An introduction to innovation for inclusion and sustainability in urban areas.

Towards More Liveable Cities in Africa

AUTHORS

Briter Bridges is a fast-growing market intelligence and research firm focused on emerging economies. Briter has built the largest collection of visual publications on Africa and underserved markets and regularly provides data and insights to corporates, development finance institutions, governments, and investors. Briter's proprietary business data platform, Intelligence, is regularly used by thousands of public and private organisations, ranging from the World Bank to Amazon, governments and funders globally.

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INTRODUCTION

Since the mid-2000s, most of the world's population can be found residing in urban areas.

As national and supranational governments keep battling to return to a degree of pre-pandemic normality by implementing vaccination programmes and social distancing measures, getting sustainable urbanisation right has never been so key. Most African cities are growing at a pace where adequate infrastructure and service provision are struggling to keep up. This has been particularly devastating for dwellers and households whose livelihoods were not adapted to remote or digital work. As the UN HABITAT's World Cities Report 2020 puts it, "*COVID-19 will not reverse urbanization*". Urbanisation is here to stay and the pursuit of a more inclusive and sustainable process remains a core agenda. The ability to achieve this depends on the coexistence of several components and collaborating actors.

By 2030, it is estimated that approximately 50% of Africa's population will be living in urban areas. Although urban areas are typically associated with industrialisation, economic growth, and employment opportunities, across several countries in Africa, rapid and often uncontrolled urbanisation and scarcely-resourced city planning and management threaten the development of cities. As Africa's urban population is projected to double by 2050, it is imperative that efforts are made to make the cities liveable and sustainable. National and city governments are responsible for maintaining and developing a safe and prosperous urban environment, which entails providing access to basic services and facilities that accommodate a satisfactory standard of living in the city. The concept of liveability is defined by a vast range of social and economic factors underlying a decent way of life and is usually considered in the context of three interconnected components, namely;

- [ ] its physical (transportation, energy, housing, waste management);

- [ ] social (diversity and inclusion), and;

- [ ] cultural (identity, satisfaction) conditions.

Taking root in a framework of sustainable and smart development, *liveability* can be considered as a metric for how a city is performing in the context of meeting common global objectives, such as the Sustainable Development Goals (SDGs), and effectively tackling changes to the urban environment. Where urban areas grow, informal settlements expand, and the ability of the government to meet the demands of the public and city-wide liveability often becomes highly strained. While administrative capacity remains essential for the functioning of a city's operations, the private sector has often shown the agility to develop solutions that can substitute or temporarily address the absence of well-functioning systems.

While civil society capacity remains essential for the functioning of city operations, the private sector can also have a big role to play. In Africa, innovators and startups are playing an increasingly important part in addressing local challenges and market gaps, using technology and digital solutions to reach the urban population for day-to-day needs. This report also considers non-tech innovators that are ensuring greater inclusion of the urban poor, such as companies offering waste management, clean cooking products, or clean water services.

According to Briter Intelligence data, startups tend to cluster around the biggest cities across Africa, for obvious reasons: cities usually represent the central nodes to access sizeable customer bases, where greater affluence and density drive demand. As countries across the region are increasingly acknowledging that flourishing economies need agendas focused on smart solutions, sustainability, and equality, digital, green, and technological companies are positioning themselves as actors able to both fill key gaps due to inadequate public service provision, and meet the demands for improved liveability standards across all aspects of society.

Briter specialises in market insights across underserved economies, with a particular focus on the opportunity across the digital and green sectors.'***Towards More Liveable Cities in Africa***' is a compendium of emerging innovations that explores the impact of urbanisation on liveability, the appearance of smart city projects across the continent, and the development of private sector development through technology and innovation-driven startups that are going beyond the concept of liveable, and making cities sustainable, inclusive and smart. The report focuses on four core cities across the continent, namely Cairo, Cape Town, Nairobi, and Lagos, looking at liveability indicators and the work innovators are doing to address the infrastructural and service gaps.

Ultimately, it is key to acknowledge that, in contexts where the provision of basic services and the presence of critical infrastructure are lacking, civil society and entrepreneurs have stepped in and are working to fill crucial gaps. When looking at this through the lens of 'need', it is easy to understand how '*innovation for better liveability*' can extend to a wide range of sectors and span food access, energy, healthcare, and education. This report aims at providing a contextual frame-

work for professionals researchers, development institutions, and investors, to understand the role private enterprise can play in offering a first service access point. Vice versa, it suggests the notion of liveability as an umbrella concept to build upon when developing an impact investment agenda.

CHAPTER 1

Costs and characteristics of urbanisation across Africa

Africa's urbanisation rate is growing rapidly
According to the United Nations (UN), three cities across Africa were already classified as megacities in 2019, that is, with populations exceeding 10 million people, including Cairo, Kinshasa, and Lagos, with many set to join, such as Dar es Salaam, Luanda, and Nairobi in this decade. The UN estimates that presently, there are about 4.4 billion people - more than half of the world's population - living in urban areas, and in 2050, it is expected that the global urban population will increase by 52% to 6.7 billion people. The continent's urban population has increased to 567 million people in 2015 from just 27 million people in 1950, as stated in a report by the Organisation for Economic Co-operation and Development (OECD). Africa's urban population boom can be attributed in part to rural areas being reclassified as urban, as well as employment-driven migration towards cities as a result of a decline in agricultural activity in rural areas. Africa's subregions have experienced varying urbanisation rates since 1950, with North, East, and Southern Africa continuously urbanising, and West and Central Africa's urbanisation levels slowing down after an initial period of growth.

There exists a relationship between a country's economic status and its level of urbanisation: countries that have experienced rapid urbanisation growth score higher economic development. This trend can also be explained through the concept of economies of agglomeration, whereby a clustering of people, companies and industries in a city brings about advantages such as access to skilled labour, knowledge spillover (whereby knowledge created by one entity is made available to another) and specialisation, resulting in increased productivity and economic growth. And while urbanisation in high-income countries has been associated with industrialisation, ***this has not been the case in low-income countries***. Many African govern-ments lack the necessary resources to enable the development of adequate infrastructure able to cope with the growing demand for services needed by the influx of people migrating from rural to urban areas every year. With a growing urban sprawl and expansion of city borders, and because of insufficient budgetary allocations, poor land management, and lack of data on city residents, ***conducting proper urban planning has proved challenging***. As a result, unplanned urbanisation has been the reality of many African cities, leading to environmental and social problems, such as congestion, pollution, disease outbreaks, insecurity, growing informal settlements, and increased inequality. As of 2020, 54% of urban dwellers in Africa live in areas without access to clean water and sanitation.

Prevalence of informal settlements
An informal city is formed when settlements spring up in areas that cannot absorb them. Usually, these areas are at the outskirts of a city, where the dwellers lack basic infrastructure services and have no legal ownership over their dwellings. Because their very development is unplanned, informal settlements are not recognised by many governments and are therefore excluded from opportunities and, in some cases, face eviction. Some driving factors of informal settlements include uncontrolled migration to urban areas, population growth, weak building regulations, and conflict-induced displacements. The UN describes informal settlements as areas of land that people occupy where there is no land tenure or building standards, and where infrastructure is inadequate. According to the World Bank 70% of Africa's urban population live in informal settlements due to lack of affordable, accessible, and available space.

