Experience in restoration from Brazil

Pedro Brancalion

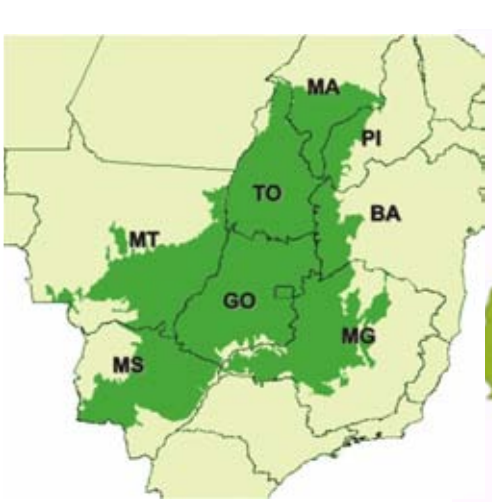
University of São Paulo, ESALQ

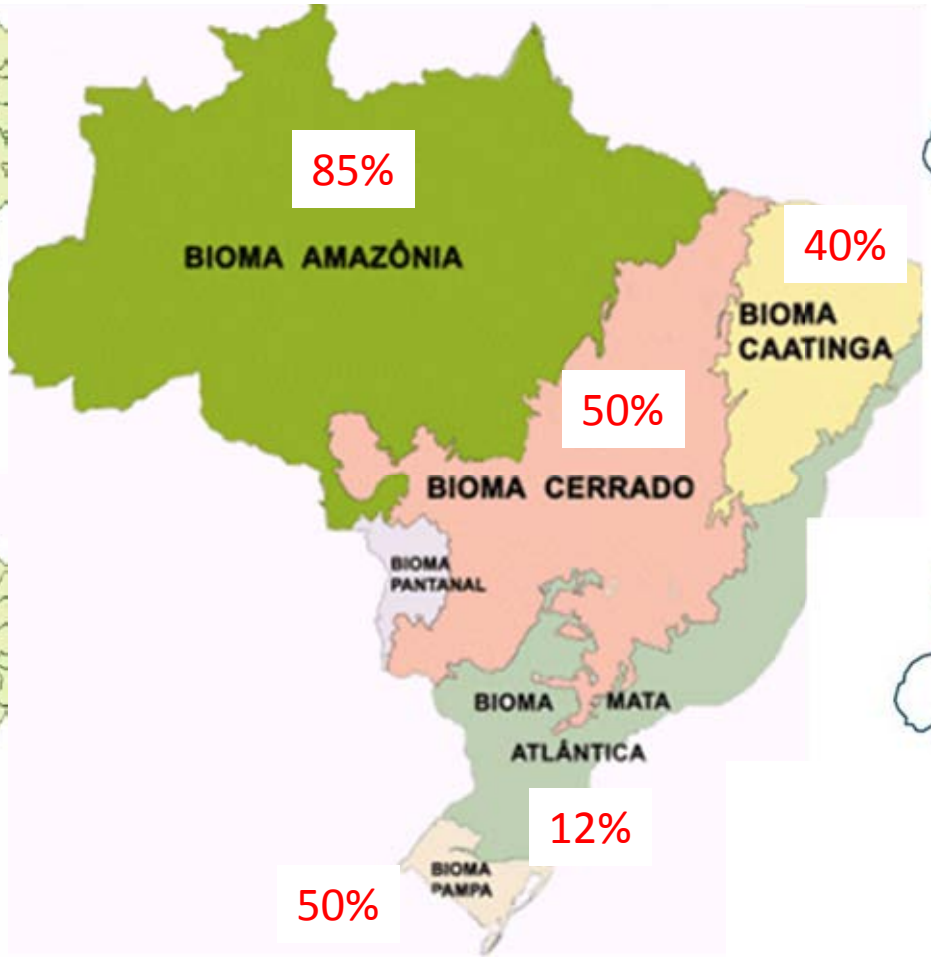
Capacity-building workshop for South East Asia on ecosystem conservation and restoration to support achievement of Aichi Biodiversity Targets

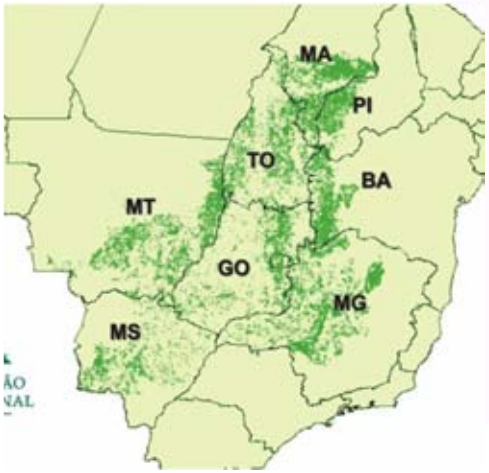
Structure

- Degradation and restoration in Brazil: an overview
- From deforestation to reforestation
- An integrated policy for ecological restoration
- Early lessons for tropical countries

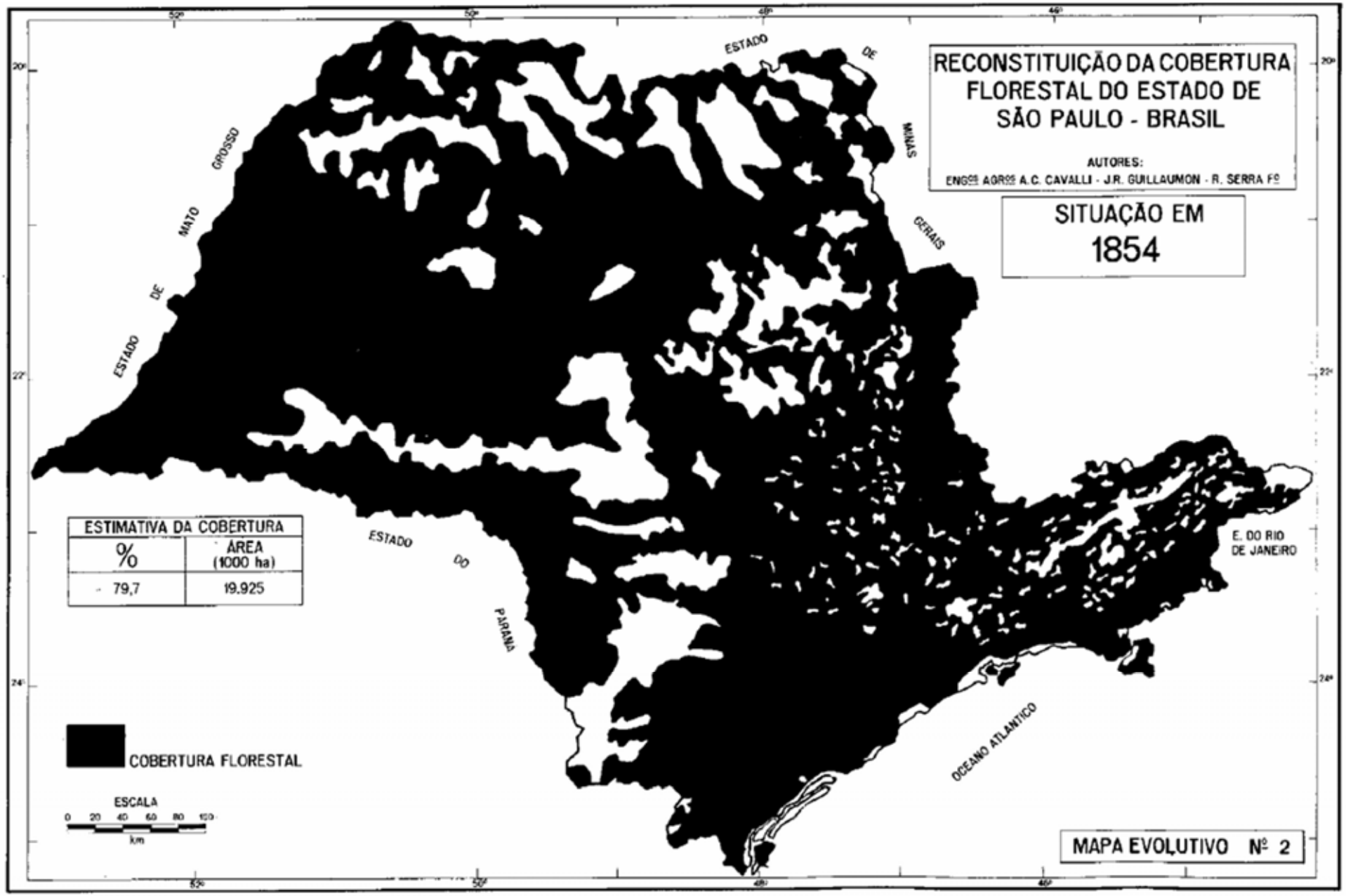
Degradation and restoration in Brazil: an overview

