Biodiversity & Bio-fuels in Brazilian Agricultural Areas

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Context

Biofuels	Biodiversity
• Renewable alternative • Less polluting energy sources compared to the fossil fuel • Basis of the energy-agricultural economy • Negative environmental consequences: soil degradation, climate alterations, and biodiversity damage	• Conversion of natural habitats in agricultural areas is usually the biggest threat to the global biodiversity • Part of that demand for farmland is due to the necessity to increase the generation of energy through bio-fuels • Balance between agricultural areas and protected areas

Sugar cane in São Paulo State - Brazil

Brazil is currently the country with the largest world production of sugar cane

In Sao Paulo State, sugar-cane areas were increased of approximately 2,398,147 ha (80 %) between the 2003/04 and 2011/12 (INPE, 2012)

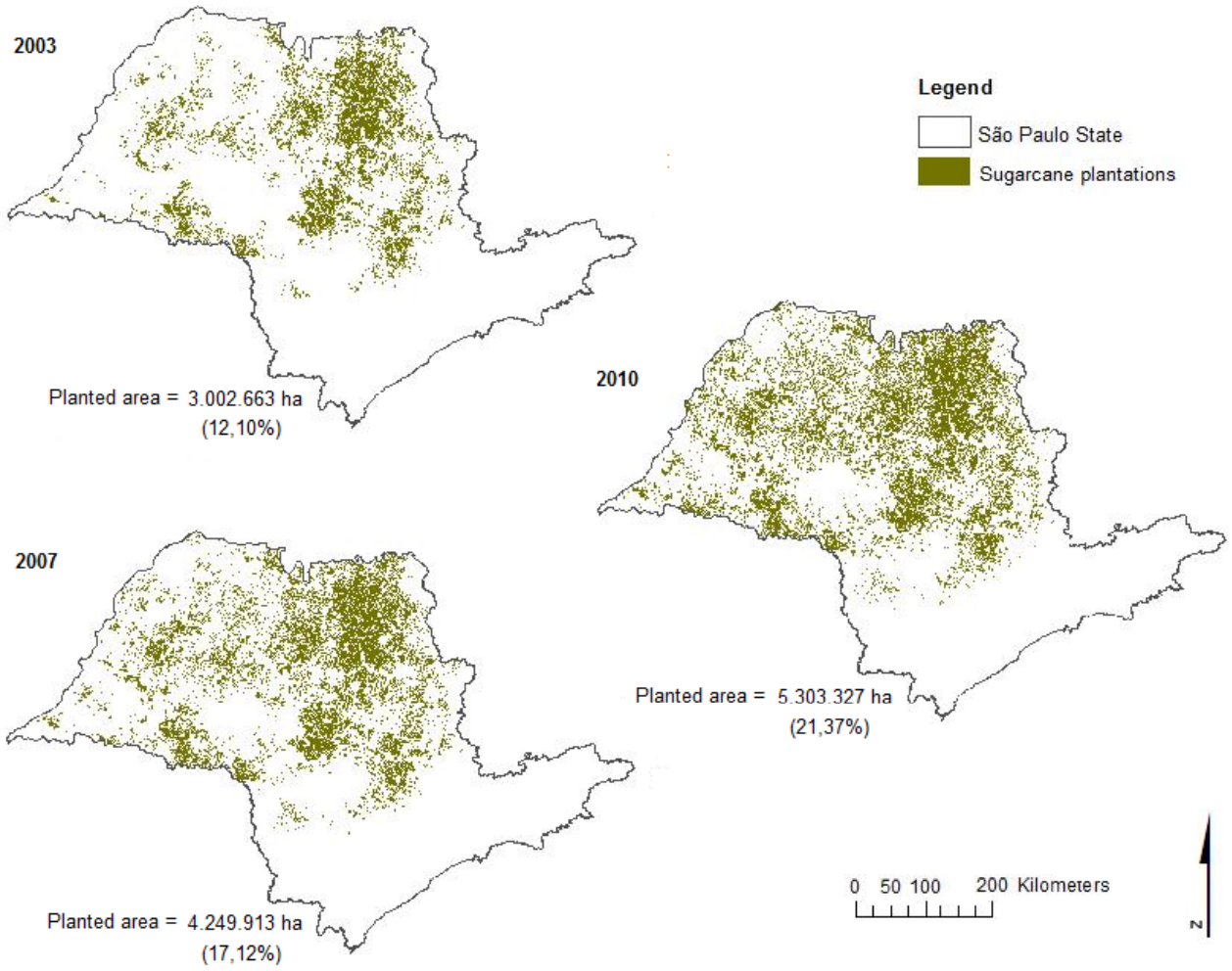


Figure 1. Areas of Sao Paulo State occupied by sugar cane
Source: Data from Rudorff et al. (2010)

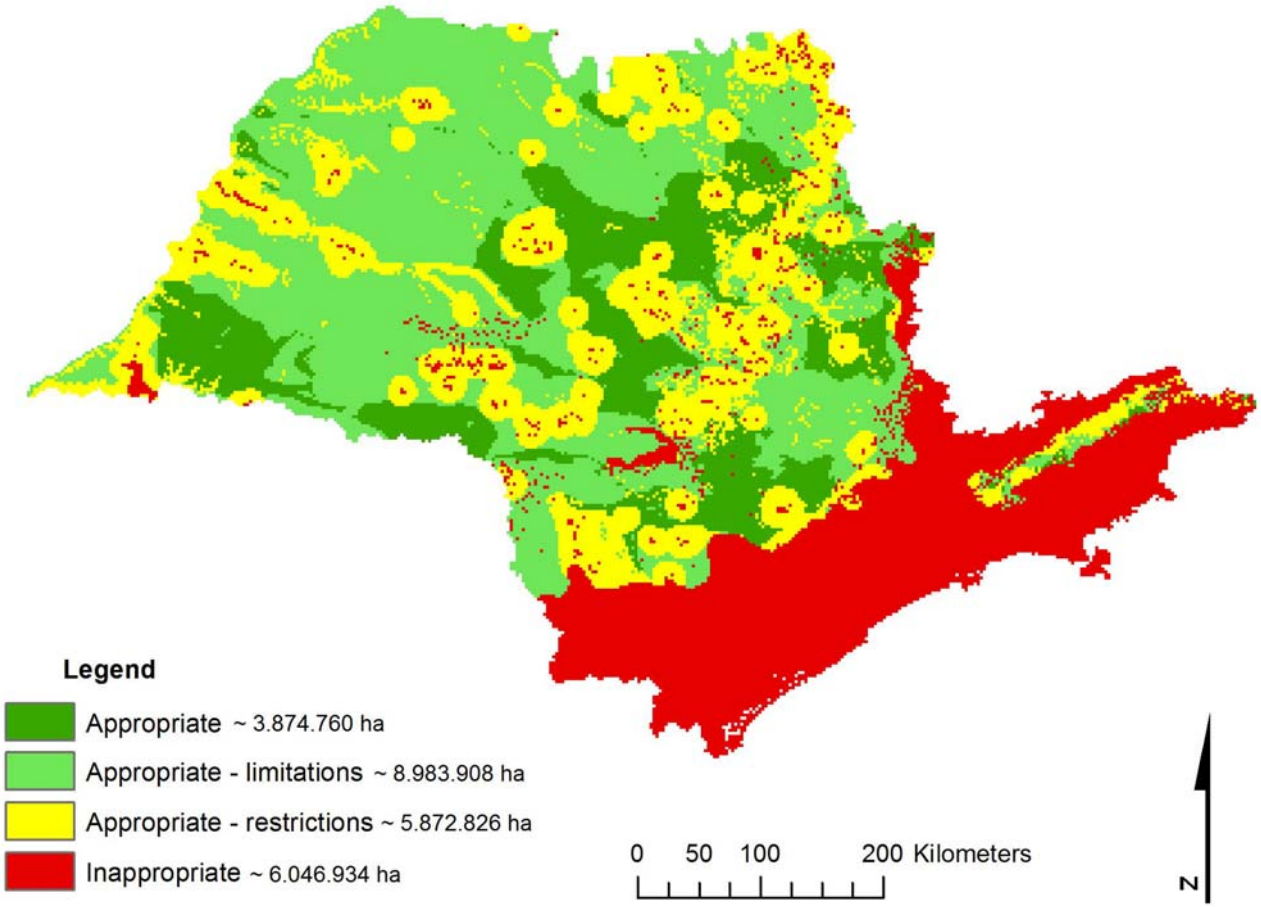
Fig 2. Zoning for the Agro-environmental Sugar - Energy Sector (São Paulo, 2008)

