POLICY BRIEF

Unlocking AI Capacity in Low-and Middle-Income Countries (LMICs): Innovative Solutions for Compute, Competences, and Competitiveness

2025

Danil Kerimi, Visiting Fellow, CyberBRICS, FGV (Brazil)
Doctoral Candidate, Technical University of Munich (Germany)
Advisor, World Smart Sustainable Cities Organization (Republic of Korea)

02

Digital Transformation

Abstract

Following the adoption of the Pact for the Future and the Global Digital Compact in 2024, capacity building in artificial intelligence (AI) has become a global priority for the LMICs to avoid the AI divide. Growing at a faster pace with ever changing technological goalposts, higher level of policy uncertainty and requiring investments in billions, AI divide could prove to be even more disruptive than broader Digital Divide the international community has been dealing with for many years. The AI divide may have many dimensions, from demographic one (e.g. millennials vs gen Alpha) to gender one, from occupational (e.g. white vs blue color) to professional (with some seeing faster and wider adoption which could mean accelerated pace of displacement or, on the contrary adaptation) to geographical (e.g. urban vs rural, coasts vs heartland), from linguistic (widely used vs rare languages) to cultural. However, it is the jurisdictional or sovereign dimension that may prove to be most disruptive. LMICs face systemic barriers to AI development due to resource gaps in hard- (compute), soft- (algorithms and data), and human-ware (skilled workforce). This policy brief examines a multidimensional need for AI capacity development using innovative financing mechanisms, both monetary and in-kind (such as data, compute, skills, policies, etc), considers if G20 AI Principles are still up to the challenge, and provides some suggestions for AI Capacity Development mechanisms.

Keywords: AI, Capacity Development, Innovative Financing, G20, LMICs, Compute Infrastructure, Digital Development

.

.

Diagnosis

There is clearly a gap in the market, but is there a market in the gap?

AI holds the potential to accelerate development across critical sectors—health, agriculture, finance, and education. However, countries in the Global South face structural barriers in scaling AI infrastructure and capabilities, including limited access to advanced compute infrastructure, scarcity of locally relevant data, a deficit in technical and governance talent, and underdeveloped domestic markets for AI innovation. These disparities risk deepening the global digital divide unless innovative and inclusive financing solutions are deployed to incite AI champions to integrate the LMICs in their global expansion plans and, in time, integrate them into the global AI economy.

Despite many global challenges and deepening international fault lines, 2024 was a transformational year for AI governance. Building on the work of the High Level Advisory Body on Artificial Intelligence[1], the United Nations General Assembly passed two resolutions[2] on AI, adopted the Pact for the Future [3] and the Global Digital Compact[4], and created the UN Office for Digital and Emerging Technologies (ODET)[5]. Multiple UN and Bretton Wood entities have been developing their internal and external AI strategies. Many requests for capacity building and technical assistance are coming from the LMICs. Some of them know exactly what is missing and how to close the gap. Some struggle even at the assessment stage of their own needs.

[1] https://www.un.org/digital-emerging-technologies/ai-advisory-body
[2] Seizing the opportunities of safe, secure and trustworthy artificial intelligence systems for sustainable development [A/78/L.49] and Enhancing international cooperation on capacity-building of artificial intelligence [A/RES/78/311].
[3] https://www.un.org/en/summit-of-the-future/pact-for-the-future
[4] https://www.un.org/digital-emerging-technologies/global-digital-compact
[5] https://www.un.org/digital-emerging-technologies/

Relying on the market forces or waiting for these countries' internal capabilities to catch up will not yield positive results in an acceptable timeframe. Many AI funds have been announced in the first few months of the 2025 (e.g. at Paris and Kigali AI Summits), with some further ones being in the planning stage. As in many other areas of development, donor coordination is going to be crucial to avoid duplication, overprescription, short-terminism, or vendor lock in. There is a real risk of internal community showering too much resources on a few pilots that may prove to be less than stellar long term while leaving some potentially promising cases out in the cold. Another challenge that is becoming apparent from deploying AI in businesses and government around the world is the need to move from pilots to widespread adoption.

From AI bonds to debt forgiveness, many lessons for AI capacity could be learned from other areas of development finance (e.g. health, agriculture, climate, etc). Innovate financing can be deployed not only to close the gaps in the market but to help build the markets by providing advanced commitments for certain computational requirements for example, among other mechanisms. Forecasting AI and compute demand, requires significant effort from hyperscalers and other market participants. Helping them undertake those studies and providing floors should project demand not materialize promptly can help them make investment decisions in favor of the emerging markets.

Innovative Finance needed to Finance the Innovation

AI capacity development requires sustained and multifaceted investment—traditionally interpreted as financial capital. To thrive, AI systems equally rely on in-kind assets such as datasets, compute power, and human expertise. Without

these, financial investments alone will be important yet insufficient. If all the resources are spent on procurement from hyperscalers' little will be left on nurturing local public and private AI ecosystems. However, the traditional overseas development and the UN system has struggled to design an architecture adapted to the needs of in-kind contributors. From administration to accounting, from reporting to governance, a new approach to financing must recognize in-kind contributions as vital as financial capital.

Moreover, most if not all development finance innovations from other areas can be adapted to the tailored financing needs for AI capacity development. From countries in special circumstances to development poster children, all jurisdictions could benefit from taking a hard look at their AI needs, AI posturing, and AI ambitions to ensure they are rooted in broader development priorities, competitive advantages and the stages of AI maturity.

