

# Soy and environmental compliance in Brazil: an undervalued risk for global markets

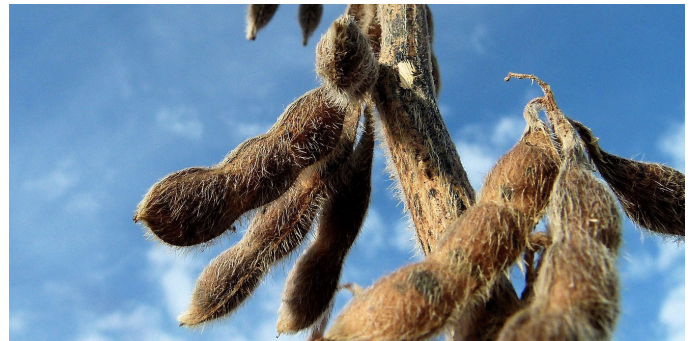
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*This brief is the first of a series developed by Trase in partnership with Imaflora, combining data on environmental governance with Trase's supply chain data sets. It focuses on the global markets for soy grown on farms in Brazil not registered in the Rural Environmental Registry (CAR), which is mandatory for all rural properties in the country and a first step for compliance with the Forest Code.*

## KEY FINDINGS

- **88% of the soy plantations in the Amazon and Cerrado biomes are on farms already registered in the CAR.**
- **2.6 million hectares of land used for soy in the Brazilian Amazon and Cerrado are not registered in the CAR.**
- **A quarter of the soy plantations on unregistered farms in the Brazilian Amazon and Cerrado are concentrated in just 15 municipalities.**
- **Nearly 40% of the soy produced on unregistered farms in the Cerrado and Brazilian Amazon is estimated to be shipped to China.**
- **Nearly 12% of the soy produced on unregistered farms in the Cerrado and Brazilian Amazon is estimated to be destined for the European Union.**
- **There is a significant risk that soy production on rural properties without CAR registration in the Matopiba region is linked with illegal deforestation.**



Soy has been widely recognised as one of the drivers of deforestation in Brazil, but little is known about the extent to which current soy production is in compliance with Brazil's environmental regulations. These regulations include the Forest Code, established to regulate land use and conservation of native vegetation on private properties.

Under the Forest Code, farmers must submit information about their properties to the new Rural Environmental Registry (CAR). Registration is a first but critical step to achieve environmental compliance at the level of the farm.

The CAR is a mandatory public registry for all rural properties in Brazil, based on submissions made by the property owners, and it represents an important step towards improving transparency around agricultural activities<sup>2</sup>. The CAR integrates information on rural property boundaries and their conservation areas (i.e. Legal Reserves, Permanent Protected Areas) to improve monitoring of environmental compliance and

Soy is Brazil's largest crop by area and also its most valuable export commodity. Almost half of all Brazil's cultivated cropland was used for soy in 2017 (43%), an area of almost 34 million hectares<sup>1</sup>. Although a significant proportion of soy is grown in the South Region of Brazil (33%), nearly all the recent deforestation linked to soy expansion has been in the Cerrado and Amazon biomes. These regions accounted for over half (51%) of soy exported from Brazil in 2017.

environmental and economic planning, and to control illegal deforestation.

The original deadline for CAR registration was 2015, but this has been postponed several times. Most recently, Provisional Measure 884, approved this month, removed any specific target date for registration.

However, according to the Forest Code (Article 78-A) financial institutions cannot provide rural credits of any kind to owners of unregistered properties.

Although almost six million rural properties have been registered in the CAR, covering an area of more than 500 million hectares, more than 170 million hectares of private land remain unregistered<sup>3</sup>.

Registration has to be validated by subnational environmental agencies, but most states have not yet started the validation process and the proportion of CAR registrations that have been validated remains very low<sup>4</sup>.

Landholders who register their properties by the end of 2020 can adhere to the Environmental Regularization Plan (PRA) as a further step towards full compliance with the Forest Code.

This brief is the first of a series exploring governance mechanisms for the Brazilian soy sector and their implications for global markets, combining data on environmental governance with Trase supply chain data. It focuses on the state of the CAR registry in the soy sector as of December 2018 and examines the exposure of global markets to consumption of soy grown on unregistered farms.

