AI & Development Finance

Instruments & Industrial Strategies for Africa in the AI Era

Executive Summary

Artificial intelligence (AI) is reshaping the global economy and has emerged as a new geopolitical and industrial frontier. The race for compute power, data and cloud infrastructure is driving a structural shift in development finance. This paper investigates how African and global development finance institutions (DFIs) are responding to the AI age by adapting their mandates, instruments and internal operations. It draws on 15–20 authoritative sources (including the World Bank, African Development Bank (AfDB), International Finance Corporation (IFC), Organisation for Economic Cooperation and Development (OECD), United Nations agencies (UNESCO, ITU, OHCHR), and analytics firms) to analyse financing patterns, infrastructural gaps, and policy frameworks. In 2024 the United States deployed US$109 billion in private AI investment, dwarfing China's US$9.3 billion and Europe's US$257 billion in public-private investments[1][2]. Sub-Saharan Africa invested roughly US$7 billion in digital infrastructure, with DFIs providing around 30 percent of financing[3]. Yet Africa houses only 1 percent of the world's data-centre capacity despite having 18 percent of the global population[18].

The study differentiates domestic, regional and multilateral DFIs and examines their financing of cloud, compute, data and digital infrastructure; the emergence of new market failures (e.g., data monopolies, semiconductor shortages, underdeveloped digital ecosystems); and the design of risk-sharing architectures for digital and innovation ecosystems. It assesses intellectual property (IP) and data-sovereignty financing, startup and small- and medium-sized enterprise (SME) pipeline development, workforce and research capacity-building, cross-border harmonisation and regulatory alignment, and institutional transformation within DFIs. Evidence shows that African DFIs are beginning to prioritize digital economy projects - AfDB invested US$3 billion in ICT over the last decade, BOAD has committed almost US$5 billion to infrastructure and digital economy projects[4][5], and regional banks such as AFC and TDB are structuring innovative finance vehicles. Global DFIs (EIB, KfW and IFC) have launched multi-billion programmes for AI and technology, but the scale is still modest relative to the expected demand for cloud and compute. The paper recommends new mandates to finance public digital infrastructure, shared compute facilities, open data commons and AI training; enhanced risk-sharing and political-risk insurance; strengthening of regulatory and IP frameworks; and deeper collaboration among DFIs, governments, academia and private capital. It concludes that

leveraging AI for development requires systemic alignment of financing instruments with industrial policy, digital sovereignty and inclusive innovation strategies.

Introduction

The global economy is entering an AI-driven industrial revolution. Machine learning models require vast amounts of data, computing power and energy. According to the Stanford AI Index, private investment in AI reached US$109.1 billion in the United States in 2024, compared with US$9.3 billion in China and US$4.5 billion in the United Kingdom[1]. The OECD estimates that AI investments in the European Union totalled €257 billion in 2023, with 73 percent funded by the private sector[2]. Generative AI attracted US$33.9 billion globally in 2024[1]. These investments reflect a geopolitical race for AI supremacy and reveal widening disparities in the distribution of computing resources.

Africa, by contrast, confronts significant infrastructure gaps. Sub-Saharan Africa invested about US$7 billion in digital infrastructure in 2024, allocating roughly 60 percent to mobile networks, 20 percent to fibre and less than 7 percent to data centres[3]. Future needs are estimated at US$7–8 billion annually during 2025–2030, with fibre, data-centre and cloud investments accounting for half of the requirement[3]. Despite this, Africa hosts only about 1 percent of global data-centre capacity[18], and no African country scores above 56/100 on the 2025 Government AI Readiness Index for the infrastructure dimension[11]. The region also has just 90 researchers per million inhabitants compared with the world average of 1,420 and invests only 0.59 percent of GDP in research and development[12].

These structural gaps raise questions about the role of DFIs in financing AI infrastructure, developing industrial strategies and managing digital risks. African and international DFIs are being called upon to build data centres, cloud computing platforms, broadband, semiconductors and digital public infrastructure; to address market failures such as underinvestment in high-risk digital ventures and data monopolies; and to craft risk-sharing instruments for innovation ecosystems. This paper therefore asks: what mandates, instruments and partnerships should DFIs adopt to support Africa's AI industrialisation? How must DFIs transform their internal operations - credit assessment, risk management, environmental and social safeguards - to incorporate AI and digital risks? What governance and IP frameworks are necessary for Africa's digital sovereignty? How should DFIs collaborate with governments, academia and private capital? The research aims to provide an evidence-based framework for policymakers and financiers.

Conceptual Framing of AI & Development Finance

AI refers to the ability of machines to perform tasks that normally require human intelligence; learning, reasoning, pattern recognition and decision-making. Large language models and generative AI require substantial compute resources (graphics processing units and cloud infrastructure), vast datasets, and resilient energy and connectivity. From an economic perspective, AI is a general-purpose technology with wide spill-overs across sectors. The AI industrialisation cycle involves research and development (R&D),

infrastructure (compute, data, cloud and connectivity), application development, commercialisation and diffusion. Each stage faces market failures: positive externalities, high sunk costs, uncertainty and coordination problems.

Development finance institutions (public banks with policy mandates to promote development through long-term financing) play a critical role in addressing these failures. Domestic DFIs (e.g., Afreximbank, AfDB, DBSA, BOAD, TDB and AFC) mobilise local resources and regional integration; regional DFIs (e.g., West African Development Bank, East African DFIs) support cross-border projects; multilateral DFIs (e.g., World Bank, IFC, EIB, KfW and BNDES) provide concessional finance, guarantees and knowledge. Their mandates often include infrastructure, SMEs, industrialisation and sustainability. In the AI era, DFIs must extend these mandates to include digital public infrastructure, open data platforms, AI research capacity and innovation ecosystems. AI can also transform DFIs internally through better credit scoring, risk analytics, portfolio optimisation, ESG monitoring and impact measurement.

Literature Review

Development Finance Theory

The theoretical basis for DFIs derives from market failure and structuralist arguments. Governments intervene through DFIs when private capital underinvests in long-term, risky or socially beneficial projects. DFIs can play a catalytic role by providing long-term finance, mitigating political and regulatory risks, and mobilising private investment. Recent literature highlights that DFIs must balance developmental impact with financial sustainability and that they need to be disciplined by transparency and governance[20]. The digital economy introduces new forms of failure (network effects, platform monopolies and data externalities) which require updated instruments such as venture debt, equity in early-stage digital firms, and co-investment in shared infrastructure.

Industrial Policy Theory

Industrial policy refers to government actions aimed at shaping the structure of the economy towards higher productivity sectors. Traditional industrial policy supports manufacturing through credit, tariffs and subsidies. In the AI era, industrial policy extends to intangible assets; data, algorithms and research. It emphasises building indigenous capabilities, protecting IP, and creating clusters and innovation ecosystems. African governments and DFIs increasingly view AI as an industrial frontier; the African Union's 2024 continental AI strategy calls for policy harmonisation, shared supercomputing facilities and joint data centres[11]. New strategic sectors include cloud computing, semiconductors, local language models, digital public infrastructure and digital trade under the African Continental Free Trade Area (AfCFTA).

Digital & AI Ecosystem Development Frameworks

Ecosystem frameworks emphasise the interplay of infrastructure, human capital, research institutions, regulation and finance. The Government AI Readiness Index measures countries' preparedness in governance, infrastructure, digital skills and public sector adoption. In Sub-Saharan Africa, countries such as Kenya, South Africa, Mauritius and Nigeria lead regional rankings but still trail global leaders[11]. Data-centre capacity and energy infrastructure are critical bottlenecks - Africa holds 18 percent of the world's population but less than 1 percent of data-centre capacity[18]. Research capacity is also limited: sub-Saharan Africa has 90 researchers per million inhabitants and spends just 0.59 percent of GDP on R&D[12]. These factors are essential for designing DFI interventions.

Data & Methodology

The study compiles quantitative indicators from published sources. AI investment data are drawn from the Stanford AI Index and OECD reports[1][2]. Digital infrastructure investment figures come from the Xalam Analytics report commissioned by the D4D Hub, which estimates 2024 capital expenditure (CAPEX) and future requirements for sub-Saharan Africa[3]. Additional data on DFI commitments are taken from AfDB success stories (US$3 billion invested in ICT)[4], BOAD's Djoliba plan (US$4.95 billion committed to infrastructure and digital economy)[5], Afreximbank digital trade initiatives (Africa Trade Gateway)[6], Raxio Group financing by IFC[7], BNDES plans for AI and data centres[8], KfW/DEG's digital portfolios[9] and the EIB's Tech EU programme[10]. The Government AI Readiness Index and UNESCO statistics provide data on AI strategy adoption, research capacity and R&D spending[11][12]. Additional context on domestic savings and institutional capital is taken from the AFC's State of Africa's Infrastructure report[14].

The paper uses descriptive statistics and charts to illustrate investment patterns, infrastructure gaps, AI readiness scores and DFI portfolios. All monetary values are expressed in constant 2025 US dollars unless indicated otherwise. The study acknowledges the limitations of incomplete data and relies on best available public sources.

Results

1. Global AI Investment Patterns

Figure 1 compares private AI investments in major economies in 2024. The United States committed around US$109 billion, over ten times China's US$9.3 billion and twenty-four times the United Kingdom's US$4.5 billion[1]. The European Union recorded €257 billion in AI investments, though this figure includes public funds[2]. The data highlight a highly concentrated global AI landscape, with the U.S. dominating private investment and Europe

relying on coordinated public-private funding. These disparities underscore the importance of DFIs in mobilising resources for lagging regions.

