

Quantifying and managing land use effects of bioenergy

19-21 September 2011, Campinas, Brazil

Session 2: Quantifying land use effects of bioenergy

Practical application: Case study results, demonstration of methods

Sparovek, Gerd (*University of São Paulo, Brazil*)

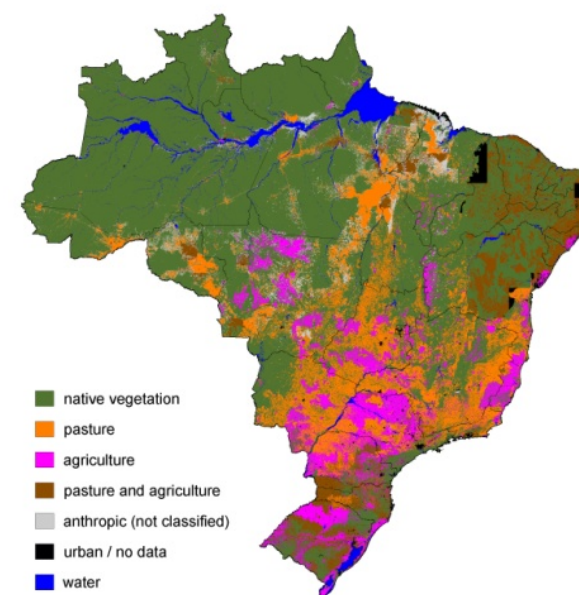
Berndes, Göran (*Chalmers University of Technology, Sweden*)

Barretto, Alberto Giaroli de Oliveira Pereira (*USP & Chalmers*)

Klug, Israel Leoname Frölich (*Consultant, Brazil*)

The revision of the Brazilian forest act: increased deforestation or a historic step towards balancing agricultural development and nature conservation

BR 850 Mha

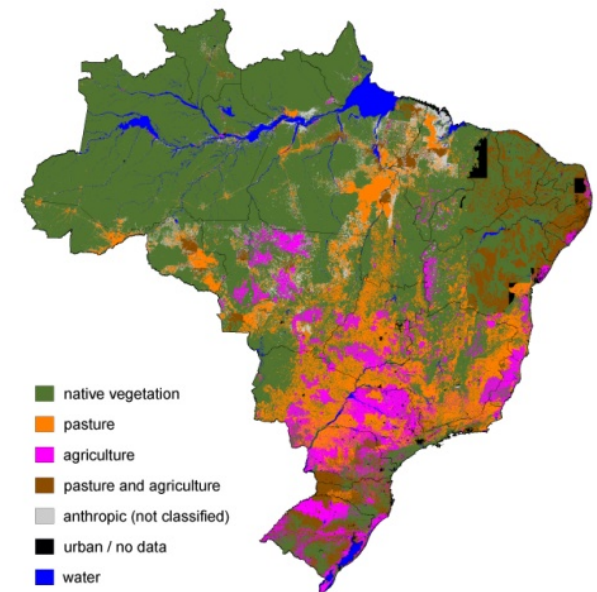
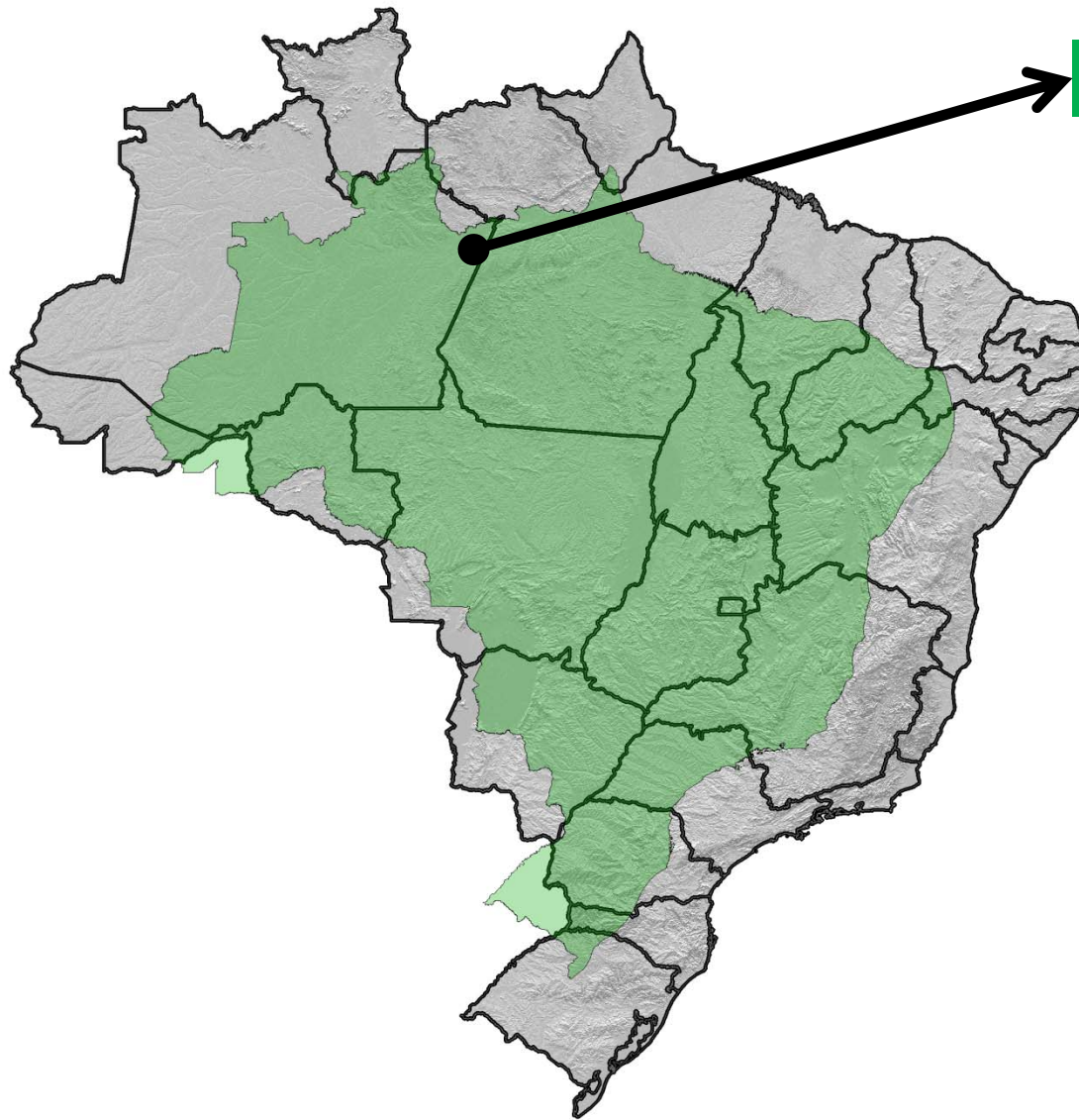


- native vegetation
- pasture
- agriculture
- pasture and agriculture
- anthropic (not classified)
- urban / no data
- water

