



BUILDING FOR RESILIENCE, INNOVATION, COOPERATION AND SUSTAINABILITY

## **Joint Statement for the BRICS Science Academies Forum 2026**

### *Harnessing Artificial Intelligence for Sustainable Development and Strengthening Global South Cooperation*

#### **Background and Rationale**

Science and technology are increasingly central to addressing sustainable development challenges such as climate change, public health burdens, food and water insecurity and other emerging areas that are shared across BRICS countries. These challenges are increasingly interconnected and require integrated, science-based and data-driven solutions.

Artificial Intelligence (AI), in particular, has been gaining prominence as a transformative tool to address these challenges. However, AI capability remains concentrated in a few countries and firms, deepening the digital divide. With their scientific capacity, large datasets, and expanding digital infrastructure, BRICS nations — and their Academies — are well placed to co-develop inclusive, context-sensitive AI solutions for the Global South, while ensuring that AI development itself remains environmentally sustainable and socially inclusive. At the same time, attention should be given to supporting workforce transition, skills development and inclusive employment opportunities across the Global South. Regulations on the use and development of AI need to account for each country's particularities and respect data privacy for all citizens and government systems.

#### **Focus Areas**

##### **1. Advanced Materials and Manufacturing:**

AI is accelerating scientific discovery and the development of advanced materials in diverse applications such as batteries/storage devices, solar panels, aircraft, smartphones, biomedical devices, drugs and pharmaceuticals, and electric vehicles by replacing costly trial-and-error experimentation with predictive modelling and short processing times. But challenges like availability and reliability of data, need for experimental validation, lack of proper skills to develop,

train and employ AI tools, and lack of long-term assessment of materials still exist. On the manufacturing front, AI can enhance product design and prototyping as well as plant operations through predictive maintenance and supply-chain and inventory optimization.

## **2. Healthcare:**

AI can strengthen health systems under severe workforce, access, and equity pressures by extending specialist expertise to underserved areas, easing frontline workforce burdens, and supporting earlier disease detection — as seen, for example, in AI-supported TB screening and retinal imaging already deployed across member states and emerging applications such as mental health. Because systems can be opaque, biased, or poorly suited to local populations, well-evidenced applications, risk-based governance, test beds and multilingual models could be prioritized. AI can also help in advancing health sciences research in areas such as drug design and discovery; epidemic early warning systems, and disease diagnosis, tracking, and prognosis, taking into account professional and regulatory oversight.

## **3. Climate and Environmental Sustainability:**

On the climate front, hybrid approaches that couple neural-network parameterisations with physics-based Earth system models can improve the fidelity of regional climate projections needed for climate studies. AI can also improve weather prediction by reducing computational costs and enabling large ensemble generation and real-time probabilistic guidance. Beyond prediction, machine learning scales global outputs down into highly localized data for policy and planning, filling crucial gaps in data-sparse regions like the Global South. By combining satellite imagery, ground observations, and socioeconomic metrics, multimodal frameworks enable proactive disaster management, climate-resilient infrastructure design, and emission-reduction strategies. While AI offers BRICS nations a unique chance to leapfrog traditional infrastructure barriers, rigorous observational validation remains essential. Embedding these approaches into national adaptation strategies can ultimately minimize loss and advance sustainable development goals. AI can also help with resilient infrastructure design for rural and urban areas, climate adaptation strategies, and emissions-reduction strategies.

## **4. Agriculture and Food Security:**

Agriculture functions as a multifunctional activity vital for food, energy and water security, ecosystems, climate adaptation, and rural livelihoods. Across BRICS nations, agricultural AI is scaling from pilot programs to advanced applications like farm intelligence, Large Language Model (LLM)-driven multimodal advisory services, and drone-based decision intelligence. These tools can optimize yields while reducing water and pesticides use, and reducing seed research timelines. Beyond farm-level productivity gains, AI can strengthen systemic resilience through early warning mechanisms and risk assessments amid geopolitical and climate volatility. It can also improve food safety through predictions of contamination and pathogen outbreaks. The successful adoption of AI in agriculture also requires investments in enabling conditions, including digital connectivity and

literacy, human capital development, and effective extension systems, giving particular attention to smallholders and technologically underserved farmers. AI should also be viewed as a complement to, rather than a substitute for, agricultural extension and capacity-building efforts. By combining technological innovation with capacity building, AI can help advance more inclusive, resilient, and sustainable agri-food systems, contributing to long-term food security across BRICS nations and beyond.

