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Review Article

Argentina at the Crossroads: An Apolitical, Data-Driven Assessment of Science and Technology in 2025

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Abstract

Background: Argentina has historically sustained one of the most consolidated public science and technology (S&T) systems in Latin America, supported by strong public universities, a high density of researchers, and internationally recognized institutions. Over the last decade, however, macroeconomic instability, high inflation, and policy discontinuities have progressively weakened this system.

Methods: An apolitical, narrative review was conducted using official statistics from UNESCO, OECD, the World Bank, and Argentine national budget data, complemented by institutional reports and validated secondary sources. Public and private investment in research and development (R&D), institutional performance, infrastructure, human resources, and international comparisons were analyzed.

Results: Total R&D expenditure in Argentina stabilized around 0.5–0.6% of GDP during the 2000s and early 2010s, followed by decline and partial recovery to approximately 0.55% in 2022 (1–3). Budget projections for 2024–2025 indicate a sharp real contraction of public S&T investment, with the national S&T function reaching an estimated 0.19% of GDP in 2025 (4,5). Core public institutions remain operational but face severe constraints, including cancelled competitive funding, infrastructure deterioration, and declining real wages, accompanied by increased migration of early-career researchers (5–8).

Conclusions: Argentina faces a structural risk of long-term erosion of scientific capacity and international competitiveness if the current trajectory persists. Conversely, restoring sustained investment and institutional continuity could leverage existing human capital to rebuild a competitive national S&T system. Science and technology should be treated as long-term state investments rather than cyclical budgetary expenditures.

Keywords: Argentina; science policy; research and development; public universities; innovation systems; human resources; public funding.

Introduction

Science and technology (S&T) have played a central role in Argentina's development model for much of the twentieth and early twenty-first centuries. The country built a distinctive system based on strong public universities, tuition-free higher education, and a national research council modelled after European institutions. This approach allowed Argentina to achieve levels of scientific productivity and researcher density that remain exceptional within Latin America (1,2).

The National Scientific and Technical Research Council (CONICET), created in 1958, became the backbone of this system, integrating research activities across universities, specialized institutes, and public laboratories. Complementary institutions such as INTA, INTI, CNEA, and CONAE supported applied research in agriculture, industry, nuclear technology, and space science. Together, these institutions enabled Argentina to develop capabilities in strategic areas ranging from biomedical research to satellite engineering (2,3).

Despite these structural strengths, Argentina's S&T system has historically been vulnerable to macroeconomic volatility and policy discontinuity. Periods of expansion have frequently been followed by abrupt contractions, undermining long-term planning and eroding institutional stability. As of 2025, the system faces one of its most critical moments in decades: institutions remain formally intact, but the material conditions required to sustain research and innovation have deteriorated sharply (4–6).

This article provides a comprehensive, apolitical assessment of the current state of science and technology in Argentina. It examines trends in public and private R&D investment, institutional impacts, the private innovation ecosystem, infrastructure and large-scale projects, human resources, and the structural implications for national development and international competitiveness.

Investment in Research and Development

Gross domestic expenditure on research and development (GERD) is the most widely used indicator of national commitment to S&T. In Argentina, GERD increased gradually from the late 1990s, rising from approximately 0.4% of GDP to slightly above 0.6% during the mid-2000s and early 2010s (1,2). This period coincided with the creation of a dedicated Ministry of Science and Technology, expansion of competitive funding programs, and significant investment in infrastructure and human resources.

After 2015, GERD declined in real terms, reflecting fiscal consolidation and a reduced prioritization of S&T. By 2019, R&D expenditure had fallen to approximately 0.48% of GDP. Although a partial recovery was observed by 2022, reaching around 0.55% of GDP, this level remained well below the average of high-income countries and below what would be expected for an upper-middle-income economy (1–3).

International comparisons highlight the widening gap between Argentina and innovation-intensive economies.

OECD countries invest on average between 2.5% and 3.5% of GDP in R&D, with some countries exceeding 4%. Even within Latin America, Brazil and Uruguay currently surpass Argentina in R&D intensity (1,3).

The composition of R&D funding in Argentina is also distinctive. Approximately 60% of total R&D expenditure is financed by the public sector, while business enterprises account for roughly 40%, in contrast to OECD countries where private funding typically exceeds 70% (2,3). This structural dependence on public funding increases the system's vulnerability to fiscal shocks.

Budget analyses for 2024–2025 indicate a sharp real contraction of public S&T investment. Adjusted for inflation, public S&T spending declined by approximately 30% in 2024 and is projected to decline further in 2025, with the national S&T function reaching an estimated 0.19% of GDP, the lowest value in more than two decades (4,5).

