

Acronyms

ASAL – Arid and Semi-Arid Land

B2B – Business to Business

B2C - Business to Consumer

B2G - business-to-government

CA – Communications Authority

CBET – Competency Based Education and Training

CBET- Competency Based Education and Training

CBK - Central Bank of Kenya

CoE- Civic Education Curriculum

CSO - Civil Society Organizations

ESP - Economic Stimulus Programme

FDI - Foreign Direct Investment

FINNAID – Finnish Aid

FSD – Financial Deepening Sector

GDP – Gross Domestic Product

GDP- Gross Domestic Product

ICTA – Information, Communication and Technology Authority

ICTs- Information, Communication and Technology

IP – Intellectual Property

IPO – Initial Public Offering

ISP – Internet Service provider

ITU – International Telecommunications Unit

KENIA - Kenya National Innovation Agency

KEPSA – Kenya Private Sector Alliance

KICD- Kenya Institute of Curriculum Development

KNBS – Kenya National Bureau of Standards

MNO - Mobile Network Operators

KPHC – Kenya Population and Housing Census

KPHC – Kenya Population and Housing Census

KRA- Kenya Revenue Authority

MoE – Ministry of Education

MoH – Ministry of Health

NACOSTI – National Commission for Science, Technology and Innovation

NGO – Non-Governmental Organisation

OECD- Organization for Economic Cooperation and Development

PDD – Principles for Digital Development

PDTP - Presidential Digital Talent Programme

R&D – Research and Development

SDGs - Sustainable Development Goals

SET - Science Engineering and Technology

SME - Small and Medium Enterprise

STI – Science Technology and Innovation

TVET – Technical and Vocational Education and Training

UNCTAD - United Nations Conference on Trade and Development

UKAID – United Kingdom - Department for International Development

USAID – United States Agency for International Development

VAT – Value Added Tax



This report has been produced by Fingo Powerbank project. The aim is to increase the civil society's capacity in three areas: innovations, technology solutions and corporate collaboration. We organize trainings, create partnerships and networks, test and adopt new solutions & provide advisory services and sparring. The focus is on supporting development NGOs and their partners in East Africa. The Fingo Powerbank programme extension is financed by the Foreign Ministry of Finland. The project will last from 2020 to the end of 2021.

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Definitions of Terms

Accelerator: A start-up service working with a start-up or entrepreneur for a fixed period and providing intensive mentorship and development services.

Agricultural Technology (Agritech): The application of ICTs to make agricultural services more efficient.

Angel investment: Early stage investment intended to provide a one-time boost to initially launch and develop a start-up. Often provided by entrepreneurs, friends or families and connected with mentorship.

Business to Business (B2B): Services or products from private sector companies intended to be used by other private sector companies

Crowdfunding: Financing a new venture, product or project by collecting small amounts of money from large numbers of investors, often in exchange for perks such as early access to the product.

Design Thinking: a non-linear, iterative process which seeks to understand users, challenge assumptions, redefine problems and create innovative solutions to prototype and test. It is a process (empathize, define, ideate, prototype, test) of creating solutions/product/service that will actually be adopted by people it is designed for.

Human Centred Design: It is a people they are intended to serve.mindset/approach that overlays design thinking to ensure that the products are relevant and beneficial— in the long run — for the people it's designed for.

User centred design: A design process focused on the experience of the end user, concentrating on empathy with users and use cases

Digital Development: the various levels of the digital divide which must be bridged to promote widespread digital usage within a society.

Digital Economy: It's the economic activity that results from billions of everyday online connections among people, businesses, devices, data, and processes.

Digital Literacy: refers to an individual's ability to find, evaluate, and compose clear information through writing and other media on various digital platforms

Digital Transformation: the process of using digital technologies to create new — or modify existing — business processes, culture, and user experiences to meet changing business and market requirements.

Ecosystem- a set of entities playing in a context (e.g. a sector, an industry, a market, an

Entrepreneurial/Innovation support: Programmes such as incubators, accelerators, labs, and other services which provide entrepreneurs with resources such as training, mentorship and business services.

Financial Literacy: the possession of the set of skills and knowledge that allows an individual to make informed and effective decisions with all their financial resources

Financial Technology (fintech): The application of ICTs to make financial services more efficient.

Foreign Direct Investment (FDI): Investment in the form of a controlling ownership in a business enterprise in one country by an entity based in another country

Gross Domestic Product (GDP): The monetary value of all the finished goods and services produced within a country's borders in a specific time period.

Incubator: A start-up service providing business services and training, early stage support and mentorship and often office space and communities for start-ups and entrepreneurs.

Initial Public Offering: refers to the process of offering shares of a [private corporation](#) to the public in a new stock issuance

Innovation ecosystem: The major stakeholders and processes supporting innovation and the establishment of new businesses in an area, and their associations and connections.

Innovation: The implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations

organization) interacting and exchanging value, leveraging resources, generating outcomes.

Role: In an ecosystem, defining a role is a way to cluster several kinds of entities into the same category of players, primarily according to how much they share motivations to join, assets and capabilities (resources that they can leverage) and type of value exchanges they're looking for.

Seed Funding: is the initial funding used to begin creating a business or a new product.

Support services: A series of skills such as accounting, legal advisory, regulatory compliance, and other skills necessary to meeting the requirements of running a business, often taken on by outside specialists

Venture capital: High risk investment in an early stage business which have proven growth potential, intended to help the business develop and expand.

1.0 Introduction

Innovation ecosystems are economic engines for creating new ideas and scaling existing innovations with high potential. They provide the web of support that makes it easier for innovative start-ups to launch and grow quickly, and for established organisations including CSOs to pivot on and innovate more aggressively. The Fingo Powerbank programme extension aims to reinforce this web of support by increasing the capacity of CSOs and their local partners to help create a culture of innovation, utilize digital solutions in order to improve the impact of their work and strengthen the collaboration between the various stakeholders including private sector, public sector, academia, other CSOs, entrepreneurs and investors in the ecosystem to build whole new and improved digital innovations and funding for CSOs; ultimately supporting their contribution to sustainable development goals. Fingo remains acutely aware that Kenya isn't necessarily a single market, but 47 counties. Each county has its own political, economic and cultural dynamics—and its own plan for development towards the achievement of the 'Big 4 Agenda' and Kenya's Vision 2030. In a sense, this underscores the commitment to identify innovations that will assist CSOs operate more effectively both locally, at county level and nationally to have more impact in communicating and influencing decision makers.

As encouraging as Kenya's budding innovation ecosystem is, business and government leaders are quick to point out that this is just the start. A host of daunting challenges must be overcome before healthy, large-scale innovation ecosystems will be able to flourish. There are three critical shortages: skills, venture capital and a culture that encourages innovation fuelled by limited policies directly supporting innovation. In each case, promising experiments are being tried that, over the longer term, could turn the tide and provide models that others can build on or learn from.

The objective of this report is to empower Fingo and its stakeholders to take advantage of the preparations that have laid the groundwork for current success and to drive their goals in creating a vibrant ecosystem. Empowering these stakeholders will lead to a more innovative private sector and all its associated economic benefits and equally transform the lives of people on the ground that are served by CSO's, through new digital products and services.

1.1 Background

The American Silicon Valley emerged as an innovation powerhouse in the 1970s, leading to communities and countries attempting to replicate the valley's magic—with varying degrees of success. Some of the key factors needed to drive these include a community of entrepreneurs, government support, relevant tertiary education institutions, availability

of capital and a culture that supports innovation and entrepreneurship. Nairobi, Kenya, is currently the second-best innovation and start-up capital of Africa consisting of a decent number of innovation hubs and incubators, financiers including CSO's and the city seems to be packed with entrepreneurs.

The Kenyan Innovation ecosystem was launched into action about 15 years ago when drops in prices of phones made them accessible. This was followed by the laying of the 1st undersea cable for the internet by Africa Online, a Pan African ISP in 2005-2006. In 2007, Safaricom a telecommunications company built the worldwide known mobile money solution, M-Pesa, that continues to revolutionise the financial services sector especially traditional banking and is an anchor platform that tech start-ups build added services on top of and that other mobile carriers imitate. In 2008, the electoral crisis led to the launch of Ushahidi, a social enterprise to tackle election violence. In 2010, Ushahidi founders and team launched the iHub, that went on to drive the entire ecosystem of soft infrastructure providers including new entrants like mLab, NaiLab, Gearbox, AkiraChix, and a successful start-up BRCK who look for gaps in the local business ecosystem and try to fill them. Inspired by these successes, a few Kenyan universities went to develop programmes that aimed at preparing students to engage in innovation and entrepreneurship and complemented that with setting up incubation hubs. The leader among them is Strathmore University, a top private university with respected programs in business and information technology. In 2011, Strathmore established @iLabAfrica, which is dedicated to fostering research, innovation and entrepreneurship. The organization conducts collaborative research, identifies technologies that can address social problems and helps students launch companies. In 2011, the government launched Kenya's Open Data Initiative, where government data is made readily available via a web portal to government agencies, businesses and citizens alike. It's the first initiative of its type in Africa, and observers believe this kind of transparency will strengthen democracy as well as boost economic activity. In 2013, the government launched Vision 2030 including the National ICT Master Plan, a strategy aimed at helping Kenya become a knowledge economy in the next five years. Konza Techno City, a USD 14.5 billion investment, is another key pillar of Vision 2030, which focused on software development, engineering, data centres and business process outsourcing. The government of Kenya continues to play a critical role in supporting the country's innovation ecosystem. It has improved broadband connectivity by bringing undersea fiber-optic cables into the country and spreading it across all county governments and linking it to all education institutions, which is one of the preconditions that give rise to a massive digital economy.

Fast forward to 2018, the government launched the ‘Big 4 Agenda’, short term for priorities for 2018-2022, which arises from Kenya Vision 2030, and both of which state the importance of ICT centric innovation as strategic enablers for national development. The Big 4 Agenda has four key pillars: food security; universal health; affordable housing and manufacturing. Furthermore, innovation in ICTs is recognised as key in the achievement of the Sustainable Development Goals (SDGs) and the Government priorities in the next five years under the current national planning framework commonly referred to the ‘Big 4 Agenda’. Thanks to these initiatives by government, academia and the start-up and innovation community, with support and funding from CSO’s and other partners, Kenya is emerging as a model for other African nations.

In 2013, the government launched Vision 2030 including the National ICT Master Plan, a strategy aimed at helping Kenya become a knowledge economy in the next five years.

1.2 Purpose of Review of the Ecosystem

- I. To understand the scope and dynamics playing out in the innovation ecosystem in Kenya, with the aim of helping FINGO Powerbank contribute towards the building of a vibrant ecosystem that will help its partners/Members unleash digital potential that creates value in its interaction
- II. Inform and bring new insights to FINGO Powerbank project and its partners to enhance and transform what they do, or care about on their journey towards achieving sustainable development goals

The Diagram below illustrates Fingo Powerbank project role as a platform owner in the Digital Innovation Ecosystem in Kenya.

