



SCIENTIFIC RESEARCH AND ENTREPRENEURSHIP

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President

Brazilian Agency for Industrial Research and Innovation - EMBRAPPII

KEYNOTE LECTURE

28th International Congress of Mechanical Engineering



COBEM 2025

Curitiba - November 9th, 2025



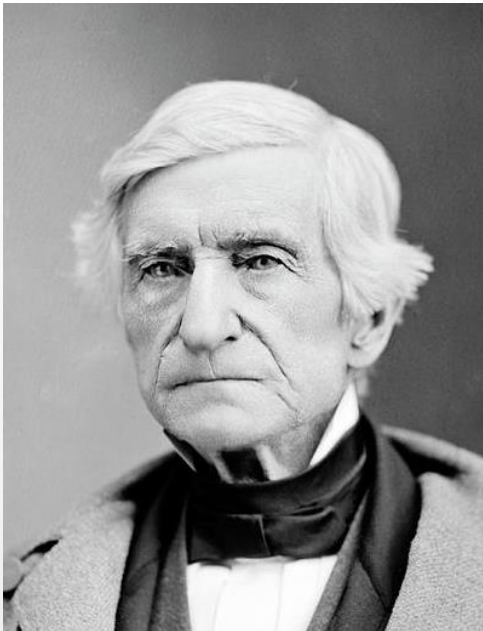
Educational and Research Institutions Throughout the Centuries...

Several Missions:

- ✓ Organize and Storage Knowledge (Aquinas 1225-1274);
- ✓ Serve the Nation (Napoleon 1769-1821);
- ✓ Research and Discover (Humbolt 1767-1835);
- ✓ Educate and Disseminate Knowledge (Newman 1801-1890).

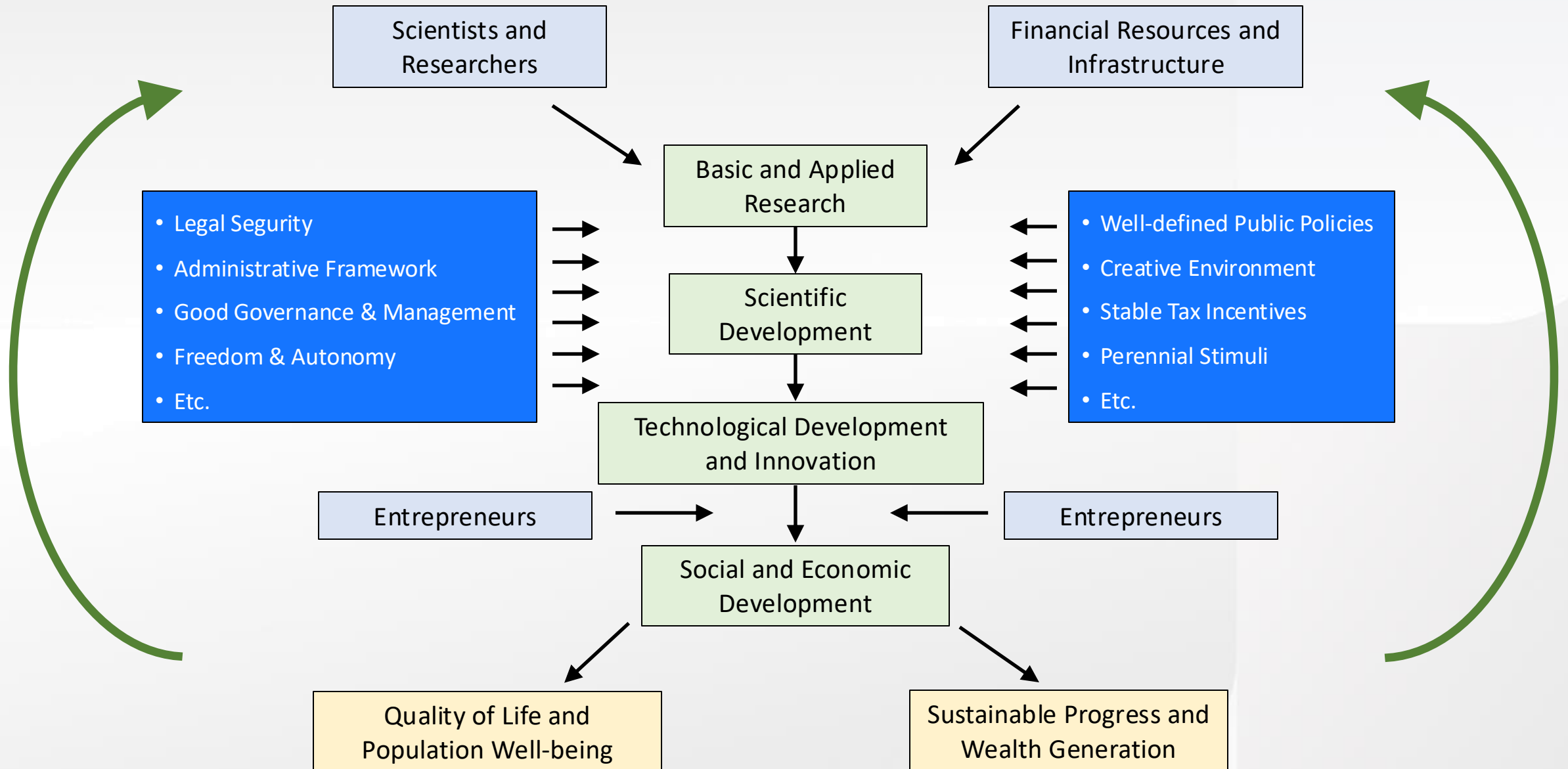


“Our purpose is to educate individuals to a prominent degree, not solely to become scientists, but also to be practical, precisely because they are scientists.”



