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BOOK

# TRANSFORMING AFRICA

*Fostering a New  
Innovation Agenda*

*Edited by*

**OLUGBENGA ADESIDA,  
GECI KARURI-SEBINA &  
JOÃO RESENDE-SANTOS**

# **Transforming Africa**

This book is a much-needed intervention that finally moves Africa’s innovation debate beyond rhetoric. It offers a grounded yet bold agenda that challenges the continent to confront hard truths: our innovation deficit is not a matter of missing strategies – we’ve had plenty – but of systemic inertia, weak implementation, and fragmented ecosystems. What sets this volume apart is its clear rejection of techno-fixes and donor-led models in favour of a more holistic, indigenous, and context-sensitive innovation paradigm. The contributions highlight the need for innovation not just in laboratories but across our governance systems, educational models, food systems, and development finance. It insists, rightly, that innovation is a societal project – and that the arts, informal sectors, and local knowledge are just as vital as advanced tech. This is a rare example of scholarship that is analytically rigorous, policy-relevant, and unafraid to ask difficult questions. I hope it finds its way into the hands of those willing to drive Africa’s transformation with the urgency and imagination it demands.

—*Carlos Lopes, Professor, Nelson Mandela School, University of Cape Town; Chair of the African Climate Foundation Board; Former Executive Secretary, Economic Commission for Africa*

Innovation is not a luxury; it is a necessity for Africa’s future. Let this book be a rallying point for all who believe in Africa’s promise. I commend it to everyone committed to building an Africa that is not only self-reliant, but also a source of inspiration and progress for the world.

—*Pedro de Verona Rodrigues Pires, Founding Prime Minister & Former President of the Republic of Cabo Verde and Mo Ibrahim Laureate 2011*

Africa is faced with unprecedented opportunities – but realizing them requires a bold, inclusive innovation agenda. This book argues for a holistic, ecosystem-based approach that empowers diverse stakeholders and integrates multiple knowledge systems. I commend the editors of *Transforming Africa* for this vital call to action.

—*Ameenah Gurib-Fakim, PhD, Former President of the Republic of Mauritius (2015–2018)*

This book makes a compelling case for systemic, inclusive innovation as the foundation of Africa’s structural transformation. By uniting indigenous knowledge with modern science, empowering women and youth, and promoting regional collaboration and inclusive governance, it outlines a bold and Realistic

path forward. Its call to build strong innovation ecosystems – where government, business, academia, and civil society work together and trust each other is timely and vital. A must-read for policy makers and anyone committed to shaping Africa’s future.

—*Dr Ibrahim Assane Mayaki*, **Former Prime Minister of Niger; Former CEO NPCA and AUDA-NEPAD; African Union Special Envoy on Food Systems**

Innovation is the continent’s most powerful lever for inclusive and sustainable development. This book highlights compelling case studies that demonstrate how systemic innovation can unleash Africa’s full potential. With its practical insights and inspiring stories, it is an essential read for anyone determined to drive social impact and economic transformation. I wholeheartedly recommend it to leaders and changemakers committed to shaping Africa’s future.

—*Élisabeth Moreno*, **Chairwoman Ring Capital and Ring Africa; Former Minister Delegate for Gender Equality, Diversity and Equal Opportunities, France; Former vice-president and managing director of Hewlett-Packard for Africa**

“Transforming Africa” is a timely and inspirational call to action for all stakeholders involved in Africa’s development journey. It positions innovation at the centre of efforts to solve real, everyday problems – from agriculture and health to education and governance. The book’s call to integrate indigenous knowledge and traditional know-how with modern technologies, recognises the strategic necessity of hybrid solutions for creating real value and resilience. The African scholars and practitioners in this book do not shy away from identifying persistent policy challenges and implementation gaps and advocate for bold, systemic transformation that challenges conventional assumptions and fosters new forms of leadership. This book is an important piece in Africa’s inclusive growth and self-reliance puzzle.