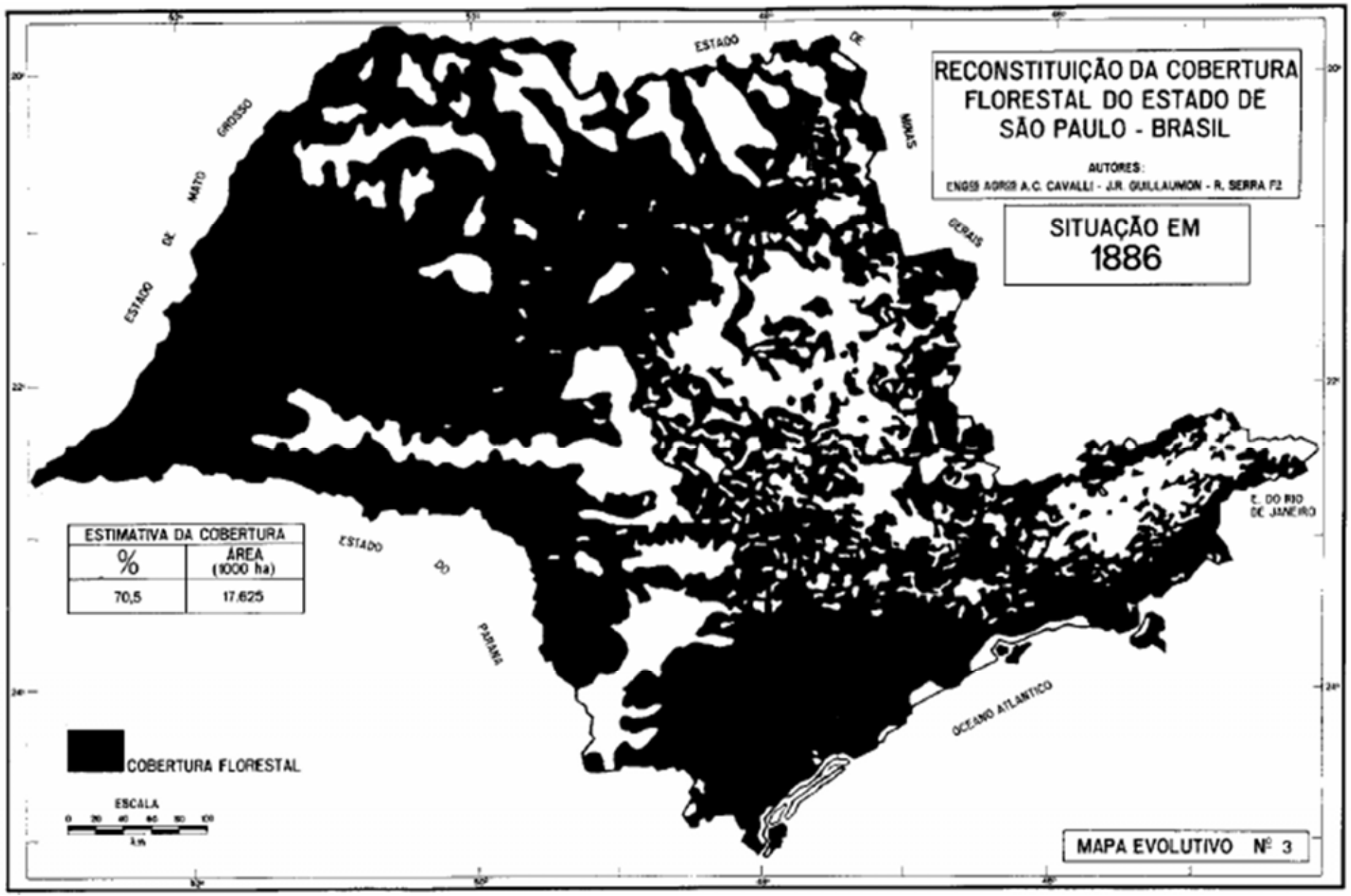


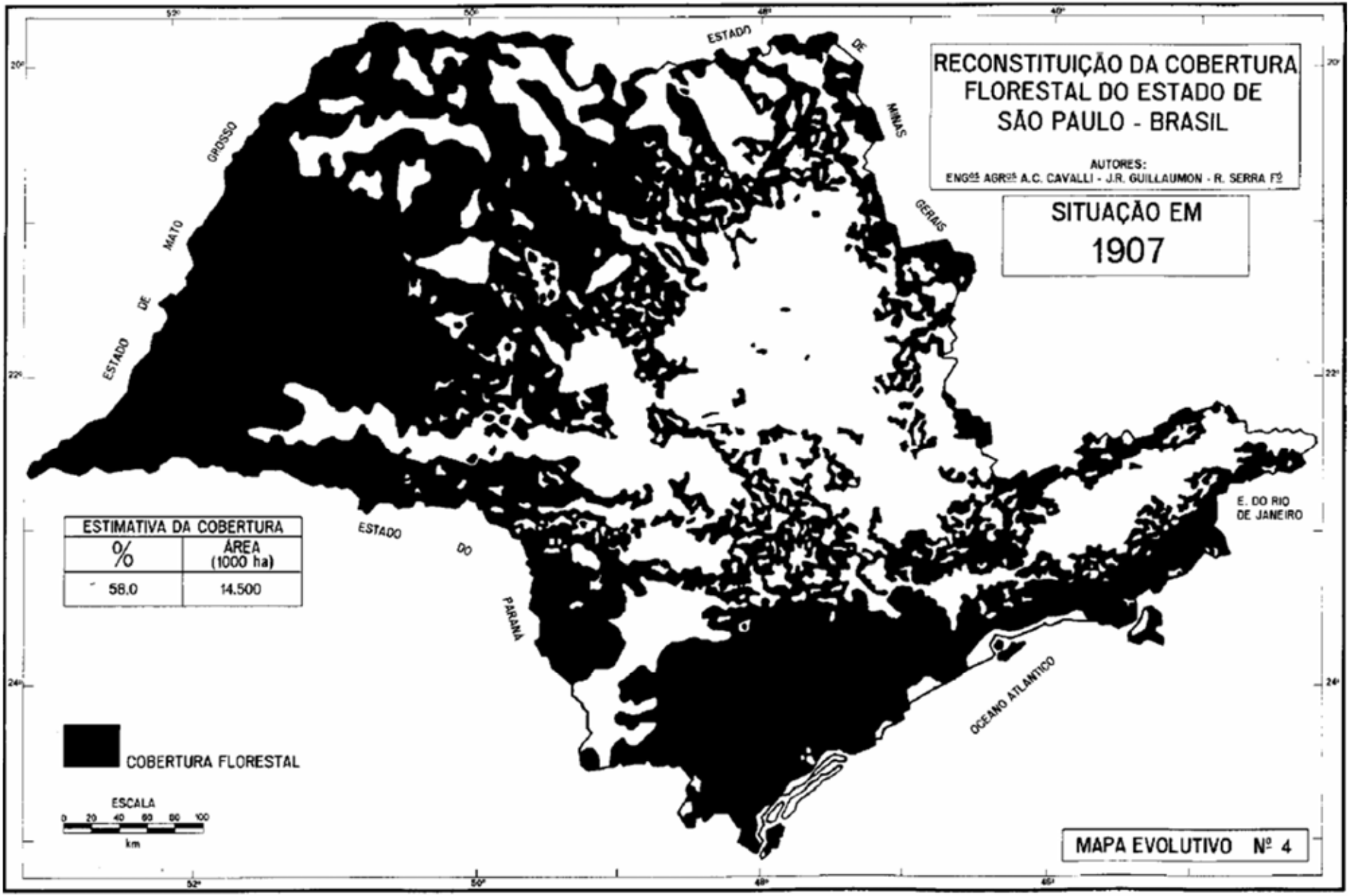


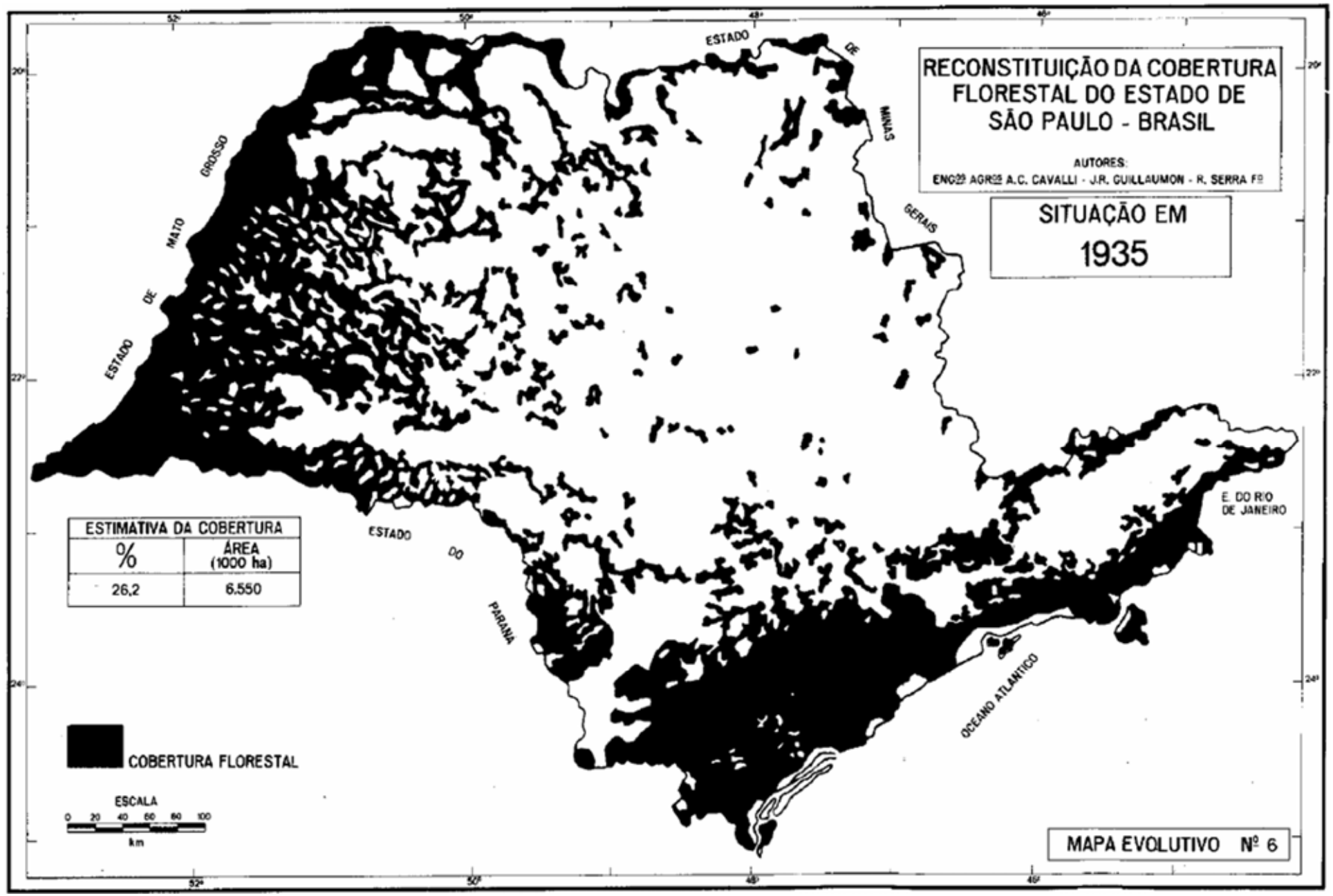