This zoning provides areas more or less suitable for growing sugarcane considering the following criteria:

a) agricultural suitability: climate and soil suitability and land slope

b) Water: watersheds deemed critical and groundwater vulnerability

c) biodiversity and protected areas*



* - Full protected areas and important areas for biological conservation
- Buffer of 10 Km of these areas
- Sustainable protect areas (called Areas of Environmental Protection)

Intensions

To analyze the sugar cane expansion based on the implementation of the Agro-environmental Zoning for the Sao Paulo Sugarcane Industry and the possible impacts on natural areas (legally protected or not) and, consequently, on biodiversity.

- original zoning maps (São Paulo, 2008)
- CanaSat project (Rudorff, 2010)
- ArcGis *10 software*

Overlaying sugar-cane area and zoning maps

Results

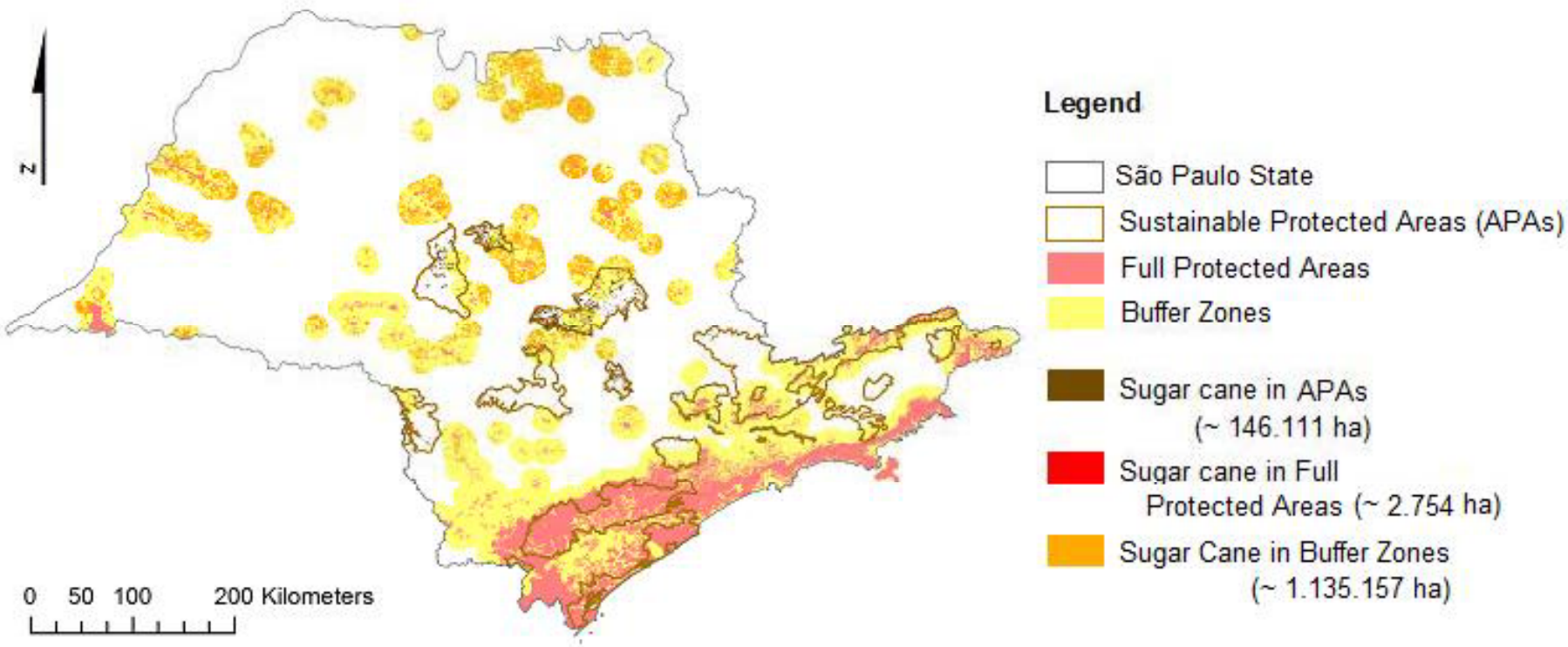


Figure 3. Sugar cane crops in protected areas and their buffer zones in Sao Paulo State.

Results

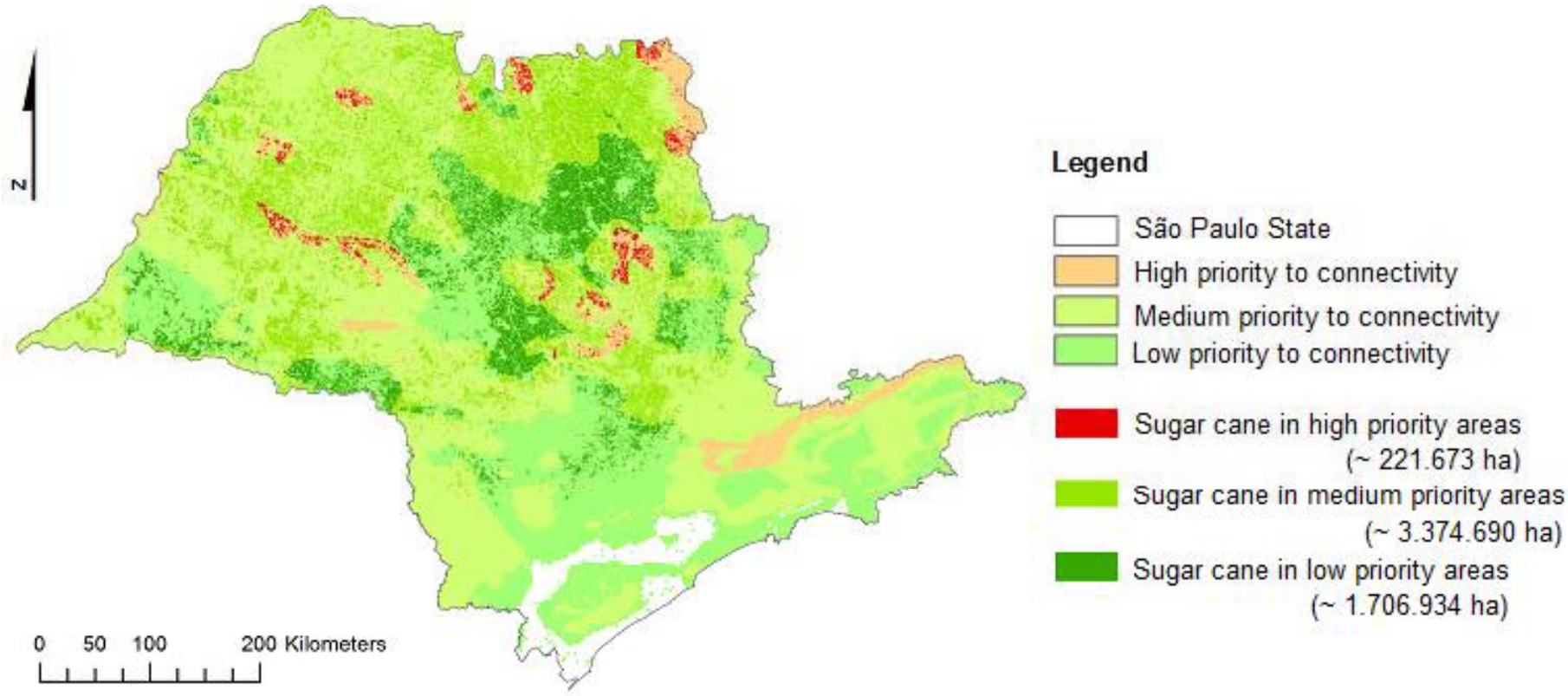
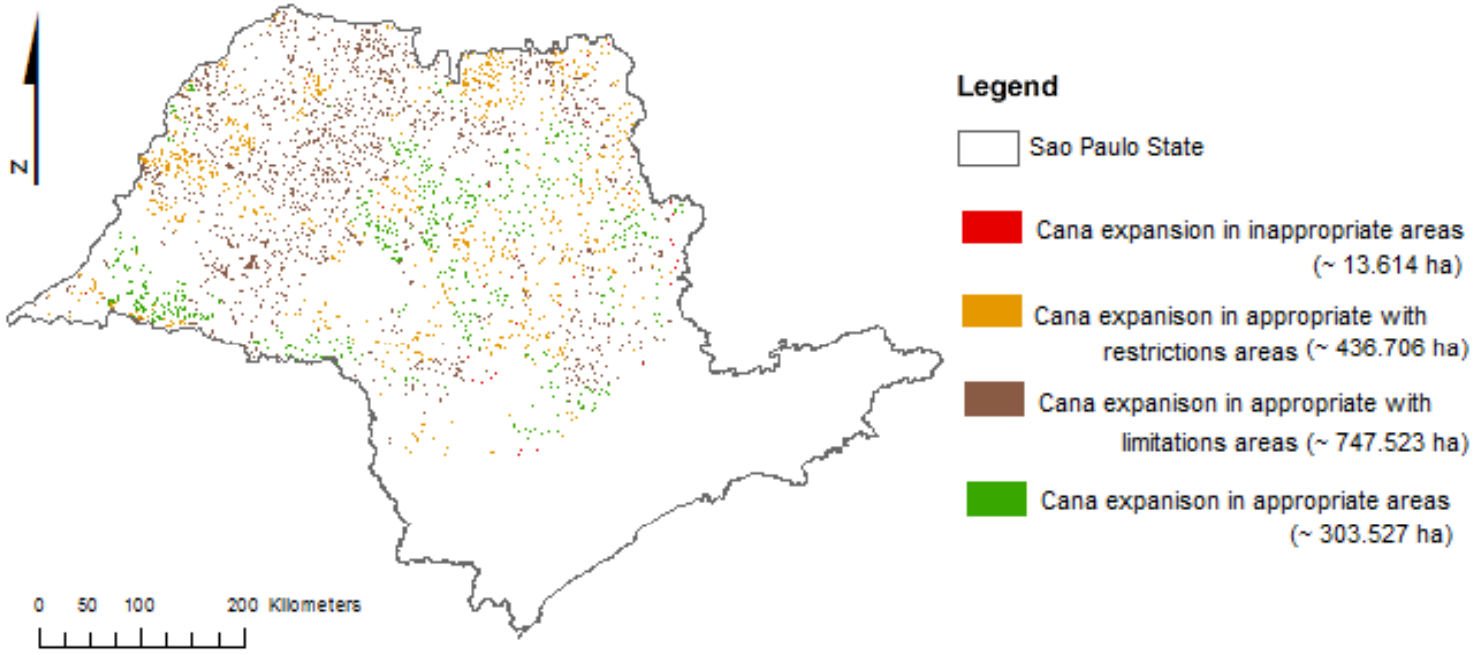


Figure 4. Sugar cane crops in priority areas for landscape connectivity in Sao Paulo State.

Results

Figure 5. Sugar cane expansion from 2007 to 2010.



The most part of the expansion was in areas with limitations and restrictions. It shows that the zoning has not been acting to direct the expansion for the most appropriate areas.

Conclusions

- The expansion of agro-energy crop production without an adequate policy and regulatory guide can enhance the many social and environmental negative impacts from the sector.

- The implementation of zonning in 2008 was not sufficient to drive the expansion of the sugar cane and energy to environmentally appropriate areas.

- According to the way the zoning is presented, most of Sao Paulo State may become a sugarcane monoculture, resulting in adverse impacts on the availability of natural resources and biodiversity conservation.

References

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Thank you!