—*H.E. Ambassador Lerato Dorothy Mataboge*,  
**African Union Commissioner**

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# **Transforming Africa: Fostering a New Innovation Agenda**

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INVESTOR IN PEOPLE

# Contents

About the Editors	<i>ix</i>
About the Contributors	<i>xi</i>
Acknowledgements	<i>xvii</i>
<b>Chapter 1 Transforming Africa: A New Era Driven by Innovation</b> <i>Olugbenga Adesida, Geci Karuri-Sebina and João Resende-Santos</i>	<i>1</i>
<b>Chapter 2 Stimulating Innovation in Africa’s Food–Health Nexus</b> <i>Nana Kofi Safo and George Owusu Essegbey</i>	<i>19</i>
<b>Chapter 3 Putting Community at the Centre of Health System Transformation in Africa</b> <i>Yap Boum II, Laura Ambe and Reiche Massengo</i>	<i>41</i>
<b>Chapter 4 Bringing the Traditional Grains of Sorghum and Millet Back to the Dinner Table</b> <i>Julius Gatune</i>	<i>61</i>
<b>Chapter 5 Innovation, Informality and Cultural Heritage: Lessons from a Study of Informal Apparel Businesses in South Africa</b> <i>Il-haam Petersen</i>	<i>83</i>
<b>Chapter 6 Exploring Firm-Level Classification of Innovation Behaviours in Agricultural Businesses: An Input–Output Modes Approach</b> <i>Yasser Buchana and Moses Sithole</i>	<i>109</i>

<b>Chapter 7 Innovation Through Educational Arts in Under-Resourced Communities in South Africa</b>	131
<i>Sean MacGinty and Linda Daniels</i>	
<b>Chapter 8 Financial Sector Development: The Fintech Solution</b>	151
<i>Tochukwu Egesi</i>	
<b>Chapter 9 Transformative Impacts of Ethical and Responsible AI: The Case of AI Sandboxes for Economic Policymaking</b>	169
<i>Blaise Booponoyeng Bayuo and Olamide Olabode Goriola</i>	
<b>Chapter 10 Countering Violent Extremism in Africa: The Challenges of Navigating Uncertainty</b>	197
<i>Anthoni van Nieuwkerk</i>	
<b>Chapter 11 Harvesting Tomorrow: Revitalising African Foodscapes</b>	213
<i>Fisayo Oyewale and Shem Omasire</i>	
<b>Chapter 12 Reimagining African Futures Through Higher Education Policy: Evidence from South Africa</b>	229
<i>Jason Owen, Geci Karuri-Sebina, Riel Miller and Heide Hackmann</i>	
<b>Chapter 13 Transforming Systems Through Innovation: What Must Change in Africa's Development Agenda</b>	247
<i>Geci Karuri-Sebina, João Resende-Santos and Olugbenga Adesida</i>	
Index	261

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We also recognise the encouragement and support of our repeat publisher, Emerald, who have yet again been a professional and competent ally in actualising our vision. Daniel Ridge was particularly supportive in initially believing in the potential of this ongoing project and commissioning the book.

We extend our sincere gratitude to all the contributors and reviewers whose rigorous scholarship and practical insights have shaped this volume and enriched the series as a whole. We also thank the community of stakeholders who gathered with us in December 2025 to carefully analyse the emerging policy themes: Azeez Hazmat, Blaze Bayo, Doha Mghabbar, George Essegbey, John Mugabe, Kais Hammami, Koena Motloi, Linda Daniels, Mandry Ntshani, Nana Kofi Safo, Rebecca Hanlin, Sean MacGinty, Yap Boum, Yasser Buchana. Finally, we would like to thank our editorial assistant, Amy Mutua, for her excellent support and tireless effort in managing the production of this volume.

This series is part of the AIS Foundation's efforts to foster research, dialogues, marketplaces and robust innovation ecosystems to harness home-grown innovation across all sectors, drive systemic change and unleash Africa's promise to create an equitable, prosperous future for all.



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## Chapter 1

# Transforming Africa: A New Era Driven by Innovation

*Olugbenga Adesida<sup>a</sup>, Geci Karuri-Sebina<sup>b</sup> and João Resende-Santos<sup>c</sup>*

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### Overview

The assertion that science, technology and innovation (STI) are the principal drivers of the global economy has become almost a cliché in contemporary discourse. Yet, this truism masks a more profound reality: the pace of innovation continues to accelerate, fundamentally reshaping societies and economies worldwide. Nowhere is this more evident than in the recent and rapid advances in artificial intelligence (AI), as well as ongoing progress in synthetic biology and genomic engineering, quantum computing, advanced robotics and autonomous systems.

