

# Regional and urban development in Brazil: major trends and opportunities

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challenges and prospects”

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1

## Summary of this presentation

- Localization
- General aspects of Brazil
  - State federation – 26 states + Federal District of Brasília
  - Population/GDP/Export
- Regional and urban question in Brazil
- Education system
- Research and development

2

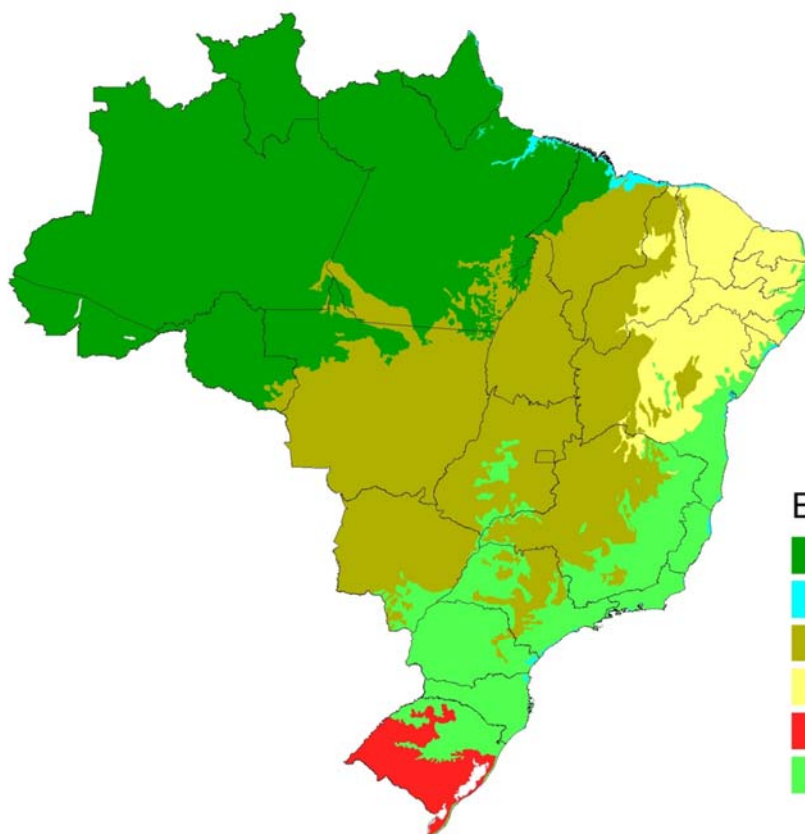


# General information: area, GDP, population, and exports, 2010

Continents and Selected Countrys	Area (tho. km <sup>2</sup> )	%	GDP (US\$ Tri.)*	%	Population (milions inhab.)	%	Exports (US\$ Tri.)*	%
<b>Africa</b>	<b>30047</b>	<b>22,4</b>	<b>1,6</b>	<b>2,7</b>	<b>1029</b>	<b>15,1</b>	<b>0,4</b>	<b>2,5</b>
<b>A. do Norte</b>	<b>20227</b>	<b>15,1</b>	<b>16,2</b>	<b>26,7</b>	<b>343</b>	<b>5,0</b>	<b>2,3</b>	<b>13,1</b>
USA	9832	7,3	14,6	24,1	309	4,5	1,8	10,5
<b>A. Latina e Caribe</b>	<b>20423</b>	<b>15,2</b>	<b>4,9</b>	<b>8,2</b>	<b>589</b>	<b>8,6</b>	<b>1,0</b>	<b>5,8</b>
Brazil	8515	6,3	2,1	3,5	195	2,9	0,2	1,3
<b>Asia</b>	<b>31959</b>	<b>23,8</b>	<b>18,7</b>	<b>31,0</b>	<b>4085</b>	<b>59,9</b>	<b>6,2</b>	<b>35,2</b>
China	9600	7,2	5,9	9,8	1338	19,6	1,8	10,0
Japan	378	0,3	5,5	9,0	127	1,9	0,8	4,7
South Korea	100	0,1	1,0	1,7	49	0,7	0,5	3,0
India	3287	2,4	1,7	2,9	1171	17,2	0,4	2,1
<b>Oceania</b>	<b>8561</b>	<b>6,4</b>	<b>0,0</b>	<b>0,0</b>	<b>37</b>	<b>0,5</b>	<b>0,0</b>	<b>0,0</b>
<b>UE27</b>	<b>4255</b>	<b>3,2</b>	<b>16,2</b>	<b>26,8</b>	<b>499</b>	<b>7,3</b>	<b>6,5</b>	<b>37,2</b>
Germany	357	0,3	3,3	5,4	82	1,2	1,5	8,7
<b>Europe - others</b>	<b>18743</b>	<b>14,0</b>	<b>2,8</b>	<b>4,6</b>	<b>240</b>	<b>3,5</b>	<b>1,1</b>	<b>6,1</b>
<b>World</b>	<b>134215</b>	<b>100,0</b>	<b>60,4</b>	<b>100,0</b>	<b>6821</b>	<b>100,0</b>	<b>17,6</b>	<b>100,0</b>

Fonte: Elaboração própria a partir dos dados do  
www.worldbank.org - World Bank Database.  
\* Em valores correntes.

