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EDITORIAL

Dear colleagues and friends,

When The BRICS Health Journal was launched in 2024, our mission was clear and ambitious: to establish a unified, borderless information space for the medical and scientific communities of Brazil, Russia, India, China, South Africa and the newly joined BRICS countries. One year on, we can confidently say that this vision is beginning to take shape.

The conceptual and structural foundation of the publication was established in the inaugural issue of The BRICS Health Journal (2024), in which comprehensive analytical reviews of the main directions of healthcare development in BRICS countries were presented. Subsequent issues furthered the discussion of innovation in technological, legal and institutional fields. This reflects the BRICS' efforts to integrate science, policy and healthcare, expanding the journal's scope to include progress in artificial intelligence, pharmacology and population health.

Over the past year, it has brought together authors from BRICS+ countries, representing ministries of health, leading universities and national academies of science. The BRICS Health Journal is a joint project with Sechenov University. This partnership ensures that the journal adheres to the highest international publishing standards, thereby guaranteeing that each publication is accessible and visible on a global scale.

In 2025, Brazil officially takes the helm of BRICS, providing an opportunity to present this special issue dedicated to the joint progress of Brazil and partners from BRICS. This special issue is a new initiative that is aligned with the core principles of the BRICS framework: cooperation, innovation and a shared commitment to rethinking global health and fostering collective progress. We will continue to develop the initiative of an annual special issue dedicated to the BRICS chair country, and we look forward to receiving support for this initiative from all BRICS member states.

Editor-in-Chief
Minister of Health of the Russian Federation

Mikhail A. Murashko

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REVIEW

Renewing multilateralism through health agenda: Brazil's 2025 BRICS Chairship

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ABSTRACT

This policy perspective highlights how the 2025 BRICS chairship, under Brazil's leadership, advanced a collective health agenda rooted in equity, innovation, and solidarity among Global South nations. Through the XV BRICS Health Ministers' Meeting (Brasília, 17 June 2025), members prioritized cooperation on tuberculosis, regulatory convergence, digital health, and the elimination of socially determined diseases. These efforts reaffirmed health as a strategic pillar for multilateral renewal. Among the major outcomes, the bloc launched the Partnership for the Elimination of Socially Determined Diseases, the Network of National Public Health Institutes, and progress on regulatory harmonization and artificial intelligence and health data governance. Together, these initiatives created operational frameworks to expand access, strengthen research collaboration, and build technological sovereignty. Brazil's domestic achievements – such as World Health Organization's 2024 certification of lymphatic filariasis elimination and the nationwide digital transformation

through the SUS Digital Program and the National Health Data Network – reflect how national progress can reinforce collective goals. By translating shared political will into practical cooperation, BRICS demonstrates that South–South collaboration can deliver measurable results. These advances position the bloc as a driving force for inclusive global health governance and a model for how emerging economies can advance universal health coverage and health for all on a planetary scale.

Key Words: international cooperation; global health; health equity; tuberculosis prevention and control; health policy; artificial intelligence; digital health; south-south cooperation

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Background

Many of the current global geopolitical trends in 2025 repeatedly exposed the limitations of traditional multilateralism to deliver effective, timely, and equitable responses to cross-border challenges [1]. Mid and late XX centuries' institutions – including the United Nations, the World Health Organization (WHO), and a range of Bretton Woods structures – have struggled to adapt to the rising complexity of global risks and increasing demands for inclusion and equity from the Global South [2]. The struggle to promptly respond to new threats has been particularly evident in public health governance: from the response to the COVID-19 pandemic and enduring vaccine access inequity, to insufficient progress on tackling social determinants of health, to emergencies triggered by conflict or environmental disasters. Against this backdrop, the credibility of a North-centric, hierarchical governance has diminished, creating space for new alternatives coming from different actors [3].

It is within this context that BRICS countries emerge as a pivotal force for renewing multilateralism. By placing the priorities of emerging economies at the center, BRICS can address many of the main global challenges through a new approach. The bloc's mechanisms and institutions are progressively gaining depth and operational capacity, and an irrefutable relevance in today's geopolitical landscape.

The Brazilian chairship of BRICS in 2025, under the leadership of President Luiz Inácio Lula da Silva, achieved its mission to bring to light many global challenges. Under the theme of "Strengthening Global South Cooperation for More Inclusive and Sustainable Governance", Brazil has positioned health not merely as a technical agenda, but as one of the best displays of the bloc's ability to deliver practical, measurable results to address those challenges.

In the next section, this policy perspective paper will explore most of the key challenges the Brazilian chairship has chosen as priorities at the BRICS health track in 2025, also mentioning the main results each working group achieved, pointing a clear direction for BRICS countries to enhance cooperation and solving common issues.

The Brazilian chairship's health agenda links innovation, equity, and cooperation through a set of interdependent priorities. The following

sections present the key health priorities advanced under Brazil's 2025 BRICS chairship. Each priority illustrates how the bloc is translating political commitment into practical cooperation that strengthens public health systems and promotes technological sovereignty. The paper first examines the Partnership for the Elimination of Socially Determined Diseases (SDDs), a landmark initiative linking health equity and sustainable development. It then explores progress in regulatory convergence among medical product authorities and innovations in digital health and artificial intelligence, which support more inclusive access to care. Subsequent sections highlight collaborative work through the Network of National Public Health Institutes (NPHIs), the BRICS Tuberculosis (TB) Research Network, and the Vaccine Research and Development (R&D) Center, followed by emerging areas such as nuclear medicine and the BRICS Health Journal as a platform for science diplomacy. Together, these initiatives demonstrate how BRICS countries are building a shared architecture for health cooperation that reinforces multilateralism and advances global health equity.

Partnership for the Elimination of SDDs

BRICS members marked a major milestone during Brazil's 2025 chairship with the creation and launching of the Partnership for the Elimination of SDDs. Founded on the understanding that health inequalities are rooted in inequity, deprivation, and structural barriers, the Partnership was designed to mobilize the accumulated expertise of BRICS countries toward cooperation. Its five pillars (systems strengthening, intersectoral action, innovation, sustainable finance, and global advocacy) represent a multisectoral approach, strongly rooted in the Rio Political Declaration on Social Determinants of Health from 2011[1,2].

For Brazil, one of the objectives of the Partnership is to advance international recognition and implementation of the concept of socially determined diseases. Through this lens, the BRICS initiative underscores the intrinsic link between public health progress and broader socioeconomic development.

The idea of the Partnership is deeply rooted in the Brazilian experience on the Healthy Brazil: "Unity to Care" (In Portuguese: Brasil Saudável: "Unir para Cuidar") program, established in February 2024[3]. It is the world's first national initiative dedicated to eliminating eleven diseases and five vertical-transmission infections as public health problems by 2030. Coordinated by the Ministry of Health alongside thirteen other ministries, it acknowledges that diseases such as tuberculosis, leprosy, malaria, human immunodeficiency virus/acquired immunodeficiency syndrome, and viral hepatitis are rooted in social determinants including poverty, inadequate sanitation, and racial and territorial inequalities. Guided by five strategic directives – combating hunger and poverty, reducing inequities, empowering health workers and civil society, fostering science and innovation, and expanding sanitation infrastructure – the program achieved impressive milestones during its first year, such as the WHO certification of lymphatic filariasis elimination and a 30 percent rise in preventive tuberculosis treatment.

The Brasil Saudável program shows that it is possible to approach public health as a combination of health promotion through, disease prevention,

[1] Declaration of the XV BRICS Health Ministers' Meeting. Accessed 21.10.2025. http://brics.br/en/documents/social-issues/250617_brics_xv-brics-health-declaration.pdf/@@download/file

[2] Rio de Janeiro Declaration. Strengthening Global South Cooperation for a More Inclusive and Sustainable Governance. Accessed 22.10.2025. http://brics.br/en/documents/presidency-documents/250705-brics-leaders-declaration-en.pdf/@@download/file

[3] Ministry of Health. Brasil Saudável – Programa Brasil Saudável: Unir para Cuidar. [Healthy Brazil – Healthy Brazil Program: Uniting to Care]. (In Portuguese). Accessed 15.11.2025. https://www.gov.br/saude/pt-br/assuntos/brasil-saudavel

treatment, and rehabilitation with the guarantee of access to safe drinking water, basic sanitation, adequate nutrition, quality education, decent housing, and opportunities for work and income.

In Brazil, income, education, gender, race, and territory are not merely abstract social determinants, they are concrete vectors that shape the processes of illness and death. Therefore, the goal of the partnership is to address SDDs through an intersectoral approach that is people-centered and attentive to racial, territorial, and gender inequalities.

Until the end of 2025, it is expected that the partnership will have developed its joint roadmap to 2030, which will contain operational guidelines for integrating initiatives into universal health coverage, pilot projects for local, community-based elimination of target diseases. Nevertheless, countries will retain full autonomy to choose their levels of participation based on national priorities and capacities, ensuring broad flexibility and voluntariness of any actions taken under the Partnership[4].

This initiative represents progress in strengthening South-South cooperation and amplifying collective influence in global health governance, particularly in the lead-up to the High-Level Dialogue on Social Determinants of Health at the United Nations General Assembly in 2025.

Harmonization of medical product regulatory authorities

BRICS members are also deeply involved in advancing voluntary regulatory convergence through the BRICS Medical Products Regulatory Authorities initiative. Building on a revised memorandum of understanding to include new members, the bloc convened thematic online seminars with special focus on technical capacity and trust-building, notably led by the Brazilian Health Regulatory Agency (In Portuguese: Agência Nacional de Vigilância Sanitária, ANVISA).

This memorandum of understanding – signed by the original five member countries' regulatory authorities: ANVISA (Brazil), the Ministry of Health and Federal Service for Surveillance in Healthcare (Russia), the Central Drugs Standard Control Organisation (India), the National Medical Products Administration (China), and the South African Health Products Regulatory Authority (South Africa) – is a strategic framework, which began negotiations in 2019 during the 5th Meeting of Health Regulatory Authorities in Brasília. It establishes concrete mechanisms for technical cooperation including information sharing on regulatory processes, exchange of good reliance practices, support for quality and safety initiatives, collaboration in multi-country clinical trials, and joint efforts to combat substandard and falsified medical products.

By positioning the memorandum of understanding as a common ground among all BRICS members, Brazil is stressing that regulatory harmonization is essential for realizing the bloc's vision of enhanced pharmaceutical sovereignty and equitable access to health technologies[5]. During the Meeting of BRICS Medical Products Regulatory Authorities in June 2025, attended by representatives from both original and new member countries, Brazil orchestrated discussions on revising

[4] BRICS partnership for the elimination of socially determined diseases. Final Version. Accessed 15.11.2025. https://brics.br/en/documents/presidency-documents/2507_brics_partnership-for-the-elimination-of-socially-determined-diseases.pdf

[5] Memorandum of Understanding among the Ministry of Health of the Russian Federation, the Ministry of Industry and Trade of the Russian Federation, the Federal Service for Surveillance in Healthcare (Russian Federation), the National Health Regulatory Agency (ANVISA) of the Federative Republic of Brazil, the Central Drugs Standard Control Organization (CDSCO) of the Republic of India, the National Medical Products Administration (NMPA) of the People's Republic of China and the South African Health Products Regulatory Authority (SAHPRA) of the Republic of South Africa on cooperation in the field of regulation of medical products for human use. Accessed 15.11.2025. https://www.gov.br/anvisa/pt-br/assuntos/relacoes-internacionais/cooperacao/brics-mou-sa-ru-in-cn-br-signed.pdf

and expanding the existing framework to accommodate new regulatory systems and updated institutional arrangements[6].

During Brazil's 2025 chairship, BRICS countries reaffirmed their commitment to strengthen collaboration among their regulatory authorities. They agreed to focus on practical, forward-looking initiatives. The main areas identified include:

- information sharing and reliance practices;
- multicountry and international clinical trials;
- combatting substandard and falsified medical products;
- joint training programs and technical workshops; and
- exchange of regulatory officers and reviewers.

Under this priority, members agreed to create a working group to organize thematic seminars, coordinate reviewer exchanges, and support joint assessments and capacity-building. They also expressed interest in developing a BRICS-wide training calendar to align schedules and resources. In parallel, countries will expand information sharing and strengthen coordination with WHO collaborating centers and other international partners to follow recognized best practices[7].

Infrastructure for specialized care in remote areas

The technological infrastructure for specialized care in remote and hard-to-reach areas represents one of the most innovative dimensions of Brazil's chairship, acknowledging the importance of Internet of Things, artificial intelligence, big data analytics, and telemedicine to deliver intelligent, sustainable, and resilient healthcare solutions.

Through a series of structured working group meetings coordinated by the Brazilian Ministry of Health, BRICS countries have engaged in extensive dialogue on overcoming geographical barriers that disproportionately affect rural, indigenous, and vulnerable populations across member nations. This year, the agenda specifically addresses the dual challenge of expanding access to high-complexity treatments while strengthening local technological development capacities, aligning with Brazil's National Strategy for Digital Health 2020-2028 and complementary programs including the Unified Health System (In Portuguese: Sistema Único de Saúde, SUS) Digital, the National Health Data Network (In Portuguese: Rede Nacional de Dados em Saúde, RNDS), and Telehealth initiatives.

This theme was also prioritized during this year considering BRICS countries share a range of public health challenges regarding specialized care, despite their different socio-economic and cultural realities, including areas with high population density or remote and hard-to-reach locations, inequities in access to health services, and quality issues, which primarily affect rural, indigenous, and low-income populations [4, 5]. These issues limit the impact of health policies, resulting in significant inequalities in life expectancy and quality of life. As discussions were developed, intelligent, sustainable and resilient hospitals were identified as a key interest to all countries. In this sense, BRICS members produced a summary report and action recommendations, emphasizing localized technology integration; social and environmental sustainability; staff training for digital health tools; and collaborative knowledge sharing

[6] The National Health Regulatory Agency (ANVISA). Anvisa participa de reunião do BRICS com autoridades reguladoras de produtos médicos. [Anvisa participates in BRICS meeting with regulatory authorities for medical products]. (In Portuguese). June 15, 2025. Accessed 15.11.2025. https://www.gov.br/anvisa/pt-br/assuntos/noticias-anvisa/2025/anvisa-participa-de-reuniao-do-brics-com-autoridades-reguladoras-de-produtos-medico

[7] BRICS 2025. Meeting of BRICS Regulatory Authorities for Medical Products. Issues Note. Accessed 15.11.2025. https://brics.br/pt-br/documentos/meeting-of-brics-regulatory-authorities-for-medical-products-issue-note-brics-2025.pdf/@@download/file

to accelerate adoption of these solutions throughout the BRICS and partner countries[8].

Public health institutes and research networks

The establishment of the BRICS Network of Research in Public Health and Health Systems and the BRICS Network of National Public Health Institutes both represent a groundbreaking institutionalization of multilateral health cooperation under Brazil's chairship. The first one was built upon Russia's foundational work in September 2024 with the First BRICS Experts Meeting on Public Health, while the latter was heavily based on Oswaldo Cruz Foundation's (FIOCRUZ) expertise from organizing the successful G20 NPHIs Conference in 2024.

The objective of the Network of National Public Health Institutes is to foster cooperation and mutual support in public health, including the analysis of the health systems of the BRICS countries. The consolidation of a structured Work Program to implement research, training, and technical cooperation actions is one of the main results of the Network's work in 2025.

The Conference held in Rio de Janeiro from September 15–17, 2025, marked the first time BRICS convened national public health institutes to coordinate their activities in supporting bloc-wide health objectives, addressing the previous fragmentation of health initiatives across different networks.

The operational framework the Brazilian chairship intends to reach consensus promotes integration between scientific evidence generation and policy implementation. NPHIs would be recognized as indispensable institutions that generate scientific evidence to inform public policies and actions for the protection and improvement of population health. The Conference was structured discussions around six strategic themes related to the health track as a whole: health surveillance and emergency response, strengthening national health systems, social determinants of health addressing inequities, and climate change and health equity as a pathway to the 2025 United Nations Climate Change Conference, and combating hunger and poverty.

BRICS members agreed to form a working group on regulatory cooperation. This group will organize thematic seminars, coordinate reviewer exchanges, and support joint assessments and capacity-building. Brazil also plans to create a BRICS-wide calendar to align activities and share expertise. In addition, countries should expand information sharing and strengthen collaboration with WHO collaborating centers and other international partners to apply global best practices. The Brazilian chairship's success in establishing this Network hopes to create a replicable model for multilateral cooperation that addresses structural asymmetries through evidence-based policy coordination and capacity-building initiatives tailored to Global South contexts[9].

Artificial intelligence and data governance in health

Artificial intelligence (AI) and health data governance form one of the most strategic priorities of Brazil's 2025 BRICS chairship. This agenda builds on the Ministry of Health's pioneering work through the Secretariat of Information and Digital Health (In Portuguese:

[8] BRICS 2025. Physical and Technological Infrastructure for Specialized Care in Remote and Hard-to-Reach Areas. Issues Note. Accessed 15.11.2025. https://brics.br/pt-br/documentos/physical-and-technological-infrastructure-for-specialized-care-in-remote-and-hard-to-reach-areas-issue-note-brics-2025.pdf

[9] BRICS 2025. Conference of the BRICS National Public Health Institutes (NPHIs). Issues Note. Accessed 15.11.2025. https://brics.br/pt-br/documentos/conference-of-the-brics-national-public-health-institutes-nphis-issue-note-brics-2025.pdf

Secretaria de Informação e Saúde Digital, SEIDIGI), created in January 2023 as one of the first ministerial departments in the world dedicated to health digitalization. Brazil hosts the Technical Meeting on Health Data Governance to position itself as a reference point within BRICS for discussions on data policy, regulation, security, and interoperability. The country brings strong experience to this dialogue through the SUS Digital Program, which connects all 5,564 municipalities, and the RNDS, which manages health data nationwide[10].

The operational framework developed through Brazil's BRICS AI Working Group directly mirrors the Ministry of Health's approach to digital health: digital health culture and permanent education, technological solutions and digital health services, and interoperability with data analysis and information dissemination. Brazil's experience with the largest universal health system globally provides unique insights for BRICS cooperation in AI applications for health system management, epidemiological surveillance, precision medicine, and emergency response capabilities.

Brazil's AI implementations have achieved measurable improvements in diagnostic accuracy, resource optimization, and access equity, particularly through telemedicine platforms that enable specialist consultations across continental distances and the My Digital SUS (In Portuguese: Meu SUS Digital) application providing integrated patient data access. The Ministry of Health's commitment to ethical AI development, aligned with best practices for transparent algorithms, robust data protection, social participation, continuous impact evaluation, and professional capacity-building, inspires the chairship to bring discussions on responsible AI governance frameworks and learn even more from other member countries[11].

Tuberculosis Research Network

The BRICS TB Research Network is one of the most strategic and mature initiatives under Brazil's 2025 chairship. It builds on the network created in 2017 after the Xiamen Declaration. The initiative responds to a critical reality: BRICS countries together account for more than 40% of the global tuberculosis burden, 40% of TB-related deaths, and at least half of all multidrug-resistant and rifampicin-resistant TB cases worldwide [6].

Brazil's leadership of the 18th BRICS TB Research Network Meeting in Brasília, demonstrated the country's domestic expertise through its National TB Research Strategy. The BRICS network's comprehensive agenda encompasses four critical thematic areas – vaccines and prevention, diagnostics, therapeutics, and public health implementation – with specific emphasis on developing innovative point-of-care diagnostics, safer and shorter treatment regimens, effective pre- and post-exposure vaccines, and digital health tools integrated with artificial intelligence for enhanced TB care and monitoring[12].

Brazil's 2025 chairship prioritized advancing the network's 2025-2029 strategic framework through structured discussions on resource mobilization strategies, with particular emphasis on engaging multilateral financial institutions.

The Declaration emerging from the May 2025 meeting aims to establish concrete commitments to develop new vaccines and conduct Phase III clinical trials across BRICS countries. The network's evolution an innovation

[10] Ministry of Health. SUS Digital. Accessed 15.11.2025. https://www.gov.br/saude/pt-br/composicao/seidigi/sus-digital

[11] Ibid.

[12] BRICS 2025. BRICS Tuberculosis Research Network. Issues Note. Accessed 15.11.2025. https://brics.br/pt-br/documentos/brics-tuberculosis-research-network-issue-note-brics-2025.pdf

hub for TB technologies puts BRICS countries in a strategic position, with the potential to influence global TB control strategies through collaborative research platforms that address the broader social and economic determinants driving the TB epidemic across emerging economies.

As the network figures between the most established priorities in the BRICS Health track, it promptly highlights the need for strengthened international cooperation, sustainable financing, and coordinated regulatory efforts. During this year, members acknowledged the urgency of addressing underinvestment in TB research through the mobilization of financially strong institutions, multilateral bodies, and the private sector, advocating for long-term investment strategies[13].

BRICS Vaccine R&D Center

The BRICS Vaccine R&D Center is one of the initiatives carried out by the member's research institutes and companies. The Center is in position to combine efforts and strengthen cooperation in the development and distribution of vaccines and the creation of lines of anti-epidemic defense.

While the Center's initial research priorities included selection of platforms for accelerated vaccine development and identification of primary vaccination goals for the BRICS countries based on national and global priorities, the Russian presidency in 2024 outlined an ambitious goal: the creation of the Electronic R&D Stock.

This R&D Stock would be a network between the members' vaccine research and development stakeholders, where information regarding products could be shared to identify potential cooperation opportunities.

In this context, the Brazilian chairship chose to go ahead with the Russian proposal and is focusing efforts into converting this idea into reality. So far, the BRICS Health Ministers XV Meeting Declaration has reaffirmed the political support for the BRICS Vaccine R&D Center activities, while the Brazilian chairship confirmed that it would take into consideration all proposed initiatives aimed at strengthening the BRICS Vaccine R&D Center, such as the Electronic R&D Stock initiative.

During the second semester of 2025, monthly meetings have been held regarding the Vaccine R&D Stock, mainly focused in creating an institutionalized viable space for information sharing between members. Of course, the many variables on this matter are much more than could be possible to accommodate in a few months of work. But not only does the Brazilian chairship rests assured of every members willingness to go forward on this initiative but also trusts that this will be a continued effort throughout following presidencies[14].