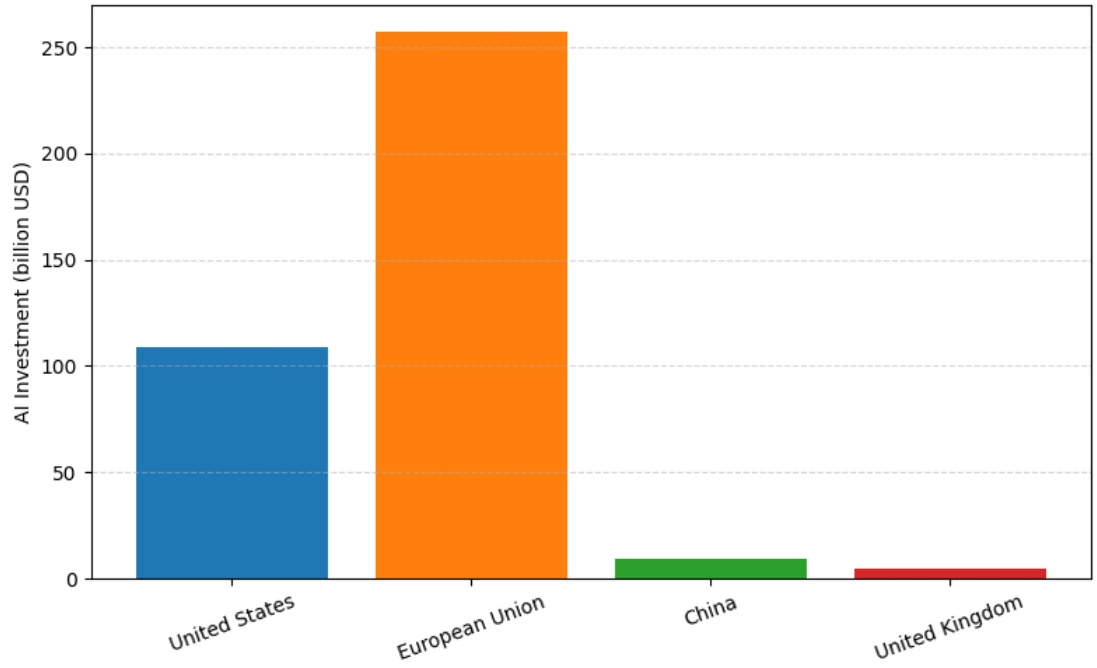

Figure 1: Private AI investment by region in 2024 (billion USD). The United States far outpaces other economies, while the European Union's AI investment reflects a large public-private programme.

2. African Digital Economy Financing Trends

Figure 2 shows that sub-Saharan Africa invested about US$7 billion in digital infrastructure in 2024 (primarily mobile networks), yet annual requirements for 2025–2030 range from US$7–8 billion[3]. Sample deals indicate that roughly US$5–6 billion has been committed through DFI-led transactions, with debt accounting for only 30 percent and equity 70 percent[3]. The gap between current CAPEX and required investment suggests a financing shortfall. DFIs need to mobilise more long-term capital and blend concessional finance with private investment.

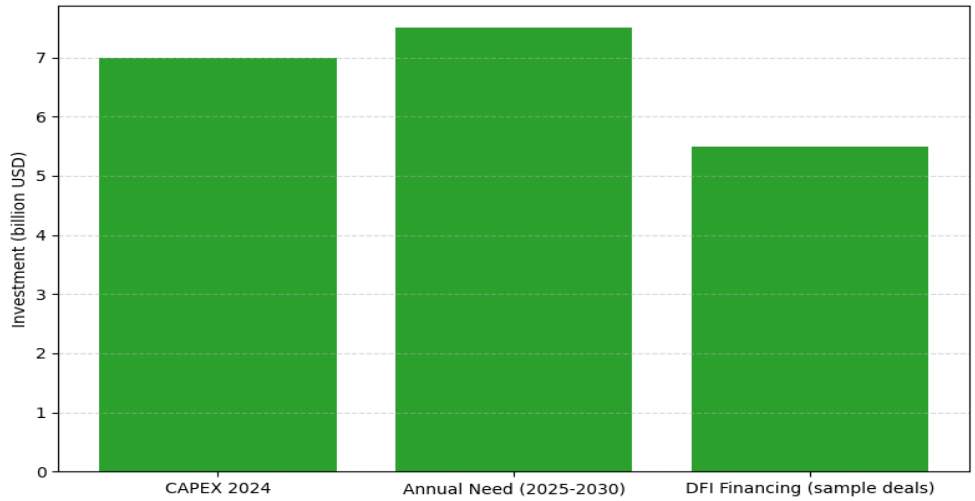

Figure 2: Comparison of current capital expenditure, estimated annual investment needs for 2025–2030, and sample DFI deals in digital infrastructure (billion USD). The chart illustrates the financing gap that DFIs must address.

3. AI Readiness and Competitiveness

Figure 3 presents AI readiness scores for selected countries. The top African performers—Kenya, South Africa, Mauritius and Nigeria—score between 50 and 56 out of 100[11]. In contrast, the United States and China score around 90 and 82, respectively. African countries lag particularly on digital infrastructure and public sector adoption. This underscores the need for DFIs to finance connectivity, cloud and compute as public goods and to support government capacity to deploy AI in health, agriculture and public services.

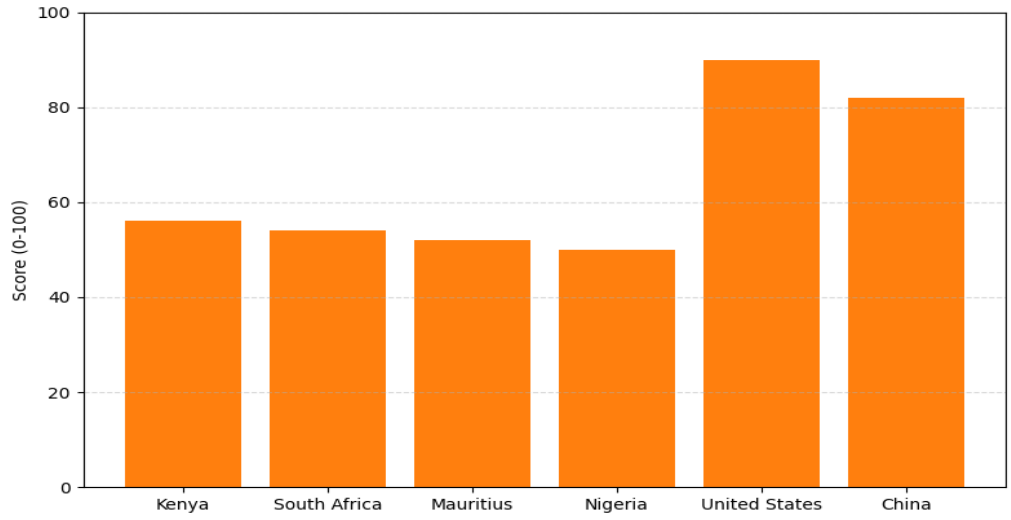

Figure 3: AI readiness scores for selected countries. African leaders still trail global front-runners, reflecting gaps in infrastructure and governance.

4. Compute and Data Infrastructure Gaps

Figure 4 juxtaposes Africa's share of the global population (18 percent) with its share of data-centre capacity (<1 percent)[18]. The mismatch highlights the continent's severe compute deficit. The absence of regional supercomputing facilities and cloud availability zones forces researchers and firms to rely on offshore services, raising latency and sovereignty concerns. Closing this gap will require DFIs to finance regional data centres, promote open access to compute and expand energy generation.

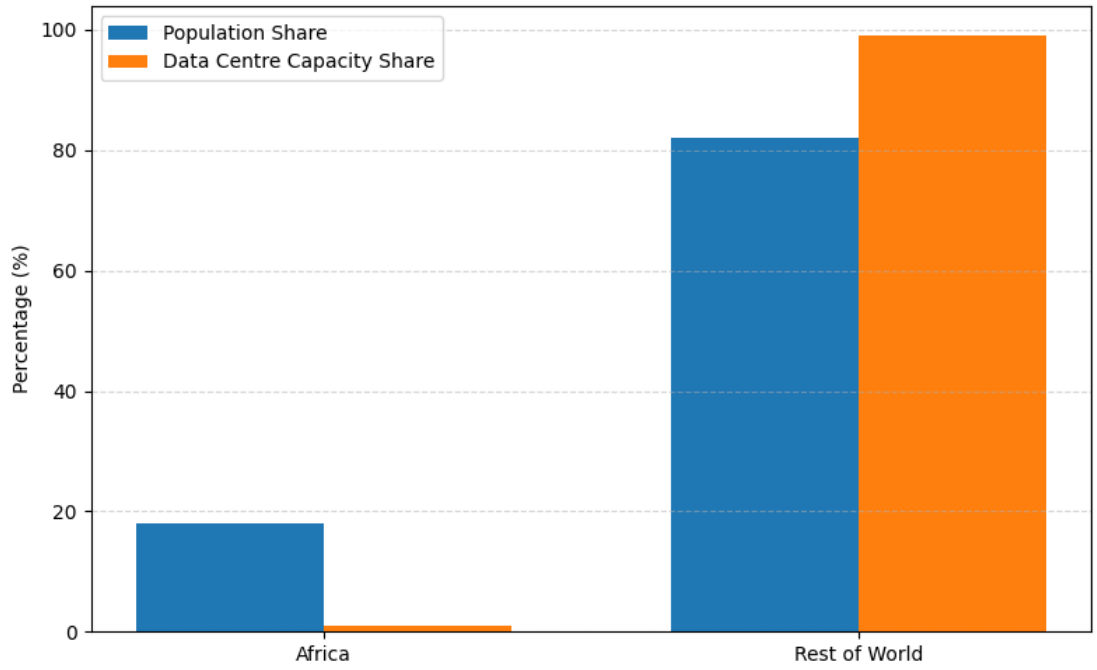

Figure 4: Africa accounts for 18 percent of the world's population but less than 1 percent of global data-centre capacity. This disparity impedes AI development and digital sovereignty.

5. Research and Talent Capacity

Figure 5 compares research capacity across regions. Sub-Saharan Africa has only 90 researchers per million inhabitants and spends 0.59 percent of GDP on R&D[12]. The world average is 1,420 researchers per million with 1.79 percent of GDP spent on R&D. North America and Western Europe have 4,746 researchers per million and invest around 2.5 percent of GDP. The shortage of researchers and low R&D spending constrain Africa's ability to develop indigenous AI. DFIs could support scholarships, research grants and partnerships between African universities and international AI labs.