A typology of AI development pathways, drawn from recent research, highlights three strategic trajectories for LMICs based on combinations of compute location (e.g. cloud vs. on premise, offshore or onsite, core vs edge) and funding models (e.g. FDI vs philanthropic, venture vs. PPPs, impact vs growth, etc). Most LMICs begin with cloud-based compute supported by donors, often from abroad, but as AI maturity grows so do the calls for transition to sovereign infrastructure with many arguments for data sovereignty, cost efficiency, and innovation control. As entities move along the maturity curve, common but differentiated needs across AI users and developers, citizens and governments, come to light as well as clarity around current technological (e.g. LLMs vs SLMs, GPUs vs TPUs, etc) and functional (e.g. training vs inference) dimensions. For instance, users (consumers and citizens) need training and access to models suited to their languages and contexts, developers (creators and enablers) require compute and data tailored to local problems, while governments need institutional capacity and peer learning to implement national strategies. However, without sustained and

tailored financing mechanisms, these journeys on the maturity curve are unlikely to achieve sustainable progress. Existing funding mechanisms tend to be fragmented, often short-term, and inadequately designed for the complex demands of AI ecosystems. Against this background, what role could the G20 play in building the robust AI capacity development architecture.

From AI Divide to AI Dividend

The G20 AI Principles[6], adopted in 2019 and grounded in the OECD AI Principles, provide the Group views on the foundational framework for responsible stewardship of trustworthy AI. These include principles of inclusive growth, sustainable development, human-centered values, transparency, robustness, security, and accountability. The rapidly evolving nature of AI ecosystems suggests that the G20 Principles would benefit from enhancement in two key areas.

First, Recognition of Infrastructure and Skills Gaps. While current principles emphasize fairness and sustainability, they do not explicitly acknowledge the structural issues in access to data, compute, and talent. Innovative financing mechanisms, especially those recognizing in-kind contributions, directly address these disparities and enable more equitable participation in the global AI ecosystem. Second, Operationalization through Financing. The existing G20 framework rightly stresses values-based AI but stops short of proposing concrete pathways for achieving those goals in diverse economic contexts.

To stay future-proof, the G20 Principles could be updated to explicitly support scalable financing frameworks that incorporate in-kind contributions, regional cooperation, and public-private alignment for AI capacity building. The G20's

[6] https://oecd.ai/en/wonk/documents/g20-ai-principles

role in operationalizing these updates would be critical, providing both leadership and legitimacy.

The G20 is uniquely positioned to steer the direction of global AI development not only through norms, but also through practical investment in foundational capabilities. As the premier forum for international economic cooperation, G20's leadership is vital in shaping a financing architecture that can be both inclusive and future ready.

Key elements of G20 leadership in this area could include standardization of in-kind contributions valuation, convening power for multistakeholder coalitions, as well as the financial innovation and risk sharing.

G20 can set frameworks that quantify the economic value of data, compute power, and expert time. This would allow non-monetary contributions to be equitably accounted for in funding mechanisms. It can support jurisdictions (perhaps going beyond countries to municipal or inter-national level) in enabling multi-stakeholder partnerships involving development banks, cloud providers, academia, and civil society to co-create AI capacity projects with LMICs. G20 finance ministries can help design blended finance instruments that reduce risk for private investors while ensuring public value. This includes guarantees, concessional loans, and outcome-based funding linked to development goals.

The G20 can build on its Data Gaps Initiative to track AI readiness and capacity metrics, aligning them with Sustainable Development Goals (SDGs) and enabling targeted support to lagging regions. Innovative financing, as proposed in this brief, is not just about raising funds but rather is about reimagining the resource base. It legitimizes non-cash inputs, promotes efficient resource use, and fosters collaboration across geopolitical and sectoral lines. Through its convening power and financial expertise, the G20 is in a unique position to institutionalize such

models, ensuring they align with both national priorities and global AI governance frameworks. Furthermore, it would encourage all the AI Capacity Building initiatives to improve their own capabilities to monitor, audit and govern these initiatives for great impact.

A global financing mechanism, supported by G20 members and aligned with the United Nations system, should be established to coordinate blended finance for AI in LMICs. These mechanisms could recognize in-kind contributions (e.g. datasets, cloud credits, compute nodes, training hours) as capital assets, support modular, demand-driven investments across infrastructure, data, and skills and provide tiered funding for AI capacity at individual, institutional, and national levels.

It could further incentivize in-kind contributions via a global registry and credit system by establishing a mechanism to standardize and accredit in-kind contributions such as data, compute, and skills, as tradable or creditable assets through appropriate securitization processes. This would create incentives for private sector and research institutions to donate resources, enable LMICs to receive noncash support without complex procurement and promote equitable data sharing initiatives.

G20 could further support the United Nations System and the multilateral financial institutions in their efforts to support local AI compute and data hubs, to provide shared infrastructure and multilingual datasets. These should lower barriers for LMIC AI developers, respect data sovereignty through local governance, foster collaboration and trust across regions, support LMICs in designing AI development trajectories, provide planning grants and matchmaking services with partners, integrating these plans with broader digital public infrastructure (DPI) efforts.

Conclusion

As the first G20 cycle on the African continent, 2025 gatherings present an Incredible opportunity for members to accelerate their thinking around emerging AI gaps, ways to build the capacity for all while minimizing potential frictions in the system in time of significant budgetary constraints. AI capacity building mechanisms will need to be significantly strengthened to help ensure alignment between national development and global governance norms.

T20 South Africa Convenors

The Institute for Global Dialogue (IGD)

The South African Institute of International Affairs (SAIIA)

The Institute for Pan-African Thought and Conversation (IPATC)

For publication enquiries, please contact t20@t20southafrica.org

Website: www.t20southafrica.org