

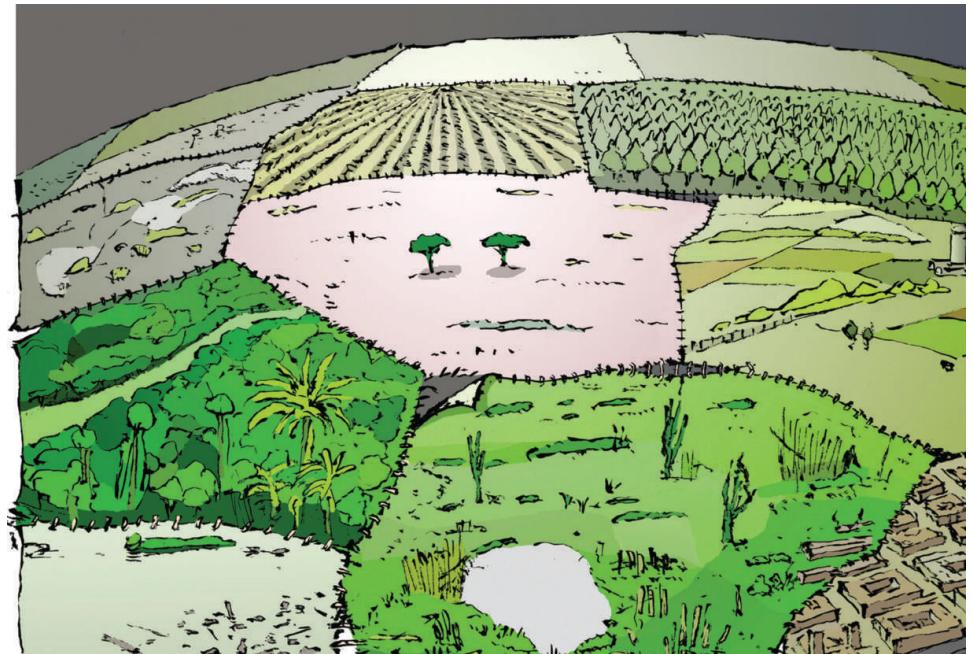
# **Using land inequality to inform restoration strategies for the Brazilian dryforest**

**Felipe Melo**

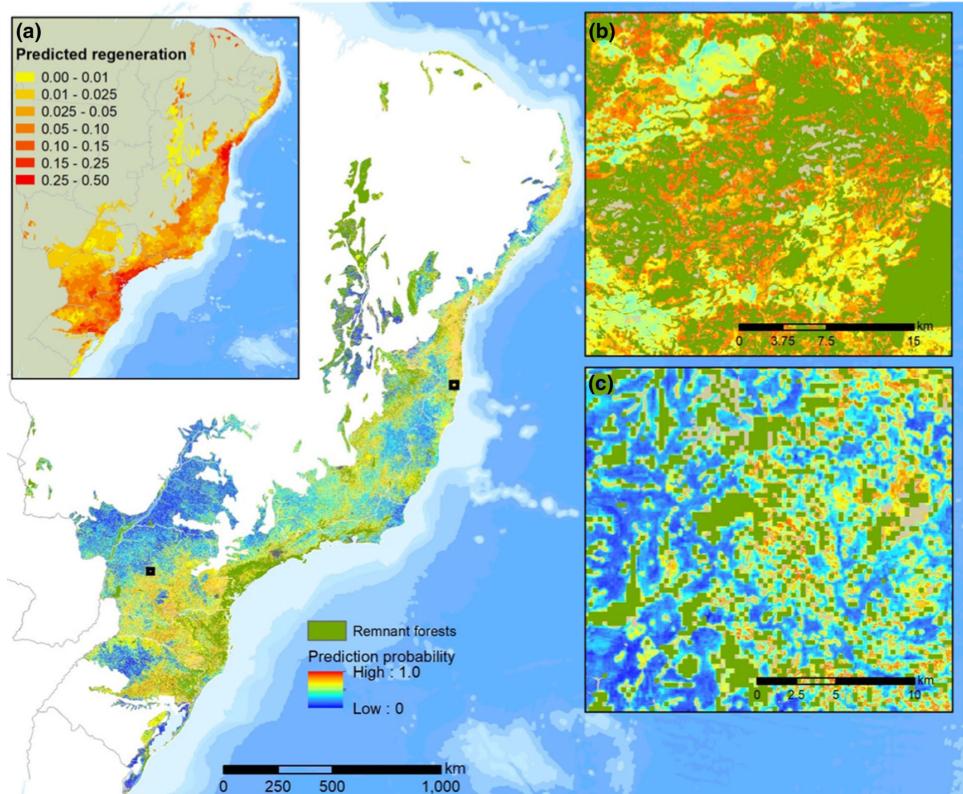
Nottingham Trent University - UK  
Universidade Federal de Pernambuco - Brazil

# Contents of this talk

- A brief appraisal of apolitical restoration
- Land inequality and restoration
- A case study in the Caatinga forest, Brazil