These and other emerging technologies could herald revolutions across virtually all domains of human endeavour, even while they bring their own new (and some unknown) risks and dangers. The fusion of these innovations promises to transform how goods and services are produced, recalibrate the balance of power between capital and labour, disrupt established sectors and eliminate jobs while creating new opportunities.

By challenging the current models of value creation, labour and governance, the adequacy of prevailing profit-maximisation models as the philosophical underpinning of economic activities or the sole metric of economic success would be severely questioned. A critical uncertainty in this emerging future is whether or not the pursuit of individual gain or profit maximisation will be the basis for

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Transforming Africa, 1–17



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economic organisation in light of the plausible radical change in the balance of power between capital and labour.

In this emerging future, the imperative for African countries to innovate – and to do so systematically and inclusively – cannot be overstated. The transformative potential of AI and other advanced technologies cannot be realised equitably or sustainably without high-performing national innovation systems and robust national strategies that favour the common good.

For African countries, this means moving beyond ad-hoc or isolated initiatives to build comprehensive, resilient innovation ecosystems. Such systems require not only visionary policies but also effective and efficient coordination and accountability among diverse stakeholders, including government, industry, academia and civil society. They also depend on strong flows of information and knowledge, robust mechanisms for collaboration and learning, as well as strong capacity to adapt to rapid change.

Against this backdrop, the goals and focus of this innovation series, of which this book is the third volume, are more relevant than ever. As the world enters an era defined by AI and exponential technological change, African nations must ensure that their innovation systems are not only robust but also agile, inclusive and fit for purpose. Only then can the continent seize the opportunities and navigate the disruptions of the new technological age, driving sustainable and inclusive development for current and future generations.

This volume echoes the calls of previous volumes in this series regarding the urgent need to foster and expand innovation in all spheres. We are not the first or only ones to make these urgent calls or to recommend strategies. The problem has not been the lack of ideas and sound strategies. Indeed, for decades now, numerous action plans, strategies and proposals have been put forward and adopted at the national and continental levels. But progress has either been slow or non-existent. Hubs of innovation exist. Isolated cases have emerged and captured international recognition. Individual entrepreneurs and enterprises have found success. But the continent, as a whole, lags behind. Coherent innovation ecosystems are not easy to find, and the individual cases of success struggle against difficult business climates and sociopolitical conditions. Thus, as a first step, the people and governments of Africa must ask the hard and difficult question of why we have failed to achieve, sustain and scale meaningful progress.

## **The Innovation Africa Series**

The first two volumes of the Innovation Africa series laid the groundwork for understanding and strengthening Africa's innovation landscape. *Innovation Africa: Emerging Hubs of Excellence* showcased how diverse actors across the continent are driving locally rooted, context-sensitive innovation. *Innovation Ecosystems in Africa: Solving the Problems We Have* broadened the focus to examine how national innovation systems address pressing developmental challenges. Both volumes emphasise the need for inclusive, systems-based approaches that integrate grassroots ingenuity with advanced research,

highlight persistent gaps in infrastructure, policy and human capital and call for coordinated, action-oriented strategies to foster resilience, collaboration and leadership. Collectively, they advocate for a bold, integrated innovation agenda as the foundation for Africa's sustainable and inclusive transformation.

The insights of the first two books have inspired this third volume of the Innovation Africa series. The third volume is a response to the call for African countries to bet on innovation with a greater sense of urgency, ensure bolder imagination about the future and invest in building more robust and effective innovation ecosystems.

The central thesis of this third volume, *Transforming Africa: Fostering a New Innovation Agenda*, is that Africa stands at a critical juncture, necessitating a bold and transformative innovation agenda to address its pressing challenges and seize emerging opportunities. The third volume is conceived as an agenda-setting work that seeks to chart a bold and imaginative course for Africa's innovation future. Building on the empirical insights and systems perspectives developed in the preceding volumes, this book moves beyond diagnosis to articulate a forward-looking agenda that addresses the urgent need for accelerated and transformative change across the continent.