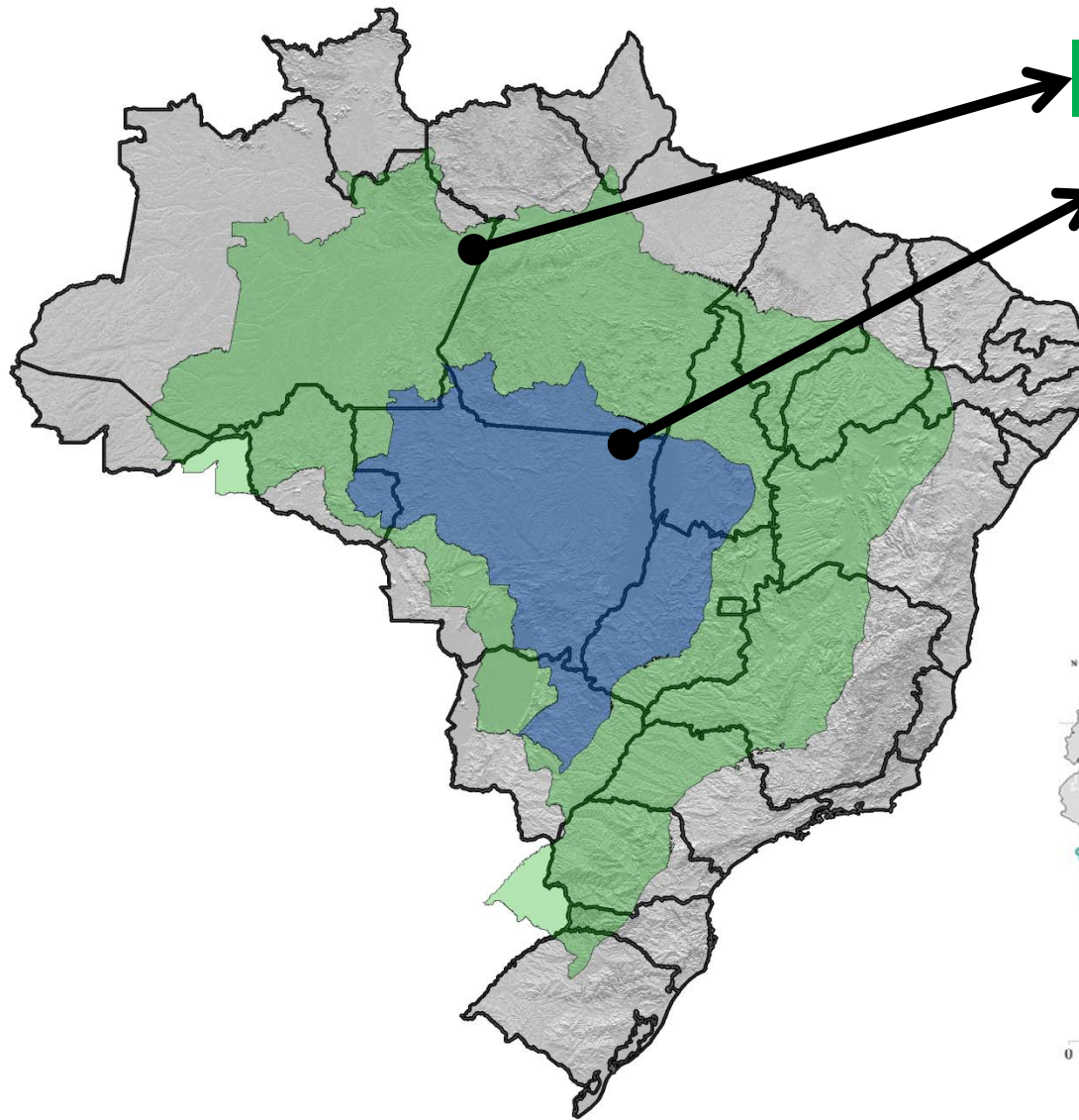
BR 850 Mha

Natural Vegetation (NV)

