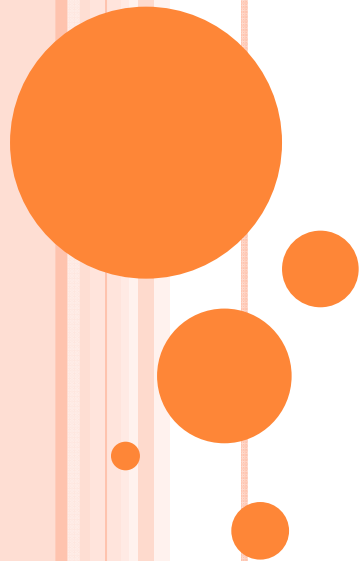


# **CDM AND REFORESTATION PROJECTS IN BRAZIL**

**Experiences, difficulties and potential**

**Magno Botelho Castelo Branco, PhD**



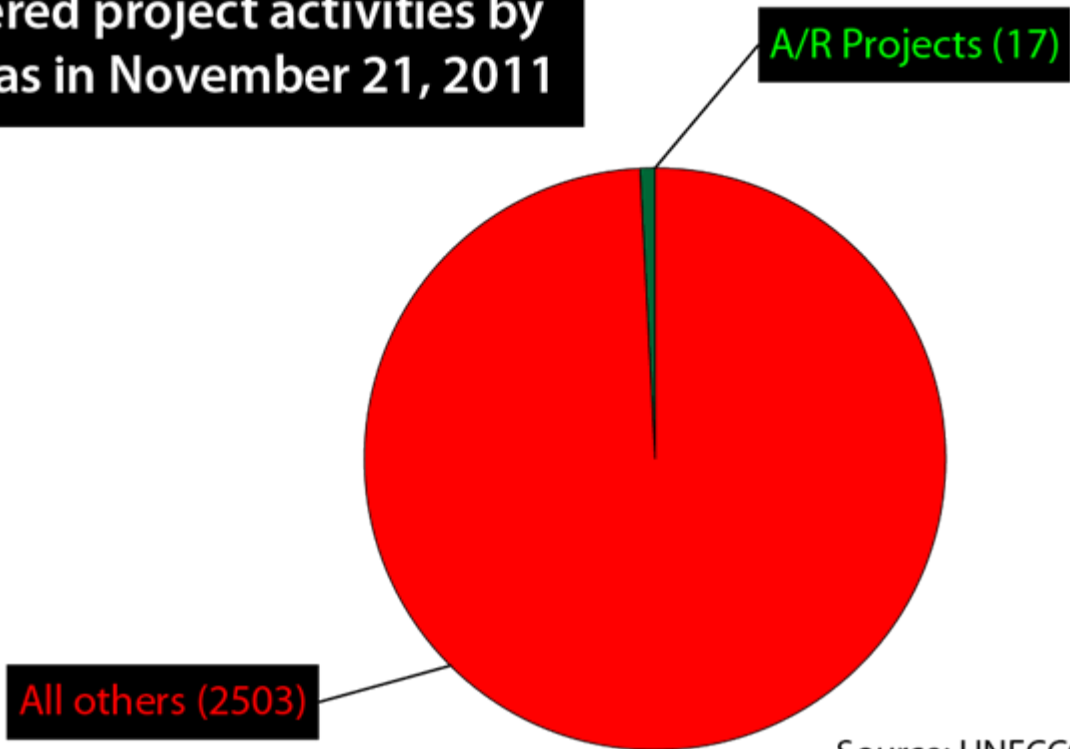
BACK IN 2000, EVERYONE AGREED  
AT FIRST...

There's a huge potential for A/R  
CDM projects world wide, and  
Brazil would benefit from this  
project scope.



IN 2010...