The informal economy is relied upon

Informal settlements are home to many of Africa's urban informal workers, and the informal economy employs 60% of Africa's urban population. Informal employment is highest in low-income countries, and workers in the urban informal economy perform jobs that are traditionally characterised by low pay, low job security, lack of representation and legal protection, and poor working conditions. As settlements grow, so does the reliance on informal jobs and the risk of perpetuating poverty traps, as an ever wider share of the active economy remains unaccounted for. Yet, informal employment plays a significant role in creating livelihood opportunities and reducing poverty rates across disadvantaged groups by:

🟨 providing easy access to food in public spaces through street vending;

🟨 providing services across the retail, on-demand services, construction, waste management, manufacturing and mobility sectors;

🟨 offering gig services, such as home maintenance and repairs, child care, as well as cleaning and housekeeping.

Urban areas face a health crisis

Since early 2020, concerns about the combination of the growing informal sector and rising urbanisation rate were aggravated by the unexpected outbreak of COVID-19, which disrupted day-to-day living and business. Urban density, uncontrolled growth, and poor design have been particularly concerning due to the risk of exacerbating transmission rates. Populations living in informal settlements have been disproportionately more vulnerable during the crisis, especially in terms of access to basic sanitation services and healthcare provision. Restrictions on mobility have also made income streams more unreliable. ***The crisis has in many ways put a spotlight on the asymmetrical nature of access to services across cities in Africa***, and the need for more inclusive, accessible, and liveable solutions for all urban inhabitants.

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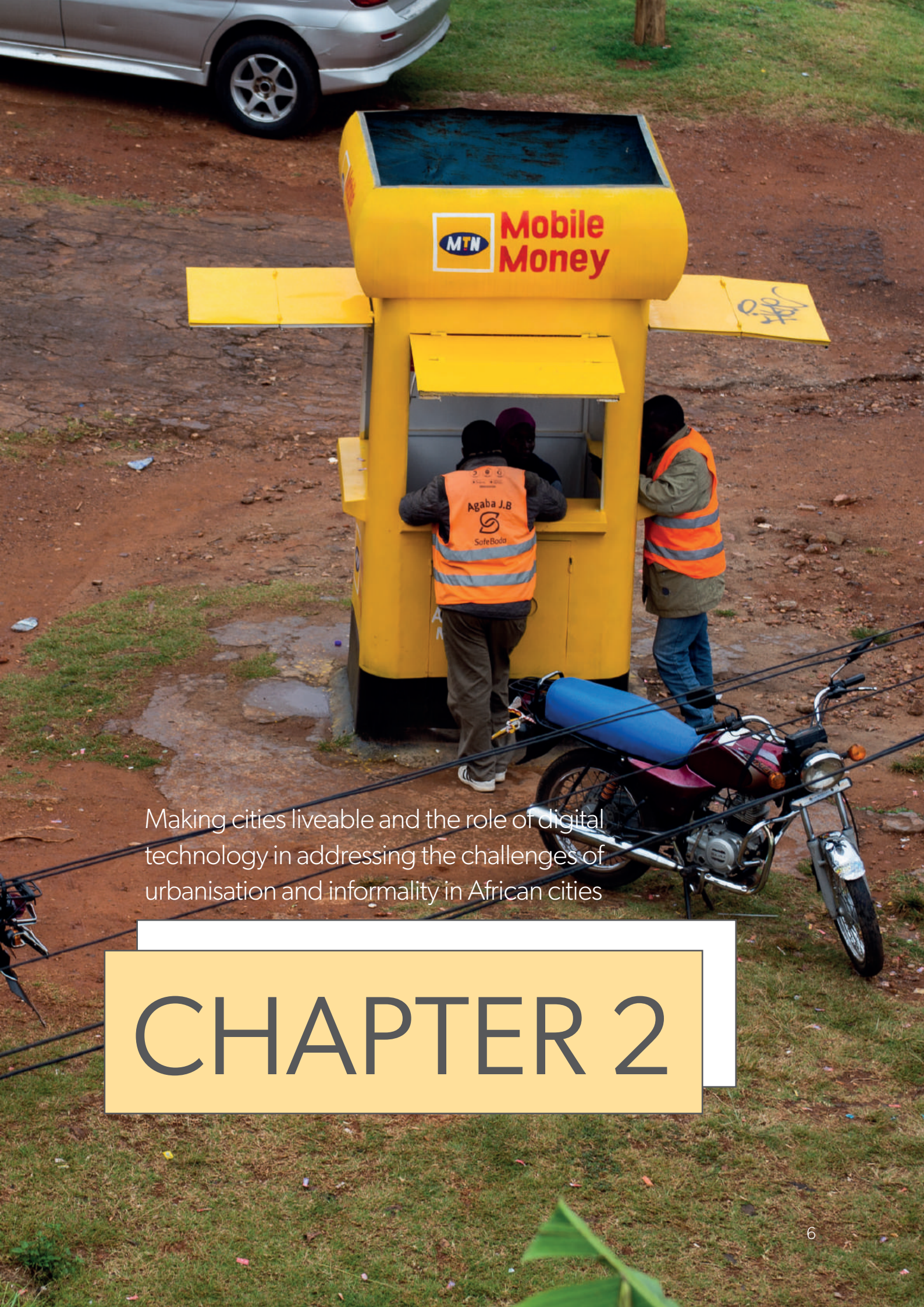
Making cities liveable and the role of digital technology in addressing the challenges of urbanisation and informality in African cities

CHAPTER 2

The role of smart cities

Smart cities, now fully part of urban and sustainable development agendas globally, have started being put forward among the set of plans and solutions to address the rapid urbanisation growth currently being experienced in Africa. Smart or digital cities exemplify an approach to urban planning that integrates technology across all operations and sectors, including mobility, economy, governance, utilities, accessible health, smart agriculture, and environment, to provide social, economic, and environmental benefits for their citizens. The concept of 'smart' is usually associated with technologies such as internet of things (IoT), big data and analytics, artificial intelligence, and machine learning, which in different ways allow for machine-to-machine communication, remote - or self-monitoring - real-time and automated reporting, wireless signals and sensors, as well as computerised analysis. At the household level, smart technologies include leisure appliances, lighting, TVs, or watches. At a bigger scale, smart solutions allow city planners, administrators, and service providers to access continuous updates and overviews of key city functions, such as water and electricity utilities, traffic and pollution control, and waste and sewage management. In the context of cities, smart solutions can bring about efficiency in the urban public sector, resulting in improved quality of life for residents.

In many cities across Africa, **public service delivery remains highly limited to urban centres or wealthy areas**, **excluding those living in low-income neighbourhoods, and those living near or outside the city's outskirts**. This ranges from public transport to electricity, and access to water. The spread of connected technologies, especially driven by a high uptake of mobile phones and the dramatic reduction of data and internet costs, allow a more decentralised approach to managing all functionalities within and around a city's borders, by connecting individuals to services otherwise inaccessible and unaffordable to them, for instance through pay-as-you-go water devices, clean cooking gas distributors, and off-grid energy service providers reaching towns.