NV 537 Mha

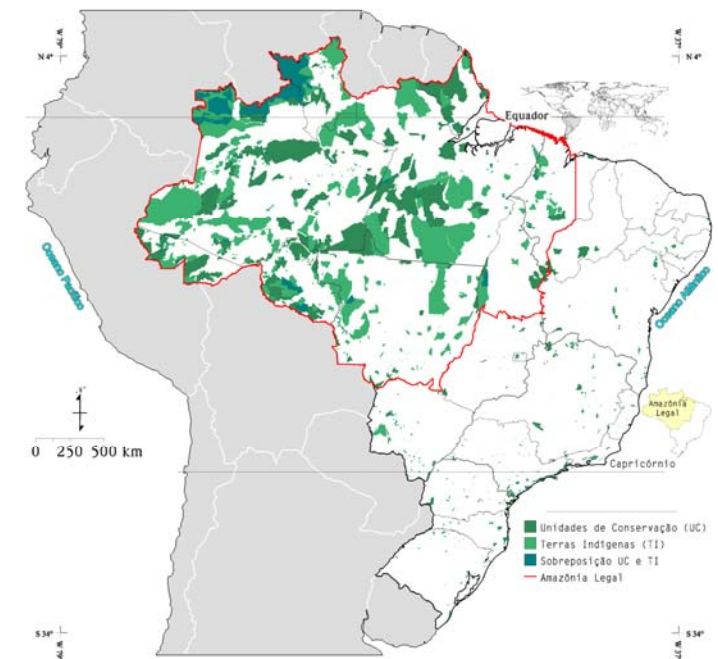


BR 850 Mha

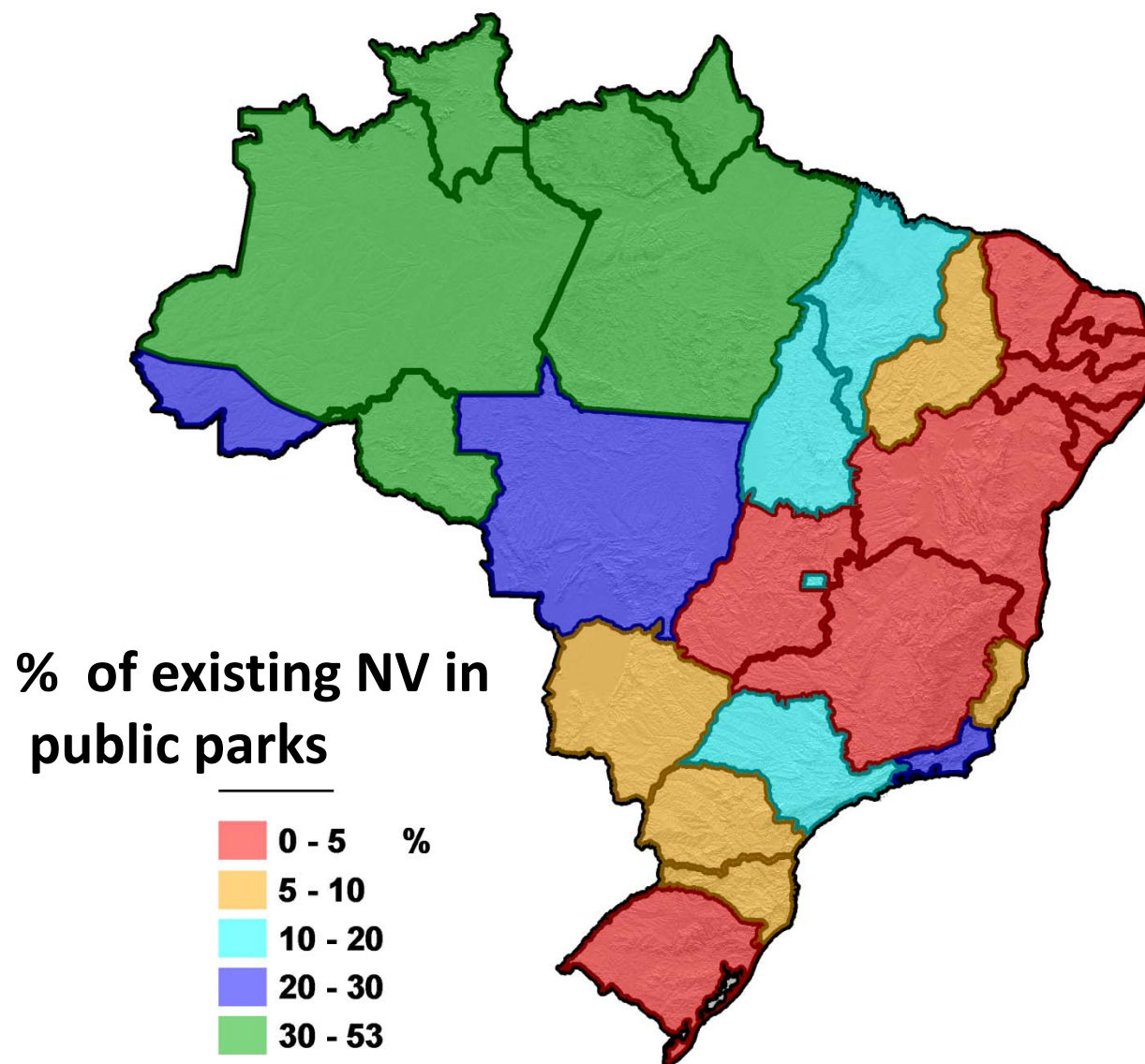


NV 537 Mha

NV in public parks 170 Mha



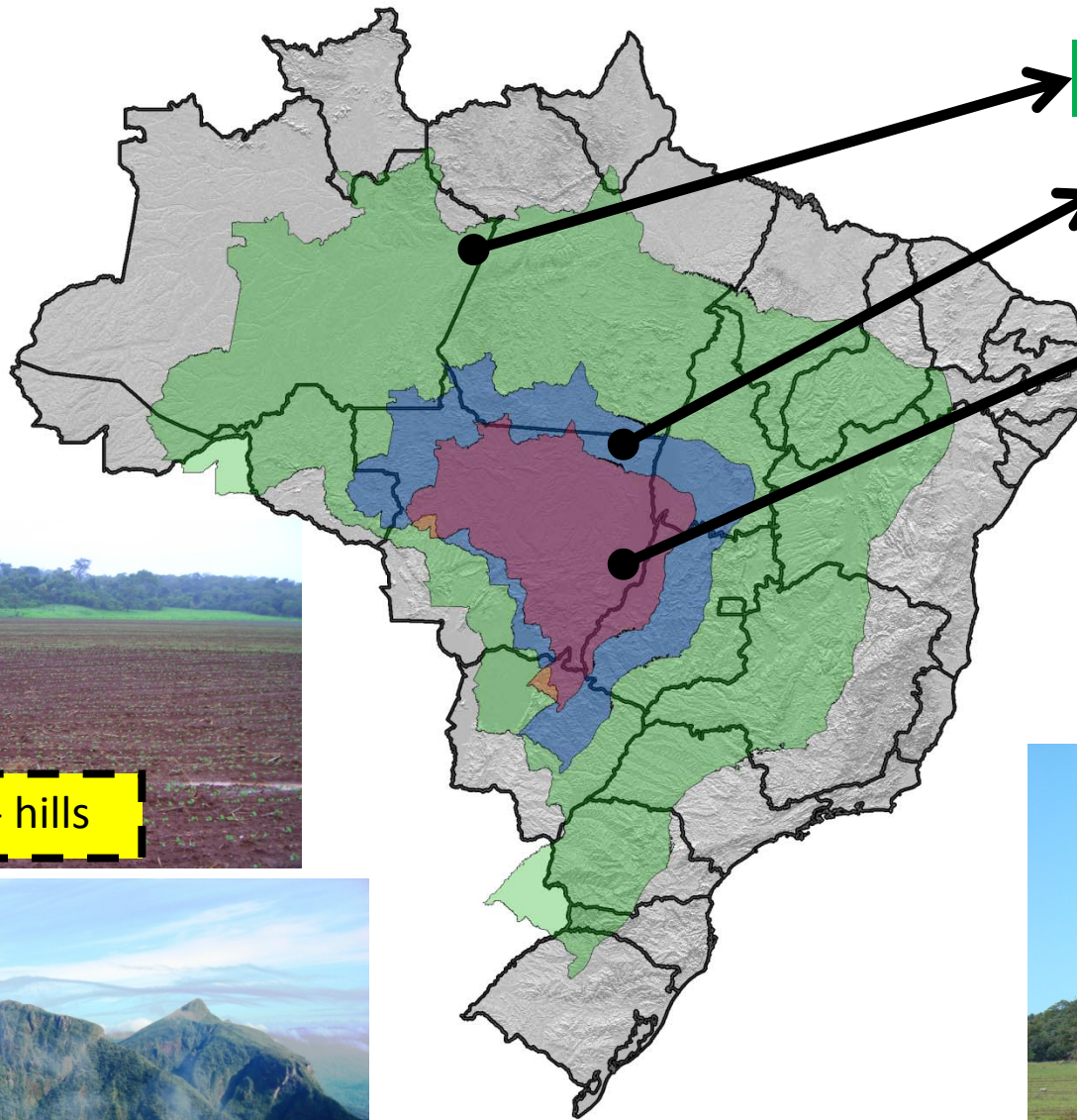
NV in public parks (conservation units and indian reservations)



	% da VN em UC/TI
PA	45
RO	48
RR	53
TO	18
AL	2
BA	3
CE	< 1
MA	16
PB	< 1
PE	3
PI	6
RN	< 1
SE	1
DF	20
GO	3
MS	6
MT	28
PR	9
RS	1
SC	7
ES	6
MG	3
RJ	22
SP	17
BR	27
AMAZONIA	40
CAATINGA	2
CERRADO	12
MATA ATLANTICA	7
PAMPAS	1
PANTANAL	5

BR 850 Mha

Permanent Protection Areas (PPA)