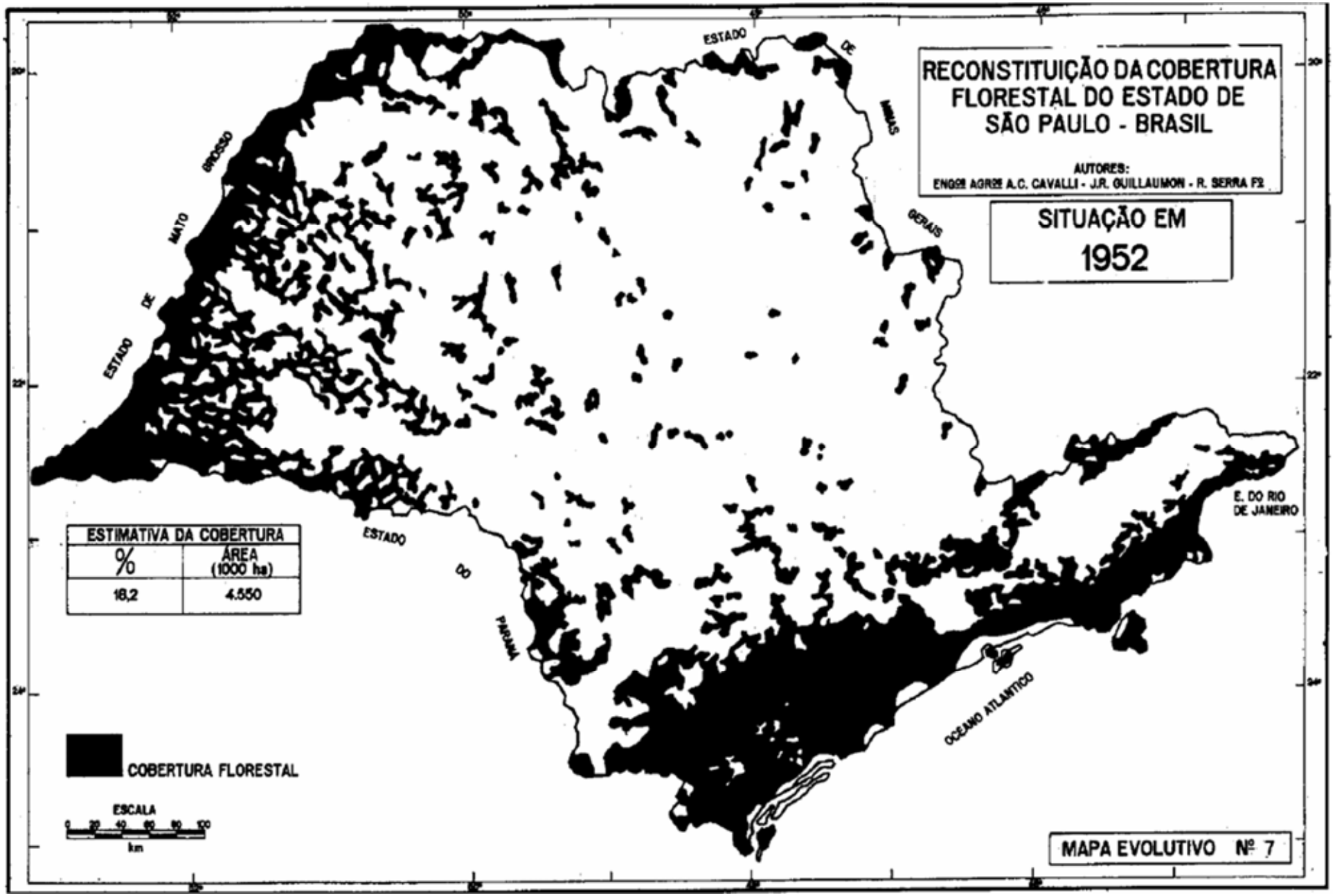
All Brazilian economic cycles were directly linked to the destruction of its natural heritage