At its core, this volume responds to the pressing question: why should Africa change the pace and direction of its innovation trajectory, and what concrete steps are required to do so? The book contends that, in a rapidly evolving world shaped by technological disruption, demographic shifts and intensifying developmental challenges, African countries cannot afford incrementalism. Instead, there is a need for a decisive shift; an intentional and strategic acceleration of innovation ecosystem building and direct enablement of innovation that can drive structural transformation and sustainable development.

Like its predecessors, this volume is simultaneously academic, policy-oriented and practice-focused. It aims to broaden the visibility and deepen the interrogation of African innovation systems by offering rigorous, contextually grounded analyses of endogenous innovation practices and lessons. Each chapter is designed to illuminate a thematic issue that is central to Africa's future, dissect the relevant innovation ecosystem and employ illustrative cases to distil both the challenges and the opportunities at hand. Importantly, the volume's structure ensures that each contribution culminates in a forward-looking agenda, proposing actionable policies and practical lessons to inspire and equip stakeholders – governments, business leaders, academics and civil society actors – for the urgent task of facilitating structural change.

Furthermore, this volume is explicitly policy-relevant. It seeks to provide not only inspiration but also concrete policy 'take-aways' for the continent's policymakers and the broader 'quadruple helix' of social actors. By synthesising evidence and experience from across Africa, the book offers a strategic agenda for moving the continent forward with speed and purpose, equipping stakeholders to address persistent challenges and seize emerging opportunities. In doing so, *Transforming Africa* aspires to contribute meaningfully to the continent's ongoing quest for innovation-led transformation and inclusive, sustainable development.

## **The Need for a New Innovation Agenda**

The global innovation landscape is undergoing rapid transformation, driven by converging technological breakthroughs, new business models and shifting geopolitical and socio-economic dynamics. Africa is deeply influenced by these changes, with digitalisation, climate change and the rise of distributed innovation models opening new opportunities while also exposing persistent vulnerabilities. Over the past decade, African innovators have demonstrated remarkable ingenuity, from mobile money and decentralised energy to burgeoning tech hubs and social enterprises, yet progress remains uneven and constrained by infrastructural, financial and policy challenges. As global competition intensifies and the pace of change accelerates, Africa's unique demographic strengths and adaptive capacity underscore the urgent need for a bold, integrated innovation agenda capable of harnessing these trends to drive sustainable and inclusive development.

Innovation has long been recognised as a cornerstone of economic transformation, societal advancement and global competitiveness (Lundvall, 2007; Nelson, 1993). Yet, Africa's innovation landscape remains deeply fragmented and underperforming relative to global peers. Despite notable progress in certain countries and sectors, the continent as a whole continues to lag on critical indicators of innovation and development (Adesida et al., 2016, 2023). In a rapidly changing global context, a fundamental recalibration of Africa's innovation agenda is urgently required – one that addresses structural deficiencies, mobilises untapped potential and aligns innovation efforts with the continent's broader development aspirations.

### ***The Changing Innovation Context***

Technological convergence across fields such as AI, biotechnology, renewable energy and advanced manufacturing is reshaping industries and creating new opportunities for value creation (OECD, 2018). Concurrently, innovation is becoming more mission-driven, aimed at addressing global challenges like climate change, pandemics and social inequalities (Mazzucato, 2018). Innovation systems are increasingly characterised by open collaboration, rapid diffusion of knowledge and networked entrepreneurial ecosystems.

In this evolving global landscape, countries that fail to build robust, adaptive innovation systems risk being locked into low-value positions within global value chains. Africa's current innovation efforts, often incremental and narrowly focused, are insufficient to overcome the structural barriers of limited industrialisation, over-reliance on commodity exports and exclusion from the frontier sectors shaping the future global economy (Adesida et al., 2016, 2023).

### ***Identifying the Gaps in Africa's Innovation Systems***

While Africa is home to vibrant pockets of innovation – from mobile banking revolutions to health-tech and agri-tech innovations – these successes remain

isolated rather than systemic. A critical analysis reveals that the continent's innovation deficit stems not from a lack of ideas or strategies, as noted above, but from systemic weaknesses in implementation, governance and enabling environments (Adesida et al., 2023).

