Africa's Growing Tech Hubs and Smart Cities

As the race to develop Africa's technology infrastructure becomes increasingly imperative and competitive, we examine how technology hubs and smart cities will impact the development of African innovations and the evolution of the region's economy. ~ Yaw Owusu

During his trip to Africa in 2016 to acquaint himself with the rising technology entrepreneurship and the evolving innovation ecosystem on the continent, Facebook CEO Mark Zuckerberg visited, among others, the Lagos, Nigeria-based CcHub and Andela, a development centre for technology professionals in which he and his wife, through the Chan Zuckerberg Initiative (CZI), recently invested. Other investors in Andela, which trains and deploys programmers and software developers across Africa, include GV (formerly Google Ventures), Spark Capital (Boston), Learn Capital (San Francisco) and the Omidyar Network (San Francisco).

Africa's information technology industry has been flexing its muscles - with fiber optic technology, smart applications and innovation hubs steadily beginning to take centre stage, as the drivers of Africa's economy gradually shift from natural resources toward human capital and innovation.

ihubs (and co-working spaces) to smart cities

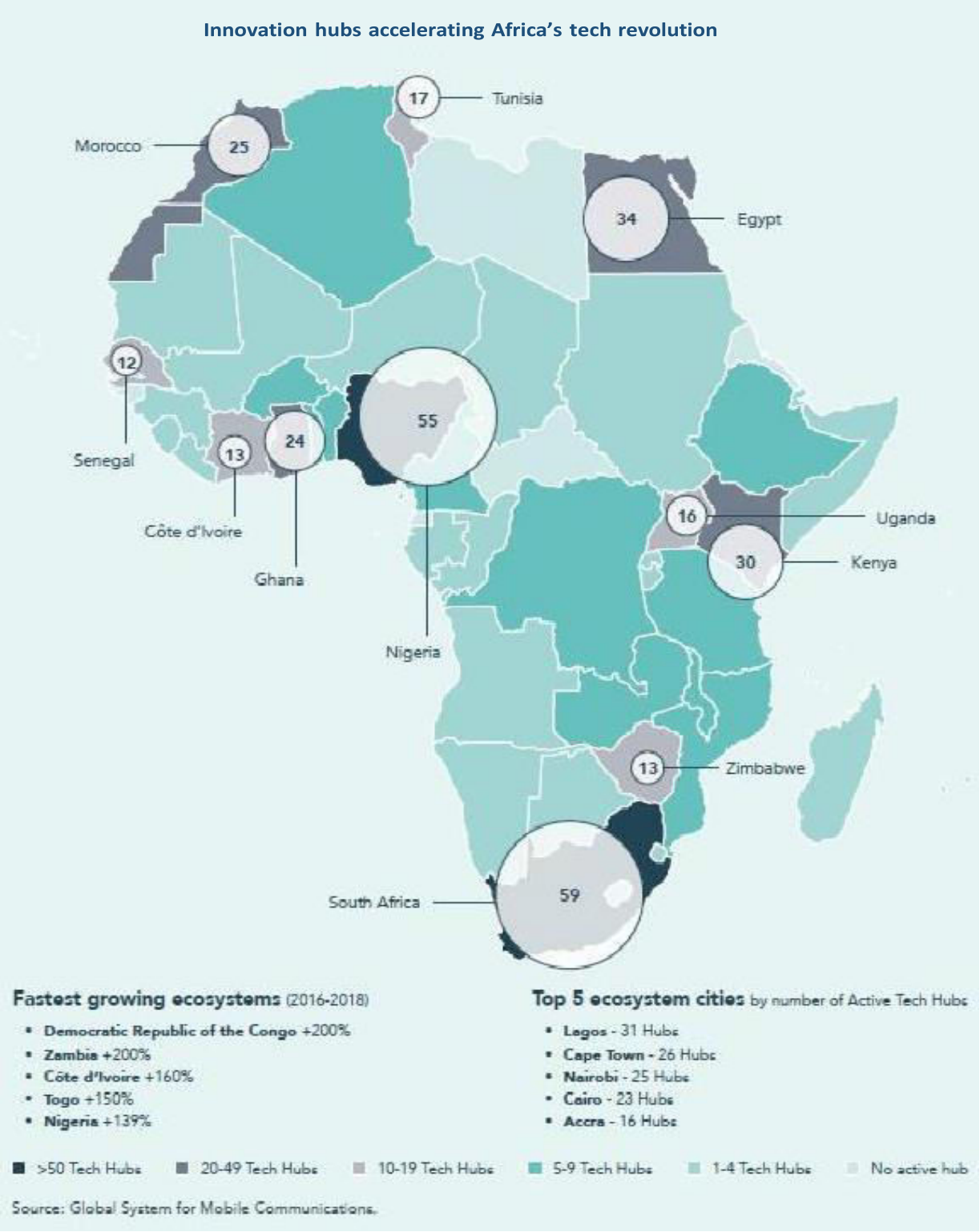
The number of technology hubs in Africa has increased by more than 40% within a year as demand for technology infrastructure continues to outpace supply of high tech workspace, incubation services, etc. on the continent. In the first half of 2019, Africa had 442 technology hubs and incubation centres (in 100 cities in 45 countries), according to the GSMA's Ecosystem Accelerator, a programme that facilitates partnerships between mobile service operators and developers in Africa and Asia.