## Brazilian Biomes



### Biomes

- Amazon Florest (Amazonia)
- Cost (Costeiro)
- Savana (Cerrado)
- Semi-arid (Caatinga)
- Southern Fields (Pampas)
- Rain Florest (Mata Atlântica)

Geographical, cultural and economic diversity

São Paulo - Brazil's main metropolitan area – responds for 25% of Brazilian GDP, 10% of population

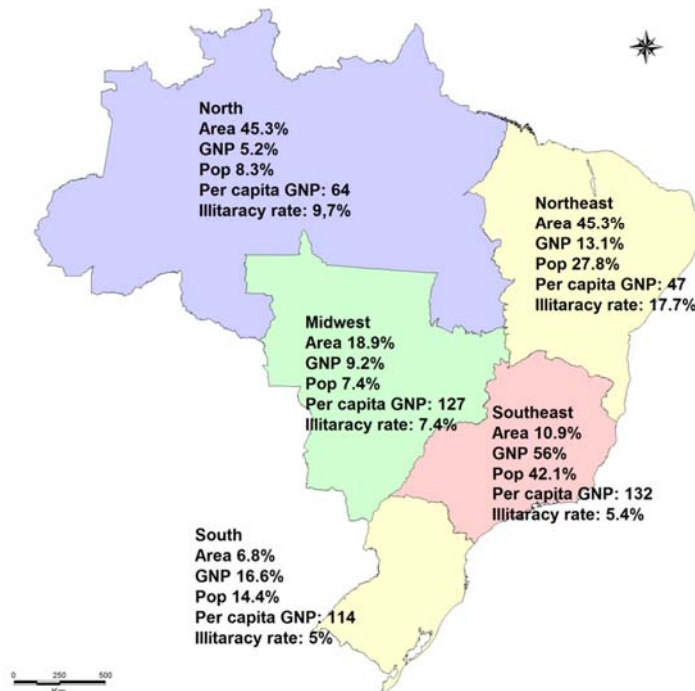


Rain Florest - Amazonia

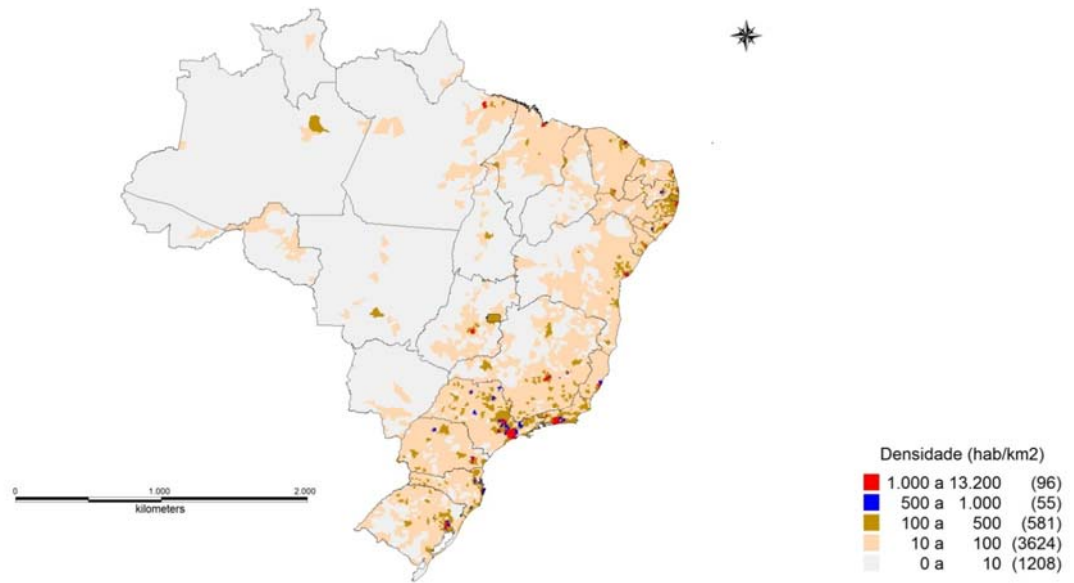


Rio de Janeiro – Carnaval

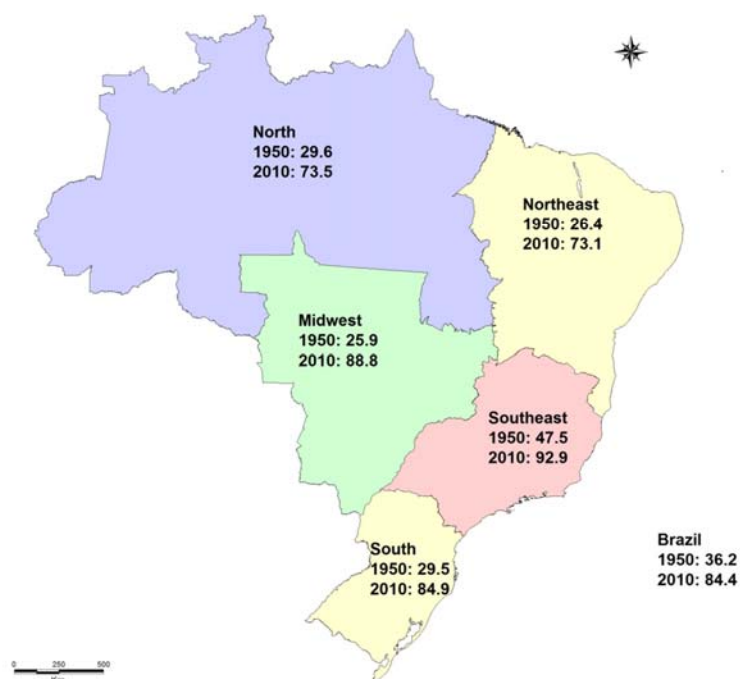
## Brazil's main regional trends: regional differences