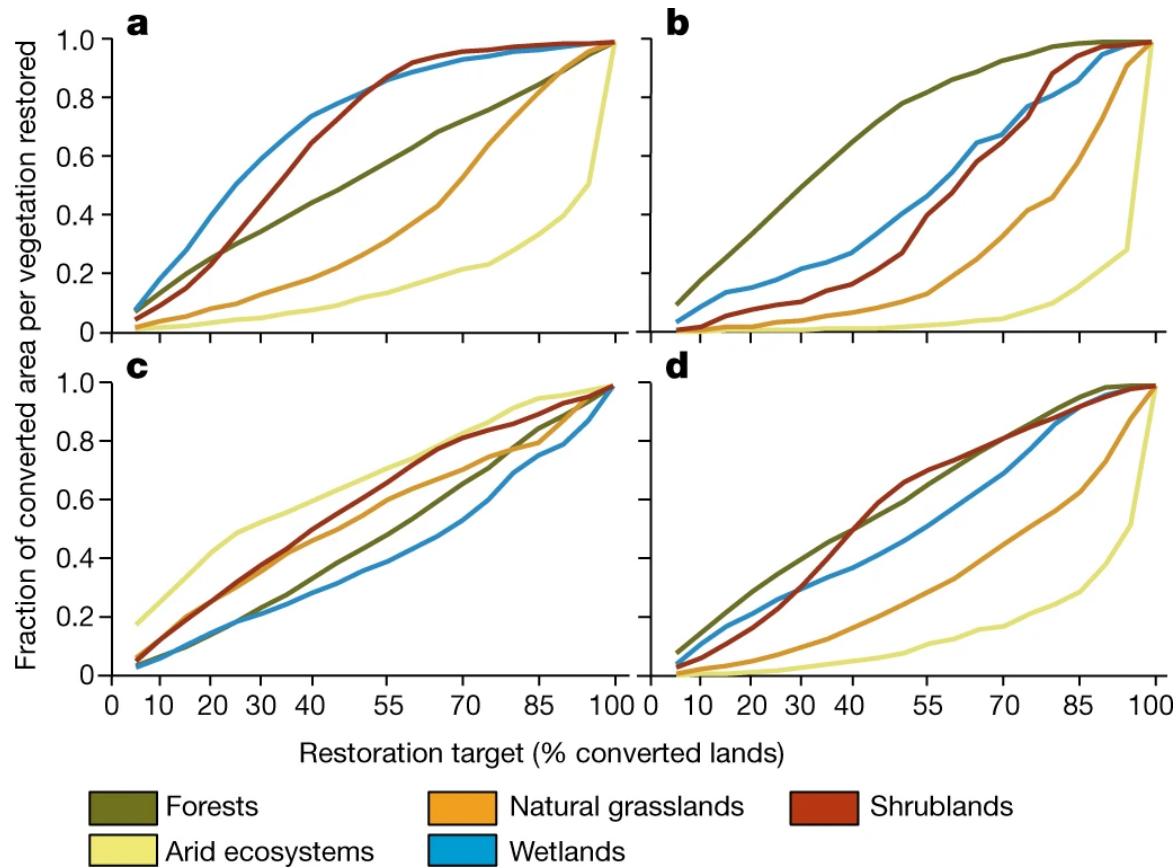
# Modeling priorities for restoration



- Spatially explicit
- Systematic
- Multi-criteria
- Lack people's dimensions

Crouzelles et al 2018

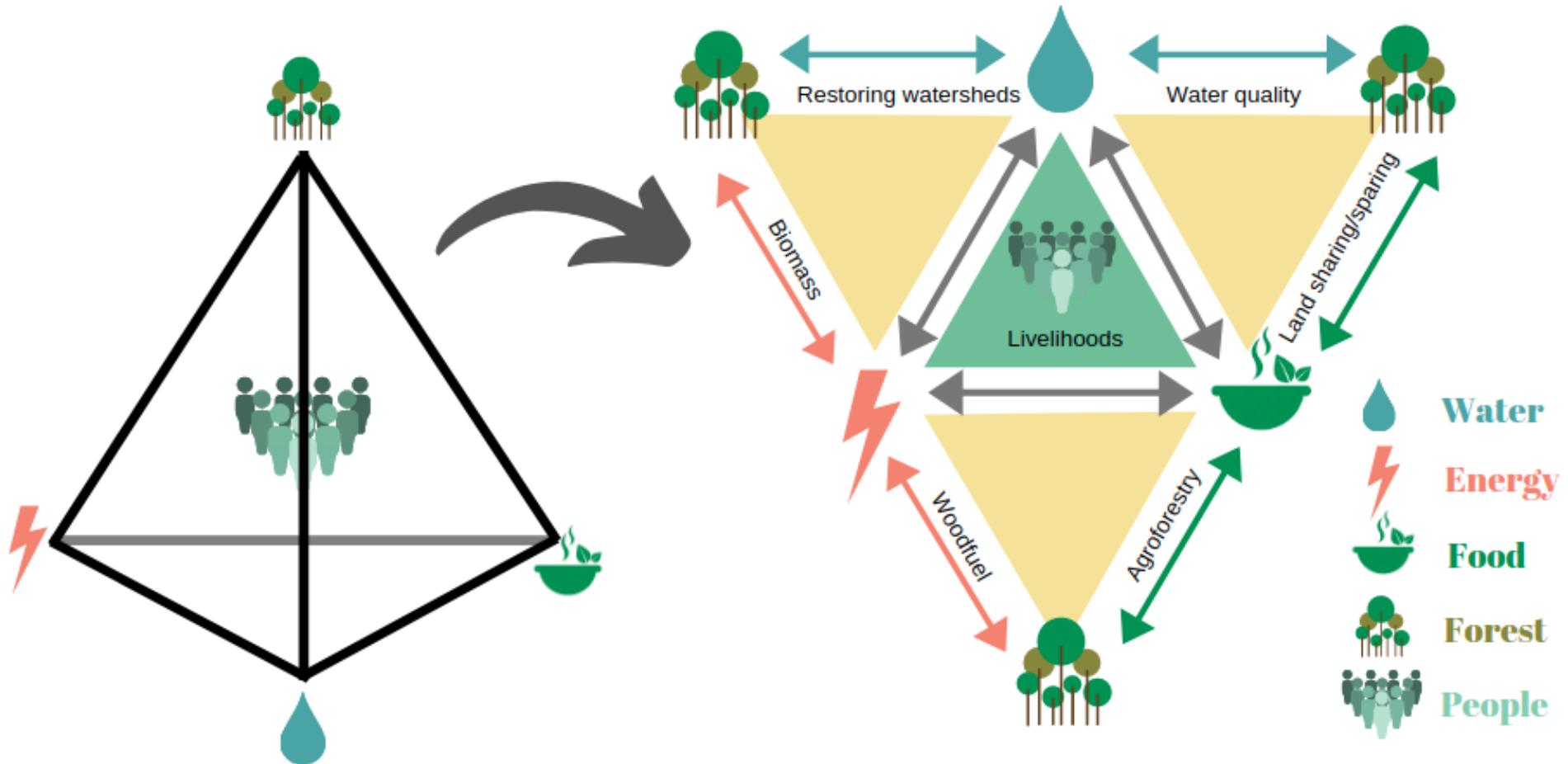
# Modeling priorities for restoration



- Imagined scenarios
- Cost-effectiveness
- Benefits
- Reduced people's dimensions

