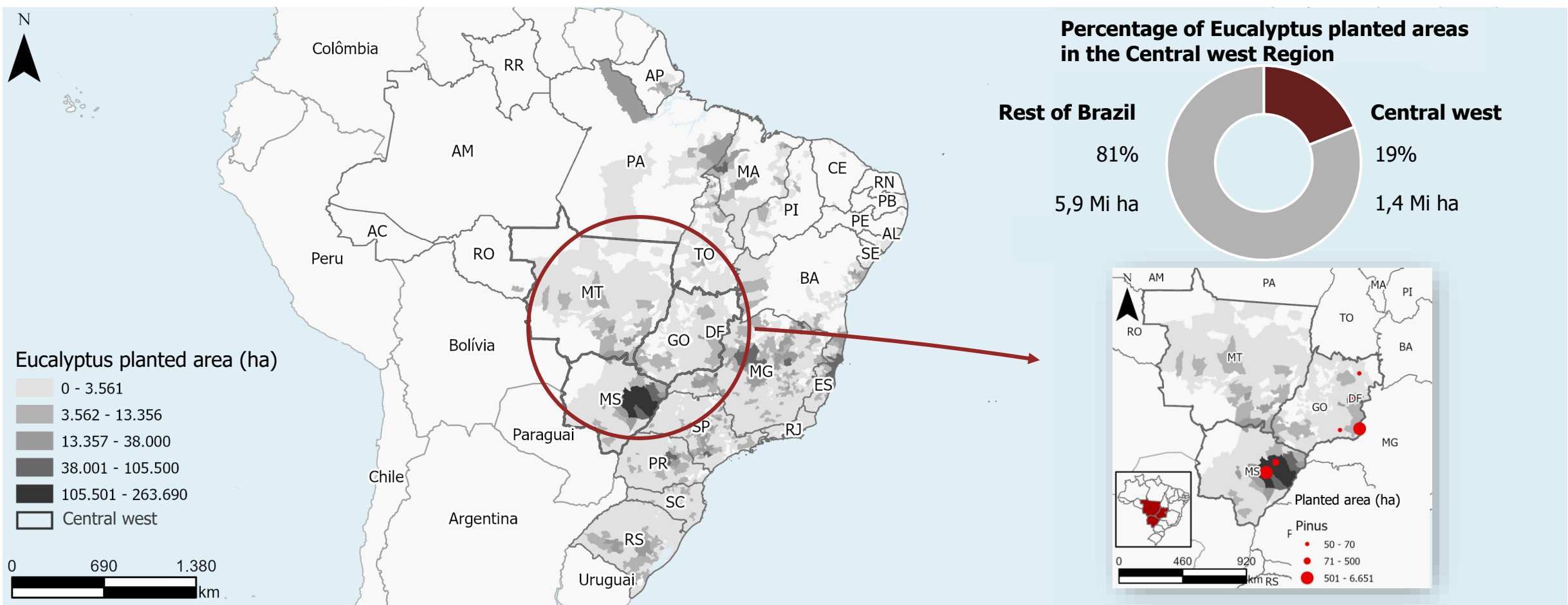


Strategic Dialogue

Forest production potential in the Central West Region

Mato Grosso do Sul is the second state with the largest planted area of eucalyptus in Brazil, alone it represents 15% of the country's planted area, and the Central west region accounts for 19%.