Nuclear medicine

Nuclear medicine has emerged as one of the key areas of cooperation among BRICS countries, particularly following the establishment of the BRICS Nuclear Medicine Working Group during the Johannesburg Summit in 2023. The group consolidated an initiative to strengthen collaboration among member countries in developing nuclear technologies applied to healthcare, aligning with the objective of building more inclusive and sustainable governance among Global South countries.

The First International BRICS Forum on Nuclear Medicine, held in Saint Petersburg on June 20–21, 2024, brought together over specialists

[13] Ibid.

[14] BRICS 2025. BRICS Vaccine R&D Center. Issues Note. Accessed 15.11.2025. https://brics.br/pt-br/documentos/brics-vaccine-r-d-center-issue-note-brics-2025.pdf

from all member countries and established important guidelines for future cooperation, focusing on four main objectives: mapping installed capacities and existing gaps among BRICS countries; identifying best practices for production, control, and distribution of radiopharmaceuticals; stimulating the creation of regional centers of excellence and technical training centers; and proposing common funds to support innovation and collaborative clinical trials.

BRICS countries present different stages of development in nuclear medicine, creating significant opportunities for technology transfer and expertise sharing. Brazil maintains considerable infrastructure on the matter. Russia significantly expanded its radionuclide therapy capacity since 2010, while Iran has consolidated as one of the world's top three radiopharmaceutical producers, manufacturing approximately 70 different types and exporting to 15 countries. Also, Indonesia is building its own industrial complex for nuclear medicine products.

The prospects for nuclear medicine cooperation within BRICS are promising, especially considering the complementarities among member countries and the political commitment established in the 2024 Health Ministers' Declaration. Regulatory cooperation emerges as a fundamental element for discussion, considering that Brazil has legislation for radiopharmaceutical registration and production by industrial pharmacies; India uses the Radiopharmaceutical Committee of the Atomic Energy Regulatory Board; Russia allows in-house production within national specific regulation; and Indonesia adheres to the Pharmaceutical Inspection Cooperation Scheme. The XV BRICS Health Ministers' Declaration of 2025 further reinforces this commitment by acknowledging the need for cooperation in nuclear medicine and radiopharmacy within the BRICS Nuclear Medicine Working Group framework.

BRICS Health Journal

The BRICS Health Journal plays a central role in strengthening scientific collaboration among member countries and amplifying the collective voice of the Global South in global health research. By promoting peer-reviewed studies across disciplines, the journal supports the production and circulation of scientific knowledge that reflects the realities and priorities of BRICS nations. It serves as a bridge between health research, policy, and practice, enabling the translation of evidence into concrete action that improves population health outcomes.

Beyond its scientific function, the journal represents a practical instrument of science diplomacy. It creates a shared space where researchers, policymakers, and institutions can engage in dialogue, exchange data, and jointly define research agendas. Through this collaborative platform, BRICS countries demonstrate their ability to generate knowledge that not only meets national needs but also contributes to solving global challenges. The journal embodies a cooperative approach to innovation – one that values equity, inclusiveness, and mutual learning.

During Brazil's 2025 chairship, strengthening the BRICS Health Journal proved to be a very fruitful asset. Efforts focused on expanding its reach, improving its visibility and indexing, and encouraging submissions that document joint projects, comparative analyses, and regional innovations. These actions aim to position the journal as a reference for evidence-based policymaking and as a tool to connect health diplomacy with scientific progress.

In the long term, the BRICS Health Journal has the potential to shape global health governance by showcasing how South–South cooperation can generate solutions with worldwide relevance. By giving visibility to shared research and by fostering scientific independence, the journal helps balance the global flow of knowledge and reinforces the idea that science – when collaborative and open – can be a foundation for solidarity, resilience, and health for all on a planetary scale.

Final remarks

In a challenging global context marked by overlapping crises that have not spared the health sector, such as security threats, political instability, and the constant attacks suffered by multilateralism, cooperation among our countries becomes desirable and indispensable.

The Brazilian chairship of BRICS has advanced a health agenda aimed at aligning technical cooperation with the political commitment to health equity and capacity-building. The formal launch of the Partnership for the Elimination of Socially Determined Diseases at the BRICS Leaders' Meeting, thereby reaching the highest political level of the bloc, represents a source of great satisfaction as it reflects the recognition of health's strategic role as both a driver of sustainable development and a means of reducing inequalities.

The momentum generated by the July Summit provides a critical foundation for advancing a set of high-priority initiatives before the conclusion of the Brazilian chairship. The Partnership on SDDs will be further consolidated through the development of a roadmap, while the BRICS Vaccine R&D Center seeks to broaden its portfolio by establishing an Electronic R&D Stock and fostering deeper cooperation among participating members.

In September of 2025, the in-person conference of NPHIs constituted a significant milestone by creating a structured platform for knowledge exchange. This forum is designed to strengthen both policy formulation and technical capacity for responding to emerging health challenges. Concurrently, efforts in digital health and artificial intelligence are being expanded, with member states prioritizing regulatory harmonization of digital products, as well as AI-driven applications in clinical and public health contexts, and capacity-building in data governance and cyber resilience. The establishment of a dedicated working group in this domain is anticipated to further institutionalize these efforts.

The integration of new members and partners from the Global South, several of whom formally joined or deepened their association in 2025, represents an important dimension of the BRICS expansion. Their participation introduces diverse perspectives and localized priorities, thereby reinforcing the responsiveness, inclusivity, and global representativeness of ongoing and future initiatives.

In conclusion, Brazil's 2025 BRICS chairship health agenda articulate and concretely advances a renewed approach to multilateralism. The results of each priority, particularly the launching of the Partnership for the Elimination of SDDs, exemplify how an ambitious, integrated agenda can transform multilateral rhetoric into actionable outcomes. With robust political will, cross-sectoral leadership, and steadfast investment, BRICS countries are devoted to set the example for the Global South's protagonism on the world stage.

In line with the theme of the Brazilian chairship "Strengthening Global South Cooperation for More Inclusive and Sustainable Governance", it is important to highlight the need to reinforce the WHO as the legitimate

specialized agency within the multilateral system for coordinating global health. To fulfill its mandate, the WHO requires our commitment to provide predictable, adequate, and sustainable financing. BRICS support for the Organization, by fostering cooperation among countries to ensure equitable access to essential health technologies and services, holds the potential to decisively contribute to enabling all people to attain the highest possible standard of health.

The work carried out under the Brazilian chairship throughout this year has gone beyond Brazil's national priorities, it reflects a collective vision: that of a cohesive, forward-looking BRICS, committed to the structural transformation of health systems. A BRICS that leads by example that chooses cooperation over competition, and that places human dignity at the center of its decisions and commitments.

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REVIEW

BRICS leaders issue Rio de Janeiro Declaration and highlight health initiatives led by Fiocruz

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ABSTRACT

Brazil assumed the presidency of BRICS this year and stipulated some health priorities as strengthening BRICS Network of Research in Public Health and Health Systems; strengthening BRICS Vaccine Research and Development Centre; elimination of socially determined diseases and infections; tuberculosis research network; combat public health emergencies of international concern or catastrophes; physical and technological infrastructure for specialized care in remote and hard-to-reach areas; BRICS regulatory authorities for medical products; and artificial intelligence and data governance in health systems. BRICS leaders gathered for the 17th Summit on July 6–7 in Rio de Janeiro, Brazil, where they issued the Rio de Janeiro Declaration, themed "Strengthening Global South Cooperation for More Inclusive and Sustainable Governance". In the human and social development promotion section of the main document, the health-related paragraphs highlighted two initiatives led by Fiocruz, a strategic institution of the Brazilian State: the BRICS Network of Research in Public Health and Health Systems and the BRICS Vaccine Research and Development Centre. A third initiative, the Conference of the BRICS National Public Health Institutes, coordinated by Fiocruz, although not mentioned at the Leaders' Summit, earned a place in the BRICS Health Ministers' declaration due its significance. Its recommendations will help advance knowledge on public health issues and support decision-making processes. The objective of this article is to report the development of initiatives led by Brazil during its presidency in 2025 and subsidize India, the next presidency, to continue the health actions related to health.

Key Words: BRICS, 17th BRICS Leaders' Declaration; BRICS Network of Research in Public Health and Health Systems; BRICS Vaccine R&D Center; Conference of the BRICS National Public Health Institutes; Health Systems Strengthening; Electronic R&D Stock; e-R&D-Hub; access to vaccines and medicines

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Introduction

In the current international landscape, where short-term interests and bilateral strategies gain strength, the struggle for solidarity and cooperation continues to represent resistance. The recent foreign policy of the United States under Donald Trump's ruling, exemplifies this rupture with the multilateral and solidarity-based logic where the defense of national interests occurs, among other ways, through the instrumentalization of international institutions when they favor direct political or economic gain, and their dismantling when they do not[1,2,3].

In this context, global health emerges as one of the most promising plexuses for building practical consensus, especially due to its

[1] Amorim C. Brasil defende o multilateralismo [Brazil defends multilateralism]. (In Portuguese). Le Monde Diplomatique. Portuguese edition. May, 2025. Accessed 22.10.2025. https://pt.mondediplo.com/2025/05/o-brasil-defende-o-multilateralismo.html

[2] Cox RW. Gramsci, hegemonia e relações internacionais: um ensaio sobre método. In: Gill S. Gramsci: materialismo histórico e relações internacionais [Gramsci, Hegemony and International Relations: An Essay on Method. In: Gill S. Gramsci: Historical Materialism and International Relations]. (In Portuguese). Rio de Janeiro: Editora UFRJ; 2007:101-124. Accessed 22.10.2025. https://ru.scribd.com/document/392014459/Robert-Cox-Gramsci-Hegemonia-e-Relacoes-Internacionais

[3] Carnegie A, Clark R. Multilateralism can survive Trump. Foreign Affairs. December 24, 2024. Accessed 27.10.2025. https://www.foreignaffairs.com/united-states/multilateralism-can-survive-trump

interdependent, universal nature, and direct connection to human security. This hypothesis gains strength when analyzed from the perspective of "multiplexity", which refers to an international order composed of multiple modes of governance that coexist and interact. Considering that the international system is polycentric and plural, depending on the area, behavior and influence from actors related to the governance and outcomes might change. While trade, security, and the environment often collapse under geopolitical disputes, global health presents a potential arena for convergence. It allows countries with different political orientations to cooperate, as has been seen in the tackle against HIV/AIDS or during the COVID-19 response.

From this perspective, plurilateral forums, mainly informal international organizations, such as BRICS, which host discussions on global health and its challenges, take on relevance for fostering and promoting international cooperation. Cooper, Dal, and Canon argue that, in operational terms, the choice of informal institutions over formal ones is related to the increased importance of efficiency. Nevertheless, not all international organizations are equally relevant [1]. Cooper focuses on the premise that some informal institutions are more important than others and, therefore, deserve greater attention [2].

For Amorim, diplomat and special advisor to the Brazilian Presidency for International Affairs, unlike other coalitions of developing countries, BRICS's performance is marked by concrete results[4]. One of the examples he most often cites is the New Development Bank, created in 2014, which offers public financing focused on infrastructure and sustainability. In addition to providing public funding, BRICS aims to be a forum for political and diplomatic articulation among countries of the Global South and a space to promote cooperation in various areas, including health[5,6].

BRICS recognizes the North-South divide and is aware that the Global South development is the main step to move forward on reducing inequities in the world. Despite industrialization efforts in various countries in the South, industrial convergence has not been accompanied by a convergence in the levels of income and wealth [3].

This context increased BRICS relevance during the Brazilian chairship in 2025 that established two strategic priorities as its central focus: (1) Global South Cooperation and (2) BRICS Partnerships for Social, Economic, and Environmental Development, under the motto "Strengthening Global South Cooperation for More Inclusive and Sustainable Governance". Brazil proposed directing efforts and political attention to six thematic areas considered fundamental: (1) Global Health Cooperation; (2) Trade, Investment, and Finance; (3) Climate Change; (4) Artificial Intelligence Governance; (5) Reform of the Multilateral Peace and Security Architecture; and (6) Institutional Development[7].

The unprecedented prioritization of Global Health Cooperation by the Brazilian BRICS chairship in 2025 represents a historic opportunity for Brazil to exercise innovative and influential leadership, capable of repositioning health at the center of multilateral agendas and articulating global solutions in strategic spaces such as the BRICS. As Buss, Estephanio, Kavanami and Burger suggested, Brazil might continue to use its influence for promoting transformative global pacts, whose

[4] Amorim C. Brasil defende o multilateralismo [Brazil defends multilateralism]. (In Portuguese). Le Monde Diplomatique. Portuguese edition. May, 2025. Accessed 22.10.2025. https://pt.mondediplo.com/2025/05/o-brasil-defende-o-multilateralismo.html

[5] Hoirisch C. BRICS tenta redesenhar a ordem internacional [BRICS attempts to reshape the international order]. (In Portuguese). Accessed 22.10.2025. https://cee.fiocruz.br/?q=Artigo-BRICS-por-Claudia-Hoirisch

[6] Amorim C. BRICS: O novo nome do multilateralismo [BRICS: The new name for multilateralism]. (In Portuguese). Accessed 22.10.2025. https://www1.folha.uol.com.br/opiniao/2025/07/brics-o-novo-nome-do-multilateralismo.shtml

[7] Brasil divulga prioridades de sua presidência à frente do Brics [Brazil announces priorities for its BRICS presidency]. (In Portuguese). Accessed 22.10.2025. https://agenciabrasil.ebc.com.br/internacional/noticia/2025-02/brasil-divulga-prioridades-de-sua-presidencia-frente-dos-brics

common goal is the implementation of the Sustainable Development Goals to progress towards global equity within and between countries [4].

Regarding the health agenda, Brazil included into discussions core objectives such as strengthening the BRICS Network of Research in Public Health and Health Systems and the BRICS Vaccine R&D Centre, fostering partnerships for the elimination of socially determined diseases and infections, enhancing the tuberculosis (TB) research network, and addressing public health emergencies of international concern or catastrophes. Additionally, the agenda focused on physical and technological infrastructure for specialized care in remote and hard-to-reach areas, the BRICS regulatory authorities for medical products and the advancement of artificial intelligence and data governance in health systems[8].

The confluence of these priorities culminated in the 17th BRICS Summit, held in Rio de Janeiro on July 6–7. On that occasion, delegations from eleven member countries (Brazil, Russia, India, China, South Africa, Saudi Arabia, Egypt, United Arab Emirates, Ethiopia, Indonesia, and Iran) along with ten partner nations (Belarus, Bolivia, Kazakhstan, Cuba, Malaysia, Nigeria, Thailand, Uganda, Uzbekistan, and Vietnam) gathered. Six invited countries also attended: Angola, Chile, Kenya, Mexico, Turkey, and Uruguay. The summit saw participation from regional organizations including the Community of Latin American and Caribbean States and the African Union, as well as multilateral organizations within the United Nations system, such as the World Health Organization, World Trade Organization, and United Nations Conference on Trade and Development. Development banks including the New Development Bank, Asian Infrastructure Investment Bank, and Development Bank of Latin America were also invited. The strong Global South representation reinforced Brazil's expectation of uniting a significant coalition of nations and organizations with aligned objectives.

On the first day, Brazil's Ministry of Foreign Affairs released the Rio de Janeiro Declaration, themed "Strengthening Global South Cooperation for a More Inclusive and Sustainable Governance"[9]. Alongside this main document, three key statements were issued: the BRICS Partnership for the Elimination of Socially Determined Diseases[10], the BRICS Leaders' Framework Declaration on Climate Finance[11], and the BRICS Leaders' Statement on the Global Governance of Artificial Intelligence[12].

The human and social development section contains four health-related paragraphs. One of them highlights two initiatives led by Oswaldo Cruz Foundation (Fiocruz), a strategic institution of the Brazilian State: the BRICS Network of Research in Public Health and Health Systems, described in the declaration as a "vital forum for collaboration among high-level public health organizations of the BRICS countries", coordinated by Fiocruz's National School of Public Health and the Vice-Presidency of Global Health and International Relations; and the BRICS Vaccine Research and Development (R&D) Center, managed by Bio-Manguinhos Institute.

Moreover, there is a third initiative also coordinated by Fiocruz, which is the Conference of the BRICS National Public Health Institutes (NPHIs).

[8] Brazilian Presidency. Accessed 22.10.2025. https://brics.br/en/about-the-brics/brazilian-presidency

[9] Rio de Janeiro Declaration. Strengthening Global South Cooperation for a More Inclusive and Sustainable Governance. Accessed 22.10.2025. http://brics.br/en/documents/presidency-documents/250705-brics-leaders-declaration-en.pdf/@@download/file

[10] BRICS nations sign partnership to eliminate diseases driven by poverty and inequality. Accessed 21.09.2025. https://brics.br/en/news/brics-nations-sign-partnership-to-eliminate-diseases-driven-by-poverty-znd-inequality

[11] BRICS Leaders' Framework Declaration on Climate Finance. (In Portuguese). Accessed 21.09.2025. https://www.gov.br/mre/pt-br/canais_atendimento/imprensa/notas-a-imprensa/declaracao-marco-dos-lideres-do-brics-sobre-financas-climaticas

[12] BRICS Leaders' Declaration on Global Governance of Artificial Intelligence. (In Portuguese). Accessed 21.09.2025. https://www.gov.br/mre/pt-br/canais_atendimento/imprensa/notas-a-imprensa/declaracao-dos-lideres-do-brics-sobre-governanca-global-da-inteligencia-artificial

Although not mentioned at the Leaders' Declaration, its significance earned a place in the BRICS health ministers' declaration[13]. The Conference's recommendations will help advance public health knowledge and support decision-making processes.

The objective of this article is to document the progress derived from the development of these three initiatives led by Fiocruz during Brazil's 2025 BRICS presidency. By detailing the operational outcomes and analyzing their contributions to global health issues, this work aims to provide a blueprint and concrete recommendations for India's succeeding BRICS presidency to continue the health track actions.

Advancement of Fiocruz-led initiatives

BRICS Network of Research in Public Health and Health Systems

The BRICS Network of Research in Public Health and Health Systems was first proposed in 2024 during the Russian presidency of the BRICS, with Fiocruz designated as Brazil's representative. The objective was to foster cooperation and mutual support in public health, including the analysis of the health systems of the BRICS countries.

Under the Brazilian presidency in 2025, the initiative evolved into a structured Work Program aimed at strengthening BRICS health systems through South-South cooperation. The Network's primary objective is to promote collaboration and mutual support among BRICS countries in the field of public health. The Network's work rests on key pillars: (1) South–South cooperation, as an essential instrument for health systems strengthening, (2) by reinforcing health systems, it becomes possible to simultaneously improve population well-being and enhance the efficiency and quality of health services.

BRICS constitutes a group of populous, economically dynamic countries facing social inequalities common to countries of the Global South. They possess health systems with different organizations and similar challenges regarding governance, financing, and control of some chronic and infectious diseases. Recent studies have highlighted the importance of strengthening their health systems to increase their resilience to future health emergencies [5]. There is evidence of the relevance of the role of nation-states in building strategies for health sovereignty and the need to strengthen cooperation among BRICS countries from an equitable perspective [6, 7].

A significant political milestone in 2025 was the holding of the 15th meeting of BRICS health ministers, reaffirming the importance of cooperation in health. The final declaration emphasized the collective commitment to addressing global health challenges, reducing structural inequalities, and expanding collaboration across the Global South. The Ministers underscored the need to build capacities, ensure universal access to health care, vaccines, medicines, and diagnostics, and strengthen resilient systems that promote equity in health. A key outcome of this declaration was the formal recognition of the BRICS Network as an essential platform for collaboration, focused on policy and health systems research. This political endorsement consolidated the Network's legitimacy and reinforced its role as a strategic mechanism for collective action.

Based on these advances, the BRICS Network Work Program was structured around three main areas: (1) technical cooperation, aimed at

[13] Declaration of the XV BRICS Health Ministers' Meeting. Accessed 21.09.2025. http://brics.br/en/documents/social-issues/250617_brics_xv-brics-health-declaration.pdf/@@download/file

identifying good practices and priority policies in each country, always respecting national contexts and promoting local autonomy, (2) capacity building in strategic areas to strengthen health systems, through seminars and short courses, (3) health systems research, to generate evidence to support public health decisions. The process of developing this Program was highly participatory. Meetings were held with strong engagement from Network members, broad dialogues on health systems and cooperation in priority areas, which allowed the identification of both common challenges and numerous possibilities for joint action.

The implementation of the Work Program began in April 2025 with the inaugural meeting of the Network. At that meeting, the characteristics of each country's health system were mapped and the role of the BRICS Bank in financing joint initiatives was discussed. Each delegation presented an overview of its national health system, addressing its organization, governance, financing, priority policies, and the main health problems faced by its population. Based on this, a central question was addressed: what would be the potential areas of cooperation and joint research among the BRICS countries, considering their characteristics, strengths and challenges? These presentations showed the great diversity of experiences, but also revealed common challenges and, above all, several opportunities to strengthen the BRICS health systems collaboratively.

In May 2025, the second meeting of the Network was held. On that occasion, the dialogue on opportunities for cooperation among the BRICS health systems was advanced. Each country presented its best practices and priority policies in health, enriching the collective debate. It was also discussed the governance of cooperation between countries, identifying mechanisms to implement these practices of bilateral or plurilateral interest. Another important result was the presentation of the Terms of Reference for the construction of a compendium of best practices in health systems, with inclusion criteria and basic content. Furthermore, the Terms of Reference was introduced for the elaboration of a book on the health systems of the BRICS countries, aimed at generating applied results. Finally, It was identified priority areas for joint research and capacity-building activities. This mapping paved the way for the next phase of the work.