Strassburg et al 2020

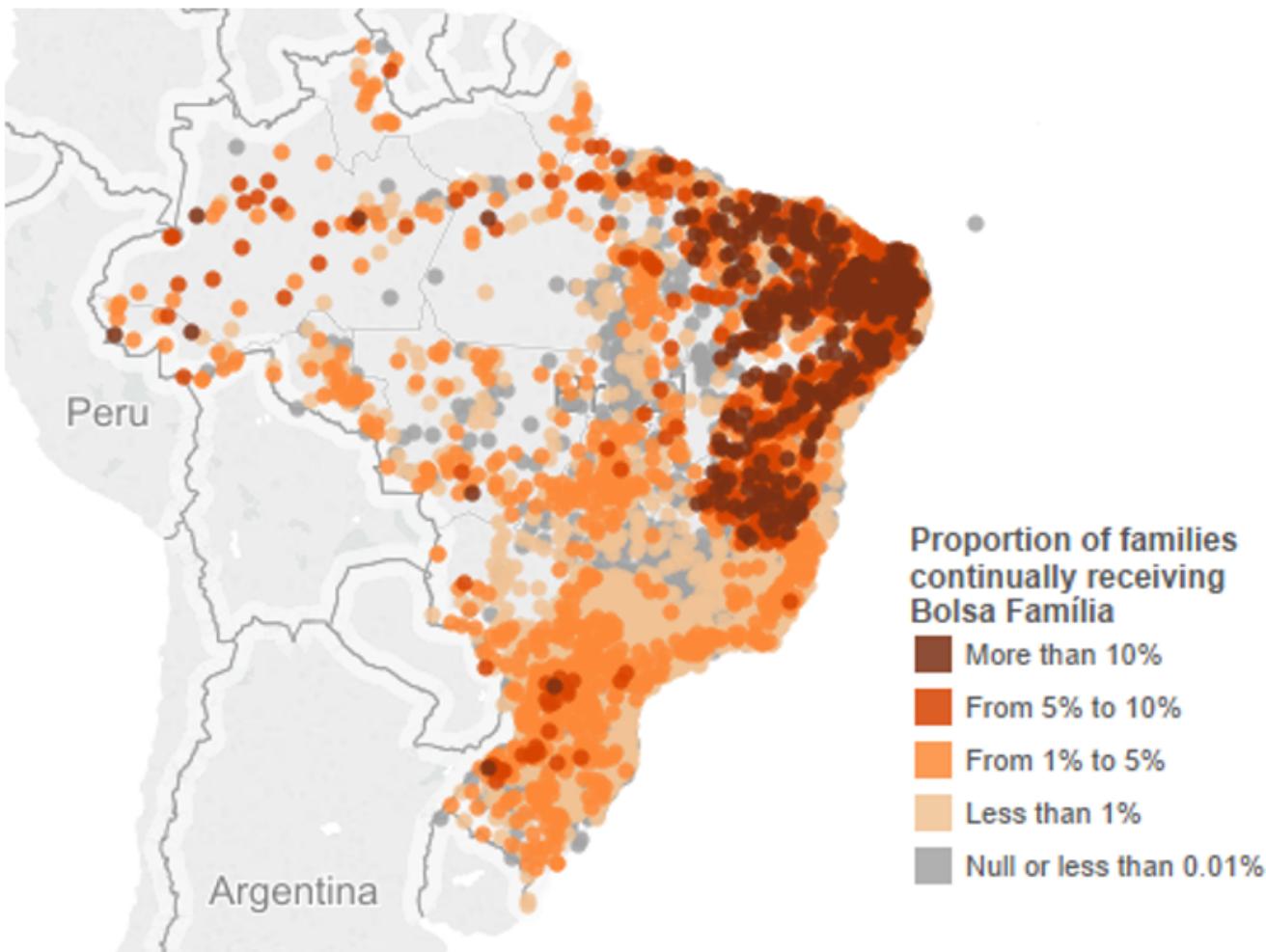
# Against apolitical restoration



Melo et al 2021

# Our study

# Context



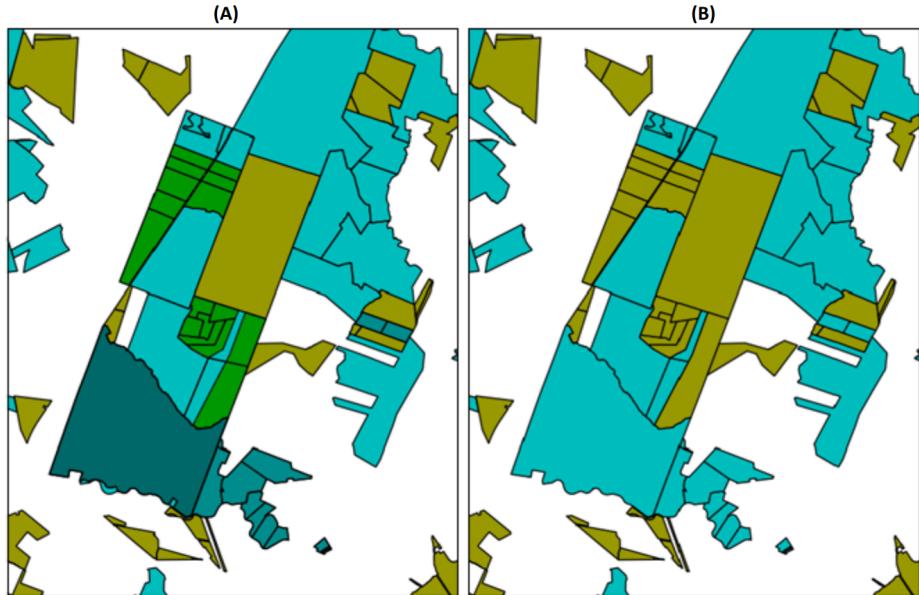
- Brazil has a rather advanced restoration movement
- Different Biome awareness
- Rural poverty + forest poverty