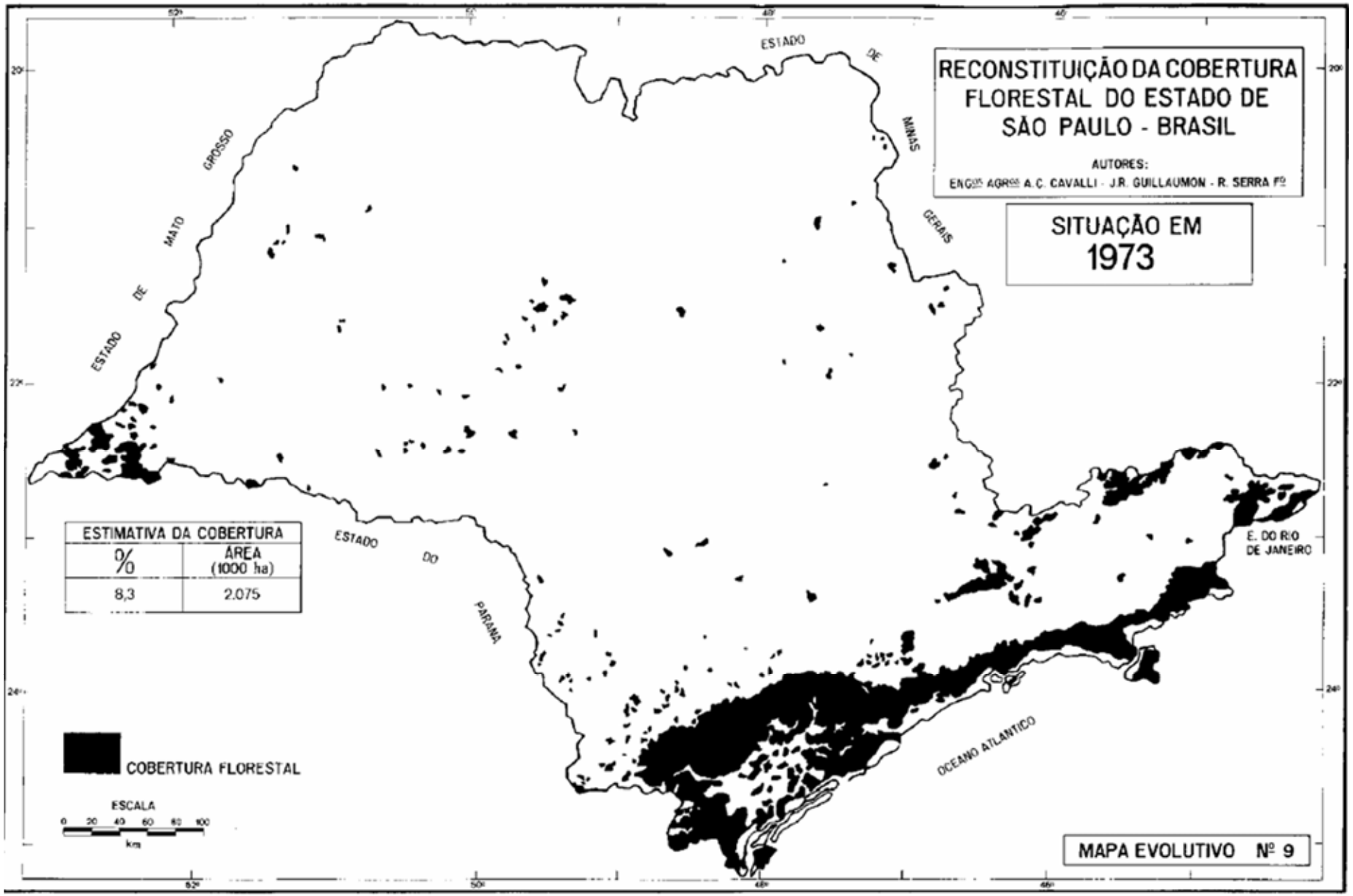

RECONSTITUIÇÃO DA COBERTURA FLORESTAL DO ESTADO DE SÃO PAULO - BRASIL
AUTORES:
ENGOS AGROS A.C. CAVALLI - J.R. GUILLAUMON - R. SERRA FO
SITUAÇÃO EM
1854
ESTADO DE MATO GROSSO
ESTADO DE MINAS GERAIS
ESTADO DO PARANA
E. DO RIO DE JANEIRO
OCEANO ATLANTICO
ESTIMATIVA DA COBERTURA
% | AREA (1000 ha)
79,7 | 19.925
COBERTURA FLORESTAL
ESCALA
0 20 40 60 80 100
km
MAPA EVOLUTIVO Nº 2


RECONSTITUIÇÃO DA COBERTURA FLORESTAL DO ESTADO DE SÃO PAULO - BRASIL
AUTORES:
ENGOS AGRGS A.C. CAVALLI - J.R. GUILLAUMON - R. SERRA F2
SITUAÇÃO EM 1886
ESTADO DE MATO GROSSO
ESTADO DE MINAS GERAIS
ESTADO DO PARANÁ
E. DO RIO DE JANEIRO
OCEANO ATLANTICO
ESTIMATIVA DA COBERTURA
% | ÁREA (1000 ha)
70,5 | 17.625
COBERTURA FLORESTAL
ESCALA
0 20 40 60 80 100
km
MAPA EVOLUTIVO Nº 3


RECONSTITUIÇÃO DA COBERTURA FLORESTAL DO ESTADO DE SÃO PAULO - BRASIL
AUTORES:
ENGºS AGRºS A.C. CAVALLI - J.R. GUILLAUMON - R. SERRA Fº
SITUAÇÃO EM
1907
ESTADO DE MATO GROSSO
ESTADO DE MINAS GERAIS
ESTADO DO PARANÁ
E. DO RIO DE JANEIRO
OCEANO ATLANTICO
ESTIMATIVA DA COBERTURA
% | ÁREA (1000 ha)
58.0 | 14.500
COBERTURA FLORESTAL
ESCALA
0 20 40 60 80 100
km
MAPA EVOLUTIVO Nº 4


RECONSTITUIÇÃO DA COBERTURA FLORESTAL DO ESTADO DE SÃO PAULO - BRASIL
AUTORES:
ENGºS AGRºS A.C. CAVALLI - J.R. GUILLAUMON - R. SERRA Fº
SITUAÇÃO EM
1935
ESTIMATIVA DA COBERTURA
% | ÁREA (1000 ha)
26,2 | 6.550
COBERTURA FLORESTAL
ESCALA
0 20 40 60 80 100
km
MAPA EVOLUTIVO Nº 6
ESTADO DE MATO GROSSO
ESTADO DE MINAS GERAIS
ESTADO DO PARANA
E. DO RIO DE JANEIRO
OCEANO ATLANTICO
52º
50º
48º
46º
20º
22º
24º


RECONSTITUIÇÃO DA COBERTURA FLORESTAL DO ESTADO DE SÃO PAULO - BRASIL
AUTORES:
ENGOS AGRES A.C. CAVALLI - J.R. GUILLAUMON - R. SERRA FO.
SITUAÇÃO EM
1952
ESTADO DE MINAS GERAIS
ESTADO DE MATO GROSSO
ESTADO DO PARANÁ
E. DO RIO DE JANEIRO
OCEANO ATLANTICO
ESTIMATIVA DA COBERTURA
% | ÁREA (1000 ha)
16,2 | 4.550
COBERTURA FLORESTAL
ESCALA
0 20 40 60 80 100
km
MAPA EVOLUTIVO Nº 7


RECONSTITUIÇÃO DA COBERTURA FLORESTAL DO ESTADO DE SÃO PAULO - BRASIL
AUTORES:
ENGºS AGRºS A.C. CAVALLI - J.R. GUILLAUMON - R. SERRA Fº
SITUAÇÃO EM 1973
ESTADO DE MINAS GERAIS
ESTADO DE MATO GROSSO
ESTADO DO PARANÁ
E. DO RIO DE JANEIRO
OCEANO ATLÂNTICO
ESTIMATIVA DA COBERTURA
% | ÁREA (1000 ha)
8,3 | 2.075
COBERTURA FLORESTAL
ESCALA
0 20 40 60 80 100
km
MAPA EVOLUTIVO Nº 9

Degradation and restoration in Brazil: an overview

• 1862: beggining of the reforestation of the **Tijuca Forest** leaded by Manoel Archer, by planting 127,000 seedlings in 13 years.

• 1934, 1965, 2012: **Brazilian Forest Code** – establishes minimum forest cover in private landholdings (from 20 to 80%) and areas of permanent protection (conservation and restoration)