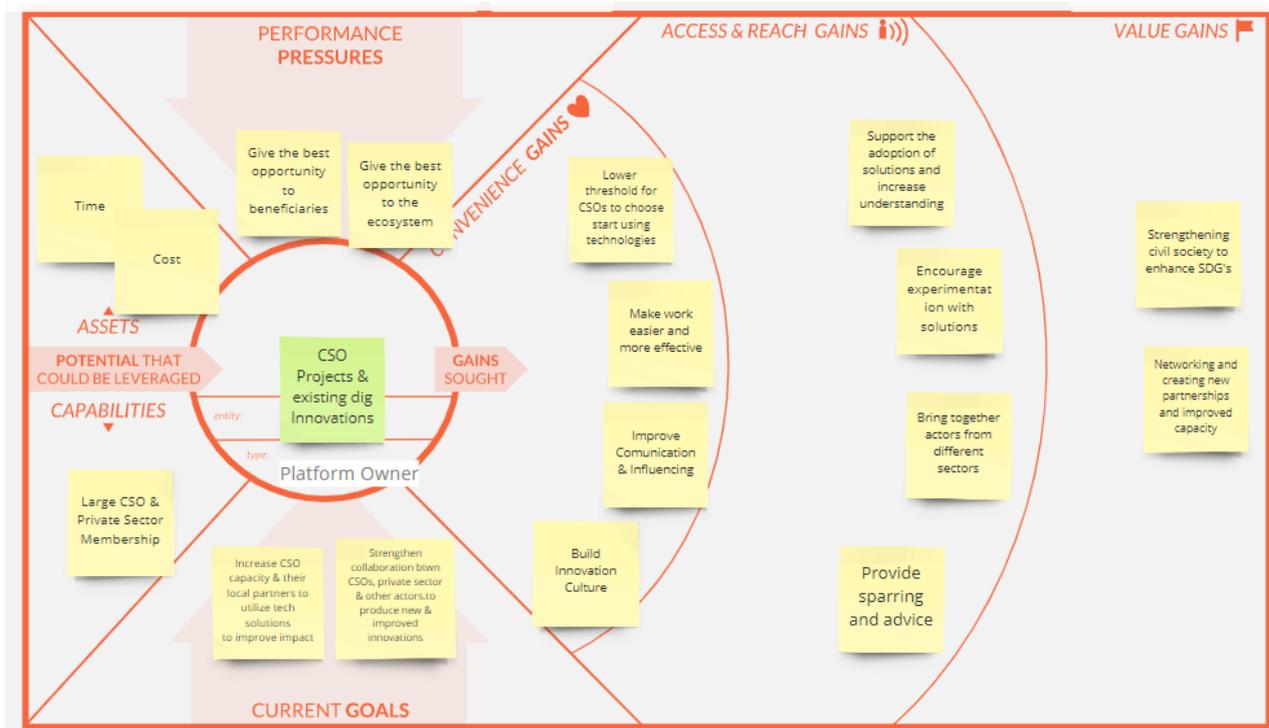


Figure 1: Fingo Powerbank Role in the Ecosystem

1.3 Desk Review

The Kenyan innovation ecosystem review starts with a context analysis of the Kenyan Innovation environment stakeholders; these include, government and public sector, private sector, academia, CSOs and innovators and entrepreneurs and their support services. The lines of inquiry followed include people, community, market environment, political environment and implementing organisations' capacity. This is followed by desk research and data analysis guided by International telecommunications Unit (ITU) Seven Pillars of Innovation; these ensure that key sectors, trends and inter-relationships among the players helps to build a better understanding of the ecosystem. A SWOT analysis is presented to showcase overall ecosystem performance followed by a sectoral analysis of key themes.

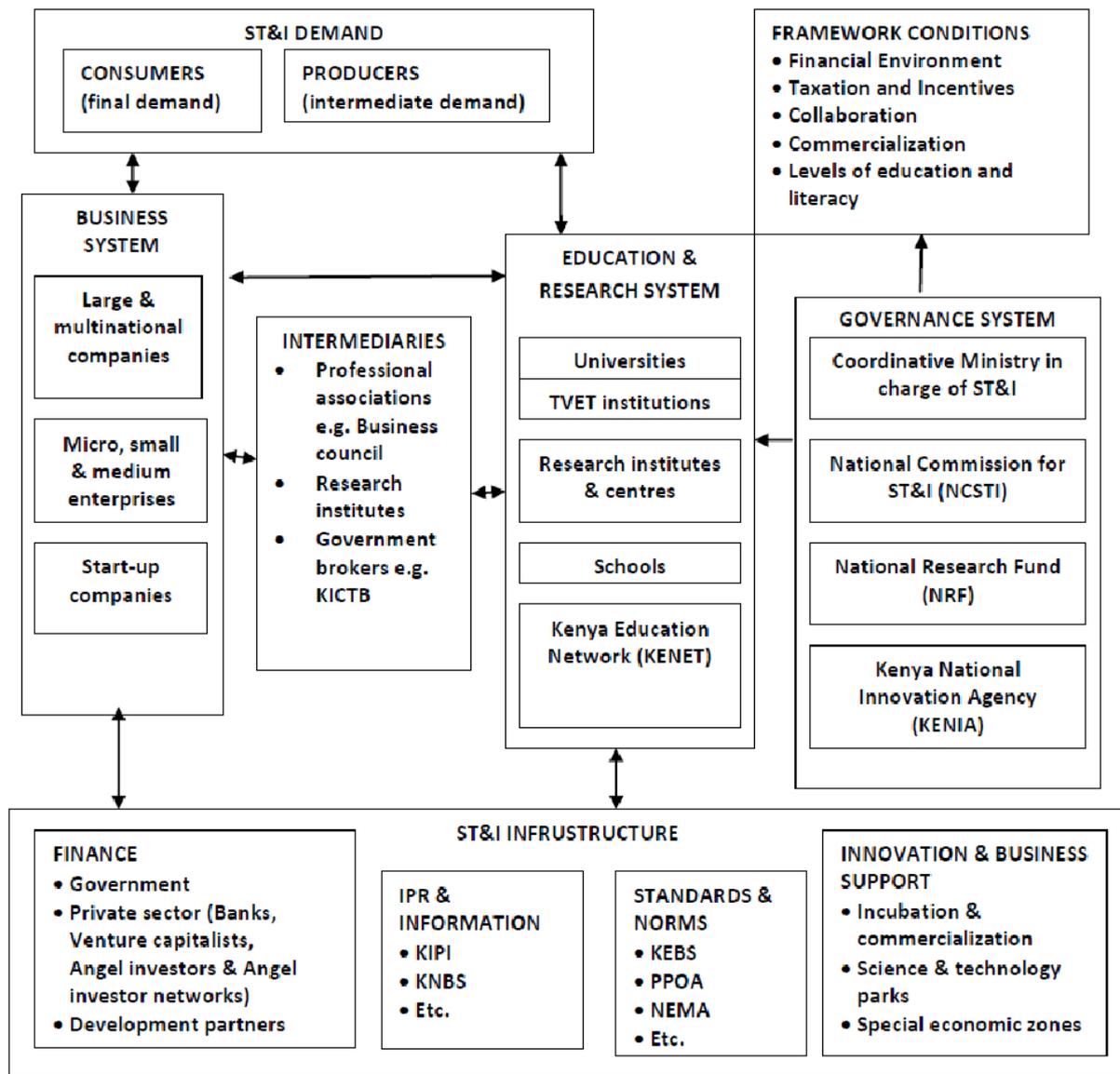
Documents reviewed are provided in the reference section. They include, but not limited to: Fingo Power Bank Project Report; Project Public Private Partnership Framework (2015); Bi-annual Reports; Kenya Vision 2030; Science, Technology and Innovation Act (2013); Micro and Small Enterprises Act (2012), Kenya Digital economy, International Telecommunications Unit (ITU) Digital skills Toolkit, Impact Portfolio Report, IBM Building Africa Innovation report, Enpact Portfolio Report, Kenya Innovation forum Event Report, Annual NGO Sector Report (2018), Nailab Evaluation Report, National Education Sector Report and Start-up case studies.

Design thinking and principles for digital development to specifically understand the existing ecosystem and be collaborative have been the guiding principles for this review. The analysed data was consolidated and documented into this report.

2.0 Role of Technology and Innovation

The Organization for Economic Cooperation and Development (OECD), in the 'Oslo Manual' defines innovation as the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations. Innovation in this context can also be new to the world, new to the market, or new to a company. Kenya Vision 2030 outlines several key objectives regarding digital innovation in Kenya, this development blueprint aims to transform Kenya into a knowledge-based and digitally enabled, middle-income economy providing a high quality of life to all its citizens by 2030.

This ambitious goal calls for deliberate efforts towards continued use and adoption of innovation and ICT to develop new products, new services, and new growth in many sectors of the economy. This warrants a review of the current innovation ecosystem to understand what is needed to achieve these objectives. The spread of ICTs into everyday life demonstrates the convergence of technological and scientific progress rooted in the use of ICTs. In the corporate environment, hierarchies, borders and organizational structures that were once the cornerstone of competitiveness are now hindering markets and opportunities. Instead, a new sharing economy is changing the rules of innovation. Collaboration, co-creation and trust between networks of resources, people, and needs are the critical behaviours for success. All are core facets of technology and innovation.



Source: Ministry of Higher Education, Science and Technology, Kenya

The benefits of innovation in the field of ICTs are not limited to ICT as a sector. The impact of ICTs is cross-cutting. It touches on almost every sector of the economy and almost every aspect of people's lives. Technology allows people to do things they always wanted to do; better, faster, easier, and cheaper. Organisations including CSOs are always looking to be more efficient to offer better services for people and improved livelihoods for their communities. This vibrant innovation ecosystem can create a conducive environment where real life problems are met with ideas, entrepreneurs, and resources to unlock unique opportunities in the creation and diffusion of digital technologies with exponential impact. For example, basic information problems, efficiency and scalability can easily be addressed using ICTs. For example, previously under-served groups, can now be easily reached through the mobile networks or the internet. In turn businesses can now gain

new customers from the development sector bringing purposeful work, higher profits and better return on investment.

2.1 Context Analysis

2.1.1 People

There are a total of 47,564,100 people in Kenya; 23,548,100 males and 24,014,700 females (KHPS, 2019). Nairobi City, the capital of Kenya, has grown rapidly. It is now a major hub for business and culture with many major international companies and organisations, as well as the largest stock exchange in Africa. The impetus of Nairobi’s innovation ecosystem is growing with a promising future as evidenced by an increasing number of hubs and talented entrepreneurs. A major area of strength for the ecosystem is human capital, while market conditions currently present the greatest challenge.

Key Human Development Indicators
<i>Education</i>
Literacy: 78% (81.1% male, 74.8% females)
School Life Expectancy: 12 years
<i>Health</i>
Children under 5 underweight: 16.4% (2009)
HIV adult prevalence rate: 6.04%
0.2 Physicians/1000 people
1.4 hospital beds/1000 people
Birth rate per woman: 3.31
Life expectancy: 67.3 years
Infant mortality: 35.198 deaths/1000 live births
<i>Housing</i>
Access to improved sanitation: 29.6% (31.3% in urban areas)
Access to improved drinking water: 61.7% (82.3% in urban areas)

IDPs: 309,200 (people displaced since the 1990s)
Energy
Access to energy 56%

Table 1: Human Development Indicators

2.1.2 Market Environment

Nairobi, Kenya is ranked as the second-best start-up ecosystem in Africa after Lagos Nigeria. It is well positioned relative to the region. Market conditions could improve, given low GDP per capita, although the World Bank estimates that it will rise with the recovery of agriculture, better business sentiment, private sector credit and the continued easing of political instability. Market opportunities within the digital innovation ecosystem exist in application development, Business to Business (B2B) solutions, software development; ICT solutions in Financial, Health, Agriculture and Education sectors, ICT Training and community problem solving; and Hardware.

2.1.3 Political Environment

Kenya continues to experience general political stability. This is attributed to promulgation of a new constitution in 2010 and continuous reforms to the constitution. The major highlights include the introduction of a bicameral legislative house, devolved county governments, and a constitutionally tenured Judiciary and electoral body. Nevertheless, there has also been instability due to the consistent threat of violent terrorist attacks, political, social and ethnic divisions, ineffective rule of law, corruption and after-effects of presidential elections of 2017, which led to new elections and later the 'handshake'.

