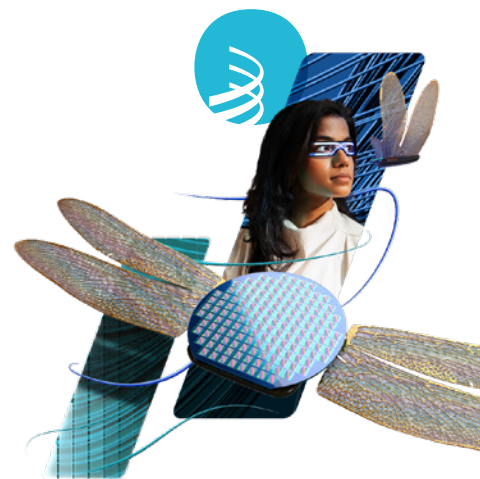


Profiling science-based start-ups in Brazil

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1. Introduction: the Brazilian science-based entrepreneurship paradox

Science-based entrepreneurship, understood here as venture creation rooted in scientific discovery or engineering innovation, has become an increasingly important route through which research systems contribute to industrial transformation. Within Latin America, Brazil occupies a distinctive position. Emerge's Deep Tech Radar Brazil 2025 identifies 952 active science-based start-ups in Brazil, equivalent to 72.3 percent of the Latin American ecosystem mapped in the companion regional study (Emerge, 2025a; Emerge, 2025b).

This scale reflects a strong creation engine, supported by Brazil's universities, research institutes and state funding mechanisms. Yet the same evidence points to a weaker scaling engine. Brazil attracts substantially less science-based venture investment than some regional peers, with USD 216 million recorded in the mapped investment data, compared with USD 607 million in Chile and USD 486 million in Argentina (Emerge, 2025b). The comparison suggests that Brazil is effective at generating ventures and prototypes, but faces constraints in converting them into globally financed companies.

This paper profiles the Brazilian science-based start-up landscape, focusing on geography, institutional origins, sectoral composition, technological foundations and financing dynamics. It argues that Brazil's science-to-market pipeline is strong at the point of venture creation, but requires more market-oriented financing, founder formation and demand-side mechanisms to bridge the gap between academic innovation and global scale.

2. Methodological framework

The analysis relies primarily on the Deep Tech Radar methodology developed by Emerge. The data set applies a science-based venture filter rather than a broad start-up definition. Companies were classified according to five criteria (Emerge, 2025a; Emerge, 2025b):

- Scientific and technological foundation: the venture addresses a problem through testable scientific knowledge, models, experiments, publications, engineering know how or laboratory-based capability, rather than merely digitizing an existing process.
- Development and maturity profile: the business model involves a longer development cycle, such as research, prototyping, testing or certification, and often requires laboratory infrastructure or specialized equipment.
- Protection and differentiation: the venture has technical barriers to entry, including patents, trade secrets, complex technical integration or multidisciplinary expertise.
- Systemic transformation potential: the technology may transform a value chain or contribute to major social, environmental or industrial challenges.

- Application in critical sectors: the solution targets areas such as health, energy, agriculture, advanced industry or climate relevant technologies.

The methodology identified 952 qualified companies in Brazil from a broader candidate pool. Companies were classified into market sectors and technological trends. For publication transparency, the authors should accompany the final chapter with a short methodological note clarifying how the initial candidate pool was identified, how active companies and academic spin-offs were defined, how investment amounts were calculated, and whether investment totals are annual, cumulative, or tied to a specific measurement period.

3. The Brazilian profile: geography and origins

3.1 Geographic concentration of innovation

Science-based entrepreneurship in Brazil is geographically concentrated, reflecting the distribution of scientific infrastructure, industrial demand and state-level innovation capacity (Table 1). The Southeast region hosts 64 percent of the mapped ecosystem, with São Paulo alone accounting for 467 start-ups (Emerge, 2025a).