Many African countries have articulated ambitious STI strategies and established supportive institutions. However, weak governance, poor leadership continuity and the absence of robust performance measurement and accountability mechanisms have undermined their effective execution. The proliferation of plans has not translated into meaningful impact on productivity, resilience or inclusion.

Moreover, innovation efforts have often focused on incremental improvements rather than the radical, systemic changes needed to overcome entrenched constraints. Africa's continued position as a supplier of raw materials – despite holding critical minerals that are vital for the emerging global industries – illustrates the gap between potential and realisation. Innovation has yet to catalyse transformative industrialisation or significant value addition at scale. Indeed, Africa not only remains wedded to its role as a supplier of unprocessed raw materials and commodities, but it has not even directed any efforts to bringing innovation to these sectors to capture part of their value-addition by building local capacity for their partial processing and transformation.

Another persistent gap is the failure to mobilise civil society, youth and marginalised groups as active agents in innovation ecosystems. Despite a growing demographic dividend, youth engagement in structured innovation activities remains limited, and outdated organisational cultures, particularly within public institutions, hinder agility and responsiveness.

### ***The Urgency of Innovation for Development***

With the continent's population projected to double by 2050 (UN DESA, 2019), innovation – broadly conceived to include technological, organisational and social dimensions – is not a luxury but a developmental necessity. Taken together, the rapid population growth, technological change and the constraints of African economies also suggest that training and education systems must innovate their approaches to focus more on building hard and soft skills to prepare young people with the capacity to create their own opportunities and self-employment.

Innovation must be at the centre of efforts to address persistent poverty, inequality, governance deficits and the existential threats posed by climate change. It must underpin the achievement of the Sustainable Development Goals (SDGs) and support Africa's structural transformation by building productive capacities, resilience and sustainable livelihoods.

A renewed innovation agenda must move beyond incrementalism to embrace bold, systemic transformation. This requires fostering accountable, inclusive and responsive national and regional innovation ecosystems that empower all actors – government, private sector, academia and civil society – in collaborative efforts to

drive sustainable, value-added growth. Innovation must be harnessed not only for high-technology sectors but also for solving basic, yet critical challenges in agriculture, health, education, infrastructure and governance. Furthermore, innovation must also be positioned at the heart of efforts to resolve Africa's enduring conflicts, including those in the Sahel, Central Africa, the Horn of Africa and the Great Lakes region, offering new pathways for peacebuilding, inclusive governance and societal resilience.

### ***Towards a New Innovation Paradigm***

Africa's abundant critical minerals, youthful population, growing urbanisation and expanding digital infrastructure offer unprecedented opportunities. However, realising these opportunities demands deliberate and strategic efforts to:

- build indigenous technological and production capabilities rather than relying exclusively on imported solutions;
- develop entrepreneurial mindsets and innovation-oriented education systems that emphasise critical thinking, creativity and problem-solving;
- promote inclusive participation, ensuring that women, youth and marginalised communities are integral to innovation ecosystems;
- create enabling environments that support risk-taking, learning and scale-up of successful innovations;
- link innovation explicitly to addressing key challenges and emerging opportunities, from industrialisation to climate resilience and sustainable value addition.

Fundamentally, Africa must also address foundational issues of leadership, governance and self-reliance. Innovation must not be pursued as an isolated endeavour but as a cross-cutting strategy embedded within national visions for structural transformation and societal well-being. The complexity and urgency of Africa's developmental challenges demand a new, action-orientated innovation agenda – one capable of catalysing both radical and incremental change. Innovation must be repositioned as a societal project: an engine for inclusive growth, resilience and sustainable futures.

Recognising the imperative for a new, bold innovation agenda for Africa sets the stage for a deeper examination of the critical areas where transformation is both necessary and possible. This volume builds upon the foundational insights of earlier works, but shifts the focus towards thematic domains that are increasingly central to Africa's innovation future. It explores emerging trends, sectoral opportunities, institutional reforms and ecosystem dynamics that must be harnessed to drive systemic change. By framing innovation as a multifaceted, cross-cutting driver of structural transformation, the chapters in this volume aim to illuminate pathways for actionable, context-sensitive strategies that can sustain Africa's innovation momentum and bridge the persistent gaps identified

across the continent. In the following section, we outline the key themes that structure this exploration.