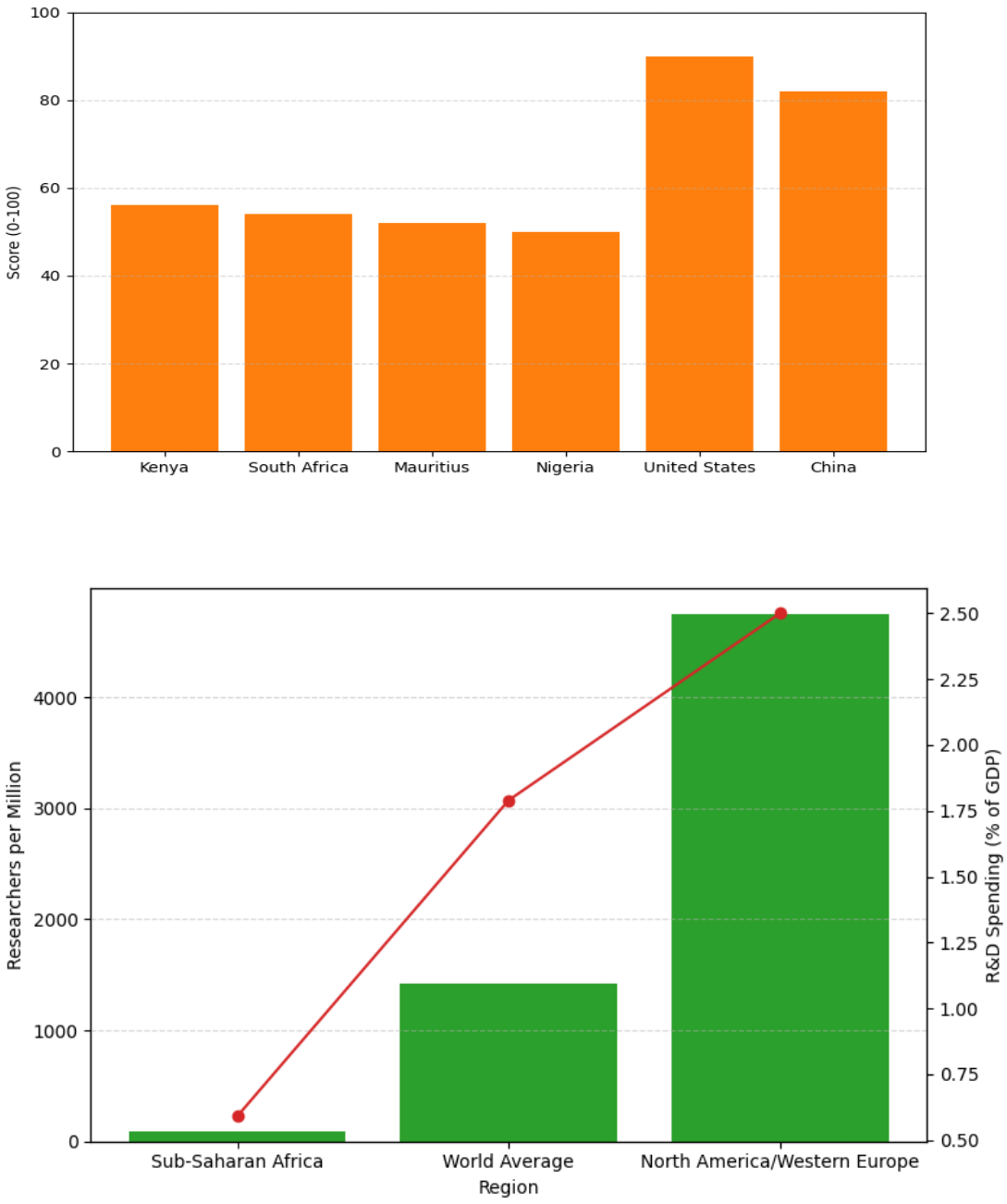

Figure 5: Researchers per million inhabitants (bars) and R&D expenditure as a share of GDP (line) for selected regions. Africa's deficit in human capital and research funding underscores the need for targeted investments in STEM education and research infrastructure.

6. Trade Potential Under AfCFTA

Figure 6 illustrates the potential impact of the African Continental Free Trade Area. AfDB estimates that AfCFTA could boost intra-African trade by 52 percent by 2035, creating a

unified market of 1.5 billion people and US$3.4 trillion in combined GDP[13]. The trade index is normalised at 100 for 2024, rising to 152 in 2035. To realise this potential, digital infrastructure, harmonised digital policies and e-commerce platforms are critical. DFIs must finance cross-border connectivity, digital ID systems, payment rails and digital trade facilitation.

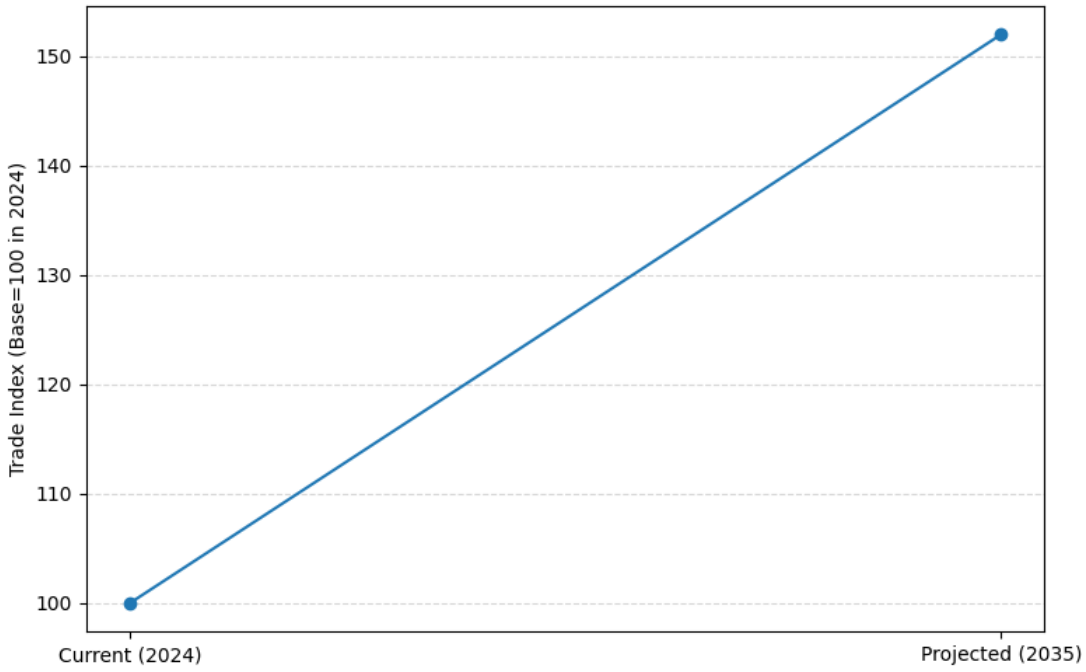

Figure 6: Projected increase in intra-African trade under AfCFTA (index where 2024 = 100). Harmonised digital infrastructure and policies will be pivotal in achieving the projected 52 percent increase in trade.

7. Composition of Domestic Savings and Institutional Capital

Figure 7 displays the composition of Africa's domestic savings, estimated at over US$4 trillion in 2024[14]. Institutional investors (pension funds, insurance and sovereign wealth funds) hold about US$1.1 trillion, commercial banks US$2.5 trillion and central banks US$470 billion. Most of these resources are invested in low-risk instruments. Mobilising a fraction towards infrastructure and AI could close financing gaps. DFIs can design blended-finance structures to crowd in domestic capital, offering guarantees and political-risk insurance.

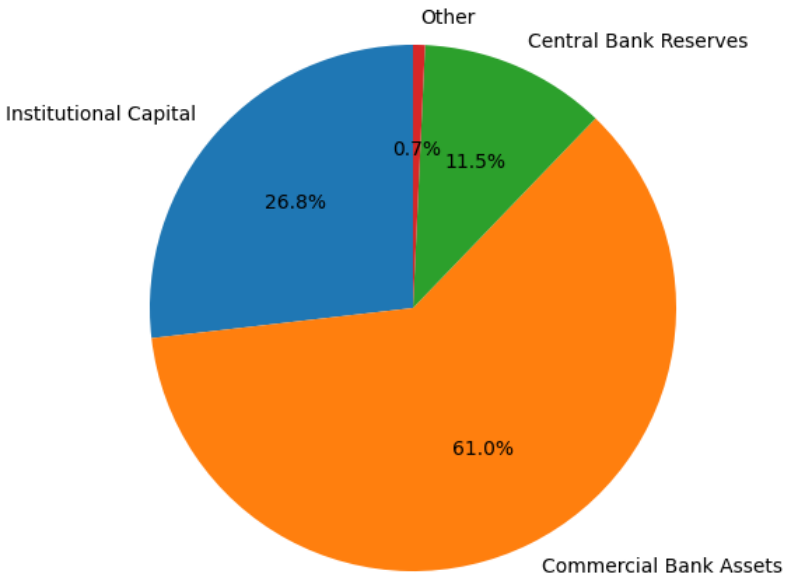

Figure 7: Breakdown of African domestic savings by component (billion USD). Institutional capital is under-utilised in infrastructure financing, representing an opportunity for DFIs to mobilise resources.

8. Distribution of Data Centres in Africa

Figure 8 indicates that Africa has 223 data centres across 38 countries. South Africa hosts 56, Kenya 19 and Nigeria 17, while the remaining 131 are spread across other countries[15]. The concentration in a few countries reflects market size and regulatory readiness. DFIs could support regional data-centre projects in under-served markets, using syndicated loans and public–private partnerships. Shared data-centre infrastructure can lower entry barriers for start-ups and SMEs.

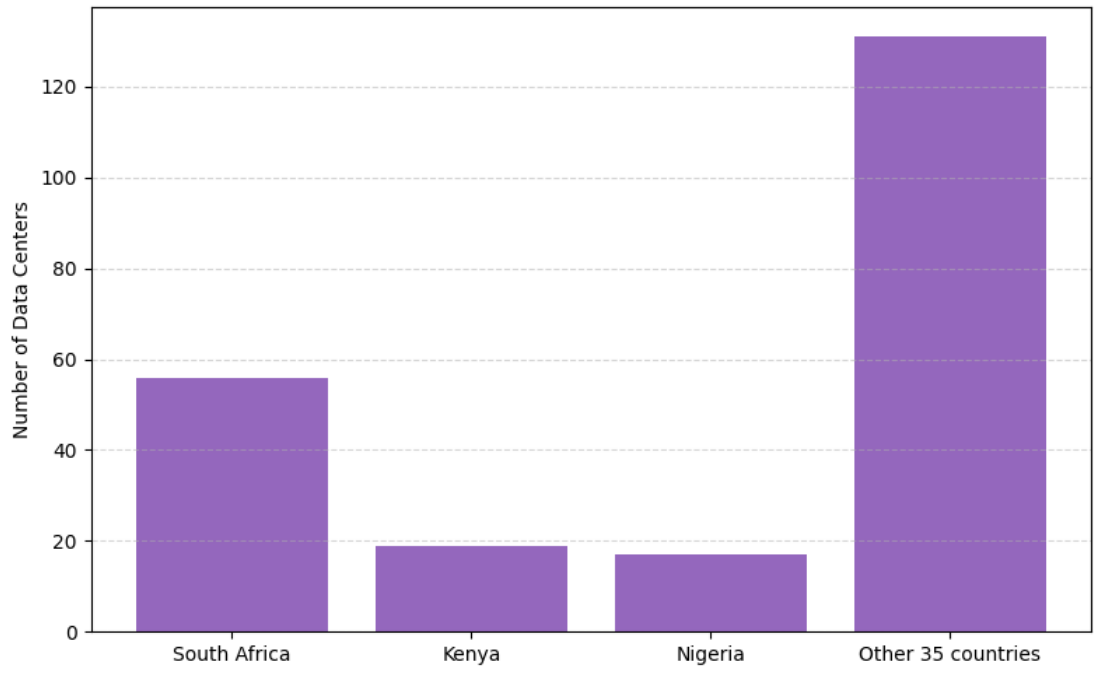

Figure 8: Number of data centres by country. South Africa dominates Africa's data-centre market, highlighting the need for more geographically balanced infrastructure.