- Severe **land inequality**

# The Caatinga dryforest



# Methods

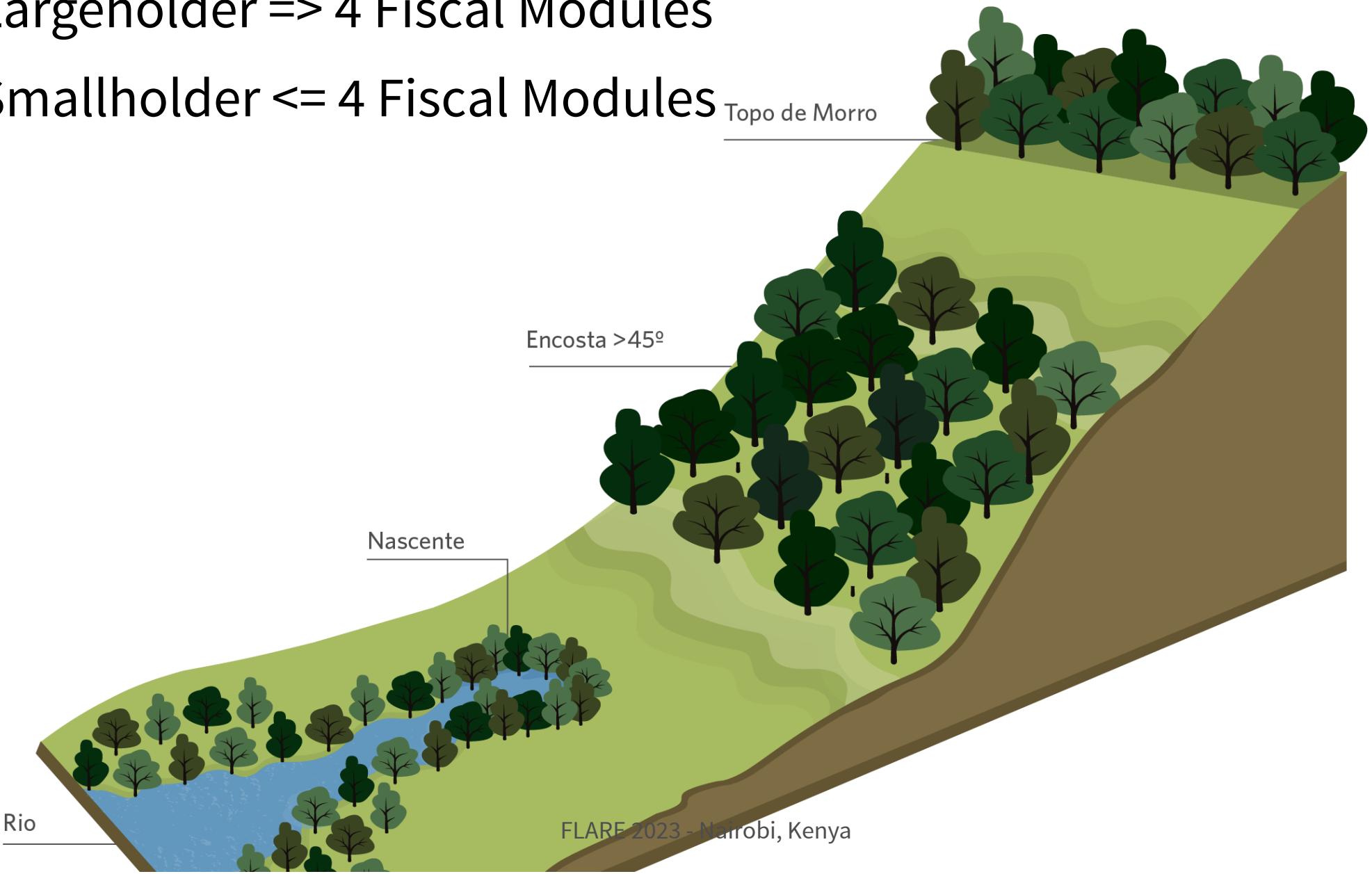
- Information on forest cover  
(MapBiomas.org)
- Land tenure database  
(imaflora.org)
- Brazilian Forest Code
  - Calculate vegetation deficits per property
  - Small vs large landowners