The consolidation of a structured Work Program to implement research, training, and technical cooperation actions is one of the main results of the Network's work in 2025. This collective effort will result in three concrete products: a basket of good practices and priority policies in health systems, a comprehensive book on the health systems of the BRICS countries, and joint research and training activities in priority areas. These areas include structuring and strategic themes for strengthening health systems, such as: (1) Primary health care, (2) Health information systems and digital health, (3) Pharmaceutical care (development and provision of vaccines, medicines, diagnostics, and strategic supplies), (4) Epidemiological studies, surveillance, and emergency preparedness, (5) Aging and control of chronic diseases, (6) Maternal and child health, (7) Environment, climate change and health; (8) Communicable diseases; (9) Social Determinants of Health and (10) Human resources in health.

One of the most innovative elements of the Network's Work Program is the basket of good practices and priority policies in BRICS health systems. This instrument brings together successful national experiences that can inspire other countries in the bloc. The proposal was that each country select relevant practices, considering its own context, and that these practices compose a basket available to the Ministries of Health

of the BRICS countries, as support and encouragement for cooperation. It is a living repository that values the diversity of the BRICS and strengthens South-South cooperation.

In summary, the Network presupposes three collaborative strategies to build more resilient health systems:

1. supporting South-South cooperation through the development of a basket of good practices and priority policies in health systems,
2. expanding the production and dissemination of evidence on BRICS health systems through the comprehensive book, which is in progress,
3. fostering joint research and capacity-building activities in strategic areas such as primary care, digital health, epidemiological surveillance, aging, climate change, among others.

The innovative nature of this proposal lies in the participatory process: each country will design projects according to its interests and, after validation by the Network, subgroups will be formed to develop research and capacity-building actions.

The BRICS Network of Research in Public Health and Health Systems was conceived to support the strengthening of several strategic areas. Among them are universal health systems, primary care, digital health, and the advancement of science and technology in health in the countries of the bloc. Another essential point is to expand the influence of countries in the Global South in the international governance of health. And, at the same time, to promote sustainable socioeconomic development with social inclusion, reinforcing health as a right and as a vector of social justice.

BRICS Vaccine R&D Centre

The BRICS Vaccine R&D Centre is rooted in a continuous commitment to collective action, tracing its formal origins back to the 10th BRICS Summit in Johannesburg in 2018[14]. In that occasion leaders demonstrated their first inclination to establish cooperation mechanism related to vaccine R&D.

This momentum was sustained through subsequent meetings. For instance, the 2020 Moscow Declaration encouraged the timely and effective operationalization of the BRICS Vaccine R&D Centre. In 2021, the New Delhi Declaration welcomed the tangible progress made toward a virtual launch.

A consensus was achieved among the original five countries (Brazil, Russia, India, China and South Africa) as leading national institutions were designated to represent their countries in the Centre. The Institute of Technology on Immunobiologicals (Bio-Manguinhos) of the Oswaldo Cruz Foundation (Fiocruz) was named as the Brazilian national center.

The virtual launch of the BRICS Vaccine R&D Centre ultimately took place on March 22, 2022, led by China's Ministry of Science and Technology. During this remarkable event, the national centers jointly proposed the "Initiative to Strengthen Cooperation on Vaccines and Jointly Build a Defense Line Against Pandemic", solidifying a significant platform for preparedness and technological sovereignty among member states.

In the backdrop, the Director-General of the World Health Organization, Dr. Tedros Adhanom Ghebreyesus warned that "...the world is on the brink of a catastrophic moral failure–and the price of this failure will be paid with lives and livelihoods in the world's poorest countries. At that stage, high-income countries had administered over 39 million COVID-19

[14] 10th BRICS Summit – Johannesburg Declaration – July 27, 2018. Accessed 22.10.2025. https://www.gov.br/mre/en/contact-us/press-area/press-releases/10th-brics-summit-johannesburg-declaration-july-27-2018

vaccine doses across at least 49 nations, compared to just 25 doses in a single low-income country[15–17]". These disparities persisted throughout the pandemic–by November 2022, nearly 13 billion vaccine doses had been administered globally, yet less than 25% of people in low-income countries had received even one dose [8].

Access to COVID-19 diagnostic testing and treatments revealed similar disparities. Only 0.4% of the 3 billion COVID-19 tests conducted globally by March 2022 were performed in low-income countries [9]. Treatment disparities in access to COVID-19 treatments proved even more stark, with high-income countries reserving over 70% of available medicines, while just eight low-income nations had received oral antiviral treatments by November 2022[18]. These systemic failures prompted BRICS countries to establish this collaborative mechanism. In the same sense, BRICS nations recognized the need to develop effective solutions for emerging challenges, including a rapid and coordinated response to a potential Disease X threat[19].

In 2024, during the Russian Federation's 2024 Pro Tempore Presidency, the Centre further advanced its activities by proposing an electronic platform aimed at intensifying connections among the participants. This effort was reflected in the Declaration of the XIV BRICS Health Minister's Meeting where Russia presented the so-called Electronic R&D Stock (e-R&D-Stock). This mechanism is a dedicated digital exchange space designed to foster scientific and technological collaboration projects. It seeks to connect diverse vaccine market stakeholders, including research institutions, pharmaceutical companies and regulatory bodies to enable the sharing of competences, dissemination of R&D project information, and provision of consulting services. Its key functionalities focus mainly on optimizing collaborative R&D, clinical and preclinical studies, technology transfer, and supply chain activities.

Under Brazil's 2025 Pro Tempore Presidency, the Brazilian Ministry of Health alongside with Bio-Manguinhos/Fiocruz proposed four main goals to significantly advance the Centre's activities: advancing discussions and a framework for the Electronic R&D Stock; stimulating bilateral partnerships and cooperation with other BRICS Networks (such as those on Tuberculosis, Socially Determined Diseases, and Regulatory Agencies) while emphasizing alignment with the Global Coalition for Local Production, Innovation, and Equitable Access; promoting the engagement of the New Development Bank (NDB) to establish a resource mobilization strategy for BRICS vaccine and biotechnology initiatives; and driving the Centre towards a concrete operational structure, especially considering the expansion of the BRICS membership.

Pari passu to these objectives, the Centre also seeks to contribute to achieving the Sustainable Development Goals of the 2030 Agenda, particularly Goal 3 – Health and well-being. Aligned with an agenda that integrates science and production while contributing to public policies, these efforts aim to expand regional and Global South capacities

[15] WHO Director-General's opening remarks at 148th session of the Executive Board. Accessed: 22.10.2025. https://www.who.int/news-room/speeches/item/who-director-general-s-opening-remarks-at-148th-session-of-the-executive-board

[16] Buss P, Hoirisch C, Alcazar S. O Brics e a barbárie global das vacinas [BRICS and the global barbarity of vaccines]. (In Portuguese). Accessed: 22.10.2025. https://cee.fiocruz.br/?q=o-brics-e-barbarie-global-das-vacinas

[17] Hoirisch C. Quo vadis, Brics? Colaboração biofarmacêutica, diplomacia vacinal dos bRICs e (des)motivações para o cumprimento dos compromissos acordados sobre vacinas COVID-19 [Quo vadis, BRICS? Biopharmaceutical collaboration, vaccine diplomacy of the BRICS and (de)motivations for fulfilling the agreed commitments on COVID-19 vaccines]. (In Portuguese). Accessed: 22.10.2025. https://api.arca.fiocruz.br/api/core/bitstreams/e747f0b4-d61f-424c-9aca-894a1e20e7a6/content

[18] COVID-19 Market Dashboard. Unicef (N.D.) COVID-19 market dashboard. Accessed: 07.10.2025 https://www.unicef.org/supply/covid-19-market-dashboard

[19] Moscow Declaration of the XIV BRICS Health Ministers' Meeting. Accessed: 22.10.2025. https://brics.br/pt-br/documentos/acervo-de-presidencias-anteriores/health-ministerial-declarations/2024-brics-health-ministers-declaration.pdf/@@download/file

in innovation and production, with the goal of ensuring equitable access to vaccines and health technologies.

To date, the Centre has held three key meetings. The First Meeting, in March, sought to bring together a shared understanding of member countries' health systems functioning, with a focus on schedules and access to vaccination; the World Health Organization's perspective on potential BRICS contributions to global health; and the NDB's operational mechanisms and potential support to the Centre, emphasizing a balanced approach regarding the requirements to drive the creation of the e-R&D-Stock.

The Second Meeting, in May, had as its main themes: enhancing cooperation among Centre members based on previously identified opportunities; strengthening integration with other BRICS health initiatives (the TB Research Network, the Partnership for the Elimination of Socially Determined Diseases, and cooperation among regulatory agencies); as well as advancing the proposal to establish the e-R&D-Stock and discussing opportunities to support the Centre's activities – including drafting ministerial declaration language to highlight the Centre's priorities and aspirations.

Finally, the Third Meeting, in September, focused on deepening the necessary foundations for the Centre's consolidation and future activities. Discussions included a progress update from the e-R&D-Stock Working Group, a review of the Centre's governance structure (originally proposed by China in 2022) to adapt it to the expanded BRICS membership, and information sharing on the outcomes of the BRICS Medical Products Regulatory Authorities Meeting.

Furthermore, the meeting initiated a significant discussion on launching a dedicated BRICS Vaccine project, identifying tuberculosis as the first potential target. The session concluded with a valuable exchange of experiences on R&D regulation, intellectual property, technology transfer, and infrastructure financing, featuring presentations from key industry players.

Following the 2025 meetings, BRICS member countries also agreed to establish a Working Group to operationalize the initiative, officially adopting the name e-R&D-Hub for the digital platform. This Working Group has been convening monthly since June 2025, focusing on resolving critical operational and legal challenges necessary for the platform's launch. A key achievement was the finalization and agreement of the comprehensive Terms of Reference in October 2025. This document defines the Group's scope and mandates, a formal governance structure, including the establishment of a Steering Committee, an Advisory Board, and a Secretariat. The Group concentrated heavily on resolving critical issues such as securing a sustainable financing model, establishing policies for intellectual property and data security, and ensuring technical interoperability among member countries' systems. Future deliverables for the WG include drafting a dedicated Data Governance Policy, an Intellectual Property Policy, and a Budget Proposal to secure the necessary support for the platform's full implementation and initial launch.

Conference of the BRICS National Public Health Institutes

The Conference of the BRICS National Public Health Institutes NPHIs aimed to formulate coordinated messages and proposals from about twenty National Public Health Institutes (including BRICS members and partners) to provide technical and political advice to BRICS Health Ministers and promote cooperation among countries.

The Conference took place in Rio de Janeiro from September 15–17, 2025, and was conceived as a forum to generate mutual knowledge among BRICS NPHIs, as well as to promote political and technical coordination around critical issues for NPHIs such as health surveillance and socially determined diseases.

Despite their functional diversity, the NPHIs share a common commitment to public health and population well-being in their respective countries, advising and supporting their governments through scientific and technical guidance. As key structures within health systems, they play a fundamental role in reducing health inequities, protecting citizens from health threats and emergencies–such as pandemics, vaccine-preventable diseases, emerging and re-emerging infectious diseases, natural disasters, and antimicrobial resistance–while ensuring universal, comprehensive, and quality health care, in line with the One Health approach [10].

Imperative to the implementation of a significant number of policy decisions, NPHIs fulfill essential public health functions by generating scientific evidence to inform public actions, developing the health workforce, engaging in cross-sectoral, regional, and international collaborations to strengthen global health security, among others [11].

In this regard, the coordination, alignment, and joint planning enabled by the Conference of the BRICS NPHIs represent key factors for enhancing the effectiveness of actions and commitments made by BRICS member governments, thereby decisively contributing to the creation of more resilient, robust, equitable, effective, and high-quality health systems[20].

The agenda of the Conference, encompassed the following issues: (1) Strategic Dialogue among BRICS NPHIs: Mapping NPHI Capacities on Shared Health Priorities; (2) Health Surveillance and Emergency Response; (3) Strengthening National Health Systems; (4) BRICS Cooperation on the Social Determinants of Health to Address Health Inequities; (5) Climate Change, Health and Equity: A Strategic Pathway to COP30; and (6) Combating Hunger and Poverty.

The Conference successfully agreed to launch the Network of BRICS NPHIs which will continue NPHIs engagement in relevant health matters throughout specifical working groups. Another successful achievement was the commitment of the Government of India to include the Conference and this Network in the agenda for their upcoming BRICS chairship. The above-mentioned, among other commitments can be found in the Conference Declaration[21].

Other health initiatives mentioned in the Leaders' Declaration

The countries have chosen to develop a Partnership for the Elimination of Socially Determined Diseases[22]. The concept involves nations uniting to eliminate poverty-related illnesses, such as TB, leprosy, yellow fever and dengue.

The Partnership will establish priority diseases at each stage, according to each country's legislation and capacities. Global and regional conferences on the subject are planned, with participation from national health institutes, universities and health ministries.

[20] Moreira M, Buss PM, Estephanio JM. Strengthening national public health institutes: Fiocruz's perspective. In: Kickbusch I, Kirton J. Health: a political choice – the future of health in fractured world, London: Global Governance Project, 2025. Accessed: 22.10.2025. https://a.storyblok.com/f/305196/x/111f24a7f2/health-is-a-political-choice.pdf

[21] Conference of the BRICS National Public Health Institutes (NPHIs). Issues note. BRICS 2025. Accessed: 22.10.2025. http://brics.br/pt-br/documentos/conference-of-the-brics-national-public-health-institutes-nphis-issue-note-brics-2025.pdf/@@download/file

[22] Elimination of Socially Determined Diseases and Infections. Issues note. BRICS 2025. Accessed: 22.10.2025. https://brics.br/pt-br/documentos/elimination-of-socially-determined-diseases-and-infections-issue-note-brics-2025.pdf/@@download/file

Once priority diseases are identified, the Partnership will seek to strengthen existing BRICS initiatives, particularly the BRICS Network of Research in Public Health and Health Systems and the BRICS Vaccine R&D Center (and in the case of TB, the BRICS TB Research Network), which provide robust platforms for collaborative research, surveillance, training of health personnel and innovation.

Regarding socially determined diseases, it is important to note that BRICS countries account for over 50% of the global TB burden. The TB Research Network aims to participate in clinical trials for new vaccines under development. Funding for this type of research remains a concern, and under Brazil's leadership new funding sources will be sought to sustain ongoing research initiatives.

The consolidation of the TB Research Network with support from the New Development Bank and the World Health Organization, guiding research and policy, along with regulatory cooperation on medical products, demonstrates the concrete progress BRICS has made as a group[23].

Final considerations

As BRICS expands its membership and influence, its emergence as a powerful global bloc has drawn increasing scrutiny from the United States. With the inclusion of new member countries, BRICS now represents 45% of the world's population and contributes approximately 35% to global gross domestic product, marking a significant shift in global power dynamics.

The BRICS Network of Research in Public Health and Health Systems promotes health cooperation to address structural and health inequalities in the Global South. It operates on the premise that robust public health systems can drive social and economic improvements, with direct and indirect impacts on living conditions. Research, training of health personnel, and technical cooperation among BRICS nations can contribute to strengthening universal health systems, with primary healthcare, digital health, science, and technology serving as strategic components. In the context of the current crisis in multilateralism, the proactive and coordinated action of BRICS countries represents a pathway to consolidating their role in global governance.

e-R&D-Hub initiative serves as a structural proposal through which member states–despite their diversity and geographical distances–can showcase potential collaborative projects for developing strategic health products. The e-R&D Hub aims to foster partnerships not only for vaccines but also for medicines and diagnostic kits that support public health policies, ensuring equitable access in alignment with the objectives of the BRICS Vaccine R&D Center. The establishment of a working group marks an important step forward for the project. However, greater commitment and active participation from member countries will be essential to fully realize their intended goals.

The BRICS Summit yielded highly positive outcomes across all areas, though continued follow-up will be necessary to ensure the implementation of approved proposals. It would be advantageous to advance in its institutionalization, with the creation of a permanent Health Ministers' Council, supported by a technical secretariat, which could facilitate the implementation of agreed measures and greatly enable a coordinated

[23] Health receives priority at the 17th BRICS Summit in Rio de Janeiro. (In Portuguese). https://cee.fiocruz.br/?q=saude-recebe-prioridade-na-17-cupula-do-brics-no-rio-de-janeiro. Access 21.09.2025.

response to a new pandemic and other health emergencies, as well as articulate common positions in international forums.

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REVIEW

Brazil–China relations in health: historical context, industrial challenges, and future opportunities

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ABSTRACT

This article analyzes the evolving health cooperation between Brazil and China as a strategic frontier in South-South collaboration. At a time of global health insecurity and technological inequality, the partnership between these two continental powers offers a transformative alternative to traditional donor-recipient models. The analysis traces a shift from commodity-based trade to a potential alliance in co-innovation, encompassing vaccines, artificial intelligence, biotechnology, and digital health. Brazil's deep dependency on imported medical inputs and its fragmented industrial base stand in contrast to China's state-led model of technological scaling and global health outreach. Yet, this asymmetry also reveals opportunities: Brazil's universal health system, research institutions, and regional leadership can be aligned with China's production capacity, digital infrastructure, and development finance to build shared technological sovereignty. The paper examines how Brazil's renewed industrial policy under Lula's administration opens new pathways

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for joint research and development, regional pharmaceutical production, and equitable technology transfer. It also confronts persistent challenges–technological imbalances, intellectual property constraints, institutional volatility, and geopolitical pressures aimed at curtailing South-South alignment. A successful partnership, the article argues, must be grounded in transparent governance, mutual benefit, and a commitment to health as a public good. It concludes with a proposal for a decentralized health innovation ecosystem in Brazil, inspired by China's special economic zones, to overcome the historical concentration of technological power and promote equitable development across the North, Northeast, and Center-West. In doing so, the Brazil–China relationship can become a model for a more just, resilient, and multipolar global health order.

Key Words: Brazil–China relations; global health diplomacy; health industrial policy; South-South cooperation; technological sovereignty; geopolitical economy of health

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Introduction

In an era of converging global crises–from pandemics to climate change–the architecture of global health remains deeply unequal. Technological power is concentrated in a handful of nations, while the Global South often remains dependent on external supply, aid, and conditional partnerships. Within this fragmented landscape, the relationship between Brazil and China emerges as a strategic possibility: not merely a bilateral exchange of goods, but a potential catalyst for a new paradigm of South-South co-innovation.

This paper examines the evolving health cooperation between two continental powers, tracing its historical development, diagnosing its structural challenges, and charting a path toward shared technological sovereignty. Brazil, home to the world's largest public health system, the Unified Health System (In Portuguese: Sistema Único de Saúde, SUS) [1–5], possesses the institutional reach and public mandate to anchor a national health innovation ecosystem. Yet, decades of deindustrialization have left it critically dependent on imported medical technologies and active pharmaceutical ingredients (APIs) – a vulnerability exposed during the COVID-19 pandemic [6, 7].

China, in contrast, has become a global leader in biomanufacturing, digital health, and state-led technological development. Its Belt and Road Initiative and Health Silk Road are not only infrastructure projects but instruments of health diplomacy and industrial outreach. The convergence of Brazil's developmental ambitions under Lula's neoindustrialization agenda and China's global expansion offers a rare opportunity to move beyond commodity-based trade toward joint research and development (R&D), co-production, and equitable knowledge transfer[1].

This article argues that Brazil–China health cooperation must be reimagined not as a transaction, but as a strategic alliance for health sovereignty–one that strengthens SUS, decentralizes innovation across

[1] Ministério da Saúde. Plano Estratégico do Ministério da Saúde 2023–2026 [Ministry of Health. Strategic Plan of the Ministry of Health 2023–2026]. 2023. (In Portuguese). Accessed 30.09.2025. https://www.gov.br/saude/pt-br/acesso-a-informacao/governanca/planejamento-estrategico

Brazil's regions, and contributes to a more just global health order. The path forward is fraught with asymmetries, geopolitical pressures, and institutional fragility. But if grounded in transparency, reciprocity, and long-term vision, this partnership can become a transformative force for equity, resilience, and solidarity in the 21st century.

Historical background of Brazil–China relations

The diplomatic relationship between Brazil and China, formally established on August 15, 1974, emerged during a period of strategic recalibration for both nations. Brazil, under a military government, sought to diversify its foreign policy beyond traditional Western alliances, while China, following its 1971 admission to the United Nations, was gradually reengaging with the international system. Brazil's recognition of the People's Republic of China made it the first South American country to do so, breaking with the regional alignment toward Taiwan and signaling an early openness to a long-term partnership [1, 8]. However, for nearly two decades, this diplomatic opening did not translate into substantive cooperation. Economic exchanges remained minimal, high-level visits were infrequent, and neither country prioritized the other in its foreign policy calculus.

A decisive shift occurred in the 1990s, as both nations embraced outward-oriented development strategies. The 1993 visit of Chinese Premier Li Peng to Brazil marked the first high-level exchange since the establishment of diplomatic relations and led to the creation of the China–Brazil High-Level Commission on Economic, Trade, Scientific, and Technological Cooperation (Cosban) [8, 9]. This institutional mechanism became the cornerstone of bilateral coordination, enabling sustained dialogue across sectors [1]. The same year, the two countries elevated their relationship to a strategic partnership, one of China's first such designations with a developing country. This recognition reflected a growing convergence of geopolitical interests and laid the foundation for deeper engagement.

The partnership was further strengthened in 2012, when Brazil and China upgraded their ties to a Comprehensive Strategic Partnership, integrating cooperation in space technology, energy, agriculture, and health. This evolution coincided with a dramatic expansion in trade, driven by China's industrialization and its growing demand for raw materials. Brazil, rich in natural resources, became a key supplier of soy, iron ore, and crude oil, anchoring a trade relationship that would make China Brazil's largest trading partner by the 2010s [2]. Yet, as authors observe, this economic interdependence has not been matched by a commensurate development of technological or industrial symmetry [2, 9]. Brazil's role has largely remained that of a commodity exporter, while China has consolidated its position as a global leader in manufacturing, innovation, and infrastructure investment.

Cultural and institutional perceptions have further shaped the trajectory of the relationship. Public understanding of China in Brazil remains limited, often confined to its economic presence rather than its broader technological or geopolitical dimensions. In contrast, China's view of Brazil tends to emphasize its natural endowments and agricultural potential, reinforcing a commodity-centric narrative [2]. These asymmetries are mirrored in business practices: Brazilian corporate culture, rooted in low-context communication, values directness and explicitness, while Chinese business environments operate within a high-context framework, where meaning is embedded in hierarchy, context, and indirect expression

[10]. These differences, as noted, can affect negotiation dynamics, trust-building, and the effectiveness of joint ventures, particularly in technology transfer and co-development projects [10, 11].