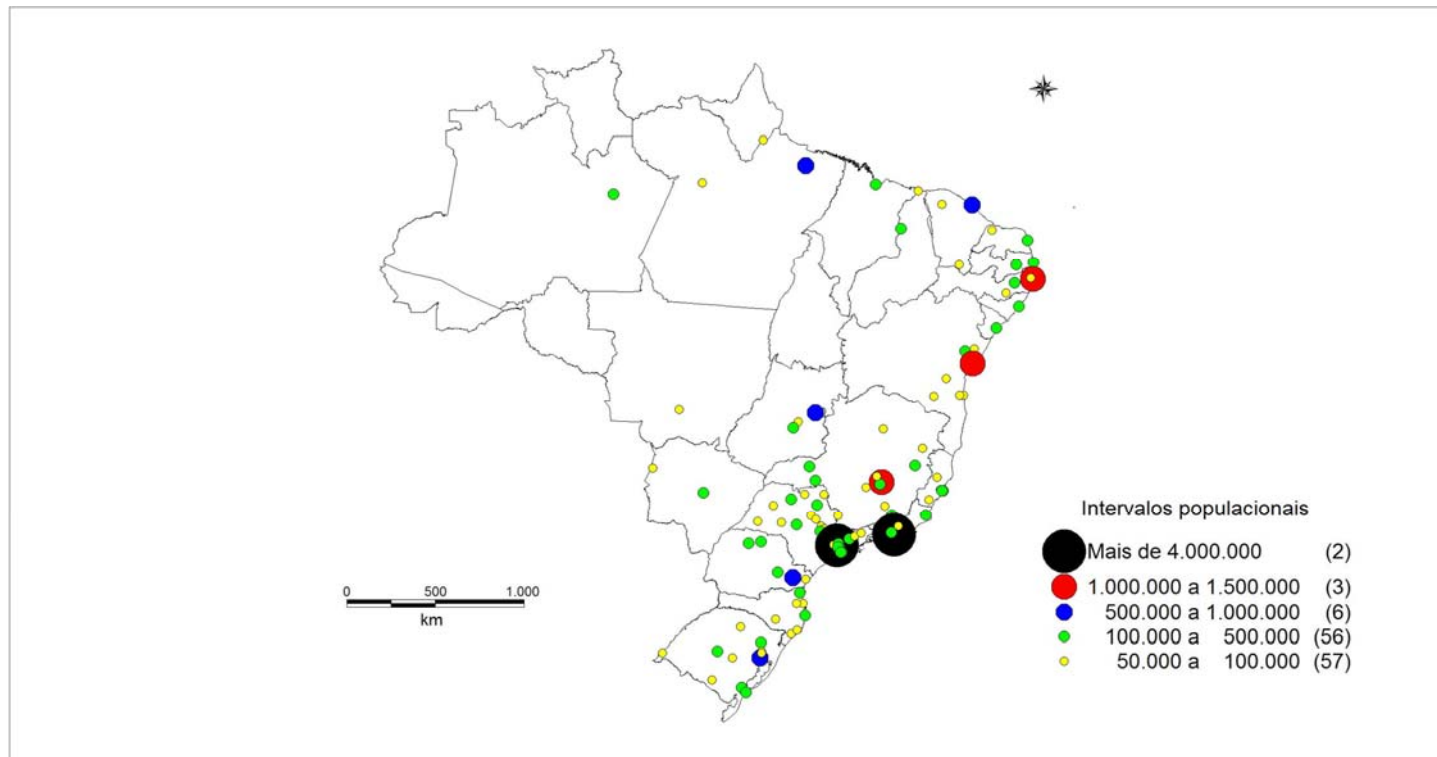




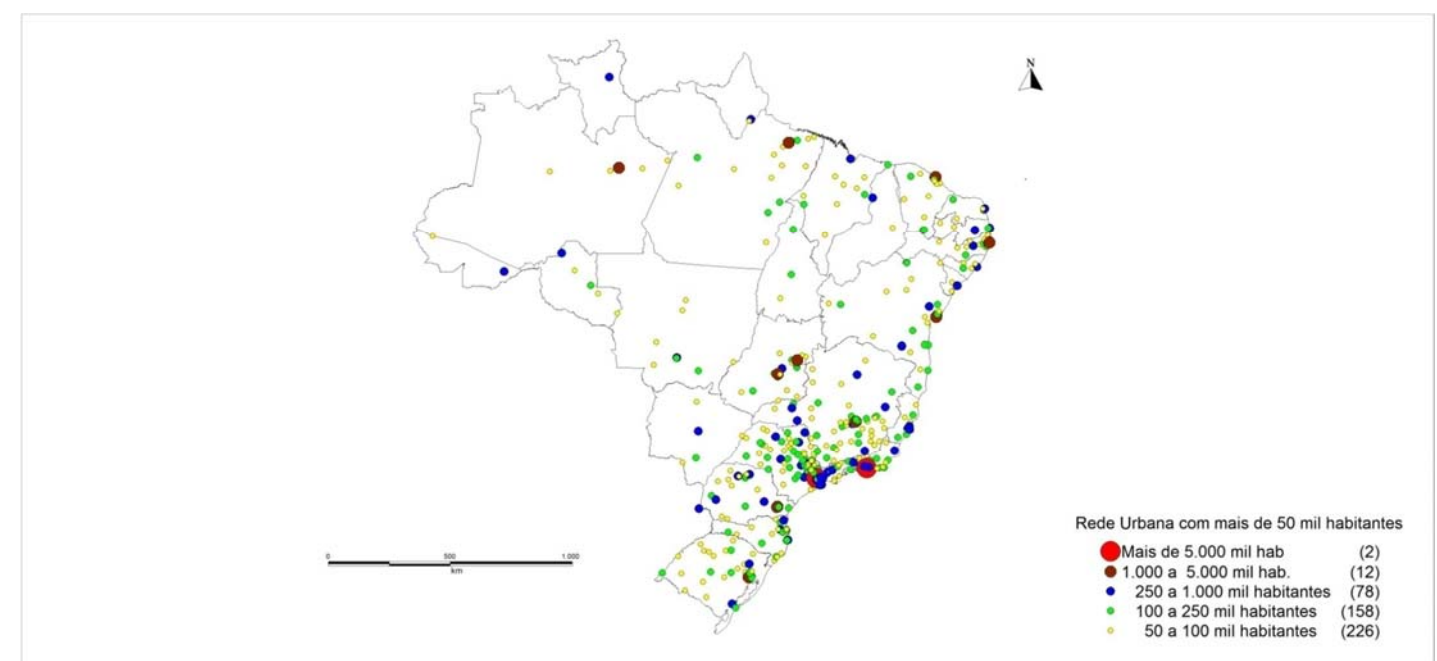
## Fast Urbanization process



# Brazil: urban network with more than 50 thousand inhabitants, 1970



# Brazil: urban network with more than 50 thousand inhabitants, 2010



# Metropolization process

Aglomerações urbanas	População (mil hab) 2010	Taxas de crescimento geométricas				
		Anos 1970	Anos 1980	Anos 1990	Anos 2000	1970-2010
São Paulo	19684	4,5	1,9	1,6	1,0	2,2
Rio de Janeiro	11836	2,4	1,0	1,2	1,0	1,4
Belo Horizonte	4884	4,5	2,5	2,4	1,1	2,6
Porto Alegre	3959	3,5	2,5	1,6	0,6	2,1
RIDE do DF	3718	7,1	3,3	3,5	2,3	4,0
Recife	3691	2,7	1,9	1,5	1,0	1,8
Fortaleza	3616	4,2	3,5	2,4	1,9	3,0
Salvador	3574	4,4	3,2	2,1	1,7	2,9
Curitiba	3174	5,4	2,9	3,1	1,4	3,2
Campinas	2797	6,5	3,5	2,5	1,8	3,6
Goiânia	2173	6,3	3,6	3,2	2,7	4,0
Manaus	2106	7,4	4,3	3,7	4,1	4,9
Belém	2102	4,3	2,9	2,8	1,6	2,9
Grande Vitória	1688	6,1	3,8	2,7	1,6	3,5
Baixada Santista	1664	3,9	2,2	2,1	1,2	2,4
Natal	1351	3,8	3,6	2,6	1,9	3,0
Grande São Luís	1331	5,1	4,6	3,0	2,2	3,8
João Pessoa	1199	3,2	3,2	1,8	2,4	2,7
Maceió	1156	3,9	3,8	2,6	1,6	3,0
RIDE de Teresina	1151	4,5	3,5	1,9	1,3	2,8
Sub total	76853	4,1	2,3	2,0	1,4	2,4
Brasil	190756	2,5	1,9	1,6	1,2	1,8

## Metropolization process – urban areas with more than a 1 million inhabitants – 2010 – (20 – 40%)

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Sub total	76853	4,1	2,3	2,0	1,4	2,4
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## Economic characteristics

- Agriculture (soybeans, rice, beans, suggar cane, coffee, cattle, pork, and others)
- Industries – metalwork, cars and components, aircrafts, biotechnology, bio fuel, petroleum, mining
- Services