Degradation and restoration in Brazil: an overview

Demand for restoration according to the new Forest Code

POLICYFORUM

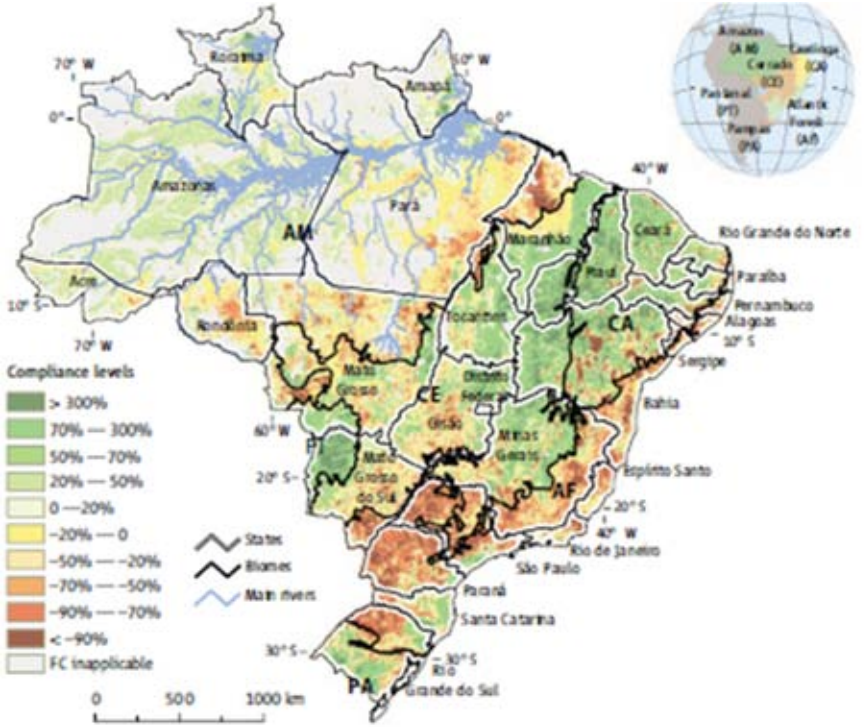
LAND USE

Cracking Brazil's Forest Code

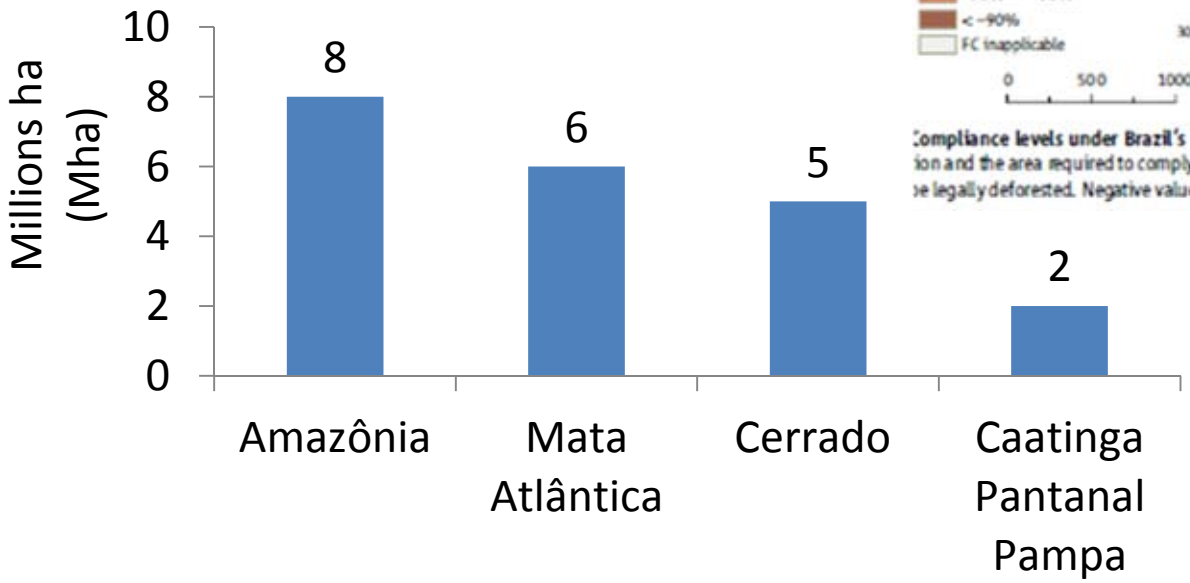
Brazil's controversial new Forest Code grants amnesty to illegal deforesters, but creates new mechanisms for forest conservation.

Britaldo Soares-Filho,[1]* Raoni Rajão,[1] Marcia Macedo,[1,2] Arnaldo Carneiro,[3] William Costa,[1] Michael Coe,[1] Hermann Rodrigues,[1] Ane Alencar[4]

SCIENCE VOL 344 25 APRIL 2014



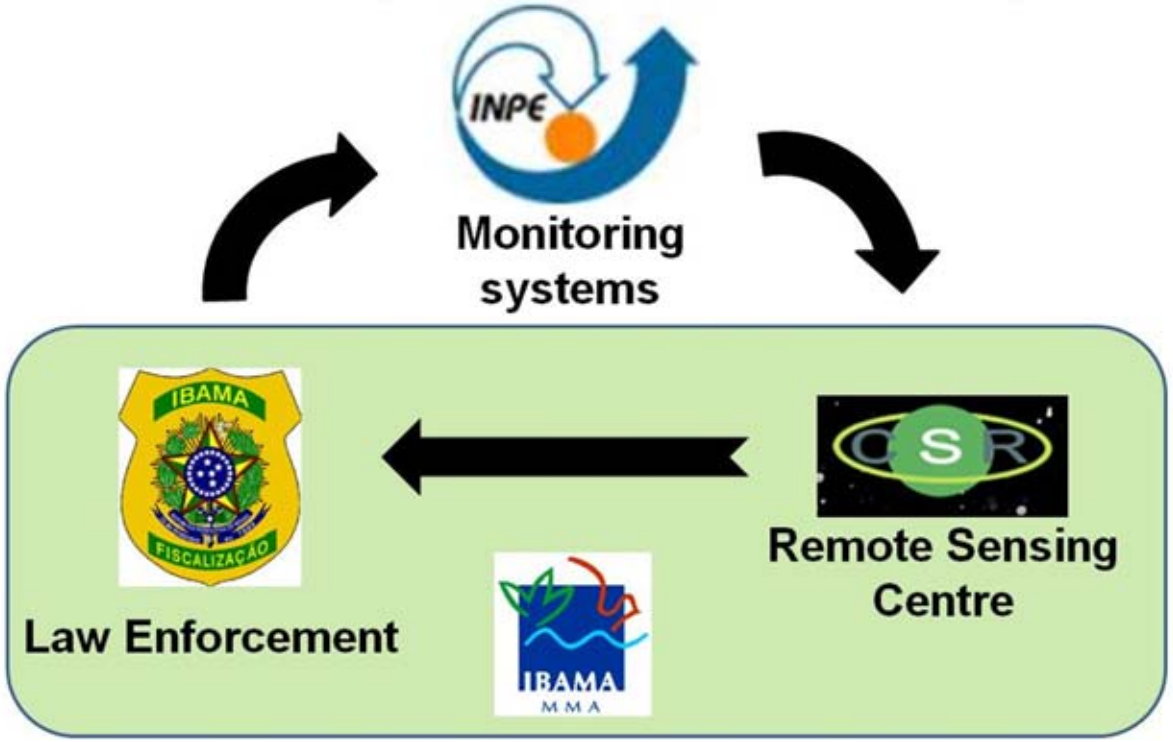
Compliance levels under Brazil's 2012 FC. Percent difference between the remaining area of native vegetation and the area required to comply with the 2012 FC. Positive values indicate forest surpluses or land that may be legally deforested. Negative values indicate forest debts or land that requires restoration. See SM for details.