*William Barton Rogers
(MIT 1861)*

SUCCESSFUL NATIONS



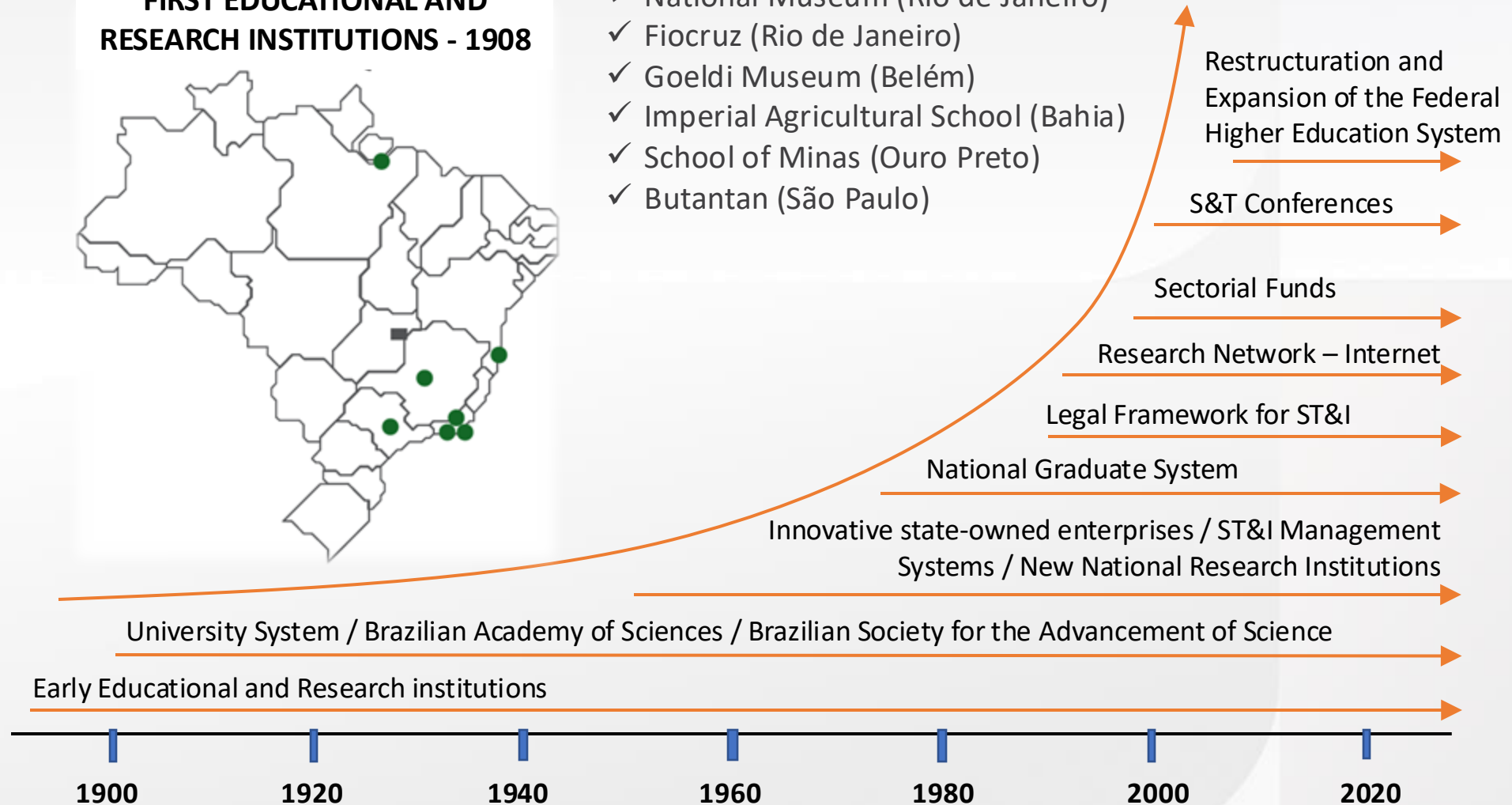
ST&I in Brazil

1808 – Arrival of The Imperial Family

FIRST EDUCATIONAL AND RESEARCH INSTITUTIONS - 1908



- ✓ Botanical Garden (Rio de Janeiro)
- ✓ National Museum (Rio de Janeiro)
- ✓ Fiocruz (Rio de Janeiro)
- ✓ Goeldi Museum (Belém)
- ✓ Imperial Agricultural School (Bahia)
- ✓ School of Minas (Ouro Preto)
- ✓ Butantan (São Paulo)



IMPORTANT MILESTONES

- ✓ CNPq (1951) - 74 years
- ✓ CAPES (1951) - 74 years
- ✓ BNDES (1952) - 73 years
- ✓ PETROBRÁS (1953) - 72 years
- ✓ FAPESP (1960) - 65 years
- ✓ FINEP (1967) - 58 years
- ✓ EMBRAER (1969) - 56 years
- ✓ EMBRAPA (1973) - 52 years
- ✓ MCTI (1985) - 40 years
- ✓ Innovation Law (2004) – 21 years
- ✓ FNDCT (2007) – 18 years
- ✓ EMBRAPPI (2013) - 12 years
- ✓ Legal Framework of Innovation (2016) – 9 years
- ✓ FAPERR (2022) - 3 years

Regarding S&T we are a Very Young Nation!

BRAZIL – CURRENT SCENARIO

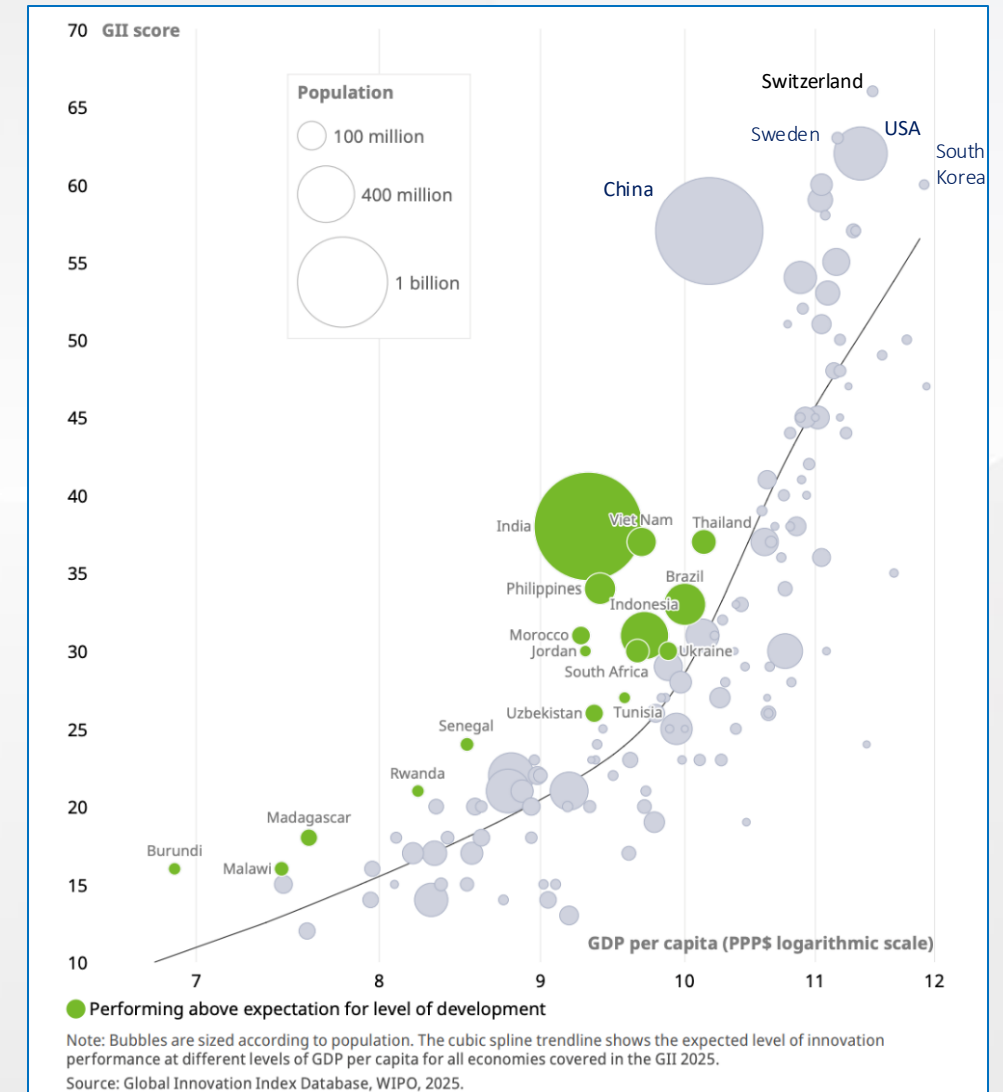
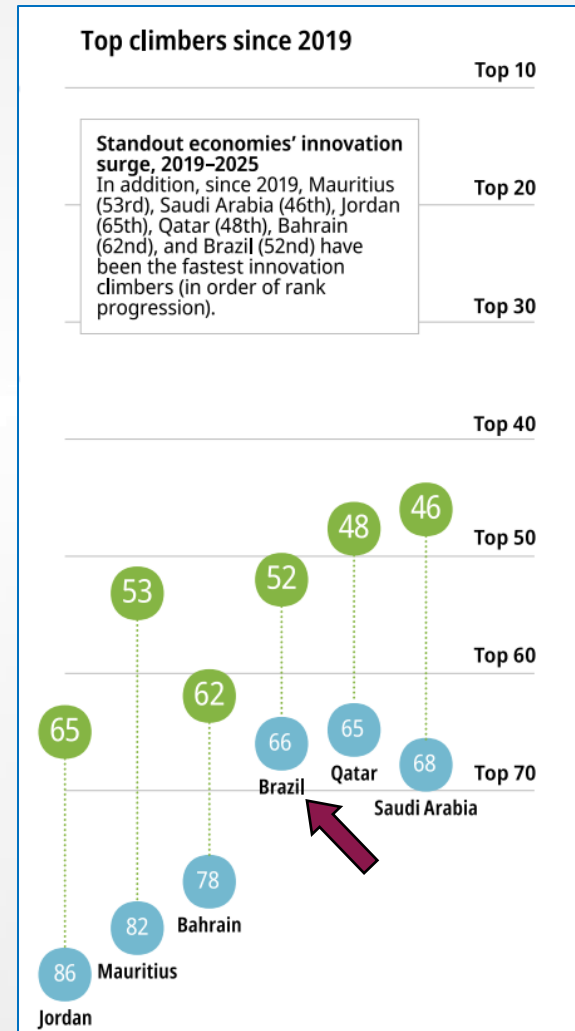
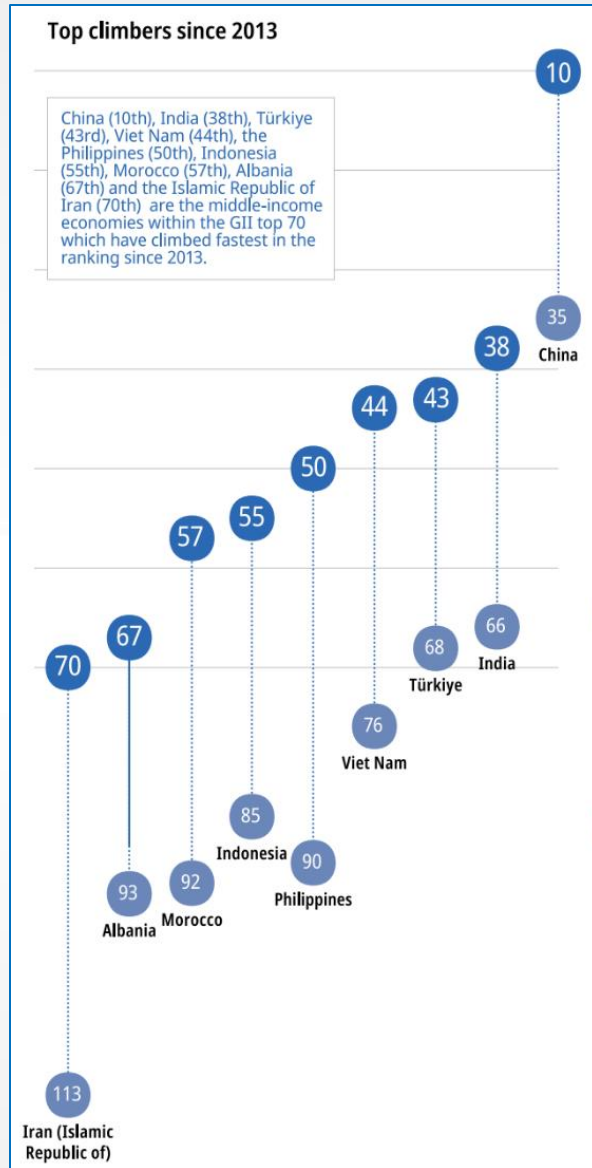
(Comparative performance with other countries)

