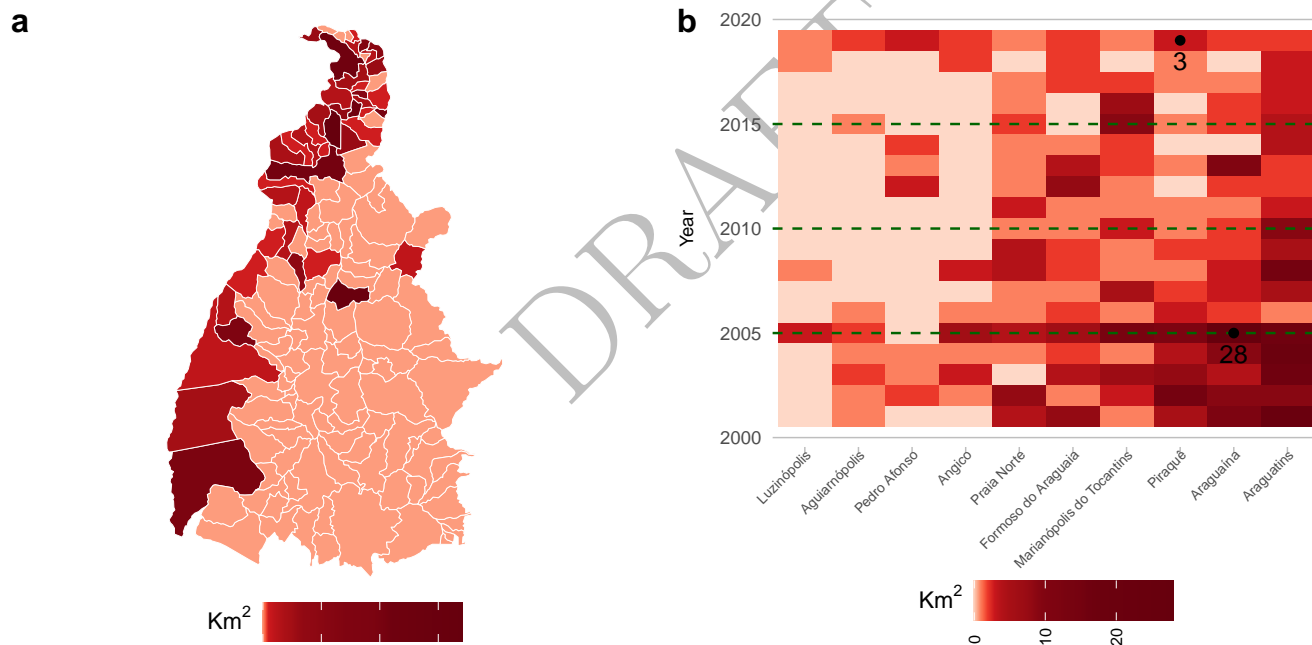
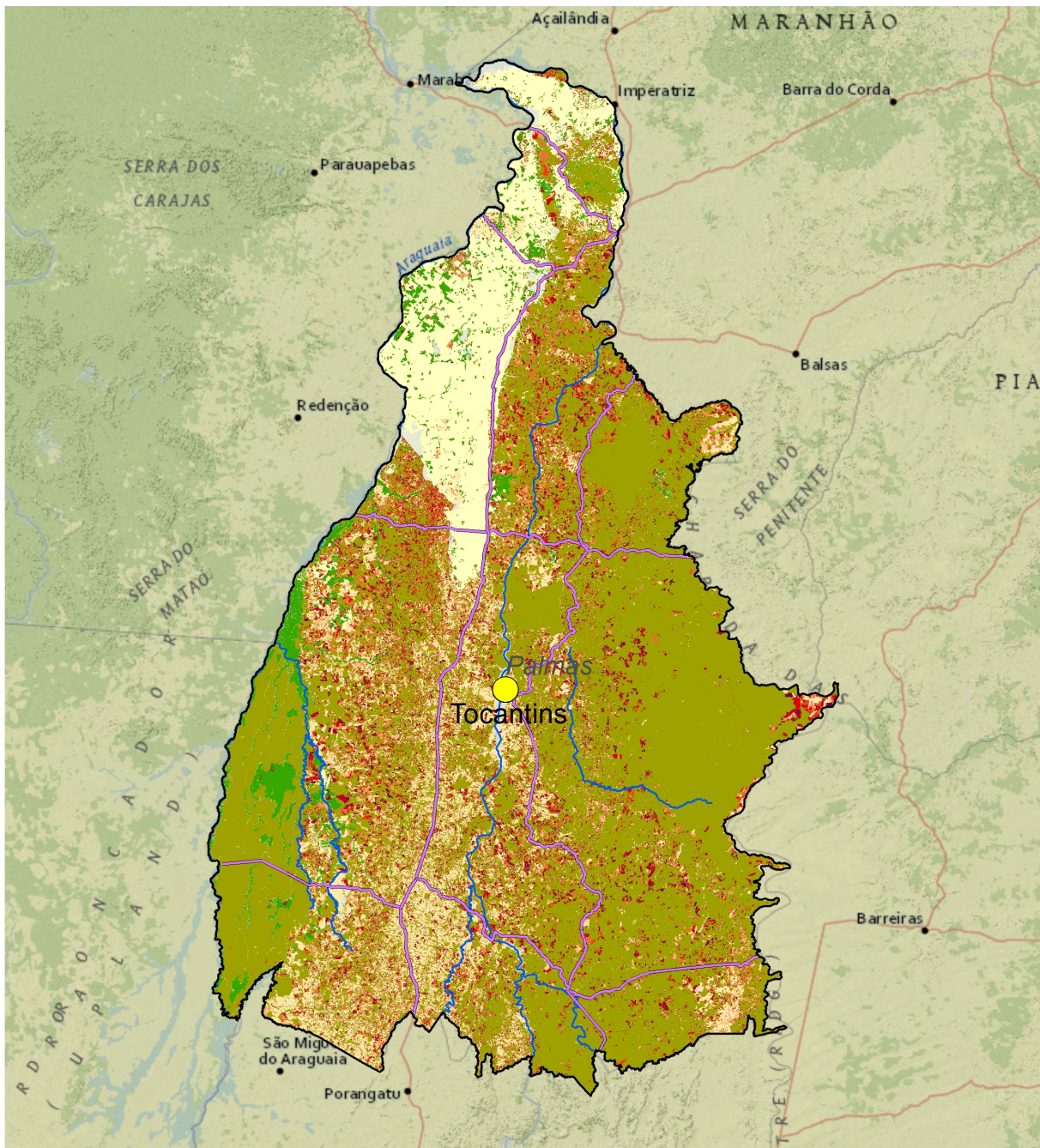


