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Farmers' decisions concerning the rainforest in land reform settlements in the Brazilian Amazon: To deforest or not to deforest, that is the question!¹

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Introduction

Land reform is a sensitive topic in public Brazilian life due to the landless workers' movement's national and international visibility, as well as to the complexity of interests involved and the historical debt of socioeconomic inequality. By 2011, a total of 8,790 land reform settlements occupying 85,869,507.55 hectares and having a population of approximately 1,235,130 families had been created all over Brazil. 503,175 families have settled in the Northern (Amazonian) states of Brazil, and 90,992 families have settled in the South-eastern region of Pará (SE-PA), all with the help of the official land reform programme (Plano Nacional de Reforma Agrária, PNRA).³ PNRA procedures require that interested landless people be registered in the cadastre of the national land reform agency (Instituto Nacional de Colonização e Reforma Agrária, INCRA). Eventually, INCRA may grant the status of beneficiary of land reform to a registrant.⁴ With regard to the environment, official numbers show that land reform settlements in the Amazon had cut down 228,208.649 hectares of tropical rain forest by the year 2006. Through 2004, the state of Pará headed the list of deforested areas with a total of 52% of the forest logged in all *Paraense* land reform settlements (Brandão Jr./Souza Jr. 2006).

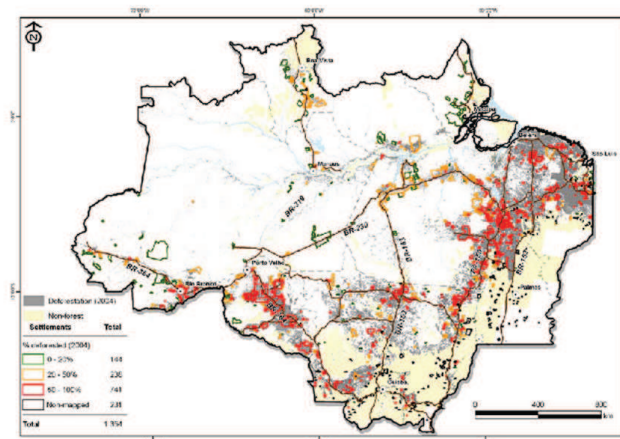


Figure 1: Deforestation in land reform settlements, Pará, 1970-2004 (Source: Brandão Jr./Souza Jr. 2006)

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² Special thanks to postgraduate student Conrad Klein for his support with graphics.

³ Source, <http://www.incra.gov.br/index.php/reforma-agraria-2/questao-agraria/numeros-da-reforma-agraria/file/1148-familias-assentadas>, accessed, October 12, 2012 and <http://www.incra.gov.br/index.php/reforma-agraria-2/questao-agraria/numeros-da-reforma-agraria/file/31-relacao-de-projetos-de-reforma-agraria>, accessed, October 12, 2012

⁴ Despite the use of electronic procedures by INCRA, a considerable group of free riders has managed to cheat the system. These free riders have gained allotments and other benefits to which they are in fact not entitled.

horizon and motives of settlers on the individual plots, wherefrom we finally deduce evidence for social, economic and ecological sustainability of land reform settlements.

Results and Discussion

In SE-PA, settlements have been continuously created since the 1980s. During different waves of settlement, the velocity of deforestation has varied.⁶ The size of individual allotments may run from fifteen to fifty hectares, although the size of allotments has shrunk to individual plots of less than fifteen hectares in the last twenty years. The plots differ not only in size, but also in the quantity and quality of natural resources on them.

In figure 3 we show a graphic presenting the most important factors of influence on settlers' livelihood strategies, highlighted in pink letters. As one of the three most important factors, the quality and quantity of natural resources on a plot affect settlers' livelihood strategies, along with their household composition. Depending on their position in the household and family cycle (as determined by the age and sex of individuals, and the consumer-producer ratio in the family), settlers may at different times be more or less exposed to the risk of undercapitalization. In critical moments, they may be tempted to overuse their natural resources to satisfy their basic needs and thus ensure the survival of their households in the short run. Furthermore, settlers' time horizons, that is, their projection and expectation regarding their permanence in land reform hamlets, play an important role. These expectations may change during an individual's life-cycle, depending on personal and external conditions.