Table 1 Regional distribution of science-based start-ups in Brazil

Region	Share of ecosystem	Key states	Main concentration drivers
Southeast	64%	São Paulo (467), Rio de Janeiro (77), Minas Gerais (54)	Top universities, FAPESP, industrial headquarters and venture support infrastructure
South	20%	Rio Grande do Sul (97), Paraná (46), Santa Catarina (45)	Industrial base in manufacturing and agribusiness, and state innovation policies
Northeast	7%	Pernambuco (17), Rio Grande do Norte (13)	Emerging hubs such as Porto Digital and energy-related innovation
North	5%	Amazonas (19)	Bioeconomy- and biodiversity-related innovation, including proximity to the Manaus Free Trade Zone
Central West	4%	Federal District (15), Goiás (11)	Proximity to federal institutions and agribusiness activity

Source: Emerge (2025a), Deep Tech Radar Brazil 2025. Coverage: active science-based start-ups in Brazil classified according to the Deep Tech Radar methodology. Underlying data should be shared separately where applicable.

The concentration in São Paulo is consistent with the role of major universities and the long-term support provided by the São Paulo Research Foundation, FAPESP. The Pesquisa Inovativa em Pequenas Empresas (PIPE) program supports scientific and technological research in small enterprises and has been an important de-risking instrument for research-based firms in the state (FAPESP, n.d.). Outside the Southeast, specialized clusters are visible in areas such as biotechnology and bioeconomy in Amazonas, energy-related innovation in the Northeast, and agribusiness-related innovation in the Central West (Emerge, 2025a).

3.2 Academic spin-offs and the university role

Brazil's science-based start-up ecosystem is closely linked to universities and public research organizations. Around 55 percent of mapped ventures are classified as academic spin-offs, meaning they originated directly from university research groups or laboratories (Emerge, 2025a). The University of São Paulo is the leading source of such ventures, followed by institutions such as UNICAMP, the Federal University of Rio Grande do Sul and the Federal University of Rio de Janeiro. Previous research on Brazilian start-ups also highlights the importance of higher education institutions and local entrepreneurial networks in shaping start-up outcomes (Reddy et al., 2019).

This structure gives the ecosystem significant scientific depth, but also creates a commercialization challenge. Founders are often technically strong, including PhD-trained researchers, but may lack experience in sales, regulatory strategy, business development and venture financing. The result is a need for business-oriented cofounders, venture-building support and technology transfer offices that can move research beyond laboratory validation toward market adoption.

4. Sectoral composition: comparative advantages

Brazil's science-based entrepreneurship profile reflects its comparative advantages in land, biodiversity, industrial demand and a large domestic market. Rather than mirroring the sectoral mix of the United States, Israel or parts of Europe, Brazil's strongest opportunities are concentrated in health, agriculture, industrial technologies and climate relevant applications (Emerge, 2025a).

4.1 Health and well-being

Health and well-being is the largest mapped sector, with 345 start-ups, equivalent to 36 percent of the Brazilian science-based start-up landscape (Emerge, 2025a). Demand is shaped by Brazil's large population and the scale of the Unified Health System, creating opportunities for cost-saving diagnostics, therapeutics and digital or biological health technologies. As an illustrative example identified in the data set, Nintx operates in life sciences and biodiversity-related health innovation; its company website is cited only for basic public identification (Emerge, 2025a; Nintx, n.d.).

4.2 Agribusiness and food

Agribusiness and food is the second largest sector, with 263 mapped ventures, or 28 percent of the ecosystem (Emerge, 2025a). The sector reflects Brazil's role as a major agricultural producer and the need to adapt technologies to tropical conditions. As an illustrative company example, Recombine Biotech is included here as a biotechnology venture active in the veterinary and agricultural markets; the sector classification relies on Emerge's data set, while the company website is used only for basic identification (Emerge, 2025a; Recombine Biotech, n.d.).

4.3 Industry, manufacturing and circularity

The industry and manufacturing cluster includes 181 start-ups, or 19 percent of the ecosystem (Emerge, 2025a). These ventures focus on efficiency, circularity, advanced materials and industrial biotechnology. Apexzymes is included as an illustrative company example in industrial biotechnology; the sector placement is drawn from the Emerge data set, while the company website is cited only for basic identification (Emerge, 2025a; Apexzymes, n.d.).

4.4 Emerging sectors

Smaller clusters also address strategic opportunities. Energy and climate ventures and region-specific mobility ventures are part of the mapped ecosystem (Emerge, 2025a). BGEnergy and Aeroriver are included as illustrative company examples; their websites are cited only for public identification rather than as the source of quantitative performance claims (Emerge, 2025a; BGEnergy, n.d.; Aeroriver, n.d.).