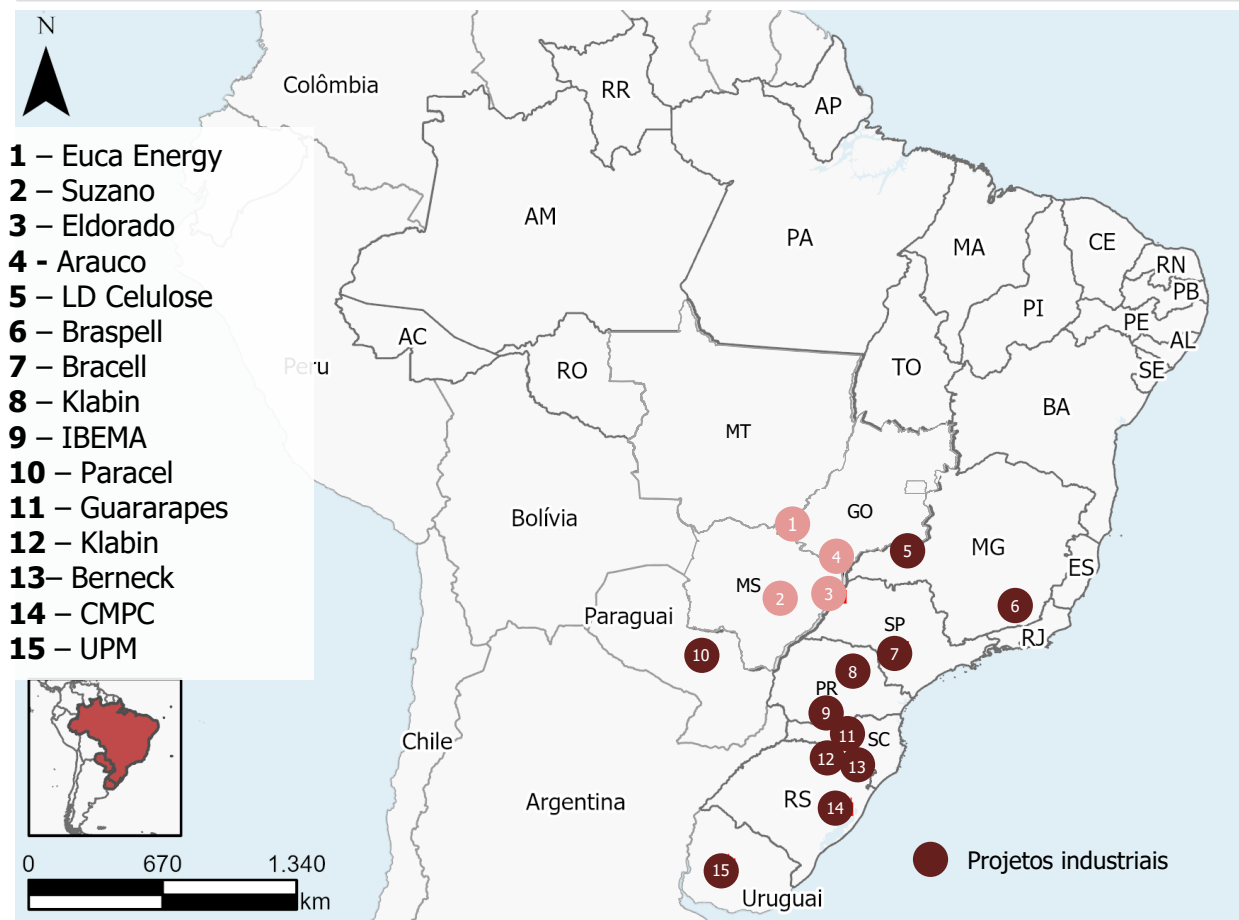
Planted area of eucalyptus and pine in Brazil, by municipality in the Central west region



Source: ESG Tech Data | IBGE (2021)

Announced and estimated industrial projects are expected to significantly alter the market dynamics of the South, Southeast and Central west regions of Brazil, as well as Paraguay and Uruguay