The growing number of tech hubs across Africa highlights the demand for modern technology parks (smart cities) that helped power the tech industry in India, South Korea, China and other emerging markets in the last 30 years. Only South Africa, out of 48 Sub-Saharan African countries, is home to 'an international standard' technology park—Pretoria's Innovation Hub, a high tech campus, featuring major brand technology companies and dynamic startups.

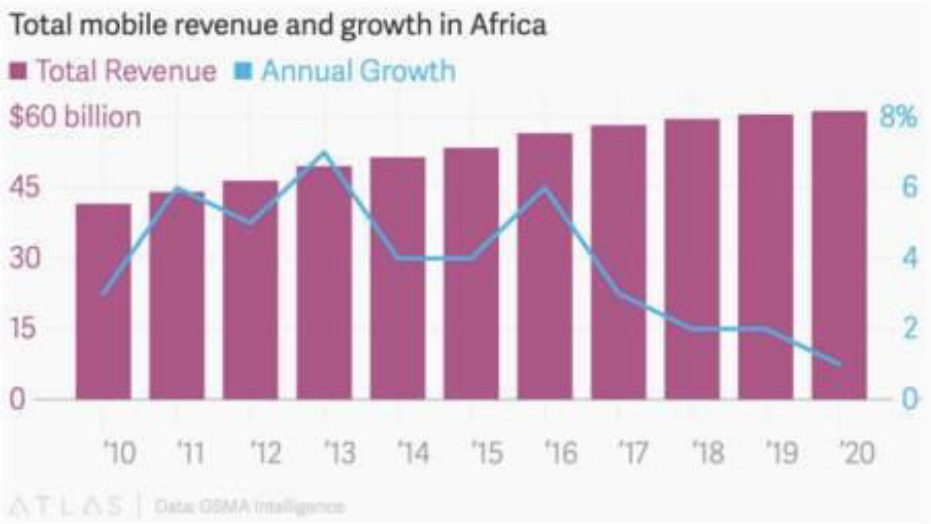
The relative success of Africa's tech hubs has made a strong case for scaling up these mini tech hubs, highlighting the need for technology parks and smart cities. Governments and private groups in every major African economy plan to build technology parks to address the expanding demand for high tech work space, startup incubation, data centre and other tech and business services.

There's going to be an explosive growth in co-working spaces and smart communities across Africa in the coming decades as the youth population increases (Africa's population of one billion will double by 2050 according to the United Nations), income levels continue to grow, more young Africans acquire higher education and become more tech-savvy and entrepreneurial-minded.

Link to a growing economy



Up to 13% of the tech hubs in Africa have established partnerships with mobile operators, particularly Orange (France), MTN (South Africa) and Vodafone (UK). Increasingly, mobile network operators in Africa seek to innovate more aggressively in order to support long-term revenue and profit growth.



A 2019 GSMA study reveal that the mobile ecosystem across Sub-Saharan Africa generated almost $150 billion in economic value in 2018 – equivalent to 8.6 per cent of the region's GDP. It is forecast to generate almost $185 billion (9.1 per cent of GDP) by 2023. There are now over 50 cities in Africa with a population of more than one million each (source: McKinsey). Africa's consumer spending in 2020 is projected to top US$1.4 trillion whilst about 50% of Africans will be living in cities across the continent in 2030. This calls for development of smarter cities and more efficient capture and use of big data and new innovations in the region. Smart city innovations would facilitate the following:

- *Transportation*: Mapping mobile phone signals at peak commuting times to better analyse movement of people, enabling city planners to make smarter transportation decisions. This may help address the substantial working hours that are lost due to heavy traffic jams, putting a strain on city and national economies.
- *Revenue collection*: Digital payment systems create opportunities to use big data technologies to boost city revenues from parking fees, garbage collection, water and other utilities. Big data may help identify underpayment, which account for many African cities losing up to 50% of their potential revenues.
- *Energy*: Smart metering and grid technologies for optimising energy infrastructure and minimising electricity losses.
- *Health*: Identifying and weeding out counterfeit medication from the African market using mPedigree, an innovation, pioneered in Ghana. Up to 30% of medications sold in Africa, according to estimates, are counterfeit. Hewlett Packard has partnered with the mPedigree Network and major pharmaceutical firms to deploy the application, currently in use in Africa and Asia.
- *Startup* incubation: Technology parks, incubation centres and smart use of big data in South Africa, Ghana, Nigeria, Kenya, etc. have spawned innovation and competition that is projected to lead to more African inventions such as mPesa, Esoko, mPedigree, etc.

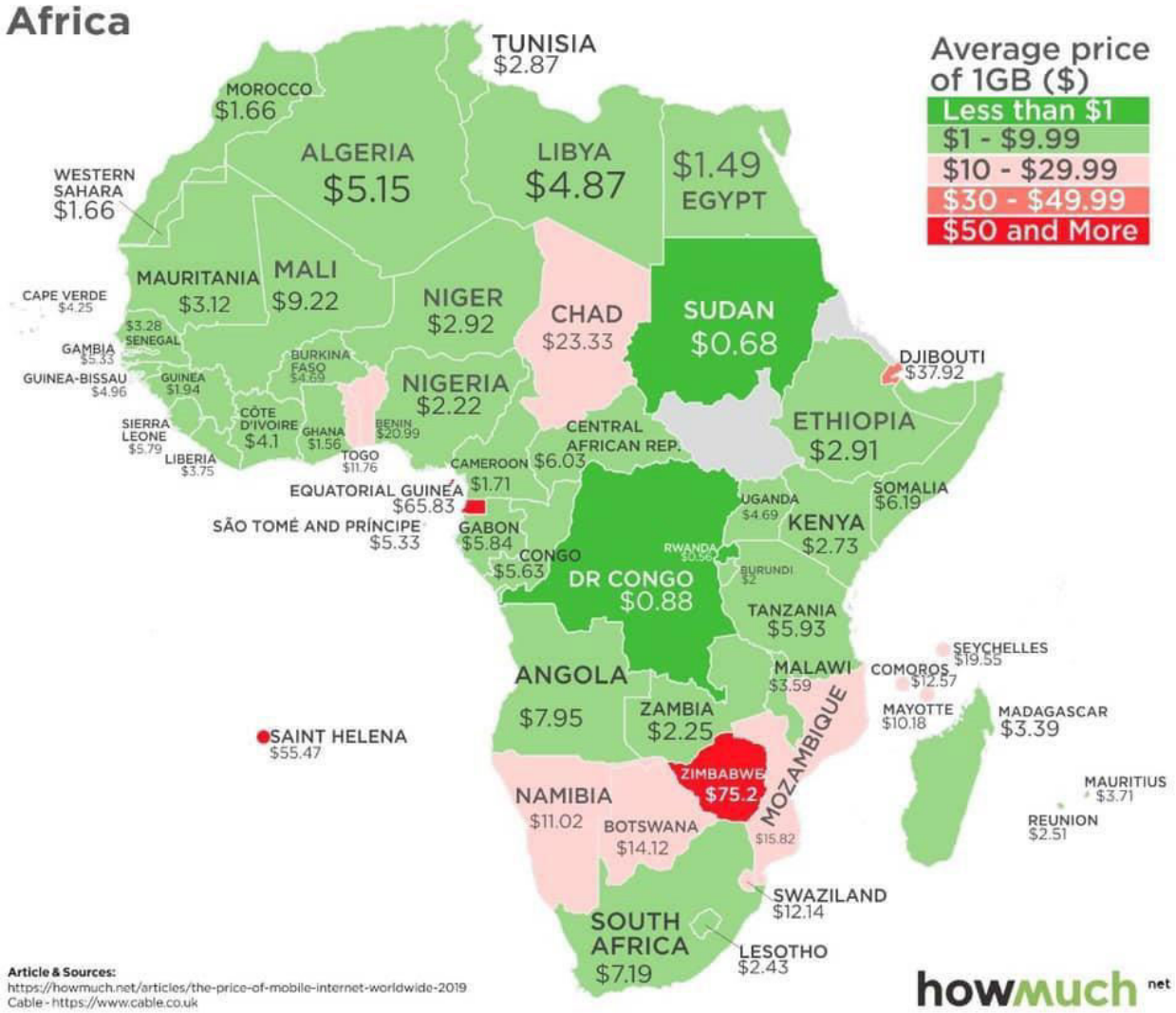
The link between big data, new innovations and the development of smart cities and its role in improving delivery of services and quality of life in Africa is gradually taking shape. Increased data access has direct impact on the type and nature of jobs demanded and produced in Africa. The demand for innovation and tech-based jobs, such as programming, software development and management of technology has been increasing.