Figure 4: a) Yearly deforestation by municipalities in 2019 b) Yearly deforestation in top 10 most affected municipalities (km^2)



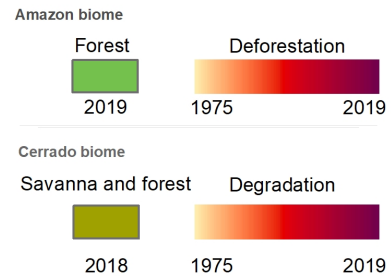
Table 1: Forest and deforestation indicators in the state of Tocantins

Year	Forest (km ²)	Deforestation	Deforestation rate (%)	Annual variation (%)
2001	11,872	189	1.59	-22.5
2002	11,592	212	1.83	12.2
2003	11,353	156	1.37	-26.4
2004	11,209	158	1.41	1.3
2005	11,057	271	2.45	71.5
2006	10,656	124	1.16	-54.2
2007	10,623	63	0.59	-49.2
2008	10,558	107	1.01	69.8
2009	10,453	61	0.58	-43
2010	10,393	49	0.47	-19.7
2011	10,338	40	0.39	-18.4
2012	10,303	52	0.51	30
2013	10,255	74	0.72	42.3
2014	10,177	50	0.49	-32.4
2015	10,131	57	0.56	14
2016	10,076	58	0.58	1.8
2017	10,022	31	0.31	-46.5
2018	9,988	25	0.25	-19.4
2019	9,964	23	0.23	-8



Tocantins, Brazil Forest and accumulated deforestation

The map shows the most recent forest cover and yearly deforestation mapped by PRODES, Brazil. Intense red colors represent the most recent deforestation whereas light orange colors earlier deforestation as noted in the legend



Prepared by Earth Innovation Institute

Burned area

According to the NASA-USGS analysis of MODIS satellite observations, the average yearly burned area in Tocantins was 31,943 km² for the period 2010-2020. This figure includes burned areas due to fires in forest, savannahs and opened agricultural areas. The burned area in 2019 was 32,147 km² and the worst year in the last decade was 2010 with 67,386 km² burned. In most years, the months of September and August represented the peak of the fire season (see Figure 5).