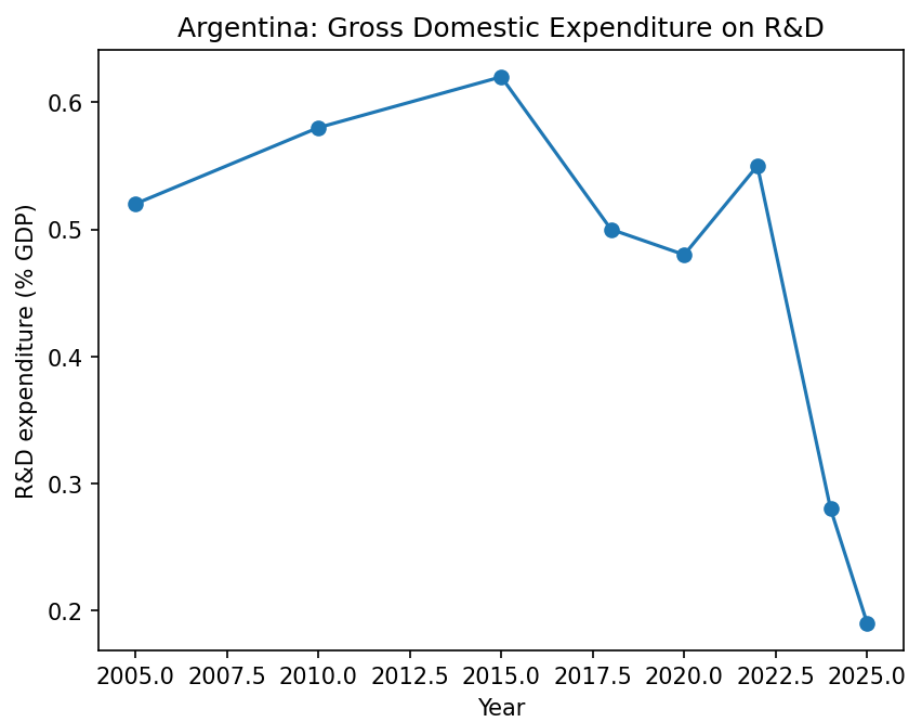


Figure 1. Evolution of gross domestic expenditure on R&D in Argentina as a percentage of GDP (2005–2025).

Public Institutions and Higher Education

Public institutions constitute the backbone of Argentina's S&T system. CONICET alone employs more than 10,000 researchers and a similar number of doctoral and postdoctoral fellows, making it the largest public research organization in Latin America (2,6). National universities host a substantial share of research activity and play a critical role in training new researchers.

Over the past decade, operating budgets of these institutions have become increasingly constrained. While nominal allocations have occasionally increased, high inflation has eroded their real value. As a result, the majority of institutional budgets are now absorbed by salaries and fellowships, leaving minimal resources for competitive projects, equipment, and infrastructure maintenance (5–7).

The cancellation of competitive funding calls by the national research funding agency has further disrupted research continuity. Hundreds of peer-reviewed projects approved in previous calls were left unfunded, an unprecedented situation in the region (6,7). Universities have warned that without restoration of funding, large numbers of ongoing projects will be suspended, and doctoral training pipelines will be severely affected (6).

Private Innovation Ecosystem and Public–Private Interaction

Argentina’s private innovation ecosystem includes a dynamic knowledge-based services sector, biotechnology firms, and a large startup community. Companies such as MercadoLibre and Globant demonstrate the country’s capacity to generate globally competitive firms, while hundreds of startups operate in fintech, agri-tech, and software services (10,11).

Despite this dynamism, business expenditure on R&D remains structurally low. Macroeconomic instability, limited access to long-term financing, and regulatory uncertainty constrain private investment in innovation. The reduction of public instruments supporting productive innovation has further weakened public–private collaboration (4,5).

The Knowledge-Based Economy Law provided fiscal incentives that contributed to a sharp increase in exports of knowledge-based services, which exceeded USD 9.5 billion in 2025 and became the country’s third export complex (11). However, uncertainty regarding the continuity and implementation of these incentives poses risks to the sector’s sustainability.

Infrastructure and Strategic Projects

Between 2007 and 2015, Argentina invested heavily in scientific infrastructure, constructing new research institutes and launching large-scale strategic projects in nuclear energy, space technology, and astrophysics (3). Since then, many of these initiatives have been delayed or paralysed due to insufficient capital investment. Numerous research facilities across the country remain incomplete or underutilized, increasing long-term costs and limiting research capacity. At the laboratory level, aging equipment and difficulties importing reagents and spare parts have reduced experimental capabilities, forcing researchers to outsource analyses or abandon certain lines of investigation (5–7).

Strategic projects such as the CAREM small modular nuclear reactor and advanced satellite missions have faced repeated delays, jeopardizing Argentina's accumulated technological capabilities and its credibility as a long-term international partner.

Human Resources in Science and Technology

Argentina has one of the highest densities of researchers in Latin America and an unusually high participation of women in science, with women representing more than 50% of researchers and fellows (2,8). This human capital represents one of the system's greatest strengths.

However, declining real wages, reduced entry positions, and funding uncertainty have severely affected working conditions. Real salaries for researchers and fellows have fallen by an estimated 30–40% over recent years, and early-career researchers face increasingly limited career prospects (5,8).

These conditions have accelerated migration to neighboring countries and high-income systems, where salaries and research conditions are significantly more attractive. If sustained, this trend threatens generational renewal and the long-term sustainability of the national research workforce.

Structural Implications and Medium-Term Scenarios

If current trends persist, Argentina risks a structural contraction of its S&T system, with lasting impacts on productivity, innovation, and international competitiveness. Loss of human capital, deterioration of infrastructure, and institutional weakening would be difficult and costly to reverse.

Conversely, restoring sustained investment and policy continuity could stabilize institutions, retain talent, and rebuild research capacity over the medium term. Achieving this would require treating science and technology as long-term state policies rather than short-term budgetary variables.

Conclusions

An apolitical assessment of available data indicates that Argentina's science and technology system is under acute stress but not yet irreversibly damaged. The country retains significant human capital and institutional experience. Policy choices made in the coming years will determine whether this capacity is eroded or rebuilt. Sustained investment, institutional continuity, and strengthened public–private collaboration are essential to preserving Argentina's scientific capabilities and supporting long-term economic and social development.

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