Results released in 2025

- ✓ **Global Innovation Index: 52nd position;**
- ✓ **Global Competitiveness Index: 58th position;**
- ✓ **Human Development Index: 84th position.**

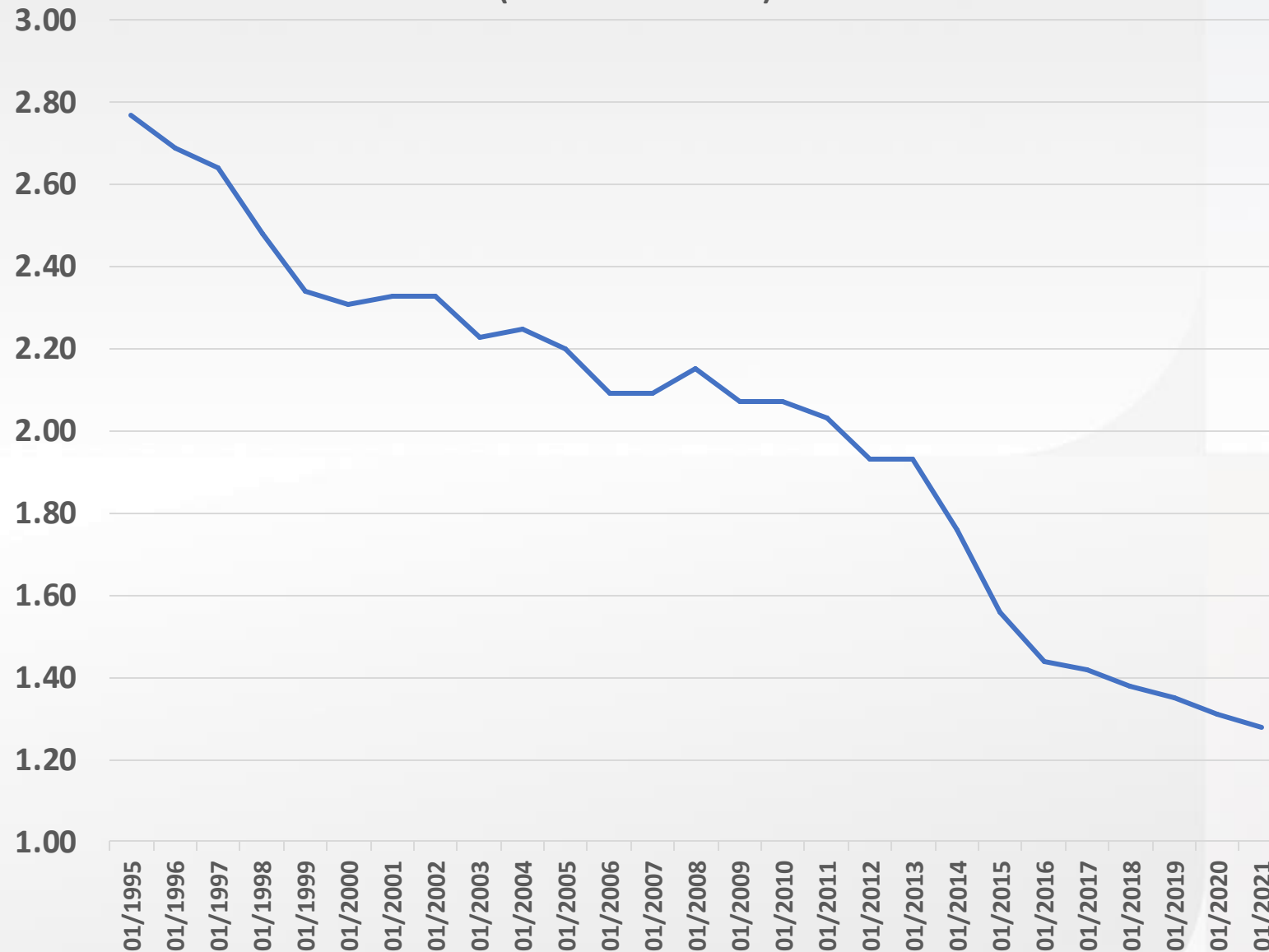
**Unacceptable performance for our
potential as a Nation!**

GLOBAL INNOVATION INDEX (2025)

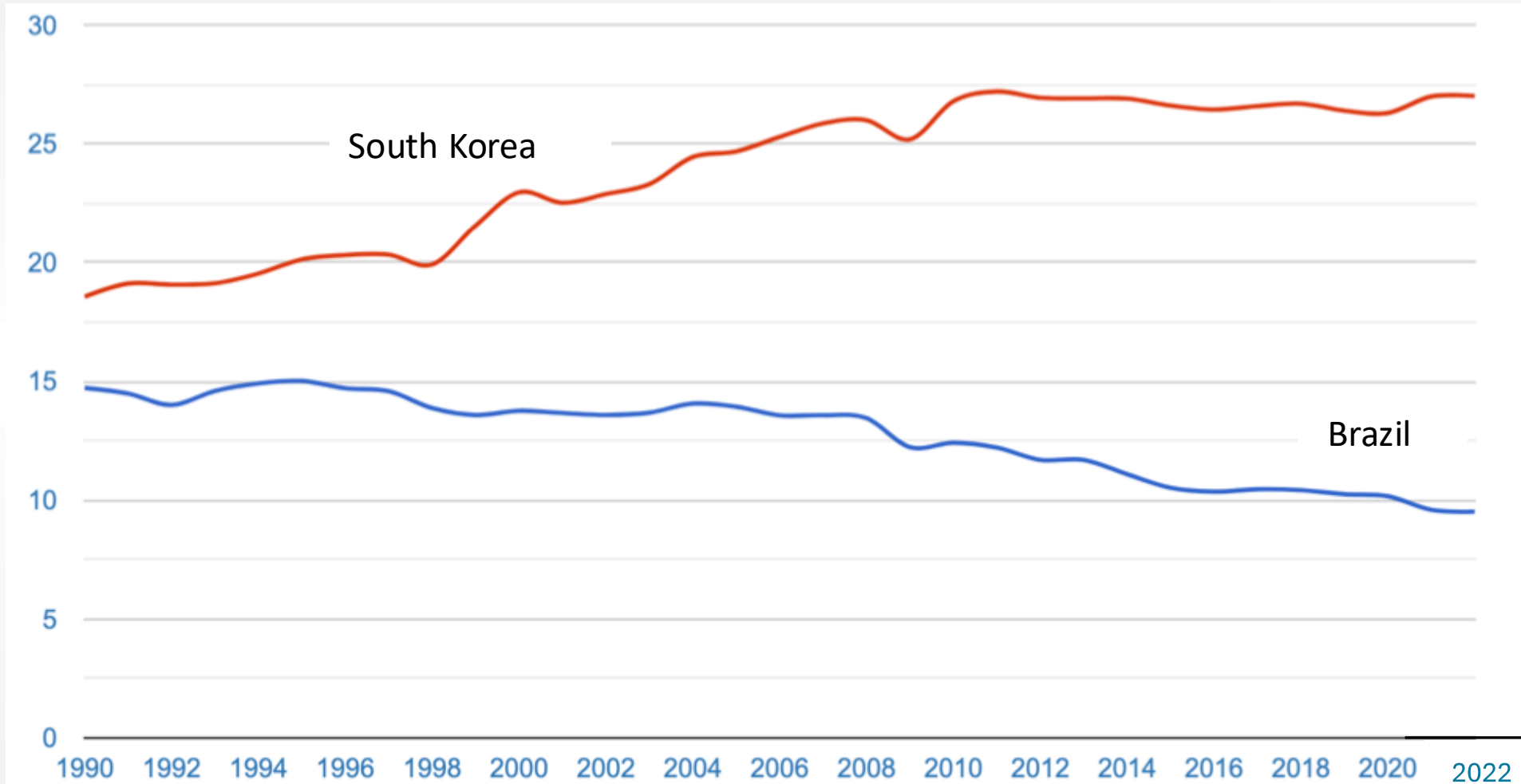


Brazilian Industry's Participation in the World

(Value Added in %)



