



GROWTH THROUGH INNOVATION:

Harnessing data and frontier technologies for Africa's economic transformation

EXECUTIVE SUMMARY

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GROWTH THROUGH INNOVATION: HARNESSING DATA AND FRONTIER TECHNOLOGIES FOR AFRICA'S ECONOMIC TRANSFORMATION

Africa has experienced steady economic growth in recent years, though it was mostly driven by factor accumulation, with negative contributions from productivity, suggesting limited improvements in efficiency. Growth failed to translate into robust structural transformation over time, as the reallocation of labour and capital from subsistence agriculture and other low-productivity activities to higher-productivity manufacturing and modern services have been slow.

Harnessing data and frontier technologies now offers significant opportunities for Africa to break from low-productivity activities and forge new pathways for inclusive and sustainable growth and to progress towards achieving the Sustainable Development Goals and Agenda 2063: the Africa We Want. Strategic adoption of frontier technologies across sectors can leapfrog traditional development pathways, raise efficiency, support industrial upgrading, increase productivity, attract investment, create jobs, and promote economic diversification.

Data as the new oil fueling frontier technologies have driven economic transformation worldwide. They hold immense potential to accelerate Africa's growth, innovation, and social development. How? By enabling more efficient decision-making, fostering entrepreneurship, economic inclusion and sustainability, and improving governance and service delivery.

Against this backdrop, the *Economic Report on Africa 2026: Growth through innovation: Harnessing data and frontier technologies for Africa's economic transformation* (ERA 2026) examines the impact of innovation on economic growth and development. It describes the role of frontier technologies in driving economic transformation, as well as the associated opportunities, risks, and challenges. It features the centrality of data and the new oil fueling frontier technologies and it highlights the actions that African

countries can take to maximize the transformative potential of frontier technologies.

The report finds that enhancing Africa's sectoral productivity and closing productivity gaps through technology and innovation require differentiated strategies. Agriculture risks being left behind without climate-smart reforms, irrigation, and targeted finance. Manufacturing emerges as Africa's anchor for structural transformation through technology and innovation-enabled clusters and corridors. And services thrive on digitalization and finance, but Africa's human capital is too limited to sustain their growth. Institutions and regional cooperation are decisive for technology and innovation to flourish. Stronger governance, regulation, and public procurement can consolidate technological gains, while the African Continental Free Trade Area (AfCFTA) provides the scale to embed innovation in regional value chains.

ERA 2026 also details how frontier technologies are transforming Africa's production landscape, with their effects differing sharply across sectors. Productivity gains from frontier technologies in agriculture remain limited due to rainfed farming, low mechanization, weak research and development (R&D), and restricted digital access. In some contexts, digital adoption imposes short-term adjustment costs when new practices disrupt traditional production systems. Manufacturing is the most consistent beneficiary of frontier technologies, with digital automation, industrial clustering, and smart logistics generating scale economies and sustaining efficiency gains underpinning industrial diversification and structural transformation. For services, rapid and significant benefits arise from digitalization in telecommunications, fintech, logistics, and e-commerce. The ensuing innovation comes mainly through technology diffusion, adaptation, and new business models rather than formal R&D.



Frontier technologies such as artificial intelligence, machine learning, advanced data analytics, and photonic sensors are transforming production processes and service delivery across agriculture, healthcare, finance, energy, transport, and public services. Across Africa, smart agriculture is increasing yields while reducing input costs. Digital platforms are expanding access to markets and finance. Renewable energy technologies are extending electricity access to underserved regions. Electric vehicles are creating jobs and generating export earnings. And e-government services are improving efficiency and transparency.

Frontier technologies are also operationalizing the AfCFTA by integrating digital systems, such as the Pan-African Payment and Settlement System, which facilitates real-time cross-border payments and intra-African trade. They also present significant opportunities in extracting and producing Africa's critical minerals, which account for 30 per cent of the world's supply, and in producing green hydrogen and nuclear energy, essential for Africa's clean energy transition.