9. Startup Funding Composition

Figure 9 compares equity and debt funding for African tech start-ups in 2024 and 2025. Total tech funding rose 25 percent to US$4.1 billion in 2025[19]. Equity funding increased from US$2.24 billion to US$2.41 billion (+8 percent), while debt financing jumped from US$1.01 billion to US$1.64 billion (+63 percent). Debt now represents nearly 40 percent of total funding. The top four markets—Kenya, South Africa, Egypt and Nigeria—captured 72 percent of all investment[19]. DFIs should design mezzanine and revenue-based financing instruments to support early-stage AI start-ups and reduce over-reliance on equity.

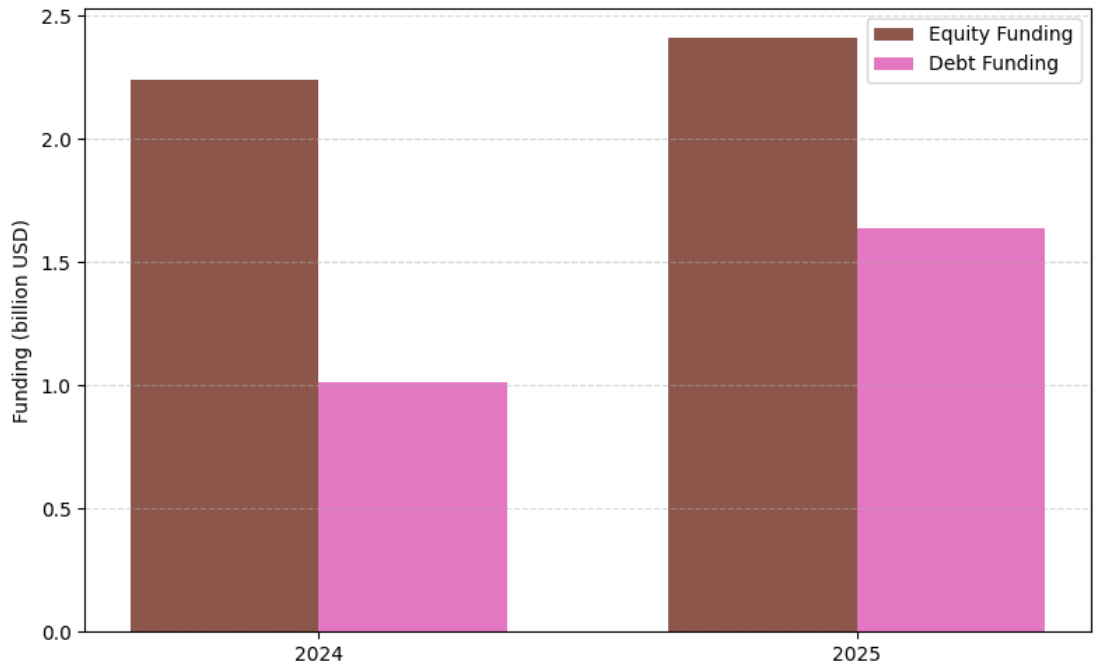

Figure 9: Comparison of equity and debt funding for African start-ups (billion USD). Debt financing grew rapidly in 2025, indicating the maturation of venture debt markets.

10. DFI Commitments to the Digital Economy

Figure 10 summarises selected DFI commitments to digital infrastructure and technology. AfDB has invested nearly US$3 billion in ICT projects over the last decade, connecting 66.5 million people to basic services[4]. BOAD has committed US$4.95 billion to infrastructure and digital economy projects and plans to allocate an additional US$2.1 billion under its Djoliba strategy[5]. IFC's financing for Raxio Group and the Africa Infrastructure Investment Fund adds about US$100 million[7]; BNDES intends to contribute R$500–1 billion (≈US$100–200 million) to an AI and data-centre fund[8]. KfW's DEG has a €15 billion portfolio across 450 projects, and the EIB plans to invest €70 billion through the Tech EU programme[9][10]. The chart uses a logarithmic scale to accommodate the wide range of commitments. It reveals that European DFIs lead in absolute amounts, while African DFIs focus on targeted regional programmes.

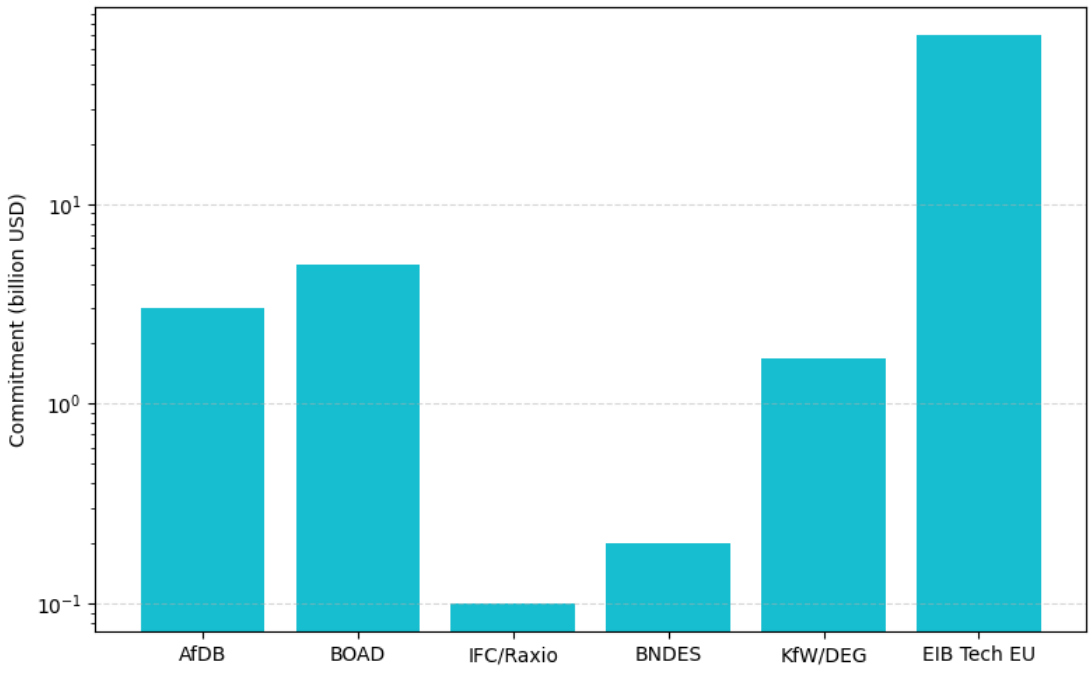

Figure 10: Selected DFI commitments to digital economy and technology (log scale, billion USD). European DFIs have launched large-scale programmes, but African DFIs provide regionally tailored financing.

11. Data-Centre and AI Market Growth in Africa

Figure 11 projects the growth of Africa's data-centre market and AI market from 2024 to 2030. The data-centre market is expected to rise from US$3.49 billion in 2024 to US$6.81 billion by 2030 (CAGR ≈ 11.8 percent)[17]. The African AI market is forecast to expand from about US$4–4.5 billion in 2024–25 to over US$16 billion by 2030 (CAGR ≈ 27.4 percent)[17]. The results indicate that demand for compute will far outpace supply unless significant investments are made. DFIs can support this market by financing energy-efficient data centres, green power, and cloud connectivity.

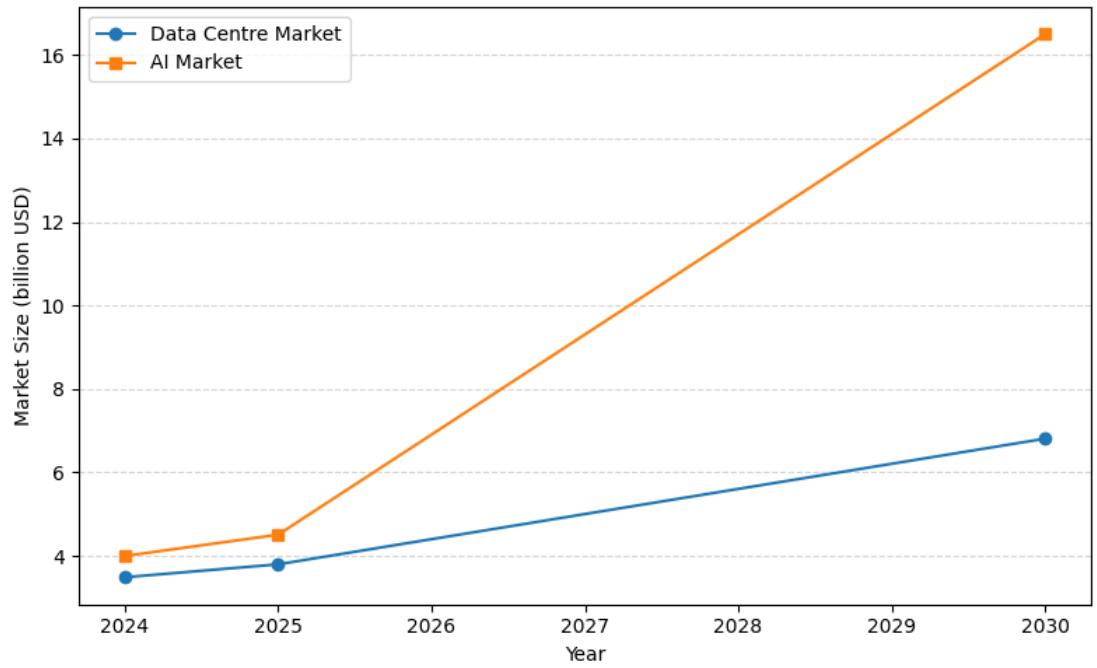

Figure 11: Projected growth of Africa's data-centre and AI markets. AI demand is expected to grow faster than data-centre capacity, underscoring the need for infrastructure investments.