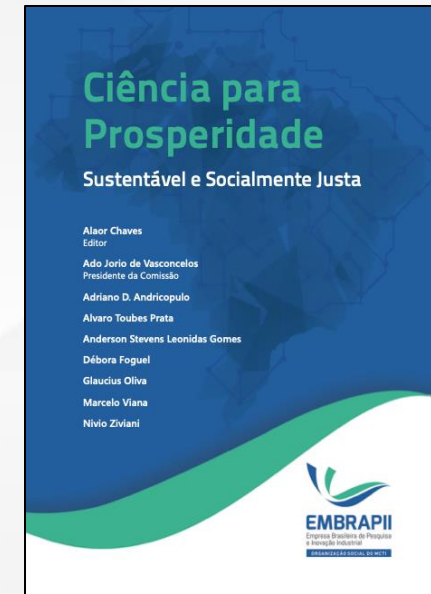
Value Added to GDP by Manufacturing (in %)



Brazilian Universities

- ✓ Teaching;
- ✓ Research;
- ✓ Outreach (extension);
- ✓ Strong Interaction with Society:
 - ✓ Quality of Life and Population Well-being
 - ✓ Sustainable Progress and Wealth Generation

Fourth mission is needed!



Challenges of Faculty Generations

- ✓ **1st Generation (1960s to 1990s)**

- ✓ Academic Qualification;
- ✓ Institutionalization of Teaching and Research;
- ✓ Strengthening Graduate Studies

} Focus on People

- ✓ **2nd Generation (1990s to 2020):**

- ✓ Structuring Laboratories and Infrastructure;
- ✓ Internationalization;
- ✓ Partnerships with Companies.

} Focus on Institutions

- ✓ **3rd Generation (2020 to ...):**

- ✓ Solving National Problems;
- ✓ Wealth Generation;
- ✓ Sustainable Development.

} Focus on Nation

Challenges and Opportunities for Science and Technology in Brazil

- ✓ To expand its influence in various sectors of the economy (**be present**);
- ✓ To work towards improving society's perception of the importance of Science and Technology (**S&T at the Service of Society**)
- ✓ To work towards solving national problems (**committing to solve them**)
- ✓ To incorporate the challenges of sustainable development (**to care about people and the environment**);
- ✓ To attract new talent (**be more attractive**);
- ✓ To explore our comparative advantages in order to **generate wealth and improve quality of life for the population**;
- ✓ To stimulate regional development.

We need to innovate and be entrepreneurial !!!

How to Move Further ?

Good Example to Follow: EMBRAPII

EMBRAPII

Supporting

**INNOVATION
IN INDUSTRY**

through partnerships with the best
Research and Technological
Development Centers in the country.



Projects Supported by EMBRAPII

Technological development initiative that relies on specialized technical support and non-refundable funding, made possible by EMBRAPII:

- ✓ The company contributes part of the investment, EMBRAPII covers up to $\frac{1}{3}$ of the total costs, and the Research Unit - accredited by EMBRAPII, provides an economic counterpart;
- ✓ For small companies, EMBRAPII's contribution can be even greater.

The advantage lies in direct contracting, without Public Call, which makes the process faster and less bureaucratic!

Why is a project supported by EMBRAPII attractive to companies?

- ✓ Significant reduction in development costs;
- ✓ Lower risk exposure with continuous technical support;
- ✓ Greater agility in contracting and project initiation;
- ✓ Access to researchers and cutting-edge laboratories;
- ✓ R&D infrastructure ready to use;
- ✓ Greater predictability in deliveries and results.

91

Embrapii Units NATIONWIDE

NORTH

AMAZONAS (2) IND^T IFAM
PARÁ (2) UFOPA UFPA
TOCANTINS (1) UFT

5

NORTHEAST

ALAGOAS (1) EDGE/UFAL
CEARÁ (3) IF-CE
 INSTITUTO ATLÂNTICO
 LESC-UFC
PARAÍBA (4) CEEI/UFCC
 CEAR/UEPB
 IF-PB
 NUTES/UEPB
BAHIA (2) SENAI
 CIMATEC
 IF-BA

RIO GRANDE DO NORTE (2) IMD/UFRN
 CRTM-IFRN
PERNAMBUCO (5) CESAR
 CIN/UFPE
 CETENE
 LITPEG/UFPE
 ISI TECNOLOGIAS DA INFORMAÇÃO E COMUNICAÇÃO

17

MIDWEST

MATO GROSSO DO SUL (2) ISI BIOMASSA
 AGROTECH/UFMS
GOIÁS (3) IF GOIANO
 CEIA/UFG
 IFG
DISTRITO FEDERAL (2) EMBRAPA
 AGROENERGIA

6

SOUTHEAST

MINAS GERAIS (13) IFMG
 DCC/UFMG
 INATEL
 FEMEC/UFU
 IF SUL DE MINAS
 ISI MLE
 UFMG FÁRMACOS
 UFOP
 ZETTA/UFLA
 DEF/UFV
 IF TRIÂNGULO MINEIRO
 FITEC BELO HORIZONTE
 CTNANO-UFMG
SÃO PAULO (26) CPQD
 CEINFAR/USP
 CIM/UNIFESP
 UFSCAR
 CTIM/UFABC
 CCM/ITA
 POL/USP
 ICMC/USP
 IFSC/USP-SC
 IQ/USP
 E-RENOVA/UNICAMP
 TECNOREEN/USP
 CQMED/UNICAMP
 ESALQ/USP
 ELDORADO
 CNPEM
 SENAI/SP
 IFSP
 IPT BIO
 IPT MAT
 FMRP/USP
 WERNHER VON BRAUN
 FITEC CAMPINAS
 LSI-TEC
 EMBRAPA
 INSTRUMENTAÇÃO
 POWERTRAIN/USP

RIO DE JANEIRO (7)

INT
 COPPE/UFRJ
 IF FLUMINENSE
 TECGRAF PUC-RIO
 ISI BIOSINTÉTICO
 ISI QUÍMICA VERDE
 CETEM

46

SOUTH

SANTA CATARINA (7) POLO/UFSC
 CERTI
 ISI LASER
 IF-SC
 ISI EMBARCADOS
 CIENP
 MOVE/UFSC
RIO GRANDE DO SUL (7) ISI POLÍMEROS
 ISI METALMECÂNICA
 INRI-UFSC
 ITEC-FURG
 UCSGRAPHENE
 SIMOB/UFRGS
 INOVAAGRO-UFPEL
PARANÁ (3) LACTEC
 ISI ELETROQUÍMICA
 ISI ENGENHARIA DE ESTRUTURAS