2.1.4 Policy and Legal Environment

The government continues to formulate and implement sound policies and regulations that permit and promote economic development. The legal environment is an area that demands the attention of policy makers with specific focus on corporate tax and Value Added Tax (VAT) rates being notably high. Corruption, a vice that has penetrated many sectors in Kenya, is highlighted as a consistent challenge that discourages innovative business ideas. Organisations estimated that approximately 20% of their recent government business deals involved the request of an informal payment. The informal sector that operates outside government taxation and monitoring, is a problem for Kenya,

34% of businesses saw the informal sector as competition and a major hindrance to their business (Enpact, 2018)

2.1.5 Public Sector

The Kenya Vision 2030 provides an overarching goal to improve the state of the economy. The 'Big 4' agenda provides direction and priorities for the period 2018-2022. The success of activities aimed at achieving the vision so far has been driven by the efforts of various government ministries, the private sector and CSOs but in silos and isolated from each other. While there is a common vision, the roadmap to achieve the ambitious goals set out seem to be disconnected, many strategies and policy specifics are not yet in place. Stakeholders in the digital innovation ecosystem continue to work in silos and are not adequately engaged with each other in either communication or implementation. This is largely driven by the lack of a common agenda, robust implementation process, and coordinating anchors for activities within the digital innovation ecosystem. Many efforts are underway, but they can be more effective with a comprehensive framework addressing all the needs of the ecosystem.

2.1.6 Private Sector

The sector is a major source of employment, wealth creation, innovation and technological advancement consisting of different types of enterprises with varying growth profiles. These enterprises can be traced in ICT, Agriculture, Healthcare, Energy, and Financial Services sectors. The small and medium enterprise (SME) sector accounts for about 80% of employment and contributes to over 92% of new jobs created annually and about 45% of the Gross Domestic Product (GDP). Whereas SMEs are a fundamental part of the economy, their performance has been dreary due to a variety of challenges. Key among them include high failure rates, lack of access to finance; market related problems (customer acquisition), management challenges, poor state of infrastructure, weak regulatory environment and lack of access to relevant technology. Kenya Private Sector Alliance (KEPSA) is an apex and umbrella body set up in 2003, to bring together the business community in a single voice to engage and influence public policy for an enabling business environment. Digital transformation is needed for SMEs to drive the digital economy. This can be through running digital entrepreneurial programs, enhancing collaboration and engagement, improving access to capital and incentives for investment in digital innovation in the private sector.

2.1.7 Academia

The education sector is vital in the development of the economy. The Social Pillar in the Vision 2030 singles out education and training as the vehicle that will drive Kenya into becoming a middle-income economy. “The sector envisions a globally competitive education, training, research and innovation for sustainable development. In order to realize this, the sector undertakes to provide, promote and coordinate quality education for sustainable development” (Kenya Vision 2030). The sector’s overall goal is to increase access to education and training; improve quality and relevance of education; reduce inequality as well as leverage on knowledge and skills in science, technology, and innovation for global competitiveness.

Kenya has a total of 74 universities, the student enrolment increased by 48.8% from 361,379 in 2013 to 537,733, and that gender parity decreased to 70.86% in 2017. Technical and Vocational Education and Training (TVET) grew to 1300 during the same period with TVET enrolment grew by 92.5% from 148,009 in 2013 to 363,884 in 2018, and 11,399 secondary schools with about 2,900,000 students in school, the gender parity index improved from 0.68 in 2013 to 0.78 in 2018 (MoE, 2018).

Numerous challenges still exist in the sector. At the basic education level, there are important sources of internal inefficiencies. For instance, more than 40% of children who start Grade 1 drop out of school before reaching Form four. Additionally, inequality in access and distribution of education facilities exists across board with an estimated 1 million school going children are out of school, mostly in Arid and Semi-Arid Lands (ASAL) counties. There are also wide disparities in access to education, based on gender, location and region. For instance, girls are generally left behind in ASAL areas. Of specific mention is the fact that nearly 6 out of 10 children from the poorest quintile, who enrolled in Grade 1, are expected to complete Grade 6, compared to 9 out of 10 children from the richest quintile. More children at basic education level are entering school but not adequately learning.

In the TVET sub-sector, challenges include inadequate data, low enrolment among females, poor linkages with the industry, inadequate physical infrastructure and equipment to support the teaching of the Competency Based Education and Training (CBET) curriculum, non-alignment of the curriculum to the CBET curriculum and to the Vision 2030, among others. In the university sub-sector challenges such as inadequate funding, low proportion of Science Engineering and Technology (SET) subjects, low enrolment of female students in SET subjects, and inadequate qualified teaching staff, poor linkages with the industry and non-alignment of the curriculum to market needs and Vision 2030 among others.

2.1.8 Civil Society Organizations (CSOs)

According to the Kenya NGO Coordination Board annual sector report for the financial year 2018/2019, a total of 11,262 NGOs have been registered in Kenya. These include both local NGOs and internationally affiliated organisations. 8,893 are active and only one third (3,028) submitted their annual reports for the financial year 2018/2019. Their total contribution to the economy was Kshs 172.1 billion; 88% of which were raised from sources outside Kenya. NGOs complement government efforts as providers of relief services while others check whether the state is delivering its obligations and commitments to citizens as well as mobilise Kenyans to participate in governance. The sector is a potent agent of development employing thousands of Kenyans and expatriates whose skills are utilised for effectiveness and sustainability of the sector.

Data gathered indicates that the NGO sector is making significant contributions in complementing government's development efforts as the country strives to achieve the Sustainable Development Goals (SDGs), Kenya Vision 2030 and other development priorities. However, compliance with submission of annual reports is relatively low. Therefore, it is paramount that monitoring, evaluation and research activities are done to promote transparency and accountability in the sector, and conclusively capture the contribution of the sector in national development. These organisations offer a wide range of support services cutting across several sectors, including the ICT sector. Key sectors include health, HIV/Aids, education, relief and disaster management, agriculture, food and nutrition, water and sanitation; creating employment opportunities for thousands and generally improving people's livelihoods.

There is room for improvement by expansion of the space in which the sector players operate, with government facilitation and enhanced self-regulation recognising the contribution of CSOs to socio-economic development. Primarily through working with stakeholders to continue with the dialogue aimed at operationalization of the Public Benefit Organisations Act, 2013 and alignment of activities and resources towards implementation of the 'Big 4' agenda.

2.1.9 Others - Foreign Direct Investment

Other contributions that help augment the institutionalised resource capacity in the country is from foreign direct investment (FDI). The world bank ranked Kenya at position 56th worldwide for ease of doing business in 2020. However, Foreign investments in Kenya remain relatively weak considering the size of the economy and its level of development. According to UNCTAD, FDI inflows increased by 27% to USD1.6 billion since 2010. The ICT sector has attracted the most FDI as a direct result of arrival of fibre

optics in 2009-2010. The other sectors targeted by FDI are banking, tourism, infrastructure and extractive industries. In the innovation ecosystem, FDI players include venture capitalists and angel investors as well as donors such as World Bank, GIZ, USAID, Mastercard Foundation, UKAID and, FinnAid.

The government has been actively taking measures and implementing reforms to attract FDI. These efforts include improving the reliability of electricity supply by modernizing its existing infrastructure, registering property, accessing credit, protecting minority investors, tax payment and resolving insolvency. The development of public-private partnerships and with the development sector as part of the 'Vision 2030' strategy have had a positive influence on FDI inflows. Nonetheless, some obstacles to investment remain, notably poor-quality infrastructures, skills shortages, instability related to terrorist risk and political, social and ethnic divisions, ineffective rule of law and corruption.

3.0 Pillars of a Digital Innovation Ecosystem: Application in the Kenyan Context

A good innovation framework will have a clear understanding of the market needs, foster good collaboration and coordination between various actors. It should create a structure within which innovation can be supported throughout its lifecycle: beginning with the underlying cultural and social factors, through basic research, into the development of innovations and firms, and through to where those become profitable and create the potential for social change. To achieve these objectives, the International Telecommunications Unit (ITU), developed the below ecosystem canvas. It draws on traditional innovation input pillars as well as pillars to support building a sustainable innovation culture. It embraces a holistic view of the problem, and acts as an easy to use guide for diagnosing, changing, and monitoring a digital innovation ecosystem. The canvas covers seven pillars: vision and strategy, infrastructure and programmes, talents and champions, capital and resources, market and networks, culture and communities, and policy and regulation. Policy, being a pillar with particularly important connections to all the others is shown wrapping around them. Vision is set as the direction the ecosystem moves toward. In the centre, the other pillars show the inputs and outputs of innovation activities.

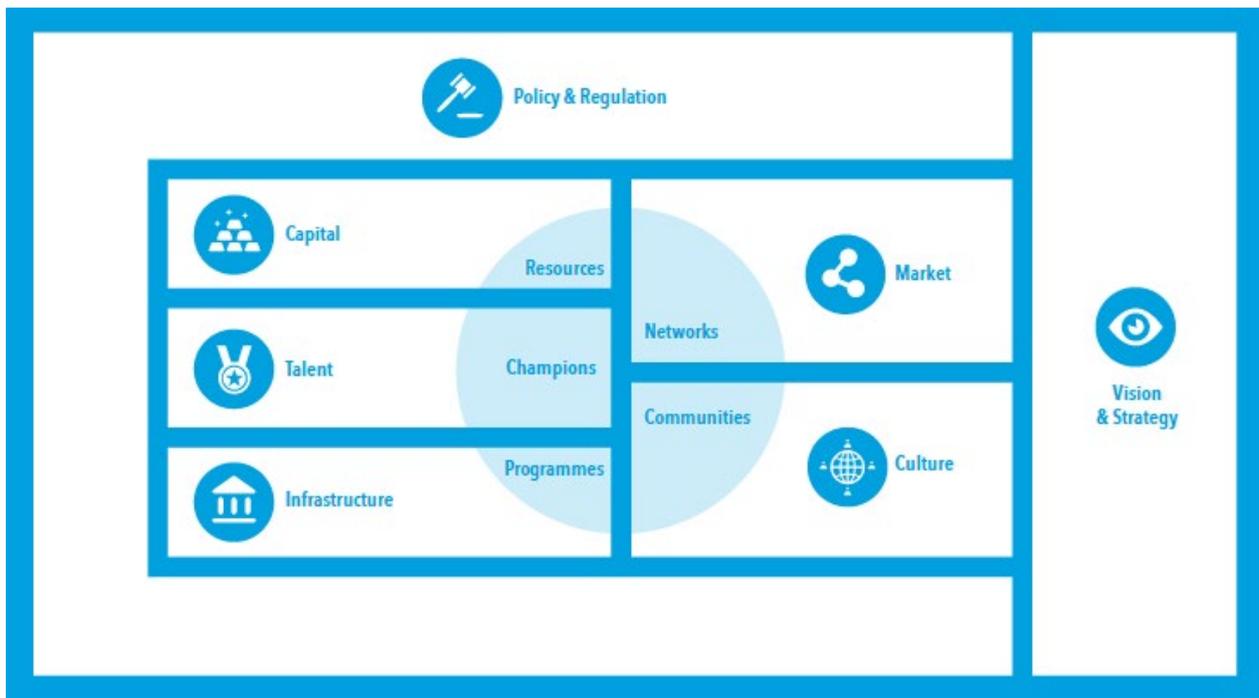


Figure 2: Innovation Pillars Source: ITU, 2018

3.1 Vision and Strategy

Definition: This pillar can be defined as awareness of, support of, and adherence to a clear national strategy; sense of the situation and direction of the ecosystem and perceived consensus around major issues.

Vision 2030, the Kenya Government economic development blueprint, recognizes the role of science, technology, and innovation (STI) to drive the digital economy. Knowledge is expected to play a central role; its effective exploitation, an effective innovation ecosystem, flourishing entrepreneurship and contribution from international development partners among others is expected to lead to wealth creation, social welfare and international competitiveness. The government recognises that digital Innovation is key in the achievement of the Sustainable Development Goals (SDGs) and Government priorities in the next five years commonly referred to as the ‘Big 4 Agenda’.

Innovation leadership is dispersed between different ministries whose action plans are not seen as coordinated. For example, digital innovation is with the Ministry of ICT, Innovation And Youth Affairs, STI (science, technology, and innovation) is with the Ministry of Education, Science and Technology, and SME related innovation with the Ministry of Industrialisation. Nonetheless, a few cases exist where there is some common understanding between stakeholders, but many projects with similar scope exist and are uncoordinated. It is this lack of a common agenda and effective coordination that leads to

a fragmented implementation process and inadequate linkages between various stakeholders with shared interests.