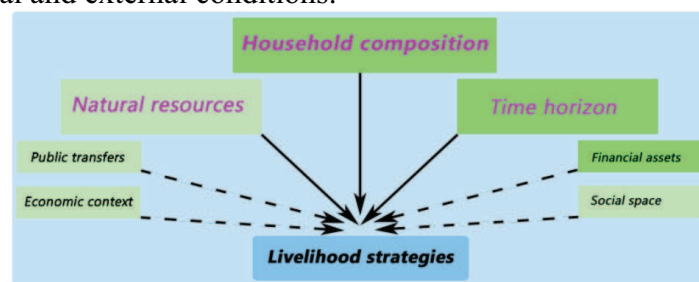


Figure 3: Main factors influencing livelihood strategies

In what follows, we analyse the relationship between the amount of deforested tropical rainforest by specific activities and the underlying time horizon and motives of settlers on the individual plots. The greatest amount of deforestation in the least amount of time is caused by free riders and vulnerable people. Applying Wilk's categories, we argue that "selfish" motives underlie the behaviour of both groups; that is, precious natural resources are sacrificed for egoistic motives. This claim needs to be nuanced, however, because settlers practice deforestation for many reasons, depending both on their initial motives and their adaptations to personal crises during the settlement experience. For example, some settlers, especially free riders of land reform and soldiers of fortune, simply want to pillage natural resources through logging timber, burning charcoal and extensive cattle rearing without pasture management. Their motives can clearly be labelled "selfish". Vulnerable people, in contrast, may have a long-term vision of permanence when they first acquire a plot; however, due to personal crises and insufficient access to assets, they may begin to plunder the natural resources on their plots as well, by burning charcoal and renting pasture to neighbouring ranchers seeking additional pasture. In addition, many settlers are strongly motivated to raise cattle and are driven by the widespread dream of becoming a rich *fazendeiro* (cattle rancher). This fantasy is additionally incentivized by governmental credit. Unfortunately, these settlers do not recognize that this dream is impossible to reach with only twenty hectares of Amazonian soil.

⁶ In SE-PA, settlements created in the 1980s still contain approximately 50% of the original rainforest, whereas those created in the 2000s managed to entirely cut down their natural resource within a five-year period.

Settlers who deforest least are those who have bought a land reform plot from a former beneficiary and who have off-farm income or are mere rural dwellers. These settlers make a living as retirees from urban occupation or engage in off-farm activities, and they are *de jure* excluded from land reform programmes. Furthermore, there are a few others who make a conscious choice not to deforest; their behaviour could be labelled “moral”, because they explicitly desire to maintain and protect the rainforest as a common good and for future generations. Their households may count on multiple sources of generally wage-based income, or by additional income earned by collecting non-timber forest products.

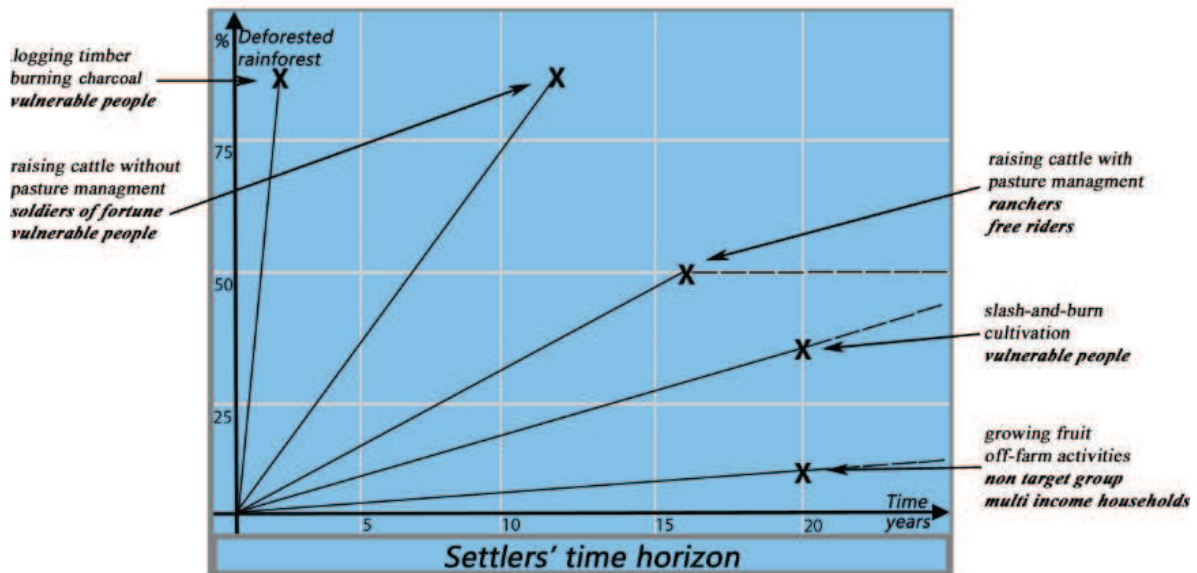


Figure 4: Settlers' time horizons

Conclusion and Outlook

Soldiers of fortune, free riders and vulnerable people are the biggest destroyers of tropical rainforest in land reform settlements in the Amazon. Non-target groups like wage earners, urban retirees and employees destroy less. Both deforesters and guardians of the rainforest may in fact be motivated by selfish motives. However, the outcome of their decisions is more important than their intentions. It is obvious that Brazilian public policies have contributed to an open-access scenario in the Amazon through land reform. Unfortunately, these public policies have safeguarded neither social nor environmental sustainability. Our recommendation to decision-makers is to revise settlement policies and programmes and to discuss the compatibility of social equity and environmental protection in such a fragile territory as the Amazon.

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