Main announced and estimated industrial projects



Source: ESG Tech Analytics

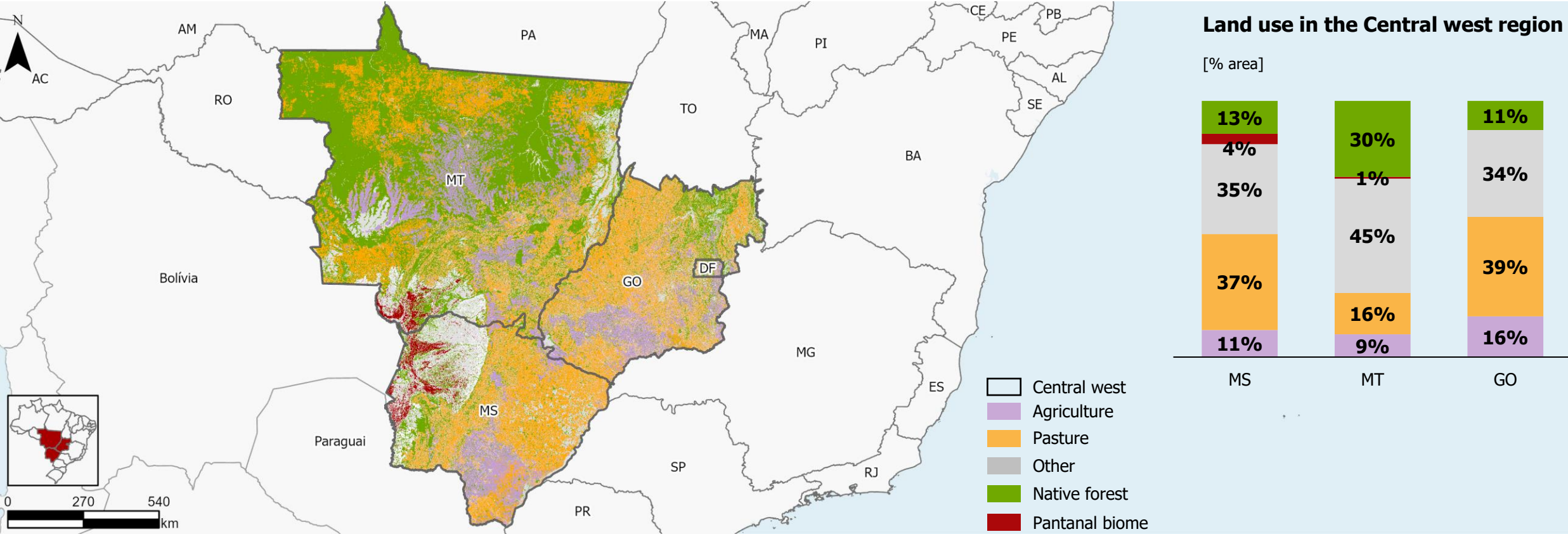
Estimated industrial capacity and wood consumption for the main new industrial projects in the Central west region

Projects	Eucalyptus consumption (Mi m ³ cc/year)
Euca Energy	8,0
Suzano – Projeto Cerrado	10,2
Eldorado – Projeto Vanguarda	9,2
Arauco – Projeto Sucuriú	10,2
Subtotal	37,6
Klabin	2,7
Paracel	7,2
Other industries	19,5
Total	47,5

Industrial projects in the Central west region Industrial projects in the vicinity

Mato Grosso is responsible for 41% of the pasture area and 53% of the agricultural area in the Central west region, with approximately 21 and 11.6 million hectares, respectively