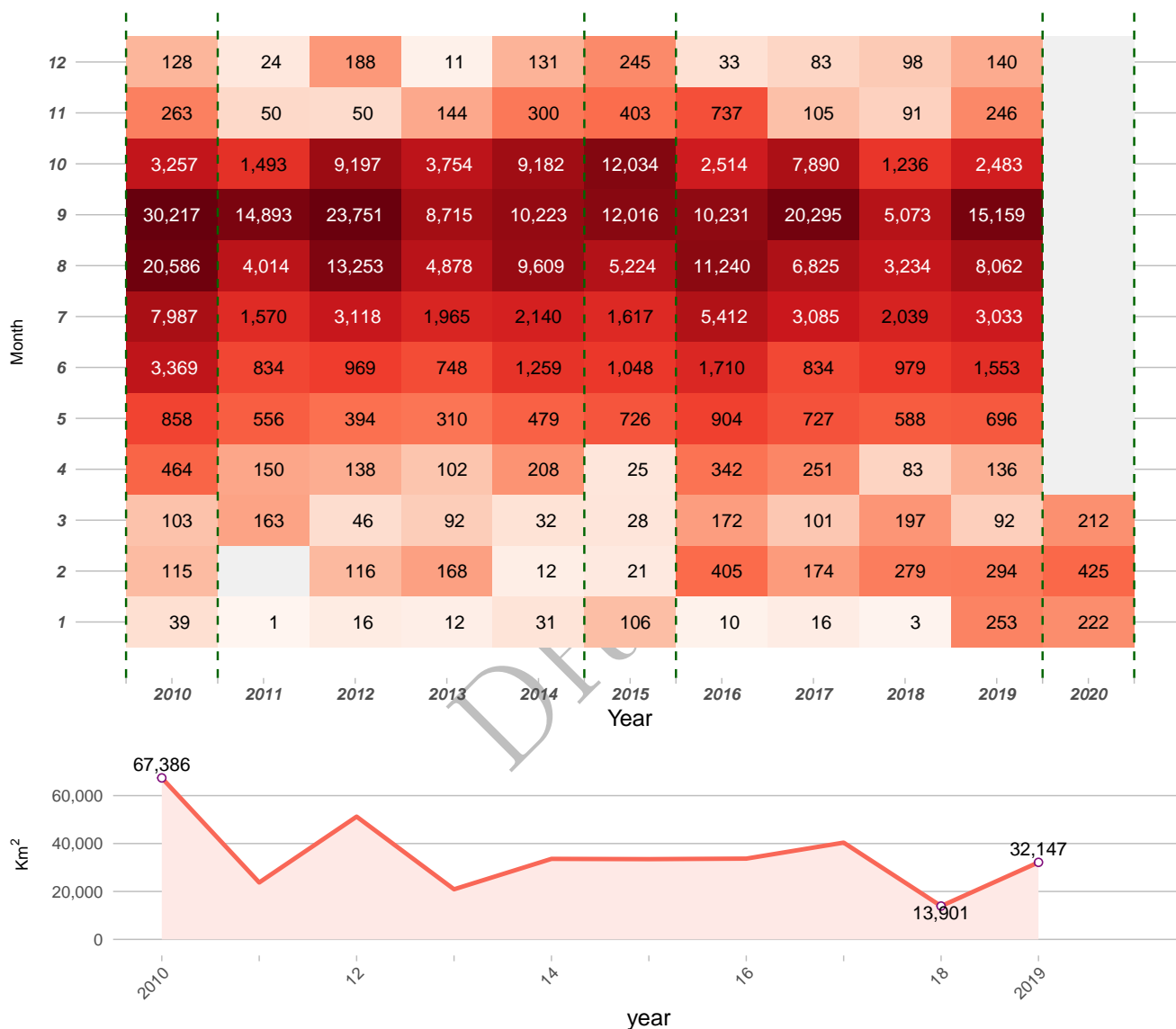


Figure 5: Monthly burned area since 2010 (km²). Source: EII analysis of MODIS-MCD64