Smart cities are commonly viewed as a testament to economic development and opportunity, and have been added to the ambitious agendas of governments all around the world. There are several smart cities being planned, designed and, at least partly developed in Africa over the past two decades, including Eko Atlantic in Nigeria, Kigali Innovation City In Rwanda, HOPE City in Ghana, Semé City in Benin, Akon City in Senegal, Konza Technopolis in Kenya, and Modderfontein in South Africa. As of the end of 2021, a number of these projects, such as HOPE and Modderfontein, appear to have been scaled back or dropped completely, in large part due to various delays, red tape, COVID-19, and funding-related challenges. Several other projects are still underway and claim to hold huge social, environmental, and economic potential, with promises to offer residents more affordable and sustainable ways of living, and city administrators with the tools to effectively manage resources and services.

Drivers behind the push for smart city initiatives in Africa

Factors that can drive the push for the adoption of smart city technologies in Africa include:

High cost of maintaining infrastructure

With African cities characterised by aging transport, energy, and communications systems, and the African development gap estimating an infrastructure financing gap of $130-170 billion a year, digital technologies present opportunities for African cities to bypass upgrading existing legacy or outdated systems, which usually come with overhead costs, and start with the latest technology. For example, many African countries skipped landlines and jumped to mobile communications, which introduced the continent to the digital age.
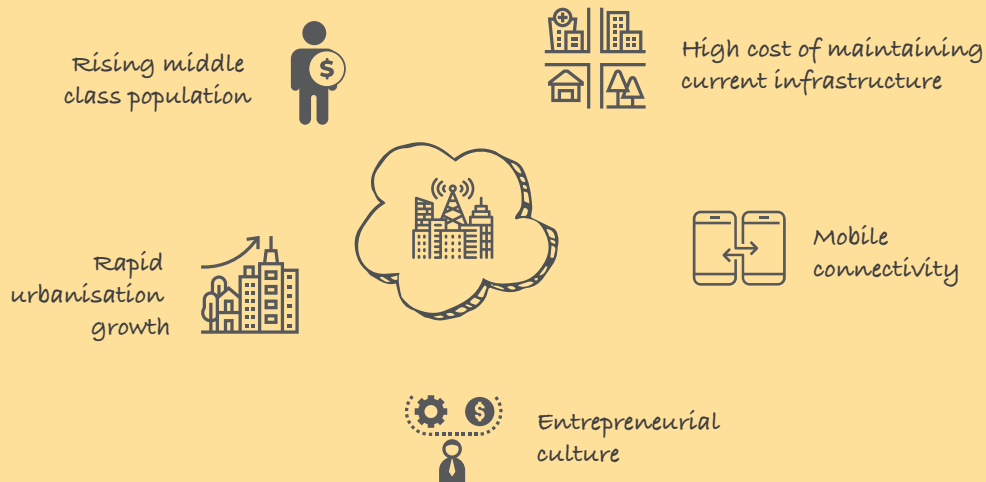
Mobile connectivity

Mobile penetration rate in Sub-Saharan Africa, currently at 45%, is projected to reach 50% by 2025. Mobile technologies enable connectivity, which is key for realising smart cities, and contribute to Africa's economic growth by creating jobs and a bustling digital economy.

Rapid urbanisation rate

Urbanisation brings all types of job-seekers to cities. Those with the talent to take on new employment opportunities, but also those who are not able to find alternatives. This can be a blessing or a curse for cities, depending on how the inflow is managed. The clustering of Africa's young and digitally savvy population in large cities, owing to rising urbanisation, could result in a trove of innovative solutions with the application of advanced technologies.

Rising middle class population

The demand for social and economic development driven by Africa's growing middle class population, which was reported to be about 170 million people in 2020, means that better services and infrastructure will be necessary to avoid a brain drain.

Rising middle class population

High cost of maintaining current infrastructure

Rapid urbanisation growth

Mobile connectivity

Entrepreneurial culture

Africa's smart city projects

Several smart city projects are being developed across Africa, aimed at providing a future of greater prosperity, security, and sustainability for its population. While the list of benefits is long, developing cities from scratch, especially in areas lacking critical infrastructure and basic service provision across existing urban areas, comes with costs, risks, and challenges. Here are some of the most renowned projects being undertaken across the continent:

Kigali Innovation City, Rwanda

Kigali Innovation City is a flagship project launched by the Rwandan government to create a technology centre in the country's capital. Built across 60 hectares, the hub will offer space to universities, entrepreneurs, startup ecosystem builders, as well as a number of retail shops. The hub is expected to attract more than $300 million in foreign investment, and create over 50,000 jobs.

Konza City, Kenya

While Konza Technopolis, also coined "Silicon Savannah" was aimed at being Africa's leading technology hub, it is yet to see completion. Launched in 2008, the city sought to bring mass job creation and investment from big tech companies, however, Konza remains an ongoing construction site, and the finalisation date has not yet been set. Operations are nonetheless underway, and the Konza Technopolis Development Authority (KoTDA) is actively engaging the startup community to provide solutions for the city.
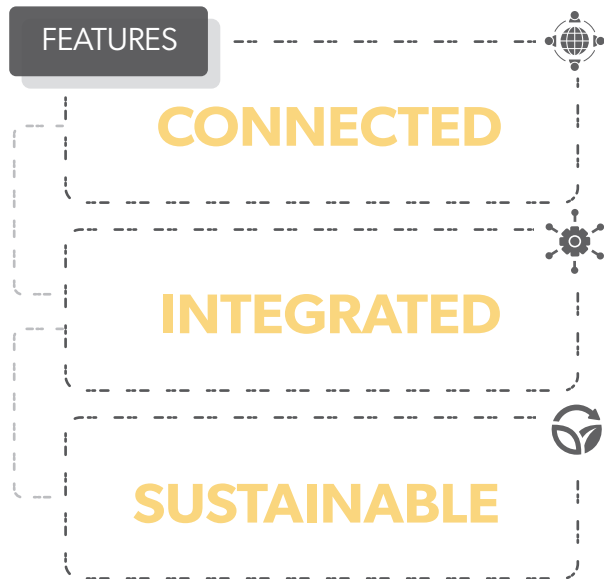
Administrative Capital for Urban Development (ACUD) project, Egypt

The Egyptian government is building a smart and sustainable city that is being referred to as the "The New Capital City", a 700 square kilometer administrative centre which is set to offer housing to between 6-8 million people, and the development is focused on safety, connectivity, integration, digitalisation, and replicability. Orange Business Services, in collaboration with Orange Egypt, has announced its intention to build a new data centre as a core provider and host of cloud services to the new city.

Eko Atlantic, Nigeria

Eko Atlantic, also known as Nigeria International Commerce city, is a privately funded project adjacent to Lagos in Nigeria, offering housing, offices, retail, and modern infrastructure. The city, reclaimed from the Atlantic Ocean and claimed to have prevented further land depletion, aims to relieve population pressure on Lagos, and showcase the possibilities of an eco-friendly urban infrastructure. The first phases of the project have been completed, and though some of the developments are already being occupied, the development of new buildings is still ongoing.