Registered project activities by scope, as in November 21, 2011



Source: UNFCCC web site



# POTENTIAL FOR A/R CDM IN BRAZIL

- Restoration of legally protected areas (Riverside forests and Legal Reserve);
  - Legal Reserve: 20% (Atlantic forest), 35% (Cerrado), 80% (Amazon).
- Forests dedicated to supply biomass to renewable energy production;
- Renewable charcoal production for the Pig Iron Industry

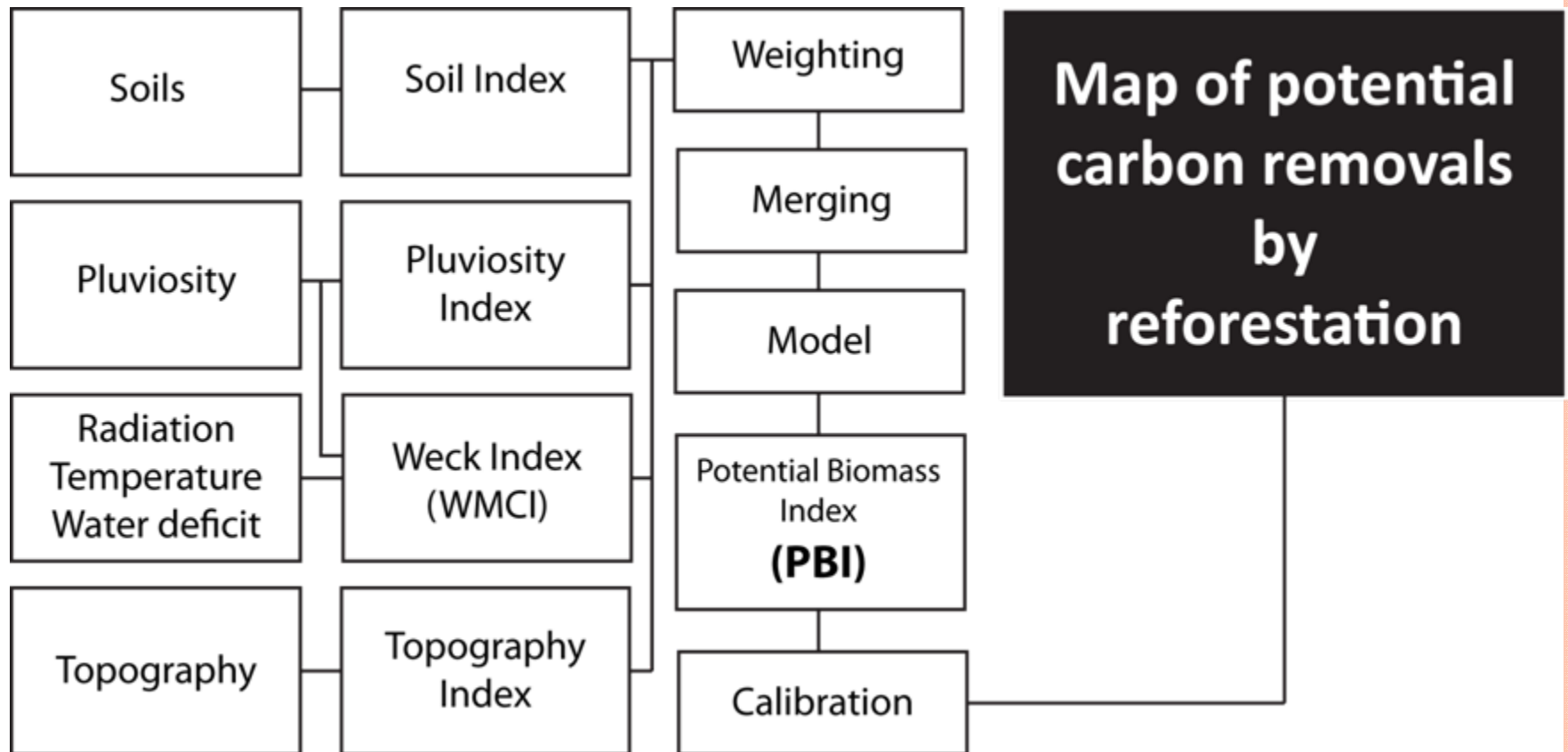


# RESTORATION OF LEGALLY PROTECTED AREAS

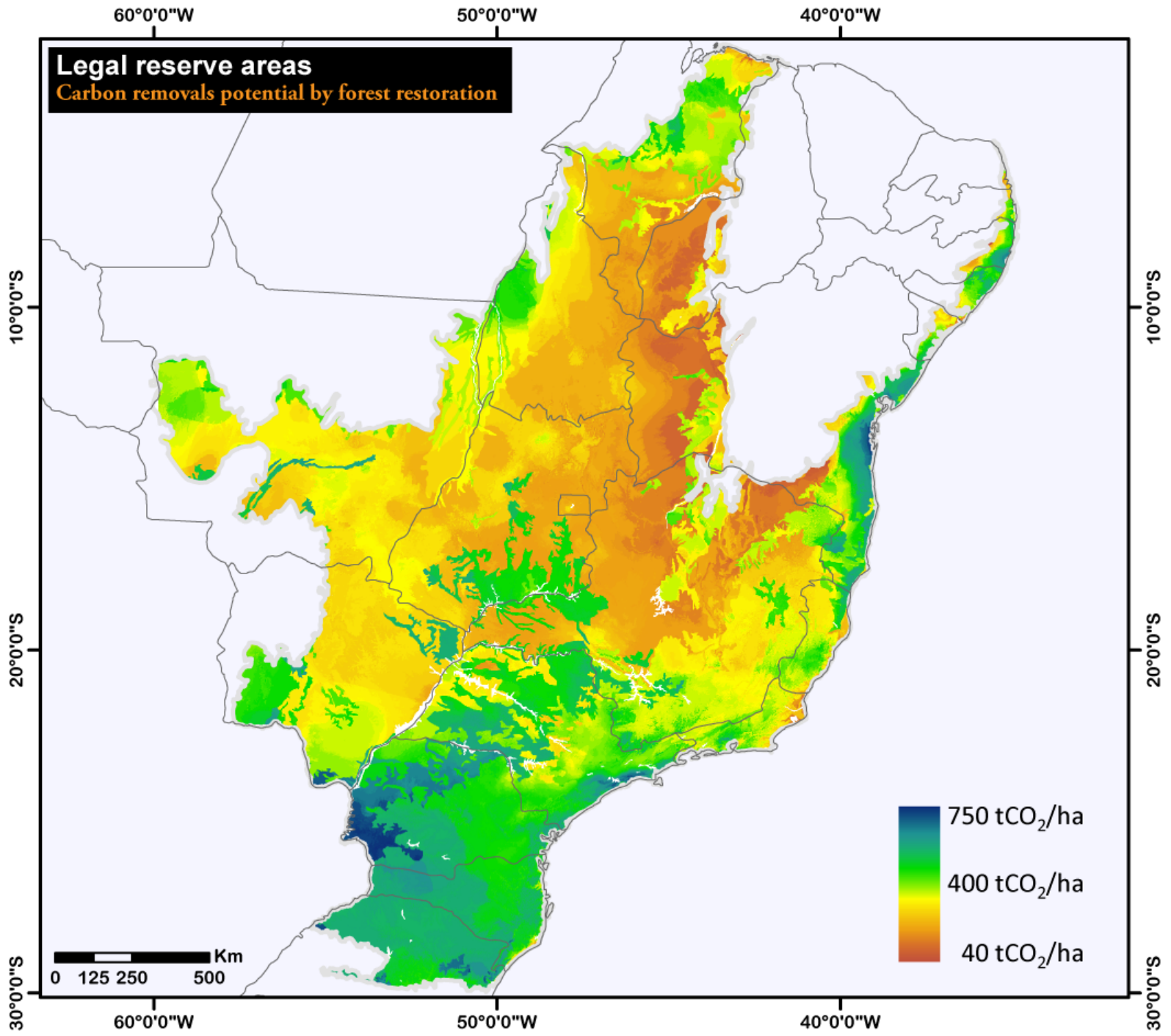
- 44,000,000 hectares of Legal Reserve to be restored (World bank 2010);
- More than 5,000,000 of riverside forests to be restored;
- Huge potential of carbon removals due to Brazil's soil and climatic conditions