Despite these developmental benefits, frontier technologies carry such risks as displacing labour, widening social and economic inequality, skill mismatches, and gender gaps, particularly in

economies with large informal sectors and limited absorptive capacity. Data sovereignty is another critical issue, as most of Africa's data are stored in foreign data centres, compromising national security and privacy, and worsening cybersecurity threats, technological dependencies, and supply chain disruptions. And Africa's incomplete data chains—with limited data centres, high processing costs, fragmented datasets, and weak integration—undermine data's value creation and local benefits. Governance and regulation issues are also prominent, as fragmented international cooperation and geopolitical tensions hinder technological advancements.

Amid these constraints, the report stresses that harnessing data and frontier technology to enable Africa's economic transformation requires many things. Strengthening governance structures. Forming partnerships. Promoting R&D, innovation, and entrepreneurship. Reforming the international financing environment. De-risking investment in frontier technologies. Developing inclusive and dynamic strategic policies, plans, and roadmaps. Promoting human capital development for the future. And investing in hard and soft infrastructure.

KEY MESSAGES

AFRICA'S GROWTH IS EXPECTED TO IMPROVE IN THE MEDIUM TERM

Economic growth is expected to reach 4.0 per cent in 2026, underpinned by rising infrastructure investments, stabilizing commodity prices, and increasing trade flows. Inflationary pressures are expected to ease thanks to declining food prices and stable currencies. But monetary policy will continue to diverge across countries and trade remains vulnerable to global shocks. The fiscal outlook continues to be favourable, amid external and domestic shocks. But debt service obligations remain high, constraining the fiscal space for development financing.

The pace of poverty reduction has been slow in Africa, despite some countries having reduced the number of both the multidimensional and monetarily poor. Most of these countries are Least Developed Countries, mostly in the Sahel and Central Africa. Poverty and inequality persist as development challenges, despite the progress of several countries towards widespread poverty reduction. Stubbornly wide gender gaps remain a major barrier to economic progress, and digital gender divides persist across most parts of Africa, with limited progress towards closing the gaps. Africa's input-driven growth model has thus proven inadequate for countries to exploit the opportunities emanating from technology and innovation.

Closing the productivity gaps through technology and innovation is proving to be the promising path to resilient and sustainable growth. Frontier technology readiness can deliver delayed but lasting dividends for African countries. Unlike broad innovation inputs that yield only short-lived gains, technology and innovation generate sustained productivity and income growth, with effects compounding over time.

The economic impact of frontier technologies and innovation depends on complementary capabilities that enable absorbing, adapting, and scaling technologies. Skills, industrial capacity, digital and physical infrastructure, institutional quality, and access to finance—all shape whether technological

advances translate into economywide productivity gains. Skills and industrial upgrading are found to be consistent drivers of productivity and output, while ICTs provide short-term boosts. Financial systems, however, need to be reoriented through facilities such as innovation bonds, blended finance facilities, and regional credit lines to channel resources into high-productivity sectors. Africa's policy emphasis should shift from "digital expansion" alone to ecosystem readiness, especially skills and productive capabilities, to convert technological diffusion into sustained productivity gains.

DESPITE THE INCREASING INVESTMENT, STRUCTURAL WEAKNESSES CONTINUE TO LIMIT TECHNOLOGY AND INNOVATION PROGRESS

Governments and private sector actors continue to invest in technologies that have the potential to address unique development challenges facing African countries, in areas including health, financial inclusion, education, and food security. Despite such policy frameworks as the African Union's 1 per cent target and the establishment of national science and innovation funding initiatives, ERA 2026 highlights how structural weaknesses limit technology and innovation progress for African countries and fail to generate immediate productivity gains and growth.

DATA ARE ASSETS, SOURCES OF REVENUE, AND BUSINESS OPPORTUNITIES FOR AFRICAN ECONOMIES

Data have become a critical economic asset, driving economic transformation worldwide. They thus hold immense potential to accelerate growth, innovation, and social development by enabling more efficient decision-making, fostering entrepreneurship, and improving governance and service delivery. As

data move through their lifecycle of generation, storage, processing, analysis, and economic impact, increasing value is created at each stage, making it a new stream of revenue for industries that have data as part of their business portfolio. Data are thus a defining resource in the digital era—the “new oil” that is renewable and multiplies in value when analysed and shared.