17

R&D&I PROJECTS - CONTRACTED

2014 - 2025



3,570 CONTRACTED
PROJECTS

2,284
COMPLETED
PROJECTS

1.400
IP APPLICATIONS



USD* **1.24 billion**

TOTAL VALUE OF R&D&I PROJECTS

34%

EMBRAPII

50%

COMPANIES

16%

EMBRAPII UNITS



2,430 SUPPORTED
COMPANIES

64%
MICRO & SMALL
COMPANIES

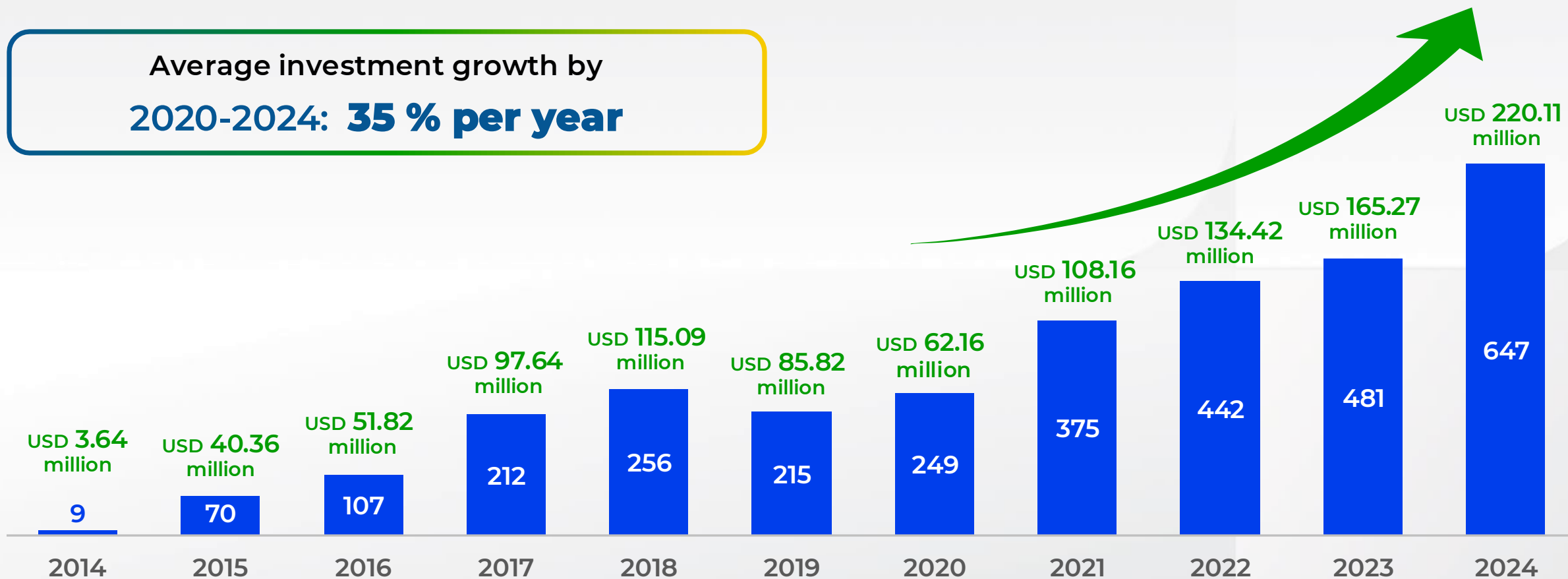
72%
1ST CONTRACT

* Exchange rate: 1 USD = 5.5 BRL

Source: Embrapii SRInfo. Data retrieved on October 24th, 2025

R&D&I PROJECT GROWTH

Average investment growth by
2020-2024: **35 % per year**



NUMBER OF
CONTRACTED PROJECTS

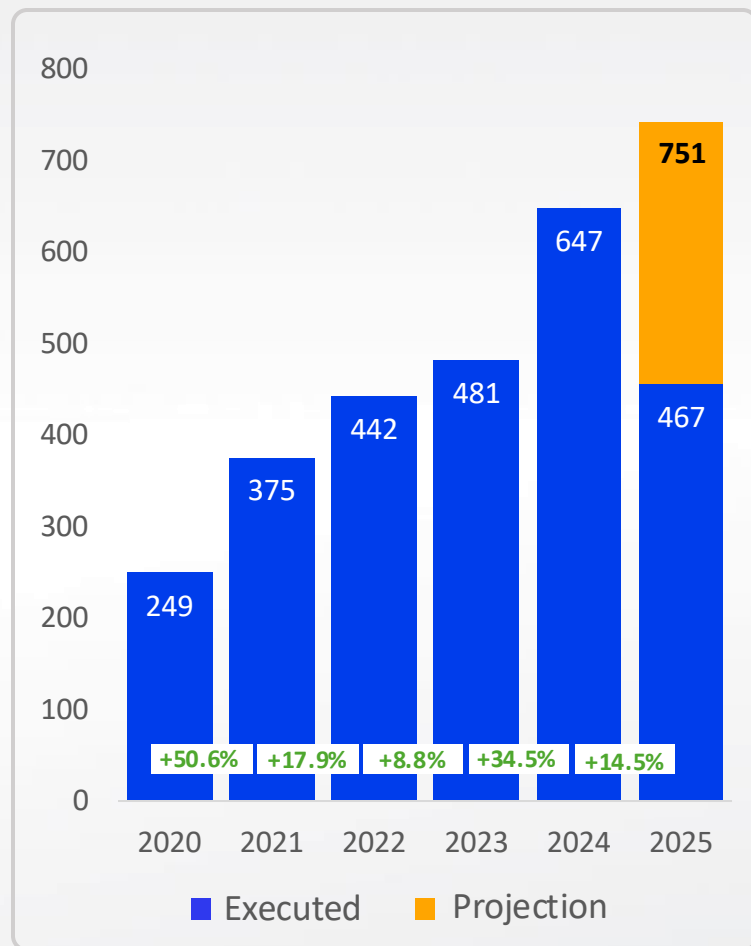
TOTAL INVESTMENT IN
PROJECTS

* Exchange rate: 1 USD = 5.5 BRL

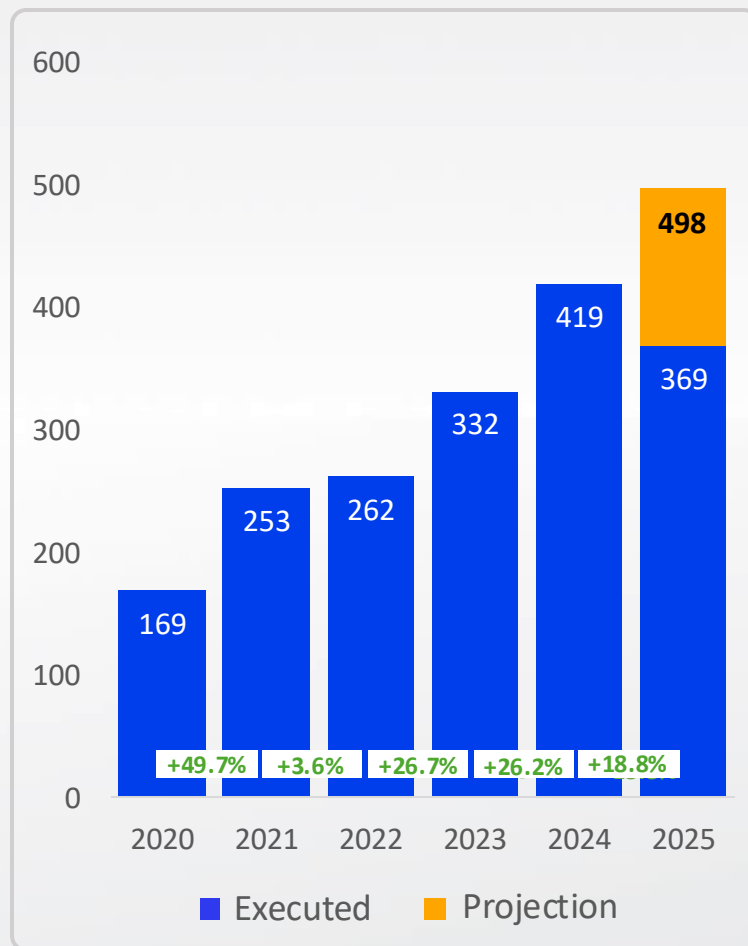
Source: Embrapii SRInfo. Data retrieved on October 24th, 2025

OVERALL FIGURES 2025

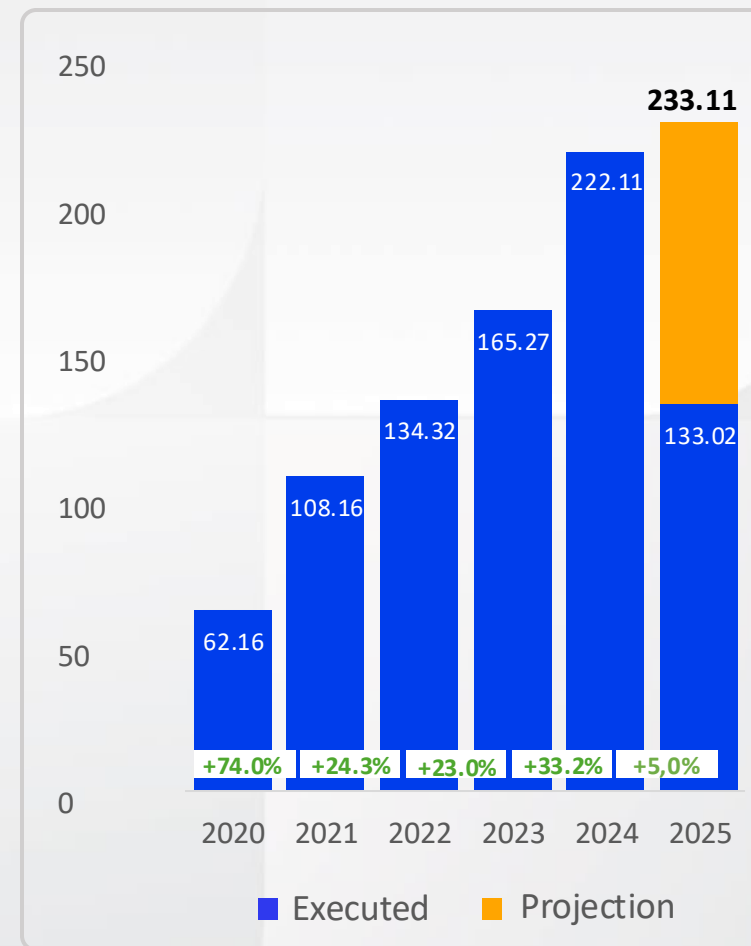
NUMBER OF PROJECTS - CONTRACTED



NUMBER OF PROJECTS - COMPLETED



TOTAL VALUE OF PROJECTS - CONTRACTED (USD* mil.)



