

Cooperation in Science, Technology, and Innovation

ISSUES NOTE

BRICS 2025



1. Background Information

Cooperation in Science, Technology, and Innovation (STI) under the BRICS umbrella began over a decade ago. In line with the mandate of the eThekweni Declaration and the March 2013 Action Plan, adopted at the 5th BRICS Summit in South Africa, the BRICS STI Ministers met officially for the first time in February 2014 in Cape Town, South Africa.

1.1. Memorandum of Understanding on Cooperation in Science, Technology, and Innovation

In March 2015, the Memorandum of Understanding (MoU) on Cooperation in Science, Technology, and Innovation was signed. This MoU established a strategic framework to promote intra-BRICS cooperation and address common social and economic challenges through knowledge co-generation, innovation, and the promotion of international partnerships.

The MoU laid the foundation for consensual cooperation in STI, guided by the principles of voluntary participation, mutual benefit, equality, and reciprocity, with a focus on:

- Sharing and exchanging information on STI policies and strategies;
- Leveraging contacts and programmes aimed at enhancing collaborative innovation projects; and
- Formulating long-term joint cooperation programmes.

Considering that the MoU was signed 10 years ago, the need has arisen to incorporate the new members into the instrument through a simplified accession protocol.

1.2. BRICS STI governance

Taking advantage of the broad framework for cooperation established by the MoU, representatives of BRICS research funding agencies and decision-makers met for the first time in July 2015 in Moscow. This meeting aimed to discuss the launch of a multilateral program to support BRICS STI projects, which was subsequently endorsed by the 3rd BRICS Ministerial Meeting on Science, Technology, and Innovation held in October 2015. This meeting also led to the creation of the BRICS Working Group (WG) on STI Financing.

In 2018, a coordination mechanism for cooperation was developed to address the increasing number of BRICS STI activities and initiatives. Following discussions during the 7th STI Ministerial Meeting, held in Campinas in September 2019, the member countries adopted the concept of the New BRICS Science, Technology, and Innovation Architecture. This architecture encompasses four pillars of collaboration, as illustrated in Figure 1 below:

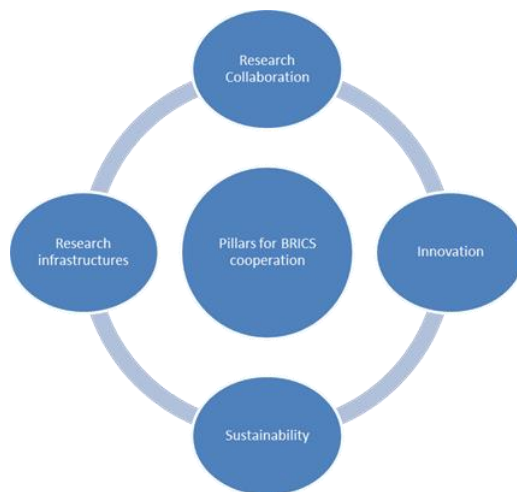


Figure 1 – Collaboration Pillars for BRICS STI.

The BRICS STI governance architecture comprises a series of structured dialogues, including the annual meetings of the Ministers of Science, Technology, and Innovation, as well as the annual meetings of Senior Officials. It also encompasses the BRICS STI Steering Committee, the Young Scientists Forum, the Young Innovator Prize, and 13 Thematic Working Groups that hold regular meetings. Additional components include Joint Calls for Research Projects, the Meeting of Science Academies, the Conference on Anticipating STI Technologies and Policies, and occasional sectoral dialogues.

This governance structure, which remains in effect, is represented in the figure below:

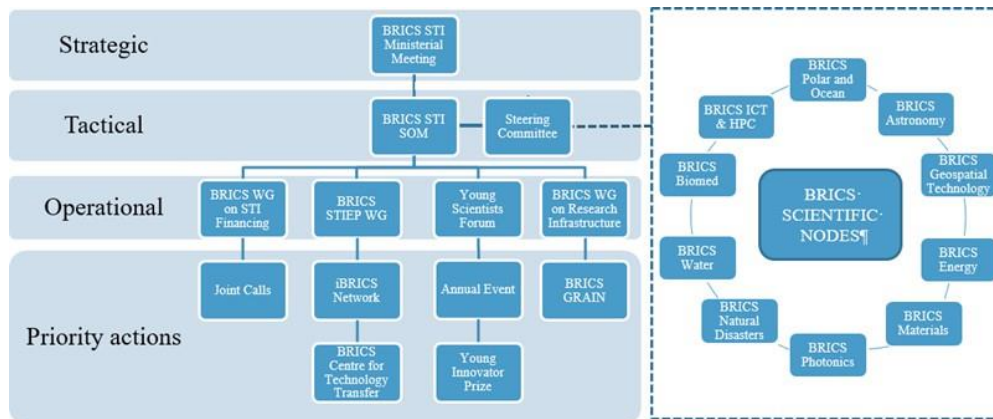


Figure 2 – BRICS Architecture in STI

To implement this architecture, the BRICS STI Steering Committee for BRICS STI cooperation was established in 2020. The Committee is composed of representatives from all member countries and meets regularly, typically every one or two months. Its coordination operates on a rotating basis, aligned with the chairships of the grouping. The Committee is responsible for monitoring the implementation of science, technology, and innovation activities among BRICS

countries, providing informational, analytical, organizational, and technical support for BRICS STI initiatives.