Clean energy technologies enable more reliable and sustainable power supplies for industry and households, thus fostering new business models and rural electrification. These technologies have improved manufacturing processes, streamlined logistics, reduced operational costs, and brought greater transparency to trade, thus strengthening the competitiveness of local industries and supporting inclusive economic growth.

AFRICA HAS A COMPARATIVE ADVANTAGE IN DEVELOPING FRONTIER TECHNOLOGIES

With 30 per cent of the world’s critical mineral reserves and 60 per cent of its best solar resources, Africa has a demonstrable comparative advantage to capture a meaningful share of the growing market for frontier technologies but must leverage them effectively. By localizing production and increasing participation in the local, regional, and global value chains, countries can drive forward with green industrialization. To do this requires a skilled workforce, but Africa has a comparative demographic advantage thanks to its young population, which tends to be more adaptive and creative.



KEY RECOMMENDATIONS

To maximize the transformative potential of data and frontier technologies in Africa, governments should:

STRENGTHEN GOVERNANCE OF FRONTIER TECHNOLOGIES

Governance of frontier technologies should maximize their benefits while minimising associated risks, considering each country's national plans, priorities, and aspirations. This involves establishing responsive legal, regulatory, and administrative frameworks, along with strong institutions to oversee their implementation. Cybersecurity remains a high-risk factor as many African countries lack basic IT infrastructure to fight cybercrime. These deficits emphasise the urgent need to monitor, prevent, investigate, and prosecute cybercrimes.

FOSTER PARTNERSHIPS FOR ADVANCING FRONTIER TECHNOLOGIES

Partnerships are important for expanding funding, talent, and infrastructure to share the risks of failure and navigate complex market-entry rules. National, regional, and international partnerships need to be collectively developed and agreed upon by stakeholders, including the government, industry, and civil society. As the costs of R&D, infrastructure, and technology acquisition increase, such alliances can meet the demands of many frontier technologies as well as to reduce costs associated with accessing those technologies, especially for poorer countries.

PROMOTE RESEARCH, DEVELOPMENT, INNOVATION, AND ENTREPRENEURSHIP

Frontier technologies are driven by R&D to create new products and services, and significantly enhance existing ones. They enable companies to become more competitive by increasing funding, creating centres of excellence in frontier technology

development and adaptation. Africa's gross R&D expenditure across all sectors accounted for only about 1.3 per cent of the global total in 2023, mostly by the public sector rather than industry. African countries now need to increase R&D funding, create centres of excellence in frontier technologies development and adaptation, and improve the policy and regulatory environment for commercializing, seeding and attracting technology startups.

FORMULATE INCLUSIVE AND STRATEGIC POLICIES, PLANS, AND ROADMAPS

This should be based on research and scientific evidence and directly connected to industrialization, economic diversification, job creation, and national ownership. Policies must remain flexible, adaptable, and responsive to emerging trends and unforeseen challenges. They must also be inclusive in their design and implementation to take care of diverse interests, concerns, opportunities, and risks across different societal groups.

DEVELOP HUMAN CAPITAL FOR THE FUTURE

Current estimates indicate that only 13 per cent of African children can read and understand a simple story by the age of 10; just 15 per cent of all students in upper secondary are enrolled in technical and vocational education training, and the gross enrolment rate in tertiary education is 9 per cent, compared with 42 per cent globally. Broadening access and enhancing performance are urgently needed to empower the population, especially youth and women, with the technology, entrepreneurial, creative, and problem-solving skills to use, design, and produce knowledge products. Countries need comprehensive national education action plans that include prioritizing context-specific strategies for curriculum reform and the professional development of teachers, with a focus on practical skills. Establishing structured collaboration frameworks between universities and industry can ensure that

education—particularly in science, technology, engineering, and mathematics—is aligned with industry and national needs.

