



Challenges and Opportunities in the Innovation Ecosystem

By Freda Yawson

Summary

Innovation is widely acknowledged as a vital ingredient to economic transformation. It drives increases in productivity through product generation and business process improvement, contributing to economic growth. Outside of a few fast growing economies and innovative startups, however, a majority of African countries are in need of agile and responsive frameworks that allow innovators to rapidly develop, test and deploy homegrown solutions. The global pandemic brought an additional layer of unprecedented challenges to the innovation ecosystem, though it also presented opportunities. Additionally, it highlighted the need for African governments to digitize, establish governance structures that support innovation, build local capacity in manufacturing, and increase innovation investments.

Thematic context

In many African countries, innovation ecosystems are nascent, with innovators limited by fundamental challenges in financing (e.g., for research and development); governance and regulatory structures (e.g., intellectual property, digitization, standards); and access to inputs, business support, mentorship, skills, and infrastructure (e.g., manufacturing and prototyping)¹. Not surprising, Africa lags drastically behind the rest of the world in global research and development investments. African countries account for just 0.9%, compared to Asia (44%), North America (27%) and Europe (21%)². And South Africa alone contributed 0.88%—nearly all of Africa's share.

Despite these challenges, African economies have seen a rise in the development of innovative startups and an increase in tech hubs in the past few years³. A 2019 report by the Afrilabs Network and BriterBridges identified at least 643 hubs, a 104% increase from the 314 hubs identified in 2016⁴. Countries including Kenya, Nigeria, South Africa, Senegal, Rwanda, Tunisia, Morocco and Ghana, among others, are seeking to develop pipelines of innovative companies with support of new legislation like Startup Acts, digital innovation policies and programs, and capital from private investors and international development partners.

Innovation's contribution

At the onset of the pandemic, many predicted catastrophic consequences for countries with weak health infrastructures, large informal sectors and already struggling economies, let alone innovation ecosystems. While the pandemic has disrupted supply chains for trade, manufacturing, health care and agriculture, it also awakened governments to the need to build capacity for homegrown solutions.

The first priority for many governments was to put in place measures to prevent the spread of the virus on the continent. Worldwide shortages in personal protective equipment and closed borders meant that governments relied not only on external aid but looked to their private sector, local makers and citizens for help. In Ghana, for example, the private sector rallied to produce masks, hand sanitizers, handwashing stations and pharmaceuticals. Makers produced 3D-printed face shields, touchless taps, and solar powered handwashing stations, while relying on WhatsApp groups and internet forums to share designs and resources with each other.

Incas Diagnostics, a local Ghanaian firm, developed a low-cost diagnostic test that detects antibodies in 20 minutes, allowing the government to cut testing time in half. With fewer than 2,000 working ventilators in public hospitals across Africa (compared to more than 170,000 in the United States), universities such as Academic City and the Kwame Nkrumah University of Science and Technology began developing prototypes for ventilators using local materials, open source data and ingenuity. The University of Ghana's Noguchi Institute sequenced the virus, providing researchers with vital information about its characteristics and behavior. The World Bank, GIZ, African Development Bank and other development partners hosted national and regional "hackathons" and offered funding for innovators who had COVID-19 related solutions.

But even as ecosystem actors rallied to collaborate, existing challenges to innovation were amplified. Three of the most notable include regulatory hurdles, digital infrastructure, and access to inputs.

- **Regulatory hurdles.** Health innovators had a unique challenge of ensuring that products met stringent regulatory processes for approval. In the case of Senvitalle, a Senegalese health startup producing digital "passports" for patients, the process was fast-tracked under emergency procedures in just three months despite a three-year wait. When developers created infection tracing and reporting applications, sharing them widely, health agencies were unable to regulate them, and joined the competition with government-sanctioned applications. In heavily regulated sectors that needed innovation, this underscores the need for collaboration between innovators at the forefront of emerging technologies (e.g., artificial intelligence and telemedicine) and policymakers to test and validate these processes quickly.
- **Digital infrastructure.** With schools and offices forced to adopt remote working conditions, many sectors were largely unprepared for digitization. In the education sector, for instance, institutions needed to digitize content and train teachers to use computers and new technology quickly. A significant portion of Africa's population resides in rural areas, so access to the internet and the high costs of data also became barriers to education and business, despite high mobile penetration. Countries such as Morocco adopted radio and television school programs, created online archives with educational materials and sent paper lessons to students in rural areas. Tech startups like E-Campus have launched apps with educational content for those who can afford it but struggle to increase user adoption, despite relatively low fees and marketing schemes, because of high data costs and limited internet access. This digital gap presents a clear opportunity for digitization and increased collaboration between mobile operators and policymakers to improve last-mile connectivity and reduce costs.
- **Access to inputs.** Lockdowns and border closings also meant that companies no longer had access to inputs for products and services. Makers, 3D printing companies and budding hardware companies were unable to scale production due to a lack of components and raw materials. This underscores the need for further investment in local manufacturing and the technical skills required to achieve production at scale.

Recommendations

- Governments should work hand in hand with ecosystem stakeholders to dismantle regulatory bottlenecks and co-create policies and programs that promote a conducive ecosystem for innovation.
- Governments should find avenues to increase investment in research and development, skills, infrastructure and capacity building to create a pipeline of innovative companies.
- Leveraging the African Continental Free Trade Area agreement and other initiatives, governments should build regional and continental partnerships to develop large-scale infrastructure and harmonize policy approaches that stimulate innovation.

***Freda Yawson** is a consultant and former Senior Programs Manager with the African Center for Economic Transformation (ACET). She is also a social entrepreneur and co-founder of two organizations, Innovate Ghana, an annual design competition for students, and the African Health Innovation Center.*

About the Series

Policy experts and researchers from the [African Center for Economic Transformation \(ACET\)](#) and the [Development and Economic Growth Research Programme \(DEGRP\)](#), in partnership with [ODI](#), explore the critical role of innovation in Africa's recovery from COVID-19. Essays identify areas in which innovation can contribute to effective responses and offer high-level policy recommendations.

Endnotes

1. [Benchmarking Study of Small Business Acts and Startup Acts](#) (Innovation for Policy Foundation, 2020).
2. Paul Heney, "[Global R&D investments unabated in spending growth](#)" (R&D World, 2020).
3. Examples include co-working spaces, incubators, accelerators, university or government-run centers, maker spaces and technology parks.
4. [Building A Conducive Setting For Innovators To Thrive](#) (Afrilabs and Briter Bridges, 2019).

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