## **Key Themes of the Book**

This volume advances a distinctive and expansive vision of innovation in Africa, moving decisively beyond conventional, technology-centric narratives. The book's central argument is that innovation must be understood and fostered not solely as high-tech or scientific advancement but as a multidimensional, society-wide phenomenon that encompasses new approaches in governance, education, health, agriculture, finance, the arts, infrastructure and beyond. In this way, the volume is intentionally atypical for the innovation literature: it foregrounds both high-end and low-end innovation and insists on the transformative potential of contextually grounded, inclusive and systemic change.

### ***Transformational Reframing of Key Issues***

A defining theme is the transformational reframing of Africa's core development challenges. The chapters collectively demonstrate that innovation is as vital in domains such as food security, water management, health systems, education and urban infrastructure as it is in emerging technological sectors. The book showcases some specific examples of innovation while also highlighting the need for innovation in Africa across a spectrum of activities: in the redesign of governance structures and policy planning, in the adaptation of farming practices, in the renewal of educational curricula, in management within public and private sectors and even in peacebuilding and conflict resolution. This broad lens challenges the persistent association of innovation with only high technology, highlighting instead the value of everyday, grassroots and organisational innovations that are often overlooked yet essential for impact at scale.

### ***Innovation Ecosystems and the Quadruple Helix***

Another central theme is the critical importance of robust innovation ecosystems. The volume underscores that innovation does not occur in isolation but is enabled by dynamic interactions among universities, research institutions, incubators, industry, government and civil society: the so-called quadruple helix. Effective ecosystems are those that activate and sustain collaboration across these diverse actors, fostering knowledge exchange, entrepreneurial activity and the translation of ideas into practical solutions. The book's case studies reveal both the promise and the persistent gaps in Africa's innovation ecosystems, emphasising the need for deliberate ecosystem-building strategies that connect micro-level entrepreneurial activity with supportive macro-level institutions, policies and infrastructure.

### ***Policy, Regulation and Enabling Environments***

The role of policy and regulation is examined as both a catalyst and a constraint for innovation. The book analyses how government policies – including intellectual property regimes, regulatory frameworks and tax incentives – can stimulate or stifle innovation. It calls for the creation of enabling environments that lower barriers to entry, encourage experimentation and protect the rights of innovators, while also ensuring that regulatory systems are adaptive to the fast-evolving realities of technology and entrepreneurship in Africa. More broadly, some chapters draw attention to the need to focus innovation in the area of governance and policymaking, advocating the adoption of anticipatory governance and foresight analysis.

### ***Financing Innovation***

Financing remains a perennial challenge and opportunity for African innovation. The volume explores the complex landscape of funding for innovation, while highlighting the importance of public–private partnerships and diaspora engagement. It also highlights the need for innovative financing mechanisms that can bridge the early-stage funding gap, support scaling and ensure that resources reach not only high-tech start-ups but also social enterprises and grassroots innovators.

### ***Talent and Skills Development***

Human capital is identified as a cornerstone of innovation-driven development. The book stresses the importance of investing in education and skills development, not just in STEM fields but also in fostering critical thinking, creativity and entrepreneurship. Chapters highlight initiatives aimed at building a skilled workforce, nurturing innovative entrepreneurs and reforming education systems to better align with the demands of a rapidly changing innovation landscape. Some chapters in the volume call for a rethinking of our traditional university models and curricula, while others focus our attention on the critical importance of hard and soft skills building outside the traditional confines of schools.

### ***Harnessing and Governing Emerging Technologies***

The governance of emerging technologies is a further thematic pillar. The book addresses the dual imperative of harnessing digital and other frontier innovations for development, while also instituting governance frameworks that ensure ethical, inclusive and context-sensitive adoption. This includes attention to issues of data sovereignty, cybersecurity and the responsible use of AI and other transformative tools.