## Economic characteristics

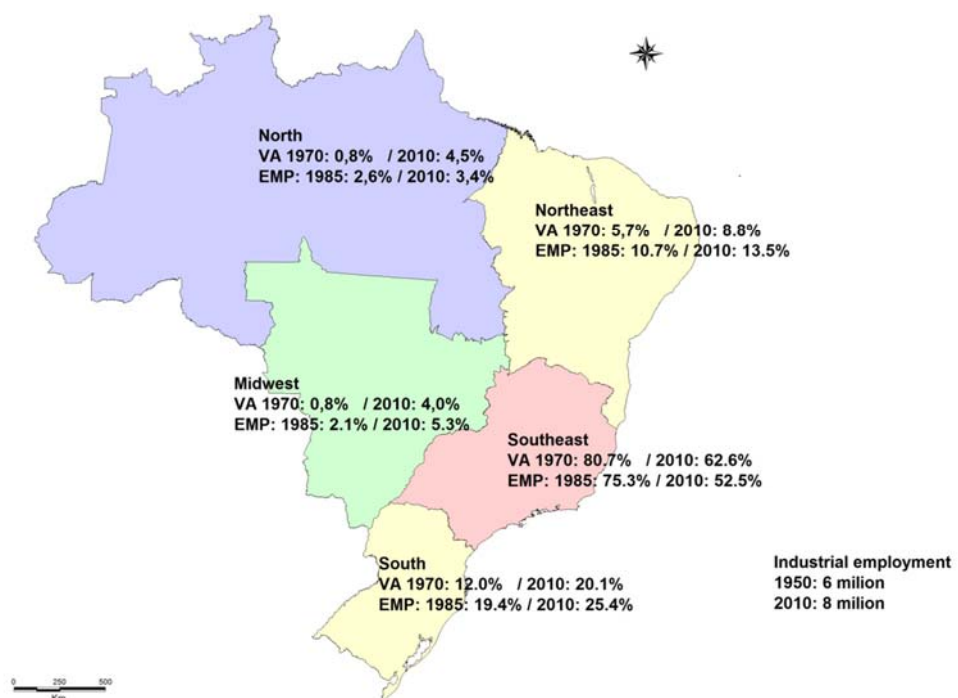
- Brazil is worldwide leadership on
  - Deepwater petroleum exploration
  - Mining
  - Civil Aeronautics Industry
  - Banking Automation
  - Bio-fuels
  - Automation of the electoral process (electronic voting)



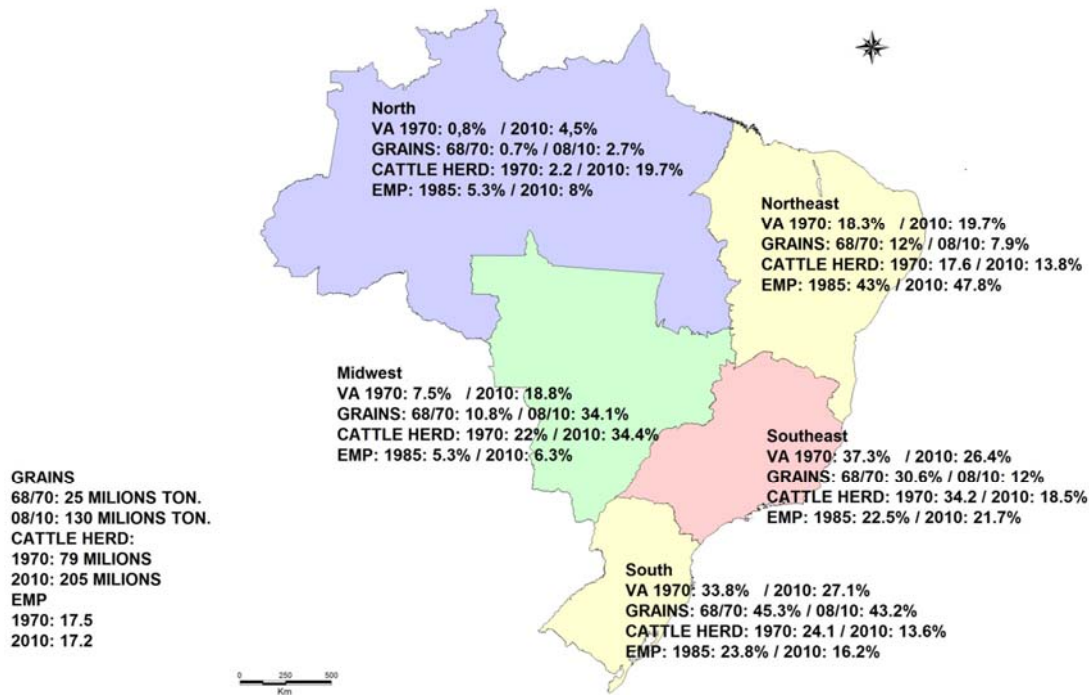
# Industrial dynamics

- Tree movements:
  - Decentralization of MRSP and macrospatial reagglomeration (polygonal development)
  - Industrial expansion in the Northeast
  - New agriculture and mineral frontier – now attracting industries