NV 537 Mha

NV in public parks 170 Mha

NV in PPA 80 Mha



Top - hills



High altitudes



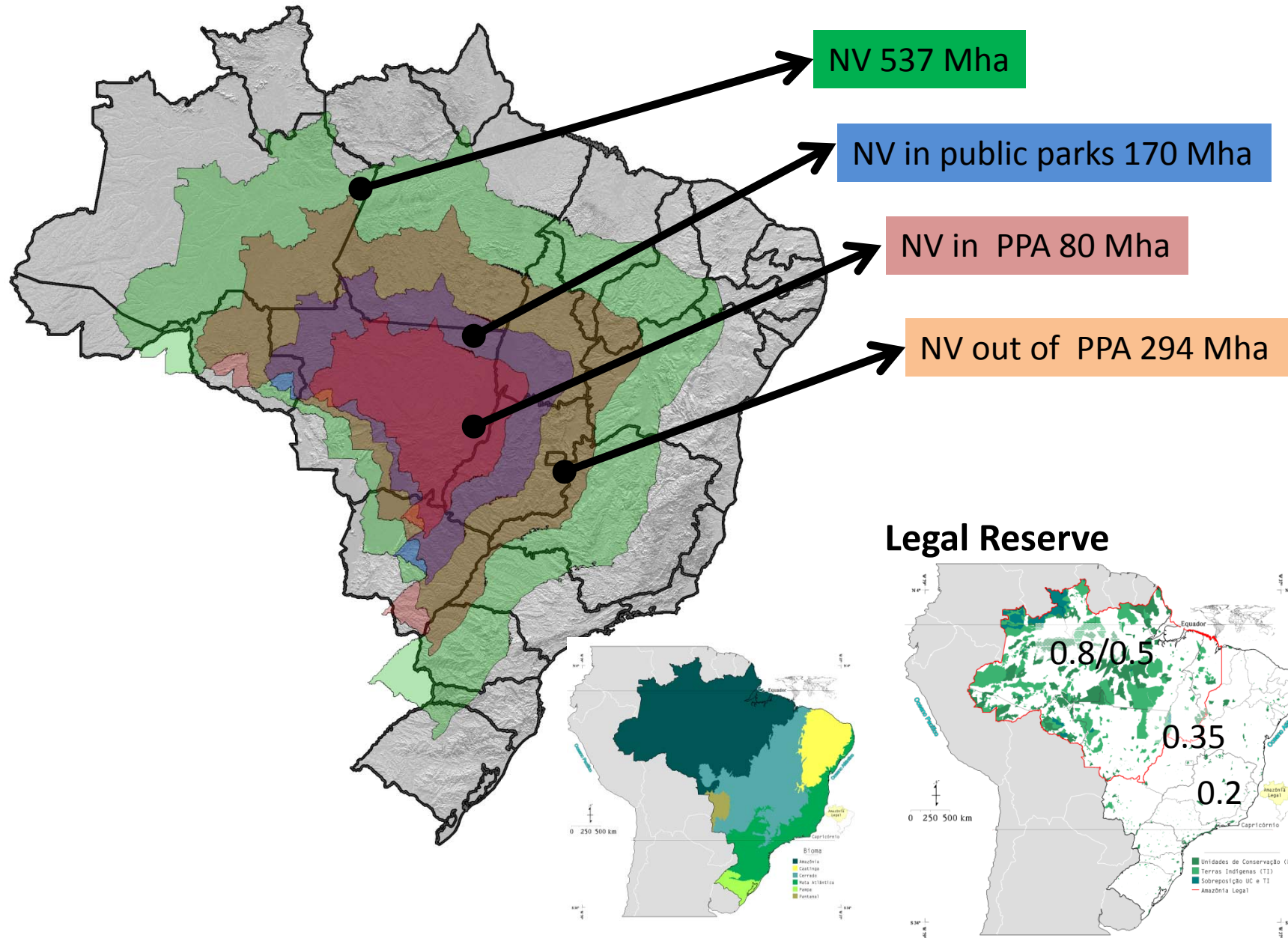
Riparian buffer strips



Steep slopes

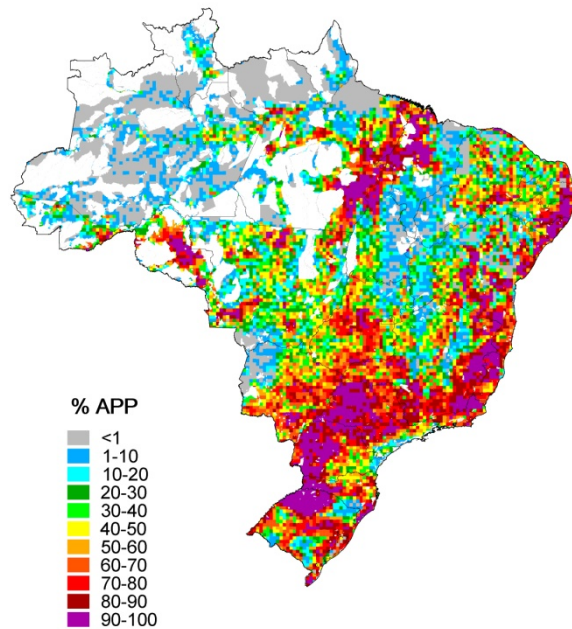
BR 850 Mha

Legal Reserve (LR)



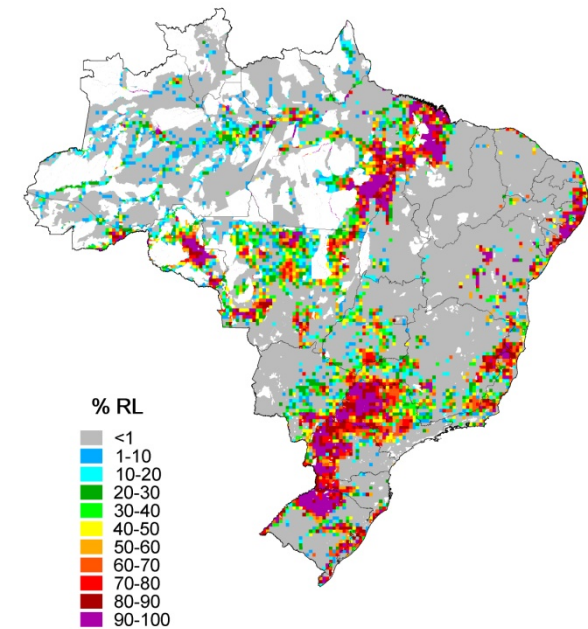
Compliance Forest Act (*NV protection on private land*)

PPA (*geographic location*)