Additionally, to facilitate the launch of joint calls for research projects, the BRICS STI Framework Programme was established. This program has its own Secretariat, located at the Russian Centre for Scientific Information, as well as a dedicated website (<http://brics-sti.org/>) and an electronic application submission system, providing a centralized platform for interested parties to access information and participate in the program's activities.

Since the creation of the Framework Programme, six calls for projects have been conducted, resulting in over 1,500 project submissions, of which 157 have received funding. In Brazil, the National Council for Scientific and Technological Development (CNPq) serves as the funding agency representing the country in the program. The Financing Agency for Studies and Projects (FINEP) will also take part in the activities during Brazil's chairship in 2025.

The full history of BRICS STI activities and their governance structure is detailed in BRICS STI Overview and BRICS STI Framework Programme Bulletin 2024, both prepared under the Russian chairship in 2024, as well as in the MoU on Cooperation and the document on the New BRICS Architecture and the Framework Programme for STI Cooperation.

2. Priorities

The Cooperation in Science, Technology and Innovation will have the dual task of continuing the solid cooperation that has been underway for ten years and renewing and reinvigorating the themes of the research and innovation collaboration in a novel context of rapid advancement of emerging technologies and national reindustrialization processes. In 2024, at the end of the Russian chairship, three new themes for cooperation were introduced: Artificial Intelligence and Quantum Technologies; Social Sciences and Humanities; and New Metrics for Science (Scientometrics). The Brazilian chairship proposes the prioritisation of the following themes:

2.1. Artificial Intelligence and Quantum Technologies

A strategic partnership among BRICS countries to foster technical and scientific cooperation in key areas of Artificial Intelligence (AI)—including semiconductors, GPUs, CPUs, High-Performance Computing (HPC) infrastructure, Large Language Models (LLMs), and disruptive AI technologies, and in Quantum Technologies, covering Quantum Computing, Quantum Communications and Quantum Sensing—is a priority for STI in 2025.

This cooperation would promote the intensification of projects utilizing the open standards, along with the enhancement of AI software capabilities. It aims to consolidate the position of BRICS countries in high-performance and high-impact technologies over the coming years. The partnership also seeks to encourage integrated and equitable technological development, customised innovation tailored to BRICS countries, and the establishment of an efficient and sustainable HPC infrastructure and ecosystem.

AI has the potential to significantly advance HPC research and technologies by accelerating research processes and providing scalable, efficient solutions to meet the sector's future demands. Additionally, until the necessary equipment is fully developed, measures can be adopted to enable countries to access GPU and HPC nodes available on the global market.

Furthermore, cooperation among BRICS countries—together with the involvement of educational and research institutions and the private sector—will enable the development of complementary capabilities, strengthening their positions on the global technological stage. Collaboration in open standards and HPC will allow member countries to make significant progress in AI and related technologies, reducing external dependencies and promoting greater technological autonomy.

In Quantum Technologies, BRICS STI cooperation should play an active role in establishing partnerships with global centres of excellence, to ensure access to resources, technologies and know-how, with the aim of sharing knowledge, promoting events and workshops and integrating into international quantum research networks to share advances and best practices.

Among the possible subthemes covered by cooperation in this area, the following can be mentioned:

- Strengthening software capacity for AI, contributing to strengthening national capacity in this area with the transfer of knowledge and technical cooperation, so that more professionals and companies can acquire the expertise necessary to design, manage and optimize HPC infrastructures focused on AI;
- Development of LLM and general AI technologies, in alignment with the guidelines of the Brazilian Artificial Intelligence Plan (PBIA).

2.2. Innovation in Industry

Promoting cooperation in innovation is a key component of the BRICS STI architecture. In recent years, there has been a clear desire and effort to expand collaboration in entrepreneurship and innovation, strengthening ties between universities and companies; fostering exchanges among tech parks, incubators, and startups; and coordinating strategies for technology transfer.

Significant progress has been made toward creating a framework with enhanced governance for BRICS dialogue in this area. This includes establishing a dedicated working group, creating steering committees, and organizing various events. The BRICS Working Group on Science, Technology, Innovation, and Entrepreneurship Partnership (STIEP) has launched several important initiatives, such as the iBRICS Network for innovation environments and technology parks, and the BRICS Technology Transfer Centers (BRICS Tech Transfer).

In this context, and with the aim of strengthening industries for fair and inclusive socio-economic development within BRICS countries, a priority for 2025 is the enhancement of industry and the promotion of innovation projects in companies. This approach aligns with national priorities set forth in Brazil's New Industry Brazil Program (NIB), which emphasizes the need to increase investments in science and technology to drive industrial development, promote innovation and competitiveness, foster sustainability, and create greater employment opportunities.

This initiative would be implemented by launching calls for proposals across BRICS countries for innovation projects aimed at securing funding for companies. These calls would be managed by development agencies similar to Brazil's Funding Agency for Studies and Projects (FINEP) and would focus on topics agreed upon by BRICS members. In order to create synergies with the two new priorities presented, the first call could be dedicated to Artificial Intelligence. Additionally, beyond funding from national development agencies, alternative sources of financing, such as the New Development Bank (NDB), could be explored.



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