AFRICA'S SMART CITY PROJECTS

BRITER BRIDGES

FEATURES

CONNECTED

INTEGRATED

SUSTAINABLE

RENEWABLE ENERGY

CONNECTIVITY

INTERNET OF THINGS

UTILITIES
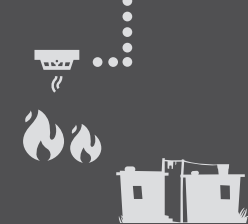
TRANSPORT

WASTE MANAGEMENT

SENSORS

TUNISIA ECONOMIC CITY

TANGIER TECH

NEW CAIRO

AKON CITY

SÈMÈ CITY

BAHIR DAR

HOPE CITY

EKO ATLANTIC

TATU CITY

KONZA CITY

KIGALI SMART CITY

MODDERFONTEIN NEW CITY

10
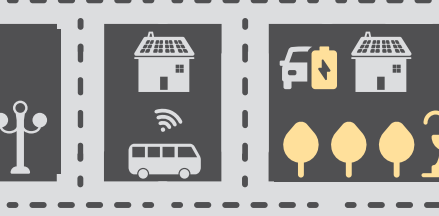
Can smart equal inclusive?

While the increased conversation on sustainable urbanisation and the rise of smart city projects are tangible examples of the shift in attention towards more accessible and safer living for the rising urban population across the continent, several questions remain to be considered regarding costs and long-term feasibility, the political and administrative nature of each area, and the impact these projects can bear on inhabitants residing within and outside the city. In addition, there are also concerns around the inclusiveness of such projects, as to who would ultimately benefit from the smart cities while in capital cities and urban peripheries the population living in critical conditions continues to grow exponentially. The 'smart city' concept is futuristic by nature, often considered in terms of the creation of new urban areas, and sometimes deemed as a solution to liveability in the future.

Liveable Cities as a concept

Defining liveability is a complex task as a multitude of factors and methodologies need to be considered. The literature tends to agree on the assumption that a *liveable city* responds to the environmental, economic, and social needs of all of its residents, such as affordable housing, quality education, employment opportunities, good governance, transport and transport links, and security, as well as more intangible features such as structures for social networks and identities. In many cities, particularly in Africa, **the most liveable places are situated around wealthy areas of the city, which are out of reach for the vast majority of the city's dwellers.** This report focuses on solutions that contribute to improving the quality of living in urban areas in both the formal and informal sectors.

Innovating existing structures

There has been a growing focus on utilising emerging technologies to make existing cities across the region smarter and more liveable from within, democratising smart solutions at the micro level. '*Towards More Liveable Cities in Africa*' explores some of the innovators across relevant sectors and key cities in Africa, many of which operate at the intersection of services traditionally delivered by the public sector, either complementing existing resources to meet the demand of residents, or even replacing official entities to close the gap between capacity and demand. Across the literature on 'liveability', African cities have been ranking low, and the Economist's 2021 "*Global Liveability Index*", which examines 140 cities globally, shows that five out of the ten least liveable cities in the world were in Africa, including Douala, Harare, Tripoli, Algiers, and Lagos. **The key factors influencing the 2021 scores were high rates of civil unrest and instability, as well as worsening health conditions and poor responses to COVID-19**. According to the publication, the pandemic has also had an impact on the category of 'culture and environment', as restrictions curbed the possibility of social gatherings and ease of movement.

> *The most liveable places are situated around wealthy areas of the city, which are out of reach for the vast majority of the city's dwellers.*

Infrastructural problems, poor security, and limited access to public services are amongst the other, more long-standing challenges that affect the state of liveability in cities across Africa, most of which are exacerbated by a growing population.

As urbanisation rates rise, so do overcrowding, costs of living, and traffic pollution, meaning that public administration efforts, infrastructure, and resources are becoming increasingly strained. To make African cities liveable, and in an effort to meet Sustainable Development Goal 11 'Sustainable Cities and Communities', devising long-term solutions to these challenges is a necessity. With the evolution of green and digital technologies, which are being integrated into sustainable and smart city agendas globally, African urban planners and administrations can work together with entrepreneurs, corporates, and investors towards ensuring the development of cities that can accommodate the needs of all residents.

Despite greater accessibility of digital devices, such as mobile phones, which are equipping underserved groups with access to opportunities and information, improving living standards is a process that involves both technology and non-technology-driven solutions. It is important to stress that, while innovations may be suited to optimise resource use, fasten decision-making, and increase efficiency, they cannot substitute critical infrastructure and basic services, which are tied to the presence of resources and know-how, as well as governments able to design, budget, and implement urban development agendas.

Liveable and smart innovators

This report takes a holistic approach to conceive innovators working towards more liveable cities, including solutions ranging from ride-hailing platforms to electric vehicle manufacturers, providers of smart metering solutions, and recycling organisations. To create a comprehensive category of so-called 'liveable city innovators', Briter developed a taxonomy focused on companies whose products and services prioritise and address the needs of growing urban populations through green and digital solutions.

Nairobi, Cape Town, Lagos, and Cairo are among the fastest growing startup ecosystems and top recipient cities of funding injected in the region, reflecting the development of viable, investable business models in the countries' capital and administrative centres. These cities, broadly located across the four corners of the continent, are explored in the following section as case studies to highlight how innovators and startups are increasing liveability in each of their respective cities and beyond. It should be noted that the mappings only include companies that mainly operate in the city area.

URBAN INNOVATORS TAXONOMY

AGRICULTURE & AGTECH
Platforms that facilitate agricultural activities in an urban landscape, connecting urban residents to fresh produce.

Urban Farming | Hydroponics

EDUCATION & EDTECH
Platforms that connect educators and learners to foster greater access to quality education for the urban population.

School Management | Teacher Training | E-Learning
Professional Skills Development

LOGISTICS & FOOD
Platforms that facilitate the movement and transport of goods in urban and surrounding areas.

Delivery | Food Delivery | Groceries Delivery

BIG DATA, INTERNET OF THINGS
Platforms that analyse and extract large datasets or offer advanced technological solutions to facilitate more efficient cities.

Internet of Things (IoT) | Artificial Intelligence
Machine Learning | Big Data & Analytics

FINTECH
Platforms that facilitate financial services and interactions between businesses and consumers.

Mobile Money | Payments

MOBILITY
Platforms that facilitate the movement and transport of people in an urban environment.

Public Transport | Ride Hailing | Electric Vehicles
Carpooling

UTILITIES
Companies that design, manufacture, and distribute sustainable and affordable utility solutions for residents, e.g. for electricity or water services.

Smart Metering System | Water Access | Electricity
Clean cooking

HEALTH
Platforms that connect healthcare providers and patients through digital platforms and technologies.

On-demand healthcare | e-Pharmacy | Wearables

PROPTECH
Platforms that connect buyers, sellers and renters of real estate and accommodation in the city.

Property Listings | Rentals

CIVICTECH
Platforms that enable citizens to connect with the government and justice system to express social concerns, show engagement, or offer feedback.