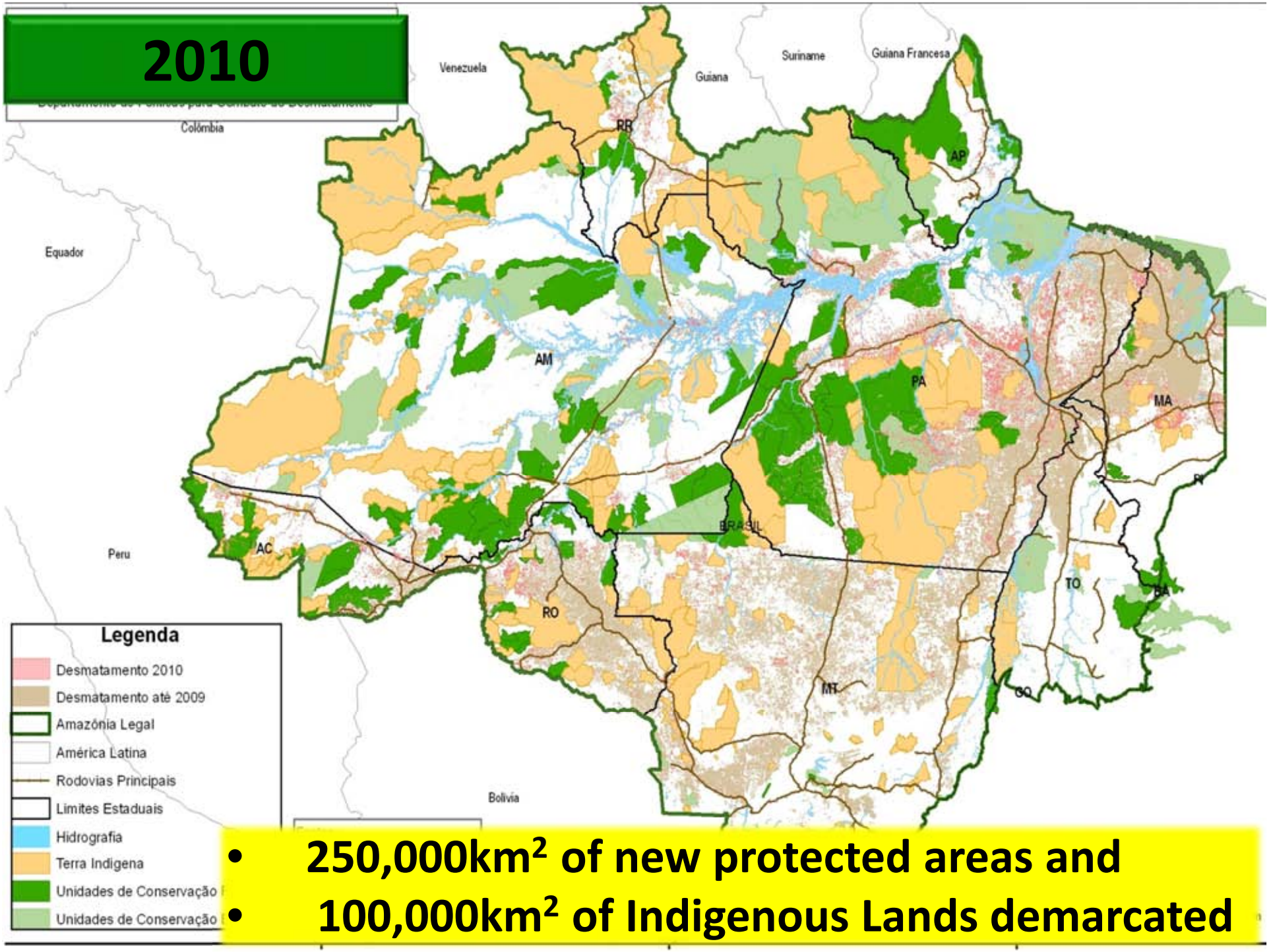


Total = 21 Mha

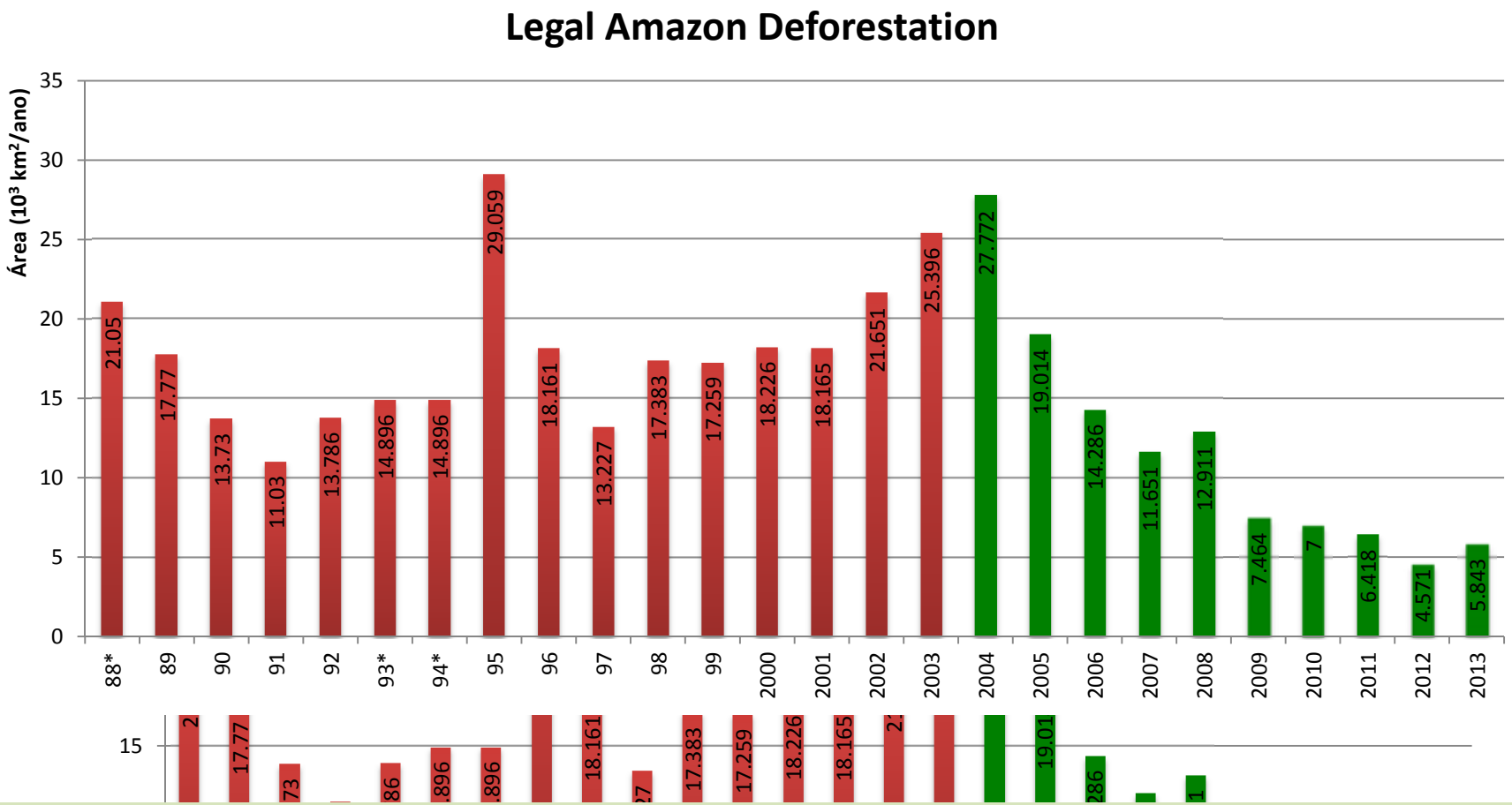
From deforestation to reforestation

Monitoring-Analyzing-Enforcing





- 250,000km² of new protected areas and
- 100,000km² of Indigenous Lands demarcated



Deforestation in 2013: 5.843 km²

- 79 % 2004-13

+ 28 % 2012-13

From deforestation to reforestation

Published online 12 March 2008 | *Nature* **452**, 134-135 (2008) | doi:10.1038/452134a

News

Brazil goes to war against logging

It represents half of the world's rainforest and is home to one-third of Earth's species, yet the Amazon has one of the highest rates of deforestation. Jeff Tollefson looks at efforts to curb the problem.

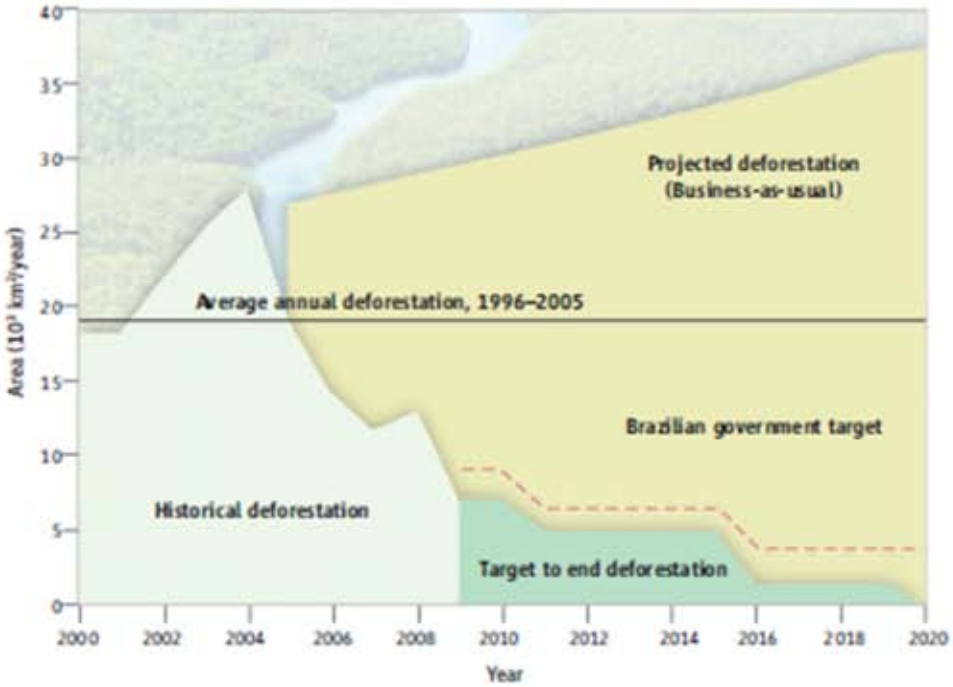
Jeff Tollefson

Brazilian President Luiz Inácio Lula da Silva (Lula) mounted a military-style crackdown on deforestation in the Amazon in January — just a month after the government proclaimed that deforestation rates had dropped 59% over the previous three years. The action was prompted by alarming new satellite data from the National Institute for Space Research (INPE) in São José dos Campos, indicating that clear-cutting is once again on the rise.

