



## Towards zero deforestation and forest restoration in the Amazon region of Maranhão state, Brazil



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### ABSTRACT

The Amazon forest in the state of Maranhão ensures ecosystem services that directly and indirectly affect the life quality of its population and economy, via hydrologic and climatic regulation, among other benefits. Currently, only 25% of the original forest cover (24.7 thousand km<sup>2</sup>) remains while illegal deforestation persists in a violent process that provokes visible social, economic and environmental harm. Simultaneously, Maranhão has seen record levels of burning, faces a water shortage and fights against the worst social and economic indicators in the country. Conversely, secondary vegetation covers 19.9 thousand km<sup>2</sup> (27% of deforested area) and is completely unprotected. Contrary to the international commitments assumed by Brazil to combat deforestation and restore forests, some of the political representatives of Maranhão have sought legal mechanisms to further diminish forest cover in public and private areas. To promote the conservation and restoration of Maranhão Amazon Forest, a multi-institutional network of researchers was established in 2015. This viewpoint paper aims to draw attention to this endangered region of the Brazilian Amazon and give science-oriented recommendations to policy makers in order to avoid more setbacks. We argue that Maranhão state must urgently establish a policy of Zero Deforestation, protect secondary forests and comply with the national forest restoration policy, thus ensuring long-term economic sustainability.

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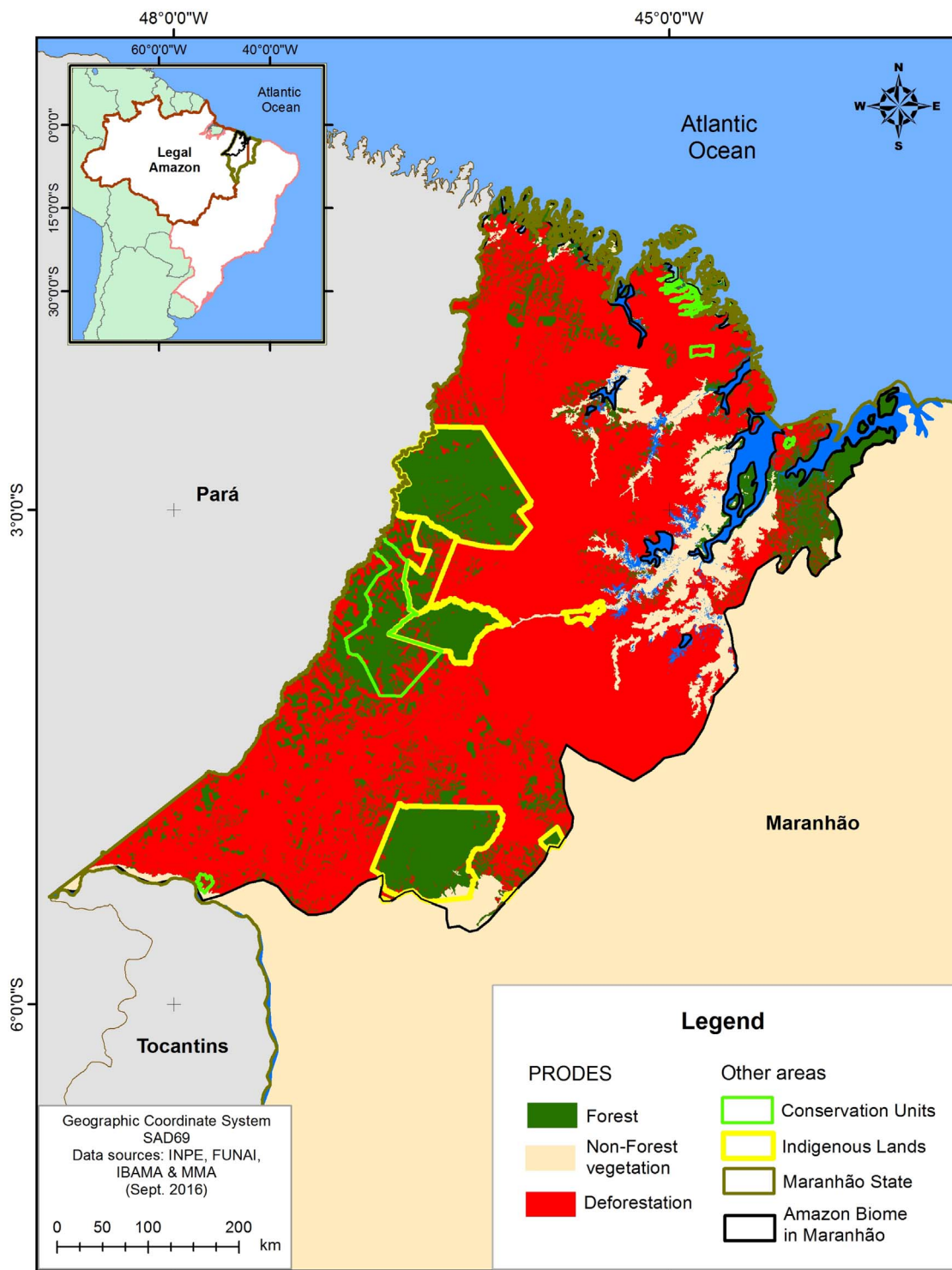


Fig. 1. Deforestation in the Amazon Biome in the state of Maranhão (INPE, 2016).

### 1. Introduction

The Amazon is the largest tropical forest on the planet with recognized importance in conserving biodiversity and in providing essential ecosystem services such as regulating the water cycle (Aragão, 2012) and climatic aspects (Malhi et al., 2008), among other benefits. In Brazil, the Amazon biome occupies 4.2 million km<sup>2</sup>, an area that extends into nine Federative states, and includes part of the state of Maranhão. Originally, 110.4 thousand km<sup>2</sup> of Maranhão was covered by the Amazon biome, but 75% of forest cover was cleared to provide

space mainly for agriculture and cattle ranching (INPE, 2016).

Amazon deforestation in Maranhão state was always justified politically by the search for the “economic development dream”, but the socioeconomic liability from this process is highly negative, reinforcing the thesis that deforestation does not result in better living conditions for the local population, but rather provokes social, economic and environmental harm (Celentano et al., 2012). In fact, Maranhão has historically ranked among the states with the worst social and economic indicators in Brazil (IBGE, 2016) while the municipalities within its Amazonian region are even poorer (UNDP, 2013). The Amazonian

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