# HOW MUCH CARBON?? SIG MODELLING IS THE ANSWER..

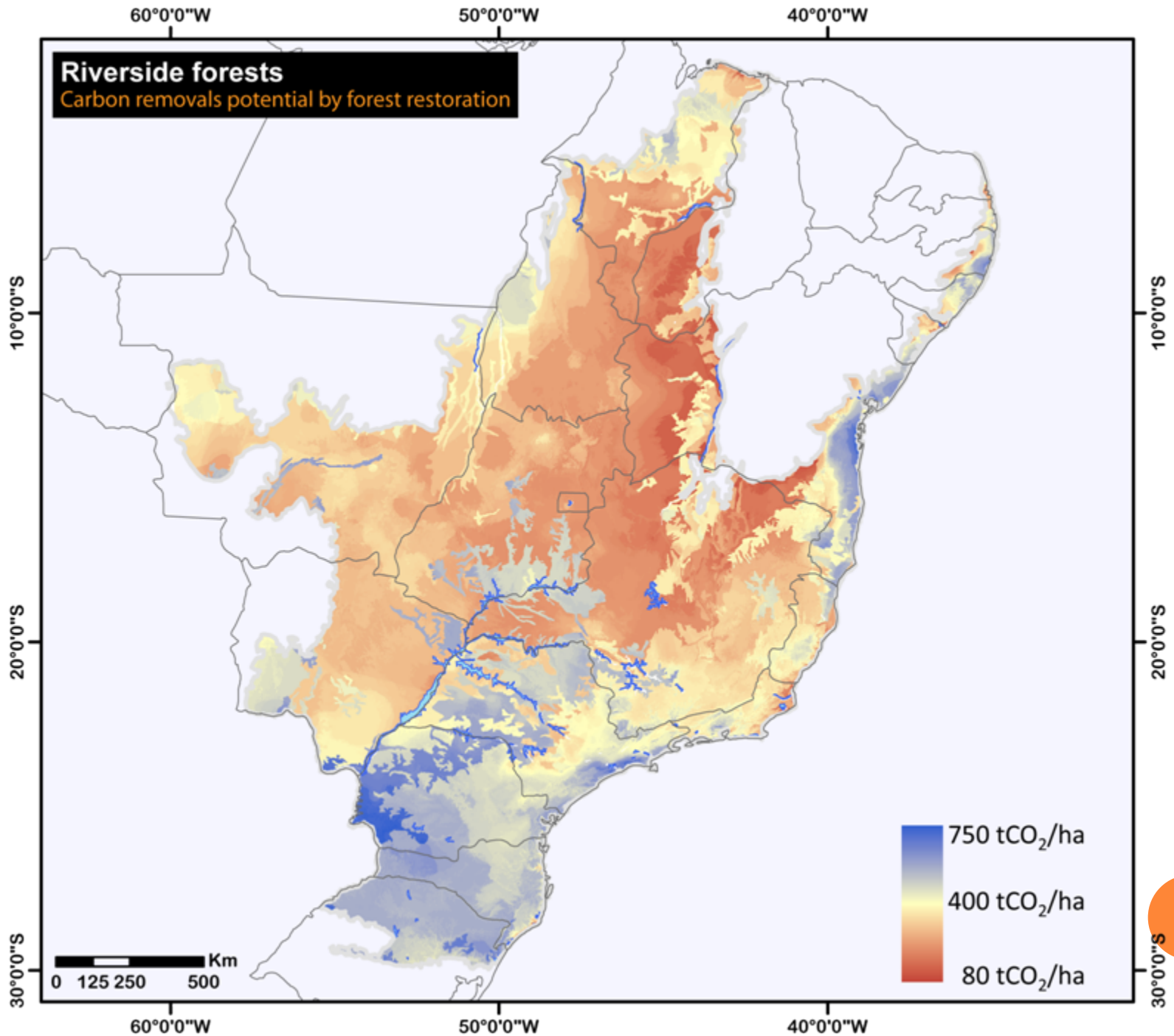


**Legal reserve areas**  
Carbon removals potential by forest restoration



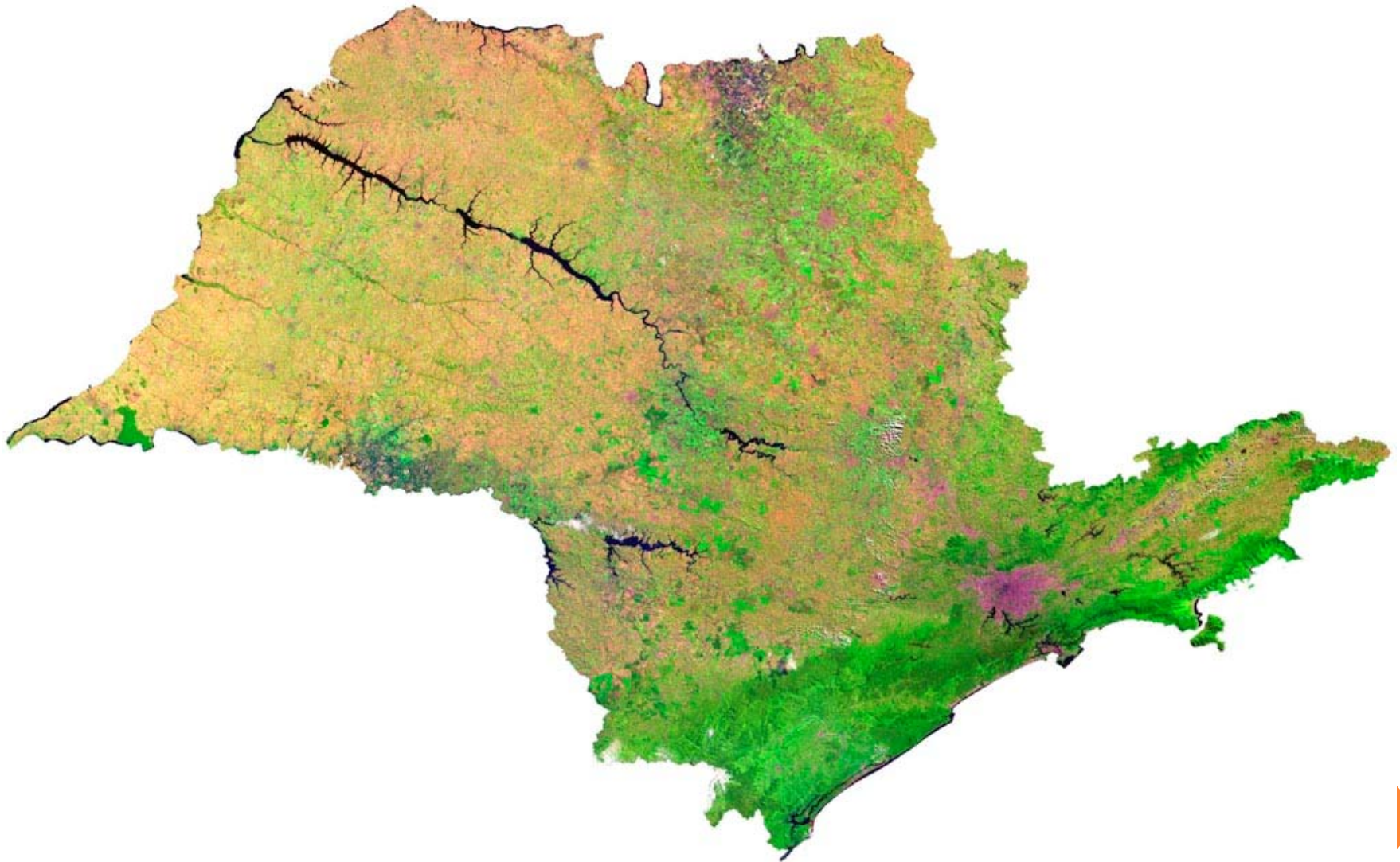
# Riverside forests

Carbon removals potential by forest restoration





# CASE STUDY – AES TIETÊ PROJECT



# RESTORATION OF 14,000 