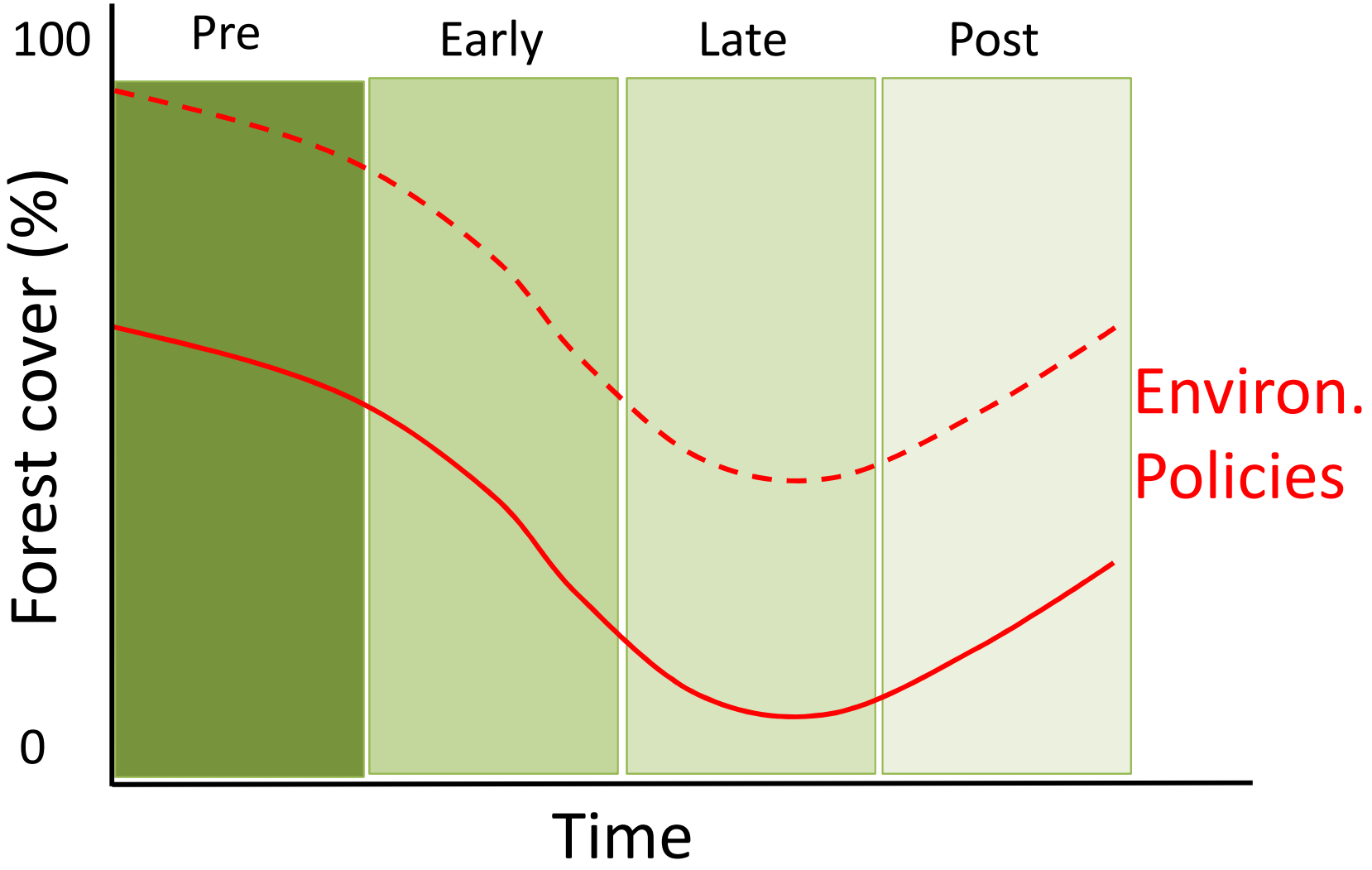
ENVIRONMENT

The End of Deforestation in the Brazilian Amazon

Daniel Nepstad,[1,2]* Britaldo S. Soares-Filho,[3] Frank Merry,[1,2]* André Lima,[2] Paulo Moutinh
John Carter,[4] Maria Bowman,[1,2†] Andrea Cattaneo,[1] Hermann Rodrigues,[2] Stephan Schwartz
David G. McGrath,[1,2‡] Claudia M. Stickler,[1,2†] Ruben Lubowski,[5] Pedro Piris-Cabezas,[5‡]
Sergio Rivero,[6] Ane Alencar,[2,7] Oriana Almeida,[2,8] Osvaldo Stella[2]



Forest transition theory



From deforestation to reforestation

Economic support for environmentally friendly africulture

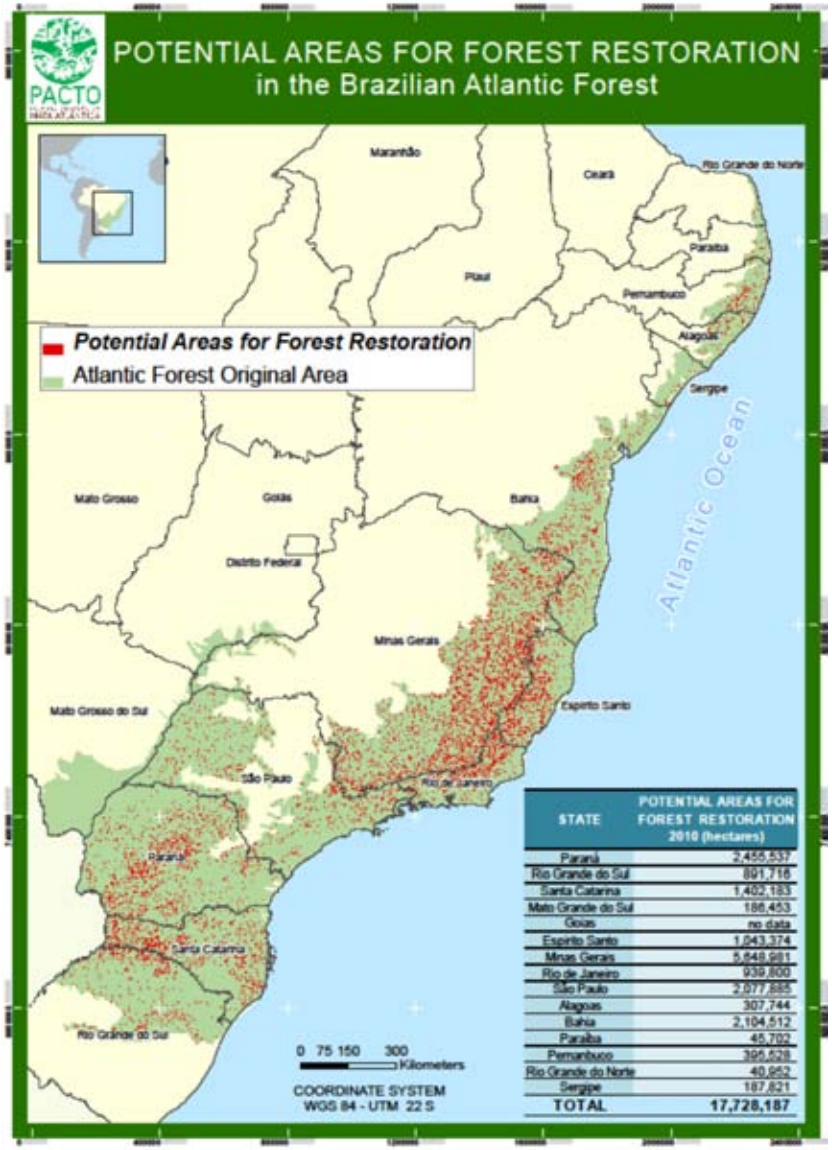
PROGRAMA ABC
AGRICULTURA DE BAIXO CARBONO
Plante sustentabilidade, colha resultados

+

New tools for assessing legal compliance

The Atlantic Forest Restoration Pact:

A major effort by Brazilian society to restore and transform its most threatened biome



Potential areas for forest restoration (ha)	
PR	2.455.537
RS	891.716
SC	1.402.183
MS	186.453
ES	1.043.374
MG	5.648.981
RJ	939.800
SP	2.077.885
AL	307.744
BA	2.104.512
PE	395.528
Σ	**17.453.712**

Calmon *et al.*, 2011

Melo *et al.*, 2011

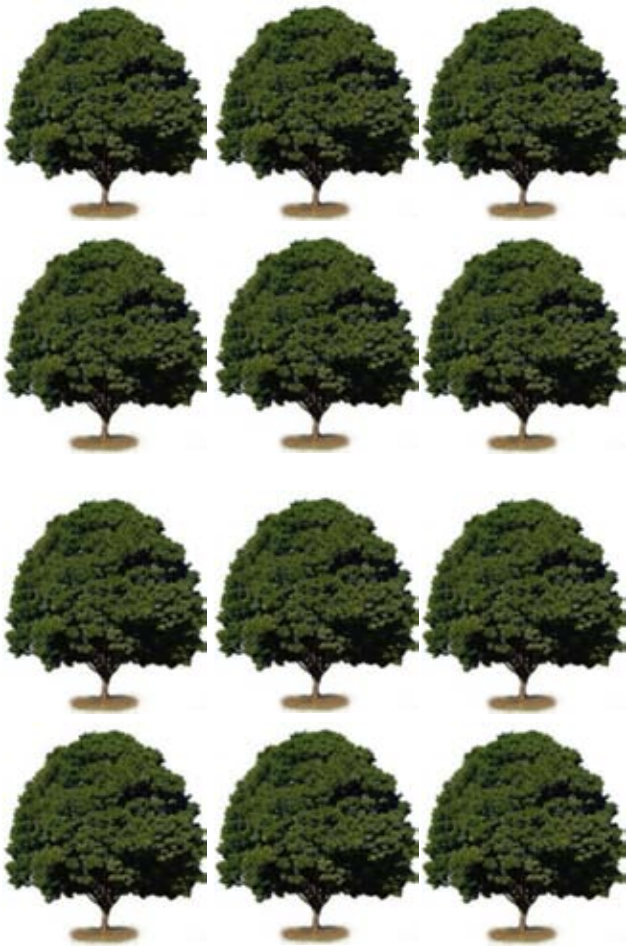
An integrated policy for ecological restoration