The Kenya National Innovation Agency (KENIA), envisions a globally competitive national innovation system for sustainable development. It is expected to develop innovation and technology in the country through the creation of more innovation parks, incubation initiatives for the diffusion of technology and provision of incubators for innovative ideas. However, stakeholders view this mandate as too broad, and its implementation ineffective coupled with challenges in resources such as skills training, and access to a wide range of information needed to succeed. It is also seen as unaware of the challenges the ecosystem faces and its role in fostering the needs of the ecosystem. National Commission for Science, Technology and Innovation (NACOSTI), the other institution mandated to guide the STI framework devotes little emphasis on digital innovation. KENIA is known for its flagship project, Kenya Industry and Entrepreneurship Project, that aimed to impact 162 start-ups participating in an International Accelerator Programme by Improving access to institutionalised resources with funding from the World Bank.

The key gap in this pillar is the lack of a specific framework or structured approach that outlines how exactly to leverage and strategically integrate digital innovation in key sectors to deliver the Big Four agenda. There is a need to develop the capacities of national innovation agencies and coordinating entities with competencies to guide the digital ecosystem for it to operate in a focused manner following a comprehensive framework addressing all the needs of the ecosystem.

3.2 Infrastructure and Programmes

Definition: This pillar focuses on the state of "hard" infrastructure (ICT connectivity, electricity, transportation); "soft" infrastructure (skills training, knowledge sharing and support platforms) and clusters to share resources.

Hard infrastructure has seen tremendous growth in Kenya, particularly with respect to mobile phone penetration and broadband connectivity including 4G, with 5G testing already ongoing with Mobile Network Operators (MNO). Kenya is considered a mobile first country, with mobile penetration level at 90%, the country has witnessed significant increases in international Internet bandwidth, mobile cellular subscriptions, and active mobile broadband subscriptions. Access and connectivity is seen as a key enabler of infrastructure development in support of Vision 2030 and an ambitious plan is underway to accelerate the transformation of key sectors such as healthcare, education, agriculture, government, and business process automation. These have included efforts to incentivise investment and partnership, nurturing an enabling policy environment and promoting

competition. Government investments in the global Internet backbone and the national optical fibre backbone have achieved results including democratising access, connecting county government offices to the Internet to facilitate public service delivery and promote e-government services and the Economic Stimulus Programme (ESP) that is developing infrastructure in schools in all 290 constituencies.

According to recent analysis from Frost and Sullivan on the African Infrastructure Tracker, Kenya is set to become a hub for intra-regional trade in Africa. However, the quality of hard infrastructure is concentrated within urban areas, and last mile remains an issue. Transport infrastructure is decent in the country in major cities despite ongoing struggles with traffic problems due to rapid urbanisation. Kenya has heavily invested in railway transport connecting the capital with the port city of Mombasa. Air transportation and capacity is a key strength connecting Nairobi to Africa and the world. Utilities remain a major hurdle given the relatively high costs and substandard quality. Water supply shortages exist. It takes over 2 months to get an electricity connection although it is reliable once installed. The cost of living is substantially high, with co-working spaces at an average of USD 162 a month.

The development of soft infrastructure and related programmes is perceived to have been slower in comparison, and again, limited primarily to urban centres. Several known digital clusters are loosely forming, but they lack guidance and support to grow. Thus, innovators in these nascent clusters are struggling to develop appropriate solutions. Soft infrastructure development, especially for technology hubs, has been largely driven by champions outside the public sector. Ushahidi, one of the pioneers, was founded after the 2008 election as a social enterprise to tackle election violence. It led to the creation of an entire ecosystem of players including iHub, mLab, Gearbox, Akirachix, and a successful start-up BRCK. One notable addition to the soft infrastructure ecosystem is NaiLab, an incubator that offers entrepreneurship support to develop innovative solutions. These soft infrastructure players, located initially at Ngong road, came to symbolize Kenya as the hotbed of the silicon Savannah. Other soft infrastructure players have since joined the ecosystem from both universities and the private sector. C4DLab, from the University of Nairobi, is an R&D and incubation lab focused on acceleration of research to market. Similarly, iLabAfrica is a centre of excellence for ICT innovation and development based at Strathmore University, and an IBM Research Lab is based at Catholic University of East Africa. These universities affiliated labs provide valuable functions in talent development, industry collaboration, and innovation commercialization. On the private sector side, Safaricom innovation initiatives have also played a key role in the expansion of soft infrastructure. On the CSO and international development side, USAID Innovation and

Mercy Corps Youth Impact Labs have played a key role in shaping soft infrastructure provision.

Infrastructure continues to face challenges that significantly affect the ecosystem medium and long-term competitiveness. Substantial improvements will be necessary for last mile hardware infrastructure; soft infrastructure requires broader development and strategic focus in order to foster inclusive innovation capacity throughout the country since inequalities are noticeable between urban and rural settings. For example, quality and availability of data centres is limited while Apps in Kenya are slow, since they tend not to be hosted locally. The insufficient quality of service delivery and lack of sufficiently developed infrastructure is inhibiting the adoption and use of new modes of delivery for content – such as in education. Cost of services is experienced as higher in rural areas, resulting in low content usage.

The right balance of innovation capacity and last mile access is necessary for the ecosystem, otherwise it will stagnate and limit the scope of inclusion. There is a need for stakeholders in the ecosystem to work together to identify mutual benefits in launching initiatives and policy reforms to address these issues.

3.3 Talent and Champions

Definition: This is about skills readiness, human capacity development, and champions taking on leadership roles in the ecosystem.

Human Capital is a strength for Kenya given its relatively flexible labour regulations, average female participation in the economy, and affordable employees. In the digital innovation ecosystem, the available talent does not meet the demand of the ecosystem. Therefore, improvement in terms of skill level and availability is necessary to develop a suitable skilled workforce to address current and future needs of the ecosystem. There are gaps in technical skills especially advanced skills and broader soft skills development. This persisting skills gap is preventing talent from moving to research, entrepreneurship and innovation as graduates predominantly prefer safer, corporate jobs.

There are many tertiary and vocational education institutes targeting technical skills, soft skills and entrepreneurial skills but more efforts are needed to improve educational approaches to meet ecosystem demands to produce talent with market appropriate skills to support innovation. These institutions need better guidance and new modern approaches as those from private sector firms such as Andela and Moringa School. To address this talent issue, the ICT authority in collaboration with other stakeholders including the Kenya Institute of Curriculum Development (KICD), has initiated the Digi

school programmes, to make sure pupils and teachers have digital literacy, but doesn't address skills required in the digital ecosystem. Other initiatives, such as the Presidential Digital Talent Programme (PDTP) and the Civic Education Curriculum (CoEs) initiatives have been developed to address the talent gap.

There is a need to identify durable solutions to improve educational approaches to meet ecosystem demands and remove barriers that exist for attracting and retaining much needed foreign talent with practical experience which can help mentor, support and develop competitive products and services needed to invigorate the ecosystem.

3.4 Capital and Resources

Definition: Investment available for start-ups and Research and Development (R&D); presence of foreign direct investment (FDI), technology transfer and licensed production, and funding available for projects to support innovation.

Access to capital and resources has been improving in Kenya over the last few years. This can be attributed to foreign investors attracted to the country due to perceived domestic and regional market growth potential, friendly legal framework, ok infrastructure among others. The 2019 Global Innovation Index shows that in the credit under market sophistication pillar Kenya ranked 6th in world economies, this is due to Kenya's strength in microfinance. However, the investment pillar, market capitalization, and venture capital funding, are weaker.

There are several funds to support SMEs. Existing funds provided by various entities including CSO's do not have a strategic focus on core sectors such as green energy, agriculture or ICT. Government funds such as the Uwezo Fund that caters for youth, women and people with disabilities are perceived as insufficient, complex and ineffective and poorly implemented. This support is seen as inadequate in the digital ecosystem since it's focused on start-up but not subsequent growth funds. Unlike traditional SMEs, technology start-ups need funds based on the worth of their ideas; this requires risk capital providers such as government programmes or venture capital; the few that exist do not provide seed funding for start-ups without proven business models. Without a continuum of funding mechanisms, from seed funding, to Initial Public Offering (IPO) and growth, start-ups will struggle, there will be no critical mass of digital innovation, and the ecosystem cannot attract investment, even from foreign sources as a result of the limited deal flow. Even with the few venture capitalists existing, there is a general lack of local knowledge and connections and trust with entrepreneurs is often non-existent so much that some start-ups struggle with setting themselves up to access them. The more successful start-ups rely on securing their funding externally through winning

competitions or receiving grant money from CSO's. Another stumbling block is that venture capitalists typically want to make investments of between USD250,000 and USD1 million. An East African tech start-up with 10 employees can run on USD50,000 for a year. Only very few angel investors are present, and these are not organized or well-known within the ecosystem. A sizeable amount of funding for development of innovations and capacity building is sourced from development partners, however this does not qualify as a sustainable resource, and does not contribute to the development of a viable, self-sufficient ecosystem

There is a lack of resources for innovators and a lack of targeted efforts at attracting foreign direct investments and engaging in technology transfer. Existing efforts are largely private sector driven and insufficient for fostering innovation and entrepreneurship at a large scale. Efforts geared towards organised research, innovation infrastructure, commercialisation, building business support, creating competitive clusters, support formation of new products and services fall short in meeting the financial requirements for the needs of mature stage firms. A structured and effective approach to attracting foreign direct investment (FDI) and technology transfer is needed. This will ease the burden of obtaining work permits, providing investor protection, and simplifying the terms of technology transfer to improve availability of appropriate technology and skills in the ecosystem. Current efforts to encourage foreign direct investment (FDI), such as the special economic zones are at an early phase of development and are not adequate to attract resources, especially in the digital innovation ecosystem. Research funding is still insufficient and directed at technical knowledge generation rather than commercialization of research.

3.5 Market and Networks

Definition: Business associations or formal networks in the ecosystem, access to domestic and international markets, and public procurement.

Under the Kenya Vision 2030, steps to increase its market competitiveness have been set out. Kenya enacted the 2015 Special Economic Zone Act with special Incentives to boost exports potential. Besides improving Kenya export capabilities, this initiative is aimed at nurturing competitive industries, fostering linkages between ecosystem stakeholders, and accelerating job creation. Because ICT is a cross cutting enabler and stakeholders face different barriers, special incentives might be required to complement such economic zones.

Stakeholders do not have a high opinion of public procurement but believe that a good enough opportunity is available for innovators to start in Kenya. To address equal market

access for government contracts for the youth, the Kenya Government launched a directive to allocate 30% of all government procurement to enable equal opportunities for women, youth and persons with disability. The aim was to enable them to take a more active role in the economy. Similarly, a directive to promote consumption of local products and services has been launched that reserves a minimum of 40% of all goods and services that are procured by the government at all levels need to be produced locally. However, perceptions are that the government funds and procurement access are not always transparent and access for innovators is limited due to challenges around fairness in procurement and bias against local products and services.

The Innovation and start-up scene is a strength, with many start-ups, including high-equity success cases, and available institutionalised resources such as co-working spaces. Lobbying capabilities, access to network resources, and access to existing customers are all seen as barriers to reaching sustainability. The domestic market size is enough to get started, a few start-ups have been successful targeting low- and middle-income customers by fostering the right partnership between their start-ups and private sector and CSOs. Regional and international markets offer increased opportunities, but their access is limited due to inefficient networks and linkages with inadequate experience in the digital innovation ecosystem.

There is a need to foster and nurture innovation, to develop networks, and to facilitate global export. Efforts to engage innovators are underway by some public sector champions such as the Kenya Revenue Authority (KRA), the ICT Authority (ICTA), and the Communications Authority (CA). Fostering the community and networking will help with continued progress and improved performance to further the ecosystem's development with training and mentoring programmes.