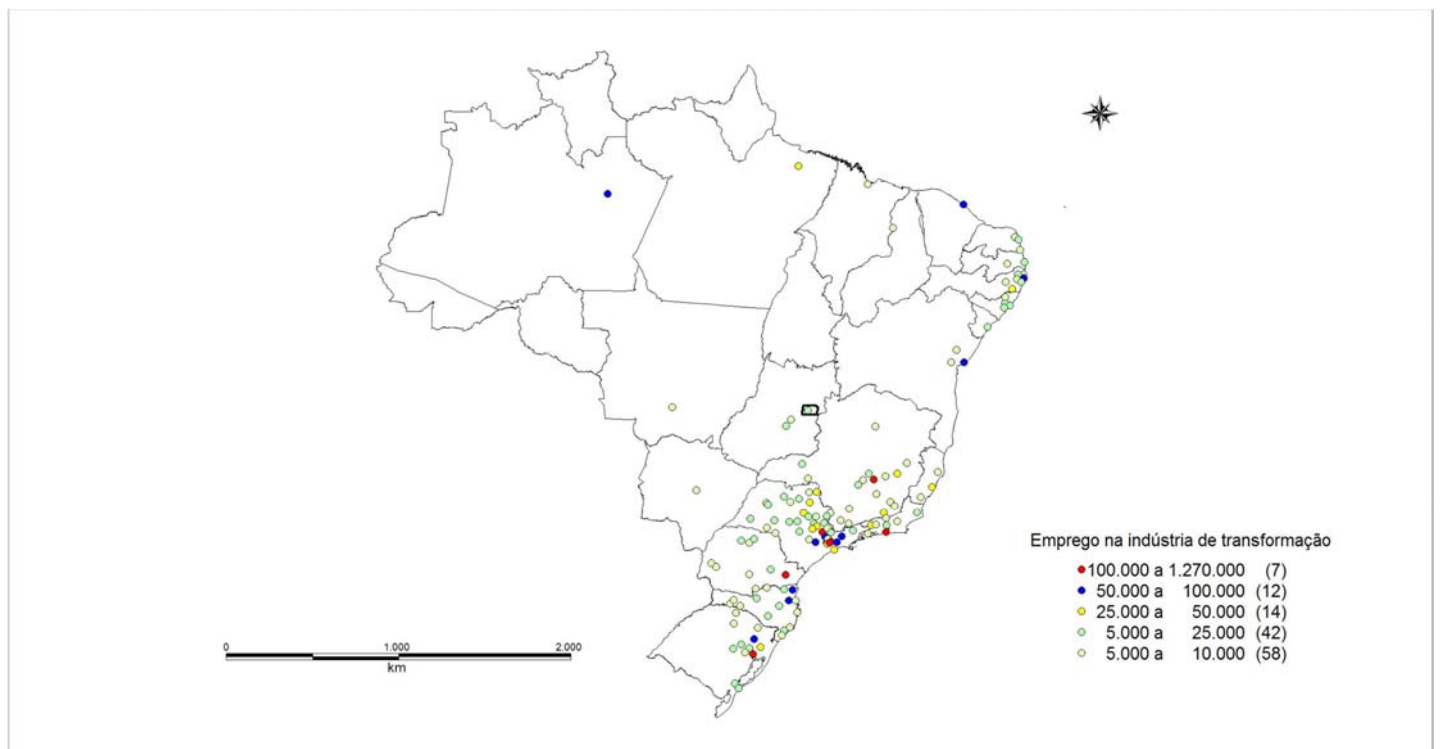
## Value added of the transformation industry and employment at transformation industry