Social Engagement Platform

JOBS
Platforms that connect jobseekers to employment opportunities, and employers to eligible candidates in an urban landscape.
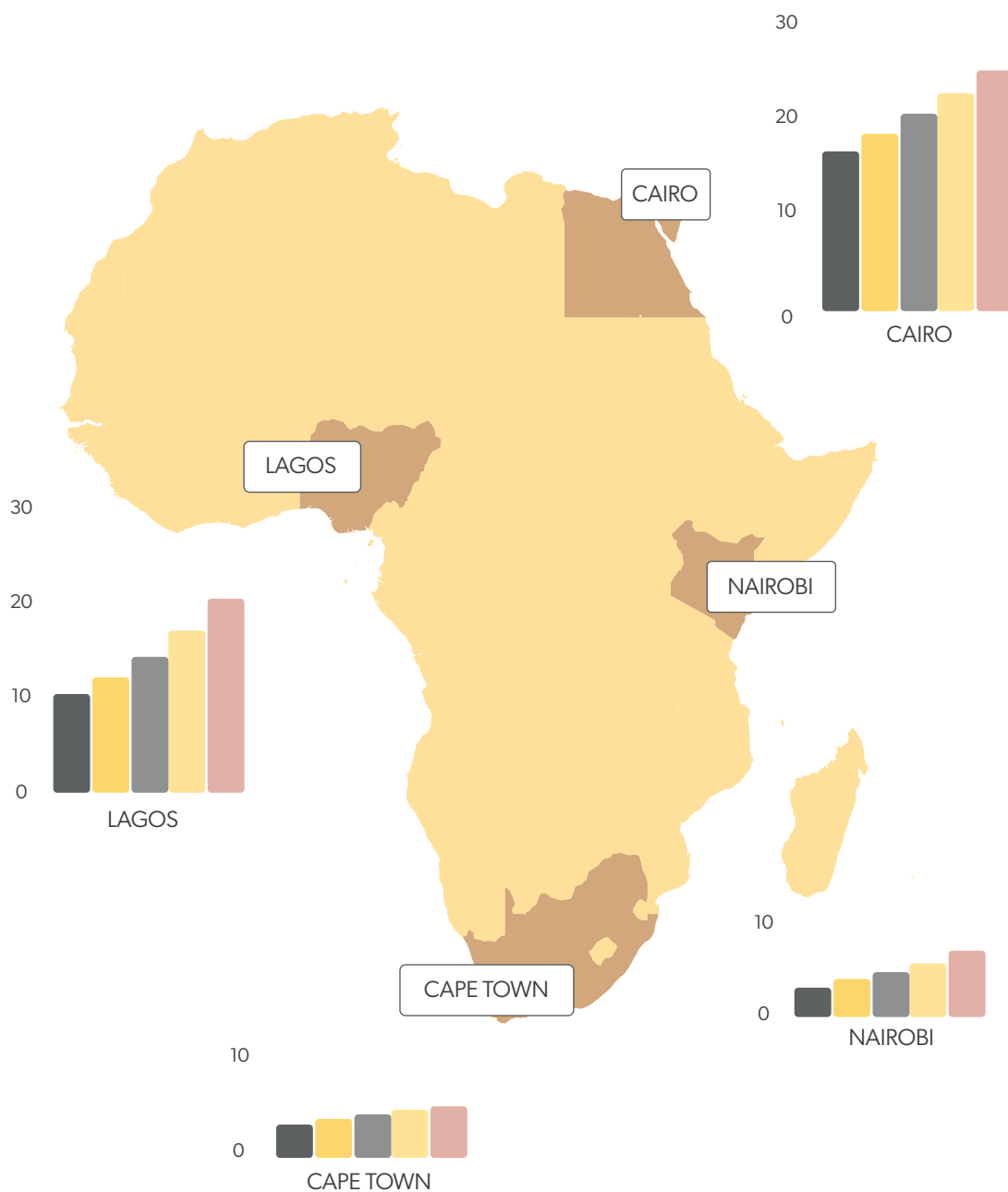
Job boards | Gig Economy | Freelance

WASTE MANAGEMENT & SANITATION
Platforms that facilitate waste management and sanitation services in the cities and surrounding areas.

Waste Recycling | Household Waste | e-Waste
Recycled Products | WASH

URBAN GROWTH IN 4 CITIES

Legend: ■ 2010 ■ 2015 ■ 2020 ■ 2025 ■ 2030

CAIRO

LAGOS

NAIROBI

CAPE TOWN

Source: World Cities Report, 2020

URBAN INNOVATORS IN NAIROBI

WASTE MANAGEMENT

EDUCATION

E-COMMERCE/FINTECH

UTILITIES

LOGISTICS & FOOD

MOBILITY

BIG DATA, AI & IOT

PROPTECH

AGRICULTURE

HEALTH

JOBS

CIVICTECH

Westlands

Kilimani

200+ Platforms

4.9M hab. (est. 2021)

$49.9M funding (2020, by HQ)

BRITER BRIDGES

NAIROBI

Nairobi is one of the fastest growing cities across the region and a hub for economic activity and investment. The city is well connected with two airports and the Mombasa–Nairobi Standard Gauge Railway, and fundamental services such as utilities, mobile connectivity, and banking are by far and large provided by a select number of stakeholders, including Kenya Electricity Generating Co. Ltd. for power needs, and Kenya Commercial Bank for financial services. Despite significant developments, city planners are struggling to keep up with the urbanisation rate in Nairobi. In an attempt to accommodate the rising demand for housing, the government has introduced the Affordable Housing Programme (AHP), yet only 2% of the new 50,000 units are made affordable to low-income households, and almost 60% of residents in Nairobi still live in informal settlements and slums such as Kibera. One company democratising access to affordable housing for Nairobians is Vlage, a marketplace that allows professionals to find and make short- to long-term shared accommodation arrangements. According to the startup's co-founder Isaac Kamau, a *lack of purchasing power for the mortgage* is a key factor affecting why cities like Nairobi are unaffordable for their residents and by offering them flexible accommodation solutions, such as move-in ready houses, working class Nairobians can afford to live close to where they work. Other critical resources, such as access to healthcare and other socio-economic services, also remain limited for urban slum dwellers. Transport is a constant headache in Nairobi, and inefficient mass transport systems appear to be Nairobi's achilles heel. The Nairobi Metropolitan Area Transport Authority estimates that approximately $1 billion dollars worth of productivity is lost annually, as commuters spend many hours daily in traffic in a city ranked as the world's fourth most congested city. Supply chain systems are fragmented in Nairobi, despite the city being a regional hub in East Africa. Restaurants for instance *"spend a lot of time sourcing supplies…and in an industry where margins can be slim, the waste and lost opportunity from this takes its toll."* Glenn Ogola from Topup Mama notes. Helping meet the demands of the growing population are more than 200 startups operating across the city, including:

- ☐ Quickbus, Little, Ma3route and Ecobodaa transforming the ease of getting around the city;

- ☐ COREC, Sanergy and Mr. Green Africa ensuring a clean city;