3.6 Culture and Communities

Definition: Activities to gather and support the innovation ecosystem, the presence of entrepreneurial culture in society, event and opportunity to participate in innovation activities

There is weak performance in cultural support, risk acceptance and innovation skills. This is because our innovation culture is largely driven by unemployment not necessarily solving problems. Corporate jobs are highly preferred due to stability and risk aversion based on issues to secure immediate financial gains, but the private sector cannot meet this demand. This lack of jobs is pushing people to capitalise on opportunities such as self-employment and entrepreneurship without the necessary skills for it to seek income. It is common practise for people to build side businesses large and small, playing

intermediaries or simply trading but resorting to their day job should it fail. Out of this, some success stories keep the ecosystem going.

Entrepreneurial business culture that drives innovation in Kenya is seen as developing, but at an early stage. Many operate in the informal sector, and business ecosystems (such as business-to-business (B2B), business-to-government (B2G), and business-to-consumer (B2C)) are needed to help migrate them to the formal economy. This is an opportunity for digital innovation and should be nurtured vigorously by all stakeholders, especially the private sector and development partners. Failure is generally not perceived well, though support networks in the private sector, CSOs and academia have been playing key roles in changing mind-sets. Support networks are active in fostering appropriate innovation and entrepreneurial culture through events such as Nairobi Innovation Week and projects in the ecosystem e.g. Brand Kenya and Buy Kenyan, Build Kenya, but their efforts are limited and not inclusive.

Kenya Entrepreneurs are learning the entrepreneurial way of failing and trying again, thus the entrepreneurial culture is seen as developing. The majority is seen failing due to low bootstrapping opportunities from support services, resources and cultural barriers. Many counties and rural communities lack representation needed to develop their ecosystems. There is also a need for strengthening community building with aim to increase trust, networking and engagement in the ecosystem nationally.

3.7 Policy and Regulation

Definition: Public sector awareness of their role and connection to other stakeholders, views on specific policies regarding research and development (R&D), Intellectual Property (IP), trade, finance and other areas

The convergence of technology is leading to a dynamic and fast changing environment that requires an equally dynamic legal framework. Kenya adopted a national ICT policy in 2006 with the broad aim to harness the potential of ICTs for economic growth and poverty reduction by concentrating on infrastructure development, human capital, stakeholder participation, and appropriate policy and regulatory frameworks. Kenya Vision 2030 was then developed to guide the national development, to build the ICT sector, foster STI, and leverage ICT as a cross-cutting enabler to accelerate the development and competitiveness of other sectors. The development of a framework to implement the Big 4 Agenda for 2018-2022 offers a great opportunity to create further enabling policies that will foster the ecosystem.

Many regulatory and policy changes under the Kenya Vision 2030 have led to the growth of the economy and the development of the ICT ecosystem. However, many policies are not seen as comprehensive, nor engaging the digital innovation ecosystem. Some policies are outdated or pending legislative or cabinet approvals, and this process should be accelerated. Though the public sector is aware of its role on innovation, it is clear from the scope of the existing policies and programmes that more is needed to enhance coordination, stimulate funding, incentivise investment, nurture entrepreneurship and innovation, as well as strengthen the Intellectual Property (IP) framework. Due to the lack of comprehensive mechanisms for engagement of innovators, the public sector is unable to nurture an enabling environment that will lead to private sector leadership in the ecosystem. This is fuelled by the low level of trust between stakeholders and limited common understanding of the major issues and opportunities such as perceptions of specific programmes, funds or flagship projects as being uncoordinated, non-transparent and ineffective.

Digital identity is a cross-cutting theme, Kenya has made advances at providing simple government services through the ecitizen portal for basic services such as information searches, filing applications and payment of fees with plenty more picking up the pace. There are, however, still some considerable room for improvement. As technologies advance, user expectations rise and new applications and models keep coming to the market, the government can't rest on its current success; it needs to push more services online and enable more complex and intensive online interactions. The use of one username and password that links validated existing accounts and connections to new services will catalyse Kenya's digital economy to great lengths. It is imperative to better manage centralized digital services through a digital transformation office that aims to further improve citizen satisfaction with public sector digital performance to catch up with—or sometimes even surpass—the private sector.

Last mile connectivity outside urban centres is one of the critical challenges facing the digital innovation ecosystem. For example, critical Infrastructure Protection is needed complemented by robust security in order to protect them against malicious attacks such as vandalism of mobile phone towers and environmental regulations which specify the technology to be used in order to reduce emissions should be put in place, especially in the rural and remote areas. The primary goal for policymakers and regulators should be to maximize the use - rather than the revenue to the state from spectrum. This can be best achieved by early consultation with the critical participants and consideration of the local market. Opening the spectrum available for mobile networks can result in enough spectrum availability for all players and prices that allow for infrastructure build-out, due to an open and transparent system. Spectrum allocation is a critical lever government can

use to further connectivity. The government must take measures to ensure that digital services are accessible by people with disabilities e.g. visually and hearing-impaired persons. Regulators should promote permissionless innovation to enable companies or start-ups to create new products without being required to seek permission from regulators' Innovation and reduce barriers to entry and exit to foster innovation. Regarding mergers and acquisitions in the ecosystem, all standards and processes should be non-discriminatory in substance and procedurally. Telecommunications providers should not be subjected to more onerous standards or processes than other companies in the digital ecosystem. Copyright and Intellectual Property is equally critical, digital piracy is itself a matter of considerable controversy, but by any measure, the sums are immense.

A conducive policy and legal environment establishes a level playing field between providers and customers and advances consumer protection through improved supervision, transparency and digital and financial literacy. There is a need to build the capacity of lawmakers and the judiciary. Capacity building would help governments formulate informed policies and laws in the area of digital innovation, finance and trade such as information security and e-commerce, intellectual property laws, capacity to enforce contracts, resolve disputes and protect consumers and equally strengthen enforcement of such laws.

3.8 SWOT Analysis

Strengths	Weaknesses
<ul style="list-style-type: none"> - clear vision to improve the state of innovation ecosystem - Growing qualified and affordable talent - Special economic zones to support innovation and entrepreneurship and attract FDI - Developing domestic and regional market - High interest in innovation and entrepreneurship but an early stage - Stable and fast-growing economy - Regional leader in incubating innovation 	<ul style="list-style-type: none"> - Disconnected roadmap to achieve Vision 2030 goals - Cultural impediments to entrepreneurship and innovation - Limited resources focused on research to support the innovation ecosystem competitiveness - Lack of robust ecosystem map and anchor - Stringent financial regulations, unclear support and coordination to foster digital innovation - Lack of means to support informal networks to build up stronger ecosystem

<ul style="list-style-type: none"> - Interested international funders and partners 	<ul style="list-style-type: none"> - Lack of funding and business angels for early age digital innovations - Government's lack of expertise as an innovation incubator
<p>Opportunities</p> <ul style="list-style-type: none"> - Develop comprehensive policies and initiatives to support digital transformation - High-end technical skills to support growing ecosystem competitiveness - Development of better access to finance models and policies to enable resources for ecosystem - National government efforts to Improve public procurement - Structured network to support digital innovation - Risk aversion and high tolerance for failure - Efforts to increase inclusiveness in the ecosystem – Women, youth and people with disabilities - Changing consumer behaviour towards digital innovation - Increasing foreign private equity investment shifting from fixed assets to services - Market leadership in mobile money and agency banking - Growing support services for potential innovators and financiers 	<p>Threats</p> <ul style="list-style-type: none"> - Lack of proactive measures to ensure security, functionally and efficiency of infrastructure for last mile delivery - Unsustainable funding- low bootstrapping from support services - Lack of trust in local digital innovations - Lack of representation for poorer and rural communities - Only focusing on ICT and mobile innovations and neglecting culture - Only targeting at attracting high-profile talents - Too costly for small start-ups

Table 2: SWOT Analysis

4.0 The Role of CSOs In the Innovation Ecosystem

Government ambitions for a digital economy and the Kenya Vision 2030 strategic plan are not yet aligned to achieve its potential. The development sector continues to build its awareness of its role in the ecosystem and is taking significant steps in the right direction. These steps require better guidance, access to a continuum of resources, new enabling policies, and a clear roadmap of initiatives and programmes. Furthermore, a change of mind-set and focus on strategic sectors is necessary.

In Kenya, the development sector complements government efforts as providers of relief and aid services while others check whether the state is delivering its obligations and commitments to citizens. They also support in mobilising Kenyans to participate in governance. The sector is a potent agent of development employing thousands of Kenyans and expatriates whose skills are utilised for effectiveness and sustainability of the sector. The development sector continues to make significant contributions in complementing government's development efforts as the country strives to achieve the Sustainable Development Goals (SDGs), Kenya Vision 2030 and other development priorities. These organisations offer a wide range of support services cutting across several sectors such as health, education, agriculture, food security and nutrition, with minor efforts in the ICT sector. These efforts aim to improve livelihoods for individuals, households, communities and the nation at large through improving employment, empowerment, entrepreneurship, and job creation opportunities by mainly providing technical training, capacity building and funding for businesses. ICT and innovation specific funding amounted to Kshs 212 million creating employment opportunities for thousands and generally improving people's livelihoods.

The overall impression from this study is that there is minimal interaction between CSOs and the ecosystem outside the projects that CSOs fund. There is room for improvement by expansion of the space in which development sector players operate, with proper facilitation recognising the contribution the CSOs play towards the ecosystem's growth. Below are the key sectors supported by the development sector in Kenya.

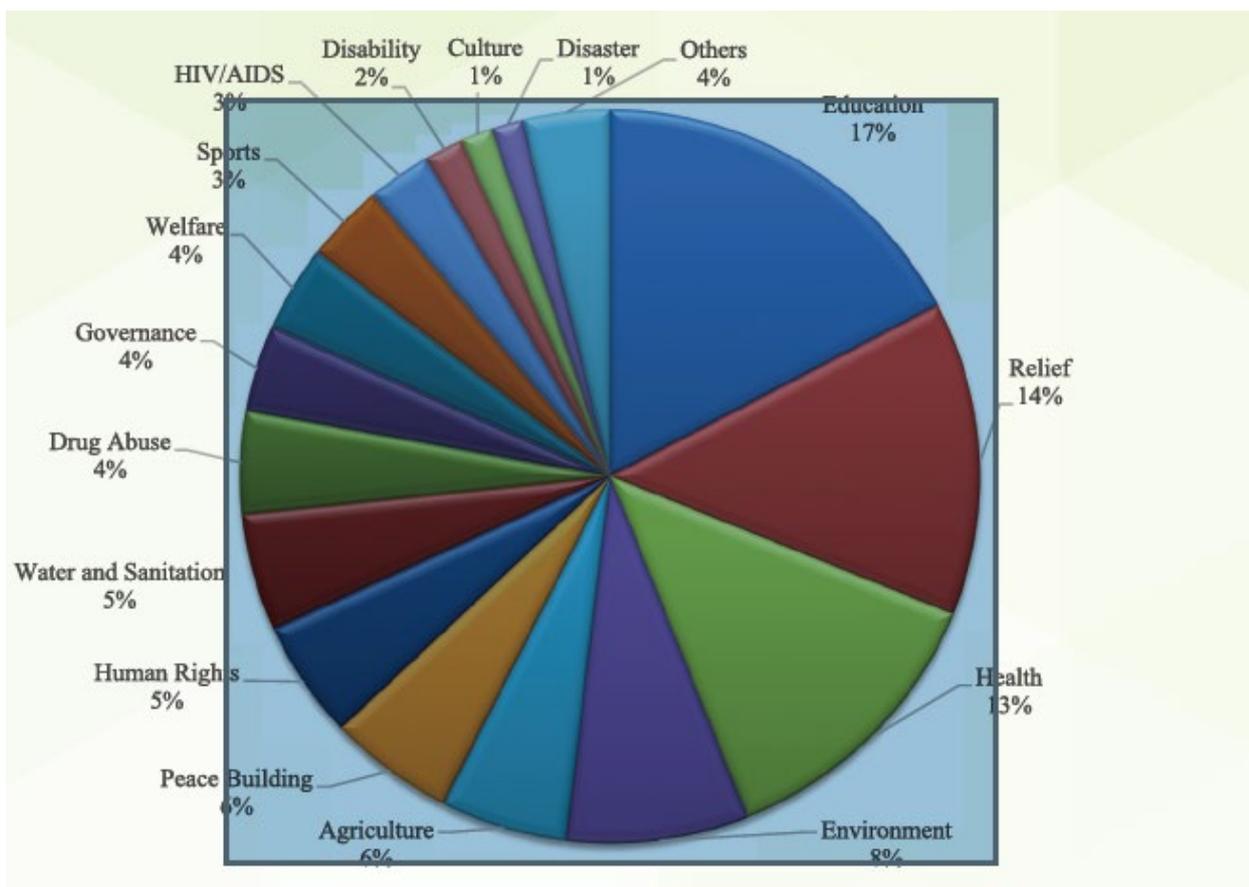


Figure 3: Key Development Sectors by Spend Source: Kenya NGO Board

4.1 Key Development Sectors

4.1.1 Education

The KPHC 2019 results show that a total of 17.8 million individuals reported that they were at school/learning institution; 11.6 million left school/learning institution after completion; 6.9 million left school/learning institution before completion; and 7.1 million had never been to school. The data shows that 10.0 million people were attending primary school; 3.4 million were attending secondary school while 3.3 million were attending pre-primary school. Those attending middle level college/technical training education were about 500,000 and those attending university education were 471,000. Majority of respondents had attained primary education, followed by secondary education. Persons with university education were 1.3 million.