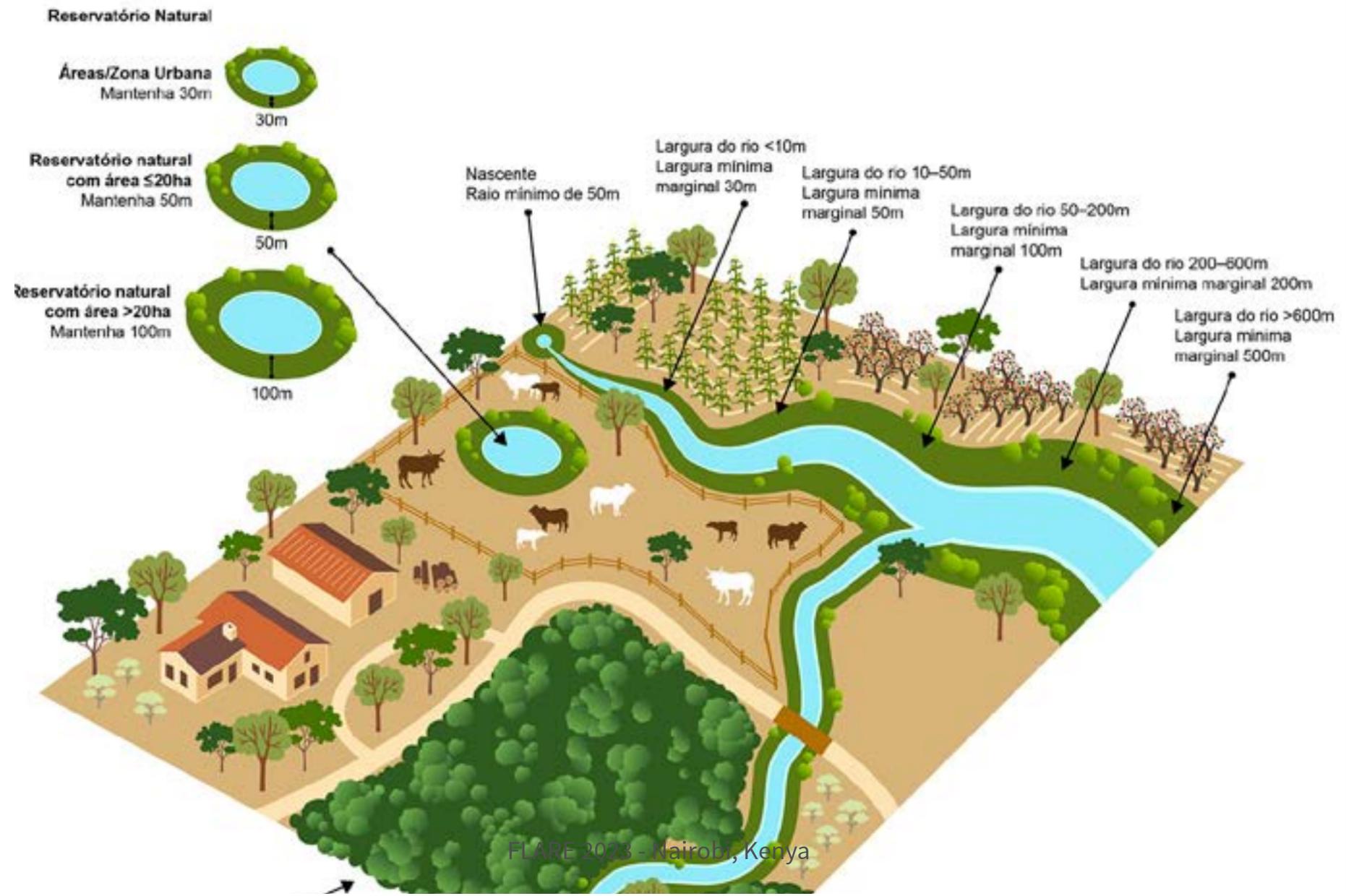
# Brazilian Forest Code

Largeholder => 4 Fiscal Modules

Smallholder <= 4 Fiscal Modules



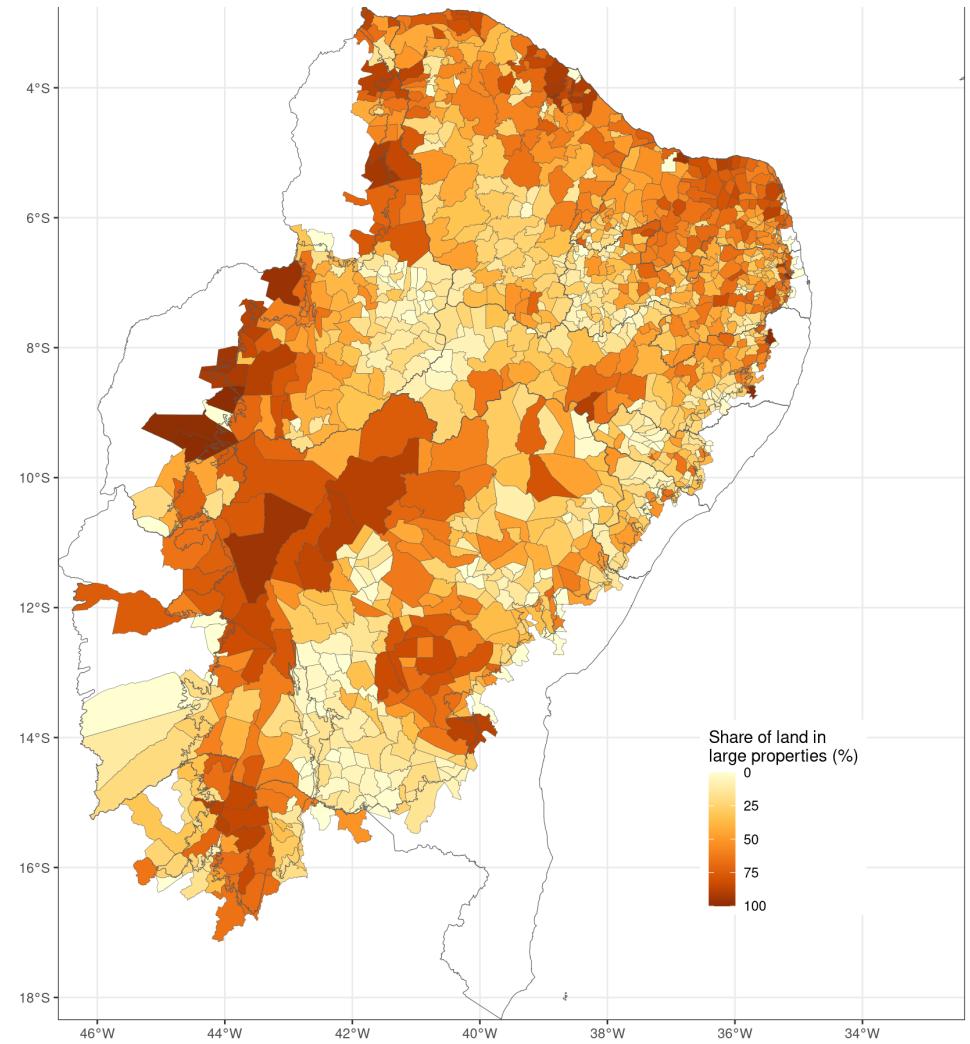