Agricultural and pasture area in the Central west region

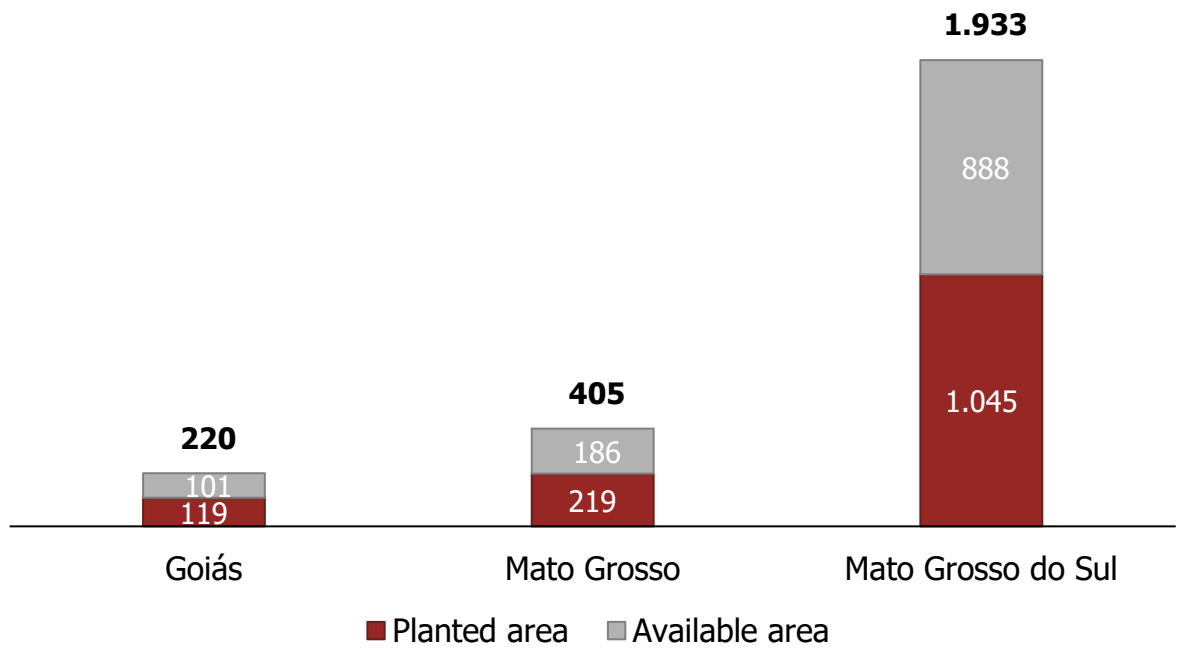


Source: MapBiomias & Pastagem.org | ESG Tech Analytics

Mato Grosso do Sul holds 75% of the eucalyptus planted area in the Central west region and an average productivity of 32 m³ per hectare per year

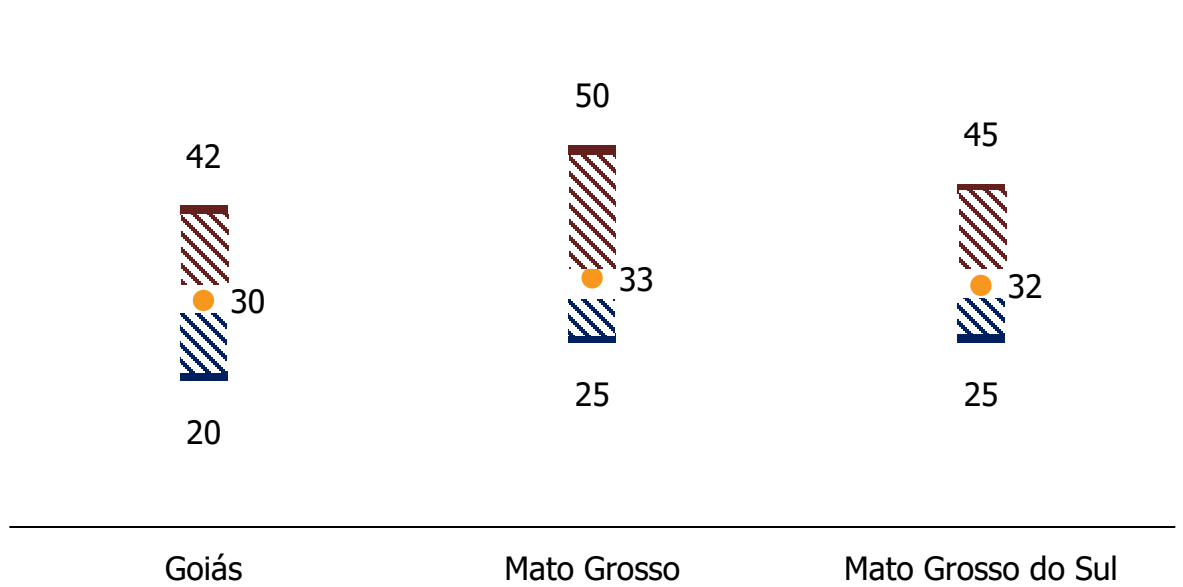
Total planted area and available planted area with eucalyptus per state in the Central west region

[mil hectares]



Minimum, average, and maximum productivity of eucalyptus per state in the Central west region