## GAPS IN THE REGISTRY AND SOY PRODUCTION

Of the 21.5 million hectares of soy plantations in the Brazilian Amazon and Cerrado, nearly 19 million ha (88%) are on farms already registered in the CAR database. This is slightly higher than registration levels for cropland overall (including soy) in Brazil – of which

around 80% has so far been registered. However, around 2.6 million hectares (12%) of soy plantations are on farms that are not yet registered, which is an area 16 times the size of Greater London.

These plantations are spread across the Brazilian Amazon and the Cerrado, but most are found in the states of Mato Grosso, Goiás, and Mato Grosso do Sul. These states account together for nearly 70% (or 1.7 million hectares) of all the soy cultivation on unregistered farms in the two biomes (*figure 1*).

Mato Grosso do Sul, Tocantins and Rondônia have the largest proportion of soy plantations on unregistered farms, with 27%, 21%, and 19% respectively. In the Matopiba region, the agricultural frontier recently linked to high rates of deforestation for soy, 13% of the land planted with soy is on farms that have not yet been registered.

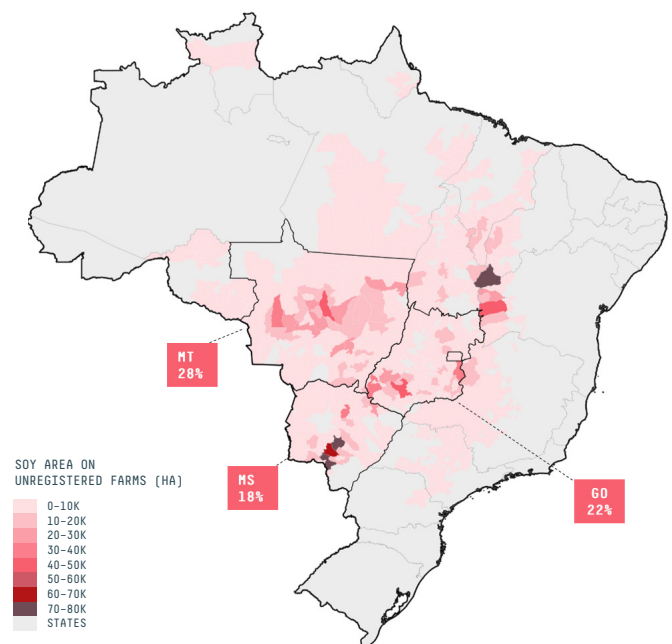


Figure 1: Area of soy plantation on farms not registered in the CAR per municipality. Boxes show states with the largest areas of unregistered soy cropland. MT: Mato Grosso; GO: Goiás; MS: Mato Grosso do Sul.

## LINKS TO SOY DEFORESTATION

Soy plantations on unregistered farms are spread across more than 800 municipalities within the Amazon and Cerrado biomes, but a quarter of these plantations are concentrated in 15 municipalities.

It is difficult to determine why some farms have not yet been registered. It may depend on the place and the context, but issues with legal compliance, such as illegal deforestation and failure to comply with the legal reserve requirements, are possible explanations. Farm owners who have land that can be legally deforested may also be reluctant to disclose information about their farms to prevent their soy production from being linked to deforestation.

We explored potential links between areas of soy on unregistered farms and soy-related deforestation across the two biomes, but found no direct correlation. However, when we looked at the area of soy plantations on unregistered farms in the Matopiba region, we found

a potential relationship to soy-related deforestation. This shows that unregistered soy plantations in this region are concentrated in municipalities with high rates of deforestation for soy (*figure 2*).

This was most evident in Formosa do Rio Preto and São Desidério, both in Bahia state. CAR registration is a requirement when farm owners ask for deforestation licences, and these licences are needed to prove that deforestation is legal. Given the absence of registration in these areas, there is a significant risk that the recent soy expansion into native vegetation here is associated with illegal deforestation.

It is crucial that soy plantations in these municipalities with high rates of deforestation are registered in order to halt illegal deforestation. Although the Forest Code allows the deforestation of a significant proportion of native vegetation in these areas (up to 80% of the farm depending on the region), the land can only be legally cleared if the farm is registered.