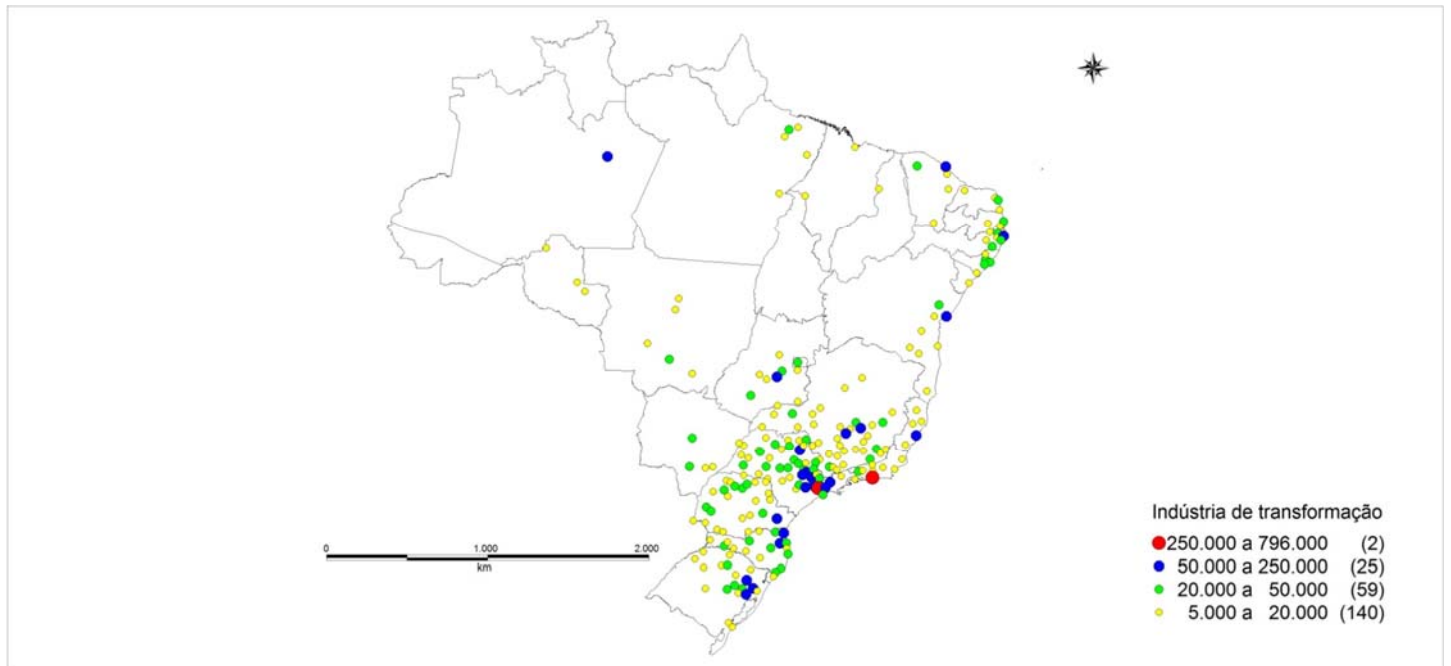
# Changes in agriculture patterns



# Main industrial poles – with more than 5 thousand industrial jobs - 1985



## Main industrial poles – with more than 5 thousand industrial jobs - 2011



21

## Trends on regional and urban development

- Urban concentration - infrastructure problems and social problems
- Regional diversity and differences
- Absence of clear regional development policy
- Risk of reconcentration process – specially due to the discover of petroleum at “pré-sal”
- Excessive dependence on major commodities export (soybeans, meet, iron ore and others)
- Innovation, science and technology as opportunities for major changes in the regional development pattern!?

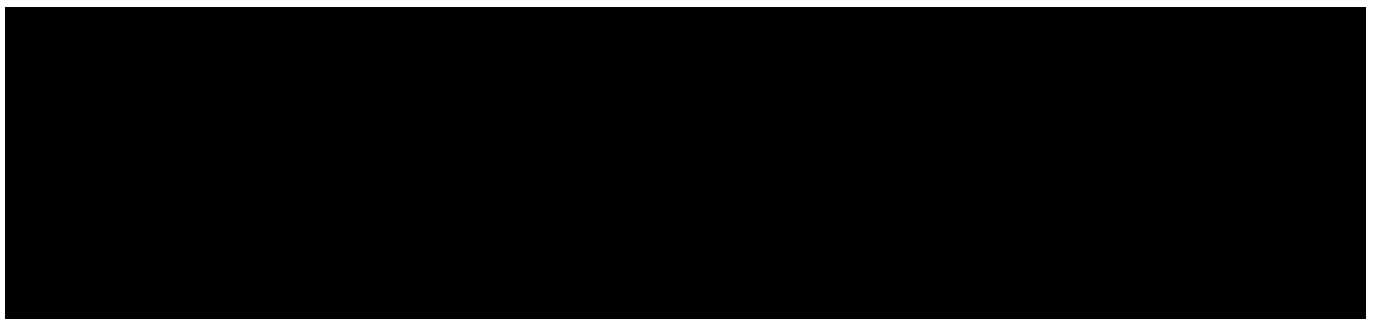
22

## Brazilian high education system

- System is both public and private
- Major changes in the last 20 years: growth in the number of institutions, students, and funding
- Major Universities are public – USP, Unicamp, UFMG, UFRJ, UFRGS
- The undergraduate is highly done by the private institutions (number of graduate students).
- The graduate programs (master and doctoral) are concentrated in the public institutions → R&D are also concentrated in public institutions.