HECTARES



# AES TIETÊ PROJECT

- One of the first proposals of A/R CDM in the world;
- Methodology development begun in 2003
- Expected net removal of 5.2 million tCO<sub>2</sub>e - 370 tCO<sub>2</sub>e/ha;
- Benefits for biodiversity conservation and ecosystem services;
- Reduction of environmental liabilities;
- Reduction in siltation of reservoirs and maintain the volume of water and power generation.



# AES TIETÊ PROJECT

- Not yet registered (November 21, 2010)



# FORESTS DEDICATED TO ENERGY PRODUCTION

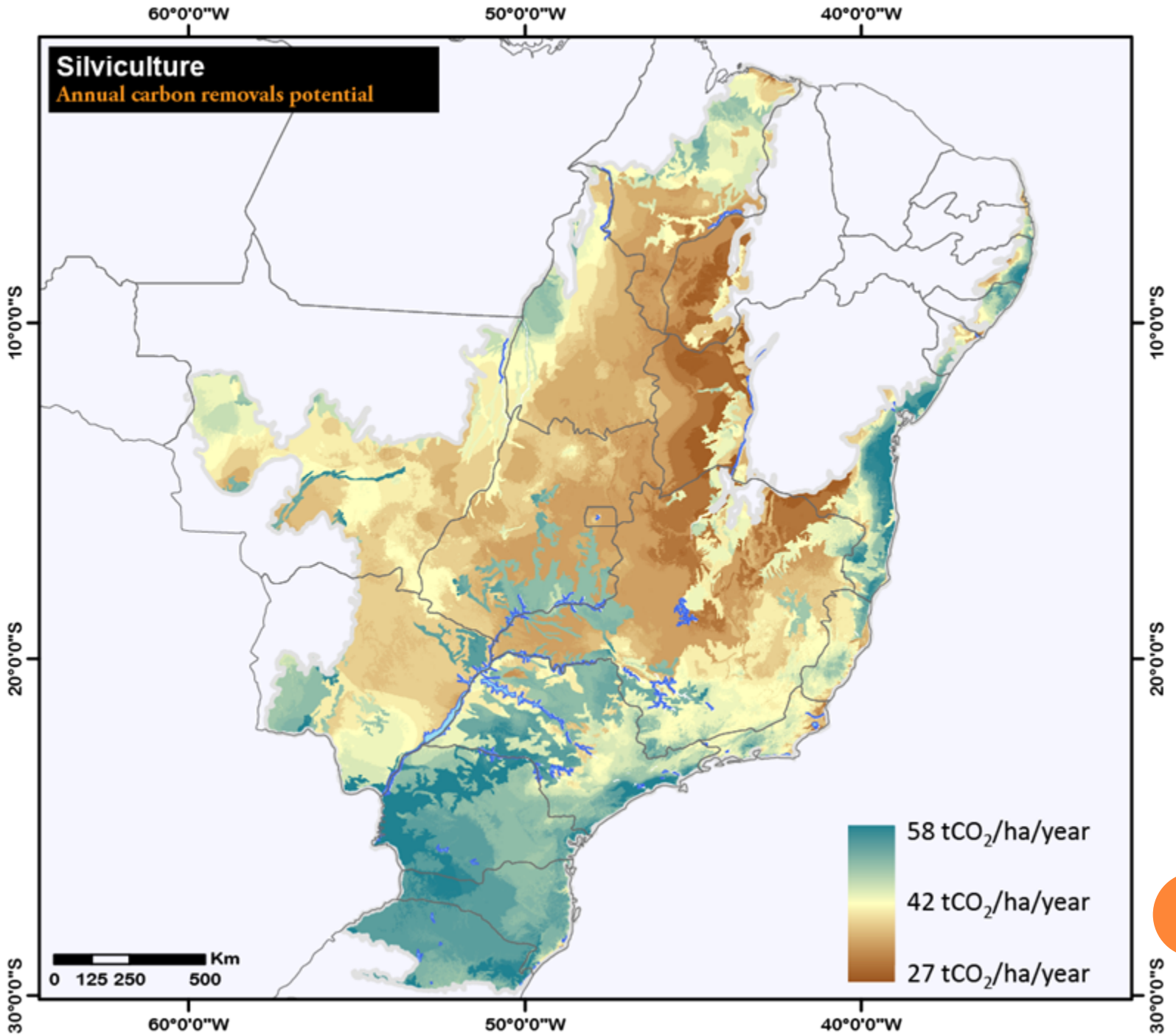
- Obtain energy through renewable biomass supplied by dedicated plantations;
- Relatively low cost deployment of maintenance;