The development sector plays a key role in complementing government services by providing access to quality education especially to the marginalised and hardest to reach including people with disabilities, these range from alternative basic education, improving literacy and numeracy for children, build the capacity of households and institutions in nurturing and protecting children, school infrastructure improvements,

school governance, psychosocial support and promotion of violence free environment within facilities and communities, awareness creation on importance of education, professional teacher development, provision of educational materials including Edtech and other support for schools, support vocational training and develop young people's full potential as leaders among others.

Digital Innovation plays a critical role, the government has rolled a number of initiatives to grow this space, these include The Presidential Digital Talent Programme (PDTP) that takes fresh and qualified ICT graduates through an internship programme designed to build their ICT capabilities, ready for the ICT market and the digital literacy programme borne out of the vision to make sure every pupil is prepared for today's digital world, and to transform learning in Kenya into a 21st century education system. In the private sector, detect start-ups are vibrant, EdTech East Africa is an umbrella body of regional EdTech communities. It represents a community of professionals in the Education technology who come together and share insights that help improve the quality of their work in education delivery and create public awareness of their products. The development sector in partnership with these start-ups continues to introduce Edtech in their education interventions to improve learning outcomes in both the development and humanitarian contexts. A mapping of existing solutions is in the stakeholders and solutions portfolio.

While there are many colleges and universities in Kenya, too often they are overcrowded, the academic programs aren't up to date and fundamental scientific research suffers from a shortage of funding. Perhaps most critically for the purposes of innovation ecosystems, the focus of most of these institutions is on preparing students to take jobs in already-existing companies, rather than giving them the skills and experiences that would enable them to start their own businesses. Kenya needs institutions that are designed from the ground up to prepare young people to be leaders and entrepreneurs.

4.1.2 Healthcare

The Ministry of Health (MoH) aims to build a progressive, responsive and sustainable health care system for accelerated attainment of the highest standard of health to all Kenyans. It is mandated with operationalising the health policy, health regulations, national referral health facilities, capacity building and technical assistance to Counties. Universal health coverage is one of four goals outlined in the Big 4 Agenda, the goal seeks to provide affordable health care for all through equitable health access and improved quality of health services.

The Ministry of Health (MoH) has made significant progress against several leading causes of death and disease. Life expectancy has dramatically increased; infant and maternal mortality rates continue to decline; MoH is actively promoting awareness for health and sanitation, but the prevalence of preventable diseases still presents a major challenge. Lack of access to healthcare in rural areas and poor sanitation in urban zones accelerates the spread of preventable diseases. Malaria is still one of the nation's biggest issues, and while HIV infection rates have slowed recently, HIV and AIDS still impact millions of families. The development sector takes a holistic approach to attaining good health, these include combating poverty by addressing the widening economic and social inequalities, rapid urbanisation, threats to the climate and the environment in addition to Investments in health specific programmes such as in HIV/AIDS programmes, Sexual and Reproductive Health, Community Health, maternal and child health, capacity building and training, health systems strengthening and advocacy for improvement of the health sector at policy level.

Digital innovations in healthcare are rampant in health facilities of different calibres, the government uses DHIS2 for data management. In the facilities where digital systems are in use, users reported on challenges such as system usability, inadequate training, infrastructure and system support and vendors reported challenges such as the availability of a wide range of modules, but implementation was constrained by funding, prioritisation of services, users' lack of confidence in new technologies and lack of appropriate data sharing policies. The private sector is leading in the development of digital solutions for healthcare including mobile health solutions (m-health) for administrative work, clinical purposes and behaviour change communications. The development sector is a financier of the digital health ecosystem.

The government, through the partnership for health forum is working with all stakeholders including the development sector to collectively succeed by investment in all health building blocks, key government priorities are Human Resources, Health products and technologies as these are viewed as most pressing needs.

4.1.3 Agriculture

In Kenya, agriculture remains the backbone of the national economy, directly contributing 24% of Kenya's annual GDP and another 27% indirect contribution. The sector employs more than 40% of the total population and more than 70% of Kenya's rural people. The sector is large and complex, with a multitude of public, parastatal, non-governmental and private sector players playing different but supporting roles. It accounts for 65% of export earnings, and provides livelihoods (employment, income and

food security needs) for more than 80% of the Kenyan population and contributes to improving nutrition through production of safe, diverse and nutrient dense foods. The sector is also the main driver of the non-agricultural economy including manufacturing, providing inputs and markets for non-agricultural operations such as building and construction, transportation, tourism, education and other social services.

The Ministry of Agriculture, Livestock and Fisheries is the government body mandated with the sector. Its strategic objectives are to; create an enabling environment for Agricultural development, increase productivity and outputs in the agricultural sector, to enhance national food security, improve market access and trade and to strengthen Institutional capacity. The Development sector plays a key role in addressing root causes of hunger and poverty through interventions that are aimed at increasing food security, building resilience of vulnerable communities, improving nutrition and access to clean water, introducing modern farming methods and technologies, structured commodities trading, irrigation, supporting stronger farmer organisations, capacity building and training and systems strengthening through advocacy at all levels. The development sector also invests in empowering the private sector to work with farmers individual and as a collective by investing in new ideas that improve their productivity and incomes such as through providing access to finance, market linkages and development of platforms, brokering relationships to remove barriers in the agricultural value chain resulting in catalysed private that is self-sustainable.

Digital innovations in Agriculture (Agritech) are rampant. Kenya is ranked position one in Africa for application of agritech solutions to tackle farming challenges ranging around inventory management, productivity, market access, financial inclusion and information to farmers. It is a driver for greater engagement in agriculture from women and young people and supports employment opportunities along the agricultural value chain. The government is taking the lead in coordinating the sector by setting up innovation challenges and seed funding opportunities through the Ministry of Agriculture and its partners, the private sector is playing a critical role by developing applications that often complement efforts from the development sector who often lack data management services needed for operational delivery, results measurement and decision making. A variety of business models between the private sector and development partners including financing application development and buying licences to use already developed solutions. A mapping of existing solutions is in the solutions portfolio.

One of the key challenges the sector is facing is population growth that's leading to diminishing land parcels in high potential areas affecting food production because the land is not utilised efficiently, farmers, who are used to rain-fed farming systems, are

being pushed into dryer, more marginal areas where they become increasingly vulnerable to drought and the unpredictability of weather patterns resulting from climate change. The sector's critical role in poverty alleviation cannot be overstated, strengthening and improving the performance of the agricultural sector and enabling the engagement of the poorest and most vulnerable in this process is therefore a prerequisite and a necessary condition for achieving recovery and growth.

4.1.4 Relief and disaster management

The disaster landscape is characterized by recurring natural hazards, particularly droughts and floods that significantly impact livelihoods and economic development in Kenya. Flood and drought events are becoming more frequent, with drought cycles occurring every 2-3 years instead of every 5-7 years, factors such as climate change and widespread poverty and rapid population growth especially in the urban settings contribute to this frequency and intensity of disasters.

Two principal government bodies coordinate disaster issues at the national level, the National Disaster Management Authority and National Disaster Operation Center. The principal challenge facing the country is that the disaster management strategy is largely reactive, compelling the government to redirect development funds to address emergency responses and reconstruction needs. These bodies work in collaboration with the development sector and the private sector to alleviate effects of disasters in the country.

The development sector complements government efforts by providing support to government priorities to operationalize the national disaster management policy such as supporting counties to coordinate and manage disaster risks and providing contingency funding during emergencies, capacity building to impart knowledge, skills and expertise in disaster risk management, enabling partnerships from relevant government ministries, the development sector including grassroots organizations, academia, private sector to drive design and implementation of Disaster reduction programmes. Gender mainstreaming is a key aspect of disaster management as different genders are affected differently, specifically, addressing historical marginalization and the burden of disaster impacts in women. Additionally, the sector provides life- saving interventions in humanitarian responses.

Digital innovations in this space are limited and not directly attributed to relief and disaster management, rather, their use cases are often applicable in the sector. For instance, Ushahidi, a crisis mapping application can be re-used and improved for relief mapping, financial services application can be used for cash transfers to cushion the

marginalized and vulnerable and rebuild communities, agricultural innovations are used to prepare farmers for changes in climatic conditions etc.

4.1.5 Food and Nutrition

In Kenya, 26% of children under five years are stunted and 4% suffer from wasting. However, significant disparities exist across counties. Malnutrition is known to cause nearly half of all deaths of children under five years globally, while chronic malnutrition leads to stunting – an irreversible condition with devastating effects, including diminished brain and physical development and reduced productivity. Kenya has made significant progress in reducing stunting, wasting and underweight children, as well as an increase in breastfeeding rates. However, food insecurity is still a major challenge especially for communities affected by recurring drought and poverty.

The Government is strongly committed to reducing hunger and malnutrition. This includes efforts to build self-reliance to reduce chronic food insecurity, as well as measures to assist those in need when emergencies occur. Linking relief with longer-term development efforts helps mitigate the potential impact of future emergencies. The Food and Nutrition Security Policy (FNSP) provides an overarching framework covering the multiple dimensions of food security and nutrition improvement. It has been purposefully developed to add value and create synergy to existing sectoral and other initiatives of government and partners. It recognizes the need for multi-public and private sector involvement, and that hunger eradication and nutrition improvement is a shared responsibility of all Kenyans. The policy and associated actions will remain dynamic to address contextual changes and changing conditions over time. This policy is framed in the context of basic human rights, child rights and women's rights, including the universal 'Right to Food'.

The development sector plays a critical role in preventing and treating malnutrition and improving the situation in the country, some of the interventions include; integrating and scaling up nutrition specific and sensitive strategies and services in communities to improve maternal, infant, and young child feeding behaviours and practices, facilitating an inclusive agriculture sector growth through value chains, increased resilience and economic growth, and improved nutritional status of rural farming families, school feeding programmes, improving coping mechanisms to shocks and stresses through integrated programming in Disaster management, agriculture, health, education among others. Digital innovations in food and nutrition are largely a result of innovations in health and agriculture among other sectors. Product innovations are more common; these include changing formulas to feeds to boost nutritional value and combat malnutrition.