12. Concentration of Digital Economy FDI

Figure 12 depicts the concentration of greenfield FDI in the digital economy across developing countries. Between 2020 and 2024, 80 percent of the US$531 billion invested in digital projects went to just ten countries[16]. This concentration suggests that investors gravitate toward markets with large consumer bases, stable regulations and existing infrastructure. African countries captured only a small fraction of such investments, reflecting perception of risk and limited connectivity. DFIs should provide guarantees and regulatory support to attract digital FDI to Africa.

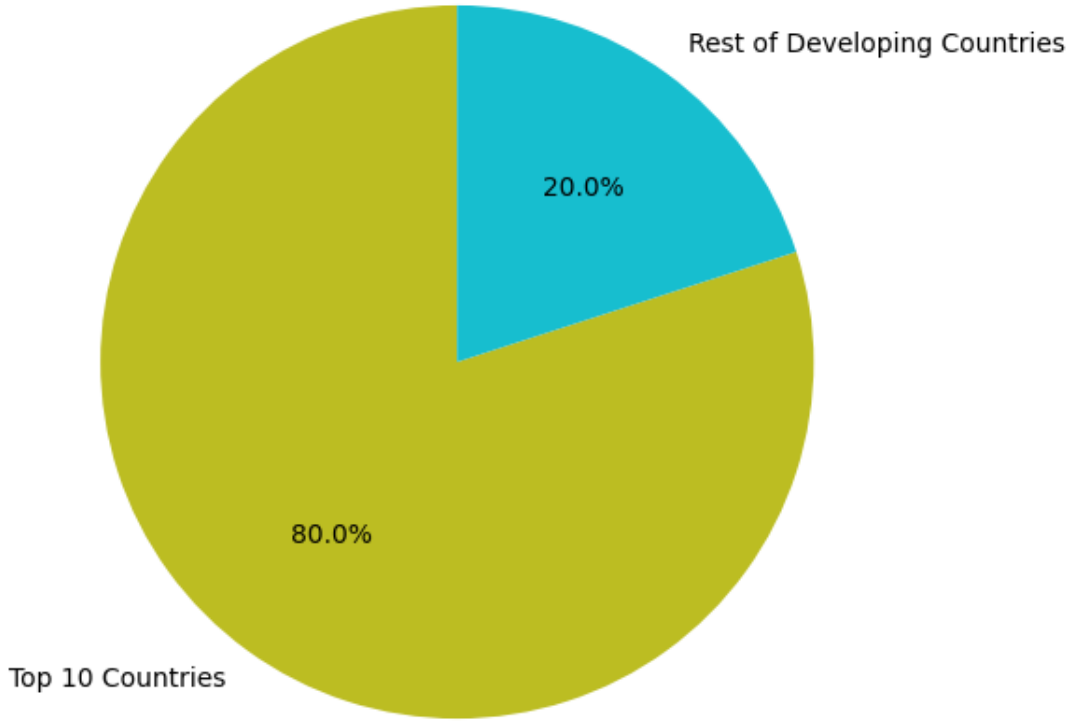

Figure 12: Share of digital-economy FDI captured by the top ten developing countries versus the rest (percentage). Investment concentration highlights the need for risk-mitigation instruments and policy reforms in less favoured markets.

13. Data-Centre Energy Consumption

Figure 13 shows that global data-centre energy consumption is projected to double from 500 terawatt-hours (TWh) in 2022 to over 1,000 TWh by 2026[18]. Rising energy consumption raises sustainability concerns, especially given Africa's energy deficits. DFIs financing data centres must ensure energy efficiency and invest in renewable energy generation. This also underscores the importance of new risk categories—climate impacts of digital infrastructure and the interplay between energy and data policies.

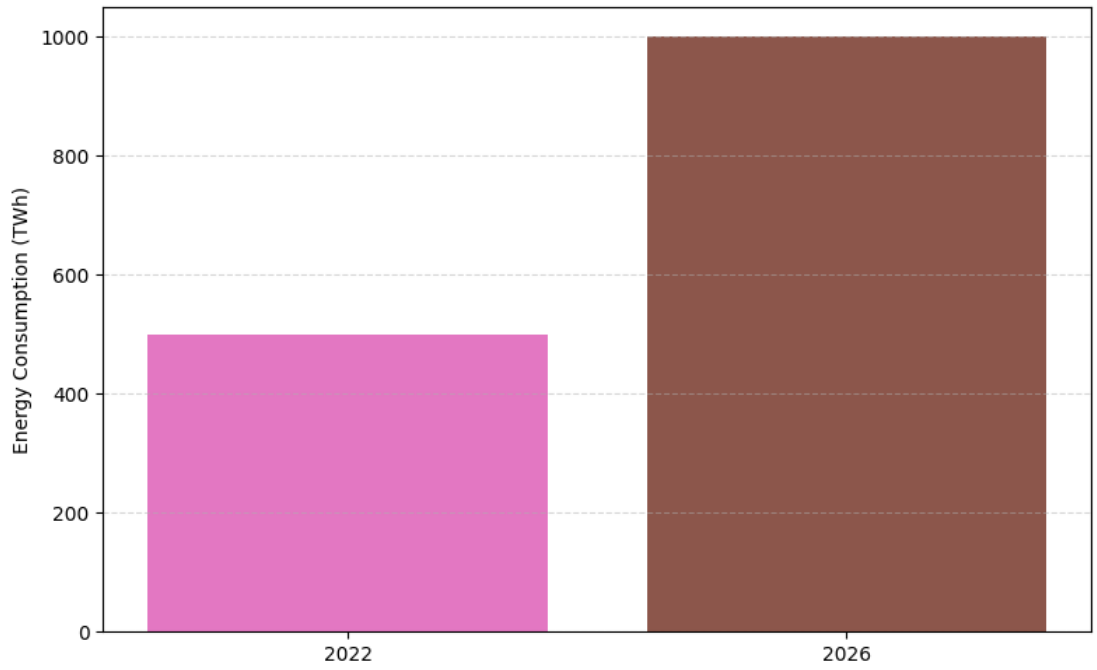

Figure 13: Projected increase in global data-centre energy consumption (TWh). The doubling of energy use signals the need for green data-centre financing and regulation.

14. Financing Mix for Digital Infrastructure Deals

Figure 14 illustrates that, in a sample of African digital infrastructure transactions, debt accounted for about 30 percent and equity 70 percent[3]. The dominance of equity reflects the early-stage, high-risk nature of digital projects. DFIs can offer credit enhancements, subordinated debt and blended finance to increase the share of debt and lower the cost of capital. They can also use results-based financing (as TDB does for distributed renewable energy projects) to crowd in private lenders.

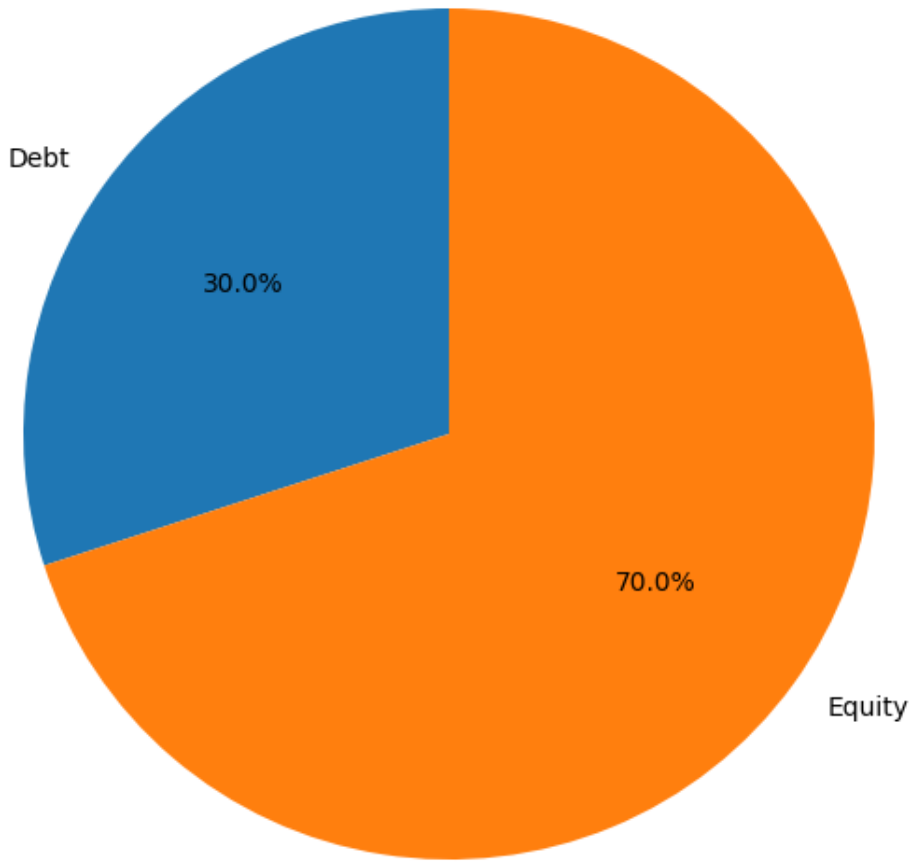

Figure 14: Proportion of debt and equity in sample digital infrastructure transactions. Blended-finance instruments could shift the balance toward more debt financing, reducing reliance on dilutive equity.

15. European DFIs' Technology Programmes

Figure 15 compares programme sizes for selected European DFIs. KfW's DEG holds a portfolio of about €15 billion across 450 projects and reports that 76 percent of clients introduce new technologies[9]. The EIB's Tech EU programme plans to invest €70 billion between 2025 and 2027 to support supercomputing, AI, digital infrastructure and other technologies, expecting to mobilise €250 billion in private investment[10]. European DFIs thus serve as benchmarks for African institutions seeking to scale up technology financing and leverage private capital.