# The “perfect world”



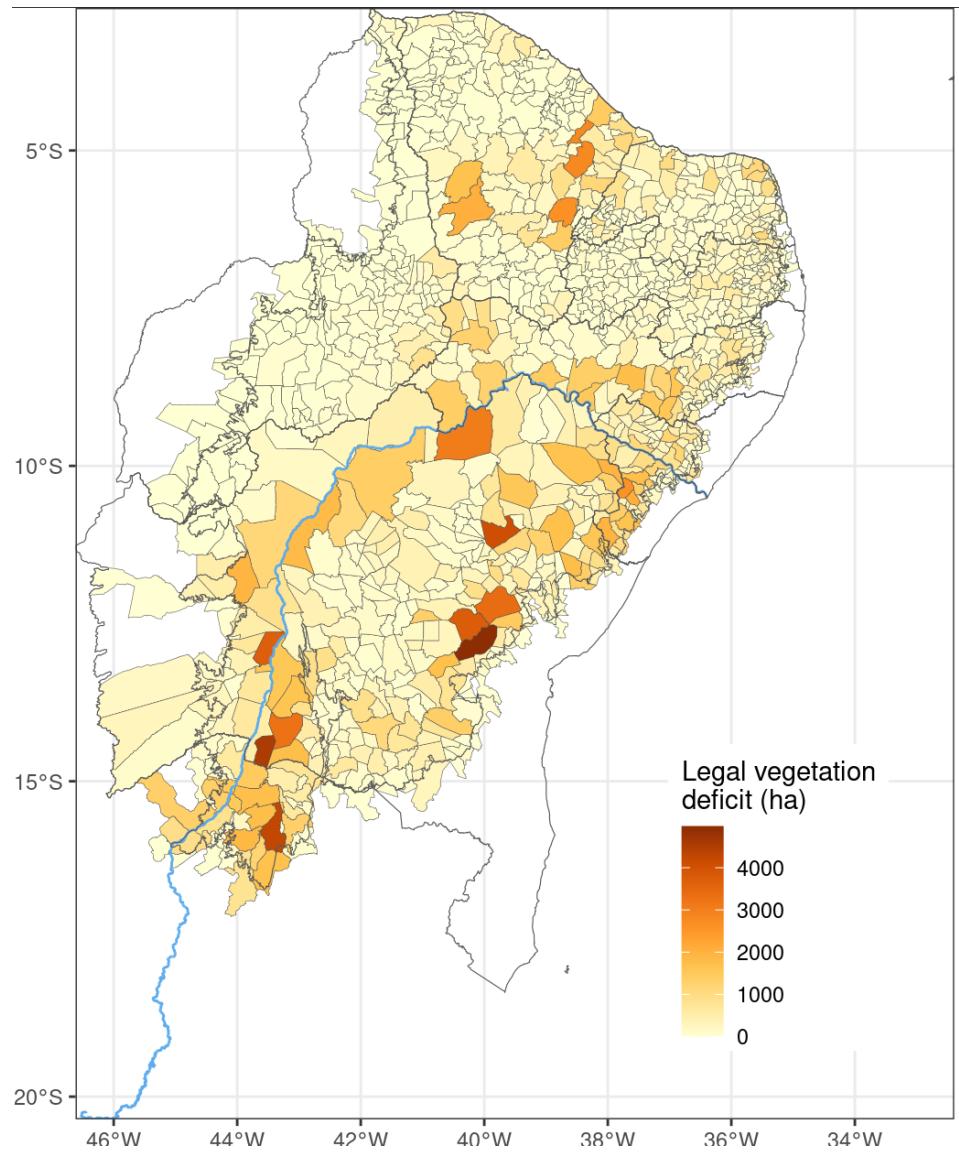
**Any deviation from the perfect world  
creates a “legal vegetation deficit”**