The roots of China's global engagement, including its outreach to Latin America, can be traced to the economic reforms initiated by Deng Xiaoping in the late 1970s. His policy of "reform and opening-up" reoriented China's development model toward export-led growth, foreign investment, and technological modernization. This shift not only transformed China's domestic economy but also redefined its foreign policy, prioritizing economic cooperation over ideological confrontation. The strategy of "hiding capabilities and biding time" (In Chinese: taoguang yanghui) allowed China to build influence through trade, investment, and infrastructure, rather than through military or ideological competition[2] [8]. Over time, this approach laid the groundwork for initiatives such as the Belt and Road Initiative, which extended China's connectivity agenda beyond Asia into Africa, the Middle East, and Latin America.

For Brazil, the implications of this strategic evolution are profound. The growing interdependence with China is no longer confined to trade but extends to critical domains such as health, digital infrastructure, and biotechnology. The pandemic-era collaboration between the Butantan Institute and Sinovac demonstrated the potential for joint vaccine production, yet also revealed the limits of current cooperation, particularly in intellectual property and local technological absorption[3]. As both countries navigate a complex geopolitical landscape–marked by U.S. pressure to decouple from Chinese technology and growing competition for influence in Latin America–the need for a mature, balanced, and forward-looking bilateral relationship has never been greater.

The historical trajectory of Brazil–China relations thus reflects a transition from diplomatic recognition to economic interdependence, and now to the possibility of strategic co-development. While structural asymmetries and cultural differences persist, they do not preclude a deeper, more equitable partnership. On the contrary, they underscore the importance of building institutional mechanisms, mutual understanding, and shared technological goals that can transform a relationship of convenience into one of lasting strategic value.

Industrial policy and technological development in the Brazilian health sector

Brazil's health sector remains structurally dependent on imported technologies and pharmaceuticals, a condition that undermines its public health resilience and technological sovereignty. According to the Brazilian Health Regulatory Agency (In Portuguese: Agência Nacional de Vigilância Sanitária, ANVISA), over 70% of APIs used in domestically manufactured drugs are imported, primarily from China and India[4]. Similarly, more than 60% of high-value medical devices used in public hospitals are sourced from abroad, including magnetic resonance imaging machines, ventilators, and surgical robotics. This dependency exposes the SUS to global supply chain disruptions, price volatility, and geopolitical risks – issues starkly revealed during the COVID-19 pandemic.

[2] Ministry of Foreign Affairs People's Republic of China Global Development Initiative – Building on 2030 SDGs for Stronger, Greener and Healthier Global Development (Concept Paper). Accessed 30.09.2025. https://www.mfa.gov.cn/eng./zy/jj/GDI_140002/wj/202406/P020240606606193448267.pdf

[3] Fundação Oswaldo Cruz (Fiocruz). Relatório de Atividades 2022: Inovação e Produção para a Saúde Pública [2022 Activity Report: Innovation and Production for Public Health]. 2022. (In Portuguese). https://fiocruz.br/relatorios-anuais?utm

[4] Secretaria de Comércio Exterior (SECEX), Ministério da Economia, Brazil. Estatísticas de Comércio Exterior de Produtos Farmacêuticos [Secretariat of Foreign Trade (SECEX), Ministry of Economy, Brazil. Foreign Trade Statistics of Pharmaceutical Products]. 2023. (In Portuguese). Accessed 30.09.2025. https://www.gov.br/mdic/pt-br/assuntos/comercio-exterior/estatisticas

The pandemic exposed the fragility of Brazil's health industrial base. Shortages of ventilators, personal protective equipment, and diagnostic reagents forced the government into emergency diplomacy to secure supplies. As one analysis noted, "the lack of domestic production capacity led to delays in testing, treatment, and containment, undermining the effectiveness of the national response" [12, 13]. Despite the efforts of institutions like Fiocruz and the Butantan Institute to produce vaccines locally, the country remained reliant on foreign suppliers for critical inputs, including viral seeds, bioreactors, and reagents.

This dependency is not merely a technical failure, but the result of decades of deindustrialization and underinvestment in science and technology. Since the 1990s, Brazil has pursued a liberal economic model that prioritized trade openness over strategic industrial development. However, unlike China, which liberalized its economy while preserving strong state direction, Brazil dismantled key institutions and reduced public investment in innovation. As Isabella M. Weber observes in How China Escaped Shock Therapy, "China adopted liberalizing measures, but not at the expense of undermining the capacity of the socialist state". In contrast, Brazil's state capacity in health technology production has been systematically eroded [6, 7].

The consequences are evident in the fragmented and underdeveloped domestic supply chain. While Brazil has strong research institutions, the transition from innovation to industrial scale remains weak. There is a notable absence of a cohesive innovation ecosystem linking academia, startups, and industry. Venture capital in health technology is limited, and regulatory processes at ANVISA, though rigorous, are often slow and bureaucratic, creating bottlenecks for new products.

Moreover, the integration between public research institutions and the private sector is limited. Fiocruz and Butantan have demonstrated world-class capabilities in vaccine development, yet their production is often confined to fill-and-finish operations under foreign licensing agreements. As one expert noted, "Brazil produces the vaccine, but does not own the technology". This lack of technological autonomy restricts the country's ability to adapt formulations, scale production independently, or respond swiftly to emerging health threats[5,6].

The situation is further compounded by geographic concentration of technological capacity. The health economic-industrial complex remains heavily centralized in the Southeast and South, particularly in São Paulo and Rio de Janeiro. This concentration reinforces regional inequalities and limits the potential for a more inclusive, decentralized innovation model. In contrast, China's development strategy has emphasized regional redistribution of industrial capacity through Special Economic Zones, a model that Brazil could adapt to promote technological development in the North, Northeast, and Center-West.

To overcome these challenges, Brazil must reassert the role of the state in guiding industrial policy. The return of President Lula da Silva has brought renewed emphasis on neoindustrialization, with health technology and biomanufacturing identified as strategic sectors. Initiatives such as National Industrialization Plan (In Portuguese: Plano Nacional de Industrialização, PNI) and the Brazil–China Health Technology Fund offer opportunities to rebuild domestic capacity. However, success will depend

[5] Vianna Sobrinho L. Saúde e inteligência artificial: o que podemos aprender com a China [Health and artificial intelligence: what can we learn from China.]. São Paulo: Hucitec Publishing; 2024. (In Portuguese). Accessed 30.09.2025. https://outraspalavras.net/tecnologiaemdisputa/saude-e-ia-o-que-podemos-aprender-com-a-china/

[6] Banco Nacional de Desenvolvimento Econômico e Social (BNDES). BNDES and CEXIM sign agreement to strengthen co-investments and cooperation between Brazil and China Rio de Janeiro; Feb 19, 2025 Accessed 30.09.2025. https://www.bndes.gov.br/SiteBNDES/bndes/bndes_en/conteudos/noticia/BNDES-and-CEXIM-sign-agreement-to-strengthen-co-investments-and-cooperation-between-Brazil-and-China/

on coherent policy implementation, long-term financing, and equitable technology transfer agreements.

Brazil's industrial challenges in health reflect a historical trajectory of policy choices–one that prioritized short-term efficiency over long-term sovereignty. By learning from models of state-led development, particularly in countries like China, and by leveraging its public health infrastructure and research capacity, Brazil can transform its health sector from a site of dependency into a catalyst for national development and technological equity.

Lula's neoindustrialization agenda and its implications for health

The return of Luiz Inácio Lula da Silva to the presidency in 2023 marked a decisive shift in Brazil's economic and technological trajectory. After years of austerity, deindustrialization, and underinvestment in science and innovation under the previous administration, Lula's government has launched an ambitious neoindustrialization agenda aimed at revitalizing domestic production, reducing foreign dependency, and reasserting the state's role in guiding strategic development. At the heart of this agenda lies a renewed recognition of health as a strategic sector – not only for public well-being but as a driver of technological sovereignty, job creation, and inclusive growth[7].

This shift is formalized in key policy documents such as the PNI and the Action Plan for Sustainable Development (In Portuguese: Plano de Ação para o Desenvolvimento Sustentável, PDES), both relaunched in 2023 by the Ministry of Development, Industry, Commerce, and Services (In Portuguese: Ministério do Desenvolvimento, Indústria, Comércio e Serviços, MDIC). As stated in the PNI, "The reindustrialization of Brazil must be based on innovation, sustainability, and social inclusion, with strategic sectors such as health, energy, and digital technologies at the forefront"[8]. This marks a departure from the liberal economic model of the 1990s and early 2000s, which prioritized trade openness at the expense of productive capacity. The macroeconomic results of that era were severe: a drop in gross domestic product growth, rising unemployment–particularly in industry–and a surge in external debt, as noted by Nilson Araújo de Souza, who observed that industrial employment fell by 42% during the Fernando Henrique Cardoso administration[9] [14].

In contrast, Lula's current agenda seeks to reverse decades of deindustrialization by identifying health technologies and biotechnology as central pillars of national development. The Ministry of Health's Plano Estratégico 2023–2026 explicitly prioritizes "strengthening national productive capacity in health inputs" and reducing dependency on imported APIs and medical equipment[10]. This is not merely a health policy objective but a national security imperative, as underscored in the 2023 update of the National Security Strategy (In Portuguese: Estratégia Nacional de Segurança, ENS), which identifies health sovereignty as a strategic asset[11].

[7] Brazil launches new industrial policy with development goals and measures up to 2033. Accessed 30.09.2025. https://www.gov.br/planalto/en/latest-news/2024/01/brazil-launches-new-industrial-policy-with-development-goals-and-measures-up-to-2033?utm

[8] Ministério do Desenvolvimento, Indústria, Comércio e Serviços (MDIC). Plano Nacional de Industrialização (PNI) [Ministry of Development, Industry, Commerce and Services (MDIC). National Industrialization Plan (PNI)]. 2023a. (In Portuguese). Accessed 30.09.2025. https://www.gov.br/mdic/pt-br

[9] Vieira FS, Benevides RPS. Os impactos do novo regime fiscal para o financiamento do Sistema Único de Saúde e para a efetivação do direito à saúde no Brasil. [The impacts of the new tax regime on the financing of the Unified Health System and the realization of the right to health in Brazil.] Nota Técnica 28. Brasília: IPEA; 2016. (In Portuguese). Accessed 30.09.2025. http://repositorio.ipea.gov.br/handle/11058/7270

[10] Ministério da Saúde. Plano Estratégico do Ministério da Saúde 2023–2026 [Ministry of Health. Strategic Plan of the Ministry of Health 2023–2026]. 2023. (In Portuguese). Accessed 30.09.2025. https://www.gov.br/saude/pt-br/acesso-a-informacao/governanca/planejamento-estrategico

[11] Ministério do Meio Ambiente. Relatório Anual do Fundo Amazônia 2023 [Ministry of the Environment. Annual Report of the Amazon Fund 2023]. 2023. (In Portuguese). Accessed 30.09.2025. https://www.fundoamazonia.gov.br/export/sites/default/pt/.galleries/documentos/rafa/RAFA_2023_port.pdf

The government has taken concrete steps to operationalize this vision. The Ministry of Science, Technology, and Innovation (In Portuguese: Ministério da Ciência, Tecnologia e Inovação, MCTI) has relaunched its Plano Estratégico 2023–2026, allocating increased funding to priority areas such as vaccine development, AI in health, and sustainable pharmaceuticals[12]. The National Bank for Economic and Social Development (In Portuguese: Banco Nacional de Desenvolvimento Econômico e Social, BNDES) has also been repositioned as a key instrument of industrial policy, launching the Innovation and Reindustrialization Support Program (In Portuguese: Programa de Apoio à Inovação e Reindustrialização, ProInova), which has mobilized 50 billion Brazilian reals (approximately 10 billion United States dollars) to finance projects in strategic sectors, including health technology and biomanufacturing[13].

These financial instruments are complemented by regulatory and fiscal incentives. The Lei do Bem (Law No. 11,196/2005)[14], which provides tax credits for innovation, has been expanded to include digital health, telemedicine, and biotech startups. Additionally, the Ministry of Health has strengthened local content requirements in public procurement: as of 2024, 30% of all medical device purchases by SUS must include a minimum level of national production, with incentives for higher integration[15].

To foster innovation, the government has announced the creation of the Brazilian Biotechnology and Health Innovation Network (Rede Biotec Brasil), a cross-institutional initiative linking Fiocruz, Butantan, Vital Brazil, and other public research centers with universities and private firms[16,17]. This network aims to accelerate technology transfer and scale-up in areas such as mRNA vaccines, monoclonal antibodies, and AI-driven diagnostics. The model draws inspiration from China's Shanghai Zhangjiang Biotech Park and India's Hyderabad Genome Valley, where concentrated investment in infrastructure, talent, and regulation has created innovation hubs of global significance.

Moreover, the agenda recognizes the need to regionalize industrial development. Rather than allowing technological capacity to remain concentrated in the Southeast and South, the government is exploring the establishment of specialized industrial zones in the North, Northeast, and Center-West. These zones would leverage regional comparative advantages – such as biodiversity in the Amazon or solar energy in the Northeast – to develop context-specific health technologies. As one policy analyst noted, "The future of Brazilian health innovation cannot be confined to São Paulo and Rio. It must be territorial, just as it must be technological".

This strategic reorientation is also reflected in Brazil's foreign policy. The 2023 Joint Statement on the Strategic Partnership between Brazil and China explicitly recognizes health as a priority area, stating that

[12] Ministério da Ciência, Tecnologia e Inovação (MCTI). Plano Estratégico do Ministério da Ciência, Tecnologia e Inovação 2023–2026 [Ministry of Science, Technology and Innovation. Strategic Plan of the Ministry of Science, Technology and Innovation 2023–2026]. 2023. (In Portuguese). Accessed 30.09.2025. https://antigo.mctic.gov.br/mctic/opencms/ciencia/SEPED/Publicacoes/ENCTI/PlanosDeAcao.html

[13] Banco Nacional de Desenvolvimento Econômico e Social (BNDES). Programa de Apoio à Inovação e Reindustrialização (ProInova) [National Bank for Economic and Social Development (BNDES). Innovation and Reindustrialization Support Program (ProInova)]. 2023. (In Portuguese). Accessed 30.09.2025. https://www.bndes.gov.br

[14] Secretaria da Receita Federal. Instrução Normativa RFB No. 2156/2023 – Atualização da Lei do Bem [Federal Revenue Service. Normative Instruction RFB No. 2156/2023 – Update of the "Lei do Bem" (Innovation Incentives Law)]. 2023. (In Portuguese). Accessed 30.09.2025. https://www.legisweb.com.br/legislacao/?id=448550

[15] Ministério da Saúde. Governo Federal prioriza indústria nacional em compra de equipamentos para o SUS. [Ministry of Health. Federal Government prioritizes domestic industry in purchasing equipment for the SUS.] 2025. (In Portuguese). Accessed 30.09.2025. https://www.gov.br/saude/pt-br/assuntos/noticias/2025/agosto/governo-federal-prioriza-industria-nacional-em-compra-de-equipamentos-para-o-sus?utm

[16] Vianna Sobrinho L. Saúde e inteligência artificial: o que podemos aprender com a China [Health and artificial intelligence: what can we learn from China.]. São Paulo: Hucitec Publishing; 2024. (In Portuguese). Accessed 30.09.2025. https://outraspalavras.net/tecnologiaemdisputa/saude-e-ia-o-que-podemos-aprender-com-a-china/

[17] Banco Nacional de Desenvolvimento Econômico e Social (BNDES). BNDES and CEXIM sign agreement to strengthen co-investments and cooperation between Brazil and China Rio de Janeiro; Feb 19, 2025 Accessed 30.09.2025. https://www.bndes.gov.br/SiteBNDES/bndes/bndes_en/conteudos/noticia/BNDES-and-CEXIM-sign-agreement-to-strengthen-co-investments-and-cooperation-between-Brazil-and-China/

both countries "commit to enhancing cooperation in public health, biotechnology, traditional medicine, and digital health"[18,19] [15]. This high-level endorsement opens the door for deeper collaboration in co-development, co-manufacturing, and joint research–provided that such partnerships are structured to ensure equitable knowledge transfer and shared ownership.

The neoindustrialization agenda, therefore, represents more than a return to state-led development; it is an effort to build a resilient, sovereign, and equitable health ecosystem. It acknowledges that health is not a cost, but an investment–one that can drive industrial transformation, reduce regional inequalities, and strengthen Brazil's position in the global order. As Lula himself has stated, "Development without inclusion is not development". In the health sector, this principle must be operationalized through policies that not only produce medicines and devices but also produce justice, equity, and autonomy.

Opportunities for Brazil–China collaboration in health

The strategic partnership between Brazil and China in the health sector presents a transformative opportunity to redefine the contours of South-South cooperation. This relationship, historically anchored in trade and emergency procurement, is now poised to evolve into a model of co-innovation, shared industrial development, and technological sovereignty. At the heart of this potential lies a convergence of interests: Brazil's need to strengthen its domestic health production and reduce dependency on imported technologies, and China's ambition to expand its global health diplomacy through the Belt and Road Initiative and the Health Silk Road. When structured with transparency, equity, and long-term vision, this collaboration can serve not only national interests but also contribute to a more just and resilient global health order.

A central pillar of this partnership is the role of the SUS as more than a provider of universal care – it is a strategic demand-pull mechanism capable of shaping industrial policy and driving innovation[20] [2, 4, 5, 10, 14]. With an annual procurement budget exceeding 200 billion Brazilian reals, SUS represents one of the largest public health markets in the world. If leveraged strategically, this purchasing power can be used to incentivize local assembly, technology transfer, and co-development of medical technologies tailored to tropical and resource-constrained environments. As one policy analyst noted, "The state is not just a regulator or funder; it is a market architect". By conditioning public procurement on local content and knowledge sharing, Brazil can transform its dependency into a platform for industrial upgrading [14, 16].

This potential was demonstrated during the COVID-19 pandemic, when the Butantan Institute partnered with Sinovac to produce over 200 million doses of the CoronaVac vaccine[21]. While the agreement was limited to fill-and-finish operations and did not include full intellectual property transfer, it proved that public institutions can rapidly scale up production when supported by international collaboration. Building on this experience,

[18] Itamaraty, Ministry of Foreign Affairs of China. Joint Statement on the Strategic Partnership between Brazil and China. Brasília/Beijing; 2023. Accessed 30.09.2025. https://www.fmprc.gov.cn/eng/zy/wjls/3604_665547/202405/t20240531_11367559.html?utm

[19] Ministry of Foreign Affairs People's Republic of China Global Development Initiative – Building on 2030 SDGs for Stronger, Greener and Healthier Global Development (Concept Paper). Accessed 30.09.2025. https://www.mfa.gov.cn/eng./zy/jj/GDI_140002/wj/202406/P020240606606193448267.pdf

[20] Vieira FS, Benevides RPS. Os impactos do novo regime fiscal para o financiamento do Sistema Único de Saúde e para a efetivação do direito à saúde no Brasil. [The impacts of the new tax regime on the financing of the Unified Health System and the realization of the right to health in Brazil.] Nota Técnica 28. Brasília: IPEA; 2016. (In Portuguese). Accessed 30.09.2025. http://repositorio.ipea.gov.br/handle/11058/7270

[21] Fundação Oswaldo Cruz (Fiocruz). Relatório de Atividades 2022: Inovação e Produção para a Saúde Pública [2022 Activity Report: Innovation and Production for Public Health]. 2022. (In Portuguese). https://fiocruz.br/relatorios-anuais?utm

future cooperation should aim for deeper integration – moving beyond technology access to co-ownership of production platforms. Joint ventures in mRNA vaccines, viral vector technologies, and biosimilars could enable Brazil and China to jointly develop vaccines for dengue, Zika, and leishmaniasis–diseases that disproportionately affect populations across Latin America, Africa, and Asia.

To achieve this, both countries must invest in binational research and manufacturing hubs. A proposed Brazil–China Health Technology Fund, co-financed by BNDES and Chinese development agencies such as the Silk Road Fund or the China International Development Cooperation Agency, could support such initiatives. These hubs would not only enhance regional preparedness but also serve as training grounds for a new generation of scientists and engineers. As Massuda et al. warned in The Lancet, political shifts and fiscal austerity pose significant threats to the continuity of SUS, underscoring the need for long-term, cross-administration commitments to health innovation [12].

Beyond vaccines, cooperation can extend to digital health and artificial intelligence. China leads in artificial intelligence-driven diagnostics, telemedicine platforms, and smart hospital systems, while Brazil has developed a robust primary care network through the Estratégia Saúde da Família.

By integrating Chinese technological infrastructure with Brazilian clinical data and regulatory expertise, the two countries can co-develop artificial intelligence models for disease prediction, chronic disease management, and early outbreak detection. Federated learning frameworks – where AI is trained across hospitals without sharing raw patient data–could ensure privacy compliance while enabling large-scale model development. Moreover, China's experience with Special Economic Zones offers a valuable model for regional industrial development. Just as Shenzhen and Shanghai became centers of technological innovation through state-led investment and policy incentives, Brazil could establish Special Health Innovation Zones in the North, Northeast, and Center-West[22,23].

These zones would combine public research institutions, private firms, and digital infrastructure to produce context-specific solutions–such as low-cost diagnostic devices for rural clinics or solar-powered telehealth units for remote Amazonian communities. In this way, health innovation becomes a tool for territorial equity, breaking the historical concentration of technological capacity in the Southeast and South.

Capacity building and cultural diplomacy are equally essential. Brazil and China should launch joint fellowship programs for engineers, regulators, and data scientists, fostering long-term epistemic communities. As Daniel Veras (2023) observes, "Brazilian corporate culture values direct communication, while Chinese business environments rely on implicit cues and hierarchical deference" [10, 17]. Recognizing these differences is not a barrier but a prerequisite for effective collaboration. Training programs that address language, negotiation styles, and institutional norms can reduce friction and enhance trust.