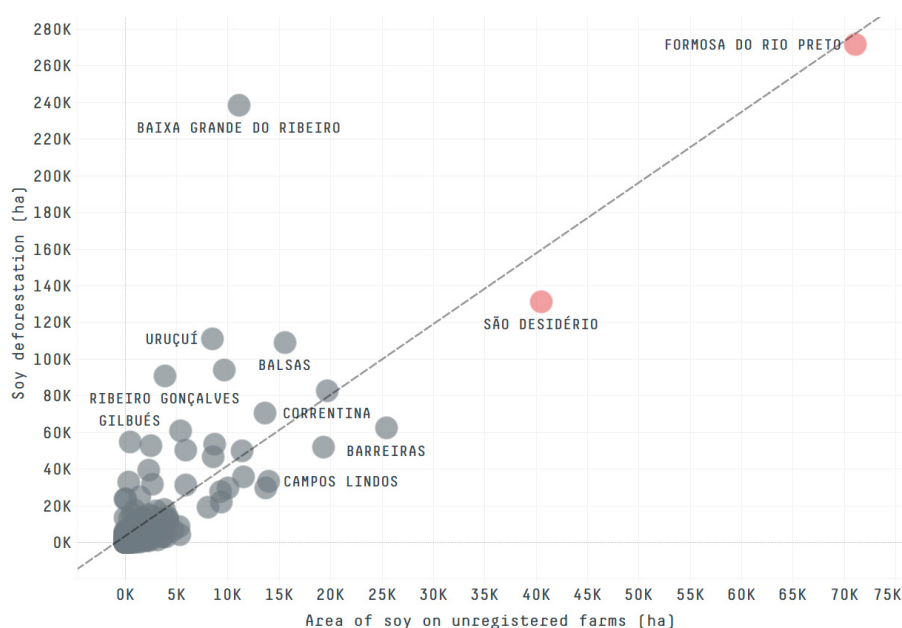


Figure 2: Correlation between soy area on unregistered farms and soy-related deforestation in municipalities in Matopiba between 2013 and 2017.



## MARKETS EXPOSED TO UNREGISTERED SOY

It is estimated that two-thirds (67%) of the soy grown on unregistered farms was exported in 2017, with almost 40% of this exported to China (*figure 3*)<sup>5</sup>. The European Union is also exposed to soy from unregistered farms. It is estimated that 12% of the soy grown on unregistered farms was shipped to Europe. We explore these export markets in more detail below.

Around one-third of the soy grown on unregistered farms remained in the domestic market. Some of this was processed domestically and used as animal feed for livestock that was then exported as meat products. These patterns suggest that soy buyers do not consistently require CAR registration – and legal compliance – from suppliers.

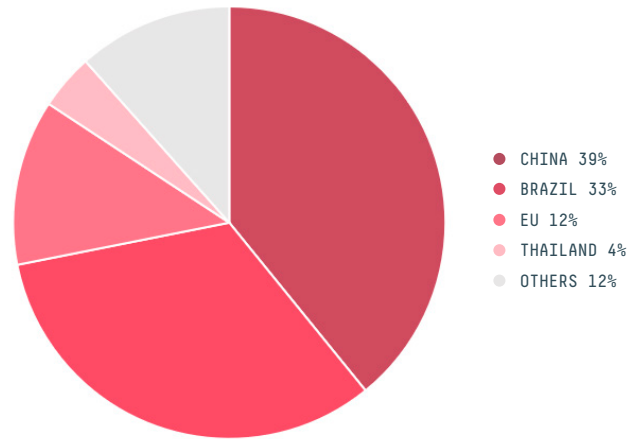


Figure 3: Main destinations of the soy grown on unregistered farms.



PHOTO: ALF RIBEIRO / SHUTTERSTOCK

## CHINA

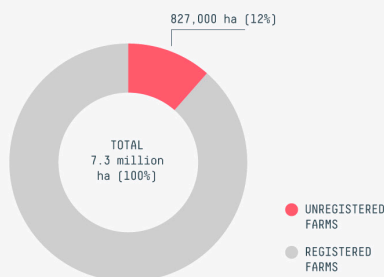
China is the biggest importer of Brazilian soy, accounting for nearly 65% of all soy exports from Brazil in 2017. Over half of that came from the Cerrado and Amazon biomes, supplied by 73,000 km<sup>2</sup> of soy plantations, an area twice the size of Belgium. Our calculations show that about 12% of China's soy imports from these biomes in 2017 (see figure below) were likely to have come from farms that are not registered in the CAR. It is estimated that one-third

of the soy grown on unregistered farms was from just 15 municipalities (highlighted in the map below), concentrated in the states of Mato Grosso, Mato Grosso do Sul, Bahia, and Goiás.