Emissions from deforestation

The accumulated emissions from deforestation in the state of Tocantins between 2000 and 2019 amount to 59 million tons of CO₂eq, which was equivalent to 0.5% of the total emissions from deforestation in the legal Amazon during this period. Considering the observed yearly deforestation, the mean carbon density of the state's forest and the business as usual deforestation baseline, the accumulated gross avoided emissions from deforestation during the period from 2006 to 2019 was 82 million tons of CO₂eq. This results from summing avoided emissions during the period from 2006 to 2019 in which the deforestation was lower than the business as usual deforestation baseline.

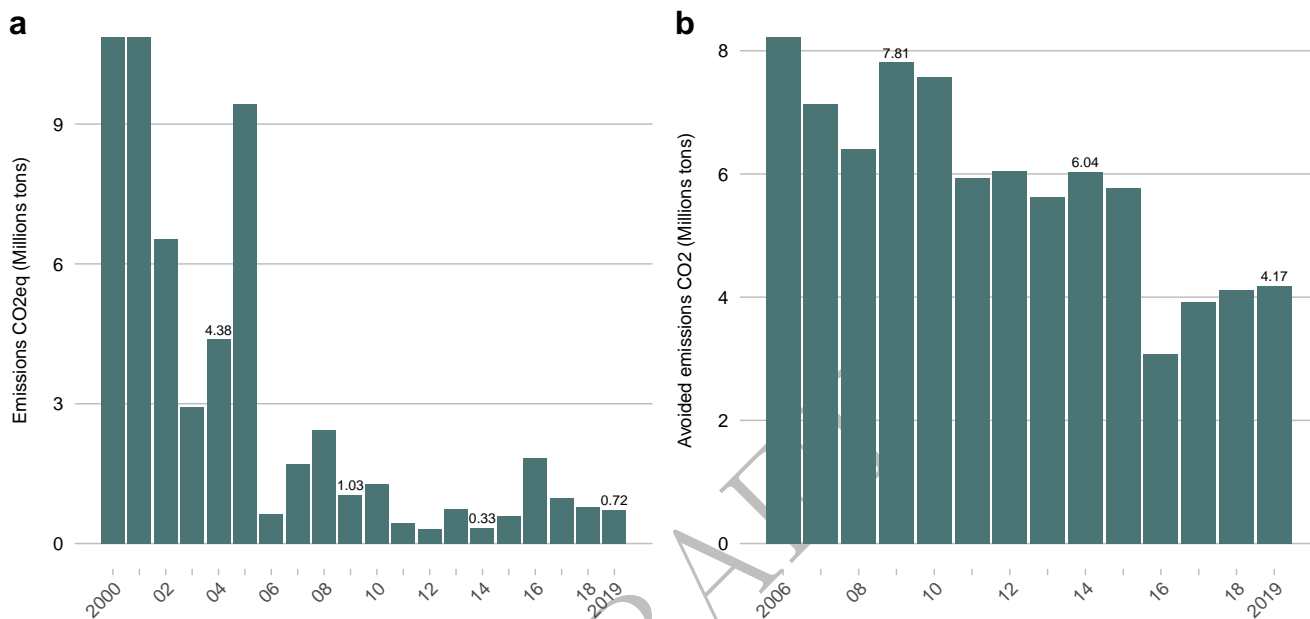




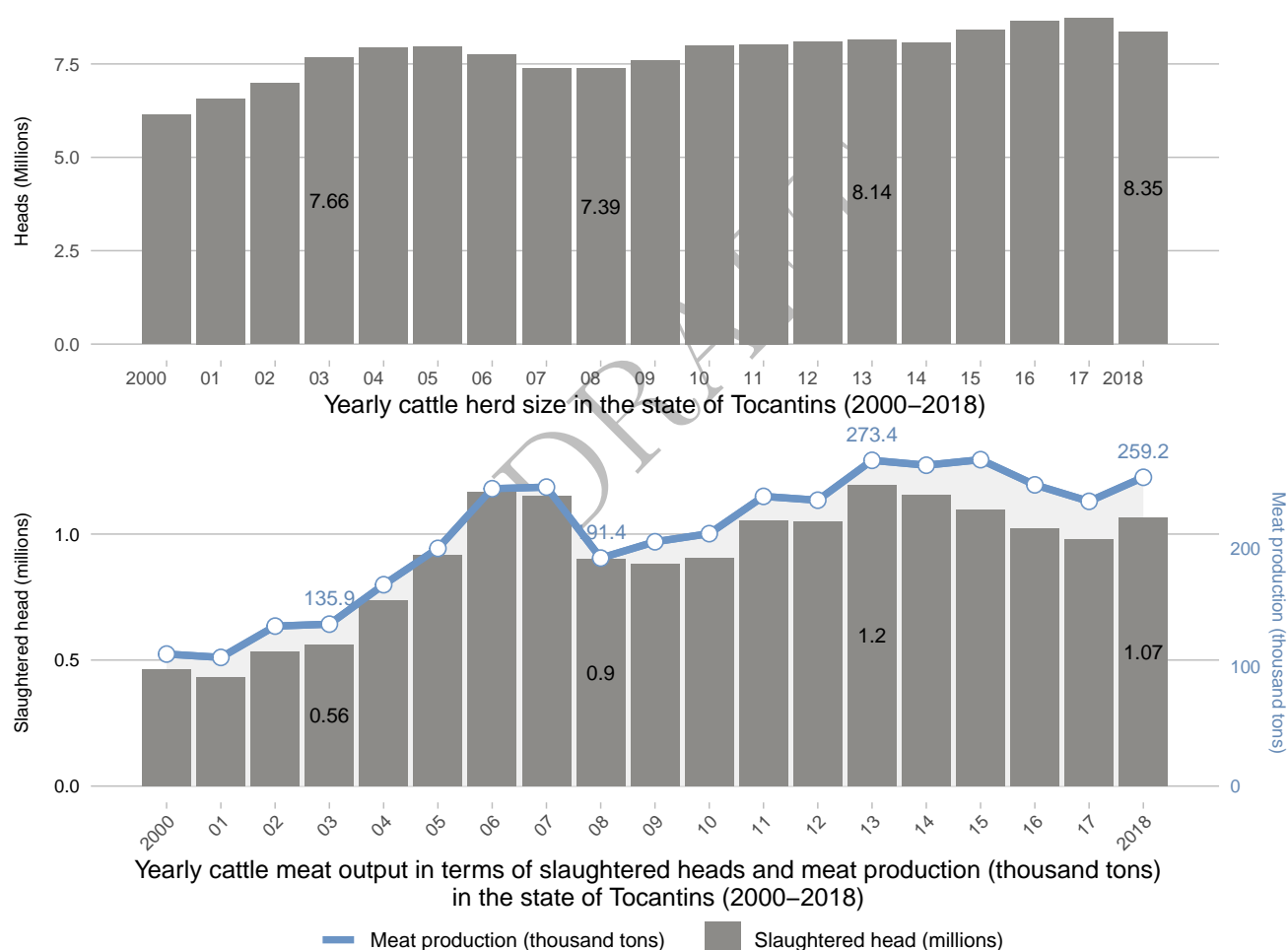


Figure 6: Emissions from deforestation (left) and avoided emissions (right) (CO₂eq Millions tons)

Livestock

Table 2: Livestock indicators in Tocantins

				
	<i>Cattle</i>	<i>Pig</i>	<i>Poultry</i>	<i>Fish</i>
Year	2018	2018	2018	2015
Herd size:	8,352,513	318,975	7,541,377	
Slaughtered heads:	1,066,984	NA	NA	
Meat production (tons):	259,158	NA	NA	
Value (thousands):				R\$76,711 BRL