- ☐ Sendy, Bwala, and MyBigOrder meeting the delivery demands of the growing on-demand culture;

- ☐ Shortlist, Fundis, Ziada, and Onesha making opportunities for employment accessible;

- ☐ Intelipro, Ajua, and Gro Intelligence bringing big data and artificial intelligence to forecast and analyse trends and availability of resources;

- ☐ Mobi-water, Majik Water increasing access and management capabilities of utilities;

- BuyRentKenya, PropTech Kenya and Hao Finder helping residents find accommodation;

- Mulika putting the city's security in the hands of residents;

- Twiga Foods, TopUp Mama, and Sokowatch powering Dukas and connecting farmers and merchants.
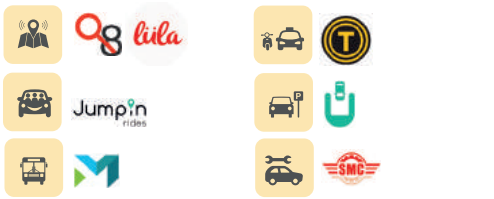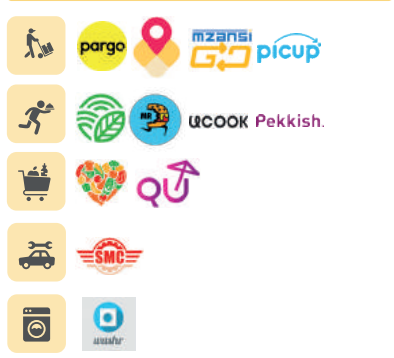
URBAN INNOVATORS IN CAPE TOWN
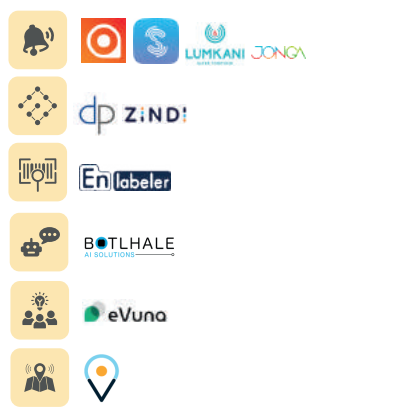
Cape Town

100+ Platforms

4.7M hab. (est. 2021)

$41.4M funding (2020, by HQ)

WASTE MANAGEMENT

I Women Recycling · mpact · kudoti · Twaste RECYCLE · reliance · WRAPP WASTE

EDUCATION

SIYAVULA · Student Hub · getsmarter · digemy · eduone · EXPLORE DATA SCIENCE ACADEMY · CODE SPACE · zaio · CloudEDU · PLAYSENSE · Paper Video

MOBILITY

liila · T · Jumpin rides · SMC

E-COMMERCE/FINTECH

z · karri · abela · Ukheshe · electrum · BoxCommerce · VULEKA · WIZZIT DIGITAL · YOCO

LOGISTICS & FOOD

pargo · mzansi GO · picup · UCOOK · Pekkish. · QU · SMC

BIG DATA, AI & IOT

LUMKANI · JONGA · ZINDI · En labeler · BOTLHALE AI SOLUTIONS · eVuna

PROPTECH

eazi REAL ESTATE · ME · digs. · PROP

CIVICTECH

CIVICTECH INNOVATION NETWORK

JOBS

careers24 · Career Junction · Timu · TALENT · CA GLOBAL · salt · Kuba · TOD · OFFERZEN

UTILITIES

KOMBO KING · wonderbag.

HEALTH

Ingress Healthcare · healthcloud · Sn · AVIRO HEALTH · alignd · hello doctor · 3x4 GENETICS · IMPULSE · Iyeza Health · CARE CHAMP · jembi · CONTRO

17

CAPE TOWN

Cape Town is arguably one of the most technologically advanced cities across Africa, with the municipality putting digital development at the forefront of the agenda to improve infrastructure, governance, inclusion, and economic opportunities. Smart technologies, such as IoT solutions and sensors, are being used to effectively manage and track resources and utilities in the city, as well as traffic data, and waste management services. Cape Town's city government has led efforts to improve waste management in all of its municipalities by introducing initiatives that would bring about efficiency in the sector such as:

☐ industrial symbiosis, where the waste from one industry can become raw materials in another;

☐ contracting the job of household waste collection to private companies and;

☐ investing in infrastructure such as drop-off points and waste management facilities that generate electricity from waste.

However, country-wide, plans to integrate waste pickers into the formal waste management system haven't seen much progress beyond the drafting of guidelines to introduce the initiative, even though waste pickers in South Africa contribute to waste minimisation efforts by recycling about 90% of the recyclables collected from households in the country. Addressing this is crucial and often falls on private companies such as Johannesburg-based startup Kudoti, who are looking to solve waste management challenges in South Africa by making reliable waste data available for the formal and informal sectors, and CivicTech Innovation Hub, a platform founded by a community of individuals and non-governmental organisations that gathers data from citizens to inform the government about

issues that are affecting them. Through their platform, Civictech Innovation Hub ensures that citizens actively contribute to governance in their communities.

In 2018, the city was struck by a water crisis due to a combination of sustained population growth and record levels of drought, which led to severe shortages. Coupled with inefficient management of water resources, fears grew that water sources might be turned off by Cape Town's municipal water supply. The event labelled as Day Zero never came to pass, but as almost a fifth of the country's population live in informal settlements, access to basic utility services and housing remains a critical challenge. Khayelitsha is the largest townships in Cape Town, with the last census in 2011 suggesting that, a decade ago, there were at least 400,000 inhabitants. Here, as in many similar environments, the lack of access to sanitation services has contributed to the spread of water-borne diseases such as cholera, and security continues to be a significant concern for residents.

Cape Town remains a particular example of high contrasts within the city. According to Consulta's South African Customer Satisfaction Index, Cape Town ranked the highest out of eight key municipalities in the country in terms of citizen satisfaction with government delivery of public services. However, many of the city's inhabitants still lack adequate access. In efforts to accommodate the growing population and move towards a more sustainable future, city officials such as Kadri Nassiep, Executive Director of Energy & Climate Change at the City of Cape Town, have expressed intentions of a smart city strategy, taking steps towards enabling smarter city characteristics through developments in energy, transportation and communication services.

One of the objectives of the smart city approach is to create prosumers, that is individuals that both produce and consume value, for instance through home solar systems.

Aligning with the government's agenda for a smarter city, are over 90+ innovators committing to making Cape Town both liveable and smart, including:

☐ Snapplify and CodeSpace focusing on boosting technical skills;

☐ GoMetro and WhereIsMyTransport making it easy and affordable to move around the city;

☐ OrderIn and Yebo Fresh making shopping hassle free by delivering parcels and groceries;

☐ Lumkani keeping homes safe by providing IoT-powered fire detection systems in fire prone informal settlements;

☐ Kandua and Sweepsouth connecting formal and informal labourers to employment opportunities;

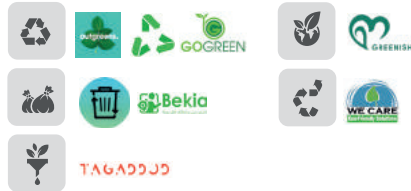☐ Eazi Real Estate and DigsConnect helping people find homes;

☐ Ukheshe and Yoco offering digital payments innovations and;

☐ RecoMed and Ingress Healthcare connecting patients to healthcare providers online.