Competition for land, leakage

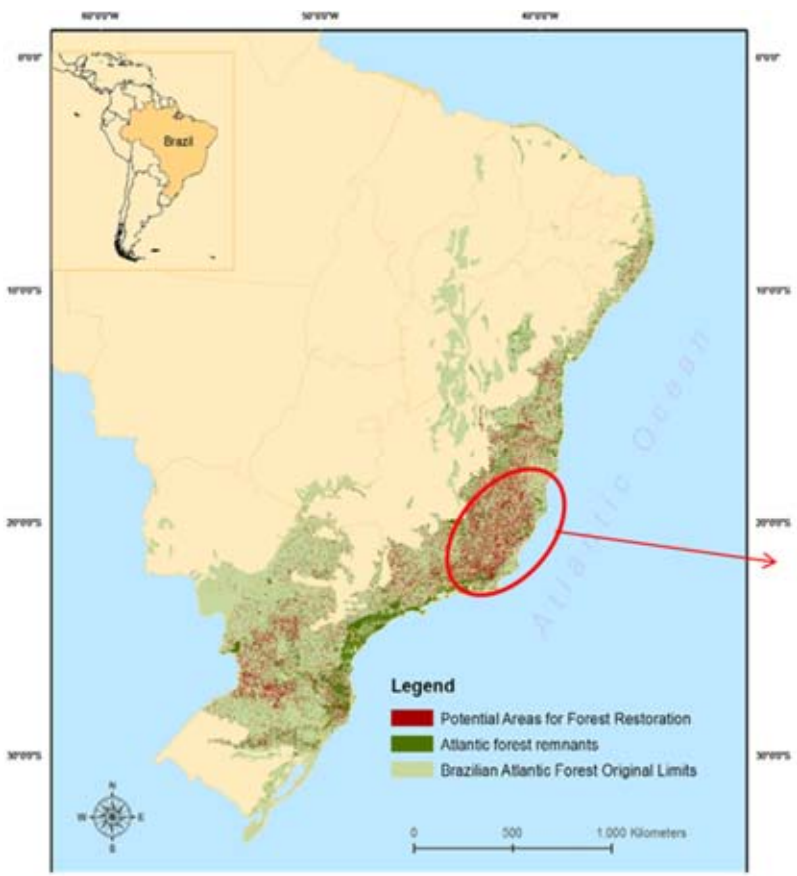
Old-growth stands are substituted by young-regenerating forests: losses in biodiversity and ecosystem services

Pasturelands

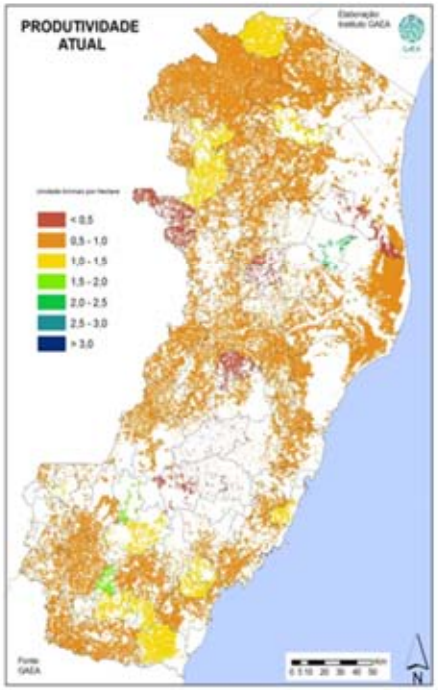
Forests Elsewhere

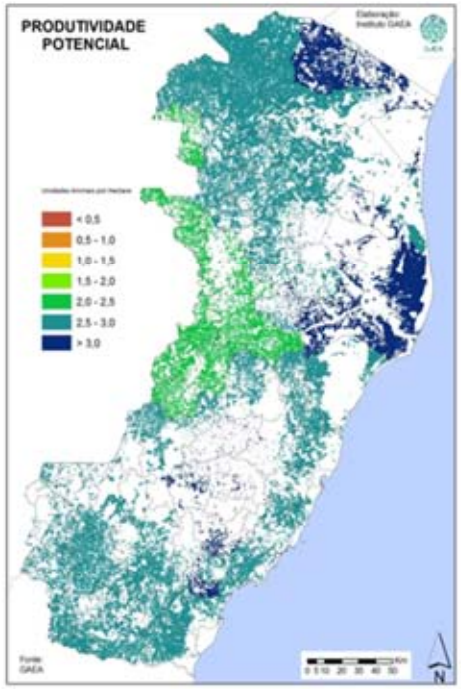


An integrated policy for ecological restoration



Reducing competition for land and sparing land for reforestation



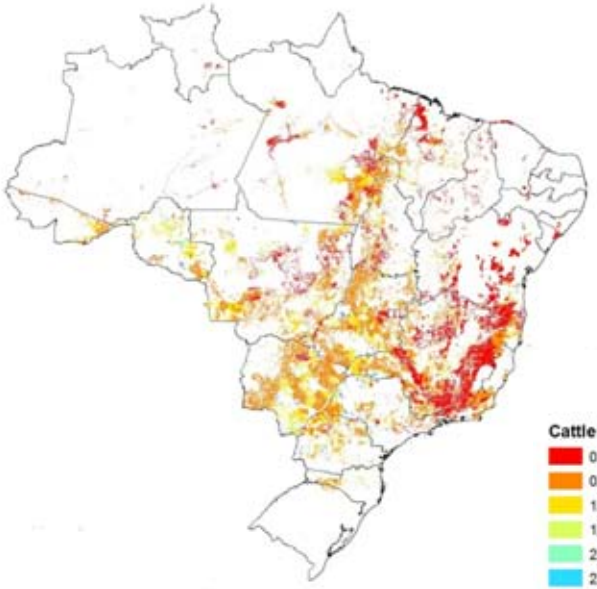


Latawiec AE, Strassburg BBN, Brancallion P, Rodrigues R., *(submitted to Frontiers in Ecology and Environment*

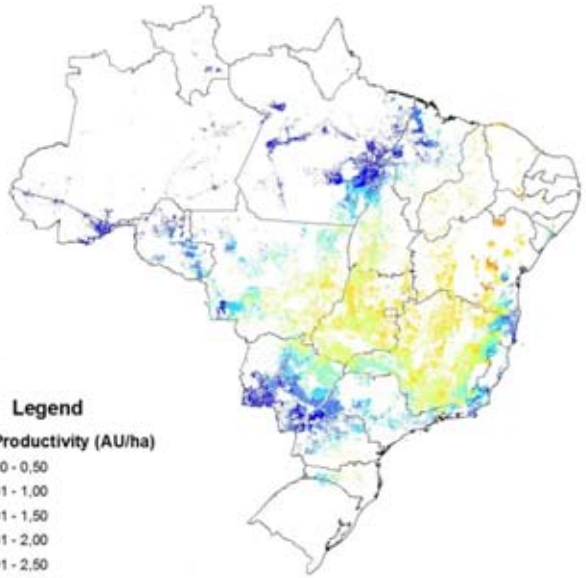
An integrated policy for ecological restoration

- Current productivity : 118 million Animal Units;
- Potential sustainable carrying capacity: 367 mi Animal Units;
  - ➢ Current productivity only 32-34% of potential

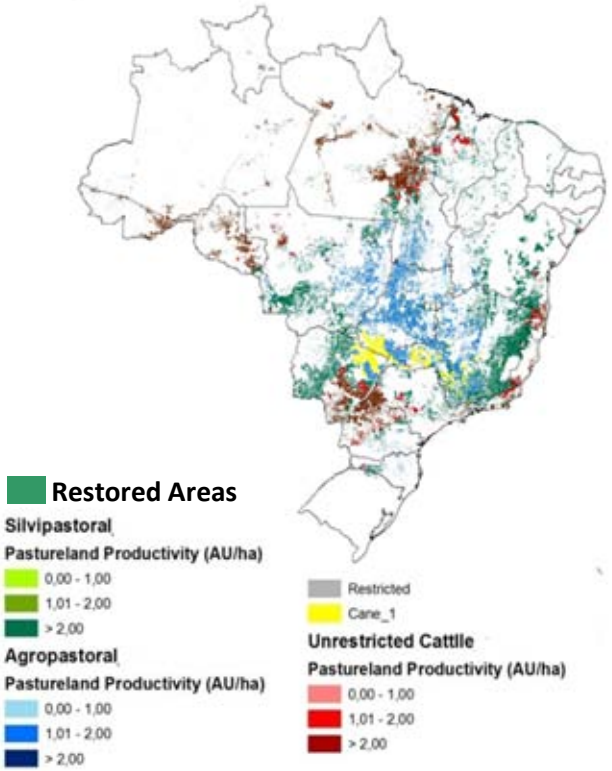
Current Productivity



Potential Productivity



All 2040 production targets + 36 million hectares restored



Strassburg, Latawiec et al. *(submitted)*

Restoration models that provide income

An integrated policy for ecological restoration

Early lessons for tropical countries

- Reforestation is only justifiable when deforestation in low
- Legal instruments and policies are needed
- Restoration has to be included in a land use planning context
- Restoration has to become more attractive to farmers




Thank you
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