Challenges facing Africa's digital economy

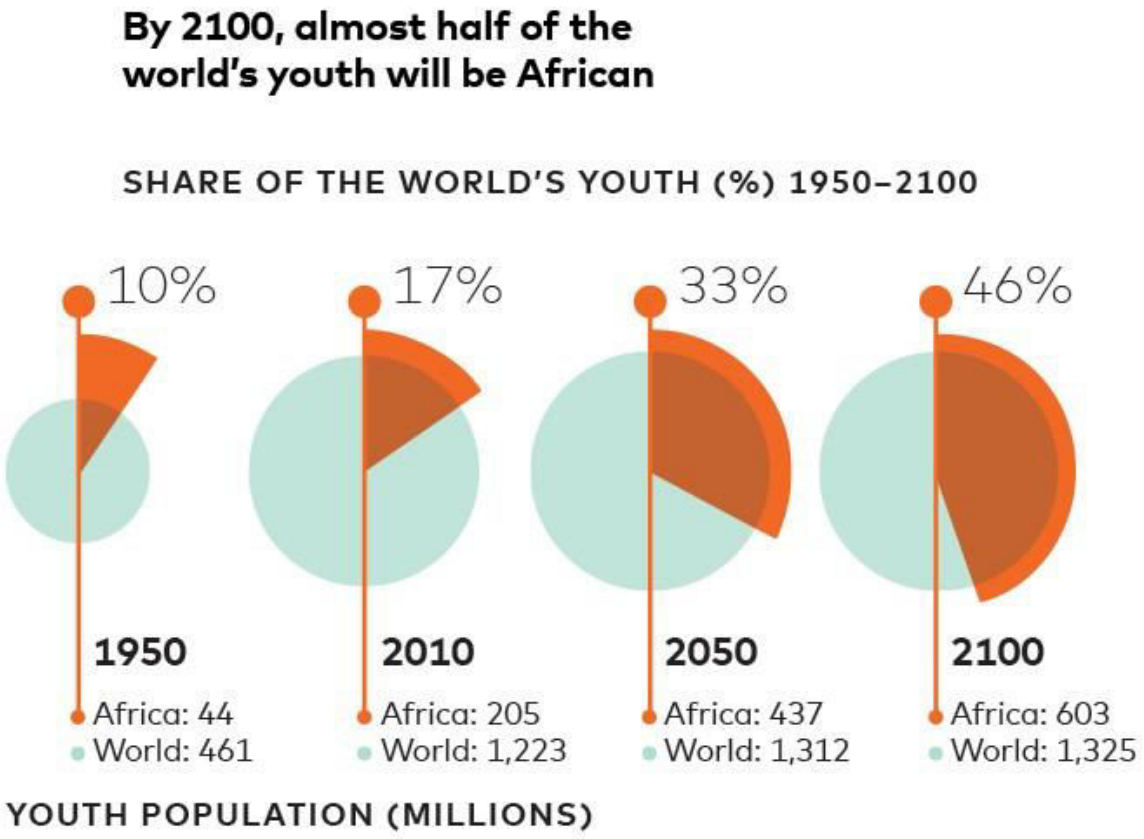
The development of Africa's digital economy is hampered by many factors including:

- *Broadband connectivity:* Fiber optic cables which have landed in all coastal countries around the continent are yet to be deployed in much of the interior of the continent, beyond 200 miles from the coast. Accordingly, many parts of even the most wired countries, such as Morocco, Kenya, and Ghana, remain unconnected or experience poor quality and costly broadband internet service.

The Price of Mobile Internet 2019



- *Education and skills development:* In sub-Saharan Africa, 40% of primary school graduates enrol in high schools, whilst only 7% of the high schoolers receive university and other post-secondary education. About 70% of African firms surveyed by Ernst & Young are recruiting to support planned growth yet "vacancies are taking longer to fill and employee turnover is high."