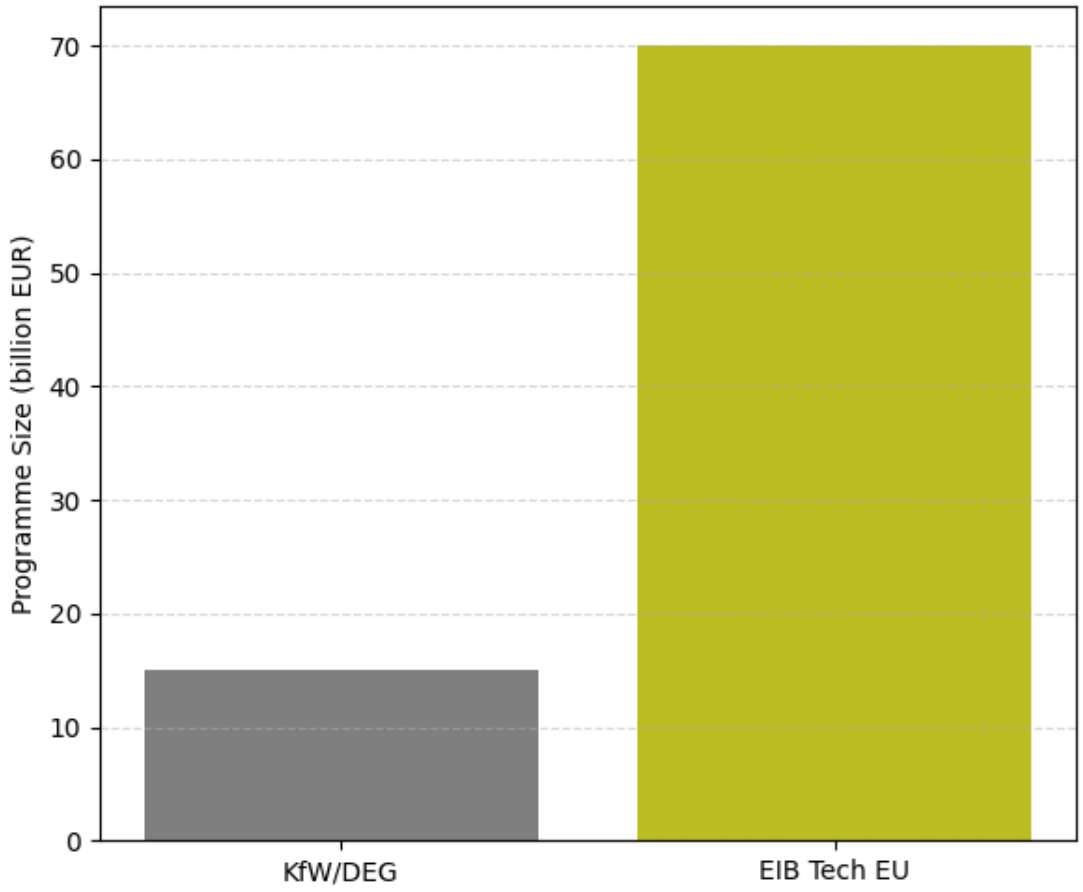

Figure 15: Programme sizes of KfW/DEG and EIB Tech EU (billion EUR). The EIB's planned investments dwarf those of African DFIs, highlighting the scale gap.

16. Researchers versus AI Readiness Scores

Figure 16 correlates researchers per million inhabitants with AI readiness scores for selected African countries. Kenya has around 90 researchers per million and an AI readiness score of 56. South Africa has roughly 120 researchers per million and a score of 54. Mauritius and Nigeria have similar research intensity and scores. The trend suggests that research capacity is positively associated with readiness, but other factors (infrastructure, governance) also influence scores. DFIs can invest in research centres and fund scholarships to improve both research intensity and AI readiness.

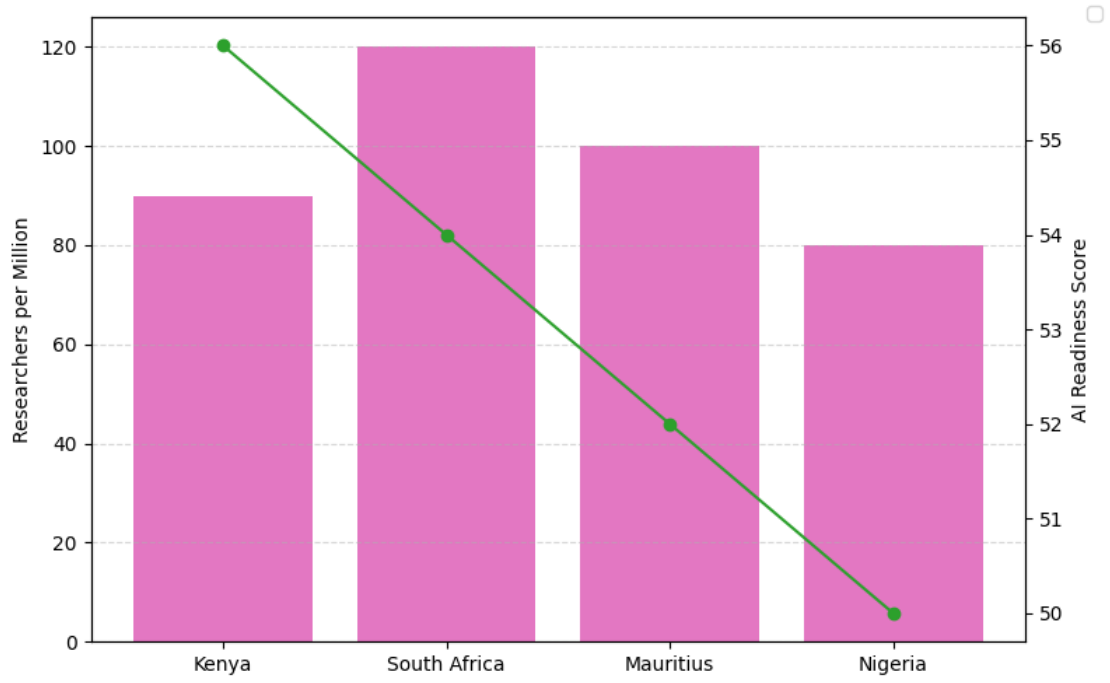

Figure 16: Relationship between research capacity (bars) and AI readiness scores (line) for selected African countries. Increasing research intensity correlates with improved readiness, though infrastructure and governance remain critical.

17. Adoption of National AI Strategies

Figure 17 shows that 29 out of 54 African countries had adopted or were developing national AI strategies by 2025[11]. Countries such as Ethiopia (US$7.7 million national AI strategy) and Rwanda (AI Scaling Hub) are increasing public investments[11]. Yet many countries lack dedicated resources. DFIs can support governments in formulating and funding AI strategies, aligning them with development goals and ensuring cross-border harmonisation.

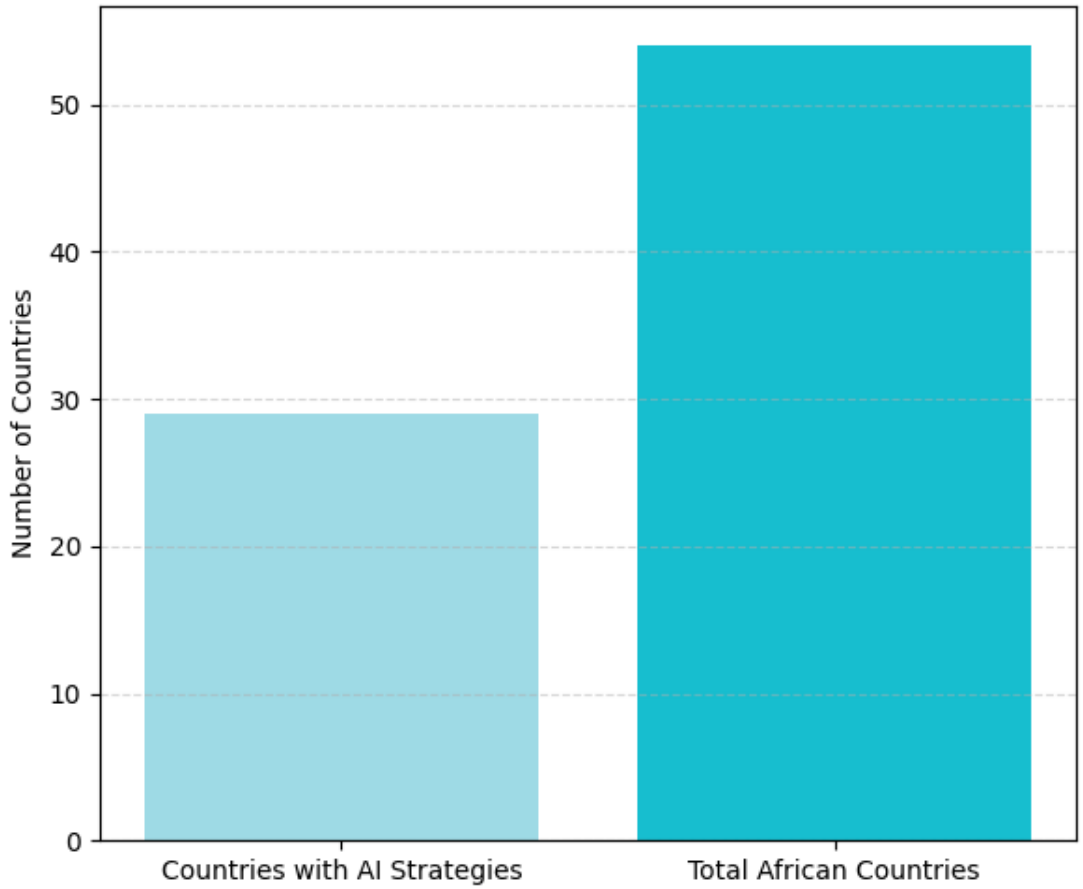

Figure 17: Number of African countries that have adopted or are developing national AI strategies versus the total number of countries. Most African countries still lack comprehensive AI strategies, signalling an area where DFIs and multilateral organisations can provide technical assistance.

18. Comparative Readiness Dimensions (Radar Analysis)

To visualise relative strengths and weaknesses in AI preparedness, Figure 18 presents a radar chart comparing scaled scores across four dimensions—governance & diffusion, infrastructure & data, skills & talent, and public-sector adoption—for Africa and the global average. The chart is derived from the 2025 Government AI Readiness Index and UNESCO's research statistics[11][12]. Africa scores highest on governance and diffusion (0.55 on a 0–1 scale) but falls sharply on infrastructure & data (0.30), reflecting limited compute and connectivity. Skills and talent (0.40) and public-sector adoption (0.35) also lag the global average (0.70–0.80 across dimensions), highlighting the need for investments in human capital and public-sector AI deployment. The radial format underscores how Africa's

readiness is more unbalanced than the global benchmark, emphasising that improvements must be multidimensional.