Agriculture

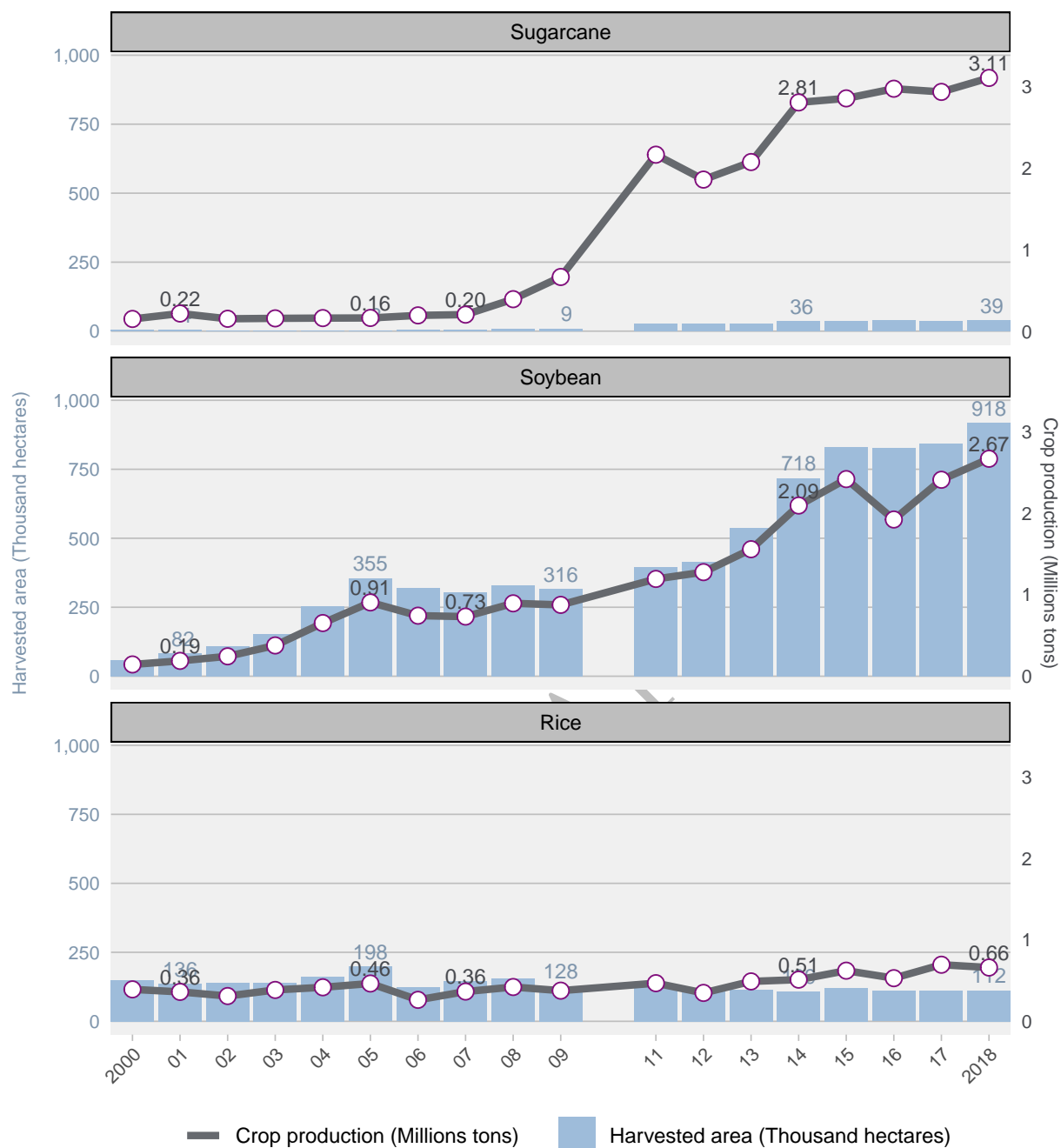


Figure 7: Harvested area and production of the three crops most produced in Tocantins



Aquaculture

The plot shows the aquaculture production in the state of Tocantins over the last 6 years and the value of this production. The data includes production of fish such as Tambaqui, Skunk catfish, Tiger shovelnose catfish or firewood catfish and includes only activities related with fish farming under controlled conditions. Does not include fishing activities.¹