Using Trase data we can identify the traders exporting soy to China from these municipalities. The top five traders (in red) accounted for nearly 60% of the soy exported to China from these places in 2017. These are the companies most exposed to the trade in soy from unregistered farms to China<sup>6</sup>.

### China's exposure to soy grown on farms without CAR registration

Soy production in the Amazon and Cerrado for export to China



#### Top five traders

Accounting for nearly 60% of the soy exported to China in 2017 from the 15 municipalities highlighted in the map

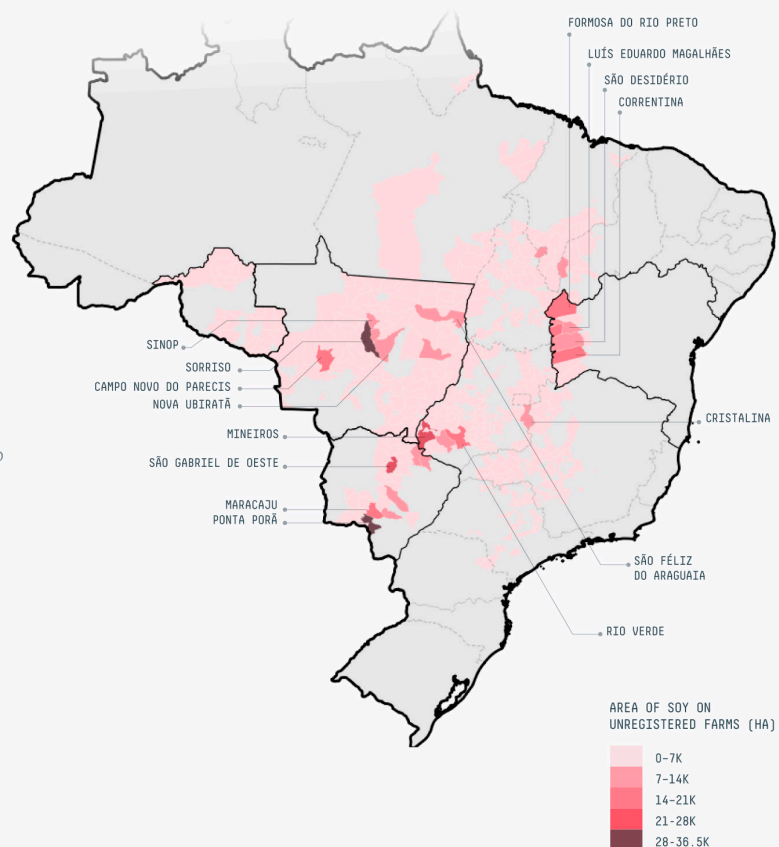
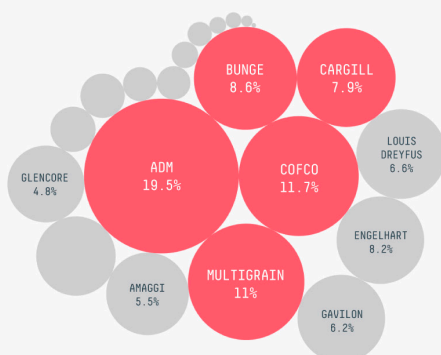


Figure 4: China's exposure to soy grown on farms without CAR registration

## EUROPEAN UNION

The EU is the second largest importer of Brazilian soy, taking 15% of all soy exports from Brazil in 2017. Around 68% of that came from the Cerrado and Amazon biomes.

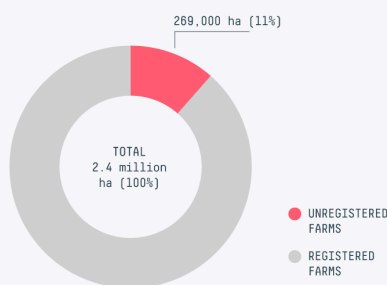
Our calculations show that about 11% of the EU's 2017 soy imports from these biomes are likely to have come from unregistered farms. Some 38% of came from

just 15 municipalities (highlighted in the map below), concentrated in the states of Mato Grosso, Bahia, Mato Grosso do Sul, and Rondônia.