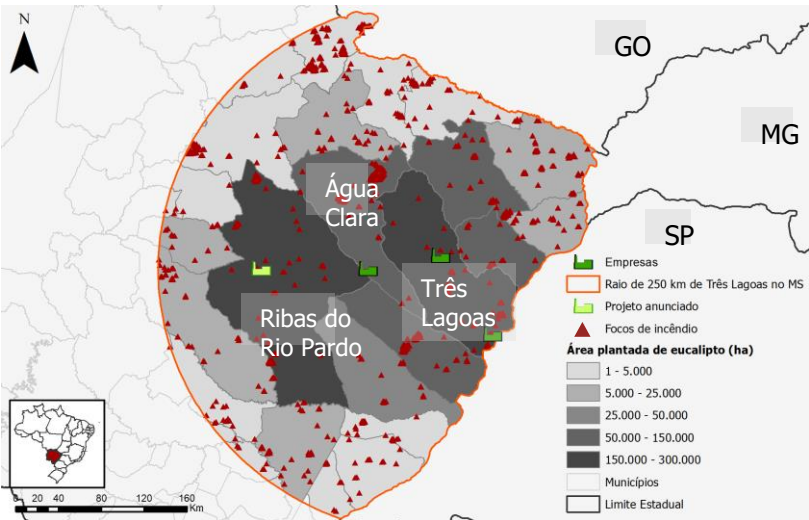
[m³ with bark/ha/year on 6 years]



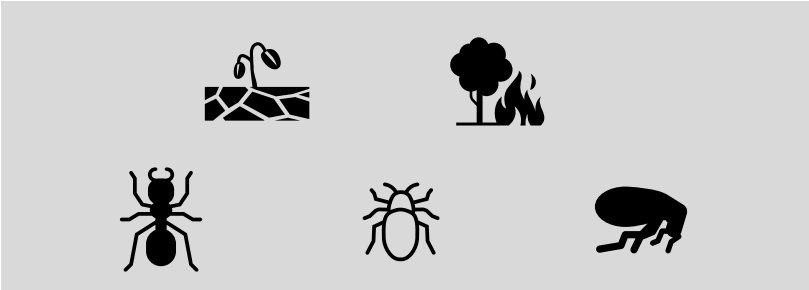
Source: IBGE (2021) | ESG Tech Analytics

Forest productivity in the region has been negatively impacted by negative water balance, pests, diseases and fires