At the multilateral level, Brazil and China can strengthen their leadership within BRICS and the Forum on China–The Community of Latin American and Caribbean States Cooperation. The BRICS Vaccine R&D Center, for instance, could be expanded to include a Latin American node

[22] Vianna Sobrinho L. Saúde e inteligência artificial: o que podemos aprender com a China [Health and artificial intelligence: what can we learn from China.]. São Paulo: Hucitec Publishing; 2024. (In Portuguese). Accessed 30.09.2025. https://outraspalavras.net/tecnologiaemdisputa/saude-e-ia-o-que-podemos-aprender-com-a-china/

[23] Banco Nacional de Desenvolvimento Econômico e Social (BNDES). BNDES and CEXIM sign agreement to strengthen co-investments and cooperation between Brazil and China Rio de Janeiro; Feb 19, 2025 Accessed 30.09.2025. https://www.bndes.gov.br/SiteBNDES/bndes/bndes_en/conteudos/noticia/BNDES-and-CEXIM-sign-agreement-to-strengthen-co-investments-and-cooperation-between-Brazil-and-China/

hosted by Fiocruz or Butantan, with China providing technical support[24]. Both nations should also advocate for a BRICS Health Technology Pool, where patents, data, and manufacturing know-how are shared among member states to ensure equitable access during health emergencies. Such initiatives would reinforce the principle that health innovation should serve humanity, not just markets.

Ultimately, the success of Brazil–China health cooperation will depend on the quality of its governance. Agreements must be transparent, with clear provisions for IP sharing, local patent filings, and compulsory licensing rights under ANVISA oversight. Joint steering committees, composed of representatives from health ministries, regulatory agencies, and research institutions, should monitor progress and ensure accountability. Without such mechanisms, the risk remains that Brazil will remain a site of final assembly, while China retains control over high-value components and design.

This partnership, therefore, is not merely about trade or technology transfer. It is about reimagining the role of the Global South in global health governance–moving from passive recipients to active co-architects of innovation. By aligning their development agendas, investing in shared infrastructure, and prioritizing equity over extraction, Brazil and China can build a health cooperation model that is not only strategic but also morally transformative.

Challenges and risks in Brazil–China health cooperation

The strategic potential of Brazil–China health cooperation is counterbalanced by a complex matrix of structural, institutional, and geopolitical challenges. While the partnership offers a pathway to technological sovereignty and industrial upgrading, its success depends on the ability of both nations to navigate profound asymmetries, ensure equitable knowledge transfer, and resist external pressures that threaten the autonomy of their collaboration[25,26]. These challenges are not isolated but interconnected, forming an integrative matrix of biotechnological industrial constraints that must be addressed through coordinated policy, transparent governance, and long-term strategic planning.

At the core of this matrix is the asymmetry in technological capabilities. China has emerged as a global leader in biomanufacturing, artificial intelligence, and medical device innovation, supported by decades of state-led investment and integrated supply chains. In contrast, Brazil, despite its strong public research institutions such as Fiocruz and Butantan, faces structural limitations in scaling innovation into industrial production. Its health technology sector remains fragmented, undercapitalized, and heavily dependent on imported inputs. This imbalance risks reproducing a core-periphery dynamic, where Brazil functions primarily as a market for Chinese technologies or a site for final assembly, while China retains control over high-value components such as software algorithms, bioprocess design, and intellectual property[27]. Without deliberate policy interventions to build absorptive capacity and co-ownership models, collaboration may deepen dependency rather than foster sovereignty.

[24] BRICS nations launch vaccine R&D center. Accessed 30.09.2025. https://english.news.cn/20220323/39c4aab5da0b4f30ad28ad738d838162/c.html?utm

[25] Secretaria de Comércio Exterior (SECEX), Ministério da Economia, Brazil. Estatísticas de Comércio Exterior de Produtos Farmacêuticos [Secretariat of Foreign Trade (SECEX), Ministry of Economy, Brazil. Foreign Trade Statistics of Pharmaceutical Products]. 2023. (In Portuguese). Accessed 30.09.2025. https://www.gov.br/mdic/pt-br/assuntos/comercio-exterior/estatisticas

[26] Fundação Oswaldo Cruz (Fiocruz). Relatório de Atividades 2022: Inovação e Produção para a Saúde Pública [2022 Activity Report: Innovation and Production for Public Health]. 2022. (In Portuguese). https://fiocruz.br/relatorios-anuais?utm

[27] World Health Organization. mRNA Technology Transfer (mRNA TT) Programme. Accessed 30.09.2025. https://www.who.int/initiatives/mrna-technology-transfer-(mrna-tt)-programme

This concern is compounded by intellectual property governance. Chinese firms and research institutions often operate under proprietary models that prioritize commercial advantage and strategic interests, which can limit transparency and restrict access to source code, biological materials, or process know-how. Brazil, as a country committed to public health and open science, must navigate this landscape carefully. Overly restrictive IP agreements could undermine the very goals of equity and accessibility that underpin the SUS. There is a risk that co-developed technologies–financed in part by public funds–could become locked behind patents controlled by foreign entities, limiting local adaptation, repair, or generic production. To prevent this, bilateral agreements should incorporate equitable intellectual property clauses, such as royalty-free licensing for public health use, open-access provisions for non-commercial research, and mandatory local patent filings that allow for compulsory licensing under ANVISA oversight.

Another critical challenge lies in the political and economic volatility of both countries. In Brazil, shifts in federal administration have historically led to abrupt changes in science, technology, and industrial policy[28] [12, 13]. The reestablishment of institutions like the MCTI and BNDES under President Lula's government marks a positive reversal after years of underfunding, but the fragility of such gains remains a concern. Budget volatility, bureaucratic inertia, and weak interministerial coordination can delay or derail joint initiatives, particularly those requiring sustained investment over multiple electoral cycles. China, while more institutionally stable, operates under a centralized governance model whose foreign engagements are often aligned with broader geopolitical objectives. This raises questions about the consistency and long-term commitment of Chinese partners in projects that may not yield immediate diplomatic or economic returns.

To overcome these obstacles, cooperation must be grounded in transparent, legally robust, and mutually beneficial agreements. Past collaborations, such as the Butantan-Sinovac arrangement, were conducted under emergency conditions with limited public disclosure, raising concerns about accountability, pricing, and technology access. Future partnerships must be governed by clear contracts that define ownership, data rights, production quotas, and pathways for local capacity building. Such agreements should be subject to parliamentary oversight, civil society engagement, and independent evaluation. Mechanisms for joint monitoring–such as binational steering committees with representation from scientific, regulatory, and public health bodies–can help ensure that projects remain aligned with national development goals.

Beyond bilateral dynamics, the partnership operates within a broader geopolitical contest for influence in Latin America, where the United States of America (USA) continues to exert significant diplomatic and economic pressure. The USA government has long viewed deepening ties between Latin American nations and China as a strategic challenge to its regional dominance [8, 9, 18]. This has manifested in efforts to dissuade countries from engaging with Chinese technology providers – particularly in sensitive sectors such as telecommunications, infrastructure, and health. Brazil, as a relatively large but economically vulnerable middle power, is particularly susceptible to such pressures. USA diplomacy may seek to portray China as an unreliable or opaque partner, framing cooperation as a threat to data security, regulatory integrity, or democratic values.

This geopolitical dimension cannot be ignored. It represents not merely a policy difference, but a structural effort to maintain technological

[28] Vieira FS, Benevides RPS. Os impactos do novo regime fiscal para o financiamento do Sistema Único de Saúde e para a efetivação do direito à saúde no Brasil. [The impacts of the new tax regime on the financing of the Unified Health System and the realization of the right to health in Brazil.] Nota Técnica 28. Brasília: IPEA; 2016. (In Portuguese). Accessed 30.09.2025. http://repositorio.ipea.gov.br/handle/11058/7270

and economic hegemony by limiting the autonomy of Global South nations. By discouraging South-South alliances, the USA aims to preserve a global order in which innovation, production, and standards are predominantly shaped in the Global North. For Brazil, resisting this pressure requires a firm commitment to strategic sovereignty – the ability to choose partners based on national interest, not external coercion.

However, this does not necessitate confrontation. Brazil can pursue a multi-aligned foreign policy, maintaining constructive relations with multiple powers while asserting its right to collaborate with any nation that respects its developmental priorities. In health, this means engaging with China on terms that prioritize transparency, reciprocity, and public benefit – without falling into dependency or inviting destabilizing backlash[29].

The challenges facing Brazil–China health cooperation are substantial, but not insurmountable. They demand not retreat, but foresight: careful design of partnerships, strong institutional safeguards, and a clear-eyed understanding of the global power dynamics at play. By acknowledging asymmetries, protecting public interests, and resisting external coercion, Brazil can engage with China in a way that strengthens its own sovereignty, advances scientific progress, and contributes to a more equitable global health order.

Conclusion and recommendations

The health cooperation between Brazil and China stands at a strategic inflection point. What began as a transactional relationship – anchored in trade and emergency procurement – is now poised to evolve into a model of South-South co-innovation, where shared challenges give rise to shared solutions. The pandemic revealed both the fragility of Brazil's technological dependency and the potential of its public health institutions, from Fiocruz to Butantan, to scale production under international partnership. Yet, as the Butantan-Sinovac experience demonstrated, technology access is not technological sovereignty. Without mechanisms for equitable knowledge transfer, local ownership, and industrial integration, collaboration risks reinforcing asymmetries rather than overcoming them.

Brazil's return to a developmental state under Lula's neoindustrialization agenda creates a historic opportunity to reposition health as a core axis of national strategy–not merely a social right, but a driver of technological upgrading, regional equity, and global influence. The SUS, with its universal reach and institutional depth, can serve as the anchor for a new innovation ecosystem, one that links research, production, and care in a cohesive national project. To realize this vision, Brazil must move beyond reactive policymaking and fragmented initiatives toward a long-term, cross-sectoral strategy that integrates health with industrial, scientific, and foreign policy.

China, for its part, offers not only a market or a supplier, but a strategic partner in technological diffusion. Its experience with Special Economic Zones, state-led scaling of biomanufacturing, and digital health integration provides valuable lessons for Brazil's own efforts to decentralize innovation and overcome the concentration of capacity in the Southeast. A Brazil–China Health Technology Fund, joint research centers, and regional production hubs – particularly in the North, Northeast, and Center-West–could transform health cooperation into a vehicle for territorial development and inclusion.

Yet, this partnership does not unfold in a neutral world. Geopolitical pressures, particularly from the United States, seek to constrain Brazil's autonomy and limit its engagement with China. In this context, the choice is not between alignment and isolation, but between dependency

[29] Fundação Oswaldo Cruz (Fiocruz). Relatório de Atividades 2022: Inovação e Produção para a Saúde Pública [2022 Activity Report: Innovation and Production for Public Health]. 2022. (In Portuguese). https://fiocruz.br/relatorios-anuais?utm

and sovereignty. Brazil's path forward lies in a multi-aligned, assertive foreign policy – one that leverages its strategic position to secure equitable agreements, protect public interests, and contribute to a more just global health order.

The material conditions for such a transformation are already emerging: in the revival of MCTI and BNDES, in the growing recognition of health as a security imperative, and in the proven capacity of Brazilian institutions to innovate under pressure[30–32]. As Marx observed, humanity only raises the problems it can solve, and the problem of health sovereignty arises precisely when the conditions for its solution begin to appear. The challenge now is not to imagine a new future, but to act decisively within the present–to build, together, a health cooperation that is not only strategic, but fair.

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[31] Ministério da Ciência, Tecnologia e Inovação (MCTI). Plano Estratégico do Ministério da Ciência, Tecnologia e Inovação 2023–2026 [Ministry of Science, Technology and Innovation. Strategic Plan of the Ministry of Science, Technology and Innovation 2023–2026]. 2023. (In Portuguese). Accessed 30.09.2025. https://antigo.mctic.gov.br/mctic/opencms/ciencia/SEPED/Publicacoes/ENCTI/PlanosDeAcao.html

[32] Fundação Oswaldo Cruz (Fiocruz). Relatório de Atividades 2022: Inovação e Produção para a Saúde Pública [2022 Activity Report: Innovation and Production for Public Health]. 2022. (In Portuguese). https://fiocruz.br/relatorios-anuais?utm

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REVIEW

Five years of the Genomas Brasil Program: advancing genomics and precision health within Brazil's unified health system

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ABSTRACT

This study aimed to assess the implementation of the Brazilian National Program for Genomics and Precision Public Health (GenBR) over its initial five years, identifying key achievements, challenges, and lessons for integrating genomics into public health systems in low- and middle-income countries (LMICs). Established by Ministerial Ordinance GM/MS No. 1,949 on August 4, 2020, GenBR aims to lay the foundation for genomics and precision health within Brazil's Unified Health System. Its primary goals include advancing science and technology countrywide, fostering the development of a national genomics industry, and conducting proof-of-concept studies to assess the practical application of precision health in public healthcare. By August 2025, over 250 research projects had been funded in 19 of the country's 27 federative units, across a range of areas, including oncological, rare, cardiovascular, infectious, neurological, and non-communicable diseases, as well as population genomics and precision health. Financial investments had exceeded BRL 1 billion, funding the sequencing of 67,000 samples. Nine large-scale genomics research projects associated with the Program have contributed to generating whole-genome data from 45,910 individuals. Moreover, four public calls have selected 209 research projects led by science and technology institutions located across all regions of Brazil. GenBR offers key lessons for LMICs seeking to implement genomics in public health, particularly in

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contexts marked by population diversity, infrastructure asymmetries, and fiscal constraints. Findings highlight the importance of sustained political commitment, inclusive governance, and long-term planning for building national genomic capacity and advancing health equity.

Key Words: genomics; precision medicine; Brazil; national health programs; databases, genetic; ethics, research

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Introduction

From the late 20th century onward, Brazil underwent profound demographic and epidemiological transformations that brought new demands to its public health system and research agenda. Declining fertility and rising life expectancy led to rapid population aging, while infectious disease mortality fell sharply due to vaccination, sanitation, and primary care improvements [1]. Non-communicable diseases became dominant, exposing the need for more personalized, preventive, and data-driven health strategies within the Unified Health System (In Portuguese: Sistema Único de Saúde, SUS) [2].

Despite major advances in genomics and precision medicine globally during the first two decades of the 21st century, Brazil lacked a coordinated national framework to translate these innovations into practice within SUS. The Brazilian population, marked by extensive genetic admixture and rich sociocultural diversity, has been significantly underrepresented in international genomic databases, which remain predominantly composed of individuals of European ancestry [3]. This lack of representation has limited the relevance and applicability of emerging diagnostic, predictive, and therapeutic tools to the Brazilian context. These limitations were further compounded by the absence of a national infrastructure for high-throughput genomic sequencing, a shortage of professionals trained in genomics and data science, and insufficient investment in health innovation ecosystems essential for advancing precision health initiatives [4].

In response to these intersecting challenges, the Brazilian Ministry of Health (MoH) launched in 2020 the National Genomics and Precision Public Health Program, also known as Genomas Brasil (In Portuguese: Programa Nacional de Genômica e Saúde Pública de Precisão, henceforth GenBR). As a strategic policy initiative, the Program aims to advance genomic and precision health, focusing on equity, scientific sovereignty, and innovation within the SUS.

GenBR aligns with broader national development frameworks, including the National Policy for Science, Technology, and Innovation in Health (In Portuguese: Política Nacional de Ciência, Tecnologia e Inovação em Saúde)[1]. More recently, the Program underwent a redesign considering the New Brazilian Industry strategy and the National Strategy

[1] Brasil. Ministry of Health. Secretariat of Science, Technology and Strategic Inputs. Department of Science and Technology. [National Policy on Science, Technology and Innovation in Health]. (In Portuguese). 2nd ed. Publishing House of the Ministry of Health; 2008:44. Accessed 22.10.2025. https://bvsms.saude.gov.br/bvs/publicacoes/Politica_Portugues.pdf

for the Development of the Health Economic-Industrial Complex (In Portuguese: Complexo Econômico-Industrial da Saúde, CEIS), established by Decree No. 11,715/2023.

This study aimed to assess the implementation of GenBR over its initial five years, identifying key achievements, challenges, and lessons for integrating genomics into public health systems in low- and middle-income countries (LMICs).

Materials and methods

This narrative review analyzes the five-year implementation of GenBR, covering the period from its inception in August 2020 to August 2025. The bibliographic search covered this timeframe, and data analysis applied Bardin's content analysis technique[2].

In Stage 1 (pre-analysis), the authors identified and selected relevant documents and scientific articles from peer-reviewed journal databases, institutional websites, and official federal government publications. They searched PubMed/MEDLINE without restrictions on language or publication date, using the following keywords: "genomics", "precision health", "personalized medicine", "genome sequencing", and "Genomas Brasil". In Stage 2 (material exploration), the research team reviewed selected documents and extracted relevant information to support the development of analytical categories. Finally, in Stage 3 (data processing and interpretation), they critically analyzed and synthesized the content within each category, with a focus on the most significant findings related to the Program's implementation and its broader policy context.

Results

Historical context

Brazil is geographically and socioeconomically divided into five major regions (North, Northeast, Central-West, Southeast, and South), which are highly heterogeneous with respect to social, economic, environmental, and demographic factors [5]. With an estimated population of 212.6 million, Brazil is the most genetically admixed country in the world [3]. Due to European colonization between the 15th and 20th centuries, Brazil received millions of European immigrants and, through the transatlantic slave trade, millions of forcibly displaced Africans from diverse ethnic backgrounds[3]. Estimates suggest that European contact led to the decimation of over 10 million Indigenous people, with effective population declines ranging from 83% to 98%, depending on the region [6].

External and internal migration processes have shaped Brazil's demographic distribution. Population is concentrated in the Southeast region (41.7%), followed by the Northeast (26.9%), and South (14.6%) regions. African ancestry is more prevalent in the Northeast, while Indigenous ancestry is more prominent in the North. Moreover, densely populated urban centers, such as São Paulo city, exhibit significant ancestral diversity [7]. In this context, whole-genome sequencing (WGS) of individuals from Brazil's highly admixed population provides a unique opportunity to explore the relationship between genetic variation and health outcomes [8].

[2] Bardin L. Análise de Conteúdo [Content Analysis]. (In Portuguese). Editions 70; 2015. Accessed 22.10.2025. https://madmunifacs.wordpress.com/wp-content/uploads/2016/08/anc3a1lise-de-contec3bado-laurence-bardin.pdf

[3] Salzano FM, Bortolini MC. The Evolution and Genetics of Latin American Populations. Cambridge University Press; 2002. Accessed 22.10.2025. https://www.cambridge.org/core/books/evolution-and-genetics-of-latin-american-populations/FF88CBA48DD870467BD3E379039E41A8

Advances in genomic sequencing, initiated by the landmark Human Genome Project [9], have expanded scientific understanding of human genetic diversity and encouraged the development of numerous national and international initiatives. Recognizing the potential of personalized healthcare and the development of therapeutics aligned with population-specific genetic profiles, many high-income countries have invested heavily in national genomics programs and their clinical implementation. At the forefront of these efforts, the United Kingdom's 100,000 Genomes Project [10], led by the National Health Service, and the United States' All of Us Research Program [11], coordinated by the National Institutes of Health, have consolidated the clinical use of genomics by establishing national genomic service infrastructures and shared databases accessible to academia and industry. Both initiatives have become global benchmarks, inspiring similar programs worldwide, including Genomic Medicine France [12], the Qatar Genome Program [13], Australian Genomics [14], the Saudi Human Genome Program [15], the Chinese Millionome Database Project [16], and FinnGen [17], among others.

In the Global South, genomic initiatives are diverse and context-specific, each aiming to address the unique health needs and challenges of their regions [18]. Pioneer in Brazil, the Brazilian Initiative on Precision Medicine (BIPMed), established in 2015, aimed to facilitate precision medicine implementation through collaborative data sharing and stakeholder engagement. However, BIPMed was a local initiative that primarily involved participants from Brazil's Southeast region, and employed whole-exome sequencing and single nucleotide polymorphism arrays rather than WGS [19].

These efforts are driven by the potential to transform the diagnosis, treatment, and management of genetic conditions, enhancing disease risk mapping across varied populations and identifying novel genetic targets for therapeutic development [20, 21].

The underrepresentation of diverse ancestries remains a major barrier to achieving equitable outcomes in genomic research and medicine. Most genomic data in databases and genome-wide association studies (GWAS) are of European ancestry, corresponding to nearly 95% in the GWAS Catalog [22, 23]. This imbalance reduces the accuracy of variant interpretation in individuals of non-European descent, leading to inconclusive results, a higher prevalence of variants of uncertain significance, and decreased predictive performance of polygenic risk scores [18, 21].

Program Design and Governance

In Brazil, several factors have enabled the development of a long-term, sustainable public policy to advance precision public health, such as the presence of leading research groups in genomics and advanced therapy medicinal products (ATMPs), the substantial decline in genomic sequencing costs, the growing expertise in managing large-scale health and genomic data, and the resilience of the public healthcare system.