INVEST IN HARD AND SOFT INFRASTRUCTURE

High-performance computing facilities, cloud computing platforms, and 5G networks are essential for enabling widespread digital technology use. Africa’s infrastructure deficit, along with its data sovereignty challenges, must be addressed. The huge energy requirements of data centres make the joint investment in data centres and energy generation an appealing financing option. Data centres can guarantee the offtake of energy generated. Investments in science, technology, and industrial parks can support the commercialisation of emerging innovations. And electric vehicle charging stations can facilitate the mass adoption of clean transportation solutions. But the success of these advanced systems relies heavily on traditional infrastructure, such as dependable energy, transport, and communication networks.

REFORM THE INTERNATIONAL FINANCING ENVIRONMENT

Structural features of the international financing environment increasingly constrain investment in R&D, innovation, and entrepreneurship, including improvements in sovereign debt resolution frameworks, the international credit-rating ecosystem, and the global tax architecture. Reforms to these global systems can address persistent financing challenges and revenue leakages, thus reducing reliance on costly external borrowing.

DE-RISK INVESTMENT IN FRONTIER TECHNOLOGIES

Investing in frontier technologies entails a significant risk, particularly during the early stages of R&D. The risks are pronounced for smaller firms and startups, which lack the financial resilience to absorb potential losses. Providing tax incentives or offering loan guarantees can provide partial or complete credit protection against a project’s failure by encouraging lending and investment in high-risk ventures.



IN SUM

Africa's economic growth has mostly been driven by factor accumulation—increases in land use, capital, and labour—rather than by genuine gains in productivity. With notable technological adoption and significant potential for rapid scaling, data, frontier technologies and innovation offer significant opportunities for African nations to transform their economies through boosting productivity, creating jobs, fostering economic diversification, and strengthening global competitiveness.

With its youthful population, abundant critical minerals, and unmatched hydro and solar power potential, Africa is uniquely positioned to claim a defining share of the technology-driven future. Technologies from green hydrogen to small nuclear reactors and integrated renewable grids can power industries, data centres, and regional electricity markets. Digital payment systems and mobile money can strengthen cross-border payments and intra-African trade, expanding financial inclusion, strengthening regional integration, and creating opportunities for entrepreneurship and micro, small, and medium enterprises. And data and frontier technologies can enhance transparency, boost efficiency, and sharpen the continent's competitiveness in the global market.

Harnessing data and frontier technologies offers significant opportunities for Africa to break from low-productivity trajectory and forge new pathways for inclusive and sustainable growth. Strategic adoption of frontier technologies across sectors offers the potential to leapfrog traditional development pathways, raise efficiency, support industrial upgrading, increase productivity, attract investment, create jobs, and promote economic diversification. Data, as a critical economic asset, and the new oil fuelling frontier technologies have also been instrumental in driving economic transformation worldwide and thus hold immense potential to accelerate Africa's growth, innovation, and overall development.

The Economic Report on Africa 2026, using a mixed-methods approach that includes empirical analysis and case studies, highlights the impact of innovation on economic growth and development through enhanced productivity. It also highlights the opportunities, risks, and challenges in harnessing data and frontier technologies and innovations to drive economic transformation, and the actions African countries can take to maximize the transformative potential.

The report finds that enhancing Africa's sectoral productivity and closing the productivity gap through technology and innovation requires differentiated strategies, with agriculture at risk of being left behind without climate-smart reforms, irrigation, and targeted finance. Manufacturing emerges as Africa's anchor for structural transformation through technology and innovation-enabled clusters and corridors. And services thrive on digitalization and finance, but with limited human capital to sustain growth. Institutions and regional cooperation are decisive enablers for technology and innovation to flourish.

What are the keys to harnessing data and frontier technology to enhance Africa's economic transformation?

- Strengthening governance structures and harnessing partnerships.
- Promoting R&D, innovation, and entrepreneurship.
- Reforming the international financing environment and de-risking investment in frontier technologies.
- Developing inclusive and dynamic strategic policies, plans, and roadmaps.
- Promoting human capital development for the future. Investing in hard and soft infrastructure.
- Taking advantage of the opportunities that come with implementing the AfCFTA to provide the scale to embed innovation in regional value chains.