Fires in Três Lagoas region

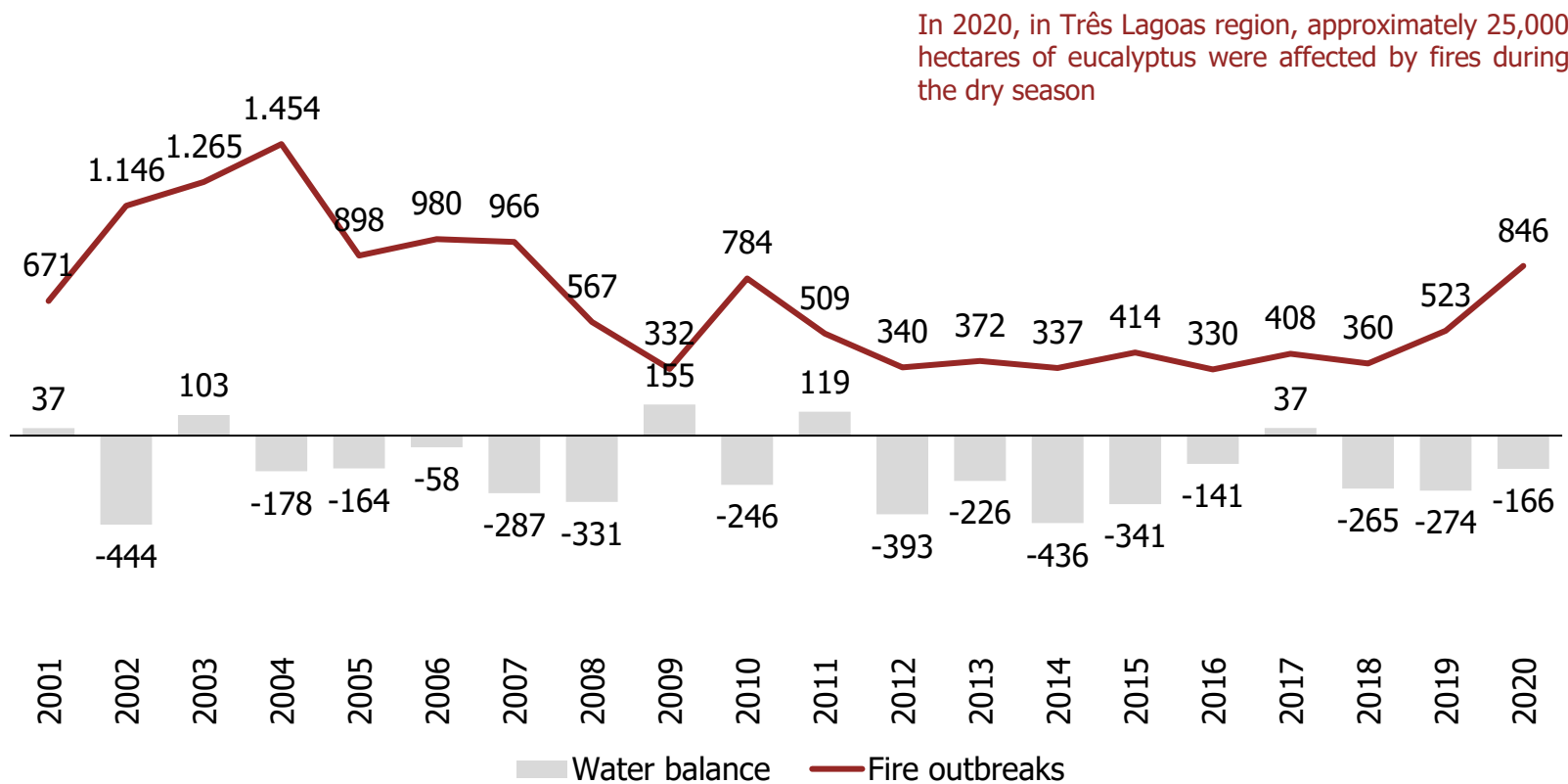


Aspects that impacted forest productivity



Historical annual time series of fires and water balance in Mato Grosso do Sul, within a 250 km radius of Três Lagoas

[Bars: millimeters of water | Line: number of fires]

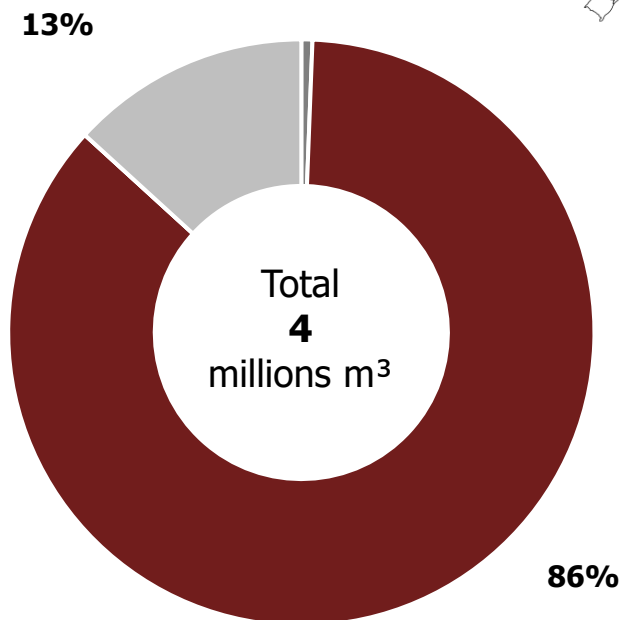


Source: NASA & INPE | Analysis and adpatation by ESG Tech

The current consumption in Mato Grosso do Sul represents 73% of the consumption in the Central west region, dominated by the pulp and paper segment with approximately 13 million m³ per year