GenBR brought together multiple stakeholders to establish a national strategy aimed at strengthening genomic and precision health research while promoting its practical application within SUS. This network include participants from different sectors within the MoH; the Ministry of Science, Technology and Innovation; referral hospitals participating in the SUS Institutional Development Support Program (In Portuguese: Programa de Apoio ao Desenvolvimento Institucional do Sistema Único de Saúde, PROADI-SUS); academic institutions; science, technology and innovation institutions; Brazilian scientific societies; professional councils; ethics

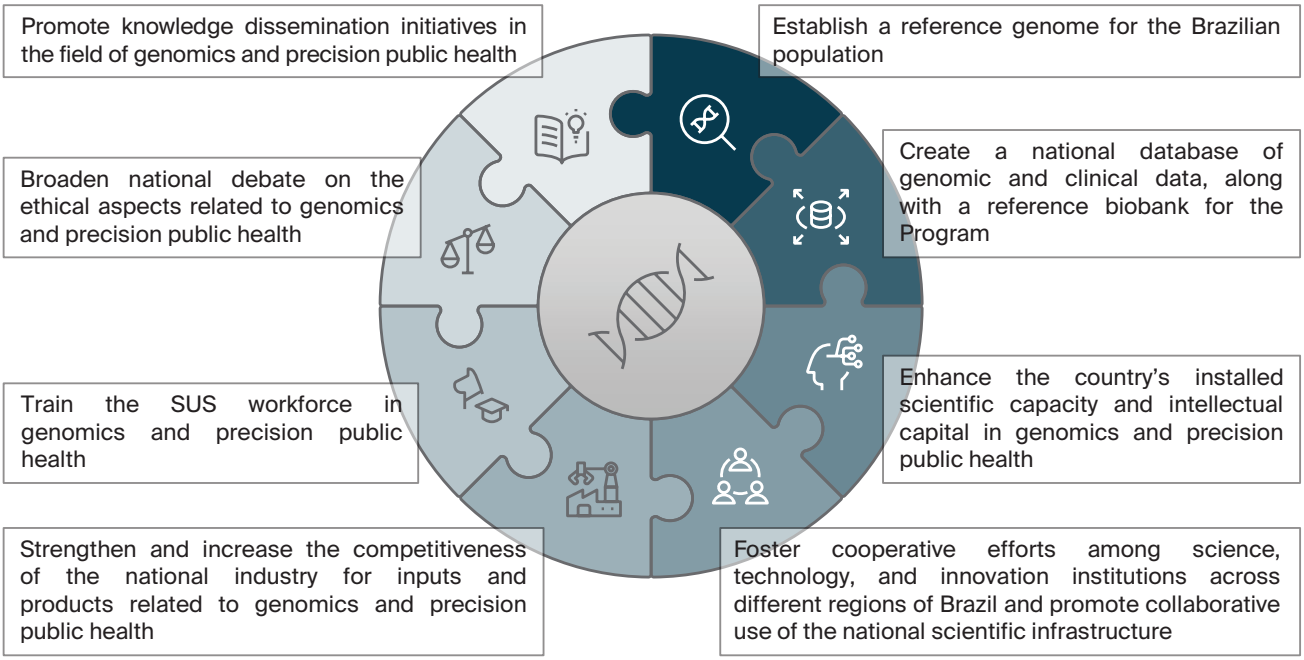
and regulatory bodies; research funding agencies; and the Pan American Health Organization of the World Health Organization (PAHO/WHO), among others.

Initially established by Ministerial Ordinance GM/MS No. 1,949 of August 4, 2020, GenBR aims to lay the foundation for genomics and precision health within SUS. Its primary goals include advancing science and technology countrywide, fostering the development of a national genomics industry, and conducting proof-of-concept studies to assess the practical application of precision health in public healthcare. To this end, the Program aimed to: develop a Brazilian reference genome; establish a national database of genomic and clinical data; strengthen scientific capacity and human capital in genomics and precision health; promote domestic production of genomic inputs and technologies; and train SUS professionals in precision health and genomics. GenBR is guided by principles such as evidence-based clinical practice, informed consent and participant autonomy, the right to health-related information, ethical standards and human dignity, non-discrimination, data confidentiality, and ethical, legal, and social responsibility for the knowledge generated.

Almost five years later, the MoH decided to expanded and updated GenBR through Ordinance GM/MS No. 6,581 of January 29, 2025, introducing four additional goals: disseminating information to the public, encouraging research focused on the genetic diversity of the Brazilian population, strengthening innovation and production capabilities, and ensuring the continuous training of healthcare professionals. The MoH also broadened GenBR's objectives to include the creation of a national biobank, promotion of collaboration among science, technology, and innovation institutions, expansion of shared scientific infrastructure, enhancement of ethical debate around genomics and precision public health, and fostering of knowledge translation. Figure 1 illustrates GenBR's strategic pillars and updated objectives.

The Ordinance GM/MS No. 6,581/2025 also established a new governance structure for the Program, composed of three primary

FIG. 1. Objectives of the Genomas Brasil Program according to Ordinance GM/MS No. 6,581/2025



levels: management level, led by the Secretariat for Science, Technology and Innovation in Health of the MoH (In Portuguese: Secretaria de Ciência, Tecnologia e Inovação em Saúde do Ministério da Saúde, SCTIE/MS); coordination level, managed by the Department of Science and Technology (In Portuguese: Departamento de Ciência e Tecnologia da SCTIE/MS, Decit/ SCTIE/MS) through the Executive Secretariat; and technical level, comprising the Technical Advisory Board (CTA-GenBR) and supporting thematic working groups. The CTA-GenBR is responsible for contributing to the formulation, review, and implementation of actions and strategies related to the operationalization of GenBR; supporting the execution and monitoring of the Program's activities; and proposing priority topics for investment in scientific research focused on genomics and precision public health. The MoH also revised the Program's official name to explicitly incorporate the term Precision Public Health, underscoring its commitment to population-level impact through targeted public policies.

GenBR builds its structure around six interconnected pillars that guide strategic actions and engage multiple stakeholders. Axis I – Processes and Regulations encompasses operational milestones, regulatory instruments, and technical guidelines, while Axis II – Scientific Capacity Building focuses on strengthening the national research infrastructure through public calls, targeted research commissions, and tax incentive contracts. It serves as the core of GenBR's research agenda, generating scientific evidence to support the proof of concept for implementing precision health within the SUS. Axis III – Industrial Development addresses technological dependence and production vulnerabilities by fostering national capacity in the precision health sector. Axis IV – Human Capital Development promotes the training of researchers in precision health, aiming to build and retain national expertise. Finally, Axis V – Workforce focuses on establishing multiprofessional networks and residency programs in genetics and genetic counseling, whereas Axis VI – Knowledge Dissemination encompasses initiatives to share scientific and technological advances with the academic community, health professionals, and the broader society.

Under Strategic Axis I, the Program's governance framework is structured to advance the internal regulatory ecosystem through the formulation of policies and guidelines. Key instruments under development include: the Intellectual Property Protection Policy, which governs rights over intellectual creations; the Policy on Scientific Publications and Dissemination, aimed at ensuring open access and transparency; the Technical Guideline for the Generation of Genomic and Phenotypic Data, focused on standardization and data quality; the Ethics Commitment Policy for research conducted under GenBR; and the Policy on Genomic Data Security, Access, and Use, which regulates access to the Program's national genomic and clinical database. Together, these instruments are designed to ensure the standardization, transparency, and harmonization of research practices, enabling consistent, auditable management, storage, and data sharing protocols.

Alignment with national and international health policies and strategies

In Brazil, the National Policy for Science, Technology, and Innovation in Health aims to promote sustainable national development by advancing scientific and technological knowledge that addresses the country's economic, social, cultural, and political priorities. GenBR supports the implementation of this policy by engaging in various phases

of the genomic research and application continuum, including large-scale sequencing and ATMPs. The program strategically targets key areas of public health, striking a balance between state-driven actions and independent scientific initiatives to ensure relevance, responsiveness, and inclusivity. Additionally, it enhances the societal value of genomics by producing data to inform evidence-based public health policies and by promoting participatory and transparent processes among stakeholders.

The Program aligns with the National Strategy for the Development of the CEIS, established by Decree No. 11,715/2023. Conceptually, the CEIS is a systemic space that integrates industrial and scientific subsystems with public health, reflecting a theoretical and political perspective that views economic development as intrinsically linked to the social and technological advancement of SUS [24]. This strategy aims to strengthen Brazil's productive and technological capacities in health, reducing the SUS reliance on foreign technologies and expanding access to essential services and products. It encompasses sectors such as pharmaceuticals, biotechnologies, and medical devices. GenBR contributes to this strategy by reinforcing the national genomic infrastructure and enabling the development of biotechnology products and services based on domestic genomic data [25]. These actions can reduce import dependency and promote technological autonomy.

GenBR also aligns with the National Policy for the Comprehensive Care of People with Rare Diseases (In Portuguese: Política Nacional de Atenção Integral às Pessoas com Doenças Raras), established under Ordinance No. 199/2014. This policy aims to ensure timely access to diagnostic and therapeutic services for individuals affected by rare diseases within the SUS. The establishment of a Brazilian reference genome and a national repository of genomic and clinical data will allow the detection of disease-associated variants across diverse ancestral groups, helping to reduce diagnostic gaps and health disparities.

It is noteworthy the pivotal role played by Health Technology Assessment (HTA) in this process, serving as a bridge between scientific innovation and its safe and effective adoption within the public health system. HTA enables the evaluation not only of the clinical efficacy of personalized interventions but also of their cost-effectiveness and budgetary impact [26]. The use of biomarkers and genomics requires more robust and adaptable HTA protocols to keep pace with rapid technological advancements [27]. Consequently, there is a pressing need to strengthen the institutional and technical capacities of the National Committee for Health Technology Incorporation in SUS (In Portuguese: Comissão Nacional de Incorporação de Tecnologias no SUS in Portuguese, Conitec), particularly in developing specific assessment criteria for emerging precision health technologies that take into account the genetic diversity of the Brazilian population.

In addition, public health surveillance must be expanded to encompass genomic surveillance, pharmacogenomics, and molecular epidemiology, allowing for the monitoring of population-level risk patterns and treatment responses across subgroups [28]. In Brazil, pharmacogenomic surveillance has progressed through localized initiatives that combine genomic data collection with active monitoring of adverse drug reactions, contributing to improved prescribing safety within SUS [29]. However, LMICs continue to face challenges such as limited infrastructure, lack of technological tools for population-level monitoring, and the exclusion of population-specific variants from international guidelines [28].

At the international level, GenBR plays a critical role in promoting genomic equity by generating data that represent the genetic diversity of Brazil's admixed population, thereby contributing to the global effort

to include populations from the Global South in genomic research. By addressing this historical underrepresentation, the Program advances both scientific knowledge and equitable access to the benefits of precision medicine. Its commitments are in line with several United Nations Sustainable Development Goals (SDGs), including SDG 10 (reduction of inequalities), SDG 3 (health and well-being through precision health), SDG 4 (training healthcare professionals in genomics), and SDG 9 (innovation and infrastructure development in science and technology).

In 2022, WHO issued a strategic document to promote equitable access to genomic technologies, with an emphasis on ethics, collaboration, and inclusion[4]. Building on this agenda, the PAHO/WHO, in partnership with Brazil's MoH, convened a regional meeting in Brasília in 2024[5]. The event aimed to disseminate the WHO's strategy on genomics, exchange experiences and best practices, identify implementation barriers, and encourage regional cooperation. Outcomes included proposals to strengthen the genomics ecosystem in the Americas through resource mapping, creation of technical working groups, targeted communication strategies, sustainable financing, ethical data sharing, and capacity building using digital platforms.

Program Implementation and Outcomes

During its initial years of implementation, GenBR operated amid the COVID-19 pandemic, which exposed Brazil's high dependency on imported molecular diagnostics and highlighted the urgency of strengthening domestic technological capabilities. As part of the national response, the Program supported the Oswaldo Cruz Foundation (In Portuguese: Fundação Oswaldo Cruz, Fiocruz) genomic surveillance network, which conducted representative sampling across all Brazilian regions to monitor SARS-CoV-2. This initiative involved partnerships with state public health laboratories, the General Coordination of Public Health Laboratories of the Secretariat for Health and Environmental Surveillance, and Decit/SCTIE/MS, facilitating the timely identification of variants and subvariants.

Considering these contributions, GenBR advanced its institutional partnerships, culminating in a Technical Cooperation Agreement between Decit/SCTIE/MS and Fiocruz. This agreement supported the launch of Public Call No. 2/2023 of the Inova initiative – Genome Sequencing, which aimed to expand genome sequencing services for humans and microorganisms of public health or biotechnological interest.

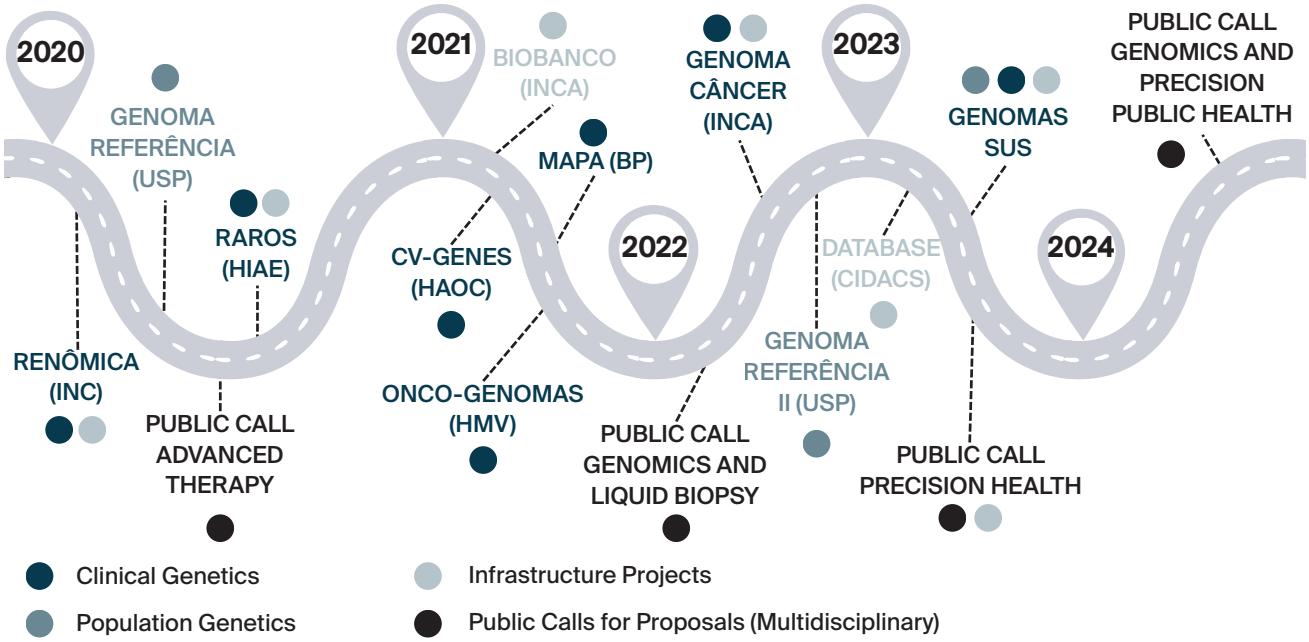
One of the key objectives of GenBR is to investigate the complexity of Brazil's admixed population by sequencing the whole genomes of 100,000 individuals, sampled in proportion to the population distribution across the country's five macro-regions. By August 2025, over 250 research projects had been funded across a range of areas, including oncological, rare, cardiovascular, infectious, neurological, and non-communicable diseases, as well as population genomics and precision health. Regarding gender equity, 56% of principal investigators are men and 44% are women.

Figure 2 presents a timeline of GenBR's major funded initiatives. By August 2025, financial investments had exceeded 1 billion Brazilian reals (BRL), supporting the sequencing of 67,000 samples. The MoH funded these projects either through direct contracting or via the PROADI-SUS, in which the MoH partners with selected hospitals to strengthen

[4] World Health Organization. Accelerating access to genomics for global health: promotion, implementation, collaboration and ethical, legal and social issues. WHO; 2022:46. Accessed 22.10.2205. https://www.who.int/publications/i/item/9789240052857

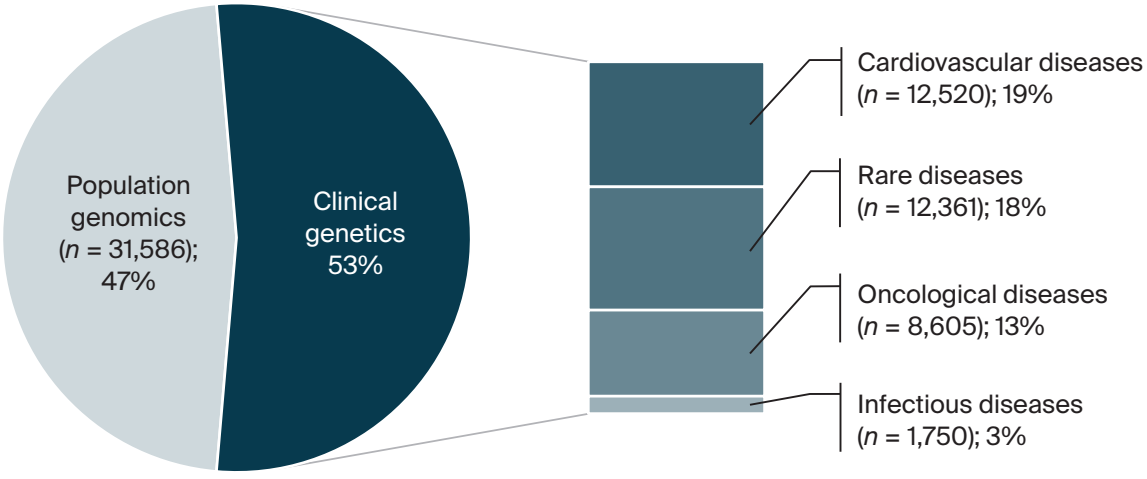
[5] Pan American Health Organization. Human genomics for health: Enhancing the impact of effective research. Report of the first regional meeting for the Americas. Brasília, 15–16 May 2024. PAHO; 2024:36. Accessed 22.10.2025. https://iris.paho.org/handle/10665.2/62584

FIG. 2. Timeline of key milestones and major projects of Genomas Brasil Program



Note: INC – National Institute of Cardiology (Instituto Nacional de Cardiologia); USP – University of São Paulo (Universidade de São Paulo); HIAE – Albert Einstein Israeli Hospital (Hospital Israelita Albert Einstein); INCA – National Cancer Institute (Instituto Nacional de Câncer); HAOC – Oswaldo Cruz German Hospital (Hospital Alemão Oswaldo Cruz); BP – Portuguese Beneficence Hospital (Beneficência Portuguesa); HMV – Moinhos de Vento Hospital (Hospital Moinhos de Vento); CIDACS – Center for Data and Knowledge Integration for Health (Centro de Integração de Dados e Conhecimentos para Saúde, Fiocruz Bahia); SUS – Unified Health System.

FIG. 3. Distribution of sequenced genomes funded by the Genomas Brasil Program according to research focus (updated in January 2025)



strategic initiatives within SUS. Nine large-scale genomics research projects associated with the Program have contributed to generating whole-genome data from 45,910 individuals. Among these, 4,427 (9.6%) are from the North, 8,103 (17.6%) from the Northeast, 24,743 (53.9%) from the Southeast, 6,899 (15.0%) from the South, and 1,738 (3.8%) from the Central-West region. Overall, 47% of the funded sequences are from population genomics projects, followed by studies focusing on cardiovascular diseases (19%) and rare diseases (18%) (Figure 3). The

remaining genomes required to reach the target of 100,000 are currently under negotiation, and full funding is expected to be secured by the end of 2025.

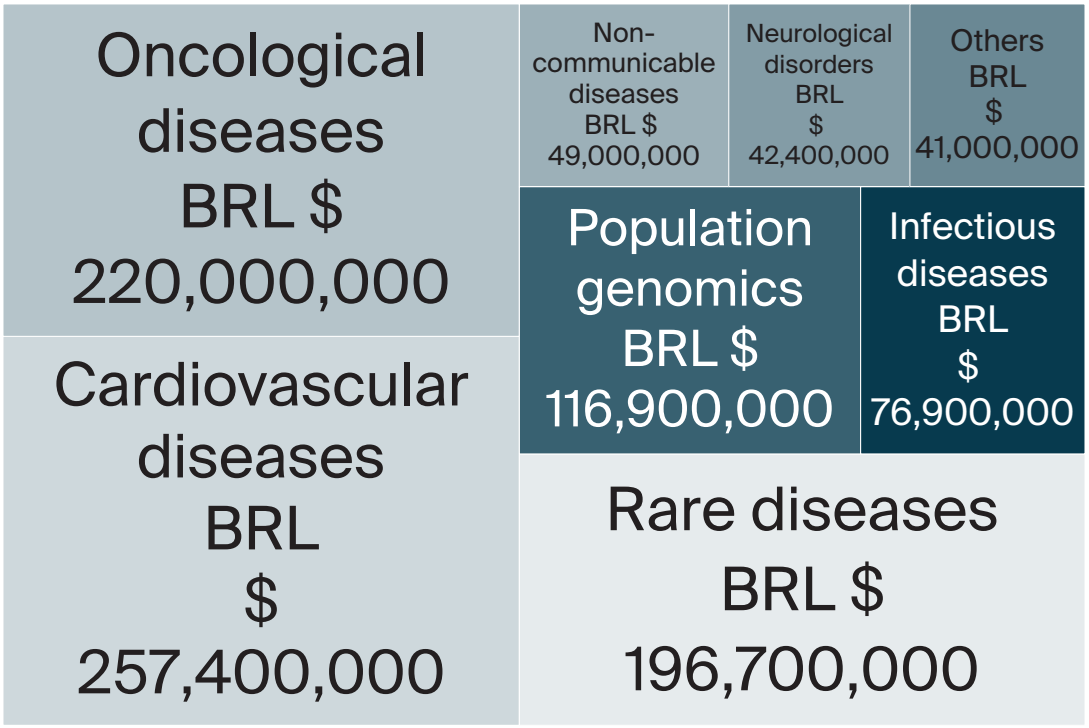
Figure 4 illustrates the allocation of financial resources across various health research domains. Cardiovascular diseases received the largest share of funding (257.4 million BRL), followed by oncological diseases (BRL 220 million) and rare diseases (BRL 196.7 million). Other areas of investment included population genomics (BRL 116.9 million) and infectious diseases (BRL 76.9 million). This distribution reflects national research priorities aimed at addressing high-burden diseases and advancing precision health strategies.

To date, 19 of the country's 27 federative units have received funding. Of the supported projects, 60% originate from the Southeast, 16% from the South, 14% from the Northeast, and 5% each from the North and Central-West regions. Nevertheless, research in genomics and precision health remains heavily concentrated in Brazil's Southeast region (Figure 5), consistent with long-standing national research patterns [30].

To address the challenge of expanding scientific excellence beyond established centers, the Program's updated Ordinance introduced measures to promote collaborative research networks. Additionally, beginning with the second Public Call, the MoH dedicated funding lines for early-career researchers (those who earned their PhD in the last decade) aiming to encourage research decentralization and reduce the dominance of long-established groups.