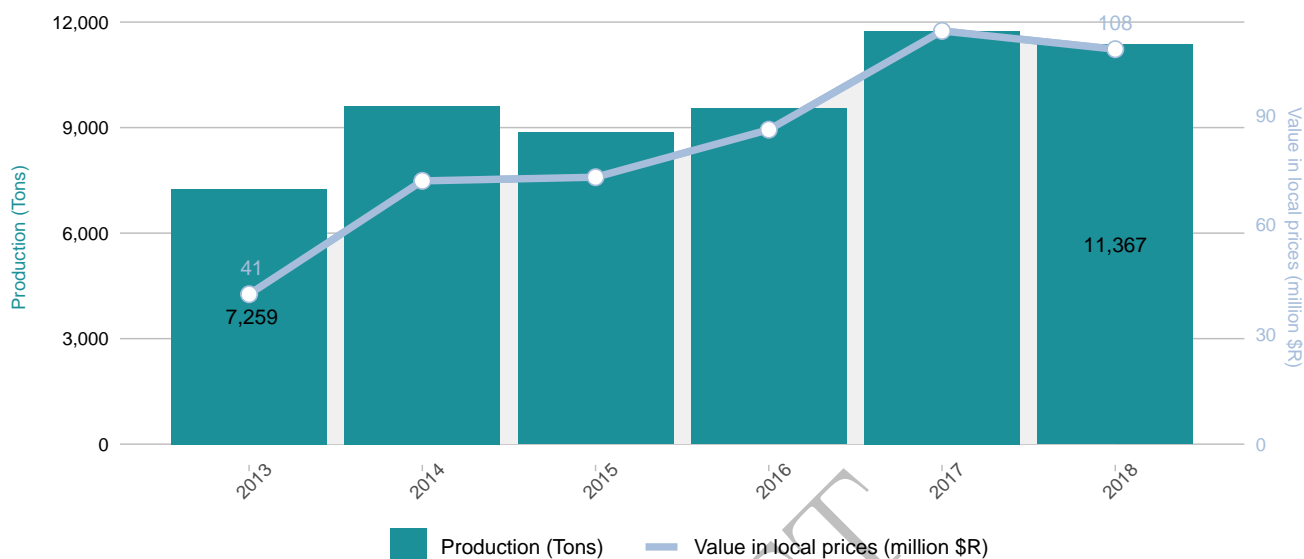
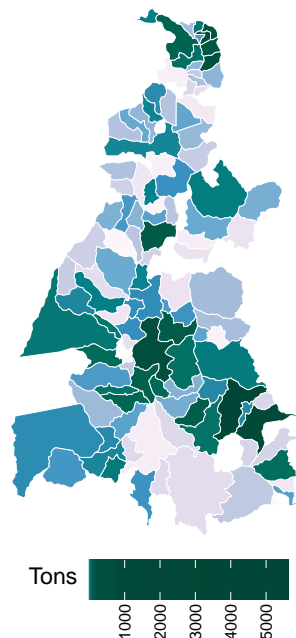


Figure 8: Yearly aquaculture production (tons) and value of production (Reales) in Tocantins

a



b

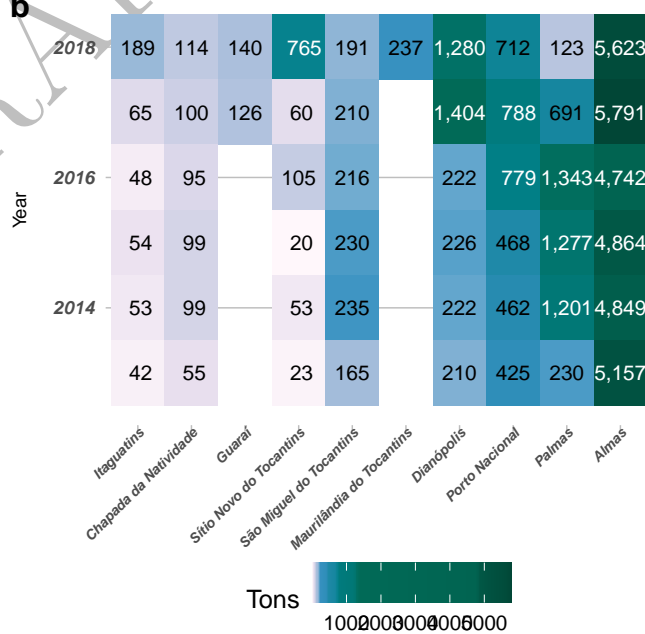


Figure 9: a) Yearly aquaculture production (tons) in municipalities of Tocantins in 2018. b) Yearly aquaculture production by municipalities (Tons)

¹The value of production don't include the class Shellfish seeds, Shrimp, Shrimp larvae and post-larvae, Oysters, scallops and mussels, Other products (frog, alligator, crab, lobster, etc.) and Alevinos.