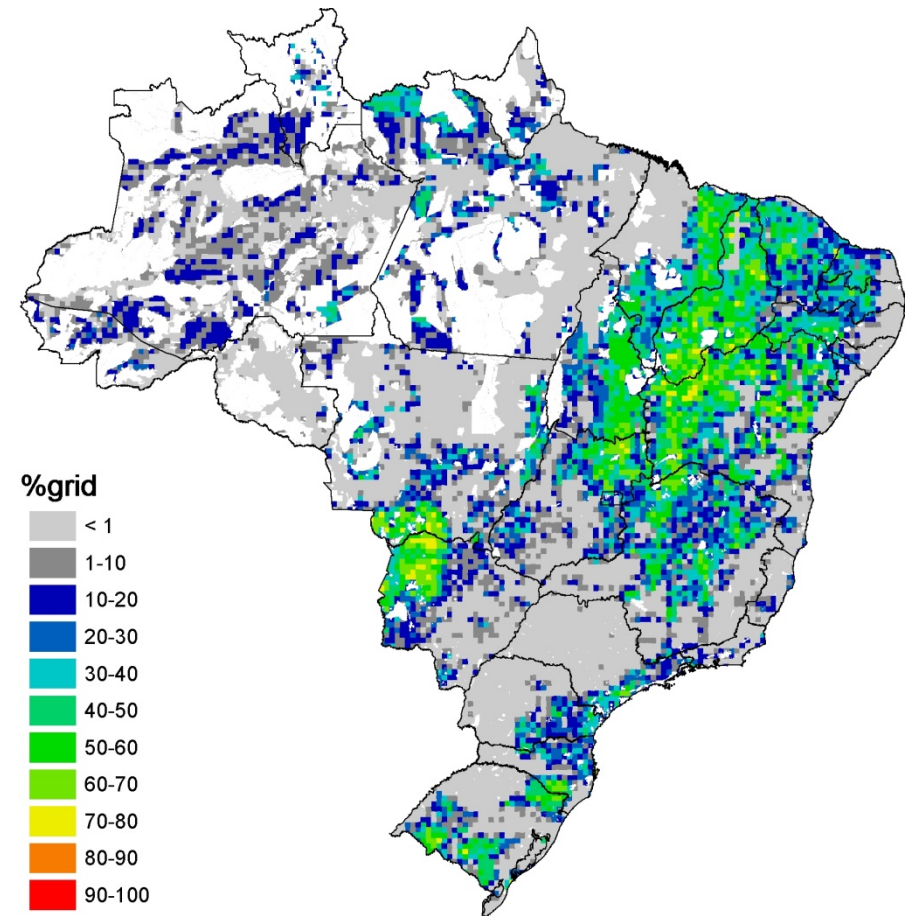
PPA needed (min) 135 Mha
Deficit (min) of NV = 55 Mha

LR (*no specific location*)



LR needed 267 Mha
Deficit (min) of NV = 48 Mha

NV not protected after full compliance to current Forest Act



Current FA \approx 91 Mha

Revision of the Forest Act (FA): possible outcome

	LR - need	LR - restored	PPA - need	PPA - restored	NV not protected
Current FA	267 Mha	48 Mha	135 Mha	55 Mha	91 Mha
Revised FA*	204 Mha	0	≈ 135Mha	0	126 Mha

Legal vs no-Legal pathway (*certification, finance, incentives, zoning, land titling, more parks, intensification...*)

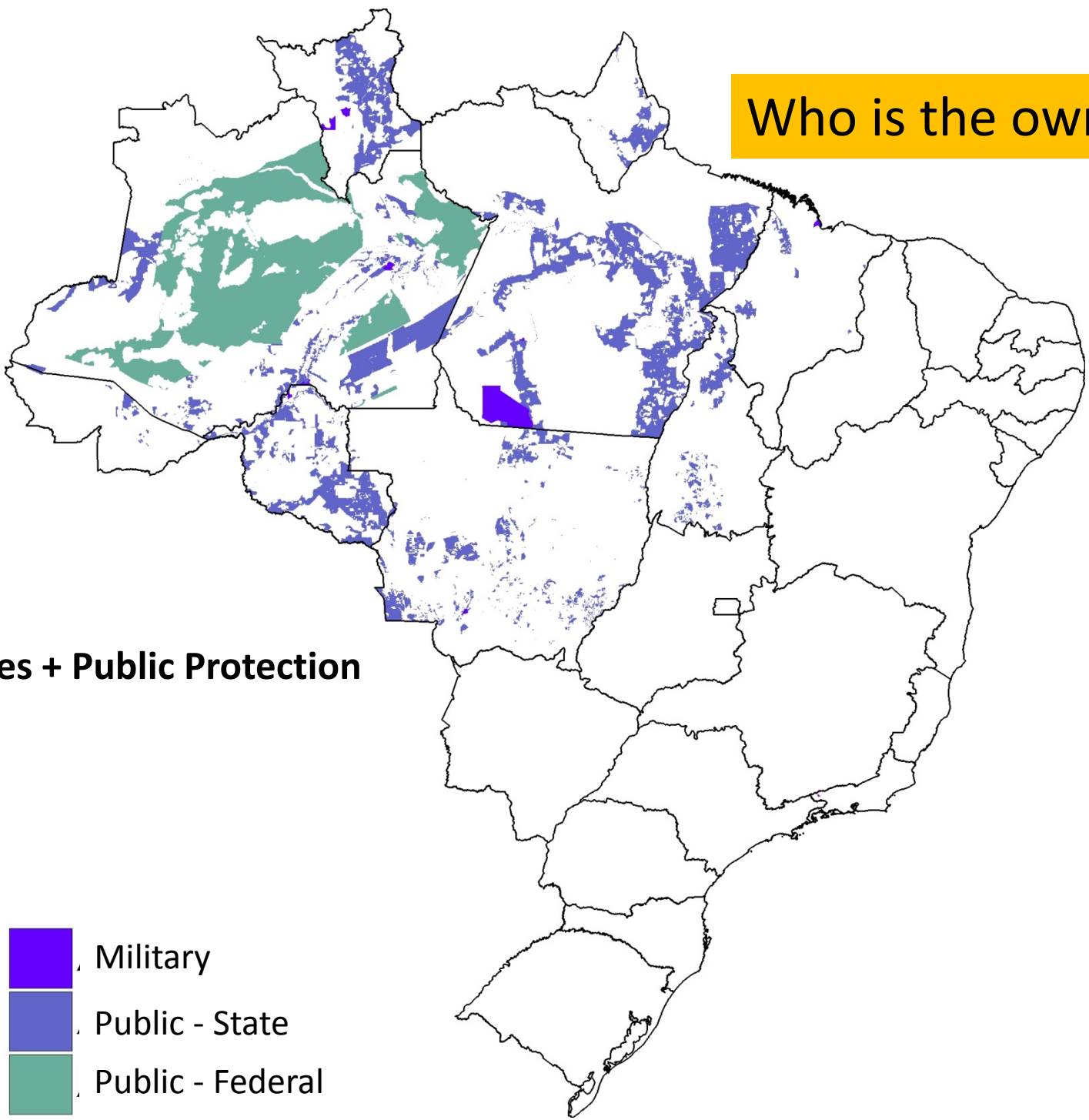
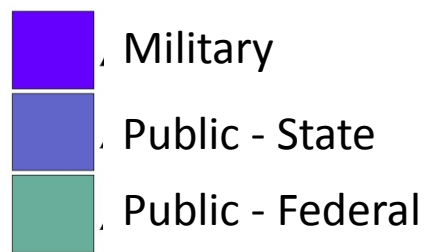
* possible interpretation considering a strong drive towards compliance