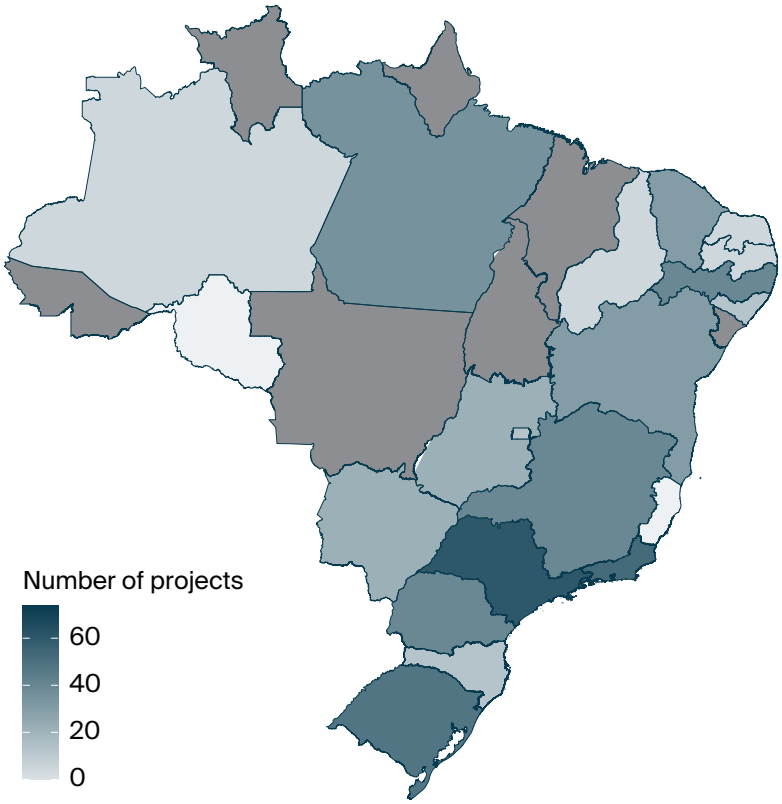
The large-scale sequencing initiatives supported by GenBR aim not only to investigate associations between genetic variation and health but also to generate extensive genomic, clinical, and sociodemographic data. To support the large volume of data generated and its translational potential

FIG. 4. Allocation of financial resources across strategic health areas within the Genomas Brasil Program



Note: BRL – Brazilian real.

FIG. 5. The number of research projects by Brazilian state



Note: The count is based on the location of the Science and Technology Institution to which the project coordinator is affiliated.

for SUS, the Program established partnerships among universities, research institutes, and centers of excellence. In 2021, the MoH launched a project in partnership with the National Cancer Institute (In Portuguese: Instituto Nacional de Câncer, INCA) to create the GenBR biobank. In parallel, the MoH hired the Center for Data and Knowledge Integration for Health (In Portuguese: Centro de Integração de Dados e Conhecimentos para a Saúde, CIDACS), part of Fiocruz/Bahia, to design the national genomic and clinical data repository (GenBRdb), which is now in its final planning stages.

The GenBRdb architecture will consist of three functional layers: a data storage repository; a management platform; and an analytical environment. Raw sequences, phenotypic data, and metadata will be transferred to regional repositories, with storage solutions optimized for each data type to enhance performance, resilience, and fault tolerance. The management layer will act as middleware, coordinating data flow between the repositories and the analytical environment while centralizing access control, user and project management, consent tracking, and providing audit and traceability services. The analytical layer will host a portfolio of bioinformatics and machine learning tools, deployed on both specialized and general-purpose cloud platforms, enabling researchers to perform advanced analyses on authorized datasets without direct access to the underlying storage infrastructure.

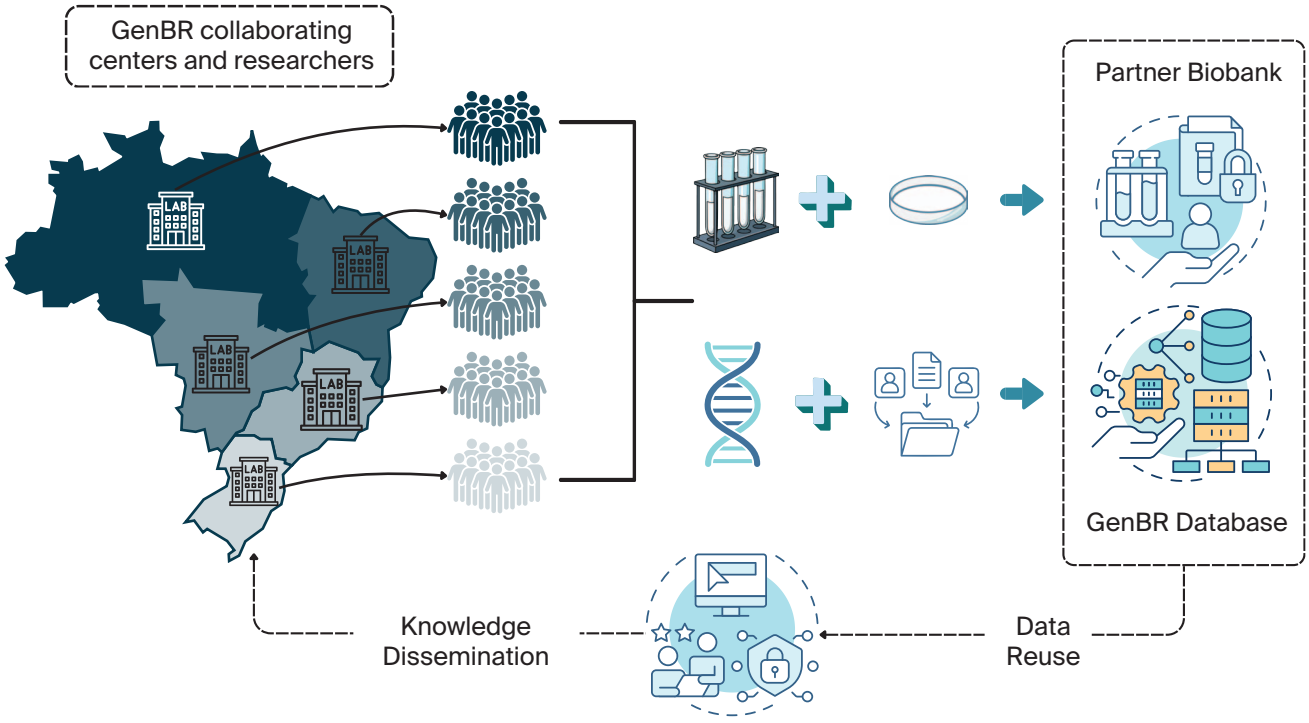
In its initial phase, the system will store raw genomic and clinical data from 100,000 Brazilian individuals, requiring petabyte-scale infrastructure. Conceived as a discovery platform for precision health, GenBRdb is

expected to be integrated into the National Health Data Network (In Portuguese: Rede Nacional de Dados em Saúde, RNDS), ensuring that research participants, patients, and healthcare professionals benefit from the results in compliance with prevailing ethical, legal, and social standards. In the future, with this structure, collaborating researchers from various regions of Brazil will be able to collect biological samples from diverse populations and send them to a facility partner for sequencing and secure storage. The resulting genomic datasets, linked to relevant clinical metadata, will be integrated into GenBRdb. Both the biological samples and data will be available for reuse, enabling other researchers to conduct further studies (Figure 6).

Coordinated efforts are underway to ensure the secure exchange of data across health, research, and surveillance networks, in strict compliance with Brazil's General Law for the Protection of Personal Data (In Portuguese: Lei Geral de Proteção de Dados Pessoais, LGPD), and to promote interoperability with national information systems and the RNDS. Once integrated, standardized, and made available following ethical and legal principles, these data can serve as a valuable resource for future research and inform evidence-based public policy.

Another key component of GenBR is the expansion of regional partnerships and the development of multiprofessional training networks through residency programs in Genetics and Genomics and Genetic Counseling. The pedagogical design of these programs was developed in collaboration with a group of specialists. Educational and research institutions will submit their proposals, and those selected will be able to offer multiprofessional residencies starting in 2026. Additionally, to promote knowledge dissemination in genomics and precision health, the MoH organized three virtual editions of the Genomas Brasil

FIG. 6. Integrated workflow for genomic data collection, processing, and use in the Genomas Brasil Program



Note: GenBR – National Genomics and Precision Public Health Program; GenBR Database – the national genomic and clinical data repository.

International Summit on Precision Health. These events convened representatives from academia, government, industry, and international initiatives to exchange knowledge and discuss recent scientific and technological advances in the field, with a particular focus on their integration into Brazil's SUS. Together, these strategies are essential for strengthening local capacities and building a specialized workforce, thereby promoting inclusion and equitable access to precision health.

GenBR has supported research through public calls for proposals, allowing for wide competition among submissions and enhancing equity in the selection process. Over the past five years, nearly one major call has been launched annually in partnership with the National Council for Scientific and Technological Development (In Portuguese: Conselho Nacional de Desenvolvimento Científico e Tecnológico, CNPq), except for 2021 due to the COVID-19 pandemic. In total, four public calls have selected 209 research projects led by institutions located across all regions of Brazil. Most of the funded projects fall within Technology Readiness Levels (TRL) 3 and 4, as assessed during the proposal submission phase (Figure 7)[6]. TRL 3 corresponds to the experimental proof of concept, marking the start of applied research and early-stage prototyping to assess feasibility and risks, whereas TRL 4 entails process refinement, comprehensive documentation, and validation at the laboratory scale.

Beyond supporting structural projects such as large-scale genomics, the implementation of precision public health requires an integrated, multidisciplinary approach, including research in genetic testing, biosensors, and cell and gene therapies[7] [31, 32]. Overall, GenBR has funded 111 projects related to ATMP development, with a total investment of BRL 327.9 million. The scale-up of ATMPs under good manufacturing practices (GMP) remains costly and technologically complex, particularly for LMICs, which often lack biomanufacturing infrastructure for producing critical inputs such as viral vectors and cloning plasmids [33]. This limitation is evident in the results of Public Call No. 26/2020, dedicated exclusively to supporting ATMP development: the highest TRL achieved among all funded projects was 6, underscoring the challenges of advancing to later stages that require GMP-grade production for clinical testing (Figure 7).

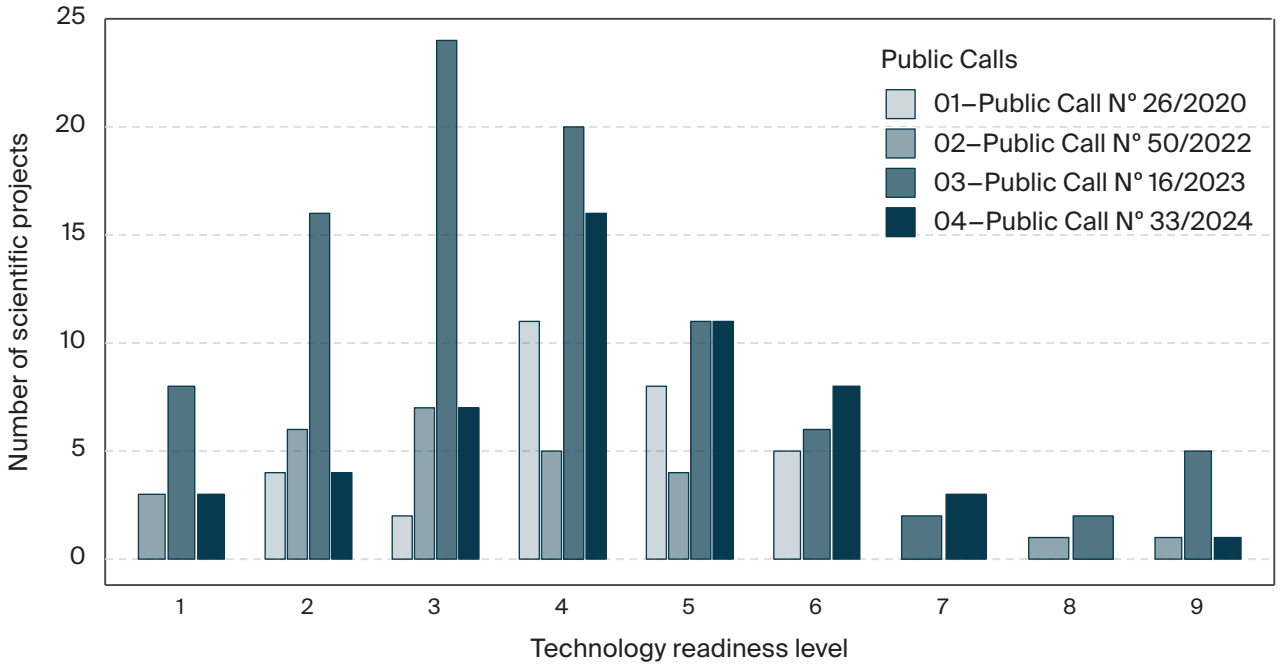
To prepare the country for the future integration of genomic and precision public health services into the SUS, GenBR funded five high-throughput sequencing platforms. This sequencing infrastructure will help reduce the backlog of genetic testing in Brazil, particularly for rare diseases, while simultaneously building national genomic capabilities across research institutions. Both physical infrastructure and technical expertise, from wet lab processes to data analysis, are crucial to ensuring national sovereignty, particularly for LMICs.

Since 2020, Brazil has made notable progress in strengthening its national capacity for manufacturing ATMP, particularly driven by research, development, and innovation demands emerging from projects supported by GenBR. The Fiocruz/Rio de Janeiro, leveraging investments from the CEIS, is preparing to begin producing key inputs, such as lentiviral and adeno-associated viral vectors, by repurposing infrastructure previously dedicated to the manufacturing of COVID-19 vaccines based on viral vector platforms [34].

[6] Board on Health Sciences Policy; Board on Life Sciences; Institute of Medicine; National Research Council. Technologies to Enable Autonomous Detection for BioWatch: Ensuring Timely and Accurate Information for Public Health Officials – Workshop Summary. National Academies Press (US); 2013. Accessed 22.10.2025. https://www.ncbi.nlm.nih.gov/books/NBK201359/

[7] DeNegri F. Políticas públicas para ciência e tecnologia no Brasil: cenário e evolução recente [Public policies for science and technology in Brazil: current scenario and evolution]. (In Portuguese). Institute for Applied Economic Research – IPEA; 2021:19. Accessed 22.10.2025. https://repositorio.ipea.gov.br/items/16ae232c-1e87-4c61-a9ee-b6d5468c24c7

FIG. 7. Distribution of technology readiness levels among projects selected through public calls promoted by the Genomas Brasil Program



In addition, the MoH financed a Center of Excellence in Advanced Therapies (CCTA), which was selected through a public call launched in partnership with the Brazilian Company for Research and Industrial Innovation (In Portuguese: Empresa Brasileira de Pesquisa e Inovação Industrial, EMBRAPII). Located at the Albert Einstein Hospital in São Paulo, the CCTA aims to expand national capabilities in the field of advanced therapies, specifically gene therapy, cell therapy, and tissue engineering. Its mission includes fostering the domestic production of ATMPs, attracting companies from the pharmaceutical and biotechnology sectors, and training highly qualified professionals to support the growth of this strategic area.

In December 2023, the MoH established a formal partnership with the Ribeirão Preto Medical School of the University of São Paulo to launch an academic network focused on characterizing genomic factors influencing health and disease processes in the Brazilian population. This initiative, titled Genomas SUS, is currently in its initial phase, with an investment exceeding BRL 90 million to support the sequencing of 21,000 genomes. Ensuring sample representativeness is a strategic priority, with an emphasis on the inclusion of diverse ethno-racial groups, particularly those historically underrepresented in genomic research. The project is coordinated through a robust network of eight anchor centers strategically distributed across all major regions of the country. It involves leading institutions such as Fiocruz (Pernambuco and Paraná), the University of São Paulo, and the Federal Universities of Minas Gerais, Pará, and Rio de Janeiro, alongside collaborating centers in 16 Brazilian states. A key pillar of the initiative is the integration of major national cohorts, diverse in both design and population composition. To date, samples from 15 cohort studies have been included in the project, such as SABE [35], EPIGEN [36], and BRISA [37].

Lessons learned and insights for BRICS and Latin American countries

Over its five-year trajectory, GenBR has emerged as one of the most significant large-scale genomics and precision health initiatives for public health in the Global South[8] [38, 39]. One of the key lessons lies in the role of sustained political will, as evidenced by continued financial support from the MoH, and the definition of clear strategic objectives. These include the generation of representative genomic data, the advancement of domestic technological capabilities, and the integration of genomic knowledge into the public health system, particularly in healthcare delivery and epidemiological surveillance. This political commitment, combined with the coordination of multiple institutions, including universities, INCA, Fiocruz, and regional research centers, has enabled the development of robust infrastructures, such as biobanks and national data repositories, multiprofessional networks, and governance and ethical frameworks tailored to Brazil's population diversity and public health needs [18, 40].

A long-term vision is also reflected in the Program's strategic planning for the progressive expansion of sequencing coverage, the standardization of protocols, and the dissemination of results. For regional scalability and adaptation, several enabling conditions must be emphasized: sustained public investment and partnership mechanisms, including international collaboration and alignment with regional initiatives such as the Genetics of Latin American Diversity (GLAD) [38]; adequate physical and computational infrastructure for the storage, curation, analysis, and sharing of genomic and clinical data; interoperability frameworks between national databases and regional health surveillance systems; inclusive policies and protocols that ensure the effective representation of historically marginalized populations, while respecting cultural specificities and ensuring social and scientific benefits to participating communities; and incentives for researcher training, professional network development, and cross-country exchange of methodologies and experiences.

Strengthening regional cooperation through the creation of consortia in Latin American countries is pivotal to promoting shared technical standards, infrastructure, anonymized data, and best practices in ethical governance, an approach that could also be extended to BRICS countries. Additional recommendations include fostering regional training in the areas of bioinformatics and research ethics; adopting policies that ensure equitable access to the benefits of genomic medicine while avoiding new forms of value extraction or technological dependency; and supporting structured dialogue platforms that bring together governments, researchers, and civil society to align priorities, assess impacts, and disseminate lessons learned.

The experiences of China and India in developing ATMPs also provide key insights for other BRICS and Latin America countries. China has emerged as a global leader, propelled by strategic policies such as the 13th and 14th Five-Year Plans, which prioritized investment in genomics and biotechnology to reduce foreign dependency [41]. India has demonstrated that public-private partnerships can facilitate the development of affordable, locally developed chimeric antigen receptor T-cells (CAR-T) therapies. In 2023, it secured approval for a CAR-T treatment for acute lymphoblastic leukemia at a cost of 36,000 to 42,000 United States dollars per patient, roughly ten times less than equivalent therapies approved in Brazil. These examples demonstrate

[8] World Health Organization. Accelerating access to genomics for global health: promotion, implementation, collaboration and ethical, legal and social issues. WHO; 2022:46. Accessed 22.10.2205. https://www.who.int/publications/i/item/9789240052857

how long-term planning, adaptive regulation, and strategic collaboration can foster innovation while enhancing access to ATMPs [42].

Conclusion

By combining a dedicated budgetary structure, governance arrangements that integrate academia, industry, and policymakers, and an industrial strategy focused on technological sovereignty, GenBR transcends the scope of individual research projects to become a state-led instrument for scaling precision public health within a universal health system. While training a highly skilled workforce and fostering positive spillovers for the knowledge economy, the Program also contributes to reducing dependence on critical imported inputs. In doing so, it lays the foundation for a sustainable innovation cycle in which scientific value, clinical impact, and fiscal resilience continuously and strategically reinforce one another.

The evolution of public genomics policies in Brazil has emerged as a key driver of health innovation, with direct implications for promoting equity and transforming healthcare delivery. GenBR exemplifies this progress by integrating genomics into SUS through coordinated actions in research, capacity building, and technological development. This initiative positions Brazil as an international reference, demonstrating that it is possible to implement large-scale strategies for personalized medicine and early diagnosis even in settings characterized by population diversity and regional inequalities. The integration of genomic data from historically underrepresented populations not only enhances the applicability of scientific findings to the national context but also fuels the health innovation ecosystem, creating opportunities for more inclusive and effective solutions. In this context, genomics emerges not merely as a scientific tool, but as a strategic instrument for transforming Brazil's SUS.

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REVIEW

The BRICS Partnership for the Elimination of Socially Determined Diseases: a multilateral agenda to health equity

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ABSTRACT

The creation of the BRICS Partnership for the Elimination of Socially Determined Diseases marks a pivotal step in positioning the social determinants of health at the forefront of global public policy and collective action. Socially determined diseases shaped by poverty, inequality, inadequate sanitation, and limited access to services, remain significant public health challenges across BRICS nations. Despite substantial progress in science, technology, and health system strengthening, global targets for disease elimination and reduction remain off track due to persistent financial gaps, fragmented programs, and insufficient multisectoral coordination. In this context, BRICS countries, representing nearly half of the world's population, are uniquely positioned to drive transformative change by integrating health equity principles into national and international agendas. This manuscript describes the technical and political process that led to the formulation of the BRICS Partnership, culminating in its endorsement at the BRICS Leaders' Meeting. The Partnership outlines five strategic objectives focused on strengthening resilient health systems, advancing intersectoral action, expanding research and innovation, securing sustainable financing, and aligning global positions to accelerate progress toward disease elimination. The initiative offers a comprehensive framework that addresses both disease-specific challenges and the broader structural drivers of inequity. The BRICS Partnership thus emerges as a global model of how collaboration, scientific advancement, multilateralism, and social justice can converge to accelerate the elimination, control, or reduction of socially determined diseases and promote a healthier, more equitable future.