5. Technological foundations: biotechnology and AI convergence

Brazil's science-based ventures rely most heavily on biotechnology and artificial intelligence (AI) (Table 2). Biotechnology is the dominant technological foundation, reflecting the sectoral importance of health, agriculture and industrial enzymes. AI and computing act as cross-cutting enablers, often embedded in scientific workflows, diagnostics, industrial monitoring or geological analysis rather than consumer applications (Emerge, 2025a).

Table 2 Top technological trends in Brazilian science-based start-ups

Technology trend	Share of ecosystem	Primary applications
Biotechnology	45%	Drug discovery, biological agriculture, industrial enzymes and biofuels
AI and computing	23%	Diagnostic imaging, geological analysis, predictive climate models and industrial analytics
Advanced materials	18%	Nanotechnology, biocompatible materials and smart polymers
Sensors and internet-of-things	5%	Precision agriculture and industrial monitoring

Source: Emerge (2025a), Deep Tech Radar Brazil 2025. Coverage and classifications follow the Deep Tech Radar methodology. Underlying data should be shared separately where applicable.

The dominance of biotechnology is supported by Brazil's biodiversity and its network of biological research institutes, including Embrapa, Butantan and Fiocruz. AI-based science ventures differ from consumer AI firms because they are often embedded in hardware, industrial workflows, diagnostics or field operations. Geowellex is included as an illustrative company example in geoscience and oil- and gas-related analytics; the Emerge data set supports the sectoral classification, while the company website is used only for basic identification (Emerge, 2025a; Geowellex, n.d.).

6. Investment landscape: the scaling gap

The central bottleneck in Brazil is not start-up creation, but scale-up financing. Brazil hosts most of Latin America's mapped science-based start-ups but captures a smaller share of regional science-based venture investment (Emerge, 2025b).

6.1 Regional investment disparity

According to the Deep Tech Radar Latam 2025 data set, Brazil accounts for 72.3 percent of the mapped science-based start-ups in Latin America, but recorded USD 216 million in science-based venture investment. Chile recorded USD 607 million, and Argentina USD 486 million, despite having smaller shares of the mapped company base (Emerge, 2025b). The comparison should be read according to the coverage period and investment definition used in the Emerge data set, which should be stated explicitly in the final publication.

The pattern suggests that Brazil has breadth in company formation, while some peers have produced more highly capitalized outliers. The Brazilian ecosystem therefore appears stronger at early creation than at late-stage financing. This is a scaling gap rather than a failure of scientific capability.

6.2 Ticket sizes and the valley of death

Investment ticket size data indicate that many Brazilian science-based start-ups remain at the micro-funding stage. Nearly 30 percent of mapped ventures have received less than BRL 200,000, a level consistent with initial grants or angel investment but generally insufficient for laboratory validation, certification, clinical trials, pilot manufacturing or international regulatory entry (Emerge, 2025a). The sharp fall in the number of companies raising between BRL 500,000 and BRL 5 million reflects the valley of death, where public grants begin to run out but the technology has not yet been de-risked for conventional venture capital.

6.3 Public sector dominance

Public funding remains central to the ecosystem. FAPESP, FINEP and SEBRAE are major sources of support, while institutions such as EMBRAPPII and BNDES Criatec help connect research capability, industrial demand and early-stage financing (Emerge, 2025a; FAPESP, n.d.; Finep, n.d.; EMBRAPPII, n.d.; BNDES, n.d.; SEBRAE, n.d.).

This public foundation is valuable but not sufficient. Emerge data indicate that private repayable investment, including angel, venture capital and corporate venture capital, accounts for only 25.7 percent of the capital raised by mapped ventures (Emerge, 2025a). The limited private capital share reflects both the technical difficulty of evaluating science assets before revenue and the smaller number of domestic investors with deep technical due diligence capacity.

Recent policy developments seek to address this gap. Law 15.184 of 2025 changed the governance and financial conditions of the National Fund for Scientific and Technological Development, FNDCT, and federal communications indicate the release of approximately BRL 22 billion for science, technology and innovation (Brazil, 2025). The transmission of these resources to start-ups and scale-ups remains a key implementation issue.