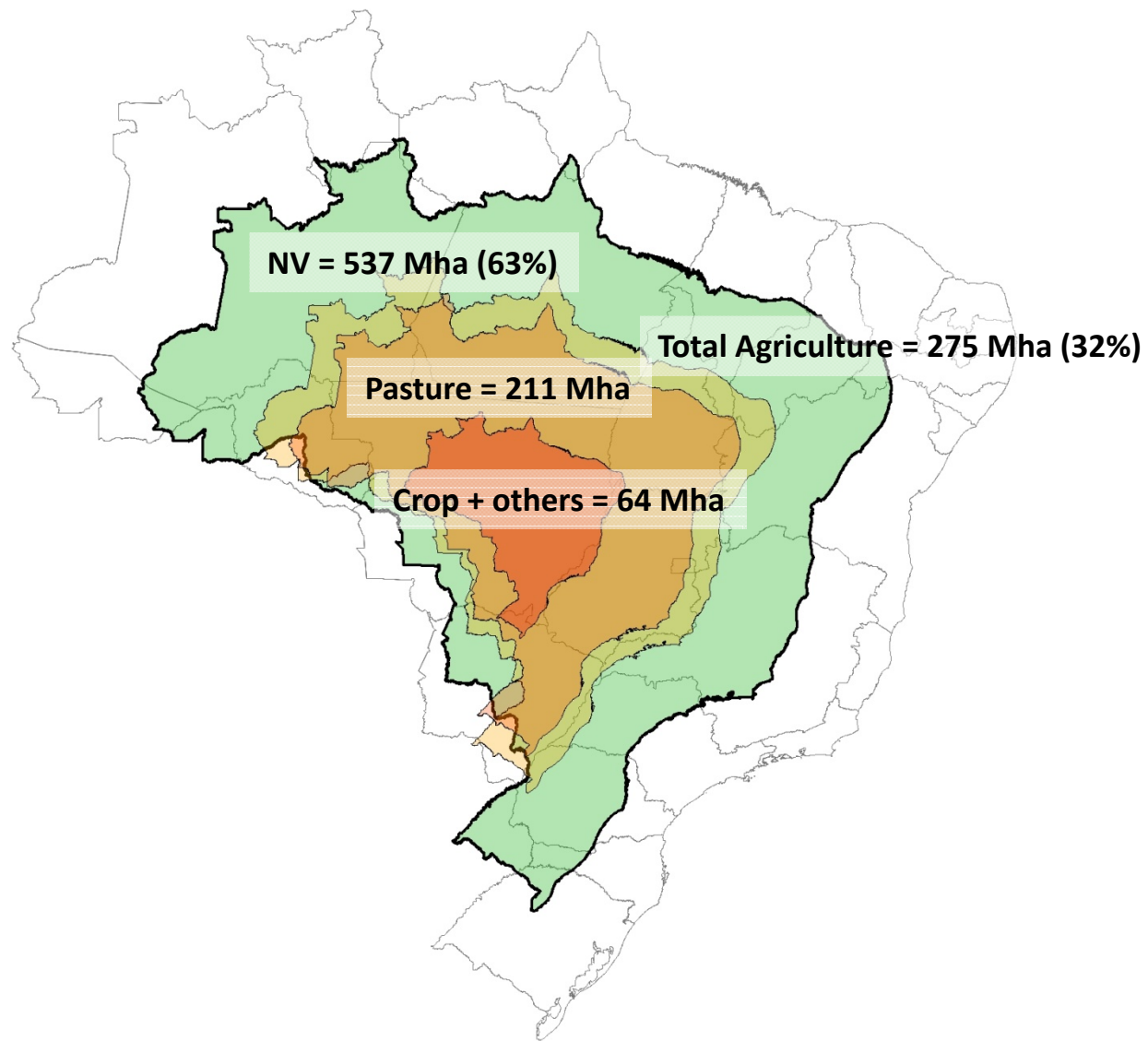
Compensation market
&
Legal requirement reduction

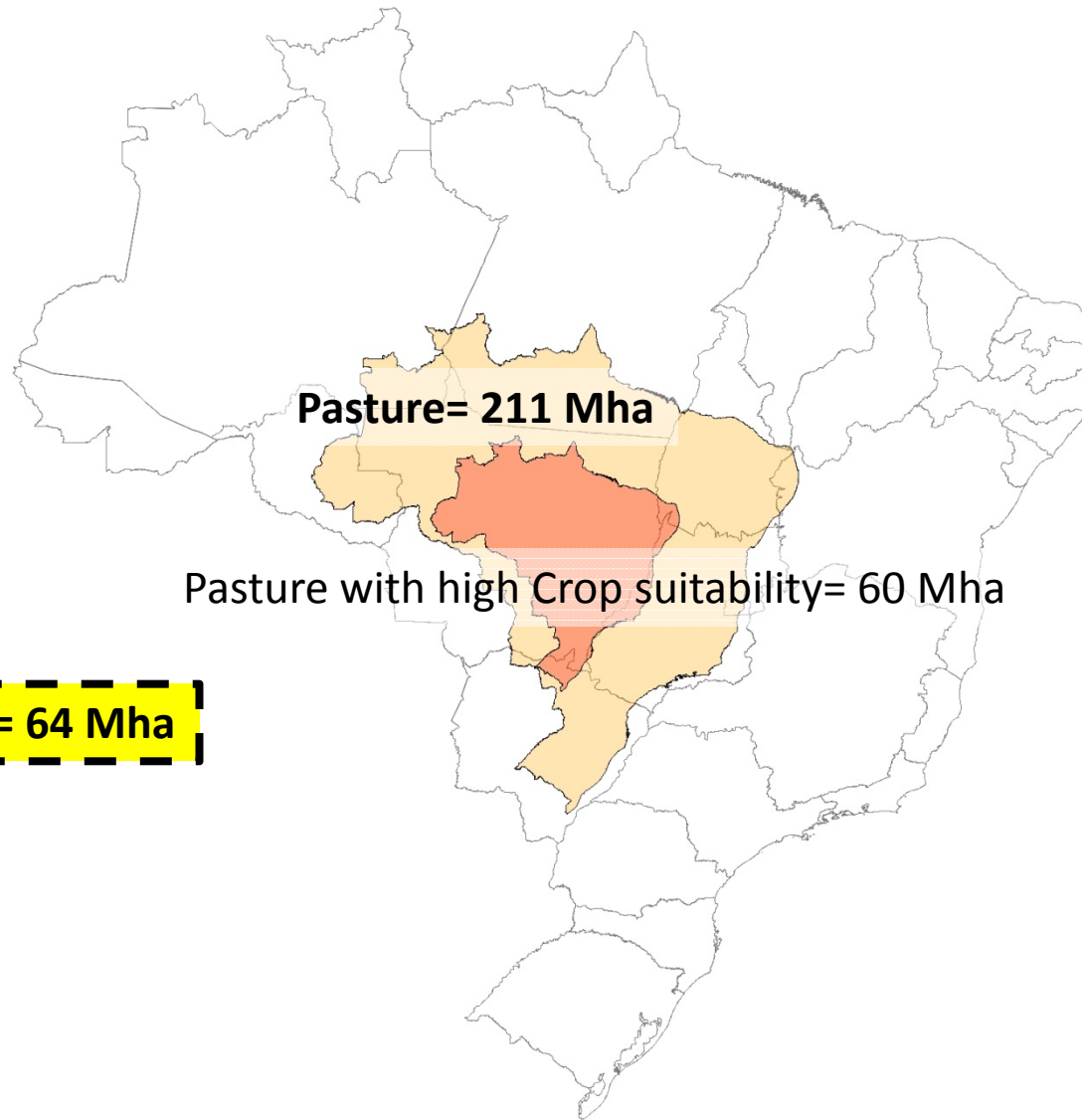
No-compliance may be forgiven

Who is the owner??