* Exchange rate: 1 USD = 5.5 BRL

EMBRAPII UNITS

Embrapii Units

91

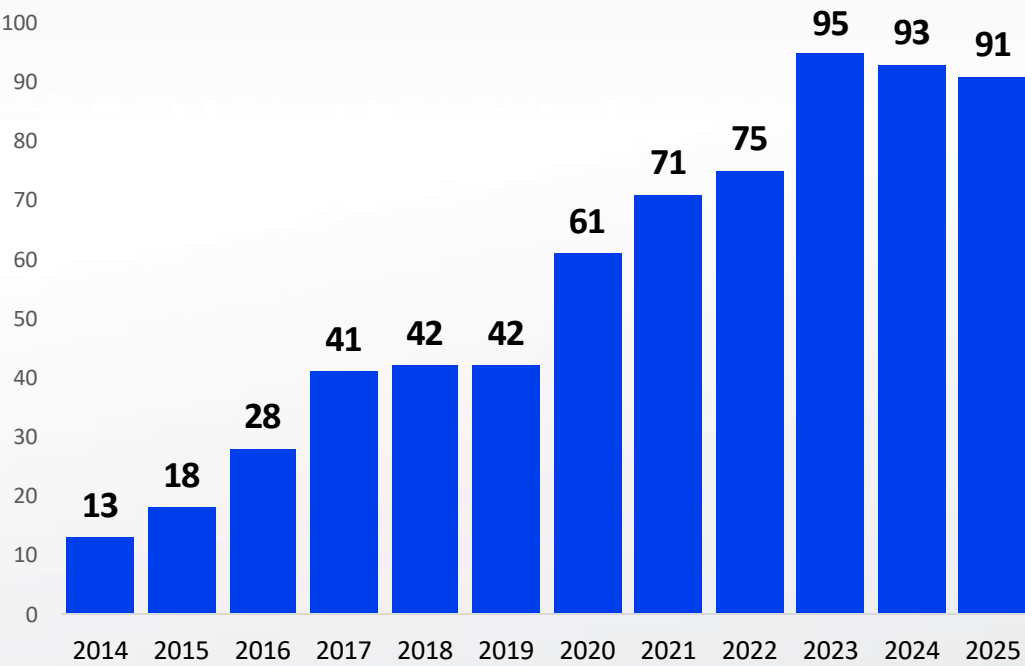
States

18

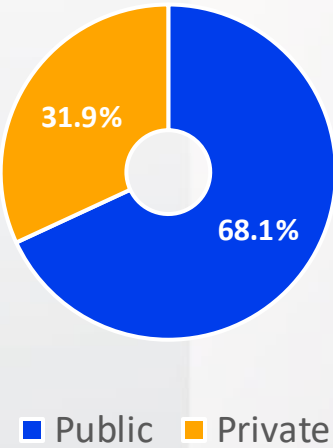
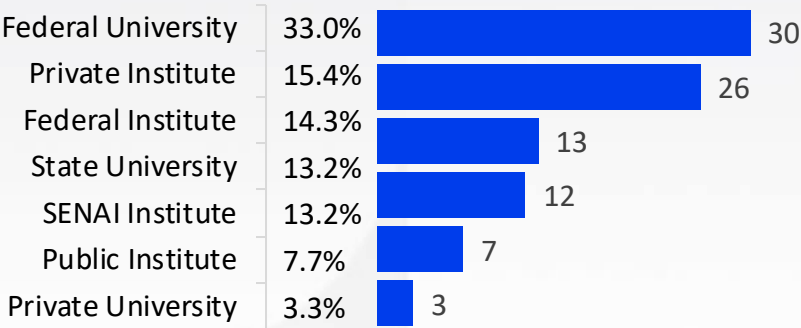
Municipalities

46

Evolution of the Number of Accredited EMBRAPII Units



Embrapii Unit by Type of Institution



REGIONAL BREAKDOWN BY EMBRAPII UNIT 2014-2025

NORTH - 5 UEs (5.5%)

48

Companies
2.0%

80

Projects
2.2%

32.9 mi

Total value (USD)
2.7%

15 PROJECTS PER UNIT (AVG.)

MIDWEST - 6 UEs (6.6%)

288

Companies
11.9%

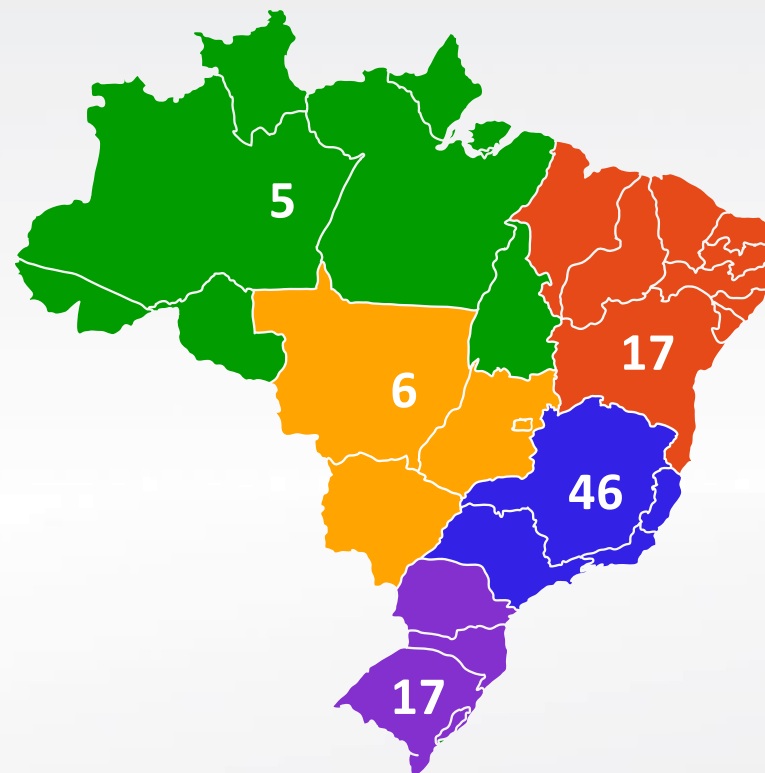
258

Projects
7.2%

74.6 mi

Total value (USD)
6.1%

43 PROJECTS PER UNIT (AVG.)



NORTHEAST - 17 UEs (18.7%)

685

Companies
28.6%

1,104

Projects
31.4%

363.6 mi

Total value (USD)
30.3%

61 PROJECTS PER UNIT (AVG.)

SOUTHEAST – 46 UEs (50.5%)

1,101

Companies
45.4%

1,468

Projects
41.6%

509.1 mi

Total value (USD)
41.4%

29 PROJECTS PER UNIT (AVG.)

SOUTH – 17 UEs (18.7%)

519

Companies
21.5%

606

Projects
17.6%

236,4 mi

Total value (USD)
19.5%

34 PROJECTS PER UNIT (AVG.)

* Exchange rate: 1 USD = 5.5 BRL

PROFILE OF SUPPORTED COMPANIES (2014-2025)