## **5. Disaster Prediction and Management:**

AI can help reduce and manage disaster risk across the full cycle. In hazard prediction, it can improve early-warning systems by integrating satellite, sensor, and socio-economic data to extend forecasts periods and achieve finer geographic precision, and by improving hydrological and geological models to reduce the risk of hydrogeological disasters. It can downscale weather models for hyperlocal forecasting. In addition, it can help organize databases needed to assess vulnerability and exposure and determine the risk of disasters in areas prone to climate disasters. It can also improve seismic predictions by, for example, identifying sub-visual anomalies. Performance, though, depends on regions having validated historical data, often scarce in low- and middle-income countries. In emergency responses, Natural Language Processing (NLP) enables rapid multilingual alerts, while machine learning improves long-term risk mapping and vulnerability identification. Post-disaster, AI can help optimize resource allocation through, e.g., routing of supplies, identification of access routes, and directing of rescue teams. Still, AI complements rather than replaces civil defense systems that are attuned to local needs.

## **Making Our Collaborative Vision a Reality**

If wisely used, AI can serve as a strategic enabler for sustainable development and resilience across BRICS nations. By fostering collaboration across key verticals—and cross-cutting issues that protect sovereign interests while promoting responsible and trusted AI development—the BRICS Science Academies Forum 2026 can advance a shared vision for AI-driven innovation, strengthen scientific cooperation, and reinforce BRICS as a strategic actor shaping a more collaborative, inclusive, equitable, and development-oriented global AI landscape for the wider Global South.

By fostering mutual learning, capacity building, and narrowing technological gaps, BRICS countries can be active contributors to AI development, not merely adopters, leading to a more transformative and equitable global AI ecosystem that advances sustainable development.

Even as BRICS countries strengthen domestic capabilities—computing infrastructure, cybersecurity, energy-efficient data centres, research systems, and most importantly, human resources — they could advance collaboration through a range of concrete mechanisms. These could include joint research programs, collaborative platforms, researcher mobility schemes, knowledge sharing from national experiences, and multilingual foundational models trained on developing-world contexts, alongside AI-enabled platforms supporting SDG monitoring and

decision-making. A joint action roadmap—emphasizing higher education and research cooperation—could provide a practical framework for translating this shared vision into long-term cooperation and measurable outcomes. Regulation of the use and development of AI, as well as privacy of personal and sensitive data, needs to be done respecting the particularity of each country. Responsible data governance and the strengthening of national capabilities will be essential to ensure that AI remains inclusive, trustworthy, and aligned with national priorities while enabling effective cooperation across BRICS countries.

One possible mechanism could be a BRICS AI Research and Innovation Network spanning member and partner Academies, serving as a platform for shared standards, ethical and regulatory guidelines, capacity building, joint pilot projects, improving data frameworks, and benchmarking of AI tools, while advancing broader South–South cooperation.

On behalf of INSA and all the Science Academies participating in the BRICS Science Academies Forum 2026, we unanimously endorse the joint statement above.

### **Endorsing Academies – BRICS Member Countries**

Brazil - Brazilian Academy of Sciences

China - Chinese Academy of Sciences

Egypt - Academy of Scientific Research and Technology

Ethiopia - Ethiopian Academy of Sciences

India - Indian National Science Academy

Indonesia - Indonesian Academy of Sciences

Russia - Russian Academy of Sciences

South Africa - Academy of Science of South Africa

### **Endorsing Academies – BRICS Partner Countries**

Belarus - National Academy of Sciences of Belarus

Kazakhstan - National Academy of Sciences of the Republic of Kazakhstan

Malaysia - Academy of Sciences Malaysia

Nigeria - Nigerian Academy of Science

Vietnam - Vietnam Academy of Science and Technology