Land Titles + Public Protection







Pasture= 211 Mha

Pasture with high Crop suitability= 60 Mha

Current crop = 64 Mha

**Cane
residues**



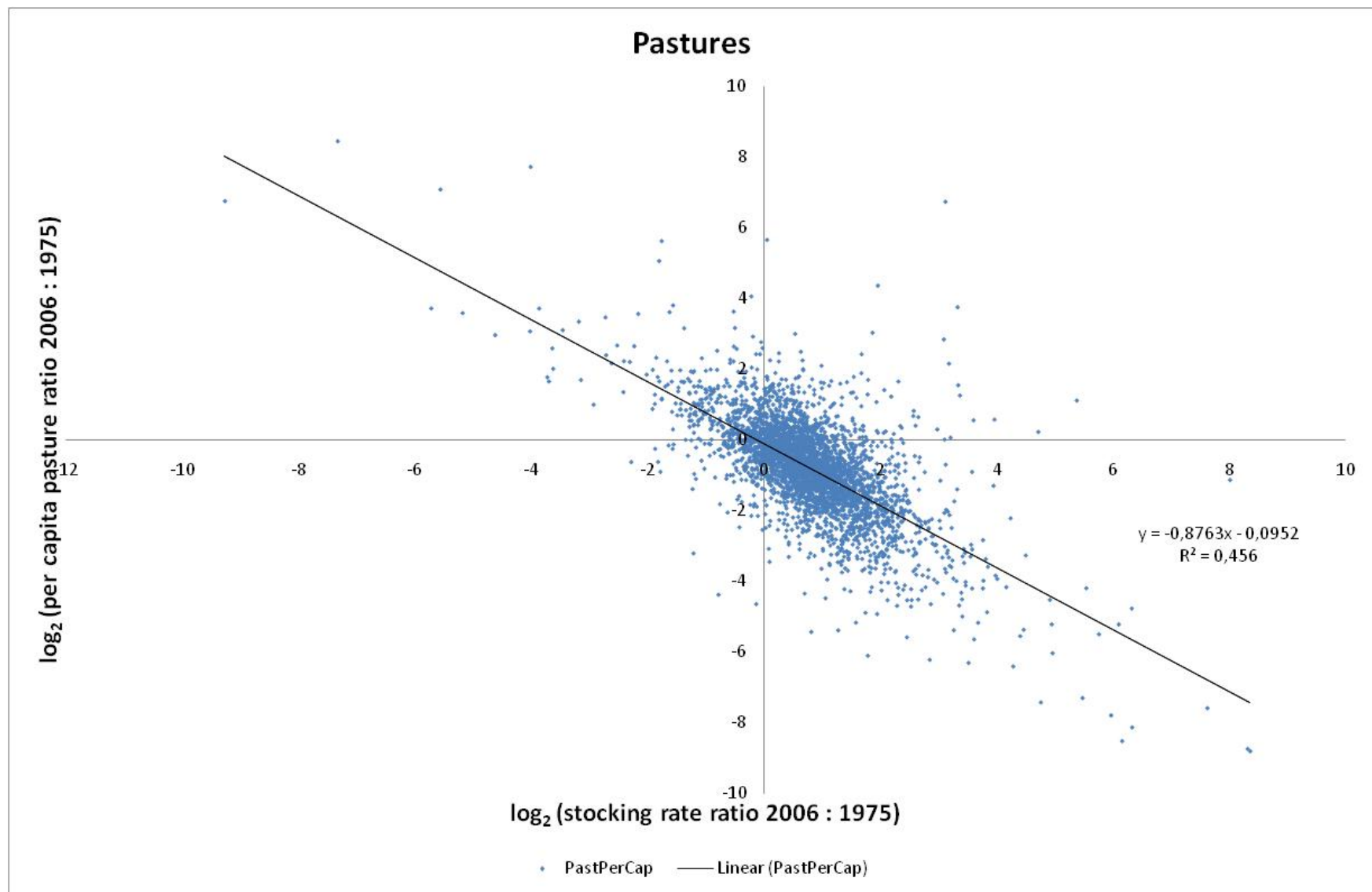
**Beef cattle production development
Intensification**