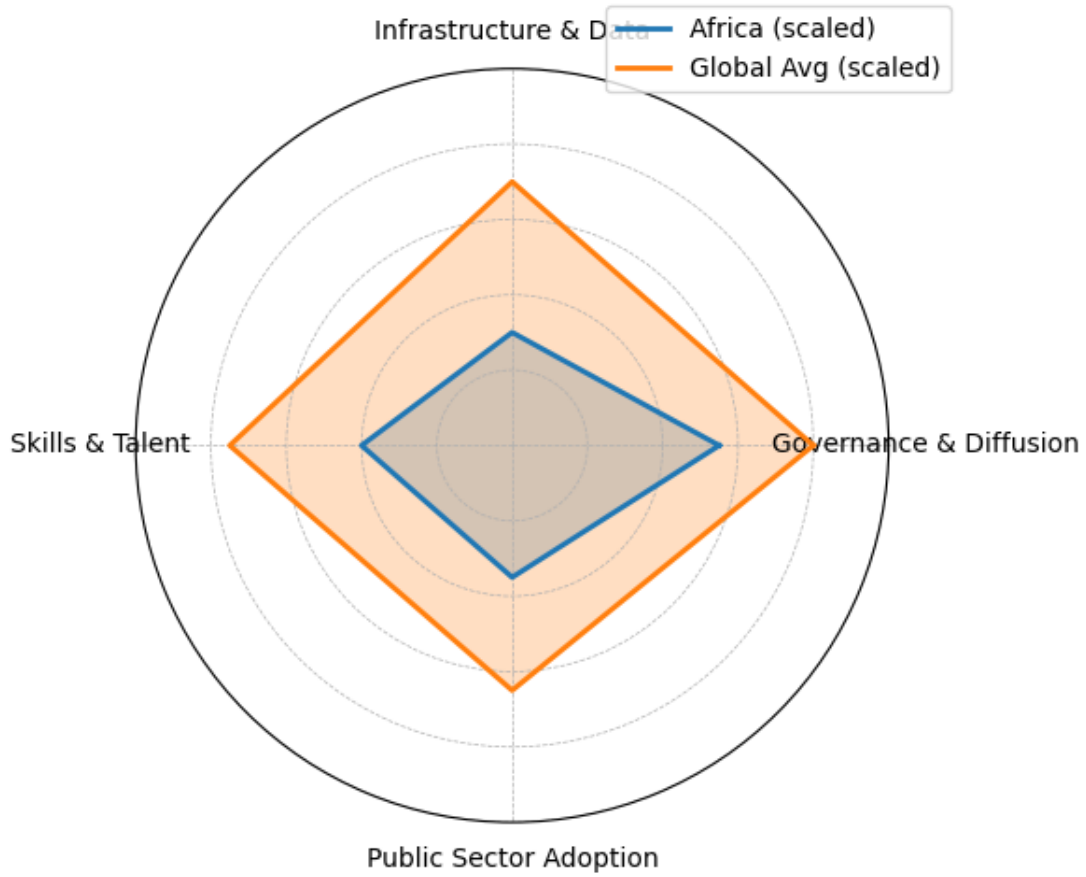

Figure 18: Radar chart comparing scaled AI readiness dimensions for Africa and the global average. Africa performs relatively well in governance & diffusion but significantly trails the global benchmark in infrastructure, talent and public-sector adoption. Values are normalised to a 0–1 scale based on available index data.

19. Correlation Analysis of Development Variables

Figure 19 provides a correlation heatmap across five variables—AI readiness score, researchers per million, R&D spending, digital infrastructure investment and AI market size—for Africa, the world average and high-income regions. The analysis reveals strong positive correlations (dark red cells) between AI readiness and research capacity (0.99), and

between digital infrastructure investment and AI market size (0.97). This suggests that investing in research and infrastructure has a large impact on AI readiness and market development. Negative or weak correlations (blue or light cells) appear between R&D spending and digital infrastructure investment, implying that R&D spending alone does not guarantee infrastructure build-out. While the small sample limits statistical significance, the heatmap demonstrates how multi-dimensional investments—human capital, infrastructure and market development—interact[3][11][12][17].

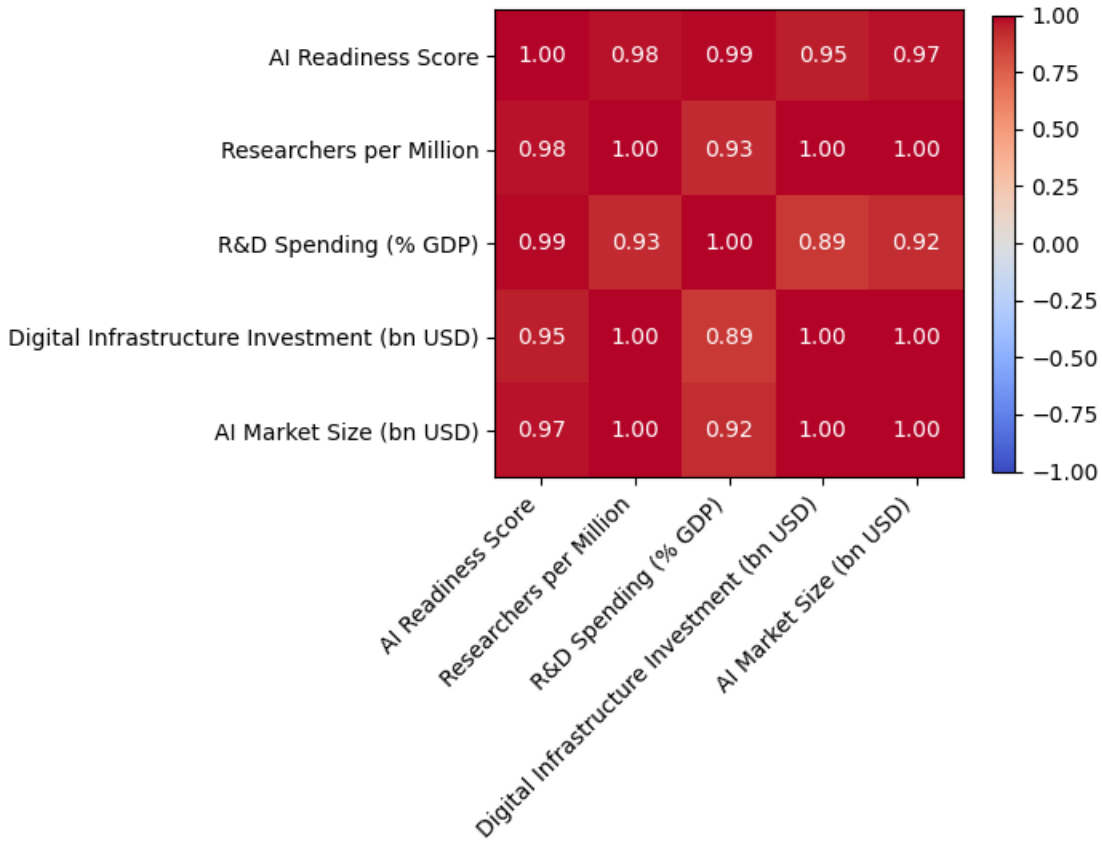

Figure 19: Correlation matrix for selected development variables. Darker shades denote stronger positive correlations. AI readiness correlates strongly with research capacity and digital infrastructure investment, highlighting the importance of parallel investments in human capital and physical infrastructure.

20. Global Positioning of Data-Centre Capacity, AI Market Size and Population

Figure 20 plots data-centre capacity share (x-axis) against AI market size (y-axis) with bubble size proportional to population share for Africa, Europe, the United States and China.

Despite accounting for 18 percent of the world's population, Africa has less than 1 percent of global data-centre capacity and a comparatively small AI market (≈US$4.5 billion in 2025)[17][18]. Europe and the United States exhibit a more proportional relationship between capacity and market size, while China's population and AI market are large relative to its capacity share. The bubble chart underscores how Africa's population and potential market demand are not matched by compute capacity, highlighting a priority area for DFIs and investors.

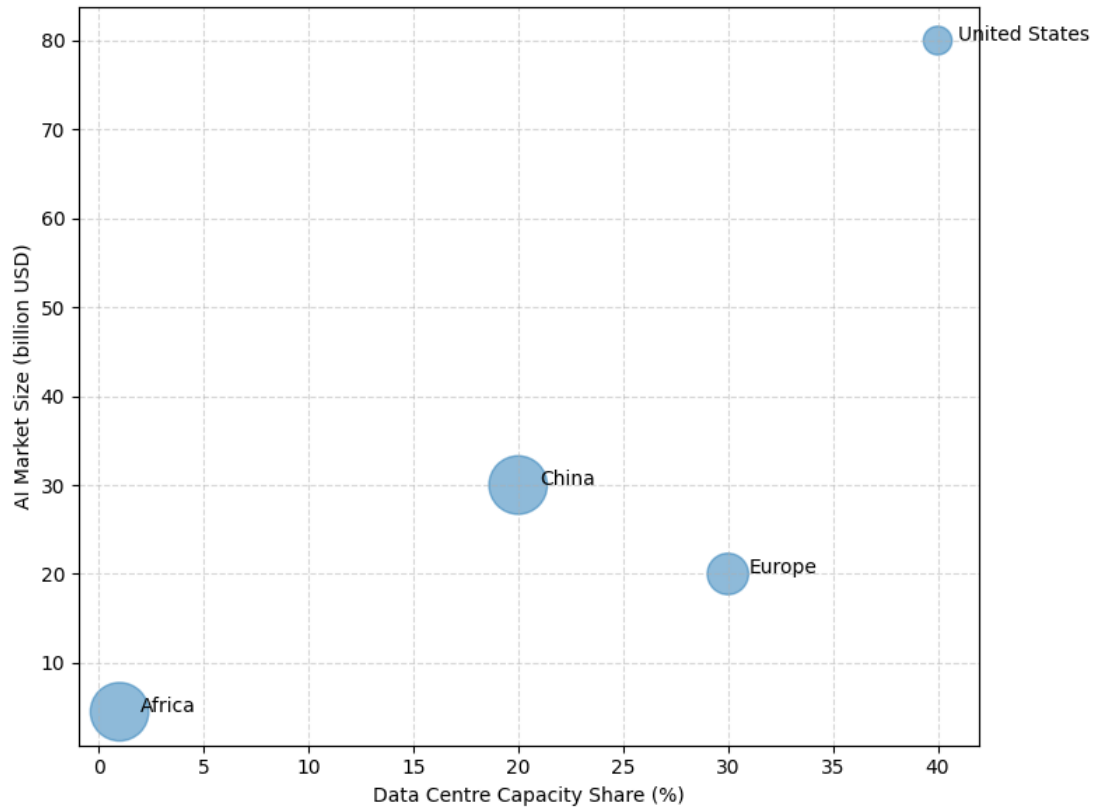

Figure 20: Bubble chart illustrating the relationship between data-centre capacity share, AI market size and population share for selected regions. Africa's underdeveloped compute infrastructure stands in stark contrast to its large population, while Europe and the United States occupy a more balanced position. Bubble size corresponds to population share.