# Land share in Caatinga municipalities

- ~ 1 million registered properties in 1204 municipalities
  - 97.8% Small properties
    - 17.9 Mha
    - 51% forested
  - 2.2% Large properties
    - 15.2 Mha
    - 69% forested



# Distribution of legal vegetation deficit



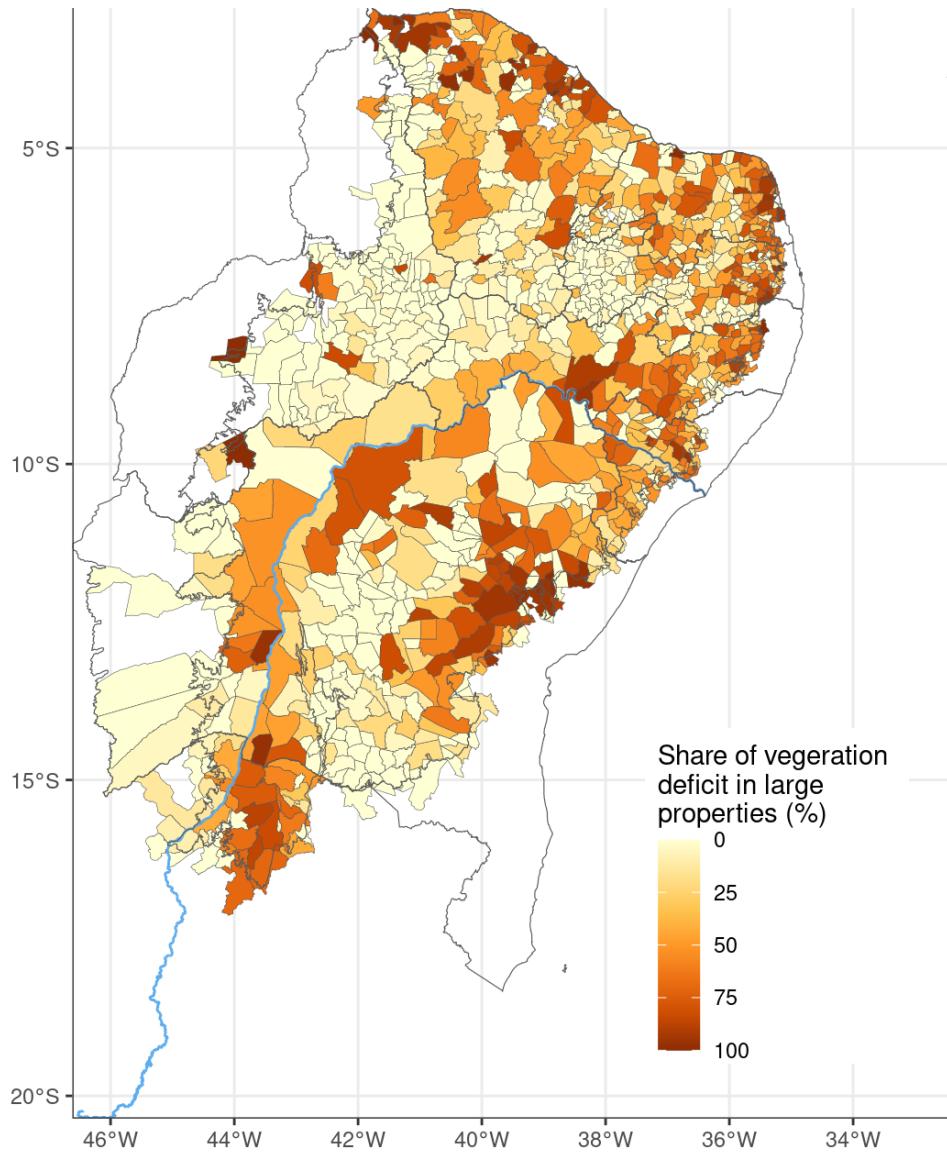
- Spatially clumped
- Following agribusiness areas



# Share of vegetation deficit

Type of landowner	N of properties	Legal Deficit (ha)
Large	2,986	139,644
Small	141,144	143,501

# Share of vegetation deficit



- Large holders
  - Spatially clumped (coast and main river)
  - Following agribusiness areas
- Small holders
  - Dryer regions
  - Familiar agriculture