The bubble chart shows the traders that export soy from these 15 municipalities. The top five (in red) accounted for over 80% of the soy exported from these municipalities to the EU in 2017 and therefore are the most exposed to soy from unregistered farms.

### Europe's exposure to soy grown on farms without CAR registration

Soy production in the Amazon and Cerrado for export to Europe



### Top five traders

Accounting for nearly 80% of exported soy to EU in 2017 from 15 municipalities highlighted in map

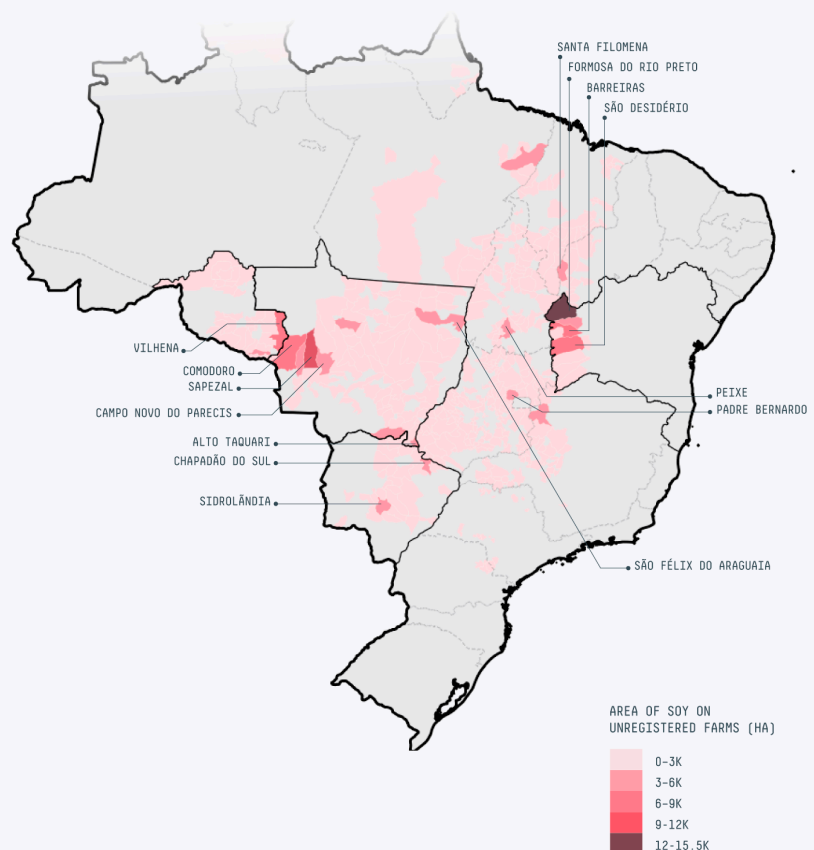
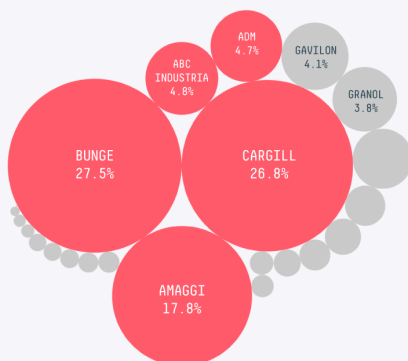


Figure 5: EU's exposure to soy grown on farms without CAR registration





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## CONCLUSION

The CAR is key to improving transparency in agricultural landscapes in Brazil, helping to ensure compliance with environmental regulations, in particular the Forest Code.

Given that the CAR registration is the very first step towards compliance with the Forest Code, it is critical that companies and financial institutions linked to soy supply chains incorporate mechanisms to assess CAR registration in their risk management. For example:

- **Soy traders and multilateral trading agreements**, such as the ongoing Mercosur-EU trade agreement, could include a requirement for CAR registration in their buyer agreements.
- **Industry associations**, such as the European Feed Manufacturers' Federation (FEFAC), could include a requirement for registration in their sourcing guidelines.
- **Voluntary commitments** from consumer goods manufacturers and retailers, as well as country-level commitments such as those of the Amsterdam Declaration Partnership countries, could include CAR registration as part of the implementation process for delivering on deforestation-free supply.