21. Scenario Analysis: Investment Trajectory for Digital Infrastructure

Figure 21 presents a scenario analysis comparing current CAPEX (flat at US$7 billion), required investment to meet connectivity and AI demand (rising from US$7.0 billion to 8.8 billion by 2030), and a projected investment path assuming DFIs scale up efforts (increasing from US$7 billion to US$11 billion over the same period). The required investment line is based on estimates by Xalam Analytics that Africa needs US$7–8 billion

annually for digital infrastructure[3]. The projected path illustrates how expanded DFI mandates and mobilised domestic savings could close the financing gap and exceed requirements. Without such scaling, the continent will continue to under-invest, hampering AI readiness and digital sovereignty[3][14].

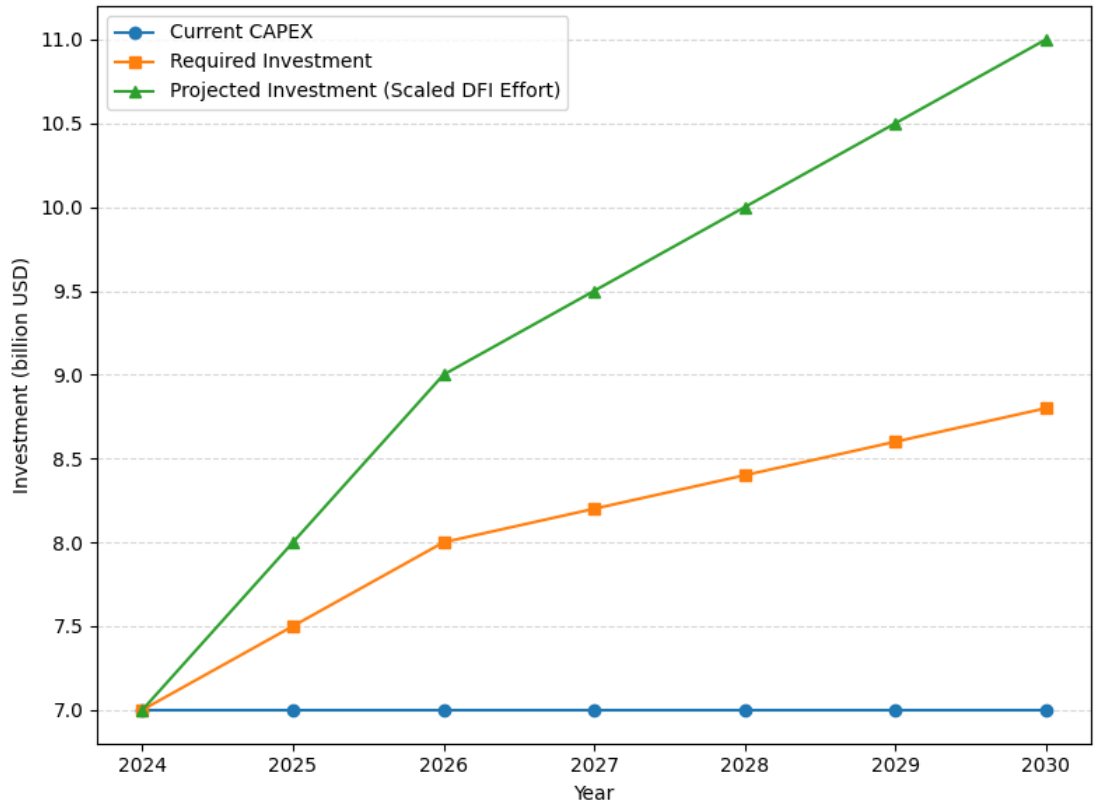

Figure 21: Scenario analysis of digital infrastructure investment. The current CAPEX remains flat, while required investment grows moderately and a scaled DFI mobilisation scenario projects significantly higher investments. Bridging the gap requires DFIs to leverage domestic savings and innovative instruments.

Discussion and Policy Implications

For African Governments

Invest in public digital infrastructure. Governments should treat cloud, compute and connectivity as public goods. Shared data centres and regional supercomputing facilities can reduce costs and improve sovereignty. Investments must be complemented by regulatory reforms such as open access to fibre networks and spectrum liberalisation. Afreximbank's Pan-African Payment and Settlement System (PAPSS) shows the benefits of regional digital infrastructure, cutting cross-border transaction costs by 7 percent and

delivering up to 27 percent savings to users[6]. Scaling similar initiatives, such as the Africa Trade Gateway platform that integrates financing, logistics and compliance services[6], will boost intra-African trade under AfCFTA.

Strengthen governance and IP frameworks. Digital sovereignty requires data-protection legislation, open-data policies and AI-specific regulation. African AI strategies should include guidelines on ethical AI, IP ownership, data localisation and cross-border data flows. Regional harmonisation, as envisaged by the AU's continental AI strategy[11], would reduce regulatory fragmentation and attract investment. Partnerships with the World Intellectual Property Organization (WIPO) and national IP offices can help structure financing instruments that support IP creation and monetisation.

Prioritise research and human capital. Governments should allocate a higher share of GDP to R&D and expand scholarships in STEM fields. Public funding can be complemented by DFI-supported innovation funds, research grants and vocational training. Initiatives like Ethiopia's AI investment of US$7.7 million and Rwanda's AI Scaling Hub[11] demonstrate early moves. Policies should also encourage diaspora talent to contribute to research and entrepreneurship.

For DFIs

Expand mandates to digital public goods. DFIs need to redefine infrastructure to include fibre, cloud, compute, semiconductors and digital public infrastructure. AfDB's US$3 billion investment in ICT[4] and BOAD's US$4.95 billion commitment[5] show initial momentum, but significantly larger programmes are required. Multilateral DFIs should create dedicated AI infrastructure windows, blending concessional loans, equity, guarantees and results-based grants. For example, TDB's Regional Energy Access Financing Platform combines loans, performance-based grants and technical assistance to deliver clean energy and digital innovations.

Develop risk-sharing and blended-finance instruments. Digital projects face high upfront costs and uncertain returns. DFIs should provide political-risk insurance, partial credit guarantees and first-loss capital to crowd in private investors[20]. They can structure project bonds for data centres, offer revenue-based financing for AI start-ups and create venture debt vehicles. Results-based financing can link disbursements to milestones, aligning incentives and reducing moral hazard. DFIs should also collaborate with central banks and pension funds to mobilise domestic savings (Figure 7). Regulatory reforms will be necessary to allow institutional investors to allocate a portion of portfolios to infrastructure.

Transform internal operations with AI. DFIs can use AI for credit scoring, risk analytics and portfolio optimisation. Machine learning models can assess SME creditworthiness using

alternative data and anticipate loan defaults. Natural language processing can enhance monitoring of environmental, social and governance (ESG) risks. AI can also support impact measurement, evaluating outcomes of infrastructure projects. To avoid new digital risks—such as bias, data breaches and algorithmic opacity—DFIs need robust data governance and human oversight[21].

Strengthen digital risk safeguards. Digital risks differ from traditional environmental and social risks because they can scale rapidly and amplify inequalities[21]. DFIs must develop safeguards that address privacy, cybersecurity, discrimination and algorithmic harm. They should conduct digital risk assessments, consult affected communities and require clients to adopt responsible AI principles. Emerging frameworks, such as the UN's guiding principles on business and human rights for digital projects, provide a starting point.

For Private Capital

Private investors—including venture funds, institutional investors and global tech companies—should partner with DFIs to co-finance digital infrastructure and AI ventures. Co-investment allows risk sharing and provides access to concessional capital. Institutional investors can allocate capital to infrastructure funds backed by DFIs, benefiting from guarantees and political-risk mitigation. Venture funds can explore revenue-based financing and convertible debt to support start-ups without excessive dilution. Global cloud providers can be encouraged to localise infrastructure in Africa through public–private partnerships and local equity stakes.

For Academia & Research Institutions

Universities and research institutes play a pivotal role in building capacity and generating localised knowledge. They should establish AI research hubs, incubators and partnerships with DFIs. Joint programmes between African universities and international institutions can expand training opportunities. UNESCO's call for science diplomacy and partnerships highlights the need to close the research gap[12]. DFIs can fund endowed chairs in AI, sponsor research competitions and support open-source projects that adapt AI to African languages and contexts.

Limitations

The analysis relies on publicly available data, which may not capture all financing commitments or private investments. Many figures—such as AI readiness scores and DFI portfolios—are approximations due to limited disclosure. The charts are illustrative and aggregate data from diverse years and sources. Moreover, the fast-evolving nature of AI and digital markets means that projections may change rapidly. Future research should build

comprehensive databases of digital infrastructure deals, compute capacity and AI applications. Qualitative case studies of DFI projects could provide deeper insights into success factors and challenges.

Conclusion

AI heralds a new industrial era, with compute power, cloud infrastructure and data becoming foundational to economic competitiveness and sovereignty. African countries face significant deficits in digital infrastructure, research capacity and policy readiness. Development finance institutions—domestic, regional and multilateral—have begun to respond by financing ICT projects, data centres, digital platforms and innovation funds. Yet the scale of current commitments remains modest relative to the continent's needs. This paper shows that DFIs must adopt new mandates encompassing digital public goods, design risk-sharing instruments, and transform their operations using AI. Strategic partnerships between DFIs, governments, private investors and academia can accelerate the build-out of AI-enabling infrastructure, bolster research capacity and enable Africa to shape its own digital future.

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