4.1.6 Gender Equality and Women Empowerment

Kenya has made great progress towards accelerating gender equality and women's empowerment in priority themes such as women's economic empowerment, women in leadership, ending violence against women and girls and access to affordable quality healthcare, a cardinal pillar in the 'Big 4' agenda of universal healthcare. The trajectory of women in leadership has been on all-time high. The Constitution of Kenya, article 27 (8) aims to ensure that there is inclusive leadership through the two-thirds gender requirement for all elective or appointive bodies, the constitution reserves 47 seats for women in the National Assembly and 16 seats for women in the Senate courtesy of Article 98 and other progressive articles that embed and reinforce equality and non-discrimination. In healthcare, the community health policy ensures that all expectant women get free prenatal, maternity, and post-natal services for free. This has resulted in more safe deliveries with 61% of births performed by skilled healthcare providers. In economic empowerment, a critical factor for equality and sustainable development, various gender mainstreaming, affirmative action and gender responsive budgeting. Catalytic funds exist that are dedicated to women such as the women enterprise fund that provides micro-finance credit and other financial support for women, Uwezo fund that gives seed money as start-up capital and access to 30% of government procurement for women, youth and people with disabilities. In regards to the prevention and response to the fight against gender-based violence, the protection against domestic violence act, 2015 sets out mechanisms to monitor and mitigate the effects of gender based violence; there has been an upward increase in the number of prosecuted cases and convictions, a toll-free hotline (1195) operated with support from telecom agents and the ministry of health is establishing GBV recovery centres in each county where survivors receive integrated medical and psychosocial support services, access to justice and initial temporary protection.

The development sector complements these government efforts by mainstreaming gender in their work e.g. creating safe spaces for women and girls, cultural behaviour change efforts to work against female genital mutilation (FGM), child marriage and other harmful cultural practices, providing capacity building and training to government, ministries and departments and raising awareness on gender issues, increasing participation of women in decision making and policy making at all levels, ensuring women's participation in peace-building, conflict prevention, and mitigation and narrowing gender gaps in education, training, and employment.

Digital innovations in gender exist, albeit few. These are centred around reporting of GBV cases through mobile and desktop applications and toll-free numbers to a variety of

stakeholders with government institutions as duty bearers, information management of cases in the value chain, digital training delivery of gender related courses, behaviour change and advocacy related information sharing and digital engagement and closing the digital gender divide. A mapping of solutions is in the solutions portfolio.

4.2 Cross Cutting Factors

4.2.1 ICT Access and Devices

The KPHC 2019 results show that 20,694,315 individuals aged 3 years and above owned a mobile phone. More females (10,425,040) than males (10,268,651) owned a mobile phone. The data also shows that 22.6% of individuals aged 3 years and above used the internet while 10.4% used a computer. The proportion of the population aged 15 years and above who searched and bought goods and services online was 4.3%.

Digital gender divide is still an issue in Kenya, according to the GSMA, Women in Kenya are 39% less likely than men to have access to mobile internet, they are also 23% less likely to own a smartphone. Four main barriers identified are; affordability, relevance, lack of digital skills and online safety. There is a need to get smartphones and the internet and build the capacity and confidence of women, closing the digital gender gap – which seems to be widening globally – is not just a moral imperative but a significant opportunity for growth in today's digital economy, this critical to accelerating global sustainable development.

4.2.2 Disability and Inclusion

The KPHC 2019 results show that 918,270 people aged 5 years and above had a disability. More females (523,883) than males (394,330) had disabilities. The common types of disability were mobility (385,417) followed by visual (333,520). A total of 9,729 persons had albinism. It is recognised that there is a disability digital divide, but all disabilities are not equally disadvantaged as factors such as digital skills, and socioeconomic conditions play a critical role. People with hearing or walking impairment are more likely to use the internet than other types of disabilities. The most disadvantaged disability groups are those who are blind and those having multiple disabilities.

Digital technologies are offering opportunities in bridging the disability digital divide, and addressing longstanding issues of accessibility, inclusive and innovative design and digital inequality for people with disabilities. Innovation needs to be inclusive in order to benefit all members of the society. National governments, civil society organisations, private and social enterprises, and disability activists have considered digital technologies

and platforms potentially useful in improving the life quality and life-chances for people with disabilities and in bringing about social inclusion for all people, particularly in health care, education, and employment. Several efforts are underway in disability mainstreaming – the process of ensuring that society is accessible for and inclusive of persons with disabilities, this work is led by the National Council for Persons with Disabilities and its partners, these include access to technologies, training and acquisition of skills in ways that are suitable for users with disabilities, Assistance programs to ease the financial burden on people with disabilities to access and acquire these technologies. Innovative and inclusive approaches are needed to challenge existing paradigms, norms and infrastructure that structure people’s access, sociality, content, and application of skills online.

4.2.3 Access to Finance and Financial Inclusion

Kenya continues to lead the mobile money and agency banking sector providing safe options for millions of people including the previously unbanked populations to save and pay for products and services. Mobile money is increasingly becoming a gateway to more advanced services, such as savings and credit, provided by banks that are linked to mobile money accounts on the backend. Currently, 83% percent of Kenyan adults can access formal financial services, 11% are still excluded (FSD Kenya, 2019). This revolution is causing shifts in the landscape of providers and products who must diversify their business models towards attracting and retaining users through innovative mobile money platforms and partnerships.

The government through Vision 2030 aims to create a vibrant and globally competitive financial sector and has given flexible regulations that allow different sectors to leverage its widespread retail banking, payments and communications infrastructure to deliver solutions that solve problems across multiple real-world domains, like agriculture, health and education. The private sector is leading these efforts by innovating in the financial technology (fintech) space through mobile and agency banking. The development sector plays a critical role in attempts to ensure financial inclusion for all; by providing financial literacy services to their beneficiaries. As financial products increase and become easier to access with more complex terms, it is especially important that users and potential users have the skills they need to navigate their options and use services in a way that provides welfare benefits, rather than exposes them to consumer protection risks. Boosting financial literacy is necessary to ensure that newly financially included Kenyans are prepared to use financial services successfully. Additionally, Cash aid and subsidies are given to beneficiaries for different purposes, most development organisations now

use mobile banking and related services to safely and efficiently distribute cash disbursements.

Even with these developments, Kenyans continue to express a demand for greater access to capital especially credit with flexible and sustainable payment terms. More than 70% of SMEs lack access to medium- and long-term finance, which creates a need for innovative debt and equity instruments for SMEs. Partnerships with local financial institutions provides opportunities to build the right products for this market (KenInvest, 2019). There is a need to incentivise the capacity of financial service providers to design and deliver value propositions that benefit all, especially poorer market segments.

5.0 Stakeholder Mapping and Analysis

The Fingo Powerbank project aims to increase the capacity of CSOs and their local partners to utilise technological solutions in order to improve the impact of their work. These collaborations will go a long way in providing the support services and contexts that the innovation ecosystem requires for the various stakeholders to learn, continuously improve and evolve digital solutions supporting their work towards the attainment of sustainable development goals. Specifically, the development sector will find new ways to cope with and adapt to new ways of working in the digital age.

The interdependent actors defined in this map consist of seven key stakeholder groups essential to the good functioning of the ecosystem: public sector actors, private sector actors – innovators and their businesses, financial actors and entrepreneurial support networks, academia and CSOs. These groups interact in many ways throughout the ecosystem, and each group works in many pillars (discussed above) and throughout the innovation lifecycle.

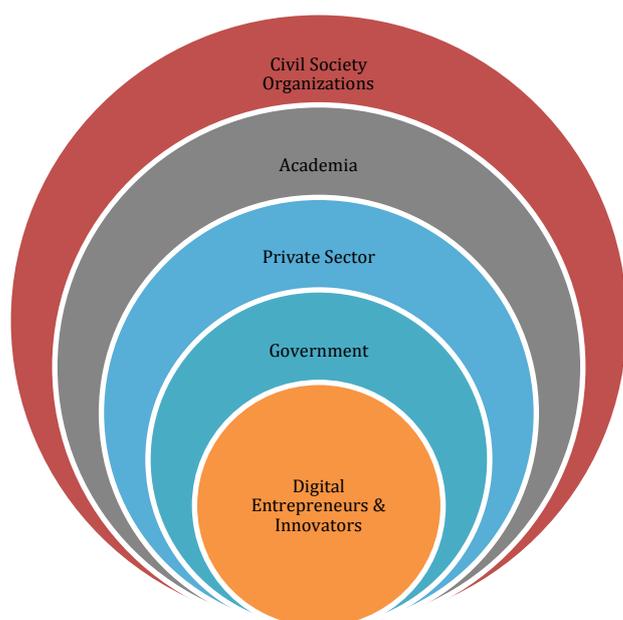


Figure 4: Stakeholders Map

5.1 Ecosystem Stakeholder Interface Canvas

The Ecosystem Stakeholder Interface Canvas used supports the mapping of the various stakeholders at each stage of the innovation lifecycle and is modified from the “Valley of Death” curve that is used to outline each stage of an innovator's journey with emphasis on the gap between developments of new concepts and when it becomes scalable and profitable, which is where many digital innovations fail. These activities are described below;

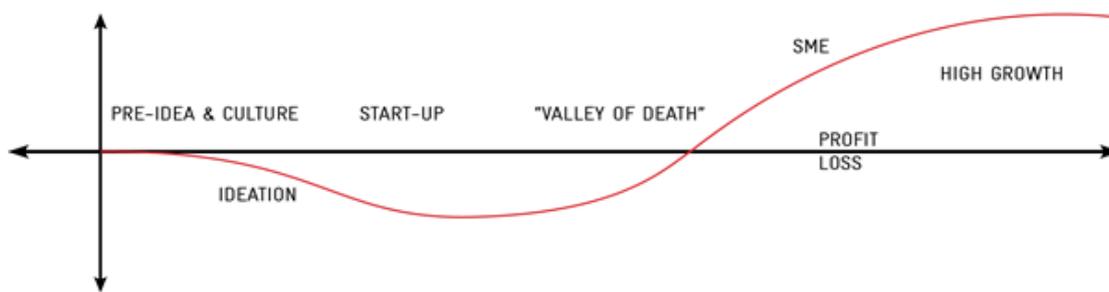
- Pre-idea – Key actors present themselves as potential supporters of the ecosystem with leadership from relevant public sector groups that provides the vision for others to work towards. Innovators identify opportunities for innovation, these could include development needs such as providing alternative basic education through untrained teachers, the support institutions cultivate interest by promoting a supportive culture and events. Academia grows this culture by providing avenues to experiment ideas with funding from a variety of sources including development, for basic research and rapid prototyping in the hope that innovations are successful with spill-over effects such as inspiring others and funding new innovations.
- Ideation – in this phase, innovations are designed and developed but are yet in use in the business environment, or not yet implemented in the development sector (intervention design). The public sector is responsible for creating a policy environment that encourages research, promotes innovation and manages knowledge. Support systems provide avenues for idea generation such as innovation challenges that help innovators provide potential solutions to problems identified.

Academia provides basic research to justify critical needs, innovators engage with problems and attempt solving them, the solutions can be commercialised using a business model of relevant to them, investors and development sector give small amounts of money e.g. grants to support them while the private sector and sometimes development sector works with them experimenting with innovation and potentially disrupting how they operate.

- Start-up – in this phase, the innovations are put in the hands of their users. Innovators find appropriate business models and seek additional funding to grow their innovations. Support systems such as hubs and accelerators provide access to infrastructure, community, human capital to grow their innovations. These entrepreneurs seek markets including through public procurement, the development sector who find opportunities to use these innovations in their work. Academia supports through commercialisation of basic research from the innovations.
- Valley of Death – this is the most challenging phase as everybody needs support in order to survive. It is important that all stakeholders work together and share knowledge, this can result in opportunities for venture capitalists to finance innovations with potential to profitability; in the development sector, this could mean a second phase of project implementation at scale. Identifying opportunities to streamline spending e.g. through economies of scale. The government can play a role by incentivising innovation e.g. through tax cuts. Innovators identify opportunities to grow their business skills e.g. through mentorship, coaching, partnerships with other start-ups, these skills are critical for the survival of their businesses.
- SME- the velocity of growth picks up and innovations materialise as established businesses, with potential for buy-outs or IPO's. In the development sector, this is often that the innovation is separated from the organisation and is separately grown as a social enterprise. Human capital gains a lot more importance to stay competitive and they will be looking at the private sector and academia to provide market-ready graduates with the right skills. At this stage, often, the businesses have access to the international market and additional funding through a variety of financiers and support from community groups of their interest e.g. The World Bank for Finance and Payments related innovations.