- **Financial institutions** need to be aware of the CAR registry and could request companies in their portfolios to have mechanisms in place to demonstrate they are only purchasing/producing soy from registered farms.
- **China**, as the main buyer of Brazilian soy, represents a particular opportunity for improving environmental compliance among upstream suppliers and soy producers. CAR registration could be incorporated into emerging standards for Chinese buyers, such as the China Sustainable Soy Guidelines which are being developed by the Sustainable Soy Trade Platform (SSTP), and included in financial mechanisms as a requirement, such as in COFCO International's US\$ 2.1 billion sustainability-linked loan<sup>7</sup>.

Each of these has a key role to play not just in demanding higher levels of environmental compliance among soy producers, but also in working to support soy farmers to achieve compliance through investment, capacity building and partnerships.

In addition, all those involved in the production, processing and export of soy from Brazil need to work together to move beyond CAR registration, which is only the first step in the path to legal compliance. Supporting the validation of the CAR within each state and the

implementation of Environmental Regularization Plans at farm level is core for the full implementation of the Forest Code.

Efforts to improve environmental compliance need to be prioritised in areas where there is a high risk of soy deforestation, particularly in Matopiba and in Mato Grosso. These regions accounted for 78% of all the soy deforestation between 2013 and 2017<sup>8</sup>.

The next report in this series will explore the extent to which soy is being produced in farms where illegal deforestation has taken place. It will also assess the extent to which importing countries are exposed to the risk of buying soy from these farms.

We will first look at the largest soy producer state in Brazil (Mato Grosso), where over 90% of all the deforestation in 2017 was illegal<sup>9,10</sup>.

## METHODOLOGY

*This analysis focused exclusively on the Amazon and Cerrado biomes and drew on data from the Rural Environmental Registry (CAR), Agrosatélite soy maps (2017), and soy supply chain mapping from Trase.*

*Maps of soybean plantations were overlaid with the boundaries of rural properties registered in the CAR (before December 2018) to show registered and unregistered farms.*

*Correlation analyses were carried out at the municipality level for all municipalities in the Amazon and Cerrado biomes, and for municipalities in the Matopiba region. Trase data was used to identify the exposure of consumer markets to soy grown on unregistered farms based on the proportion of soy exported from each municipality.*

*Full details of the methodology [are available here](#).*

## Notes

1. Calculated using Brazilian Institute of Geography and Statistics (IBGE) data – Produção Agrícola Municipal. Accessed at <https://sidra.ibge.gov.br/Tabela/1612#resultado>
2. To find out more about CAR access <http://www.car.gov.br>
3. Código Florestal: a abrangência e os vazios do CAR – quanto e quem falta. In Sustentabilidade em Debate, 2018, accessed at [http://www.imaflora.org/download.php?d=downloads/biblioteca/5b7eao62689cd\\_sustentabilidade\\_codigo\\_florestal.pdf](http://www.imaflora.org/download.php?d=downloads/biblioteca/5b7eao62689cd_sustentabilidade_codigo_florestal.pdf)
4. Do papel à prática: a implementação do Código Florestal pelos Estados brasileiros. Transparência Florestal, 2019, accessed at <https://www.icv.org.br/2019/07/01/transparencia-florestal-do-papel-a-pratica-a-implementacao-do-codigo-florestal-pelos-estados-brasileiros>
5. See the detailed methodology [here](#).
6. All the traders exporting soy from each of these municipalities along with the volumes can be accessed on [trase.earth](#).
7. Chinese food giant raises \$2.2 billion in country's first sustainability loan, 2019. Accessed at <https://www.bloomberg.com/news/articles/2019-07-16/cofco-raises-2-1-billion-in-china-s-first-sustainability-loan>
8. Calculated using the soy deforestation risk data available on [Trase.earth](#).
9. Análise do Desmatamento no Cerrado Mato-grossense – Prodes Cerrado 2017, 2018. Accessed at <https://www.icv.org.br/wp-content/uploads/2018/09/AnaliseDesmatamentoCerradoMTProdes.pdf>
10. Deforestation Analysis in Mato Grosso (Prodes, 2017), 2017, accessed at <https://www.icv.org.br/wp-content/uploads/2018/01/deforestation-analysis-in-mato-grosso-prodes2017.pdf>

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