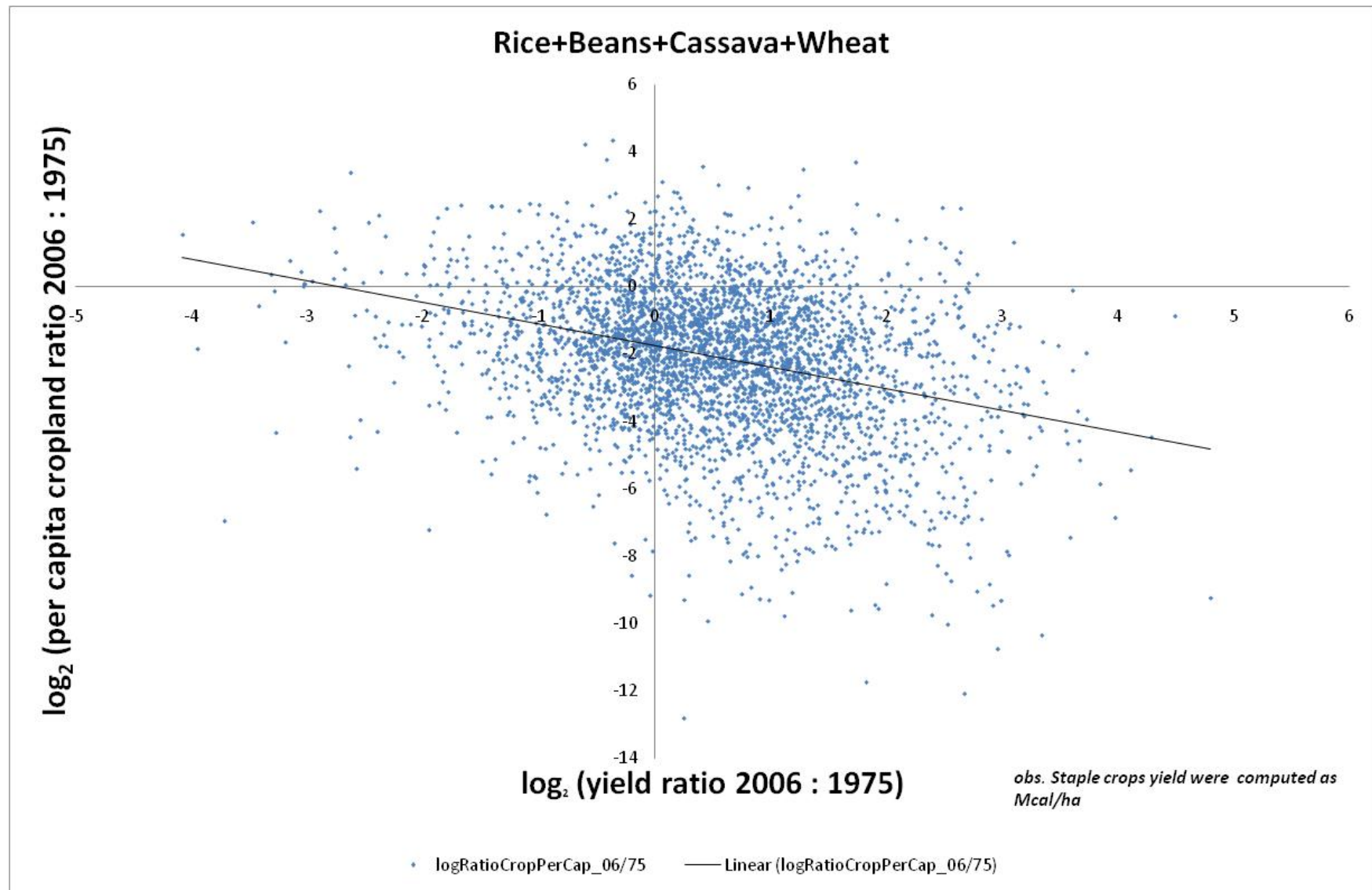
Cattle production can release 69 Mha

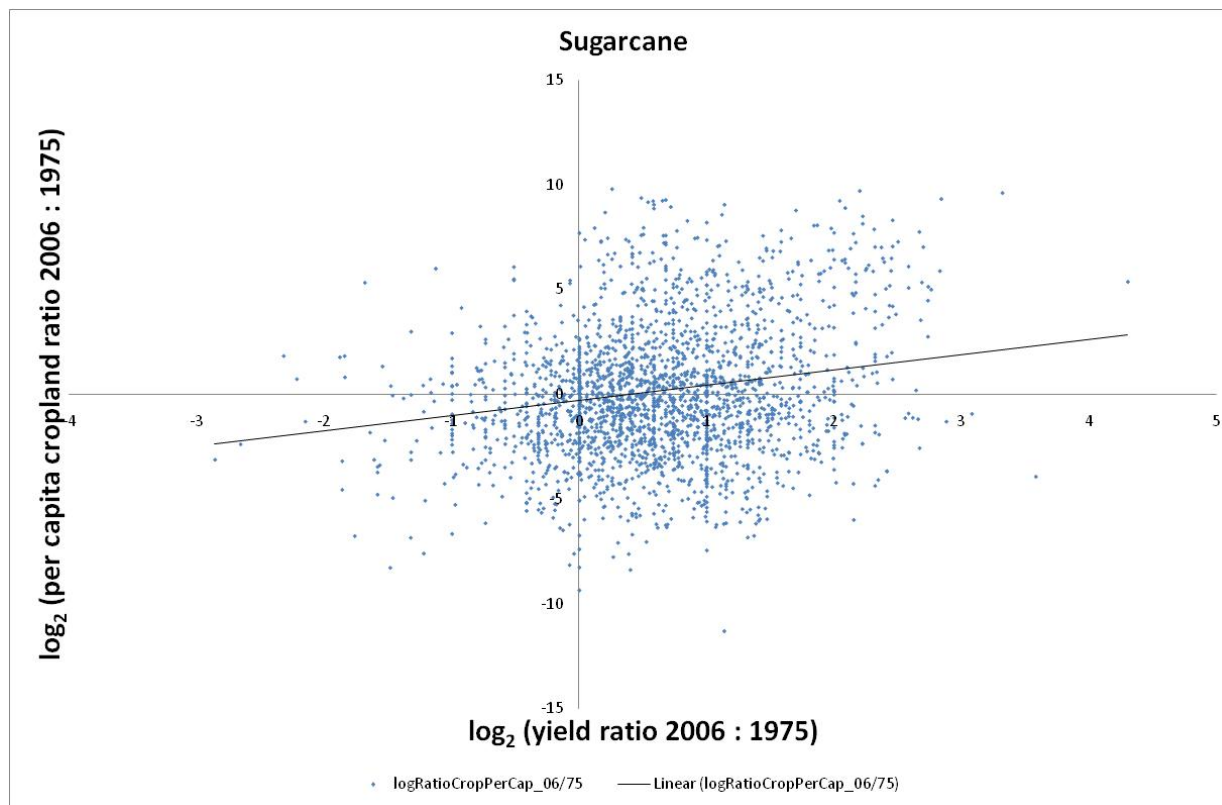
Herd (M head)	180		133
Stocking rate (head/ha)	1.14		1.50
Off-take rate (% y)	22		30
Slaughter rate (M head/y)	40		40
Area (Mha)	158	→	89



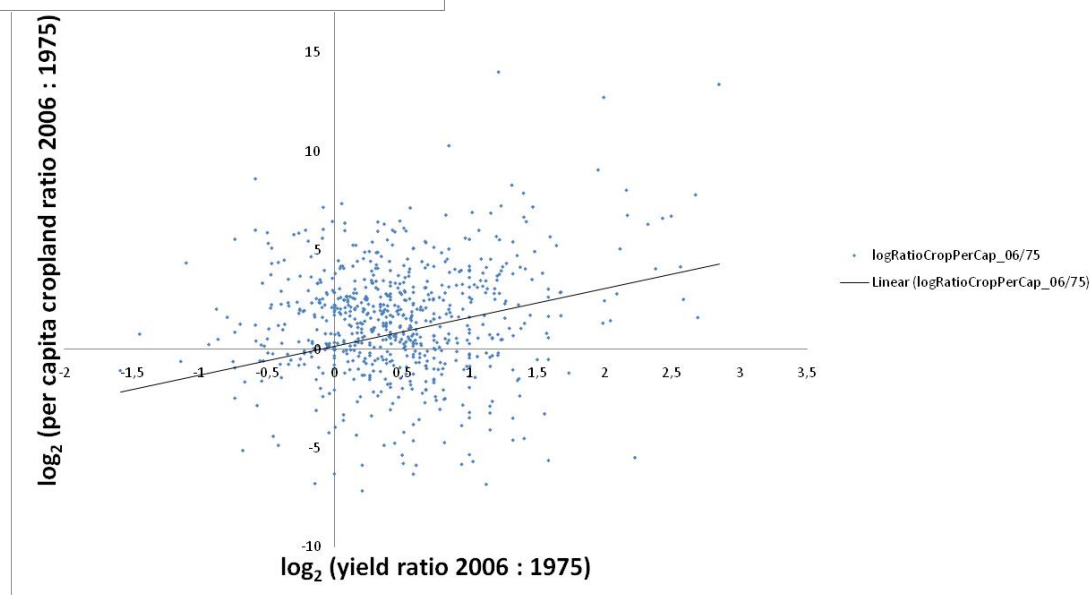
Integration with crops







Soybeans





Obrigado!

Thanks!

Danke!

Tack!

Bedankt!

感謝!

Questions now?

or later:

gerd@usp.br