## **Two possible sources of accreditation**

- Carbon removed from the atmosphere (plantations)
  - Subject to the conditions of applicability of afforestation and reforestation under the CDM
  - High potential for carbon sequestration - 27 to 58 tCO<sub>2</sub>e/ha/ano
  - 135-290 tCERs / ha for each scan (5 years)
- Energy production (substitution of fossil source)



**Silviculture**  
Annual carbon removals potential



# CASE STUDY – UTE RONDON II

- Currently in the process of validation;
- 24 MW of capacity - 4 consumed in the plant itself;
- 10,000 hectares of eucalyptus – 2,000 / year
- 10 years of accreditation



# CASE STUDY – UTE RONDON II

- Internal Rate of Return:

Without CDM: 8.2%

With CDM: 10%

100,000 CERs / year

Credits earned by the displaced fossil energy





# FORESTS DEDICATED TO SUPPLY RENEWABLE CHARCOAL FOR THE IRON INDUSTRY

- Substitution of coal coke
- 2,700,000 hectares of plantations would stop charcoal-gathering oriented deforestation by 2030 (World Bank 2010);
- The Plantar Project:
  - 11,000 hectares of eucalyptus plantations;
  - Biomass will be used to generate thermal energy as well as a reducing agent for iron manufacturing



## ➤ Rota do Carvão Mineral



Mina

Emissão  
 $\text{CO}_2$



Coqueria

Emissão  
 $\text{CO}_2$



Alto Forno

EMIÇÃO  
1.9 toneladas  
 $\text{CO}_2$

## ➤ Rota do Carvão Vegetal (Biocombustível sólido)



Floresta Plantada

Resgate  
 $\text{CO}_2$



Carbonização

Emissão  
 $\text{CO}_2$   
Reciclado



Alto Forno

REMOÇÃO  
1.1 toneladas  
 $\text{CO}_2$

GANHO AMBIENTAL  
3t  $\text{CO}_2\text{e}$   
por ton produzida

# A/R PROGRAMME OF ACTIVITIES IN THE BRAZILIAN COOPERATIVE SYSTEM

- Funded by the British Embassy;
- Main goal: to help rural cooperatives to eliminate environmental liabilities related to forest cover;
- 20 hectares (pilot-project);
- Development of PoA and first CPA. All other costs should be undertaken by the cooperative system.
- Project comprised capacity building and provided basic understanding of climate related issues.







# RESULTS

- 17 small landowners in the pilot-project
- 20 hectares of riverside areas restored.



# A/R CDM ACTIVITIES: WHAT'S HAPPENING?

- Market uncertainties: tCERs and lCERs
- Legal uncertainties: Brazil's Forest Code under attack;
- The Permanence Dilemma;
- EU ETS???
- Huge development AND monitoring costs;



# PERSPECTIVES

- First A/R CERs will hit the market in 2011;
- CDM life after 2012
- Brazil Forest Code
- REDD



THANK YOU!!!



[magno@iniciativaverde.org.br](mailto:magno@iniciativaverde.org.br)