Source: Africa Ahead: The Next 50 Years, 2013 Ibrahim Forum Facts & Figures

Youth population refers to the population aged between 15 and 24.
Source: UNDESA, 2012

- *Access to power:* In the last five years, many African governments - especially Nigeria, Ghana, Senegal, and Kenya - have reformed the power sector to streamline government-led power generation operations, encourage private investment, and expand access to electricity, which ranges from Chad (4%) to Nigeria (45%), Ghana (72%) and South Africa (85%). Still, persistent power outages on the continent hurt the productivity and profitability of tech firms, especially those that depend heavily on power, such as data centres.
- *Government's role:* Though many African political leaders publicly demonstrate commitment to developing the ICT sector in partnership with private investors and developers, real investment in the sector by the respective governments has been less than impressive, whilst there remains little or no public private partnerships in many countries on the continent.

- *Access to capital*: African private investors and developers continue to struggle in accessing finance from angel investors, venture capital (VC) firms and especially from local and international commercial banks. The best funded investors and VCs are from North America, Europe, China and Japan, many of whom are risk averse about opportunities in Africa.

Despite these challenges, international bandwidth and data networks are increasingly becoming more affordable and available in Africa and more people have access to smart phones, PCs, laptops and other data-enabled devices. Analysts from Informa Telecoms & Media, forecast that the number of smart phone connections in Africa will increase from approximately 79 million in the fourth quarter of 2012 to 500 million by 2020.

Promoting and sustaining Africa's smart communities

The success and sustainability of African innovation hubs, technology parks and smart cities depend, to a great extent, on the following:

- *Founders Act*: The cost of a technology park/smart city typically ranges from US$200 million to US$10 billion. Due to the capital intensive-nature of the business, initiators, especially those driving private ventures, must be prepared to sacrifice time, income, personal convenience, etc. in order to get the project off the ground in the shortest possible time.
- *Public private partnerships:* Due to the high cost of developing tech parks, it is easier for governments to drive such ventures as sole owner or majority shareholder. Yet even in privately-funded parks, governments may play indispensable roles, including providing land at affordable prices and/or designate finished projects as free zone entities. The free-zone designation of a technology park typically offers tax incentives to resident firms, enabling the project to compete with regional and international tech parks/smart cities.
- *Business environment:* The more favourable a business environment, the more successful a technology park will be as a commercial entity. In addition to the ease with which a business can be started in a country, local and international investors pay attention to tax laws, access to capital, dealing with construction permits, registering property, protecting minority and/or foreign investors, enforcing contracts, resolving insolvency, etc.
- *Partnership with industry leaders*: In 2013 and 2015, IBM opened research laboratories in Kenya and South Africa respectively. The IBM Africa Labs, located at the Catholic University of Eastern Africa, Nairobi and at the Wits University in Johannesburg, seek to develop and deploy smart applications to address inefficiencies in public procurement, energy management, financial inclusion, traffic congestion, etc. in Kenya. In South Africa, the collaboration will focus on advancing cloud computing, Big Data and mobile technologies to power South Africa's urbanisation, boost smart mining and facilitate innovative healthcare. IBM, Microsoft, and Samsung, among others, have demonstrated interested in playing principal roles in development of technology parks across Africa.

- *Angel investors, VCs and DFIs*: In 2012, the AfDB, in partnership with the governments of Spain and Denmark, launched the African Guarantee Fund (AGF). The AGF seeks to facilitate access to capital by African private investors, many of whom face hurdles raising capital from commercial banks, angel investors, venture capital firms and development finance institutions for big ticket businesses. Ghana Cyber City (GCC), one of only two privately-funded ventures among the upcoming technology parks in Africa (the other is the Silicon Park Africa), experienced a tough period raising capital until AGF came along with a commitment to guarantee up to 75% of the capital GCC raises that requires a financial security.
- *Media*: African and global media have a role to play in correctly reporting the substantial progress that has been made in the information technology industry on the continent. The world needs to know about Africa's home-grown inventions as well as the emerging innovation hubs, technology parks and smart cities that are impacting the quality of day-to-day life and changing the way business is conducted on the continent.

About the author

Yaw Owusu is the Managing Director of Gateway Innovations, a private investor/tech group that seeks to develop high impact technology parks in Africa, starting with the Ghana Cyber City.

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