The figure below is a simple infographic representation of the current overall innovation ecosystem in Kenya that has been colour coded to offer an “at-a-glance” visual representation with red representing areas seen as being missing, yellow areas that are present but insufficient or weak, green as areas that are strong, and blue as areas that are weak or missing but with specific programmes underway to improve them. Focus is on the innovations and entrepreneurs highlighting what inputs from other stakeholders are required to promote digital innovation at each stage.

INNOVATION LIFECYCLE

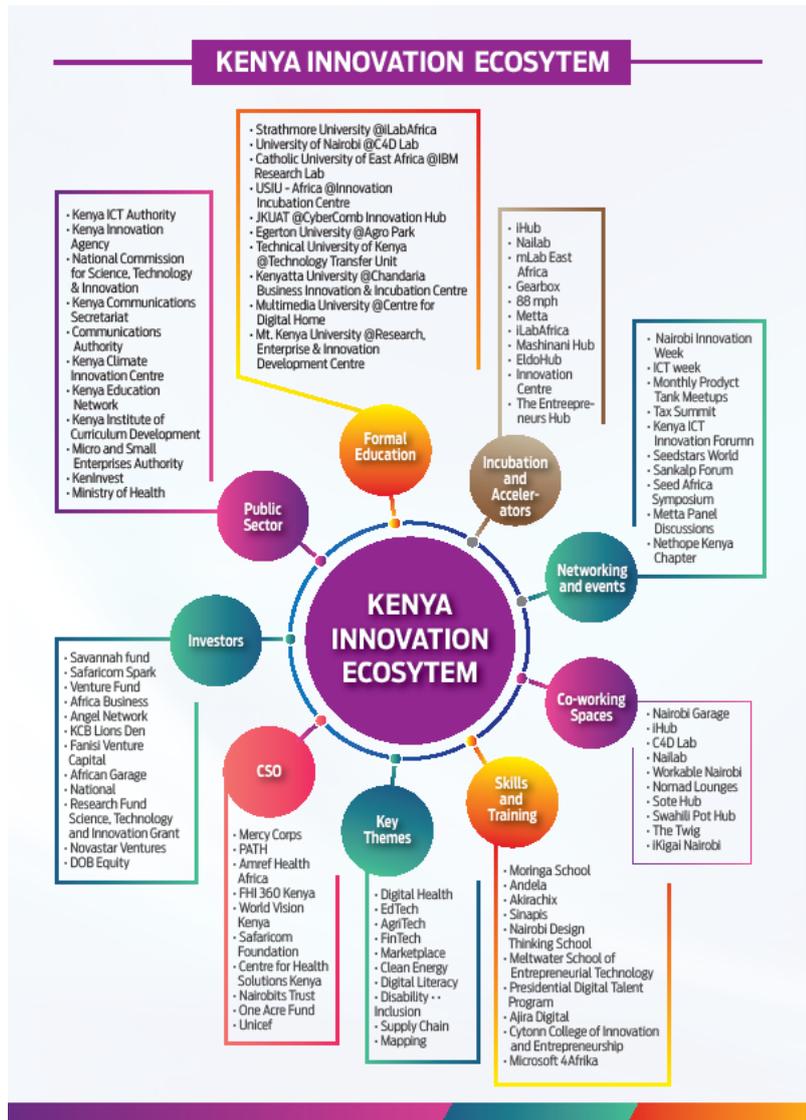


INNOVATION LIFECYCLE					
INNOVATION PHASE	PRE-IDEA	IDEATION	START-UP	THE "VALLEY OF DEATH"	SME
INNOVATORS	Entrepreneurial Interest	Engage with problems	Develop business models	Building collaboration	Expand
CSOs	Development sector challenges	Intervention Design	Project Implementation	Funding priorities	Sustain the lifecycle
ACCESS TO FINANCE	Research funding	Seed funding	Angel investment	Venture capital	Business finance & Loans
INNOVATION SUPPORT	Entrepreneurial Events	Hackathons & Competitions	Co-working & Support	Incubators and Accelerators	Business Association
PRIVATE SECTOR	Success stories	Research programs	Lab Programs	B2B & Support Services	Skills training programs
ACADEMIA	Entrepreneur Community	Basic Research	Spin offs	Soft skills training	Human Capital
PUBLIC SECTOR	Vision and strategy	IP&R&D Support	Tax Support	Public Procurement	Trade Policy

KEY	
RED	Areas seen as missing
YELLOW	Areas that are present but insufficient or weak
GREEN	Areas that are strong
ORANGE	Areas that are weak or missing but with specific programmes underway to improve them

Figure 5: Overall Innovation Ecosystem Profile

The canvas below illustrates the work of individual stakeholder groups and how actors interact with one another to support the work of innovators and entrepreneurs.



The Canvas below illustrates the key themes and players in the ecosystem relevant to CSO's. Specific details of these players are available on the Solutions Portfolio Document.



5.2 Key findings

The innovation ecosystem is continuing to grow. Early-stage innovation and growth innovation ecosystem has grown in the last few years. However, a lot of this excitement is short lived due to a lack of guidance, mentorship and support structures for entrepreneurs. This has resulted in a phase of stagnation that leaves the ecosystem in a vulnerable state. Boundaries for digital innovation include lack of access to funding, a shortage of skilled workers and a culture that encourages innovation fuelled by limited policies directly supporting innovation. In each case, promising experiments are being tried that, over the longer term, could turn the tide and provide models that others can build on or learn from.

The growth drivers of the ecosystem revolve around access to capital, ecosystem support, policy and regulatory framework, market opportunities, human resource capacity, state of infrastructure, and government and private sector support. Access to capital (finance) is still a major concern. There is high dependence on informal sources of finance and bootstrapping due to high risk perception of the lenders and inability of the entrepreneurs to adequately pitch their business concepts (models). The situation is exacerbated by lack of collateral (security) and credit history. Nevertheless, a significant portion (50%) of the lenders or equity providers have started to appreciate emerging opportunities within the SME segment. The lack of access to capital is further compounded by lack of early stage investment. It was found that only 2% of Kenyan start-ups (44% in ICT) had received funding from business angels compared to 37% at Silicon Valley. It was further noted that, with continued support, the ecosystem has potential of attracting impact investment capital, especially on ideas with strong social and environmental benefits.

While there is a common vision, the roadmap to achieve these goals seems to be disconnected. Kenya Vision 2030 lacks specifics and does not provide for comprehensive policies and initiatives to support the transformation. Stakeholders in the digital innovation ecosystem are working in silos and rarely engage with each other – neither in communication nor in implementation. For innovation policies to work better for Kenya, a new implementation framework is needed to guide activities in the innovation ecosystem. Previous policies have helped the ICT sector, predominantly through government efforts in developing infrastructure and public service. The start-up community has benefited from various public, private sector and CSO initiatives. Good infrastructure, together with the establishment of the first hubs fuelled initial growth of

the digital innovation ecosystem. However, there are still considerable steps that need to be taken in order to create critical mass in the ecosystem.

One considerable challenge concerns the lack of dialogue and common agenda between stakeholders. A higher degree of guidance and structured collaboration between the public sector and other stakeholders within the ecosystem is needed. The public sector should take an active role in continuously assessing needs within the ecosystem and should develop policies to nurture innovation. The private sector should adopt an ecosystem leadership role to ensure long term sustainability. This can be accelerated if entrepreneurs can engage with problems and create high growth business models to solve real needs. For many of the key gaps in the ecosystem, good practice and success stories are available both within Kenya and internationally, and a central component of any effort to improve policy will be to amplify, duplicate, and learn from such practice and success stories.

Some programmes are creating bridges and enabling digital innovators to address opportunities in Kenya, but they are limited and seen as fragmented. They are often not well capitalized as they lack resources and operate in silos. Many communities are built around their champions' interest, but there is a need to bring them together more often to create trust and solidify the ecosystem. Resources are also needed for community mapping, events, and to help entrepreneur bootstrap and access markets. Champions with good practices do not receive adequate support from the public sector. This may be related to a misalignment with national priorities. There is a lack of leadership by both public and private sectors in supporting the ecosystem. Overall, the central space is lacking dialogue and collaborative initiatives among the various stakeholder groups.

Kenya is struggling with its infrastructure regarding basic utilities and ICT, which is limiting the efficiency of entrepreneurs in the city. Further investment, especially in ICT, is advisable to improve the capacity of developing start-ups, particularly outside of the major metro areas. A national policy that directly accounts for and supports start-ups in their different stages could have a significant and positive impact on the ecosystem. This may include financial support, legal frameworks that are conducive for start-ups (for example, in the business registration phase), and creating a positive funding environment through reforms in loans, collateral requirements, tax exemptions, and methods for resolving insolvency

5.3 Recommendations

Enabling a cross-sectoral dialogue can help to develop this platform. International development organisations, Local NGOs, and private sector investors are already working in Kenya. As such, strategies and plans should be developed to ensure professionals from these sectors mutually work with start-ups and ecosystem professionals towards finding innovative solutions. This is deemed to promote both intensive knowledge exchange and personal networking between future leaders in the innovation ecosystem, and foster mutual awareness of challenges, requirements, and processes faced by others, thereby creating trust and enabling systemic solutions. From there, adequate policies can be best developed.

Beyond policy support, there are several practical ways to support the ecosystem. First is the need to nurture appropriate talent. This can be through improved access to institutionalised resources such as incubators, accelerators, and co-working spaces who offer key support services. Secondly, there is need to develop the support ecosystem as well as create spaces that foster the growth of networking, learning, and the creation of new business ideas. Thirdly, there is need for increased visibility, which may have spill over effects on would-be innovators, who may not be aware of the increasing potential. In addition to improving access to these resources, continuing to enhance the standards and quality of entrepreneur support organisations through trainings, for example with international experts or to train and certify mentors, would offer another value-add to the ecosystem. Summarily, deliberate efforts must be made to strengthen public sector innovation, business to business engagement platforms and integration of digital innovation in key sectors.

5.4 Conclusion

One of the realities of operating in a developing country like Kenya is the realization that these countries must find their own way. They must innovate their way to the future. So, innovation ecosystems aren't just a necessary element of economic progress; they are a way to discover the path forward for a society. Although Kenya's digital innovation ecosystem is experiencing growth, flagship projects such as the Fingo Powerbank project will play a critical role to help bring together stakeholders, foster partnership and give them a platform to showcase their work with the aim of restarting growth working with the development sector, increase competitiveness, and fostering the creation of new products and services that solve real life problems.

Supporting the capacity of the dedicated digital innovation institution (KENIA) and development of a continuum of resources for equitable access and support of the ecosystem is crucial. Digital innovation is a priority objective that supports Kenya Vision 2030 economic goals, but it is also a cross-cutting enabler for political and social goals. A large portion of resources – targeting education, mentorship, funding, infrastructure, and other – is reaching predominantly urban populations. Thus, there is a considerable need for inclusion of all stakeholders and marginalized groups, particularly in hard to reach areas that are predominantly disadvantaged due to various reasons, including PWDs throughout Kenya, in order to achieve socio-economic development and digital innovation inclusion. There is a need to establish a development process for stakeholders too. How will they move along the processes of onboarding, getting better at using digital solutions and finding ways to improve existing solutions and/or build new ones in the existing ecosystem?

Finally, there is need to focus on new thinking on growth and digital innovation experimentation, where all stakeholders can be engaged to foster a vibrant innovation ecosystem. There is need to promote digital development innovations that are grounded on key principles and frameworks for example Principles for Digital Development (PDD). Once addressed, the recommendations provided in this report will empower stakeholders to accelerate their journey towards transforming Kenya into an innovation-driven economy. The implementation and any final decisions about priorities and which recommendations to consider as important for further engagement remain the right of FINGO and its stakeholders in Kenya.

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Appendices



FINGO-20200504T143723Z-001.zip

1. Role of FINGO Powerbank Project in the Digital Innovation Ecosystem
2. Kenya Innovation Ecosystem Map
3. Kenya Digital Innovation Themes
4. Key Stakeholders
5. Stakeholder Map
6. Pillars of the Innovation Ecosystem Summary
7. Draft Reports