6.4 What worked, what did not, and why

Three elements appear to have worked particularly well. First, the FAPESP PIPE program has provided a long-running and predictable mechanism for de-risking early-stage science-based ventures in São Paulo (FAPESP, n.d.). Second, universities have become productive sources of start-up formation, with academic spin-offs representing 55 percent of mapped ventures (Emerge, 2025a). Third, Brazil's ventures are aligned with comparative advantages in biodiversity, health, tropical agriculture and industrial transformation, giving the ecosystem a coherent sectoral identity.

Several constraints remain. Private venture capital participation is still limited, partly because many ventures lack revenue traction and partly because many investors lack the technical due diligence capacity to evaluate pre-revenue science assets. Matching fund mechanisms and applied research models exist, including EMBRAPPI and BNDES Criatec, but have not yet shifted private investor behavior at the scale required (EMBRAPPI, n.d.; BNDES, n.d.). Public procurement of innovation is also underused. Among the 952 mapped start-ups, only eight target government as a client segment, compared with 204 serving business-to-business markets (Emerge, 2025a). Finally, doctoral training remains primarily oriented toward academic careers, leaving a shortage of entrepreneurial scientists able to translate research into investable companies.

7. Lessons and policy implications from the Brazilian case

The Brazilian case offers transferable lessons for emerging science-based ecosystems that have strong research output but weaker scale-up capacity.

7.1 Talent: build entrepreneurial scientists

Brazil's shortage of business-literate scientists is a core bottleneck. Doctoral and postdoctoral training could include customer discovery, regulatory strategy, finance and venture creation. The broader lesson is that founder formation should be treated as innovation infrastructure. A high volume of researchers does not automatically translate into a high volume of founders.

7.2 Financing: expand scalable matching mechanisms

Brazil could expand matching funds in which public money is paired with private capital to reduce risk while maintaining market discipline. This is especially relevant where public funding dominates and private investors are hesitant to enter science-based asset classes. The transferable lesson is that matching finance can pull private capital into the ecosystem more effectively than grants alone.

7.3 Market access: use public procurement for innovation

The public sector can act as an early customer for science-based solutions in technologies relating to health, energy, agriculture, infrastructure and climate. International evidence shows that public procurement for innovation can support demand creation and accelerate adoption of novel technologies when designed carefully (OECD, 2017). Brazil has legal and institutional tools that can be used more actively for technological orders and innovation-oriented procurement. The broader lesson is that governments can use demand, not only grants, to help start-ups cross the valley of death.

7.4 Global capital platform

Brazil cannot rely only on domestic capital. Co-investment agreements with international science-based funds, structured roadshows and fund-to-fund channels could help high potential ventures reach investors with deeper technical expertise. Emerging ecosystems should internationalize early, rather than waiting for a mature domestic venture capital industry.

7.5 Concentrate on comparative advantages

Brazil should deepen support in sectors where it already has strong scientific and economic foundations, including bioeconomy, tropical agriculture, biodiversity-related health applications, food systems and critical minerals. Health and well-being and agribusiness and food already account for nearly two-thirds of mapped ventures, while biotechnology is the dominant technological foundation (Emerge, 2025a). The broader lesson is that emerging ecosystems do not need to imitate the sectoral mix of global leaders. They can build more credible positions by aligning science-based entrepreneurship strategy with national assets and existing scientific strengths.

8. Conclusion

Brazil has built a large and scientifically grounded science-based start-up ecosystem. With 952 mapped ventures and a strong academic spin-off pipeline, the country has established one of Latin America's most substantial creation engines for science-based entrepreneurship (Emerge, 2025a; Emerge, 2025b).

The remaining challenge is scale. Investment volumes, ticket sizes and the role of private capital suggest that the ecosystem still struggles to convert a broad venture base into globally financed companies. Bridging this gap will require stronger founder formation, larger and better designed matching funds, innovation-oriented procurement, international capital channels and a sharper focus on sectors where Brazil has structural advantages.

The Brazilian case therefore illustrates a wider lesson for emerging economies. Building a science-based venture pipeline is only the first step. Long-term competitiveness depends on the ability to convert research assets into companies that can access customers, capital and global markets.

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