URBAN INNOVATORS IN CAIRO

Cairo

90+ Platforms

21.3M hab. (est. 2021)

$29.8M funding (2020, by HQ)
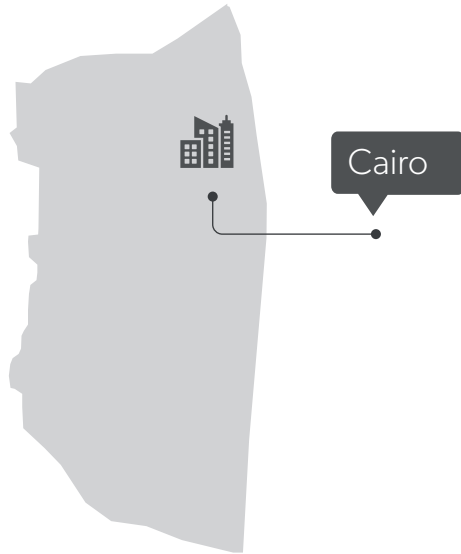
WASTE MANAGEMENT

EDUCATION

E-COMMERCE/FINTECH

CIVICTECH

UTILITIES

LOGISTICS & FOOD

BIG DATA, AI & IOT

MOBILITY

AGRICULTURE

JOBS

PROPTECH

HEALTH

BRITER BRIDGES

CAIRO

More Egyptians reside in rural areas - 56.9 percent of the population - than in cities. However, it is projected that over the next two decades, the number of Egyptians living in cities would surpass those in rural areas for the first time. The country's population is growing and so is its poverty level in rural and urban areas, such as Cairo, one of the most densely populated cities in the world, and where more than half of its residents live in informal areas. A effect of the large concentration of Egyptians in urban areas is regular traffic congestion, something that Cairo-based trucking solutions provider Trella and delivery platform 1Trolley are very familiar with. Trella's logistics marketplace connects shippers to carriers, ensuring a seamless flow of goods across the cities, while 1Trolley offers last mile delivery services to consumers through its digital platform. Egypt's unemployment rate, which came in at 7.4% in Q1 2021, could rise to double digits in the coming years as the government moves on its plans to freeze the hiring of workers in a bid to reduce its bloated public sector. If the city infrastructure and public systems are unable to accommodate its inhabitants, this could pose serious challenges for Egypt. One such challenge is the danger of a water shortage and drought, as a result of climate change and poor municipal water and waste management. However, several developmental efforts have been initiated over the past decade to upgrade Egypt's public infrastructure such as:

☐ the Cairo Municipal Solid Waste Management Project aimed to make the country's waste management sector more effective;

☐ modernisation of its public administration to ensure efficient service delivery;

☐ improvement of the metro systems in two of the country's largest cities Alexandria and Cairo to combat traffic congestion and pollution and;

☐ construction of social housing projects in Cairo's slum areas to improve the quality of life of the dwellers.

In addition to the reforms happening on a public level, there is a growing private sector and an innovation ecosystem that is trying to mitigate deteriorating public infrastructure by the use of digital solutions intended at closing the gap in the delivery of public goods and services. These innovative solutions and companies include:

☐ Tagaddod, Greenish, and RecycloBekia that provide sustainable development solutions that ensure a clean city;

☐ Buseet and Raye7 that offer easy access to safe and convenient rides to Egypt's working class;

☐ Isqan, Aqarmap, and AqbarBest making it easy and convenient to rent an apartment;

☐ Nafham, OTO Courses and Zedny democratising access to quality education for kids and professionals;

☐ Tanqeeb, Wuzzuf, and Forsana connecting people with jobs and;

☐ Dayra offering financial services to unbanked gig workers.

URBAN INNOVATORS IN LAGOS

Ikeja

Lagos

Lekki

160+ Platforms

14.8M hab. (est. 2021)

$61.8M funding (2020, by HQ)
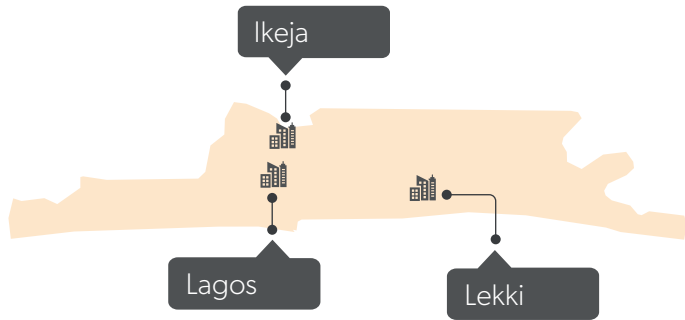
WASTE MANAGEMENT

EDUCATION

MOBILITY

UTILITIES

LOGISTICS & FOOD

PROPTECH

JOBS

BIG DATA, AI & IOT
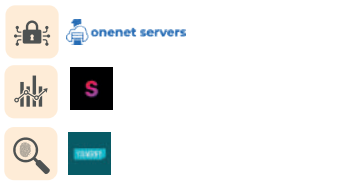
HEALTH

E-COMMERCE/FINTECH

CIVICTECH

BRITER BRIDGES

LAGOS

Lagos is one of the most densely populated cities in the world with a population of more than 24 million people, of which more than 35% are unemployed. As Nigeria's economic and financial hub, the city has witnessed the influx of economic migrants from other cities in Nigeria seeking better opportunities. Many of these migrants settled in informal settlements when they arrived as they couldn't afford the high rental costs of an urban city, and this led to poor sanitation, traffic congestion, pollution, and overcrowding, which the megacity is infamous for. The housing deficit in Lagos is over 3 million units, and while the city's government introduced plans to construct more than 20,000 affordable housing units through the Lagos Affordable Public Housing (LAPH) Initiative in partnership with the private sector before 2020, little is known of the progress of the project to date. Also, while the city's formal waste system is among the most effective in the country, with roughly 650 waste collection trucks transporting solid waste city-wide from households to dump sites once every week or two, the informal sector still plays a major role in helping to keep the city clean and recycling waste materials where the services of the city's waste management agency may be lacking. Street cleaners employed by the agency can regularly be seen on major roads in the city sweeping the paved areas and picking up litter. However, little attention is given to the street gutters, which often overflow during heavy rainfall leading to flooding around most areas of the city. With Lagos losing up to $10 billion yearly to traffic congestion, the city's government has begun exploring novel approaches to address its congestion problem, such as making investments in alternative transport systems like Bus Rapid Transit Systems, rail lines, and waterways, and dismantling roundabouts that get in the way of the city's free flow of traffic.

Nigeria suffers from a food infrastructure deficit, which has only worsened in the past year as a result of COVID-19. Due to logistics inefficiencies, Nigeria's food distribution systems have been severely affected during the pandemic, and this has led to rising food prices as it now costs more to transport food from the North, where the majority of Nigeria's food is grown, to the South to cities like Lagos. Although there have been efforts by the Lagos State Government to identify and support innovators in key sectors of the economy such as agriculture by offering grants to them, no concrete plans have been communicated about how the problem of food insecurity will be tackled in the city.