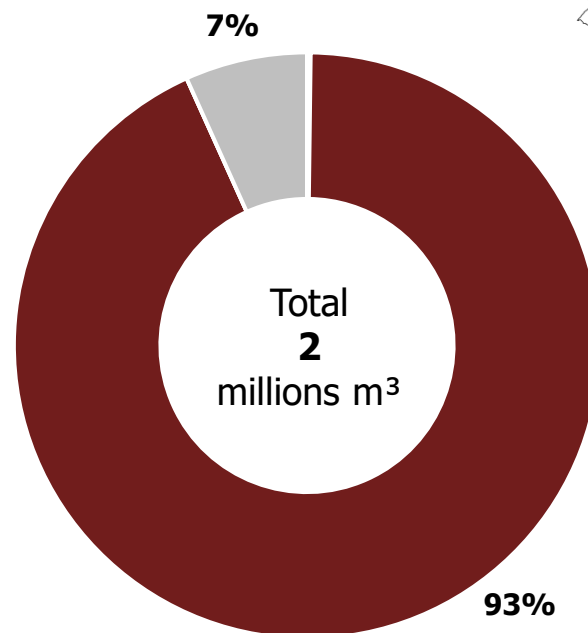
Wood consumption of eucalyptus in **Goiás**

[%]



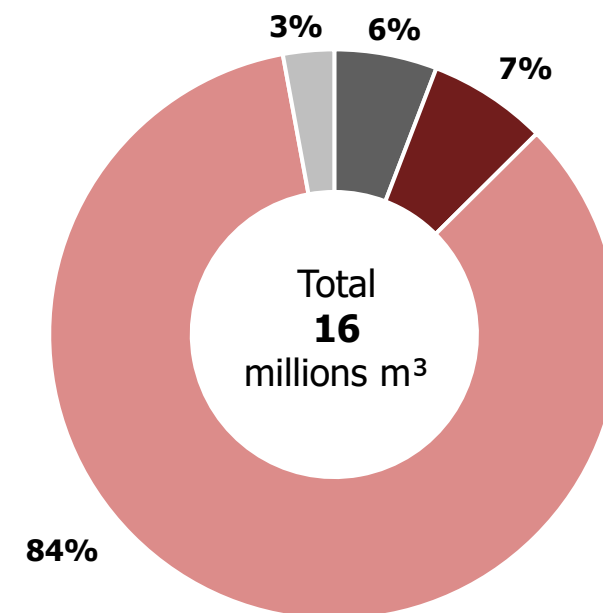
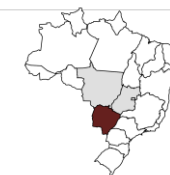
Wood consumption of eucalyptus in **Mato Grosso**

[%]



wood consumption of eucalyptus in **Mato Grosso do Sul**

[%]