Key Words: social determinants of health; public policy; multilateralism; health diplomacy; global governance; epidemiology

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Introduction

According to the World Health Organization (WHO), where we live, the communities which we belong to, our level of education, ethnicity, race, income, gender, and disability status determine how long we can expect to live a healthy life[1]. In other words, the social context in which we live, individually or collectively, can positively or negatively influence our health [1]. In this sense, Socially Determined Diseases (SDD) are those whose occurrence, progression, and outcomes are intrinsically linked to the social determinants of health. The effect these determinants have on populations highlights their role in driving inequities in access to health care and services [2]. Health equity, however, involves not only access to health care but also the equal distribution of disease risks and care practices [3]. Considering the diversity that exists among countries, the elimination, control or reduction of socially determined diseases requires a joint, multilateral effort, as a mutually strengthening strategy for the promotion of global health.

The definition of SDD is based on consolidated concepts in Public Health and the Social Determination of Health, with approaches arising from discussions and theories such as the "social health gradient" model, which shows how living and working conditions influence disease[2], the Lalonde Report, one of the first documents to highlight that social, economic, and environmental factors have a greater impact on health than medical services[3], and the Social Determination of Health.

Within the scope of the latter, it is possible to mention the influence of the São Paulo School of Public Health, with authors such as Sérgio Arouca and Naomar de Almeida Filho, and the work of Latin American Social Medicine, with authors such as Jaime Breilh (Ecuador) and Juan César García (Argentina). In practice, the Pan American Health Organization, like the WHO, emphasizes the importance of considering the Social Determinants of Health when formulating health policies and programs, contributing to equity and social justice[4]. In Brazil, the Ministry of Health addresses the issue in policies, linking it to racism, poverty, and exclusion[5], as well as in programs such as the Healthy Brazil Program[6].

Given the complexity of the determinants and their impacts on population health, little progress has been made on health goals around the world.

The WHO's Global Health Sector Strategies set diseases elimination, control and reduction targets, yet recent assessments highlight that progress is off track to meet the 2025 and 2030 goals.

[1] WHO. World report on social determinants of health equity. Geneva: World Health Organization. 2025. Accessed 15.09.2025. https://www.who.int/publications/i/item/9789240107588

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[3] Lalonde M. A new perceptive on the health of Canadians: a working document. Ottawa: Minister of Supply and Sevices Canada, 1974. Accessed 21.09.2025. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.phac-aspc.gc.ca/ph-sp/pdf/perspect-eng.pdf

[4] WHO. Reducing inequalities within a generation. Health equity through action on its social determinants. Final Report of the Commission on Social Determinants of Health. Portugal: World Health Organization. 2010. (In Portuguese). Accessed 15.09.2025. https://iris.who.int/bitstream/handle/10665/43943/9789248563706_por_contents.pdf

[5] Brazil. Ministry of Health. National Policy for Comprehensive Health of the Black Population. Brasília: MS, 2007. (In Portuguese). Accessed 15.09.2025. http://bvsms.saude.gov.br/bvs/publicacoes/politica_nacional_saude_populacao_negra.pdf

[6] Brazil. Decree No. 11,908 of February 6, 2024. Institutes the Healthy Brazil Program – Unite to Care, and amends Decree No. 11,494 of April 17, 2023, to provide for the Interministerial Committee for the Elimination of Tuberculosis and Other Socially Determined Diseases – CIEDDS. (In Portuguese). Accessed 15.09.2025. https://www.planalto.gov.br/ccivil_03/_ato2023-2026/2024/decreto/D11908.htm

Financial gap, lack of integration across programs, and insufficient multisectoral coordination remain key barriers to achieving the targets.

In its Global Report on Social Determinants of Health Equity, the WHO demonstrates that progress in improving quality of life, including access to basic sanitation, education, and employment, is progressing at a pace that prevents the targets for eliminating health disparities among populations from being met. In 2022, for example, 1.62 million people required interventions for neglected tropical diseases (NTD), demonstrating that challenges persist across health, political, and financial levels[7].

The elimination of SDDs as a public health challenge is therefore a core priority under the 2025 BRICS Brazilian Presidency's Health Agenda, reinforcing the block's commitment to addressing health inequities and advancing the United Nations Sustainable Development Goals (SDGs), including SDG 1 (No Poverty), SDG 2 (Zero Hunger), SDG 3 (Good Health and Well-Being), SDG 4 (Quality Education), SDG 10 (Reduced Inequalities) and SDG 17 (Partnerships for the Goals).

SDDs such as tuberculosis, human immunodeficiency virus (HIV)/ acquired immunodeficiency syndrome (AIDS), hepatitis, sexually transmitted infections, malaria, leprosy, acute diarrheal diseases, and other NTDs remain as a major public health challenge across BRICS, driven by structural factors like poverty, poor sanitation, malnutrition, inadequate housing, and limited healthcare access [4].

Furthermore, many neglected tropical diseases disproportionately affect marginalized populations, amplifying health inequities. Although they predominate in impoverished tropical areas, some NTDs have a wider geographic distribution. The multisectoral collaboration and engagement are necessary to address key social determinants and inform actions for the equitable delivery of interventions, given that such determinants increase the risk of disease and hinder timely diagnosis and treatment[8].

In other words, in general, diseases do not respect borders and can impact international mobility, global trade, and international health security. Therefore, proposing initiatives to eliminate SDDs, addressing these systemic challenges requires multispectral, equity-focused strategies that integrate disease control with broader social justice and human rights objectives, as emphasized in the BRICS response to neglected tropical diseases [5].

The Healthy Brazil Program model, India's experience with social protection, South Africa's universal coverage law, China's advances in healthy cities, Egypt's success with hepatitis C, and Ethiopia's community outreach demonstrate that bold goals are possible [5].

The Brazilian "Bolsa Família" Program is a good example of political and financial interference on the social determinants of health with the conditional transfer of income to socially vulnerable populations and demonstrates a direct result in reducing the incidence of SDDs. A cohort study analyzed 100 million Brazilians between 2004 and 2015, showed the association of the Bolsa Família Program with a large reduction in the incidence (adjusted rate ratio 0.59; 95% confidence interval: 0.58–0.60) and mortality (adjusted rate ratio 0.69; 95% confidence interval: 0.65–0.73) of tuberculosis, where the strongest

[7] WHO. Global report on neglected tropical diseases 2024. Geneva: World Health Organization; 2024. Accessed 15.09.2025. https://www.who.int/publications/i/item/9789240091535

[8] Ibid.

association was observed in the indigenous and black and Pardo ethnicity [6].

Some limitations persist, preventing the full realization of elimination, control or reduction goals, as SDDs thrive where health systems are not appropriately resilient. Some of the key barriers include:

- the underfunding of disease elimination, control or reduction programs, in comparison to better-resourced global disease initiatives;
- limited research and development capacity, with restricted access to diagnostics, vaccines, and innovative treatments;
- the need for coordinated, cross-sectoral interventions addressing broader social determinants of health[9].

A relevant aspect is that public health, as a common good, has the potential to strengthen diplomatic ties, acting as a platform for dialogue and cooperation between nations. This facilitates the transfer of technologies and knowledge, contributes to conflict resolution, and promotes peace and stability among the countries involved. Furthermore, considering its alignment with the global sustainable development agenda, public health is a central theme in international forums.

Building on this context, the BRICS Partnership for the Elimination of Socially Determined Diseases emerges not only as a diplomatic and technical endeavor, but also as a strategic platform to integrate health equity principles into public policy, grounded in collective action and shared responsibility.

BRICS global leadership in confronting Socially Determined Diseases

Health context in the BRICS

The BRICS countries have considerable global weight, accounting for 48.5% of the population and 36% of the world's territory. Economically, they account for 40% of global gross domestic product and 21.6% of trade, according to data from Trade Map and the World Bank[10]. This reflects a complex and diverse health landscape, representing almost half of the world's population.

Despite being emerging economies with growing political influence, the bloc's members present highly diverse demographic and epidemiological realities, which affect their public health strategies. Collectively, they face a significant burden of diseases such as tuberculosis, HIV/AIDS, and malaria.

The WHO estimates that over 1.7 billion people worldwide are at risk, requiring annual interventions focused on developing efforts for the prevention and treatment of neglected diseases. It is also estimated that around 200,000 deaths occur each year, along with more than 19 million disability-adjusted life years lost, resulting in significant direct and indirect health costs to affected individuals, their families, and communities, ultimately leading to a reduced quality of life[11,12].

The burden of disease (disability-adjusted life years) in BRICS countries is dominated by non-communicable diseases, however,

[9] WHO. World report on social determinants of health equity. Geneva: World Health Organization. 2025. Accessed 15.09.2025. https://www.who.int/publications/i/item/9789240107588

[10] World Bank. World Integrates Trade Solution (WITS). Accessed 15.08.2025. https://wits.worldbank.org/

[11] WHO. Global report on neglected tropical diseases 2024. Geneva: World Health Organization; 2024. Accessed 15.09.2025. https://www.who.int/publications/i/item/9789240091535

[12] Brazil. Ministry of Health. Neglected Tropical Diseases in Brazil Morbidity, Mortality and National Response in the Context of the Sustainable Development Goals 2016-2020. (In Portuguese). Accessed 15.09.2025. https://www.gov.br/saude/pt-br/centrais-de-conteudo/publicacoes/boletins/epidemiologicos/especiais/2024/boletim-epidemiologico-de-doencas-tropicais-negligenciadas-numero-especial-jan-2024/view

communicable diseases must be considered. India and South Africa stand out for their higher burden of communicable diseases and nutritional, maternal, and neonatal conditions. In India, tuberculosis and diarrheal diseases are the leading causes of death, while HIV/AIDS accounts for 25% of deaths in South Africa[13].

As reported by Reid et al. [7], in 2017, 1.6 million people died from tuberculosis, along with 300,000 people with HIV – more deaths than from any other infectious disease. Furthermore, in many parts of the world, drug-resistant forms of tuberculosis threaten struggling control efforts and require health systems to address this and other issues [8].

In Brazil, in the five-year period from 2016 to 2020, a total of 583,960 new cases of the selected NTDs were identified (an annual average of 116,792); in 2015 alone (baseline year), 152,894 new cases were reported. Throughout the entire period, the highest case detection rates were observed in the Northern and Northeastern Regions. A total of 40,857 deaths with multiple causes were recorded during the five-year period (an annual average of 8,171.4), with 7,978 deaths in the baseline year. Deaths occurred at significant levels throughout the period, particularly in the Central-West, Southeastern, and Northeastern Regions. During the five-year period, case overlap of NTDs was observed in 99.3% of municipalities (88.0% in 2015) and overlap of deaths in 66.0% (35.0% in 2015). It was estimated that 15 million people were at risk of NTDs in 2015, increasing to an average of 28.9 million during the five-year period. In all analyzed periods, there was a direct relationship between detection and the Social Vulnerability Index, with higher rates among the male, Indigenous, and over 60 years old populations. There was a reduction in detection from 2007 to 2020 for the country and all major regions. The forecast for 2025 is a more pronounced reduction in detection than in mortality for Brazil[14].

Given this epidemiological scenario and persistent inequalities, the need for a joint response became evident to the BRICS countries, which culminated in the Brazilian proposal to create the Partnership.

Building the Partnership

Considering that the BRICS countries can assume the global leadership in the elimination of SDDs, the Brazilian Presidency proposed to the countries of health BRICS group to hold a BRICS Partnership for the Elimination of Socially Determined Diseases.

Throughout the virtual technical meetings and high-level in-person meetings that took place during the period of March to July 2025, the BRICS countries delegations built three important texts to co-create the Partnership for the Elimination of Socially Determined Diseases:

- the Partnership text;
- the Health Ministries Declaration;
- the leadership Declaration.

The first Virtual Technical Meeting was held on March 14th, 2025, which were presented national strategies, challenges, and opportunities for collaboration related SDDs, such as HIV, tuberculosis, viral hepatitis, sexually transmitted infections, neglected tropical diseases, and other SDDs. At this moment, the BRICS delegations identify that SDDs are deeply linked to multisectoral responses, emphasizing integration

[13] WHO. BRICS Health and WHO Country Presence Profile. Geneva: World Health Organization; 2017. Accessed 15.09.2025. https://iris.who.int/bitstream/handle/10665/255800/WHO-CCU-17.05-eng.pdf;sequence=1

[14] Brazil. Ministry of Health. Neglected Tropical Diseases in Brazil Morbidity, Mortality and National Response in the Context of the Sustainable Development Goals 2016-2020. (In Portuguese). Accessed 15.09.2025. https://www.gov.br/saude/pt-br/centrais-de-conteudo/publicacoes/boletins/epidemiologicos/especiais/2024/boletim-epidemiologico-de-doencas-tropicais-negligenciadas-numero-especial-jan-2024/view

between health, education, social development, and environmental policies to achieve sustainable progress.

Additionally, the delegations agreed to support the Brazilian Presidency to create the Partnership for the Elimination of Socially Determined Diseases, and it was discussed the needs of ensure sustainable funding, strengthening the health services, collaboration in research and innovation, particularly in diagnostics, vaccines, and treatments, and the importance of technology transfer and expanding local production of essential medicines, reducing reliance on imported pharmaceuticals and enhancing regional self-sufficiency.

Access to and development of new technologies coupled with sustained investment in health infrastructure can significantly accelerate disease detection, surveillance, prevention, and treatment. For BRICS countries, this is a strategic priority, reflecting their unique capacity to produce essential health inputs, lead technological innovation, and mobilize multilateral resources for infrastructure and sustainable development.

By fostering the development and integration of innovative tools such as vaccines, therapeutics, and diagnostics, BRICS can enhance the quality and reach of care for its populations. Strengthening the BRICS Public Health Institutes Network, the BRICS Vaccine Research and Development Center and the BRICS Medical Products Regulatory Authorities could be critical to closing knowledge gaps and expanding collective innovation capacity. Furthermore, advancing cooperation in the production and equitable access to strategic health technologies aligns with broader efforts to reinforce national capabilities, while ensuring that innovation directly contributes to the elimination, control or reduction of diseases agenda.

Subsequently, the Brazilian Presidency focused its efforts on drafting a proposed partnership text and the Health Ministries' Declaration, which outlined the contents of this instrument and the BRICS countries' commitment. These texts were forwarded to the countries for inclusion, and delegates thereafter, negotiated their positions on the partnership text in four additional virtual technical meetings held on April 30, May 9, and June 10, and one in-person meeting with Senior Official, in June 16 and 17, to which the Health Ministries and their advisors were invited to negotiate the proposals, as well the BRICS Leaders' Summit.

The BRICS countries, in the Partnership[15], recognizes that to achieve the elimination, strengthening control, or reduction of SDDs requires a comprehensive understanding of national contexts, capacity gaps, and financing and cooperation needs. Considering that the BRICS nations have varying levels of surveillance, infrastructure, and other disparities in public health capacities, and many BRICS countries have successfully eliminated certain diseases, others continue to face challenges linked to SDDs. Additionally, the effectiveness of disease elimination, control, or reduction strategies could rely on fostering the exchange of best practices, successful and failure stories, and knowledge-sharing, as, and where more effective and coordinated action is needed.

Therefore, the construction of the partnership considered the differences between countries and within the same country, to promote a joint strengthening approach.

In this sense, the BRICS Partnership for the Elimination of Socially Determined Diseases[16] will aim to promote research and development

[15] BRICS. Partnership for the Elimination of Socially Determined Diseases. 2025. Accessed 15.09.2025. https://brics.br/en/documents/presidency-documents/2507_brics_partnership-for-the-elimination-of-socially-determined-diseases.pdf/@@download/file

[16] Ibid.

of innovative health approaches, including vaccines, prevention, early detection, diagnosis, and treatment. It will aim to foster increased international investment, strengthen diplomatic efforts to place SDDs elimination at the center of the global health agenda, and seek prioritization of this issue in multilateral and regional forums. Additionally, it aims to establish partnerships as an open, inclusive, and consensus-based joint initiative to enhance cooperation, mobilize resources, and advance collective efforts to achieve the integrated elimination of SDDs, especially in the Global South.

The partnership plans to focus on five primary objectives: "(1) Reinforcing resilient health systems and delivery of essential services, to ensure equitable access to vaccines, prevention, early detection, diagnosis, treatment of and health education for SDDs, strengthening community-based health services and focusing on populations in vulnerable situations in regions most affected by SDDs as a means to also advance Universal Health Coverage (UHC); (2) strengthening intersectoral action for addressing the social, economic, and environmental determinants of health, following a whole-of-government and whole-of-society approach; (3) expanding collaborative research, development, capacity-building, innovation, and technology transfer among members, encouraging knowledge-sharing as a strategy to strengthen cooperation and drive innovative solutions adapted to local realities for the elimination of SDDs; (4) advocating to address financial barriers to the elimination of SDDs, by mobilizing national and international resources and fostering engagement with development banks, financial institutions, donors, and the private sector to secure sustainable and innovative funding mechanisms; and (5) aligning positions on addressing SDDs within the framework of international organizations, including the UN organizations, such as the World Health Organization (WHO), the United Nations Development Programme (UNDP), and other relevant forums, as well as with private sector stakeholders, to facilitate integration into broader international cooperation frameworks, and ensure alignment with global SDGs"[17].

According to the Partnership[18], the BRICS countries will recognize as SDD, diseases that reflect national circumstances and laws, as well as diverse national realities and capabilities, making it possible to have a flexible arrangement that allows members to foster cooperation within the framework. Additionally, the BRICS countries could invite BRICS partner countries to join the Partnership.

It is important to highlight that the BRICS countries recognize that addressing upstream drivers of SDDs, to achieve the objectives of the Partnership and that foster more equitable and sustainable health outcomes, is crucial to robust, coordinated, and intersectoral action, to improve sanitation and housing conditions, tackling malnutrition and poverty, and leveraging innovative technologies.

Regarding the administrative issues, the Partnership calls financial instruments and engages with donors and the private sector to consider the essential supporters of this Partnership and gives to the BRICS chairship the presidency of the Partnership as a rotational presidency. Additionally, advocates for high-level engagement, and agree to convene an annual ministerial session within the framework of the BRICS Health Ministers' Meeting.

[17] Ibid.
[18] Ibid.

The three instruments created were just the beginning of the partnership. The BRICS countries are now expected to work on a Roadmap for the Elimination of Socially Determined Diseases to support the coordination of implementation, which will consider the initial timeline that includes technical seminars, capacity-building and training activities, research network meetings, and financial support.

Public health systems serve as a backbone of disease prevention, control, and elimination efforts. A robust, resilient, and well-integrated public health infrastructure is essential for achieving sustainable progress in the elimination, control or reduction of SDDs across BRICS nations. The Partnership offers an operational lens by clustering and analyzing multiple diseases and health challenges to determine how they can be efficiently embedded into existing service platforms or innovatively incorporated into new service delivery models.

Through strategic policy action, targeted investments, and sustained technical cooperation, public health systems can become more resilient and responsive, accelerating progress toward the elimination, control or reduction of SDDs and related health challenges – however, health systems alone cannot address the complex, multifactorial drivers of disease transmission and persistence.

Ultimately, strengthening intersectoral collaboration is essential to optimize resources, avoid duplication of efforts, and accelerate progress toward the elimination, control or reduction of socially determined diseases as pressing public health challenges.

While intersectoral coordination strengthens the foundations for a more equitable and comprehensive approach to elimination, control or reduction of diseases, these efforts must be supported by adequate infrastructure and innovative technologies to achieve tangible results. Integrated public policies can only reach their full potential when backed by the appropriate capacities required to deliver quality services efficiently and at scale.

Promoting this agenda also requires a cultural shift within systems driven by advocacy, financing, and multilateral action to prioritize inclusive and context-responsive technological solutions that are embedded in long-term strategies. For the BRICS Ministers of Health, this is a commendable opportunity to lead global health progress to shape sustainable and sovereign pathways toward elimination, control or reduction of diseases.

In sum, and as highlighted throughout national contributions is past discussions, strengthening local capacities in research and development, technology transfer, digital health, and vaccine production enhances regional resilience and reduces dependency on external systems. These strategic enablers must be mobilized through sustained political commitment, cross-sector partnerships, and multilateral collaboration. By aligning infrastructure and innovation efforts with the broader goals of public health system strengthening and intersectoral coordination, BRICS countries are well-positioned to lead transformative action towards achieving elimination, strengthening control or reduction of socially determined diseases and the advancement of health equity.

To sustain progress and address upstream determinants of health, elimination, control or reduction of SDDs efforts must be embedded within a broader, multisectoral response. This calls for enhanced intersectoral coordination to align policies, pool resources, and implement joint interventions that tackle the root causes of disease and promote health equity.

Final considerations / conclusions

The history of global health is replete with bold initiatives, but few have the potential to change the fate of nearly half the world's population like the BRICS Partnership for the Elimination of Socially Determined Diseases.

The Partnership stands a timely and transformative initiative, capable of placing social determinants of health at the heart of global health policy. By leveraging the combined political influence, scientific capacity and innovation, shared commitment, and diverse experiences of its members, the Partnership has the potential to lead a paradigm shift – from disease-specific interventions to integrated, equity-driven strategies that address the root causes of health inequities.

Beyond advancing the elimination, control, or reduction of SDDs, the Partnership can catalyze progress across multiple SDGs, particularly in the Global South, where the burden of these diseases remains most acute.

Policy priorities could support integration of services that address multiple health concerns and enhance linkages between communities and health systems, improving adherence to treatment and retention in care. By embedding this vision within global governance frameworks and aligning it with the SDGs, the BRICS Partnership positions itself as a catalyst for transformative change in health equity, fostering solidarity across the Global South.

Then, BRICS countries will not only contribute to improved health outcomes but also reinforce resilient health systems, strengthen intersectoral action, foster technological development and innovation, mobilize national and international resources, and aim to integrate international cooperation frameworks, ensuring alignment with the global SDGs while promoting social justice and inclusive development.

Improving quality of life and well-being will lead to increased productivity and economic growth, longer life expectancy, less suffering from preventable diseases, and engaged citizens. This is expected to promote a more just and healthy society, prepared to face the challenges of the future.

Health lies at the crossroads of the social, economic, and environmental dimensions that shape sustainable development. Within BRICS nations, where Health Ministers have consistently emphasized their dedication to equity and solidarity, addressing the social determinants of health emerges as both a strategic priority and a shared commitment. This effort will serve as a global model for how collaboration, science, multilateralism, and social justice can work together to build a healthier and more equitable future – leaving no one behind.

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