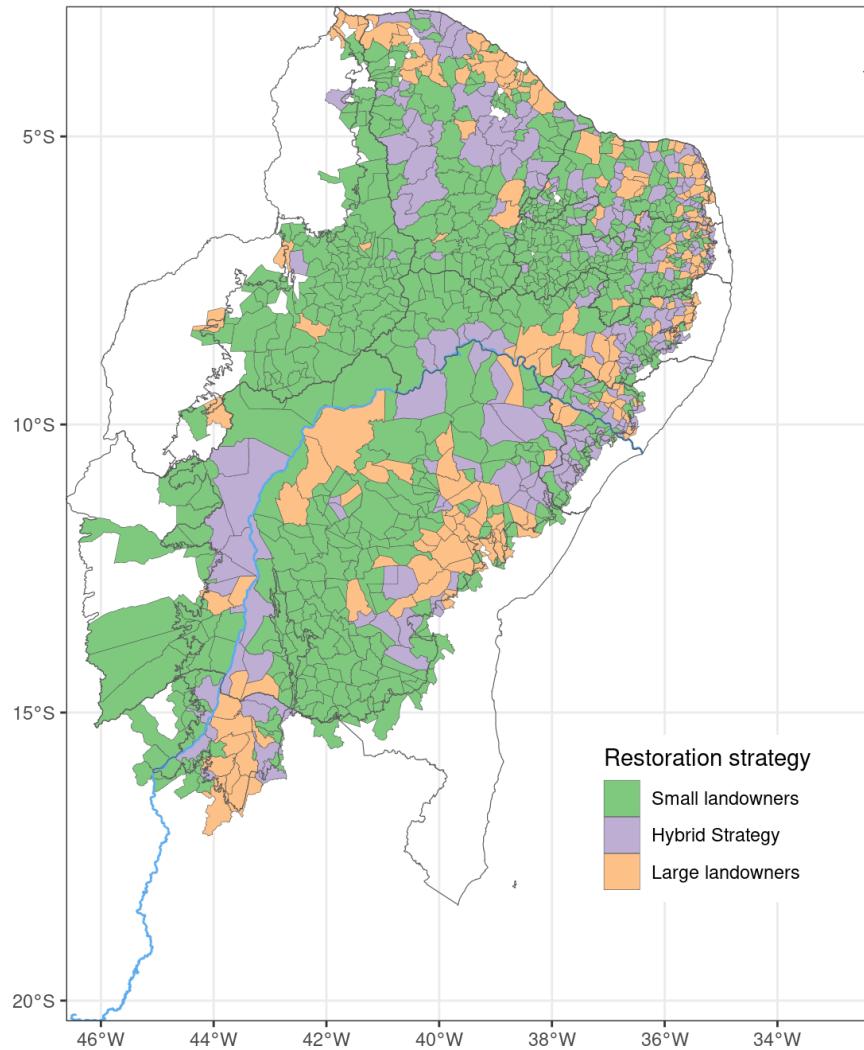


# Adapated strategies

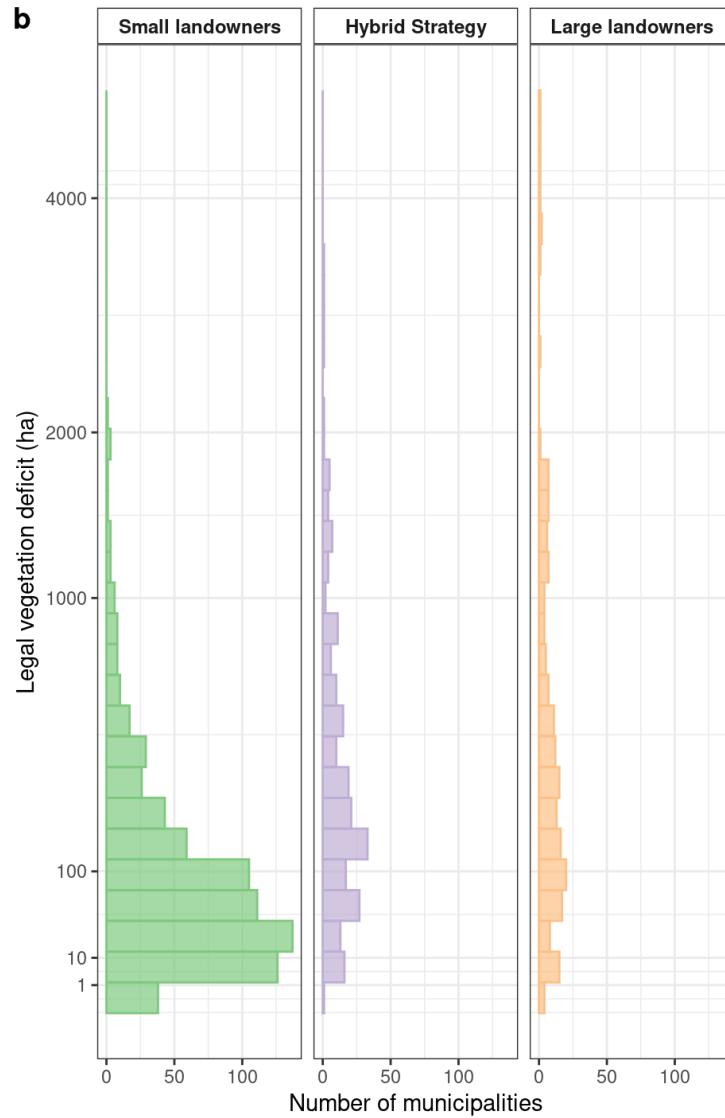
Type of prevailing deficit	Restoration strategy
Large holders	Active restoration; legal compliance; restoration supply chain
Small holders	Agroforestry; biocultural restoration
Hybrid	Context dependent combination of all strategies

# Spatialization of restoration strategies

a



b



# Restoration must not reproduce land inequality

- Smallholders
  - ~1ha deficit
  - small-scale farms
- Scale up agroforestry
- Largeholders
  - ~40ha deficit
  - Intensive land use
- Impulse restoration supply chain

# Take-home message

- Include sensible social information
- Account for land inequality
- Avoid reproducing injustice
- Balance between opportunities



Marinaho et al 2023

# Acknowledgements



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Científico e Tecnológico*



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# Thank you

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