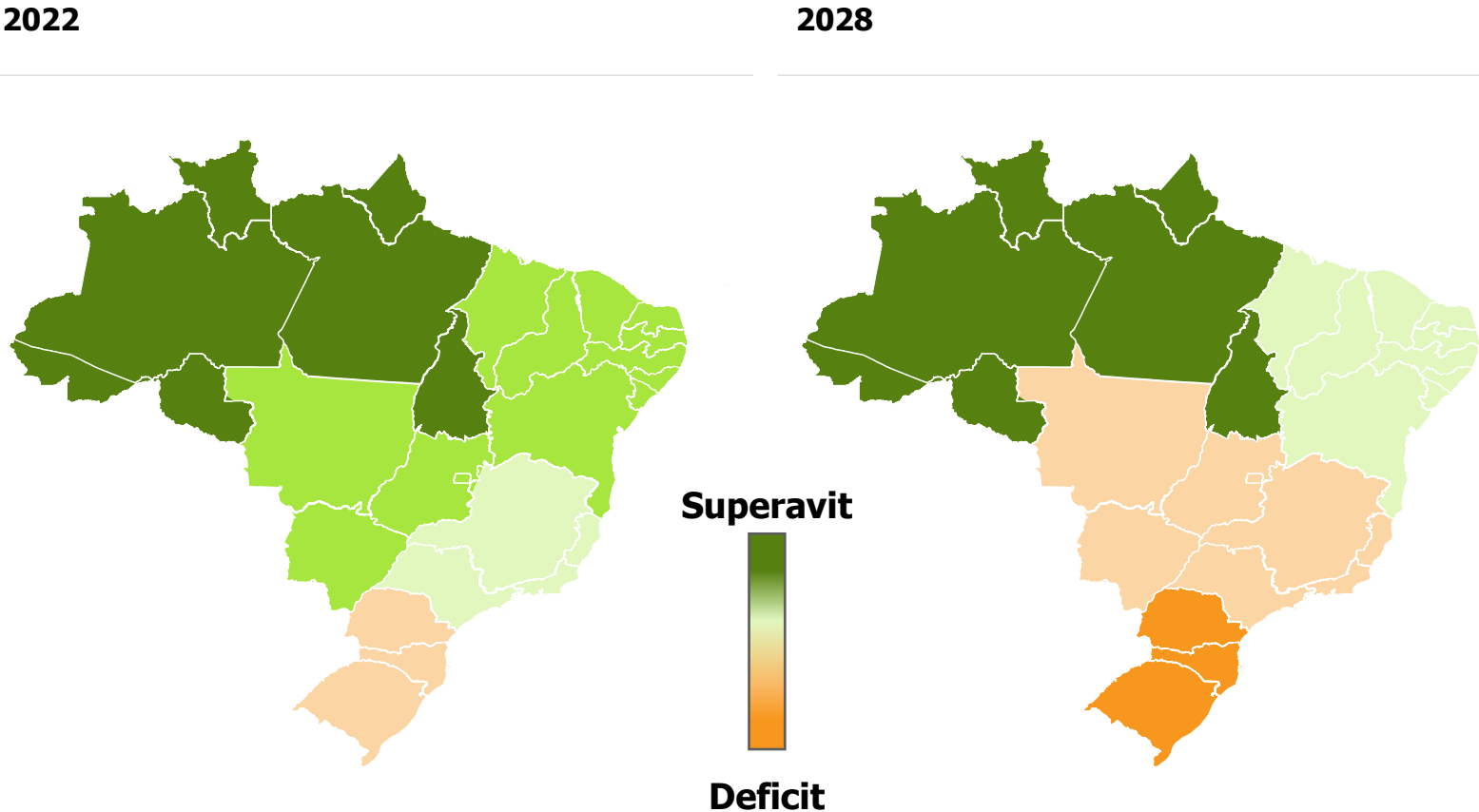


Charcoal Firewood Paper and pulp Other purposes

Source: IBGE (2021) | ESG Tech Analytics

By 2028, the biomass consumption in the majority of Brazilian macrorregions will exceed their current production. A granular analysis reveals that certain microregions and sectors will face significant supply challenges, while others will present supply opportunities

Balance of supply and demand for Eucalyptus by macroregions of Brazil (2022 and 2028)



Without considering new forest plantations, there is a trend of reduction in the availability of wood in most Macroregions of Brazil.

However, a more specific analysis is recommended, as forest markets vary significantly depending on the state and cluster analyzed (regions of approximately 200 km in radius).

Source: ESG Tech

Strategic Dialogue

The new investments in MS are likely to cause significant shifts in the local wood and land markets, besides the impacts on local social structures: economic and population growth and higher demand for essential services and infrastructure

Wood and land markets

- What are the impacts on wood demand?
- What a sustainable supplying model looks like now?
- What are the increasing risks and challenges from the new scenario (pests and diseases, yield losses etc)?

Expansion strategy

- What are the new opportunities and threats after the new mill announcement?
- How to assure supplying resilience?
- How to adapt current expansion plans to the new scenario?
- What are the likely response from the other players?

ESG Strategy

- What are the impacts on the cities under new projects' influence?
- What are the current needs and demands for essential services and infrastructure of those cities' populations?
- What the collaboration between private and public entities should look like to properly address the sustainable development agenda of those cities?

How ESG Tech contributes to this dialogue?



ESG Tech is a Brazilian strategy and business development consulting firm with focus on the forestry and agriculture sectors. We employ own analytical tools to assess and design comprehensive sustainable development plans both to companies and public sectors.

Our multidisciplinary team includes experts on different business disciplines and links in the value chain who can advise and help our clients in every step of their decision-making and implementation processes.

- **Sustainability Strategic Plan:** product lifecycle analysis, social and environmental development/management plans, opportunities in carbon management
- **Strategic Planning:** scenario analysis, market and competitive analysis, growth planning and risk assessment
- **Feasibility Analysis:** investment and cash flow projections, optimal scale and site location
- **M&A:** from target screening to deal structuring and negotiation, to post-merger integration



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