Companies

2,430

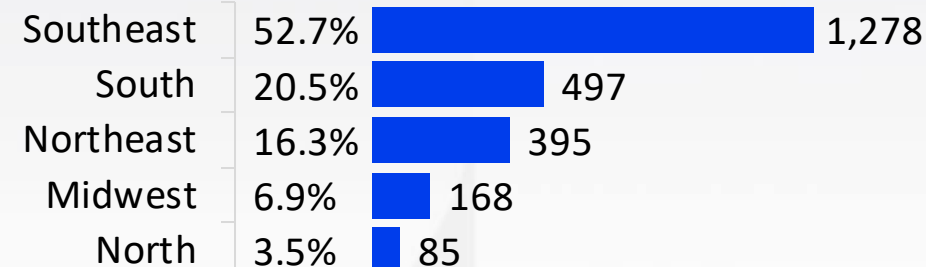
States

26

Municipalities

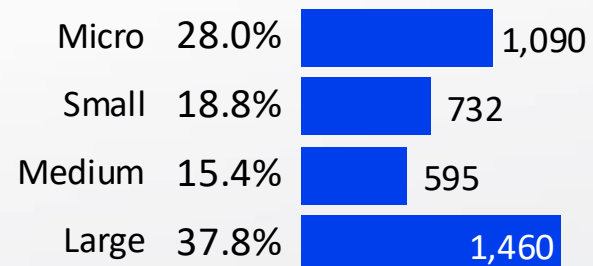
528

Companies by Region

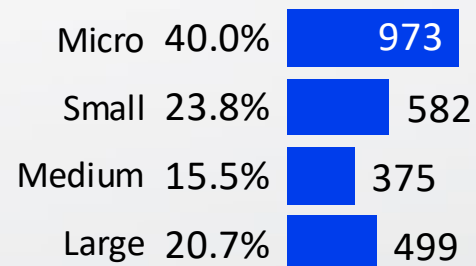


Companies by Size

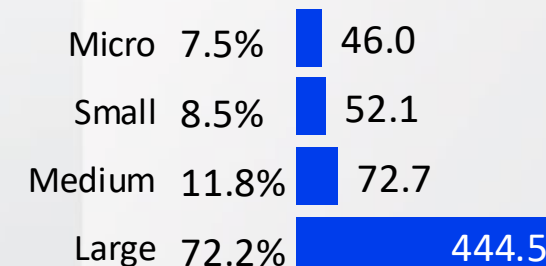
Number of Projects



Number of companies



Total investment – companies share (USD million)



OVERALL COMPANY NUMBERS BY REGION*

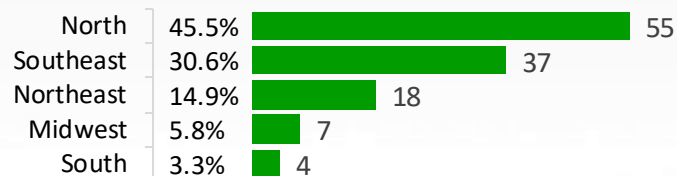
NORTH (85)

85
Companies
3,5%

121
Projects
3,3%

40,3 mi
Total value (USD)
2,5%

Number of Projects with Regional Embrapii Units:



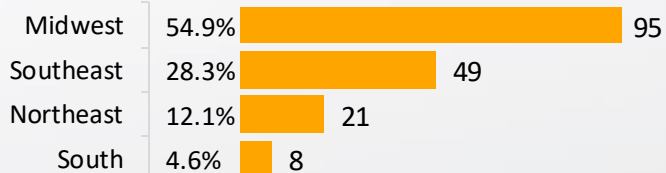
MIDWEST (168)

168
Companies
6,9%

173
Projects
4,7%

62,5 mi
Total value (USD)
3,9%

Number of Projects with Regional Embrapii Units:



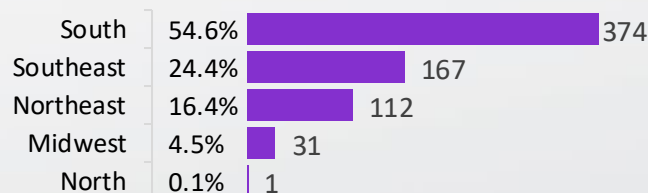
SOUTH (497)

497
Companies
20,5%

685
Projects
18,4%

263,3 bi
Total value (USD)
16,5%

Number of Projects with Regional Embrapii Units:



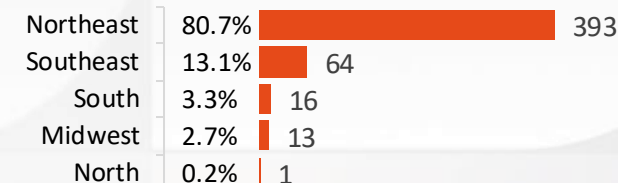
NORTHEAST (395)

395
Companies
16,3%

487
Projects
13,1%

790,9 mi
Total value (USD)
9,0%

Number of Projects with Regional Embrapii Units:



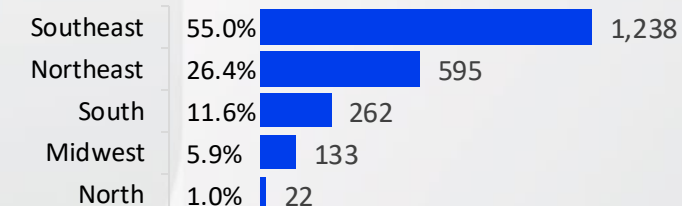
SOUTHEAST (1,278)

1.278
Companies
52,7%

2.250
Projects
60,5%

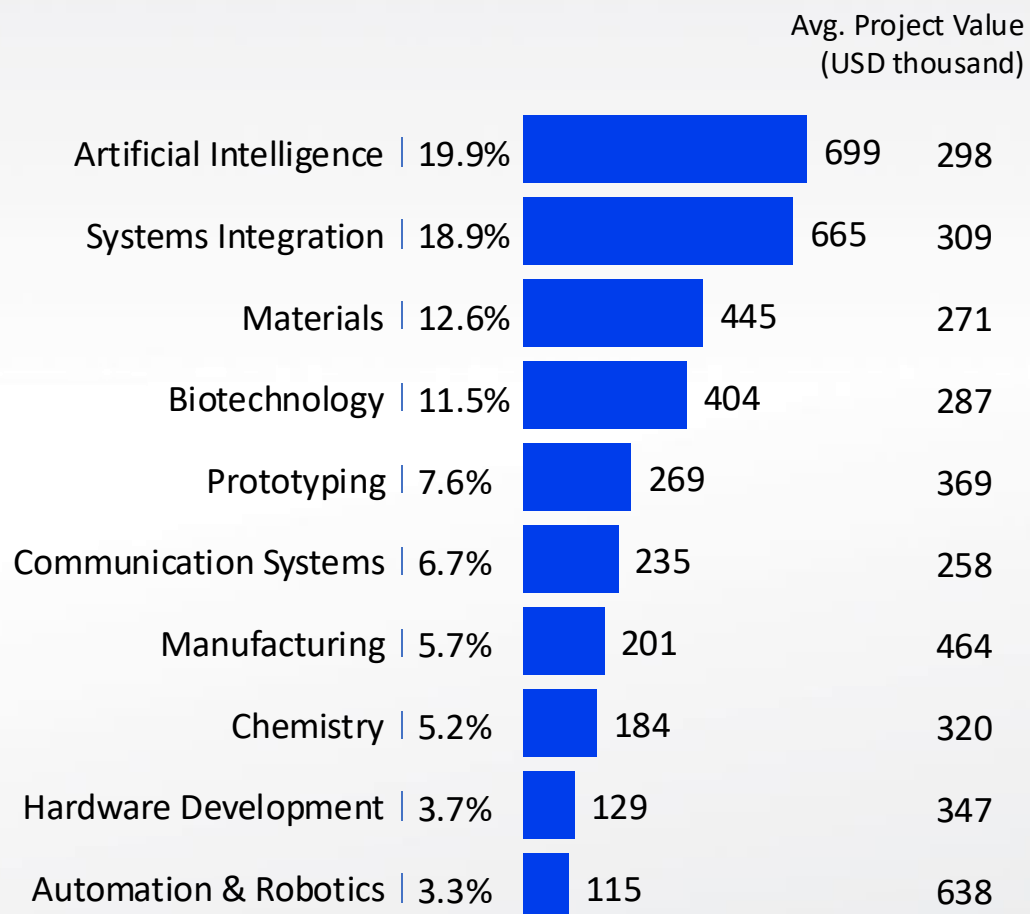
1,08 bi
Total value (USD)
68,0%

Number of Projects with Regional Embrapii Units:

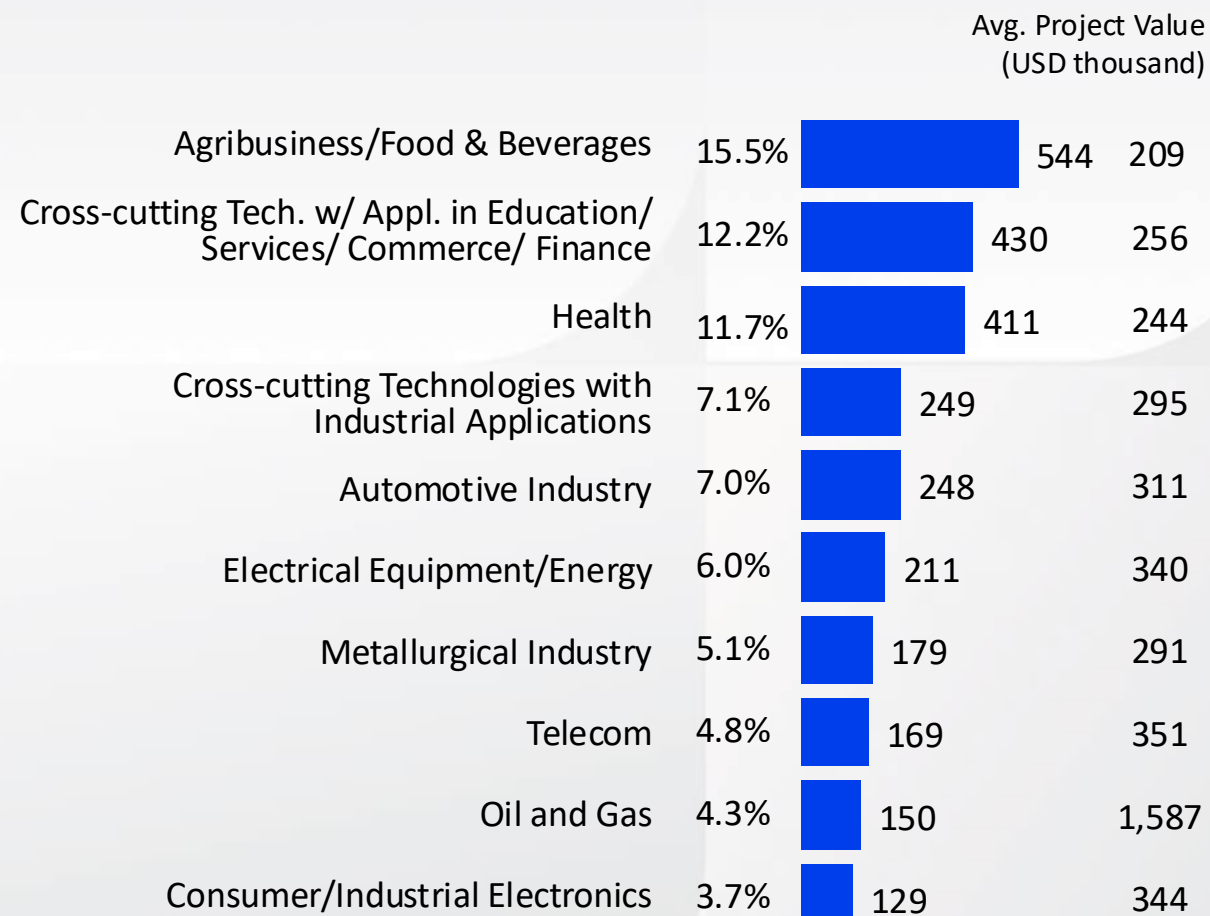


PROJECTS PROFILE (2014-2025)

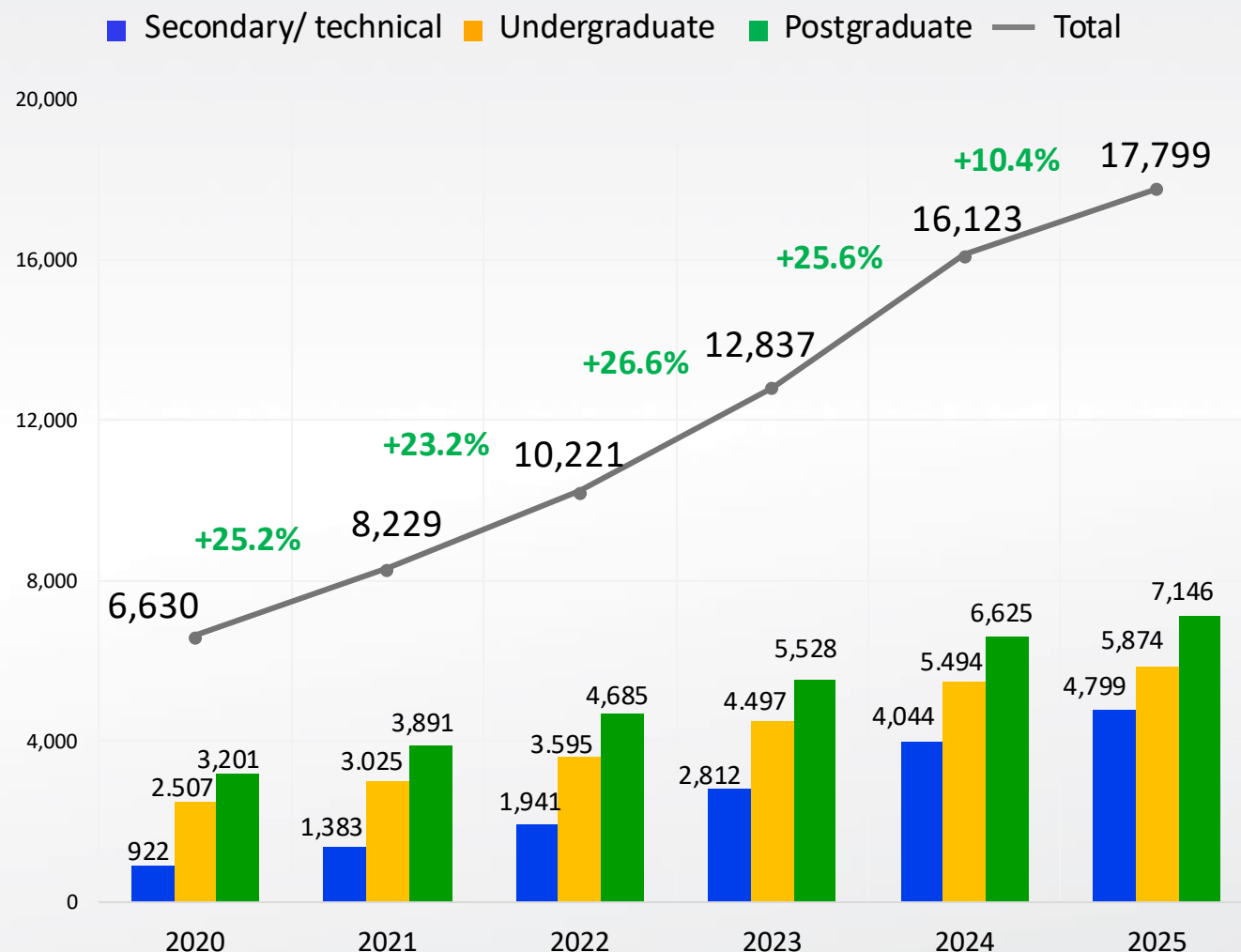
Number of projects by Enabling Technology (top10)



Number of projects by Application Area* (top10)



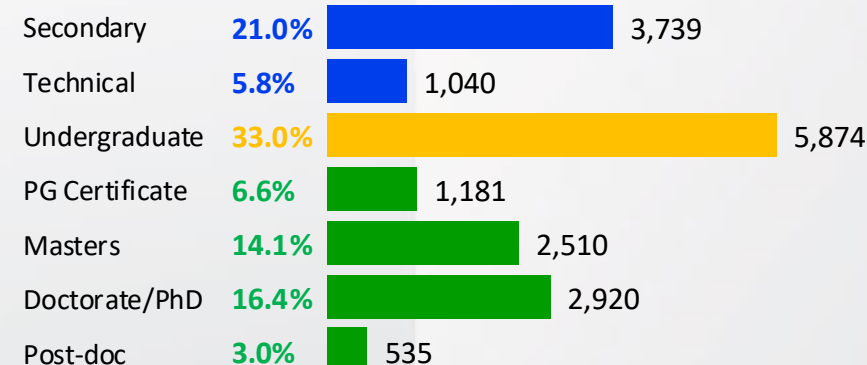
EMBRAPII UNITS: STAFF



17,799 ACTIVE STAFF IN EMBRAPII UNITS

7,146 POSTGRADUATE STAFF
40.1%

Current employed staff by level of education



**Join EMBRAP II and
contribute to making our
industry stronger !**



Thank you !