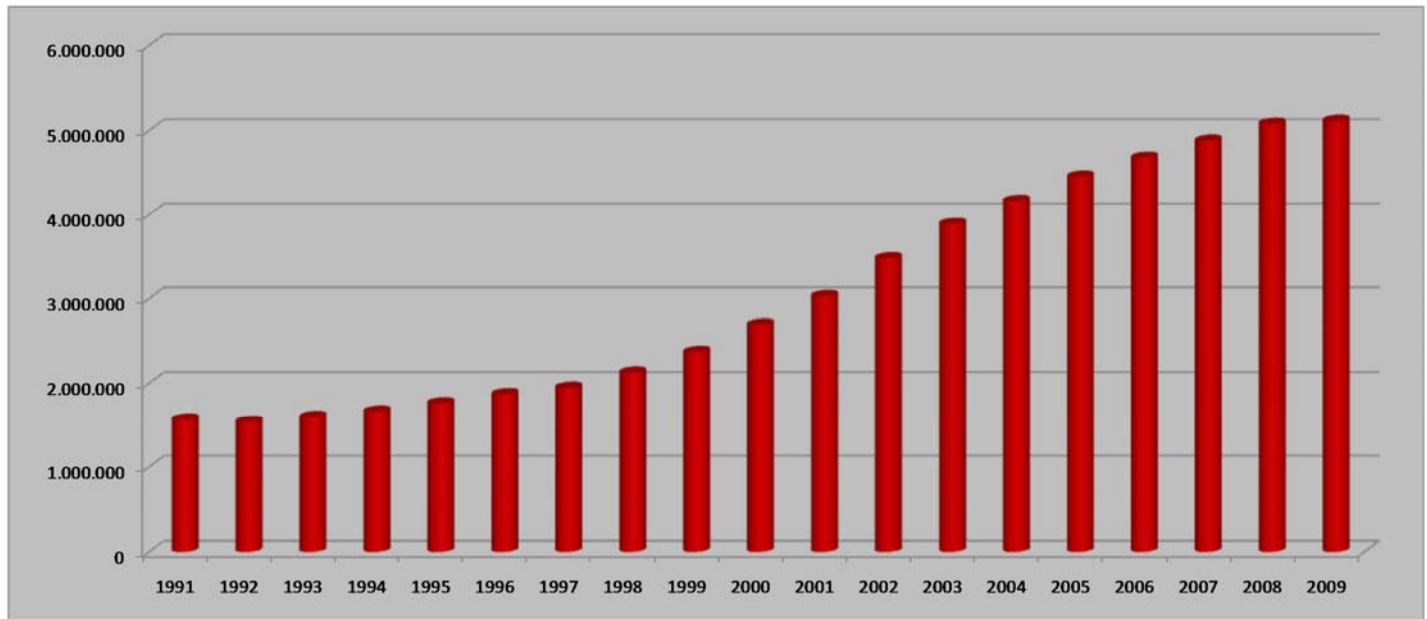
23

## Some numbers of Brazilian high education system in 2010



24

# Evolution of enrollment in undergraduate programs during the last 20 years



25

## Post-graduate programs and R&D

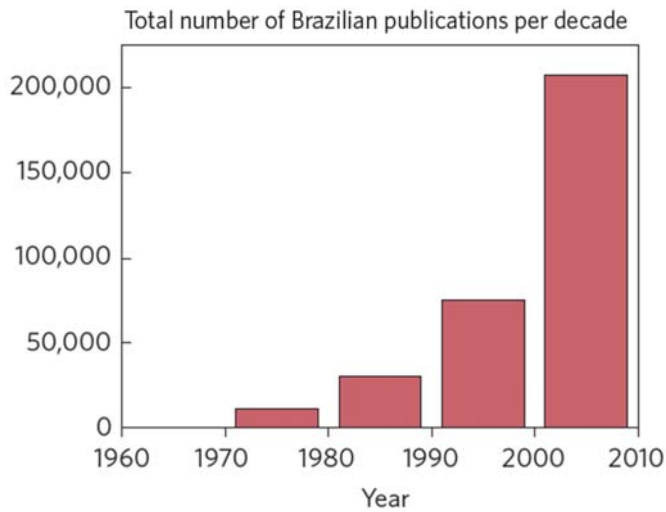
- The number of post-graduate programs (Master's and Doctoral) has doubled in the last decade
- Today there are about 3,000 programs, more than half only in federal institutions
- The number of master's and doctorate's degrees assigned has also doubled in the last decade
- It increased from 26,000 to 53,000 per year
- 12,000 doctor's degrees and 41,000 master's degrees were assigned in 2010
- These results represent more than the double of the sum of all the other Latin America's countries
- Funding has increased in last 20 years (CAPES, CNPq, FINEP and others)

26



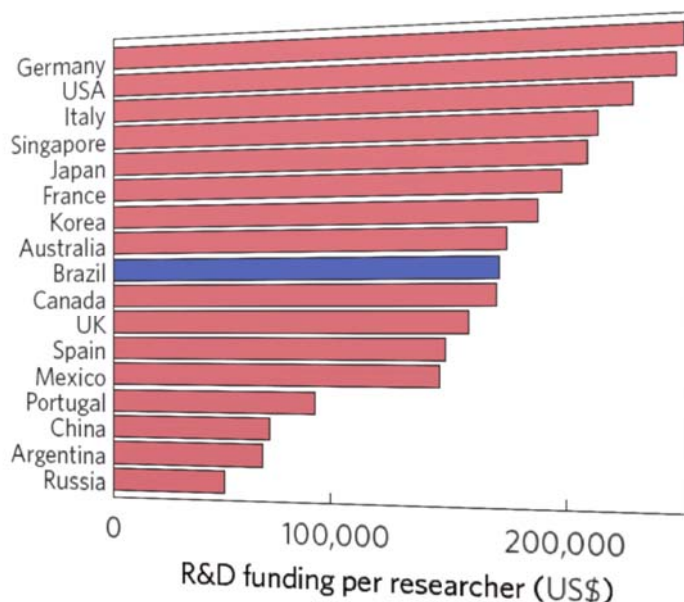
## Brazilian science towards a phase transition

NATURE MATERIALS | VOL 9 | JULY 2010 | www.nature.com/naturematerials



- 2.7% of all scientific papers published worldwide;
- 13<sup>th</sup> place worldwide in number of publications;
- Brazil is the Latin America's top publisher on science and technology

## Brazil in numbers



9<sup>th</sup> place worldwide in R&D funding per researcher.