Known for their entrepreneurial mindset, innovators in the city are contributing to the creation of liveability by providing solutions to problems that weak infrastructure has left unaddressed.

A few examples of them are:

☐ PricePally, an e-commerce platform that is bringing efficiency into how food is sourced by intelligently matching producers with consumers to ensure that food is affordable and maintains its quality. This is in a bid to tackle food insecurity in a country characterised by weak food production and distribution systems and a reliance on food imports to feed its high population. Transporting food from the rural areas to the cities in Nigeria can be very expensive and problematic and as a result, consumers in large cities have to pay more for food items whose quality is often poor. This barrier between consumers and producers is what Price-Pally is trying to reduce and is what its CEO Luther Lawoyin describes as "*heavily inefficient as it spirals to high-cost and affects the freshness and quality of food.*"

However, while trying to build a smart community of members in the food system, Luther points out that food insecurity in Nigeria would be greatly reduced if the transport infrastructure in the country is improved upon;

☐ Muster, a proptech startup that is providing shared accommodation plans for people that need flexibility in rent payments. Its CEO Ugochukwu Okoro lists housing as one of the top factors that are currently making Lagos unliveable for its residents, and through their solution, they are making housing affordable for them in locations that were previously inaccessible;

☐ ShapShap, an on-demand delivery service facilitating easy movement of goods from vendors to consumers. The startup's CEO Khalil Halilu considers poor mobility around Lagos as a major factor that is affecting its liveability and they are trying to solve this problem by reducing the amount of time that commuters in the city spend in traffic;

☐ BudgIT, a civictech startup that is championing accountability and transparency in Nigeria by democratising access to public data for its citizens. Headquartered in Lagos, the startup has been in dialogue with the state's government on ways to improve accountability in budgetary allocation and service delivery. Poor governance at the local government level across the country and a lack of accountability has led to the delivery of what BudgIT's CEO Oluseun Onigbinde terms "suboptimal" basic social services. And by tracking the delivery of infrastructure within Lagos, the startup hopes to create "a strong social contract between the citizens and the government".

☐ Stutern, a jobtech platform that is connecting young African talents to flexible work options. By offering skills development and internship opportunities to young people in the city, the startup helps to launch them into promising careers. In Nigeria, even in big cities like Lagos, jobs are hard to come by and in offering "*flexibility for workers to work remotely*", the startup is contributing to a more liveable city according to its CEO Kehinde Ayanleye.

CONCLUSION

The overarching objective of creating liveable cities comes by developing services that ensure social and financial inclusion for current and future generations. As urbanisation rates across Africa continue to soar, the ability to guarantee decent standards of living to everybody is at risk, especially as a growing population in informal settlements remains cut off from critical services. The concept of liveability has become particularly relevant since the outbreak of COVID-19, which has added pressure on public services and disrupted the lives of millions of individuals and businesses. Worse still, the pandemic is predicted to undo years of social and economic progress, and the number of people living in extreme poverty is estimated to have increased by 32 million in 2020.

With the advent of COVID-19, startups and innovators in the digital and tech space have shown the ability to adapt to the changing needs of the population by serving as a vehicle for the digitisation of services. This translated into conducting online education, providing online medical consultations, delivering food and groceries on-demand, and more, reaching the otherwise underserved, and helping to mitigate the impact of decreased mobility and restrictions that were put in place across the region. Yet, startups are unlikely to become so widespread and resourced to be able to fully substitute critical infrastructure and public service provision. When severe water scarcity hit Cape Town, there was little on-demand delivery startups could do. Similarly, when electricity towers collapse and entire urban centres are left without diesel generators as their only energy sources, distributed power such as solar panels are yet to offer complete coverage, although progress is being made all across the continent.

While smart city projects have often been put forward as a solution to urban challenges, the extensive time horizon, cost, and accessibility, imply that these projects cannot be considered as readily-available solutions. That said, decentralised and localised pockets of smart innovation are happening at a broad scale across cities and have proven to be resilient and enduring fixes to flawed systems.

Technology and startups alone cannot solve all macro issues associated with urbanisation. Strategic planning and good governance cannot be replaced with technology. Nairobi, Cape Town, Cairo, and Lagos are four of the fastest growing cities across the continent, and while they present different social, economic, and political backgrounds, and enjoy a vastly more sophisticated set of infrastructure and basic services than the average city on the continent, many of the challenges to liveability remain equal. Concerns are growing that a significant segment of the population across cities in Africa is being left behind, and the proportion of this population as part of the city area is growing. Informal settlements and 'slums , and 'townships' still lack significant access to basic services, particularly in terms of adequate housing, transport infrastructure, clean energy solutions, access to health facilities, safety, water, and sanitation. The vast majority of informal settlements are still not being accommodated by public services, and they are unlikely to be considered as a priority customer target for many private companies due to low purchasing power, lack of adequate addressing, and higher risk environments. The high cost of licensing and compliance contributes to informality in Africa's cities. Glenn Ogolah notes that "*it not only increases the cost of business but also slows down how quickly innovators can expand their impact, to reach and serve out of city populations.*" He further notes that

coordination between local governments and technology innovators would go a long way in mitigating costly informality in cities. Increased expenditure and investments in education, infrastructure, health, and clean energy are essential to young and old populations and the approach needed must be context-centred and encourage greater collaboration and private-public coordination. Infrastructure must be prioritised. This opinion is shared by many innovators, such as Walid Rashwan, Founder at 1Trolley who notes that a focus on critical aspects such as internet speed and mass transportation solutions is key in catalysing liveability. Infrastructure is costly and takes time to be developed, and as such, they require patient capital which will hardly come from the private sector alone. Then, a clear strategic plan that is centered on human capital development is needed to improve the lives of ordinary people in African cities. Furthermore, governments should incorporate sustainability and liveability goals into policies that they introduce and reward businesses that work towards meeting these goals, Habiba Eissa, Investor Relations Officer at Trella suggests. "*Implementable strategic plans intended at driving human capital development, human mobility, reducing costs of living, petty corruption, and ultimately improving the environment in cities are* *needed*", Osman Siddiqi, the Chief Impact Officer at Arifu also suggests.

Startups, on the other hand, are better suited to leverage the infrastructure to create efficiencies in the living systems, and in addition, align their strategies with the government's sustainability goals in order to achieve long-term business benefits. Where such alignments are lacking, startups should leverage their relative ease of execution to anyway provide more affordable solutions to public failures across different spaces such as education and infrastructure as Malaika Judd, Co-Founder at Sendy laments.

With a growing urban population, transformative reforms are also needed to reduce climate impacts, improve governance and social protection, and encourage greater consumption. In order to make greater strides towards liveability, government agencies, corporates, investors and startups have a shared responsibility to optimise resources and find a balance between public and private delivery of services to meet the demands and needs of all segments of the growing population, going beyond liveable to make cities sustainable, progressive and inclusive.

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